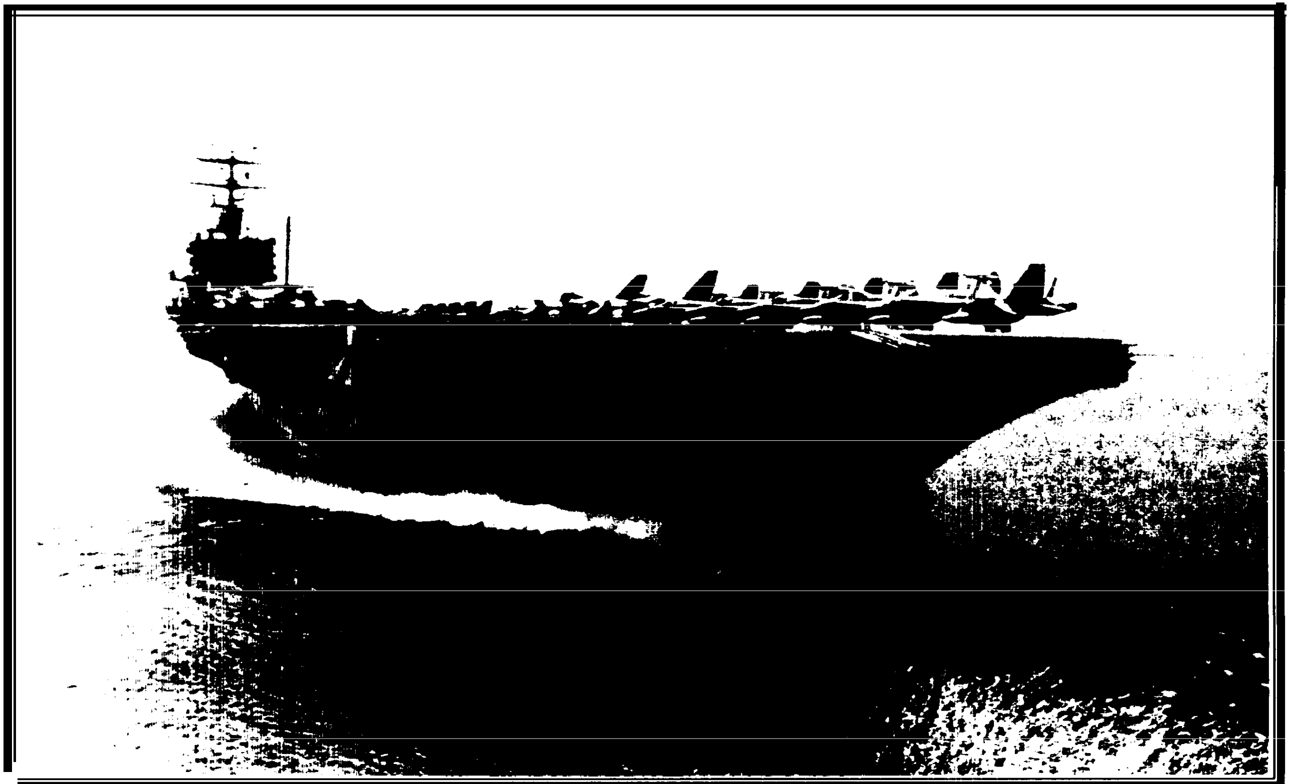
Final Environmental Impact Statement for

Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet

Coronado, California • Bremerton, Washington
Everett, Washington • Pearl Harbor, Hawaii



Volume 7 – Part A

Comments and Responses for Coronado, California

July 1999

Department of the Navy

Finai Environmentai impact Statement for

Developing Homeporting Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet

Coronado, California • Bremerton, Washington
Everett, Washington • Pearl Harbor, Hawaii

VOLUME 7 - Part A

Comments and Responses for
Coronado, California
Federal, State, and Local Agencies
and Organizations

July 1999

Department of the Navy

Introduction to Public Comment Organization

This section presents comments received during the Draft EIS public comment period, and responses to each comment. The comments received are in the form of letters or comments received at the public hearings. For simplicity, the following characterizes comments received as "letters," and each specific issue raised in each letter as a "comment." The comment letters and their responses are organized into sections for each potential CVN homeporting location: Coronado, Bremerton, Everett, and Pearl Harbor. Within each CVN homeporting location section, public comment letters are grouped by the commentor's affiliation and are abbreviated as follows: Federal agencies (F); State agencies (S); Local agencies (L); Organizations (0); and Individuals (I). Comments recorded from the Hearing Transcripts completes each comment set (H). Individual comment letters in each of these groups are numbered in the chronological order in which they were received by the Navy. For example, the first Federal comment letter received for each CVN homeporting location is identified as F.l. Specific comments are numbered as follows: F.l.l, F.l.2, F.1.3, etc. The second Federal comment letter received for each location is numbered F.2. Specific comments are numbered F.2.1, F.2.2, F.2.3, etc. State ietters are coded S.1, S.2, S.3 etc.

There are a number of comment letters that include comments about more than one of the locations. In these instances, the comment letter has been assigned multiple codes for each CVN homeporting alternative location that is addressed. The specific comments relevant to that CVN homeporting location are identified. The comment letter is listed in each relevant CVN homeporting alternative location section, and only the specific comments relevant to that location are indicated.

Immediately following each comment letter are the responses to those comments, numbered to correspond to comment codes. Pages are identified by comment code, so that all pages with comments and responses to letter F.1 are indicated with this code at the bottom of the page. The table of contents following this introduction lists each comment letter, the date sent, and the corresponding code.

A number of comments on the Draft EIS were submitted in Spanish. These letters have been translated into English by a certified translator. Responses appear in both English and Spanish. On the page immediately following this introduction, the translator's certifications are presented.

Due to the number of comments received for Coronado, California, comments and responses for that site have been divided into two documents: Volume 7, Part A, and Volume 7, Part B. Comments from Federal, State, and Local agencies, as well as Organizations, are included in Volume 7, Part A, and comments from Individuals and those made at Public Hearings are included in Volume 7, Part B. Comments and responses for Bremerton, Washington; Everett, Washington; and Pearl Harbor, Hawaii, are bound separately in Volumes 8-10.

CARLOS CERECEDO
STATE CERTIFIED COURT INTERPRETER
2420 MODOC RD.
SANTA BARBARA, CALIFORNIA 93105
PHONE & FAX: (805)963-4483

Judicial Council Certificate Number 300249

CERTIFIED TRANSLATIONS

Script and Translation of Tape Comments

AFFIDAVIT

I, CARLOS CERECEDO, STATE OF CALIFORNIA COURT CERTIFIED INTERPRETER -TRANSLATOR, JUDICIAL COUNCIL CERTIFICATION NUMBER 309249, HEREBY CERTIFY, THAT THE ATTACHED DOCUMENTS ARE A FAITHFUL AND TRUE TRANSCRIPTION MD TRANSLATION FROM THE SPANISH LANGUAGE TO THE ENGLISH LANGUAGE TO THE BEST OF MY KNOWLEDGE AND ABILITY.

Carlos Cerecedo

CARLOS CERECEDO
COURT CERTIFIED
INTERPRETER- TRANSLATOR
JUDICIAL COUNCIL # 390249

Santa Barbara, November 6, 1998.

CARLOS CERECEDO
STATE CERTIFIED COURT INTERPRETER
2420 MODOC RD.
SANTA BARBARA, CALIFORNIA 93105
PHONE & FAX: (805)963-4483

Judicial Council Certificate Number 300249

CERTIFIED TRANSLATIONS
SIX COMMENTS IN SPANISH FOR THE DRAFT EIS
1 ESTRADA
2 RODRIGUEZ
2 MIRAMONTES
1 URCINO

AFFIDAVIT

I, CARLOS CERECEDO, STATE OF CALIFORNIA COURT CERTIFIED INTERPRETER -TRANSLATOR, JUDICIAL COUNCIL CERTIFICATION NUMBER 300249, HEREBY CERTIFY, THAT THE ATTACHED DOCUMENT IS A FAITHFUL AND TRUE TRANSLATION FROM THE SPANISH LANGUAGE TO THE ENGLISH LANGUAGE TO THE BEST OF MY KNOWLEDGE AND ABILITY.

Carlos Cerecedo

CARLOS CERECEDO
COURT CERTIFIED
INTERPRETER- TRANSLATOR
JUDICIAL COUNCIL # 300249

Santa Barbara, November 6, 1998.

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Federal Agencies

BARBARA BOXER
CALIFORNIA

COMMITTEES:
APPROPRIATIONS
BANKING, HOUSING, AND URBAN AFFAIRS
BUDGET
ENVIRONMENT AND PUBLIC WORKS

United States Senate
HART SENATE OFFICE BUILDING
SUITE 112
WASHINGTON, DC 20510-0505
(202) 224-3553
senator@boxer.senate.gov
http://www.senate.gov/~boxer

September 2, 1998

The Honorable John Dalton
Secretary
Department of the Navy
Washington, DC 20350

Dear Mr. Secretary:

On August 28, 1998, the Navy published a Draft Environmental Impact Statement (DEIS) on Developing Homeport Facilities for Three Nimitz-Class Aircraft Carriers and Support of the U.S. Pacific Fleet. At that time, the public was given 45 days to review and comment upon this important document. E1.1

Many citizens, local governments, and public agencies are analyzing the DEIS; a number of them have informed me that additional the is needed to complete a full and adequate review of this voluminous and complex document. In particular, I draw your attention to a letter from the City of Coronado to the Navy (copy enclosed), which discusses its concerns regarding the DEIS in considerable detail and requests a two-and-one-half month review period.

Based on the City's and other comments I have received, I ask that you extend the public comment period for an additional 30 days beyond the current October 12 deadline. I believe that this extension would give the public a more reasonable amount of time to review and respond to the data and issues presented in the DEIS and will provide the Navy with additional valuable information for use in evaluating the proposed project.

Thank you for your attention to this request.

Sincerely,

Barbara Boxer

Barbara Boxer
United States Senator

BB:dh

Enclosure

1700 MONTGOMERY STREET SUITE 240 SAN FRANCISCO, CA 94111 (415) 403-0100
2250 EAST IMPERIAL HIGHWAY SUITE 545 EL SEGUNDO, CA 90245 (310) 414-5700
650 CAPITOL MALL SUITE 6544 SACRAMENTO, CA 95814 (916) 448-2787
2300 TULARE STREET SUITE 130 FRESNO, CA 93721 (209) 497-5109
600 B STREET SUITE 2240 SAN DIEGO, CA 92101 (619) 239-3884
210 NORTH E STREET SUITE 210 SAN BERNARDINO, CA 92401 (909) 888-8525

Comment Number	Response

Barbara Boxer, U.S. Senator

F.1.1 The Draft EIS public review period was extended to 75 days.

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
600 Harrison Street, Suite 515
San Francisco, California 94107-1376

November 20, 1998

ER 98/0548

John Coon
Department of the Navy, Southwest Division (Code 05ALJC)
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

Dear Mr Coon

F.2

The Department of the Interior (Department) has reviewed the June 1998 Revised Draft Environmental Impact Statement (DEIS) for Developiing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet (Project), Coronado, California, Bremerton, Washington, Everett, Washington, and Pearl Harbor, Hawaii. The following comments on the DEIS are provided for your consideration when preparing the Final Environmental Impact Statement (FEIS).

GENERAL COMMENTS

F.2.1

In general, the Department does not object to the programmatical objectives of Alternative 2, the Navy's preferred alternative. The preferred alternative calls for the berthing of two (for a total of three) additional nuclear-powered aircraft carrier ships (CVN) and removal of two conventional carriers from the Naval Air Station North Island (NASNI) at Coronado, California, and the homeporting of two CVNs at the Puget Sound Naval Shipyard (PSNS), Bremerton, Washington and the Naval Air Station (NAVSTA) at Everett, Washington. The Project also includes modernization of the Bremetton home port to meet new Navy standards. However, the DEIS states in its Abstract that Alternative Two would result in significant but mitigable impacts on marine biological resources at the PSNS and the NAVSTA. Although we agree with the programmatic findings of the DEIS on the home port locations, we can not concur with the proposed Project and the DEIS' finding of significant but mitigable impacts until several Project issues are addressed in additional detail

F.2.2

<u>CVNs Homeporting at Puget Sound Naval Station, Bremerton, Washington and at Naval Air Station, Everett, Washington</u>

Under the Department of the Navy's Alternative Two, the existing carrier capacity at the PSNS and the NAVSTA home ports would remain the same:. and no additional projects would be built

at the NAVSTA. The modernization that would occur at the PSNS includes deepening turning basins and berths and demolishing and reconstructing a major pier Approximately 425,000 cubic yards would be dredged for the Project About a third of the total dredge volume is expected to be contaminated sediment which would be disposed at an approved upland landfill and/or nearshore confined disposal or confined aquatic disposal facilities The in-water disposal facilities would have a footprint of about 14 acres Because the PSNS modernization is included in most of the other action alternatives evaluated in the DEIS, this alternative would have the least impact on Puget Sound However, the DEIS' lack of specific implementation detail prevents the Fish and Wildlife Service (FWS) from assessing the full impact of the proposed work on fish and wildlife resources

The dlepth criteria in Appendix H specifying the turning basin and berth dredging depth need to be re-evaluated for the PSNS Bremenon complex. The Navy may be able to minimize the area and/or reduce the dredging depth of the preferred alternative because tides are advantageous in Puget Sound, the Navy has a 96 hour deployment time (due to currents), and the maximum channel depth in Rich Passage is -40 foot MLLW. The current proposal is to dredge the Pier D east berth from -45 to -49 feet, the Pier D west berth from -43 to -49 feet, Pier B from -40 to -46 I feet. Pier 3 from -44 to -46 I feet, and the turning basins from -40 to -41 feet MLLW The FEIS should explore opportunities to reduce these dredging depths without constraining homeporting operations

The DEIS lacks specific implementation detail For example, it does not provide detailed maps with lbathymetric, Project, or natural resources features, adequate biological information, and detailed design information, including modeling. The DEIS does not address the management of ballast water or expected impacts of maintenance dredging The cumulative impact discussion is limited to the development actions that would occur concurrently or in the near-future with the proposed Project However, severe cumulative impacts have occurred at the Bremerton complex over the last century The development of the Puget Sound Naval Shipyard resulted in large losses of intertidal mudflats, eelgrass, and estuarine emergent wetland The development and progressive deepening of berths, turning basins, and navigation channels also impacted the subtidal habitat (below -10 feet MLLW) by creating a greater portion of deeper subtidal habitat than the original condition These changes have probably resulted in a significant cumulative impact to rearing habitat for anadromous fish (loss of intertidal habitat) and foraging habitat for sea and diving ducks (change of water dlepth distribution). Given the cumulative effect of these proposed actions and those of the past, the Navy has opportunities to enhance environmental conditions for fish and wildlife habitat as part of the Project

The Corps of Engineers (Corps), in cooperation with the Environmental Protection Agency, the Washington Department of Ecology, and other agencies, is developing a feasibility study for a multiuser contaminant disposal strategy for Puget Sound This feasibility study includes constructing a multiuser facility for contaminated sediments. Preliminary results of the study have identified Sinclair Inlet/Bremerton as a principal geographic; area of interest because it contains about 20 percent of Puget Sound's contaminated sediments. The FEIS should explore the opportunities that this multiuser facility for contaminated sediments would have for the Navy to handle contaminated sediment from this Project, future Navy projects, and other Puget Sound contaminant needs. This multiuser facility would reduce the proliferation of smaller sites in Puget Sound and lead to a consistent evaluation and management approach to confined disposal of contaminated sediments

Homeporting at Naval Air Station North Island (NASNI), San Diego, California

F.2

F.2.3 Before the Department can concur with Alternative Two and the finding that impacts on marine biological resources would be significant but mitigable, several Project issues need to be addressed in additional detail. They include: (a) Project effects to species listed under the Endangered species Act of 1973 (ESA) as endangered or threatened, (b) additional mitigation for marine biological resources beyond what was identified in the DEIS, © more accurate quantification of impacts to marine habitats, (d) remediation and minimization plan for removing and reducing the cumulative build-up of copper contaminants from nuclear powered aircraft carrier ships (CVN) homeported, and (e) monitoring for the presence of contaminants and the clean-up of any contaminants found at the proposed mitigation site near Pier 8 at the Naval Air Station North Island (NASNI). The ESA listed species include the endangered California least tern (Tern), endangered1 California brown pelican (Pelican), and coastal populations of the threatened western snowy plover (Plover)

F.2.4 Project Effects to ESA Listed Species The proposed action may affect foraging for the Tern and the Pelican Impacts to foraging activities of these species include: (1) additional coverage of I .49 acres of San Diego Bay waters by the new wharf and ferry/flag landing beyond existing conditions, (2) permanent filling of 1.2 to 2.5 acres behind the existing Pier J/K area, (3) impacts to San Diego Bay waters at the proposed CVN berthing site at North Island by proposed 2-year demolition of Pier J/K and construction of a new wharf, (4) potential surface water turbidity impacts associated with dredging activities, and (5) placement of 50,000 cubic yards of dredged materials from the mitigation site near Pier B to enhance sensitive bird habitat at NASNI. We suggest compensating the loss of 1.2 to 2.5 acres of habitat useable by Terns or Pelicans for foraging by making an equivalent area of shallow water habitat near Pier B at NASNI

F.2.5 We concur with the finding on DEIS page 3.5-19 (lines 3 to 6) that the dredging for this mitigation would need to be completed at the start of the construction period and prior to initiation of the proposed Project in order to create Tern foraging habitat by filling behind Pier J/K prior to the permanent loss of bay habitat. While this specific measure may offset the second effect identified above,, additional significant impacts to Tern and Pelican foraging remain They are associated with effects numbered I and 3 above The coverage of I .49 acres of bay waters by construction of the wharf and ferry dock would permanently reduce future foraging opportunities

F.2.5 for both the Pelican and the Tern This reduction is particularly significant because the Terns and their young at the NASNI nesting colony are dependent upon small marine fish successfully captured adjacent to this nesting area. Demolition of Pier J/K and the pile driving associated with the new wharf construction would result in shock waves being sent through the water column Foraging by Terns and Pelicans can be adversely affected if shock waves result in fish avoiding the Project area, disrupt concentrated schools of fish, or force prey fish to seek deeper waters Additional1 impacts to foraging Terns and Pelicans would occur when foraging opportunities for these species are further limited by boats, barges, and work platforms covering surface waters of the Project area The FEIS needs to address the significance of this action, given that demolition and new wharf construction would occur in two years

F.2.6 The Project involves the dredging of 490,000 cubic yards of material at NASNI to create an adequate depth for berthing a CVN Because Tern and Pelicans are sight feeders, dredging and its associated turbidity can potentially reduce these species ability to successfully capture prey items While large turbidity plumes associated with dredging are not anticipated because relatively large percentages of sand material would be dredged, the FEIS should fully describe the number and location of surface, middle and bottom-core sediment samples taken to characterize the anticipated percentage of sand in the dredging footprint.

F.2.7 The FEIS should ensure the dredging would not result in a surface turbidity plume greater than 1.000 feet in width or length and surface turlbidity would not persist longer than one hour On page 3 5- 19 (lines 7 to 14), the DEIS states "The construction contract would include a requirement for a biological monitor To limit the spread of turbidity during the Tern nesting season (i e April t to September IS), best management practices (BMP) would be used " The FEIS should provide for silt curtains to be used as a means to limit the spread of surface turbidity within San Diego Bay if dredging activity is scheduled during the Tern nesting season The FEIS should identify when and how often biological monitoring would occur, and what procedures the: Navy would initiate with the dredging contractor if the above identified limits of the turbidity plume or the time frame of surface turbidity were exceeded.

F.2.8 The DEIS identities on page 3 3-8 that dredging of the proposed shallow water mitigation site would result in approximately 50,000 cubic yards of material being removed with approximately 15,000 cubic yards being utilized as fill in the wharfarea and the remainder used to enhance sensitive lbird habitat at NASNI Consideration also needs to be given to the use of the 490,000 cubic yards of material dredged from the proposed CVN berthing area at NASNI. We concur with the Navy's proposed use of sand to enhance Tern and Plover nesting sites This Project provision would be consistent with both the Memorandum of Understanding (MOU) between the FWS and the Navy and the Programmatic EIS for Dredged Material Disposal that was developed by the Navy. We suggest the sand be deposited and spread out on the ocean beach from Zuniga Point to the Coronado fence line and adjacent interior areas of the base adjacent to Zuniga Point Use of the sand at this location could improve nesting opportunities for the Plover The deposition and spreading out of sand materials at this location should be conducted outside the Plover nesting season We suggest using sand material at other Naval properties to potentially enhance nesting opportunities for the Tern and/or the Plover. These properties include North and South Delta Beach at the Naval Amphibious Base, Coronado, California and the ocean beach area adjacent to the Naval Radio Receiving Station, Coronado, California We would welcome an opportunity for the FWS to formally discuss use of dredged materials to enhance Tern and Plover nesting habitats. Based on such discussions, a specific plan of action should be developed and presented in the FEIS regarding this issue F.2.8

Given the extent of issues raised above, we recommend the Navy initiate an updated MOU involving in-water construction activities and Tern compensation and consultation pursuant to section 7 of the Endangered Species Act. F.2.9

<u>Additional Mitigation for Marine Biological Resources</u> The proposed construction of the new wharf and ferry landing described1 on page 3.5- l8 would cover 1.49 acres of San Diego Bay waters This would result in a significant impact for which the Navy needs to provide specific mitigation in the: FEIS. In addition to loss of foraging opportunities for Terns and Pelicans previously identified, shading from these structures would have commutative effects on algae, eelgrass, benthic invertebrates, and marine fish utilizing this aquatic resource. These commutative effects need to be addressed and mitigated in the FEIS The need for mitigation relative to this issue was raised by the FWS and the National Marine Fisheries Service (NMFS) in previous meetings with the Navy and its biological consultants. This issue should be addressed in Table ES-3 and Table 2- I I "Summary of Significant Environmental Impacts and Mitigation." We request the Navy meet with the FWS, NMFS, California Department of Fish and Game, and Corps' Regulatory Branch to discuss this issue and determine appropriate mitigation for this impact. This issue should be resolved among the above listed agencies and be addressed in the FEIS. F.2.10

F.2

<u>Accurate Quantity of Impacts to Marine Habitats</u> The FEIS needs to adequately quantify impacts of marine habitat losses, These habitats include: (a) intertidal habitat, (b) shallow subtidal habitat, and © eelgrass lbeds The DEIS identifies that I .2 to 2.5 acres of San Diego Bay waters would be filled The FEIS should quantify the amount of impacted acres and not a range of acres. It should also quantify how many acres of intertidal, shallow subtidal, and eelgrass would be lost with this proposed till Such quantification is needed to ensure I) no net loss of these habitat types would result and 2) surface elevations of the mitigation site are excavated to an appropriate level These elevational levels need to specifically address the losses of each habitat type regardless whether the area impacted supports eelgrass or is unvegetated intertidal or shallow water habitat The FEIS should provide a scaled engineering plan of the mitigation site with surface contours relative to Mean Lower Low Water (MLLW). F.2.11

Tlhe FEIS also should estimate acreage of potential eelgrass impacts associated with construction of the Project Potential eelgrass impacts that need to be addressed include (a) the I 2 to 2 5 acres to be tilled behind Pier J/K, (b) activities associated with demolition and construction of the new wharf, © shading associated with the proposed new wharf, (d) dredging of the shoreline to create the proposed mitigation site near Pier B, e) existing eelgrass beds planted at a mitigation site created near Pier B for Naval Project P-549 and existing eelgrass beds near the proposed dredging of the new CVN berthing area at NASNI, and (f) construction of new ferry landing dock The FEIS should also identify when and where detailed pre-construction eelgrass surveys would be completed and the entity responsible for conducting the surveys F.2.12

<u>emediation Plan for Removing the Cumulative Build-Up of Copper Contaminants from CVN's Home Ported</u>

The DEIS identifies leaching of one CVN plus periodic (assumed to be twice a year) m-water hull cleanings would result in an annual input of 840 pounds of copper into San Diego Bay This accumulation would be in addition to the CVN that is currently homeported at NASNI The DEIS stated the amount of copper from the CVN is negligible compared to an estimated total annual input for the entire bay of 182,000 pounds of copper. The Navy needs to address the cumulative impacts of copper input rinto San Diego Bay by having two CVN's homeported in one relatively small area of the bay. Copper is a contaminant and is toxic to marine resources. We arc concerned with the bioaccumulation of copper in marine organisms Its input into the bay needs to be minimized to the greatest extent practicable The FEIS needs to provide alternative measures to reduce the amount of copper entering San Diego Bay from the homeporting of CVN: at NASNI. The FEIS should evaluate employment of skirts around the: hulls of CVNs before conducting cleaning operations, as well as other practical remediation actions F.2.13

<u>Monitoring for the Presence of Contaminants and the Clean-Up of any Contaminants Found at the Proposed Mitigation Site Near Pier B at NASNI</u>

The DEIS identities potential sources of contaminants that were in the immediate proximity of the proposed mitigation site near Pier B. These were the elevated PAH concentrations immediately bayward of Pier B and potential sources of contaminants from IR Site l/Outfall 3 and IR Site 9 The FEIS needs to identify what specific contaminants and contaminant levels have been found at each of these sites. what monitoring efforts are being conducted at each of these sites to determine the extent of the contamination, and what mediation measures would be or are being employed to remove any contamination found relative to the proposed mitigation site F.2.14

SPECIFIC COMMENTS -- Puget Sound Naval Station

<u>Page 4.1-5 Line 33</u> Disposing dredge fill into a nearshore confined disposal or confined aquatic disposal facility may pose a significant geologic or seismic risk due to liquefaction If these areas underwent liquefaction then a significant contaminant release could occur in Puger Sound

John Coon, Department of the Navy
Southwest Division (Code 05ALJC)

Page 4.1-7 Lines 34-39 While there is little information on tsunamis in Puget Sound, the risk of a seismic induced tsunami may exist since the "earthquake hazard in the region is substantial" More analysis is needed to assess the tsunami risk for the Project, especially if nearshore contaminated dredge disposal is a consideration.

Page 4.2-1 Lines 16-22 Shallow groundwater is abundant along the waterfront and seeps through the sheet pile in the dry docks The Navy needs to examine the groundwater flow to find out whether the groundwater would provide a significant design challenge for any nearshore confined disposal facilities and if increased berth depth will increase the current contaminant releases into Puget Sound from groundwater

Page 4.2-1 Lines 24-35 Contaminant containment measures need to be considered during Pier D demolition and re-construction and in the staging areas to prevent contaminated sediments from entering marine waters by surface water runoff.

Page 4.2-6 Lines 23-24 According to the regulations implementing the National Environmental Policy Act, mitigation involves five steps that are often called the mitigation sequence: 1) avoiding the impact. 3) minimizing the impact, 3) rectifying the impact, 4) reducing or eliminating the impact over time, and 5) compensating for the impact. The Navy should use this broad definition when discussing the mitigation measures. By using this definition, the Navy will clearly document the effort they are making to avoid and minimize impacts to fish and wildlife.

E.2

Page 4.3-4 Lines 29-32 The FEIS should provide specific information about how the Navy would respond to a spill and collect the contaminated material in a containment boom for safe disposal

Page 4.3-6 Lines 9-25 The tidal currents in Puget Sound could widely disperse contaminants bound to clay and inorganic particles that are suspended during the dredging operation. These particles stay in suspension for relatively long periods resulting in potentially large transport distances The contaminants would be biologically available when they settle out on the surface of the sediment The Navy should construct a model of the dredge plume and use empirical information from Puget Sound to estimate the area and quantity of dispersal. This information should be used to decide on the significance of the impact A closed-bucket clamshell dredge or another type of "environmental" dredging technique should be considered to reduced the amount of suspended sediment

Page 4.3-8 Lines 9-31 Given the amount of suspended sediment resulting from dredge disposal and Puget Sound's wide tidal range, we do not agree with using a "notch" on any confined disposal site The "notch" would be a significant pathway allowing a large quantity of contaminated sediment to enter the Sound and pose a significant risk for fish entering the facility.

John Coon, Department of the Navy
Southwest Division (Code 05ALJC)

Page 4.3-8 Lines 32-47 There are few examples in Puget Sound of confined disposal or confined aquatic disposal facilities The environmental impact statement does not provide enough information to decide on the merits of a nearshore disposal facility for the Bremerton complex We cannot support a confined disposal facility without detailed site specific design analysis that demonstrates the facility will not result in the long-term release of contaminants to the environment

Currently, we prefer disposal or treatment alternatives for contaminated sediments on upland rather than in intertidal or subtidal habitats Locating the disposal facility on uplands offers many planning and operational advantages Upland disposal would not displace important intertidal and subtidal habitats These habitats are usually very limited in industrialized areas where contaminants are likely to occur Upland disposal would also allow easy access to the site for frequent monitoring, make it easier to discourage fish and wildlife from using the site while it is being tilled, allow for a broad range of contingencies in case the site fails, provide a future opportunity to remediate or treat the sediments as this science matures, and take advantage of the decades of experience with solid waste disposal, especially the regulatory framework that is already in place Given the risk that these sediments may pose to fish and wildlife and human health, the known lower risks associated with upland disposal should be weighed carefully against the lower cost of nearshore and in-water disposal alternatives

Page 4.3-9 Lines 12-19 Concrete or steel piers should be used for the piles rather than treated wood piles The Navy should also investigate the noise and vibration impacts to fish and wildlife from pile driving These disturbances can often be significant even relatively far away from the site

Anderson and Teitzel (1986) measured noise at various distances from a pile driver driving steel piles (Delmag model D-46-23 with rated energy of 48.000 to 105,000 ft-lbs) They found a peak impulse noise that ranged from 106 to 120 dBA 200 feet from the pile driver The standard noise drop of -6dBA per distance doubling for hard surfaces would result in 90 dBA at 6,400 feet from the site This noise level would be even higher over water The effect of this level of noise in the Project area may be enough to affect nesting bald eagles and other wildlife Feist and Anderson (1992) also found that pile driving stresses juvenile salmon up to 600 meters from the source

Page 4.3-9 Lines 5-21 The propeller wash from the ship movements (and associated tugs) can result in depressed benthic colonization In absence of disturbance, benthos will recolonize a substrate until an "equilibrium" community becomes established in the area The recruitment for the later successional stages often depends on bioturbation that creates an aerobic substratum which is typically very close to the surface Propeller or other disturbances that affect the surface sediments will suspend the aerobic sediment and expose an anaerobic surface This continual disturbance is likely to keep the benthic community in a relatively early successional stage that would not be as desirable for foraging fish and waterfowl

Page 4 4-2 Lines 1 - 14 The study's contaminant sediment sampling is inadequate to assess the current condition of the substrate The samples were taken between March 1990 and April 1991 so they do not describe the contamination that has taken place over the last seven years. The samples were only collected on the surface, not any deeper than 10 centimeters (cm) If the Navy's estimate of 2 cm/year for the sedimentation rate is accurate, then the samples only describe the contaminant releases that occurred over a 2 to 5 year period (between 1986 to 1991) This method is not adequate to describe the quality of the sediment when the Navy is proposing to dredge a maximum depth of 183 cm for the proposed Project, a profile representing 90 years of contamination

Page 4 4-3 Lines 15-19 Given the industrial history of the Bremerton complex, substrate sampling and contaminant analysis should be completed systematically and for the entire area proposed for dredging or disposal within the complex

Page 4 4-5 Lines 5-16 The Navy should consider a closed-bucket clamshell dredge or another type of "environmental" dredging technique to reduce the contamination of the surface sediments by sediment suspendled during dredging operations. This dredging equipment is highly specialized so the expertise to mobilize and/or operate such equipment may not be available locally.

F.2

Page 4.4-6 Lines 5-16 The Navy should use the most current dredging, technology to make sure that the sediments in the Project and dispersal areas do not become contaminated by suspended sediment caused by the dredging operation. If the sources of contamination are eliminated and the areas remain clean, then the Project could have a long term benefit to fish and wildlife:. This benefit could be significant since the Project area is about 100 acres.

Page 4.4-6 Lines 1-8 The DEIS does not indicate the number of piers that have to be removed during the demolition of Pier D If there is a considerable number of old piers to remove, then significant contaminant release may occur in the Project area by exposing previously contaminated sediments. The environmental impact statement should quantify this potential contaminant source

The piles should be disposed at an appropriate upland, site, especially if they are preserved with creosote or other wood preservatives

Page 4 5-1 Line 39 Page 4.5-2 Line 14; Page 4 5 3 Line 35 A one day trawl survey in January 1998 is not sufficient to quantify the Project's impacts on invertebrates, fish, and juvenile anadromous fish If additional (and recent) survey information is not available, then the Navy should conduct a one to two year invertebrate survey on the seasonal use of these organisms in the study area We recommend the longest survey period that is practicable because large inter-annual variation often occurs in biological communities

Page 4 5-2 Lines 28-35 No bird surveys were completed for the Project The Navy should conduct a one to two year bird survey if no recent survey information is available We request the FWS review any biological survey designs that the Navy develops as part of the proposed Project

Page 4.5-6 Line 1 Benthic infauna density may re-establish itself within a year, but the community diversity can often take many years to recover The later stages of benthic recolonization typically have larger organisms while the earlier stages have smaller organisms that are often microscopic The larger organisms associated with the later stages provide a greater variety of foraging opportunities for demersal fish, macroinvertebrates, and waterfowl

Page 4 5-6 Lines 18-34 The contaminants released and transported by the dredge plume would be immediately available to fish and wildlife because they will be dissolved in the water column or distributed on the sediment's surface 'The Navy should estimate the quantity or extent of this potential release, by models or other means, in the FEIS

Page 4.5-7 Lines 7- 14 Herring may a'lso use macroalgae attached to piles and revetments as spawning substrate The Navy should determine the use of the shoreline for herring spawning and, if it is significant, should time the implementation of the Project to avoid the spawning and incubation period

Page 4 5-7 Lines 30-42 Birds, particularly gulls, are attracted to clamshell dredge operations because of the foraying opportunities Foraging birds in the vicinity of the dredge operation can be a significant tropic pathway for contaminants. For example, the large number of glaucous-winged gulls near the Bremerton shipyard complex could be attracted to the dredging operation, pick up contaminants, and then be preyed on by bald eagles or other raptors

Page 4.5-11 Lines 37-40 The study presents very little information on the use of Project area by federal threatened and endangered species If not already available, the Navy should conduct a survey of the distribution and use of tlhese species near the Bremerton shipyard complex A survey outside the immediate Project area may be justified because of the potential to widely distribute contaminants in the dredge plume and the high noise and vibration levels expected during the demolition and re-construction of Pier D

Page 4 5-15 Lines 21-25 A detailed mitigation and monitoring plan or at least the Navy's conceptual commitments for mitigation should be included in the final environmental impact statement We request that the FWS participate in developing this plan

Page 4.6-4 Line 23 Marbled murrelets are federally listed as a threatened species under the Endangered Species Act

Page 4.6-4 Lines 3-13 We cannot agree with the Navy's no effect determination given the potential noise that would accompany pile driving, the potential for widely dispersing contaminated sediment in the dredge plume, and the opportunistic foraging of gulls and other birds in the vicinity of the dredging operation that may become prey for bald eagles. The Navy should work with the FWS and National Marine Fisheries Service to complete a biological assessment for the Project that addresses these issues

Naval Air Station North Island

Page 3.5-18 Section 3 Naval Air Station North Island, 3.5 Marine Biology, 3.5.2 Environmental consequences and Mitigation Measures, 3.5.2.5 Mitigation Measures This section of the DEIS discusses creat ion of a shallow water mitigation site In the previous mitigation site created for the first CVN homeported at NASNI (P-549). the shoreline of the mitigatiam site was rip-rapped We request that armoring of the shoreline be avoided if feasible. If not feasible, the FEIS needs to identify the elevation at which the rip-rap would be placed relative to MLLW for assessing thre impacts associated with armoring the shoreline and potential loss of shorebird foraging habitat. F.2.15

This same section of the DEIS discusses construction of a ferry/flag landing dock that would cover 6,600 square feet of San Diego Bay waters as compared to the existing 2,472 square foot structure The FEIS needs to justify increasing the size of this dock structure, and address the cumulative impacts from structures covering San Diego Bay waters. The FEIS should provide an updated summary of bay coverage from all Naval structures including the proposed Project F.2.16

Page 3 Terrestrial Biology, 3.6.1 Affected Environment, 3.6.1.1 Homeporting Site This section of the document discusses the uses of planted trees (eucalyptus, fig and torrey pine) by nesting great blue herons, black-crowned night herons and snowy egrets. The Project would result in construction of new facilities including a CVN warehouse, a fleet support building, and an equipment laydown building. The DEIS identified that the Project would also increase the need to construct additional parking at NASNI The FEIS should identify any eucalyptus, fig or torrey pine trees that would be removed as a result of these facilities. Any loss of these tree species should be mitigated in a plan that would be described in the FEIS, and be available to the FWS for review and approval F.2.17

SUMMARY COMMENTS

The DEIS adequately supports the programmatic finding to use existing home ports, to modernize the Bremerton complex, and to make no changes to the existing Everett complex However,, the lack of specificity in the DEIS makes it difficult to fully determine the Project's fish and wildlife impacts or the mitigation that may be necessary, in particular for the PSNS part of the Project Therefore, we believe the DEIS is inadequate to fully implement the preferred alternative. The deficiencies which we have identified must be addressed in the FEIS, and if our concerns F.2.118

F2

regarding the lack of specific implementation detail for the PSNS can not be resolved in the FEIS, we request that a supplemental DEIS be developed for the PSNS part of the Project The FWS' Western Washington Office (WWO) in Lacey, Washington and Carlsbad Fish and Wildlife Office in Carlsbad (CFWO) in Carlsbad, California are available to work with the Navy to address cumulative impacts to fish and wildlife habitats and. in particular, those impacts to ESA listed species, reduce or eliminate contaminated sediments, and develop enhancement measures The WWO may be contacted at 360/753-9440, and the CFWO may be contacted at 760/431-49910 F.2.18

Thank you for the opportunity to comment.

Sincerely,

Tracey Y. Quéripel

for Patricia Sanderson Port
Regional Environmental Officer

cc
Director, OEPC, w/original incoming
Regional Director, FWS. Portland

Enclosure (Appendix)

REFERENCES

Anderson. D S. and S.D. Teitzel 1986. I-90 Seattle Access Pile Driving Noise Analysis L-6679 Washington Department of Transportation

Feist, B E and J J Anderson 1992 Potential Impacts of Pile Driving on Juvenile Pink (*Oncorhynchus gorbuscha*) and Chum (O. *keta*) Salmon Behavior and Distribution, University of Washington School of Fisheries

Comment Number	Response

U.S. Fish and Wildlife Service (USFWS)

F.2.1 Your comments are noted and are included in the Final EIS.

F.2.2 Please refer to the following responses to the comments contained in your letter.

F.2.3 This comment is a summary, listing issues that the USFWS believes need to be addressed. Subsequent paragraphs in the letter provide USFWS' detailed comments and are responded to as described below.

F.2.4 See EIS section 3.5.2.5, mitigation measures for Threatened and Endangered Species. The information in the EIS agrees with your comment that both the permanent filling and coverage of open water foraging habitat are significant for terns and pelicans. Both types of impacts are to be mitigated by shallow-water habitat reconstruction near Pier B at NASNI. Section 3.5.2.2 has been clarified to indicate that temporary impacts on brown pelican foraging and roosting are less than significant because this species does not nest in the vicinity, and because suita'ble foraging and roosting habitat for these wide-ranging birds is available throughout much of San Diego Bay and in coastal waters to the north and south. Some short-term impacts on least tern foraging are considered significant in the EIS and would be mitigated as described in section 3.5.2.5, by avoidance of certain activities during the breeding season and, if necessary, by measures to limit the spread of turbidity.

F.2.5 Shock waves from pier pile driving during demolition and construction of the new wharf may impact some resident fishes by causing them to temporarily leave the project area. Other schooling fishes that are typically transient in the project area may be affected by shock waves by being temporarily dispersed from their schools. Since pile-driving would occur for several sections of the wharf construction for periods of several weeks to a few months, these impacts would be localized and temporary and therefore insignificant. See also response to comment F.2.4 above.

F.2.6 As discussed in section 3.3.2 of the EIS, changes in turbidity levels associated with dredging are expected to be localized and temporary in duration. These changes are not expected to significantly impact foraging birds (section 3.5). Additional testing of sediment quality in the vicinity of Pier J/K was recently completed (January 1999). The sampling design and numbers of sites proposed for the sediment characterization study are described in the "Dredged Material Sampling and Analysis Plan: MCON Project P-700A Berthing Wharf – Phase II at Naval Air Station North Island, Coronado, California." According to that document, sediment cores were collected at 25 sites within four subareas. Sediments were cornposited, generating one composite sample per area, with the exception that two composite samples-were generated for an area immediately

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	adjacent to Pier J/K (Area D). Each composite sample is being analyzed for grain size characteristics. Preliminary results from these analyses indicate that sediments are primarily (64-88 percent) sands with 12-36 percent fines. This information will also be included in the dredging permit application, which the U.S. Fish and Wildlife Service will review as part of their role under the Fish and Wildlife Coordination Act.
F.2.7	The USFWS' recommendations, which are consistent with mitigation identified in the BRAC Final EIS, have been incorporated into the wording of the mitigation measure in section 3.5.2.5 of the Final EIS. Silt curtains would be utilized during construction activities at the Pier B mitigation site and at the NAB Enhancement Area, but not in the wharf area since this is outside of sensitive areas identified in the Memorandum of Understanding (MOU) Between the U.S. Fish and Wildlife Service and Southwest Division, Naval Facilities Engineering Command (1993, as amended). Where feasible, construction activities at the mitigation site would avoid the least tern nesting season identified in the MOU, but coordination with USFWS (4/15/99) determined that it will be more important to complete the mitigation site as expeditiously as possible, even if construction extends into the nesting period.
F.2.8	In response to comments to maximize the beneficial uses of dredged material from the proposed action, the Navy is proposing, as the preferred option, to transport dredged material from Pier J/K and mitigation site to be deposited just south of the Naval Amphibious Base for the creation of intertidal/subtidal habitat. Creation of this enhancement habitat in Navy protected waters is consistent with the Coastal Act and supports the "San Diego Bay Integrated Natural Resources Management Plan." This action is discussed in section 2.3.3.1 of the EIS.
F.2.9	Consistent with the programmatic nature of the Memorandum of Understanding (MOU), the recommendation to update the MOU is incorporated into the Final EIS section 3.18.5, as a mitigation for cumulative impacts. An updated MOU would obviate the need for formal Section 7 consultation regarding cumulative issues.
F.2.10	The ferry/flag landing would be relocated to an existing boat landing south of the BRAC CVN wharf and new construction contained within the existing facility footprint such that there would be no issues associated with new shading for that structure. Assessment of any impacts to eelgrass in the wharf area would be based on pre- and post-construction surveys, and any needed mitigation resolved by applying the loss to the Navy's Eelgrass Mitigation Bank credit, in accordance with the Southern California Eelgrass Mitigation Policy (NMFS 1992). Based on Navy studies conducted in February 1999, as summarized in Volume 1, section 3.5.2.2, Facility Improvements, there do not

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	appear to be any shading effects to invertebrates living under a comparable pier at Naval Station, and therefore unlikely to be any significant effects for food sources of bottom-feeding fish. Fish studies during the same survey were inconclusive due to the naturally low abundances during winter. Therefore, potential effects will be addressed by pre- and post-construction surveys, and mitigation for any significant impacts accomplished at the mitigation site. Construction of the Pier B mitigation site, the NAB Enhancement Area, and enhancement of western snowy plover habitat at NASNI will ensure no net effects to birds, including threatened and endangered species.
F.2.11	Habitat that would be impacted by project dredge and fill activities in the wharf area totals, comprised of 0.82 acres of low intertidal (+1 to -2.2 feet MLLW), 0.63 acres of shallow subtidal (-2.2 to –10 feet MLLW), and 0.05 acres of medium subtidal (-10 to -20 feet MLLW). This represents about 55 percent intertidal and 45 percent subtidal area, although the intertidal habitat is primarily low quality, abutting a vertical quay wall along the shoreline. These impacts would be mitigated by constructing new habitat that would reflect one of two options, intertidal (+4 to +1 feet MLLW) or intertidal/subtidal (+2 to –4 feet MLLW), at the Pier B mitigation site. These options were coordinated with the agencies (USFWS, NMFS, and COE) on 14 April 1999. The final design will be determined during permitting, in accordance with agency specifications. Impacts to eelgrass will be determined based on pre- and post-construction surveys, and mitigated using credits from the Navy's Eelgrass Mitigation Bank, as detailed further in the response to F.2.10 and in Volume 1, section 3.5.2.5. The Navy will also create additional habitat at the NAB Habitat Enhancement Area. This would target about 30 acres of principally 10-12 foot deep subtidal area that would be filled, using dredged material from the wharf area to create about 10 acres of intertidal mudflat, sloping at about 20:1 from a planned upper depth of + 2.5 feet MLLW.
F.2.12	Mitigation for impacts to eelgrass will be as detailed in the response to F.2.10 and in Volume 1, section 3.5.2.5. Pre-construction surveys in all areas that would be dredged and filled will be conducted a minimum of six months before construction to determine the actual amount of eelgrass that would be impacted. Post-construction surveys will also be conducted in these same areas within six months after construction is completed.
F.2.13	The DOD and EPA are evaluating potential control options for the discharges that generate copper, including hull coating leachate, seawater cooling, and underwater hull cleaning. The DOD and EPA will be establishing discharge standards for these discharges from Armed Forces vessels. Copper is a widespread contaminant associated with many industrial and non-point sources, including hull leachate and cooling water discharges from Naval vessels. Navy hull leachate presently contributes an estimated 22 percent of the dissolved

Comment Number	Response
	copper input to San Diego Bay (Johnson et al. 1998). For comparison, the civilian pleasure boat hull leachate contributes an estimated 33 percent of the dissolved copper input. According to the Nature of Discharge (NOD) report prepared for Uniform National Discharge Standards (UNIX), leachate from anti-fouling paints on all Naval vessels in San Diego Bay adds an estimated 0.19 micrograms per liter to bay waters, compared to ambient concentrations of 3.7 micrograms per liter. Although this represents a proportionately small increase, existing copper concentrations exceed the water quality criterion. As stated in the EIS (section 3.3.2),the amount of copper leaching from a CVN hull is estimated to be slightly greater (0.37 pounds per day) than that from a CV. However, this increase in copper inputs to the bay associated with berthing a CVN is expected to be offset by planned decreases in the size of the Navy fleet, resulting in a net decrease over the next several years in the total copper input from anti-fouling paints on Navy vessels. The number of Navy ships homeported in San Diego will be reduced from 76 ships in 1992 to 55 ships in 1999. Reductions in hull leachate from Navy vessels are expected to be roughly proportional to decreases in the number and average size (wetted surface) of the ships in San Diego Bay. Thus, CVN homeporting is not expected to exacerbate copper loadings to San Diego Bay. The EIS (section 3.3) has been revised to provide this information.
F.2.14	The EIS describes the presence of elevated levels of certain contaminants (polycyclic aromatic hydrocarbons) in sediments immediately adjacent to Pier Bravo. The available information indicated that these contaminants were likely from the creosote pier pilings, were localized near the pier, and were not detectable in areas closer to shore (i.e., the proposed mitigation site). Recent, additional sampling (both in-bay and upland areas) confirmed that areas dredged to construct the mitigation site do not contain significant contaminant levels. A tabular listing of the data has been added to Volume 3, section 3.4. A draft report containing these results has been prepared and is presently being reviewed by the Navy (the final version of the report has not been reieasedj. Section 3.3 has been revised to read that during dredging at the mitigation site dredging would occur only in water depths shallower than -5 feet MLLW. The EIS does not address monitoring or remediation of sediments in the vicinity of Pier Bravo or IR Sites, because these are beyond the region of influence that could be affected by the proposed action for this EIS.
F.2.15	Design of the mitigation site at Pier B will be based on one of two options, intertidai or intertidai subtidai, as specified in the response to F.2.11 and in accordance with agency specifications during permitting. Rip-rap will be needed to stabilize parts of the intertidal habitat and would be in accordance with agency specifications. The intertidal habitat that would be impacted in the wharf area is low intertidai, and of low quality since it is principally represented by areas abutting a vertical quay wall. The new habitat at the mitigation site,

Comment Number	Response
	irrespective of which option is selected, will represent higher quality foraging area for shorebirds compared to the areas impacted areas for the wharf. The ferry/flag landing would be relocated to an existing boat landing south of the BRAC CVN wharf **and new construction contained within the existing facility footprint such that there would be no issues associated with new shading** for that structure. Cumulative impacts from shading are addressed in section **3.18.5.**
F.2.16	The increase in size was related to requirements of the Americans with **Disabilities Act, defining the access/gangway width and the need to extend the** landing into deeper water to accommodate ship docking (minimum of **15 feet** water **depth). Cumulative impacts from shading are addressed in section 3.18.5.**
F.2.17	**The Navy as part of previous homeporting projects at NASNI, and in** cooperation with The United States Department of the Interior, Fish and Wildlife Service, developed a North Island heron/egret rookery mitigation plan. The **service** documented **concurrence with this plan in their letter of 25 November** 1997. This "heron park" has since been established with various Eucalyptus, ficus and Torrey pine trees and innovative artificial nesting towers adjacent to the road accessing Pier J/K. The boundary of the heron mitigation park was later modified to include four Eucalyptus trees located at the southwest comer of the intersection of Roe Street and Wright Avenue. Individual trees outside the heron mitigation park identified to be removed in this proposed project will not be removed prior to fiscal year 2000 (October 1, 1999) and removal is prohibited between the months of January through August. **This is outside of established migratory bird nesting season. The Navy in their cooperation** with regulatory agencies will continue to strive to reduce adverse impacts on migratory birds in the course of planning for and engaging in activities. Due to these actions, **no new impacts** would occur to the rookery as a result of this **homeporting** project.
F.2.18	**The Navy, as Lead Agency, does not agree with your conclusions that the** EIS did not assess **impacts on the region. The** EIS **evaluated regional environmental impacts for all the environmental resources. The issue of the EIS impact assessment specificity of detail is addressed** in the previous responses to your comments above. Specific details **concerning the composition of the sediment and its compatibility with in-water disposal will be made during the permitting** process if the preferred alternative is chosen. Such details cannot be provided during **the early planning phases of a project. The** EIS **analysis is based on** existing information of nearby sediment characteristics.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

Sam Francisco, CA 941053901

NOV . 98

Captain T.M. Boothe, Captain
CEC, U.S. Navy, Commander
ATTN: John Coon. code: 05AL.JC
Southwest Division. Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92 132

Dear Captain Boothe:

F3

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for *DEVELOPING HOME PORTFACILITIES FOR THREE NIMITZ-CLASS AIRCRAFT CARRIERS INSUPPORT OF THE U.S. PACIFIC FLEET - - Coronado, California; Bremerton, Washington; Everett, Washington; and Pearl Harbor, Hawaii.* Our comments on the DEIS are provided pursuant to the National Environmental Policy Act (NEPA), Section 309 of the Clean Air Act, and the Council on Enviironmental Quality's NEPA Implementing Regulations (40 CFR 1500- 1508). EPA provided written scoping comments on the Notice of Intent to prepare the DEIS on March 11, 1997, EPA attended1 the October 28, 1998 public hearing on the DEIS held in San Diego, California and met with Captain Tom Boothe, USN, and Navy staff to discuss the project. Our comments have been jointly developed between EPA Regions IX and X, in coordination with EPA Headquarters.

The DEIS analyzes potential environmental impacts resulting from constructing and operating the facilities and infrastructure needed to support the homeporting of three NIMITZ-class nuclear-powered aircraft carriers (CVNs) within the U.S. Pacific Fleet at four alternative facilities: 1) Coronado, California; 2) Bremerton, Washington; 3) Everett, Washington; and 4) Pearl Harbor, Hawaii. The Navy proposes to construct and operate the appropriate facility and infrastructure needed to support the homeporting of three CVNs in the Pacific Fleet. Two CVNs will join the U.S. Pacific Fleet, replacing two conventiionally-powered aircraft carriers (CVs) homeported at Naval Air Station North Island (NASNI), Naval Complex San Diego, California. The current location of a third CV at Naval Station (NAVSTA) Everett will also be reevaluated in order to increase the efficiency of support infrastructure, maintenance and repair capabilities. and to enhance crew quality of life. The DEIS analyzes the potential environmental effects of the proposed action for six alternatives with varying levels of CVN honneporting facilities and infrastructure (such as dredging) development. A No Action Alternative (defined as no new infrastructure or facilities) is also analyzed in the DEIS. The Navy currently prefers Alternative Two, which would homeport two additional CVNs at NASNI (for a total of three CVNs), and homeport a total of two CVNs in the Pacific Northwest (one each at Bremerton and Everett), with no CVNs at Pearl Harbor.

Based upon EPA's review of the DEIS, we have rated the document as EC-:!, Environmental Concerns - Insufficient Ilnformation. Please refer to the attached "Summary of Rating Definitions and Follow-Up Action" for a more detailed explanation of EPA's rating system. We have environmental concerns on several issues at the three alternative project sites identified as part of the "Proposed Action," including issues related to dredging and dredged material disposal; impacts to marine water quality and aquatic biological resources; air quality, pollution prevention, and cumulative impacts. We believe that the proposed project and Final EIS (FEIS) can be improved by providing additional information in these areas. We defer submitting detailed comments in connection with Pearl Harbor since that is not part of the Proposed Action. Should the Navy subsequently determine: to homeport a Nimitz-class carrier in Hawaii. we reserve the authority to submit comments in that regard since that would be a substantial revision of the Proposed Action., In particular, there are dredging and dredged material disposal issues that would need to be examined by EPA in any Navy decision to homeport a Nimitz-class carrier at Pearl Harbor. Please refer to our detailed comments (attached) for a more detailed presentation of EPA's comments on the DEIS. F.3.1

We appreciate the opportunity to comment on the DEIS. Please send two copies of the Final EIS (FEIS) to me at the letterhead address (code: CMD-2) when it is filed with EPA's Washington, D.C. office. If you have any questions, please call me or David Tomsovic of my staff at 4 15-744-l 575.

Sincerely,

Jeanne Geselbracht

for David Farrel, Chief
Federal Activities Office

Attachments:
a) Summary of Rating Definitions and Follow-Up Action
b) Detailed EPA comments on DEIS
c) CEQ public participation guidance - one page excerpt

cc: Sheila Crofut. EPA Region IX, Seattle, Washington

SUMMARY OF EPA RATING DEFINITIONS

This rating system was developed as a means to summarize EPA's level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the EIS.

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures, that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require Changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsausfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

F.3

ADEQUACY OF THE IMPACT STATEMENT

Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(a) of the preferred alternative and those of the alternatives reasonably availabk to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS. which could reduce the environmental impacts of the action. The identified additional information. data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably avulabk alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be fomnally revised and made available for public comment in a supplemental or revised dnft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment"

I) EPA COMMENTS REGARDING SPECIFIC ISSUES AT ALTERNATIVE SITES IN CALIFORNIA AND WASHINGTON STATE

A) DREDGING AND DREDGED MATERIAL DISPOSAL

1) Naval Air Station North Island (NASNI)

- EPA Region IX has worked closely with the Navy on dredging issues related to the proposed project and has reviewed and provided comments to the Navy on a dredged materials Sampling and Analysis Plan (SAP) for dredging associated with the NASNI homeporting alternative. The proposed SAP was prepared so as to be consistent with the requirements of the joint EPA/Corps Testing Manual (Evaluation of Dredged Materials Proposed for Ocean Disposal. February 1991). EPA believes that the data from this testing program will be sufficient on which to base a determination of suitability of the dredged materials for ocean disposal. F.3.2

- The DEIS references sediment data collected for previous evaluations of dredged materials for San Diego Bay, including the more extensive dredging, associated with the previous BRAC homepotting effort While these data are not specifically for the materials being considered for dredging and disposal as part of this action, they do serve as an indicator of the potential levels of contamination for the NASNI Pier J/K alternative and the Pier Bravo mitigation site for dredged materials. EPA recommends that in addition to the tabular summary of the BRAC data (see Volume 3, Section 3.4). all relevant sediment and biological testing data be provided in the FEIS Additionally, a figure should be prepared which shows the location of these samples relative to the proposed action. F.3.3

- The DEIS does not include an extensive discussion of disposal options for the proposed dredged materials. While previous testing in the general vicinity of the project provides some indication of the potential suitability of the dredged materials for ocean disposal, the final suitability determination will be made by the U.S. Army Corps of Engineers with EPA's concurrence. Therefore, the FEIS should include a range of disposal options, including beneficial reuse (i.e., beach nourishment, backfill behind the wharf dike) and upland disposal for materials not suitable for unconfined aquatic disposal. Standards to be met for each of these disposal options should also be discussed in the FEIS. Finally, EPA recommends that the FEIS discuss the practicability of using the wharf backfill area for isolation of any contaminated1 materials, similar to the Confined Disposal Facility as part of the BRAC homeporting project. F.3.4 F.3.5

- Recent Navy dredging in San Diego Bay highlighted the issue of military ordnance in bay sediments. The FEIS should discuss how the Navy would survey for ordnance and how ordnance may affect the dredging operation and potential disposal alternatives Any restrictions on dredging operations, including measures necessary to avoid or minimize impacts to threatened and endangered species and public safety, should be detailed in the FEIS. F.3.6

F.3

- The cumulative impacts discussion for the NASNI (pp. 3.18-4, 3. 'I 8-6, **and** 3.18-7) mentions two other major dredging projects in San Diego Bay and potential impacts to marine water quality. A project identified as "'Central Bay Dredging" would dredge approximately 3.3 million cubic yards of sediment in the San Diego Central Bay, while a project called "Bay Dredging" would remove 18 million cubic yards of dredged material (we presume that the correct figure **is** in fact 18 million cubic **yards** rather than I .8 million cubic yards). According to the DEIS, the Central Bay Dredging Project would request Federal funding in 2000, while the Bay Dredging Project would seek federal appropriations in **2004** although it has yet to be determined whether the Bay Dredging Project is in the Federal interest. There is no discussion **of** the potential environmental impacts of these projects or whether the large volume of material can be disposed of in a manner that is fully consistent with various State and Federal requirements, including requirements at the existing ocean disposal site. There is also no discussion in the DEIS of future maintenance dredging operations needed for the BRAC CVN homeporting project, which will be operating at the NASNI by late 1998 (Volume 1, p. 3.18-3). We believe that future maintenance dredging for the BRAC CVN homeporting and this project, as well as the Bay Dredging and tlhe Central Bay Dredging Projects, should be elements of the NASNI cumulative impacts analysis, including subsequent ocean disposal volumes, unless maintenance dlredging volumes projected to occur with the BRAC CVN homeporting decision have been incorporated in the current NEPA analysis which does not appear to be the case. F.3.7 E3.8 F.3.9

- Lastly, in the context of Navy dredging at the NASNI for the BRAC CVN homeporting, we note that the ocean dumping of clean sediments not suitable for beach nourishment was at times conducted in an improper, inappropriate manner. Following an EPA Region IX investigation begun in 1996, EPA filed an enforcement action against the Navy's dredging contractor in 1997 alleging numerous violations of the Marine Protection, Research and Sanctuaries Act and associated Federal ocean dumping requirements. This enforcement action has closed and significant penalties **were** collected for the violations. We strongly encourage the Navy to exercise a diligent oversight and monitoring of its contractors in **their** performance of dredging and dredged material disposal for Nimitz-class homeporting work at the NASNI and for activities in Washington State as well. This will serve to ensure more effective environmental compliance and **to avoid or reduce the possibility of adverse impacts to water quality and** aquatic resources. F.3.10

ii) Puget Sound Naval Station (PSNS) Bremerton

- EPA's March 11, 1997 scoping comments noted that Bremerton and Everett harbors are areas of known contaminated sediments. We recommended that the Navy research the contaminated sediment data sets held by state and federal agencies to determine potential contaminant levels and problem areas, for presentation in the DEIS. The data summarized in Volume 4. Section 4.4 are insufficient to fully, accurately evaluate the sediment quality within the navigation dredging prism. The data depicted are averages of detected results only, with **no** indication of the range of chemical results observed for any given chemical of concern, or the location of the high values.

The FEIS should clarify the detection limits for undetected data. If the detection limits are greater than the Dredged Material Management Office (DMMO) screening levels (SLs), maximum levels (MLs), or Bioaccumulation Triggers (BTs), these values would be treated similarly to detected values in a "reason-to-believe" **analysis** requiring either further chemical testing to confirm detection limits lower than SLs (BTs, etc.) or biological testing to reach a decision. The FEIS should provide a better representation summary of data previously collected from the dredging areas, including ranges of observed concentrations. a map showing the locations of the samples, and specific sample values (especially for samples having SL and/or MIL exceedances). The FEIS should also include a timetable for the proposed sampling and sediment testing program. If the results of this testing program are available, a summary of such results should be included in the FEIS. Should they be unavailable when the FEIS is released, they should be incorporated into the (discussion in the project's Record of Decision.

- The combined sampling and analysis plan recently submitted to the DMMO agencies should be referenced and described more fully in the FEIS (see DEIS, p. 4.4-3). We recommend that particular attention should be given to any relation between existing data (summarized in section 4.4.1) and the extent and nature of the proposed additional testing.

- Because few "deep core" sediment chemistry data are available for the site (p. 4.4-2), there appears to be little or no basis to substantiate the Navy's claim that proposed dredging at the piers and turning basin areas would result in a decrease in surface sediment contamination. Subsurface sediment chemistry information should **be provided** in the FEIS so as to demonstrate that the removal of surface sediments, will not expose a contaminated sedliment layer beneath. Definitions of "surface," "deep core," and "subsurface"' sediment should also be provided for clarification.

- Sufficient toxicity testing has not been performed by the Navy on the sediments proposed for dredging. The Navy has not provided sufficient data in the current DEIS to support the conclusion that dredlging surface sediments will result in lower contaminant concentrations. Additionally, the information provided does not conclusively demonstrate that toxicity or bioaccumulation will decrease due to dredging or that this project's overall impact to sediment quality will be less than significant.

- No sediment chemistry data are presented to document the quality of sediments that have historically accumulated <u>under</u> Pier D. This information is particularly important given that sediments under the pier are typically the result of long-term accumulation and have been exposed to various ongoing and historical sources of contamination. Furthermore, these sediments would not be well represented by samples taken from adjacent maintenance dredged areas. Thus, there appears to be no basis for the Navy to conclude that the quality of resuspended sediments from under Pier D, once **redeposited,** would be similar to the existing bottom sediments in the deposition areas and that pier construction would have less than significant impacts on marine sediment quality.

- ‘The DEIS assumes that loss of prey species and alterations of benthic lhabitat associated with dredging would be a temporary impact (e.g., the benthos would be recolonized) and therelby concludes that significant impacts to the biological communities at the Puget Sound Naval Station would not occur as a result of proposed dredging. But such a conclusion does not account for changes that would likely [illegible] in [illegible] areas involving expansion of the dredging prism (Pier D, turning basin areas). In these areas construction dredging and future maintenance dredging would likely result in permanent alteration of the benthic community. More discussion should be provided in the FEIS on projected or potential impacts to the benthic community associated with the expansion of Pier D and the turning basins. The FEIS should clarify the expected frequency of maintenance dredging at these areas. Note that it may be possible to mitigate for any loss or long-term degradation of benthic habitat in the design of shallow-water habitat associated with the Confined Aquatic Disposal (CAD) site. The FEIS should discuss these potential mitigation opportunities.

*The Navy's proposal involves loss of 3.5 acres of deep-water habitat associated with the CDF (Confined Disposal Facility) and conversion of IO acres of deep-water soft-bottom habitat to shallow-water hard-bottom habitat associated with the CAD (p. 4.5-9) More information should be provided in the FEIS to substantiate the Navy's assertion that new halbitat associated with the CAD site would adequately mitigate for loss of deep-water habitat at the CDF sites as well as permanent alteratiorn of deepwater benthic habitat in the pier extension and turning basin areas.

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- According to the DEIS, salmonid impacts are not expected because operations would be limited to periods outside of the salmon outmigration window (p. 4.5-12). The section does not include a detailed analysis of dredging to widen and expand channels. In such a case the impacts are not temporary because continued maintenance dredging is required. This should be acknowledged, and potential impacts analyzed, in the FEIS.

- Reference should be made to Volurne 4: *PSNS Bremerton Supplemental Information, Section 4.4, Sediment Quality Information,* since this volume is separate from Volume I (main text). Volume 4 contains information regarding where sediment samples were collected in the vicinity of the planned berthing areas.

- The DEIS asserts that bioassay toxicity testing results indicate that these contaminants may not be affecting the biological community and that "[d]redging could result in slightly lower concentrations of toxic chemicals in these sediments..." (see p. 4.4-5). However, the DEIS does not provide data to support this assertion. Studies of fish have shown high concentrations of PCBs, mercury and chromium (refer to *1990 Sinclair and Dyes Inlets Acrion Plan). 73* per cent of English sole have cancerous tumors on their livers, while in comparison, fish caught in most areas of Puget Sound are free of such tumors. The FEIS should, as appropriate, clarify these potential discrepancies

- EPA Region X should be included in any future habitat evaluation and CAD design efforts associated with this project in Washington State.

iii) Naval Station (NA VSTA) Everett

- We believe that Alternative 4 should more properly be titled *Removal of Existing CVN, Addition of Four AOEs and Relocation of Two FFGs*. Relocation of the two guided missile frigates (FFGs) because of the fast combat logistic support ships (AOEs) would necessitate dredging 50,000 cubic yards of sediment. This information appears on page 2-30 of the DEIS, but is not carried over to the affected environment analysis found at page 5.4-3 of Volume 1. No explanation is provided in that section about why 50,000 cubic yards of sediment nerds to be dredged. Similarly, the cumulative impacts section (see Volume I, pp. 5.18-6 to 5.18-7) contains no reference to the action or its impacts. This should be addressed and analyzed in the FEIS.

- Alternative 5 should more properly be titled *One CVN, Addition of Two AOEs and Relocation of Two FFGs*. The text discussion in Volume 1, p. 2-30 (lines 24 - 26) does not specify two FFGs although 50,000 cubic yards of sediment would be dredged under this alternative. Cumulative impacts for Alternative 5 are not addressed in that section or in the affected environment section. This should be analyzed in the FEIS.

- Deposition of dredged materials from all projects as related to Alternatives 1 - 6 should be analyzed in the FEIS. Only one disposal site is mentionedl. Its capacity to receive cumulative dredged material totals should be addressed in the FEIS. ‘We recommend that a reasonable range of disposal sites and options should be discussed, including any opportunities that may exist for beneficial reuse of dredged material associated with dredging at Everett.

B) MARINE WATER QUALITY

i) Naval Station Everett

- The Cumulative Impacts Section states that construction and operation of seven projects in the "region of influence" could produce discharges that would flow into surface: or groundwater sources. Discussion is limited to the statement that regulations would limit impacts from the homeporting of one CVN (p. 5.18-5). The addition of four AOEs and relocation of FFGs is proposed under Alternative 1. Two CVNs are proposed under Alternative 4. The addition of two AOEs and relocation of FFGs is proposed under Alternative 5. These alternatives, and the indirect and cumulative impacts from the seven projects, should be addressed in the FEIS *ii) Puget Sound Naval Station Bremerton*

- The DEIS (p. 4.3-2) lists contaminants associated with Operable Unit B of the Puget Sound Naval Shipyard National Priority List (NPL) site and discusses them at pp. 4.4-l to 4.4-6. The DEIS states that water quality impacts would be less than significant when carried out in compliance with permits issued by responsible regulatory agencies. The DEIS references shipyard maintenance improvement projects (p. 4.18-1) scheduled1 for fiscal year 2002. The potential for direct impacts on marine water quality due to in-water work (pier construction and dredging) in the same timeframe as arrival of another CVN (2001-2005) and the same geographic area qualifies these actions for a more detailed cumulative analysis in the FEIS.

C) TERRESTRIAL BIOLOGY

i) Naval Station Everett

- High levels of polychlorinated biphenyls (PCBs) have been found in eagles at Hood Canal. The FEIS should provide an analysis of PCBs and other toxics in (eagles and other wildlife due to contaminated food sources and whether the proposed project may aggravate this condition. F.3

- Projected or potential impacts of the project (direct, indirect, cumulative) on the Snohomish Estuary Wetland area should be assessed in the FEIS.

D) TERRESTRIAL HYDROLOGY AND WATER QUALITY

i) Nuvul Air Station North Island F.3.11

Volume I (pp. 3.2-6 and 3.2-7) indicates that operations associated with two additional CVNs at North Island would result in an increase in the quantity of chemicals that are handled, stored and disposed of at the home port location. However, this section indicates that such impacts would be partially offset by decommissioning of two non-nuclear carriers at North Island by 2005. Because of this, impacts are defined as less than significant and "no mitigation measures are required." We are concerned regarding the potential impacts to water quality due to increased storage, use and disposal of hazardous chemicals and hazardous materials at North Island, and also concerned that the Navy indicates that no mitigation measures; are required to avoid or minimize such adverse impacts. We encourage the Navy to adopt and implement a mitigation measure at North Island that would lead to a reduction in the volume and toxicity of chemicals and other substances that can adversely affect water quality at this facility, e.g., substituting less toxic materials that are able to accomplish the mission just as effectively (refer to pollution prevention comments below).

ii) Puget Sound Naval Station Bremerton

- The DEIS's analysis of potential surface and groundwater impacts is insufficient. The DEIS

states that, "Surface and groundwater impacts associated with disposal in the proposed landfill locations are not addressed as part of this impact assessment. It is assumed that environmental issues associated with an existing landfill have already been addressed by the landfill..." (p. 4.2-3). These "environmental issues" are not specified or articulated in the DEIS. For the purpose of the cumulative impacts analysis, the Navy should make a reasonable effort to articulate these issues in the FEIS for agencies and the public.

E) AIR QUALITY

I) Naval Air Station North Island (NASNI)

- The DEIS indicates that the proposed project's emission levels at the NASNI would be lower tlhan the de minimus thresholds set forth in EPA's general conformity rule - - thus the project does not require a general conformity determination (for San Diego). Specifically. the DEIS (Volume I, p. 3.10-9) states that "[r]eview of the data...shows that emissions would be less than the thresholds that trigger a conformity determination under the 1990 Clean Air Act (100 tons per year for CO and 50 tons per year for N0x and VOC)."' The DEIS discussion on air quality impacts in San Diego concludes by stating that "[s]ince air quality impacts from construction and operation would be insignificant, no mitigation measures are proposed to reduce project emissions at NASNI." (Volume 1, p. 3.1 O-l 1). F.3.12

We acknowledge that the emissions data presented in the DEIS support the Navy's statement that the project falls below the de minimus thresholds found in EPA's general conformity rule, and that no formal conformity determination is required for the project's construction and operation in San Diego. Nonetheless, EPA classifies the San Diego Air Basin as a serious ozone nonattainment area and a moderate carbon monoxide nonattainment area. In light of' the significant air quality problems that continue to characterize the San Diego Air Basin, we strongly encourage the Navy to adopt and implement all reasonable, feasible mitigation measures to reduce CO, N0x and VOC emissions associated with the project's construction and operation Although such mitigation measures may not be legally required under the Federal Clean Air Act, we believe that adopting such mitigation measures would be consistent with the Navy's recognized leadership in environmental stewardship.

In light of the San Diego Air Basin's current nonattainment status for both ozone and carbon monoxide, we recommend that the Navy discuss the aidopting of non-regulatory based mitigation measures to reduce project-related emissions to the greatest extent feasible. A varisty of mitigation measures would help to minimize CO, N0x and VOC emissions from the project's construction and operation at the NASNI. One significant mitigation measure to reduce such emissions would be to use electric dlredging equipment, a recognized means to reduce criteria pollutant emissions associated with dredging projects in ozone nonattainment areas (e.g.,, the Corps of Engineers' Los Angeles-Los Beach Harbors 2020 Deep Draft Project; and the Corps' 50-Foot Dredging Project at the Port of Oakland). Although the amount of material proposed for dredging under the Nimitz-class homeporting project is considerably less than in either thr Los

Angeles or Oakland dredging and deepening projects, real benefits to San Diego air quality may accrue from reducing NOx and VOC emissions associated with dredging activities. Such a move toward electric dredging in Navy projects in San Diego may also be carried over in other respects as well, e.g., the use of electric dredging equipment in future maintenance dredging for this project and the BRAC CVN horneporting. F.3.12

i) Naval Station Everett

• We note that the DEIS discusses the use of mass transit and a ferry system to reduce traffic volumes associated with personnel at Naval Station Everett. We encourage the Navy to adopt those mitigation measures as part of the proposed project, and include appropriate commitments in that regard in the FEIS and the Record of Decision.

F) NOISE

i) Nuvul Station Everett

Cumulative impacts from six on-base projects and the offsite Weyerhaeueser Redevelopment Project may produce significant noise impacts depending on their scheduling. This should be analyzed in the FEIS, in the context of each action alternative at Everett.

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G) GOVERNMENT-TO-GOVERNMENT CONSULTATION WITH FEDERALLY RECOGNIZED INDIAN TRIBES

The President signed an Executive Memorandum of April 29, 1994 regarding "Government-to-Government Relations with Native American Tribal Governments." Documentation of government-to-government consultation with the Suquamish, Tulalip and Stillaguamish Tribes on issues of concern for these Tribes should be provided in the FEIS, including the status of any outstanding issues of concern to the Tribes that may have been brought to the Navy's attention during the NEPA process. We specifically note the following:

- Volume I (p. 5.17-4) refers to the disposal of 50,000 cubic yards of dredged sediment at the Port Gardner open water disposal site within the Tulalip Tribe's "Usual and Accustomed" fishing places. There is no discussion in the DEIS regarding govemment-to-government consultation that may have already taken place between the Navy and the Tulalip Tribe or how the dredged material disposal may affect the Tribe's use of the fishery natural resource, or the Tribe's viewpoint on this matter. These issues should be addressed1 in the FEIS.

- Volume I (page 4.17-4) states that dredging and disposal of 425,000 cubic yards of material would result in increased use of the waters near the Sinclair Inlet and the Suquamish Tribe's "Usual and Accustomed" fishing places, but that such impact would be short-term and would not

"significantly preclude tribal members from sharing in the economic benefits of the proposed action.'* Again, however, we note that there is no indication in the DEIS about whether the Navy engaged in a govemment-to-government consultation with this Tribe regarding potential impacts to the Tribe's resources (i.e.+ the fishery) or other issues that may be of concern to the Suquamish Tribe. The FEIS should discuss any coordination and consultation efforts that have taken place between the Navy and the Suquamish Tribe regarding the proposed project.

II) EPA COMMENTS APPLICABLE TO ALL ACTION ALTERNATIVES

A) POLLUTION PREVENTION

EPA believes that there are significant opportunities for the Navy to incorporate pollution prevention techniques in the design, construction and operation of the project at all four naval facilities. In several respects the DEIS was prepared with no consideration given to Executive Orders and Council on Environmental Quality (CEQ) guidance concerning pollution prevention, energy efficiency, water conservation, minimization of hazardous waste, reduction and recycling of solid waste, and decreased use of pesticides. Refer to the sections bellow for additional details. F.3.13

i) Council on Environmental Quality (CEQ) Pollution Prevention Guidance

The DEIS did not address pollution prevention features in the project to the extent outlined by the CEQ in the January 29, 1993 *Federal Register*. The Navy's FEIS could be strengthened by specifically designing, constructing and operating this project with pollution prevention features as an integral element. We urge the Navy to integrate a broad range of pollution prevention measures in the project and to include appropriate pollution prevention commitments in the FEIS and Record of Decision.

ii) Executive Order 12902 • Energy Efficiency and Waler Conservation at Federal Facilities F.3.14

A number of new structures and buildings would be required under the P'roposed Action. As one example. proposed facilities at the NASNI would include a new warehouse, fleet support building and equipment laydown building (Volume 1, p. 3.7-6). However, the DEIS gives no indication about whether Executive Order 12902 (dated 'March 8, 1994) was considered in the impact documentation for the project. Executive Order 12902 has several potential implications for the project, including requirements in Section 306 concerning construction of new Federal facilities. Section 306 of Executive Order 12902 specifically provides that for new Federal facility construction, the agency involved in the construction shall "design and construct such facility to minimize the life cycle cost of the facility by utilizing energy efficiency, water conservation, or solar or other renewable energy techniques..." and "utilize passive solar design and adopt active solar techniques where they are cost-effective." The FEIS should address how the Navy would ensure that the proposed project meets the applicable requirements of Executive Order 12902. Appropriate commitments regarding energy efficiency and water conservation should be reflected in the FEIS and the Record of Decision.

iii) Executive Order 12856 • Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements F.3.15

As with Executive Order 12902, the DEIS does not acknowledge the various requirements of Executive Order 12856 as they may apply to the proposed project (we note, however, that page A- 12 of Volume 1 discusses the Emergency Planning and Community Right-to-Know Act of 1986). The preface of Executive Order 12856 references a requirement of the Pollution Prevention Act of 1'990 that

> "it is the national policy of the United States that whenever feasible, pollution should be prevented or reduced at the source, that pollution that cannot be prevented should be recycled in an environmentally safe manner; that pollution that cannot be prevented or recycled should be treated in an environmentally safe manner; and that disposal or other: release into the environment should be employed only as a last resort...."

We recommend that the FEIS address the applicability of Executive Order 12856 to the proposed project, both in terms of the Executive Order's pollution prevention requirements and its toxic release inventory reporting requirements for covered facilities.

iv) Hazardous Waste Minimization F.3.116

The DEIS discusses hazardous wastes generated at the various facilities. Page 3.15-6 indicates that, at NASNI, the CVNs would replace CVs "that generate approximately the same volume of hazardous waste." This page goes on to describe mitigation measures that the Navy has in place at NASNI for hazardous waste incidents. In terms of mitigation measures, page 3.15-8 indicates that "[n]one of the facilities and infrastructure required to support additional CVNs at NASNI would result in significant impacts to health and safety. Therefore, no mitigation measures are proposed." Similar statements concerning no mitigation measures being proposed at Puget Sound Naval Station, Naval Station Everett, and Pearl Harbor can be found, respectively. at page 4.15-7, 5.15-8, and 6.15-6. We are concerned that the Navy may be foreclosing opportunities to further advance hazardous waste minimization at NASNI and other facilities analyzed in the DEIS with the statement that no mitigation measures are proposed. We believe that the Navy should determine whether opportunities to further reduce the use of hazardous materials and the consequent generation of hazardous waste may be available as part of the proposed action. If such opportunities are indeed available, then they are reasonable mitigation measures that should be adopted by the Navy in the FEIS and included as mitigation commitments in the Record of Decision for the project.

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v) Pesticides and Herbicides F.3.17

The DEIS does not indicate whether pesticides, herbicides or other materials regulated under the Federal Insecticide. Fungicide and Rodenticide Act would be used in connection with the proposed project. We have reviewed other Navy EISs that have referred to the use of on-going use of pesticides at naval air stations and facility pest management plans that specify the area to be treated, the frequency of application, pesticide product name and EPA registration number, mixing concentrations, and special precautions that are needed. To the extent that the Navy envisions that the use of pesticides or herbicides may be an integral element of the proposed project, that should be aiddressed in the FEIS. The DEIS gives no indication as to what types of pesticides may be currently used at the four facilities, quantities applied on annual basis, and perhaps most importantly, whether alternatives to the use of pesticides or herbicides are available, especially for highly toxic pesticides. We recommend that the FEIS provide additional discussion regarding the current use of pesticides at the facilities. whether the use of pesticides is contemplated under the proposed project, whether pesticides not currently in use would be employed under the proposed project, and if the Navy has evaluated an alternative to reduce and minimize such use under the proposed action. The FEIS should discuss whether an alternative that minimizes and reduces the use of pesticides constitutes a reasonable alternative for purposes of NEPA analysis. We recommend an alternative focusing on Integrated Pest Management (IPM), an approach emphasizing biological and non-chemical pest controls with a selective use of chemical pesticides only when IPM approaches are not aidequate in controlling the problem. Should chemical controls prove necessary, we encourage the Navy to use the least-toxic pesticide available to control the problem. If use of pesticides or herbicides is proposed, the FEIS should discuss mitigation measures to avoid and minimize adverse health-related impacts to base personnel and dependents, and whether the Navy has evaluated an alternative to avoid pesticides use as much as possible and/or an alternative that employs less toxic substances. We arc particularly concerned that children of military personnel may be exposed to chemical pesticides at base facilities (schools, childcare centers, base housing), as well as the cumulative exposure risks to children from pesticides used at various locations on the bases where children spend significant amounts of time each day.

B) RADIATION-RELATED ISSUES

F.3.18

Section 7.4.4.2 (Air Monitoring) describes the Navy's activities related to 40 CFR Part 61, Subpart I, the radionuclide NESHAP. In 1997, after extensive testing and review by EPA regions and EPA headquarters, the Navy received permission to use alternative methods for demonstrating compliance with Subpart I. EPA determined that the Navy operations do not exceed the NESHAP standard and that methods detailed in the rule could be modified to suit the special conditions found in certain shipboard situations. Section 7.4.4.4 (Independent Agency Monitoring) described the harbor surveys conducted by the EPA National Air and Radiation Environmental Laboratory (NAREL). These surveys have demonstrated that Navy operations have not significantly contributed to levels of radioactivity in homeport harbors.

C) ENVIRONMENTAL JUSTICE

F.3.19

EPA is aware that a number of issues and concerns regarding environmental justice considerations have been raised in regard to the proposed homeporting action, especially in San Diego. We are aware of various concerns raised by local organizations in San Diego regarding the scope and effectiveness of public participation in the NEPA review process by potentially affected communities, in particular low-income and minority communities. The Environmental Health Coalition in San Diego, in a letter to the Navy, specifically requested that the Navy prepare a Spanish language translation of the DEIS. In its September 30, 1998 response to the Environmental Health Coalition, the Navy indicated that it is "committed to ensuring that low income and minority populations have the opportunity to fully participate in the [NEPA] process" but that, in the Navy's judgment, translating the: DEIS into Spanish is not needed to nchicve that goal.

EPA, subsequently had phone discussions with the Navy (David Tomsovic, EPA, and Captain Robert Westberg and Bob Hexom, Navy) regarding the CEQ's guidance memorandum to Federal agencies regarding mechanisms by which Federal agencies can increase and improve public participation in NEPA decision-making. EPA staff (Running Grass) met in San Diego on October 28-29 with the Navy regarding: the level and adequacy of public participation for the proposed project. In terms of enhanced public participation in the NEPA process, CEQ has written that "early and meaningful public participation in the federal agency decision making process is a paramount goal of NEPA." CEQ's NEPA Implementing Regulations require Federal agencies to make diligent effonts to involve the public throughout the NEPA process. Participation of low-income, minority or tribal populations may "require adaptive or innovative approaches to overcome linguistic, institutional, cultural...or other barriers to effective participation in the decision-making processes of Federal agencies under customary NEPA procedures." In order to overcome various barriers to public participation in the NEPA process, CEQ identified a number of steps that may be considered4 as appropriate in developing an innovative strategy for effective public participation. For your reference we have attached the section from CEQ's guidance memorandum on public participation in the NEPA process, which outlines nine steps that Federal agencies may consider. The CEQ's guidance memorandum references several important aspects of the Executive Order on Environmental Justice and the accompanying presidential memorandum which have a bearing on the proposed project. Specifically, the Executive Order requires Federal agencies to work to ensure effective public participation and access to information in the NEPA process. Thus, within its NEPA process and through other appropriate mechanisms, each Federal agency shall, "whenever practicable and appropriate, translate crucial public documents, notices and hearings, relating to human health or the environment for limited English speaking populations." (CEQ homepage, *Environmental Justice under the National Environmental Policy Act*, December IO, 1997, at p. 4, found on worldwide web).

Based on discussions which EPA (Running Grass) had with the Navy in San Diego on October 28-29, we understand that the Navy expressed an interest in various suggestions for enhanced

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public participation raised by EPA, and found in the CEQ's guidance memorandum, to improve and enhance public participation in the NEPA process for this project. Specific measures which the Navy expressed interest in include a Spanish language translation of the executive summary (at FEIS stage); a Spanish language version of the public notice announcing availability of the FEIS; provision of Spanish language translation at public hearings on the project; and increased notification of the public via the Spanish language media in the San Diego area (press, radio, television). We believe that the Navy's adoption of these provisions would help to significantly improve public participation in the NEPA process for this project and more effectively engage the potentially affected public. We also commend the Navy for providing Spanish language options on its tollfree number for the public to obtain information on the project (at 888-428-6440). We believe that this method should be carried forward in the FEIS public announcement stage as well. To the extent that the Navy can increase and improve public access, and thus meaningful participation, in its NEPA decision-making for other affected communities (not only in California but in Washington State and Hawaii as well), we recommend that similar provisions be adopted. We recommend that the Navy address these issues in the FEIS. F.3.19

D) EDITORIAL COMMENTS

- Volume I (p. A-6) discusses various requirements under the Federal Clean Air Act (CAA). This section in the FEIS should be modified to note that the Federal CAA also regulates hazardous air pollutants under the EPA regulatory program for "National Emission Standards for Hazardous Air Pollutants" (NESHAPS), including radionuclides and asbestos. F.3.20

- Volume 1 (Appendix A: Relevant Federal, State and Local Statutes, Regulations and Guidelines) discusses Federal laws on public health and safety. We could find no reference to a Federal law which may have bearing on the proposed project: the Federal Insecticide, Fungicide and Rodenticide Act, which regulates use of pesticides and herbicides. F.3.21

- Volume I (Appendix A) should recognize the applicability to the proposed project of three recent guidance documents issued by the President's Council on Environmental1 Quality - these are the CEQ guidance documents to Federal agencies concerning pollution prevention, environmental justice and cumulative impacts. F.3.22

- Puget Sound Naval Shipyard was listed as a Federal Superfund site on EPA's National Priority List (NPL) in 1994 due to contamination from PCBs, heavy metals, and other organic compounds found in soil, sediments, and groundwater at various areas of the site. The facility's NPL status should be acknowledged in the FEIS.

- Cuts of less than one foot are not typically considered dredgable using a hydraulic or clamshell dredge (pg. 2-25). The FEIS should explain how and why this dredging would be performed. F.3.23

- Alternatives are presented out of consecutive order (a 1 - 6 sequence). This causes confusion within the text of the DEIS. F.3.24

2. Public Participation

Early and meaningful public participation in the federal agency decision makin process is a paramount goal of NEPA. CEQ's regulations require agencies to make diligent efforts to involve the public throughout the NEPA process. Participation of low-incomc

populations, minority populations, or tribal populations may require adaptive or innovative approaches to overcome linguistic, institutional. cultural, economic, historical, or otha potential barriers to effective participation in the decision-making processes of Federi agencies under customary NEPA procedures. These barriers may range from agency failure to provide translation of documents to the scheduling of meetings at times and in places that are not convenient to working families.

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The following steps may be considered, as appropriate, in developing an innovative strategy for effective public participation:

- Coordination with individuals, institutions, or organizations in the affected community to educate th public about potential health and environmental impacts and enhance: public involvement;
- Translation of major documents (or summaries thereof), provision olf translators at meetings, or other efforts as appropriate to ensure that limited-English speakers potentially affected by a proposed actia have an understanding of the proposed action and its potential impacts;
- Provision of opportunities fur limited-English speaking members of the affected public to provid comments throughout the NEPA process;
- Provision of opportunities for public participation through means other than written communication such as personal interviews or use of audio or video recording devices to capture oral comments;
- Use of periodic newsletters or summaries to provide updates on the NEPA process to keep the public informed;
- Use of different meeting sizes or formats. or variation on the type und number of media used, so that communications are tailored to the particular community or population;
- Circulation or creation of specialized materials that reflect the concerns and sensitivities of particula populations such as information about risks specific to subsistence consumers of fish, vegetation. o wildlife;
- use of locations and facilities that are local. convenient, and accessible to the disabled, low-incom and minority communities, and Indian tribes; and
- Assistance to hearing-impaired or sight-impaired individuals

Comment Number	Response

U.S. Environmental Protection Agency

F.3.1 Your comments are noted and are included in the Final EIS. PHNSY is a reasonable alternative in this EIS, and EPA should provide relevant comments on all alternatives during the NEPA process. EPA has been notified of its responsibility. Please refer to Commanding Officer, Southwest Division, Naval Facilities Engineering Command letter Ser 4PLR.BH/3140 dated March 26, 1999.

F.3.2 The Navy concurs with this comment. A final sampling and analysis plan (SAP) has been prepared and submitted to the resource agencies (in November, 1998). Field sampling and analysis, following EPA/U.S. Army Corps of Engineers guidelines (i.e., Green Book protocols), was conducted during January through April, 1999. The results from sediment grain size, sediment quality, elutriate, and bioassay testing will provide adequate information for evaluating the suitability of the sediments for ocean disposal and potentials for impacts to water quality and biological impacts at the disposal site.

F.3.3 The requested sediment quality and bioassay information, and associated figure, have been included as an appendix to the SAP for sediment testing at Pier j/K. This information has been added to Volume 3, section 3.4.

F.3.4 The EIS has been revised to include evaluations of an in-bay Habitat Enhancement site near NAB. Potential use of dredged material for creation of in-bay shallow-water habitat near NAB has been evaluated in the EIS. Beach replenishment of suitable material was considered but eliminated because creation of the NAB enhancement area results in vastly superior environmental benefits, and is consistent with California Coastal Management Program goals.

F.3.5 Placement of dredged sediments within a confined disposal facility (i.e., wharf backfill) was not evaluated because the existing information indicated that the quality of the dredged sediments would be compatible with requirements for ocean disposal.

F.3.6 A geophysical survey for ordnance has been conducted at Pier J/K and no ordnance was identified. This effort included debris and magnetometer survey with diver and a pile survey to identify location and size of possible debris. Also included was a hydrographic survey of the mitigation site near Pier Bravo. Even with the current available technology there can not be a 100 percent certainty of identifying buried objects. A site specific safety management plan will be developed to minimize risks if ordnance or other buried debris is discovered. Final disposal would be in accordance with permit specifications and agency requirements. Please see section 2.3.3.1 in the EIS for a discussion of the proposed action.

Comment Number	Response
	Approximately 29,000 cy of dredged material from the mitigation site may be used to fill approximately 1.5 acres behind the existing Pier J/K area. The remaining 19,000 cy of dredged material would be disposed of at the LA-5 designated ocean disposal site, or used to enhance endangered bird habitat at NASNI, and/or to create in-bay intertidal/subtidal habitat. In response to comments to maximize the beneficial uses of dredged material from the Homeporting proposed action, the Navy is proposing, as the preferred option, to transport dredged material from Pier J/K and mitigation site to be deposited just south of the Naval Amphibious Base for the creation of intertidal/subtidal habitat. Creation of this enhancement habitat in Navy protected waters is consistent with the Coastal Act and supports the "San Diego Bay Integrated Natural Resources Management Plan." This option would minimize public health and safety risks that may result from debris contained in the dredged footprint. A site specific explosive safety management plan will be developed in accordance with DOD Directive 6055.9, "DOD Ammunition and Explosive Safety Standards," to minimize the risks if ordnance is discovered. Final disposal would be in accordance with permit specifications and agency requirements. Please see section 2.3.3.1 in the EIS for a discussion of the proposed action.
F.3.7	The quantities for the two reasonably foreseeable dredging projects have been revised in section 3.18 as follows: Central Bay Dredging, 1.96 million cubic yards; and Bay Dredging, 15 million cubic yards.
F.3.8	The Central Bay and Bay Dredging Projects are addressed in section 3.18. The exact timing of these projects has not been determined, but it is unlikely that they would occur simultaneously with the proposed dredging for the proposed action. The cumulative effect of the action and these reasonably foreseeable projects would be affected by their separation in time. This discussion can be found in section 3.18.3.
F.3.9	Section 3.18 has been revised to include the cumulative effects of reasonably foreseeable maintenance dredging associated with the BRAC CVN Homeporting project. The cumulative effect is assessed. The potential maintenance dredging volumes that may be placed at the ocean disposal sites are unknown, in part, due to the desire to use portions of the material for beneficial reuse projects.
F.3.10	The comment addressing dredged material disposal operations for the BRAC CVN Homeporting project is acknowledged. The Navy would ensure that similar problems do not recur through monitoring provisions that will be included in the contract prepared for the dredging contractor.

Comment Number	Response
F.3.11	As indicated on page 3.15-3, lines 17-20, no additional (net) impact regarding hazardous materials/waste would occur as a result of this alternative because the number of aircraft carriers would not increase over the historical complement of three. Sections 3.2.2.2, 3.2.2.3, and 3.2.2.4 of the Final EIS has been changed to reflect this fact. Since 1994, NAS North Island has implemented a successful Pollution Prevention (P2) program for shore operations and will continue to do so in the future. In kind, the Navy has an aggressive P2 Afloat program (CVNs included) administered by Naval Surface Warfare Center (NSWC) Carderock with the main objective of reducing hazardous material offload, handling, and disposal. Together, these programs ensure P2 opportunities are explored, demonstrated, and transitioned on a continuous basis throughout the facility, as well as, the Fleet. Facility operations associated with the support of two additional CVNs are in no way an exception to this reiterative process. NAS North Island has been a major participant in the Navy's P2 equipment procurement program by adopting "cleaner" processes resulting in the substitution or reduction in the use of hazardous materials. Great strides have been made in replacing solvent cleaning operations with aqueous technologies throughout the facility reducing hazardous waste generation and air emissions by nearly 100,000 lbs. per year. Recent P2 efforts aboard ship, in particular a CVN, have led to an average hazardous waste reduction of 75,000 lbs. per year to shore facilities. In 1994, the Fleet and Industrial Supply Center (FISC) established a centralized Hazardous Material Center at NAS North Island. Since inception in 1992; the FISC Hazardous Material Program, serving the Navy in San Diego, has diverted over thirteen million pounds of hazardous material from the waste stream by implementing the philosophy of source reduction, substitution, and reutilization.
F.3.12	Your comment is acknowledged. Research conducted by the Navy has determined that electric-powered hydraulic dredges and booster pumps are available on the West Coast that could perform a portion of the dredging activities proposed for the project. However, digging the footing for the rock dike would have to be performed with the use of a clamshell bucket dredge. Since there is no known electric clamshell dredge on the West Coast, use of electricity to reduce emissions from this portion of the project dredging activities would be infeasible. With the electric grid system readily available in proximity to the proposed dredging and disposal sites, this power source will be offered to prospective dredge contractors as a option to operating their dredging equipment with diesel fuel. Since construction activities would not produce any significant air quality impacts, no further measures are being considered to mitigate combustive construction emissions.

Comment Number	Response
F.3.13	These Council on Environmental Quality (CEQ) guidance documents have been utilized in developing the EIS analysis. Sections 3.2.1, 3.17, and 3.18 have been revised to include reference to the CEQ Guidelines concerning pollution prevention, environmental justice, and cumulative impacts, respectively. However, since they are guidance documents, rather than federal, state, and local statutes, regulations, or guidelines, they are not included in section 1.5. Current operations at potential homeporting locations in regard to their management of hazardous waste minimization, pesticides, and herbicides is a component of the affected environment. The EIS is responsible for addressing the net change between the existing condition and the proposed action's contribution to generation and management of hazardous waste, pesticides, and herbicides. The EIS discusses how these changes would affect the current management of these materials. The Navy continuously monitors its operations to find ways to minimize the use of hazardous materials and to reduce the generation of hazardous wastes. For example, nonhazardous materials are substituted for hazardous materials wherever practicable, processes are changed to ones that do not employ hazardous materials, and care is taken to avoid contaminating nonhazardous materials with hazardous materials. Please note that it is because of the Navy's compliance with its existing programs that the EIS conclusion is drawn that no additional mitigation is necessary to address impacts associated with the proposed action. The proposed action would incorporate pollution prevention features in the design, construction and operation of the proposed facilities, as outlined by the Council on Environmental Quality in the January 29, 1993 *Federal Register*. A broad range of pollution prevention measures would be integrated in the project through contracts for design, construction and base operations. Please also see response to comment F.3.11 for additional discussion of the success of the Pollution Prevention program at NASNI.
F.3.14	Executive Order 12902, Energy Efficiency and Water Conservation at Federal Facilities, has been included in a new section 1.5.9, Utilities. The proposed action design would comply with the order. Section 3.16.2 has been revised to state that the facilities associated with the proposed action would be designed, constructed, and operated to meet the requirements of Section 306 of Executive Order 12902 to minimize the life cycle cost of the facilities by utilizing energy efficiency, water conservation, or solar or other renewable energy techniques when they are cost effective. These considerations are contained in all contractual documents for the design, construction, and operation of naval facilities.

Comment Number	Response
F.3.15	Executive Order 12902, Energy Efficiency and Water Conservation at Federal Facilities, has been included in section 1.5.7 Public Health and Safety. Section 3.15.2 has been revised to state that the facilities associated with the proposed action would be designed, constructed, and operated to meet the requirements of Executive Order 12856 to ensure whenever feasible that pollution would be prevented or reduced at the source, that pollution that cannot be prevented would be recycled in an environmentally safe manner; that pollution that cannot be prevented or recycled would be treated in an environmentally safe manner; and that disposal or other releases to the environment would be employed as a last resort. These requirements would be contained in all contractual documents for the design, construction, and operation of the proposed facilities.
F.3.16	Section 3.15.2 has been revised to state that the Navy has implemented a strict Hazardous Material Control and Management Program and a Hazardous Waste Minimization Program for all of its facilities. The Navy continuously monitors its operations to find ways to minimize the use of hazardous materials and to reduce the generation of hazardous wastes. For example, nonhazardous materials are substituted for hazardous materials wherever practicable; processes are changed to ones that do not employ hazardous materials; and care is taken to avoid contaminating nonhazardous materials with hazardous materials. Please see response to comment F.3.11 for a discussion of the success of the Pollution Prevention program at NASNI.
F.3.17	Section 3.15.2 has been revised to state that the Navy requires that its contractors minimize the use of pesticides, herbicides, or other materials regulated under the Federal Insecticide, Fungicide, and Rodenticide Act, in connection with the proposed action. Considerations to use other methods of pest and vector control are contained in all contractual documents for the design; construction, and operation of Naval facilities. The Navy requires that its contractors will minimize the use of pesticides, herbicides, or other materials regulated under the Federal Insecticide, Fungicide, and Rodenticide Act in connection with the proposed action. Considerations to use other methods of pest and vector control are contained in all contractual documents for the design, construction, and operation of Navy facilities. The Navy Pesticide Compliance Ashore Program is established by OPNAVINST 5090.B series Chapter 13. This chapter provides safety and compliance requirements and policy relative to the legal use of pesticides at Navy shore facilities. The requirements apply within the United States, possessions, and trust territories. The use of pesticides applied to property under Navy stewardship is controlled. OPNAVINST 6250.4A, Pest Management Program (NOTAL) assigns Navy policy for pesticides applied to property under Navy stewardship to the Naval Facilities Engineering Command, and jointly with the

Comment Number	Response
	BUMED for disease vector surveillance and control, and safety matters. More detailed requirements and responsibilities relative to the application and regulation of pesticides at Navy installations are included in this instruction. It also discusses other topics pertinent to pesticides including prevention of pollutants in wastewater, spill prevention and management (Chapter 10), and management of hazardous waste (Chapter 12).
F.3.18	Your comments are noted and are included in the Final EIS.
F.3.19	The Navy has identified several ways in which to ensure public participation to low-income, minority populations in the San Diego area. Public hearing notices were published in several local newspapers including the La Prensa (in Spanish), the San Diego Union Tribune, the San Diego Voice and Viewpoint, the Chula Vista Star News, the Escondido North County Times, and the Coronado Eagle/Journal & Imperial Beach Times. Two public hearings were held in two locations (downtown San Diego and Coronado), to assure public convenience. All responses to public comments generated during the public comment period provided in Spanish are translated into Spanish. Very detailed responses to the comments have been provided in Spanish to ensure that the reader has sufficient understanding of the EIS materials without needing to read the EIS itself. The Notice of Availability (NOA), is translated in Spanish, and a toll-free telephone number support hot line is available in Spanish as well (1-888-428-6440). The Navy considers that these efforts address the CEQ guidance memorandum on compliance with E.O. 12898.
F.3.20	The discussion of the Clean Air Act in Appendix A has been revised to include the information provided in this comment.
F.3.21	Section 1.5 and Appendix A have been revised to reference the Federal Insecticide, Fungicide, and Rodenticide Act. Section 3.15.1 has been revised to indicate that the Navy requires that its contractors minimize the use of pesticides, herbicides, or other materials regulated under the Federal Insecticide, Fungicide, and Rodenticide Act, and that this would apply to the proposed action.
F.3.22	These Council on Environmental Quality (CEQ) guidance documents have been considered in developing the EIS analysis. Sections 3.2.1, 3.17.1, and 3.18.1 have been revised to include reference to the CEQ Guidelines concerning pollution prevention, environmental justice, and cumulative impacts, respectively. However, since they are guidance documents, rather than federal, state, and local statutes, regulations, or guidelines, they are not included in this section 1.5.
F.3.23	The proposed CVN homeporting berthing and turning locations to be dredged discussed in Section 2.4 are described in terms of their current average depth.

Comment Number	Response
	These elevations are not uniform, such that some areas within the proposed dredge footprint already **are** at the required depth. The same type of dredge equipment would be used throughout all the proposed dredge footprint. Section **2.4** has been revised to refer to average existing depths of proposed CVN homeporting berthing and turning locations.
F.3.24	Section 2.3.3 explains the rationale for the alternatives presentation order. The homeporting facilities needed to support CVNs and relocated AOEs for each location are discussed beginning with the action requiring the least amount of improvements, through those with the most improvements. The Navy did consider addressing each aiternative in sequentiai order, but it was considered to be more confusing because of the extensive cross-referencing needed.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 908024213

NOV 9 1998

F/SW02 1 :RSH

Mr. John Coon
Southwest Division (Code 05AL.JC)
Naval Facilities Engineering Command
i220 Pacific Highway
San Diego, California 92 132-S 190

Dear Mr. Coon:

Thank you for the opportunity to review the Draft Environmental Impact Statement (DEIS) for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet. Our comments are confined to those alternatives that include facilities at the Naval Air Station North Island in San Diego. Additional comments from other eiements of the National Oceanic and Atmospheric Administration may be forthcoming, particular as they may apply to alternatives with home port facilities at other locations.

Generally, we believe the DEIS addresses most issues of concern to our agency in an adequate manner. However, the discussion relating to impacts from the construction of a new 90 x 1,300 foot pier (page 3.5- 1 8), including necessarv mitigation, is relatively superficial. As Mr. Robert Hoffman of my staff indicated at several pre-DEIS meetings, a determination will need to be made regarding the impacts of this construction and adequate mitigation agreed to prior to the issuance of the required Corps' of Engineers permit. It would appear to be in the best interests of the Navy to accomplish this task during this stage of the project planning in order to coordinate all project mitigation requirements. F.4.1

If you have any questions, please contact Mr. Ho&an at (562) 980-4043.

Sincerely,

for J J Slawson

William T. Hogarth, Ph.D.
Regional Mministrator

cc:
USFWS - Carlsbad (Martin Kenney)
CDFG - San Diego (Marilyn Fluharty)

Comment Number	Response

National Oceanic and Atmospheric Administration

F.4.1	Mitigation of impacts on marine resources is detailed in the responses to F.2.10. In summary, mitigation at the Pier B site would be like-and-in-kind. The Navy will also construct a habitat enhancement area at NAB, as part of dredged material disposal plans. Eelgrass would be mitigated using credits from the Navy's Eelgrass Mitigation Bank, with the amount determined based on pre- and post-construction surveys and consistent with established 1.2:1 ratios.

State Agencies

Mr. John Coon (Code 05AL.JC)
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132

Your comments must be postmarked no later than October 12, 1998.

The San Diego Regional Board will also use the two public hearings being conducted by the US Navy to receive the public comment. These two public hearings will be on (1) Tuesday, September 29, 1998, at 7:00 pm, at Coronado High School, Auditorium, 650 D Avenue, Coronado, California; and (2) Wednesday, September 30, 1998, at 7:00 pm, at San Diego County Administration Center, 1600 Pacific Highway, San Diego, California

If you have any questions relating to this CEQA process, please call me at (619) 467-2978.

Respectfully,

S.1

DAT T. QUACH
Associate Water Resource Control Engineer

DTQ

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California Regional Water Quality Control Board
San Diego Region

Peter M. Rooney
Secretary for Environmental Protection

Internet Address: http://www swrcb ca gov/~rwqcb9
9771 Clairemont Mesa Boulevard, Suite A, San Diego, California 92124-1324
Phone (619) 467-2952 • FAX (619) 571-6972

Pete Wilson
Governor

September 4, 1998

TO WHOM IT MAY CONCERN:

On August 27, 1998 the San Diego Regional Board received a Public Notice from the US Navy which indicates that the document entitled "Draft Environmental Impact Statement (DEIS) for Developing Home Port Facilities For Three NIMITZ-Class Aircraft Carriers in Support of the US Pacific Fleet in Coronado, California; Bremeton and Everett, Washington; and Pearl Harbor, Hawaii" is available for public review and comment at:

1) Coronatdo Public Library, 640 Orange Avenue!, Coronado,
2) San Diego Library (Science & Industry Section), 820 E Street, San Diego, and
3) Regional Water Quality Control Board Office, 9771 Clairemont Mesa Boulevard, Suite A, San Diego.

In order to develop home port facilities for these three aircraft carriers, the Navy must dredge and dispose of approximately 490,000 cubic yards of sediments from San Diego Bay. The dredge and disposal of sediment will be regulated by waste discharge requirements (WDR) adopted by the San Diego Regional Water Quality Control Board. The adoption of WDR in a discretionary action because it requires the exercise of judgment or deliberation of the Regional Board. Section 15357 of California Water Quality Act (CEQA) states that all discretionary projects are subject to CEQA. Therefor the Regional Board is subject to the requirements of CEQA when it adopts WDR for this dredging and disposal project.

If no other state or local agency becomes lead agency before the adoption of WDR, the San Diego Regional Board will assume the role of lead agency for this homeporting project. As lead agency, the San Diego Regional Board will need to determine if the environmental document satisfies all requirements of CEQA. Consequently, please notify us as soon as possible if your agency has responsibilities for supervising or approving 'the portion of homeporting project in San Diego Bay.

The San Diego Regional Board as lead agency will use the EIS in place of the EIR without recirculating the federal document for public review because Section 21083.5 of CEQA allows the use of environmental documents prepared by federal agencies when state agencies carry out or approve projects which are also subject to NEPA. Therefore you should review this Craft EIS for developing home port facilities for three carriers as if it is a Draft EIR for the project. If you have any comments please send them to:

Comment Number	Response

California RWQCB – San Diego Region

The RWQCB letter is provided for informational purposes in this Final EIS.

STATE OF CALIFORNIA - THE RESOURCES AGENCY

PETE WILSON, Governor

CALIFORNIA COASTAL COMMISSION

45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200

November 3.1998

John Coon
Code 232.SD
Southwest Division (Code 05AL.JC)
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190

S.2

RE: Draft EIS, Developing Home Port Facilities for Three NIMITZ-Class Nuclear Aircraft Carriers, including at the Naval Air Station North Island (NASNI), Coronado[1]

Dear Mr. Coon:

Thank you for the opportunity to comment on the above-referenced EIS. Our comments will be limited to the California aspects of the proposal. Our comments are organized into overall/general comments and page-specific comments, as follows:

A. General Comments

1. Two areas of dredging are described, the primary one consisting of approximately 500.000 cu. yds. of dredging at the homeport site on the north side of NASNI, and a secondary area consisting of approximately 50,000 cu. yds. at the "mitigation" site on the west side of NASNI. For the first of these, it is not clear to us what the Navy is proposing to address the potential presence of ordnance in the material. In addition, for both dredging projects, the document does not fully address beach replenishment options. These issues are discussed in further detail in the "page-specific" comments below. S.2.1

2. Procedurally,, as we know the Navy is aware, and as the Navy submitted for the initial homeporting of a NIMITZ-Class carrier at NASNI (CD-95-95). a consistency determination will need to be submitted to the California Coastal Commission for homeporting of any NIMITZ-Class Nuclear Aircraft Carriers at NASNI. This regulatory requirement arises under Section 307 of the federal Coastal Zone Management Act'. The consistency determination should include a finding as to whether the project is consistent to the maximum extent practicable with the California Coastal Management Program and the necessary information to support that conclusion, including S.2.2

[1] 16 U.S.C. 1456, with implementing regulations at 15 CFR Part 930.

an analysis of the project's consistency with Chapter 3 of the Coastal Act. (See CFK Section 930.39 for a full listing of the information required for a complete consistency determination.) S.2.2

3. When the Commission reviewed the original homeporting project (CD-95-95). the Navy agreed to considler implementing a number of traffic mitigation measures to address off-base traffic impacts (primarily within the City of Coronado. a popular coastal visitor destination area). We would appreciate a status update on the Navy's efforts to impllement these measures, which included: S.2.3

(1) a parking lot on base for vehicles currently parking on residential streets and impacting coastal access, and alternative transportation for vehicles that will be associated with the construction project;

(2) the relocation of the main entrance gate on 4th to 3rd and Alameda as recommended in the "UTP" and endorsed by the Navy;

(3) undergrounding of utilities on First Street to mitigate impacts on neighborhoods caused by the excess clutter of traffic and parking and concerns regarding interference with 'view corridors and public health and safety;

(4) a parking lot of significant capacity at the Naval Recruit Depot. combined with Ferry Service to North Island, coupled with measures to direct use of this service by Naval personnel and (employees;

(5) Naval shuttle service from the Coaster (high speed rail servicing S.D. County) from the Santa Fe Railroad station to NASNI during traditional work hours; and

(6) barging of equipment and supplies for the construction of the project from mainland San Diego directly to North Island.

4. When the Commission reviewed the original homeporting project (CD-95-95). the Navy agreed to submit a post-construction biological and water quality monitoring program. to insure structural integrity and allow "early detection of bioaccurnulation in transplanted and resident biota that may indicate a breach in the integrity of the facility." The Navy also agreed that an engineering monitoring program would be prepared to evaluate the structural integrity of the rock dike throughout its lifetime. When the Commission originally considered this matter. the Navy bad anticipated that the Regional Water Quality Control Board (RWQCB) would require fmalization of the plan within three months of its waste discharge permit issuance for the project, which was expected (at that time) in the near future. For a number of reasons this deadline was extended, and while the Navy has continued to agree to submit the final monitoring plan to the Commission for its review and concurrence (including a public hearing), the plan has not yet been finalized. We would appreciate a status update on the Navy's efforts to submit and implement this plan. S.2.4

5. The Navy is working with the San Diego Association of Governments (SANDAG) and Congress to continue to explore options for implementing beach replenishment, to offset the losses of sand that occurred because the original homeporting project dredging contained ordnance and could not be placed on County beaches (as originally committed to by the Navy). We would appreciate a status update on the Navy's effons to offset sand losses from the original homeporting Project. S.2.5

6. The discovery of munitions in the dredging for the original homeporting project begs the broader question of what measures. if any, the Navy intends to undertake to examine the overall problem of rnunitions still present in bay sediments, and the extent of public hazard possibly remaining if those materials are not removed. Accordingly, we would appreciate being apprised of any efforts the Navy expects to undenake to determine how extensive the munitions-in-the-bbay problem remains, not just in areas to be dredged but on a comprehensive basis for the entire bay, to enable the public to understand the nature of the threat that still exists. S.2.6

B. Page-Specific Comments

EIS Page #	Comment	
2-22	Disposal optioas listed for 50,000 cu. yds. of dredging to construct the "mitigation" site on the west side of NASNI to offset bay fill in the Pier J/K area clo not mention beach replenishment. Therefore it is unclear whether this disposal option will be considered, in the event the material is suitable for beach replenishment.	S.2.7
2-63	Where applicable (i.e.. California activities), we would appreciate the Coastal Commission being added to the list of regulatory agencies contained in the Impact/Mitigation Chart, which includes COE,, CDFG, USFWS., NMFS, EPA, and USCG.	S.2.8
3.3-4	Historic "IR Site 9" is very close to the proposed "mitigation" area discussed on p. 2-22, where dredging will restore tidal action to what is now upland. The EIS does not analyze whether this increased proximity of tidal action to the "IR" site could increase the risk of release of contaminants from IR Site 9.	S.2.9
3.3-7	The statement is made that the presence of ordnance is unknown "but would be adldressed by a solids debris management plan consistent with Corps of Engineers Permit No. 94-20861 -DZ issued to the Navy for the Turning Basin Dredging (FY 97 MILCON Project P-549): Please provide a copy of that condition so we can evaluate its adequacy and understand what it covers. In addition, as we noted in our first comment above, there is no indication as to whether beach replenishment will be considered, in the event the material is suitable, for the approximately 500,000 cubic yards of material to be dredged to accommodate additional CVN aircraft carriers at NASNI.	S.2.10

S.2

3.3-7	The statement is made that "LA-2 . . . off Orange County" has been monitored. Did the EIS mean to say LA-3? We generally consider LA-2 to be off L.A. Co., and LA-3 to be off Orange County. In a somewhat related matter, it is our understanding that the Navy was required by the Corps to perform additional monitoring at LA-5 (off San Diego) because of tlhe large quantities of material that were ultimately deposited at that site from the initial lhomeporting dredging. The Navy has sent us a "Baseline Monitoring" report dated August 28, 1998, for LA-S, but we have not received any post-disposal monitoring results. If any such results are available we would appreciate a summary of this information. If they are not, a timetable showing when they are anticipated would be useful.	s.2.11
3 4-1	The "Grain Size" discussion indicates high percentages of sand content. Hlowever. as stated above in several comments, there is no discussion of whether beach replenishment will be considered, in the event the material is suitable, for the alpproximately 500,000 cubic yards of material to be dredged to provide the additional depths necessary for the additional carriers at NASNI. To reiterate the point, as the Commission noted in reviewing the original homeporting project (CD-95-95). the Coastal Act (Section 30233(b)) requires beach replenishment where materials are suitable.	s.2.12
3.4-6	The EIS states: ". . .a geophysical survey would be conducted to locate any buried ordnance or other undocumented features.*' For the original homeporting project, a pre-dredge geophysical survey revealed no ordnance, whereas the material dredged turned out to be replete with ordnance. What measures will the Navy undenake to provide a more refined pre-dredge survey.? In addition, we note that the EIS indicates this is a $185 million project. When, the Commission requested mitigation of sand losses for the initial homeporting project, one of the constraints according to tlhe Navy was insufficient budgeting by the Navy to enable it to screen the sand or propose alternative forms of beach replenishment. We recommend that the Navy ask for sufficient funds to mitigate all reasonably foreseeable project impacts, including funds to screen the sand or propose alternative forms of beach replenishment. in the event the 500,000 cu. yds. are suitable (based on grain size analysis) but constrained from beach use by the presence ol ordnance in the material.	S.2.13
3.7-3	in discussing the federal consistency procedures, the document is generally accurate but it omits that a consistency determination would need to be submitted to the Coastal Commission for its review. As mentioned in our general comments on page: 1, we recommend that this be added to the discussion. Also. within the same discussion, 16 USC Section 1456(c) (2), which is quoted, talks about federal dlevelopment projects *within* the coastal zone. To be complete, we recommend also noting that, as provided in 16 USC Section 1456(c)(1), any federal activity which *affects* the coastal zone is also subject to these requirements. Also, the word "direct" should be deleted on line 28, as the CZMA was amended in 1990 to eliminate the "direct effects" test.	S.2.14

Thank you for the opportunity to comment on this document. If you have any questions about the need for or the preparation of a consistency determination. please contact Jim Raives, federal consistency coordinator for the Commission staff, all (415) 904-5292. If you have any questions about these comments, please feel free to call me at (4 IS) 904-5289. s.215

Sincerely,

Mark Delaplaine

MARK DELAPLAINE
Federal Consistency Supervisor

S.2

cc: San Diego Area Office (Sherilyn Sarb)
EPA (David Tomsovic)
SANDAG (Steve Sachs)
OCRM (David Kaiser)
Army Corps, San Diego Field Office (David Zoutendyk)
RWQCB. San Diego Region
Environmental Health Coalition (Laura Hunter)
CCC, Jim Raives

Comment Number	Response

California Coastal Commission

s.2.1 A geophysical survey for ordnance has been conducted at Pier J/K. This effort included debris and magnetometer survey with diver and a pile survey to identify location and size of possible debris. Also included was a hydrographic survey of the mitigation site near Pier Bravo. Even with the current available technology there can not be a 100 percent certainty of identifying buried ordnance. Among the items found with magnetometers were sheet metal, scrap metal, possible anchor, steel rod, steel frame, and an unknown structure. Visual inspection observed wire cable, timber piles, steel plate, steel pipe, scrap steel, fishing net, rubber hose, a ring gear, steel bolts, rubber tire, and aluminum ladder. A site specific safety management plan will be developed to minimize risks if ordnance or other debris is discovered. A maximum 12-inch debris grate and ongoing inspections of dredge spoils will be required as part of the Contractor Quality Control (CQC) Program during dredge operations. Final disposals would be in accordance with permit specifications and agency requirements.

In response to comments to maximize the beneficial uses of dredged material from the proposed action, the Navy is proposing, as the preferred option, to transport dredged material from Pier J/K and mitigation site to be deposited just south of the Naval Amphibious Base for the creation of intertidal/subtidal habitat. Creation of this enhancement habitat in Navy protected waters has been presented to representatives of the California Coastal Commission, is consistent with the Coastal Act and supports the "San Diego Bay Integrated Natural Resources Management Plan." Beach replenishment of suitable material was considered but eliminated because creation of the NAB enhancement area results in vastly superior environmental benefits, and is consistent with California Coastal Management Program goals.

s.2.2 The Navy is providing a Coastal Consistency Determination (CCD) to the California Coastal Commission independently from the distribution of the FEIS. The CCD may be presented prior to the FEIS distribution, but no later than prior to issuance of the Record of Decision (ROD).

s.2.3 No mitigation measures were needed as part of the BRAC CVN project as no significant traffic impacts were identified. However, quoting directly from the Record of Decision, "The City of Coronado expressed support for homeporting the CVN addressed in this project, however the City is concerned about the impact on Coronado of all Navy projects in the area. The City requests the Navy agree to take action on several measures the City believes would ease the impacts of Navy-related projects in the area. The Navy has met with City representatives and has found significant areas of cooperation and agreement, including the following specific actions: . . . [among other things,] . . . the Navy is willing to seek funding for a new entrance to NAS North Island, at the end of

Comment Number	Response
	Third Street in Coronado, in conjunction with construction of a new commissary planned in 1997."
	Relocation of the Third Street gate is a multi-faceted effort that required first the relocation of the NASNI commissary and Navy exchange. Once construction of the new commissary and exchange construction were completed, the old commissary and exchange could be razed, and the Third Street gate could be moved. Until funding was secured to relocate the commissary and exchange, only limited activity associated with the Third Street gate relocation could occur. Funding for relocation of the NASNI commissary and Navy exchange is now available and design for the new commissary/exchange is nearly completed, with construction scheduled to begin in summer or fali of 1999. Steps have been taken to initiate the Third Street gate relocation as an official navy project. Parametric costs have been collected and preliminary design considerations have been formulated. The Navy is committed to continue to seek these funds. Therefore, pianning associated with the project continues, but will be subject to congressional approval as a Navy budget item. In any event, relocation of the gate could not have proceeded until preliminary activities of commissary and exchange construction had been completed.
	A discussion of the traffic and parking improvements that have been implemented by the Navy subsequent to the completion of the BRAC CVN EIS are as follows: (1) A parking lot has been constructed immediately outside the gate at the end of First Street that can be used by personnel who do not have security passes for their vehicles. Without this lot, these vehicles would otherwise be parked on the City streets. (2) A carpool/vanpool program is in place to encourage construction workers and military personnel to ride-share. (3) Utilities on First Street have been placed underground. (4) A parking lot has been constructed at the Naval Recruit Depot that is intended for use by ferry riders. (5) The Navy has an information/education program in place to inform personnel about trip reduction programs. (6) Equipment and supplies were barged between San Diego and NASNI during construction projects, including rocks for the dike and dredged sediments.
S.2.4	The Post Dredge Monitoring Plan presents the long term monitoring plan for dredge sediments utilized as fill and in-situ Installation Restoration (IR) Site 1 Harbor Sediments for Out falls 9 through 15 located adjacent to NAS North Island at the CVN Turning Basin. This "Near shore Confined Disposal Facility Post Dredge Monitoring Plan" was finalized February 1999 and responds to requirements described in the California Regional Water Quality Control Board Order 95-118 as clarified in the August 20, 1996 "Supplement to Pre-Dredge Monitoring Report" and to the conditions in the US Army Corps of Engineers permit 94-20861-DZ.

Comment Number	Response
	Construction of this project began in September 1996, and was completed in August 1998. The first of a series of post-dredging/monitoring events has been completed. Monitoring of the CDF is being performed in conjunction with a CERCLA Remedial Investigation at IR Site 1 out falls No. 9 through 15.
S.2.5	The monies requested from Congress for the sand replenishment will be available to SANDAG once a cooperative agreement is obtained between SANDAG and the Navy. This agreement has recently been signed.
S.2.6	The Navy is developing a public outreach program to provide information regarding the extent and nature of ordnance that may exist within the bay. The first series of presentations occurred in January 1999. A 15-minute presentation was given to each of the San Diego Bay Area Restoration Advisory Boards (RABs) during the January meetings, including the Naval Station San Diego RAB (1/27/99), the North Island/Naval Amphibious Base RAB (1/13/99) and the Naval Training Center RAB (1/26/99). Two handouts were provided during the RAB meeting presentations: a fact-sheet explaining the purpose and goals of the ordnance assessment, and a small forum soliciting public input on parties that should be involved. Interviews have been conducted in January and February 1999 with individuals associated with historic ordnance handling. Navy employees at bases, ships, and major commands were interviewed to identify any written records dealing with ordnance disposal. Command histories were reviewed and historic shipping logs were researched. Secondary goals of the interviews included gaining a firm understanding of munitions handling in the past, changes in munitions handling procedures, and current munitions handling practices.- Additional interviews with Navy associations and retirement groups will be held. The goal of this effort is to find and document any personal accounts of munitions loss. Also being interviewed are diving groups that may have encountered munitions during recreational dives in San Diego Bay.
S.2.7	In response to comments to maxirnize the beneficial uses of dredged material from the Homeporting project, the Navy is proposing, as the preferred option, to transport dredged material from Pier J/K and channel dredging to be deposited just south of the Naval Amphibious Base for the creation of intertidal/subtidal habitat. Creation of this enhancement habitat in Navy protected waters has been presented to representatives of the California Coastal Commission, is consistent with the Coastai Act, and supports the "San Diego Bay Integrated Naturai Resources Management Plan." Beach replenishment of suitable material was considered but eliminated because creation of the NAB enhancement area results in vastly superior environmental benefits, and is consistent with California Coastal Management Program goals.

Comment Number	Response
S.2.8	As described in the EIS, the agencies listed in Table ES-3 are those responsible for monitoring the implementation of each measure. The California Coastal Commission would not have monitoring responsibility for these improvements. The role of the Coastal Commission is further discussed in sections 3.7.1.2 and 3.7.1.3.
S.2.9	Recent sampling within the area of the proposed mitigation site confirmed that upland soils that would be dredged to construct the mitigation site are not significantly contaminated. A draft report containing these results has been prepared and is presently being reviewed by the Navy (the final version of the report has not been released). A tabular listing of soil chemistry data has been added to Volume 3, section 3.4. Due to the absence of significant soil contaminants, creation of a mitigation site will not increase the risk of contaminant releases to the bay. Additional RCRA analyses of sediments offshore from IR Site 1/Outfall 8 are being conducted as part of the sediment testing of the Pier J/K sediments. Results from these analyses are expected to be available in June 1999. See also response to comment F.2.6.
S.2.10	The Navy will provide copy of "Solids Debris Management Plan" consistent with COE Permit no. 94-20861-DZ for Turning Basin Dredging P-549. For further detail, please see response to comment S.2.1.
S.2.11	Tine Draft EIS intended to say LA-3 has been monitored. The Final EIS wiii be corrected to indicate as such. The "LA-5 Ocean Disposal Site Final Survey" required per ACOE Permit #94-20861-DZ was forwarded to the Corps of Engineers 29 October 1998. A copy of this survey will be provided.
s.2.12	Please see the response to comment S.2.1 for a discussion of beneficial reuse of dredged material.
S.2.13	A geophysical survey for ordnance has been conducted at Pier J/K. This effort included debris and magnetometer survey with diver and a pile survey to identify location and size of possible debris. Also included was a hydrographic survey of the mitigation site near Pier Bravo. Even with the current available technology there can not be a 100 percent certainty of identifying buried objects. Among the items found with magnetometers were sheet metal, scrap metal, possible anchor, steel rod, steel frame, and an unknown structure. Visual inspection observed wire cable, timber piles, steel plate, steel pipe, scrap steel, fishing net, rubber hose, a ring gear, steel bolts, rubber tire, and aluminum ladder. A site specific safety management plan will be required in the dredging contract to minimize the risks if ordnance or other debris is discovered. A 12-inch debris grate and ongoing inspections of dredged spoils will be required as in the

Comment Number	Response
	previous homeport project as part of the Contractor Quality Control (CQC) Program during dredge operations. For further detail, please see the response to comment S.2.1.
S.2.14	The Navy concurs that (1) any federal activity that *affects* the coastal zone is subject to the requirements of the Coastal Zone Management Act (CZMA); (2) preparation of a Coastal Consistency Determination (CCD) is required when **a** federal project could have *an effect* on the coastal zone; and (3) the CCD prepared by the U.S. Navy for proposed CVN homeporting actions at NASNI would be *submitted to the California Coastal Commission for review.* Section 3.7.1.3 has been revised to incorporate this response.
S.2.15	The Navy will contact the federal consistency coordinator of the California Coastal Commission **staff** regarding preparation of a Coastai Consistency Determination.

STATE OF CALIFORNIA . THE RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME
1416 NINTH STREET
P O BOX 944209
SACRAMENTO, C A 94244-2090
(916) 445-9330

November 9, 1998

Mr. John Coon
Southwest Division (Code 05AL.JC)
Naval Facilities Engineering Command
1220 Pacific: Highway
San Diego, California 92 132-S 190

Dear Mr. Coon:

S.3

The California Department of Fish and Game (DFG) has reviewed the Draft Environmental Impact Statement (DEIS) for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet. The Department of the Navy proposes to construct and operate facilities necessary to support the homeporting of three NIMITZ-class nuclear-powered aircraft carriers (CVN's) in the Pacific Fleet at four facility concentrations; Coronado, Caliiomia, Bremerton and Everett, Washington, and Pearl Harbor, Hawaii NASNI currently homepotts one CVN', the U.S.S. Stennis, as a result of tlhe 1993 Base Realignment and Closure (BRAC) directive. The Navy has proposed six alternatives for this project. Two conventionally powered aircraft carriers (CV's), currently homeported at Naval Air Station North Island (NASNI!), Naval Complex, Coronado, San Diego, Caliiomia, would be replaced by two CVN's in each of the six alternatives. With respect to activities that would occur at NASNI; Alternatives I, 2, and 3 would add two CVN's, Alternatives 4 and 6 would add one CVN, and Alternative 5 would not add any CVN's but would still remove two CV's. The Navy currently prefers Alternative 2.

Alternatives 1, 2, 3, and 4, would require construction of a CVN wharf, which would involve dredging and filling of 1.2 to 2.5 acres, and the relocation of a ferry/flag landing. in addition, Alternatives 1, 2, and 3, would require the modiicationr of an existing berth currently used as a transient berth. Alternative 5, which proposes no additional CVN's, and Alternative 6, which proposes to berth one <additional CVN at the currently established transient berth, would not involve any construction or dredging activities at NASNI.

The DEIS states that approximately 1.2 to 2.5 acres behind the existing Pier J/K area will be filled and a corresponding size mitigation site will be constructed adjacent to Pier B (on NASNI) to compensate for the loss of shallow water habitat. The final EIS should provide an exact acreage of both the area to be filled and the mitigation site. The Navy plans to assess and mitigate any impacts to existing eelgrass (*Zostera marina*) habitat by conducting pre- and post-construction eelgrass surveys at the proposed CVN wharf area. An eelgrass survey will also be conducted at the proposed mitigation site prior to site construction. The final EIS should also clearly state that impacts to eelgrass habitat, from fill activities, construction activities, and s.3.1

shading by new structures, will be mitigated by planting eelgrass at the mitigation site at a ratio of 1.2: 1 (in accordance with the - - California -). S.3.1

The DFG believes that the Navy has adequately addressed the majority of marine resource issues of concern to the DFG with one possible exception. We are concerned that the homeporting of multiple CVN's at NASM may increase the potential for invasive, non-indigenous marine organisms, found in ballast water and associated sediments, to be introduced into San Diego Bay. Increased vessel activity may facilitate the transport of invasive non-indigenous species into waters of the state. In addition, dredging activities associated with homeporting removes native organisms thereby reducing competition for the invasive species. The DFG recommends that the Navy develop a plan to address these issues. S.3.2

As always, DFG personnel are available to discuss our comments and concerns in greater cletail. To arrange for a discussion, please contact Ms. Marilyn Fluharty, Environmental Specialist, California Department of Fish and Game, 4949 Viewridge Avenue, San Diego, CA 92 123, telephone (6 19) 467-423 1.

Sincerely,

Don Lollock

Donald L. Lollock,, Chief
Scientific Division
Office of Spill Prevention and Response

cc: Ms. Marilyn Fluharty
Department of Fish and Game
4949 Viewridge Ave
San Diego,, California 92123

Comment Number	Response

California Department of Fish and Game

s.3.1	Mitigation for marine resources from the projects are as detailed in responses to comments F.2.10 and F.2.11 and in revised text in Volume 1, section 3.5. In summary, the amount of habitat that would be impacted for the project would be 1.5 acres, comprised of about 0.8 acres of intertidal and 0.7 acres of subtidal habitat. Mitigation at the Pier B mitigation site would be based on selection of one of two options for site design, intertidal or intertidal sub tidal, to be determined by-the agencies during-permitting. The Navy will also construct a habitat enhancement area at NAB, as part of dredged material disposal plans. Eelgrass would be mitigated using credits from the Navy's Eelgrass Mitigation Bank, with the amount determined based on pre- and post-construction surveys and consistent with the Southern California Eelgrass Mitigation Policy.
S.3.2	The total number of aircraft carriers in San Diego would not increase, as summarized in Chapter 2 of the EIS. Therefore, there would not be a potential increase of non-indigenous organisms from ballast water discharges by Navy vessels.

Local Agencies

Comment Number	Response
L.1	There is no comment letter associated with this code.

cc: John Coon
SWDIV
NAVFACENGCOM

Attachment A

MEMORANDUM

DATE September 22, 1998

TO: Ed Kleeman, Senior Planner

FROM: Gail Brydges

SUBJECT: Comments on DEIS for Nuclear Homeporting

L.2

DEIS Failure To Consider Cumulative Impacts In Transportation Corridor L.2.1

The DEIS Section 3.18 ***NASNI Cumulative Impacts*** Figure 3.18-1 Cumulative **Projects** in San Diego **does** not identify any past, present or foreseeable **future** project in or related to the transportation corridor serving the project area. In **fact,** there appears to be a deliberate attempt to avoid **identifying** such projects. Great care has been taken **to identify** projects as far away as Old Town and North Bay, yet large projects in and around the transportation corridor serving the project area have been **excluded** from cumulative analysis. Failure to consider the **cumulative** impacts of projects on the transportation corridor serving the project area constitutes a **serious** flaw in this document.

Examples

(These lists are not inclusive, 'but serve only as examples. Also see Map Attachment A)

Projects Included In Cumulative Analysis But Irrelevant to Project Area	Projects Not Included In Cumulative Analysis But Relevant to Project Area
Kona Kai Development, Shelter island	**A San Diego-Coronado** Bridge Seismic Retrofit Financial Plan
Ritz-Carlton Hotel, Harbor Island	**B Glorietta** Bay **Master** Plan
North Bay Redevelopment Study Area	**C Hotel Del** Coronado Master Plan
North Embarcadero Master Plan	**D Convention** Center **Expansion**
Navy Projects **SPAWAR** USS Coronado etc.	**E Naval** Amphibious Base - cumulative projects **P-195 Special Warfare** Command **Headquarters Facility** **P-078 Operational Storage Warehouse** **P-198 Small** Craft **Warehouse/Storage** Facility P-2211 **Waterfront Operations Facility** P-211 **Special Operations Forces Pier** P-19 I **Seal** Tam One and **Three Operational** Facility **P-144 Explosive Ordnance Disposal Mobile Unit** Three **Waterfront Operations** **P-142 Amphibious Construction Battalion One** ***Administrative*** Facility

Projected Traffic Exceeds LOS,. ADT and Perk; **Period Trip Standards for Alternatives One,** Two. and Three **(i.e. three homeported CVN's)** L.2.2

Level of service (LOS) standards for State Route **75** and State Route 282 serving the project **area** are set forth in the Congestion Management Plan Chapter of the Regional Transportation Plan and the City's Circulation Element of the General **Plan**. The operational goal of **SR75** and **282** is an LOS no **worse** than D. **Currently, SR75** and 282 operate at LOS E and F during peak **periods**. See data chart Attachment **B**. The existing condition is one with two aircraft carriers homeported. Alternatives One, Two and Three propose a third **homeported** aircraft carrier, with a complement of over 3,000 personnel and additional service vehicle trips. These trips added to the existing condition, would substantially exceed the legally established **thresholds** of **significance** of 200 peak-hour vehicle! trips or 2,400 average daily trips and would exacerbate congestion on roadways which already **operate** at LOS E and F during peak periods.

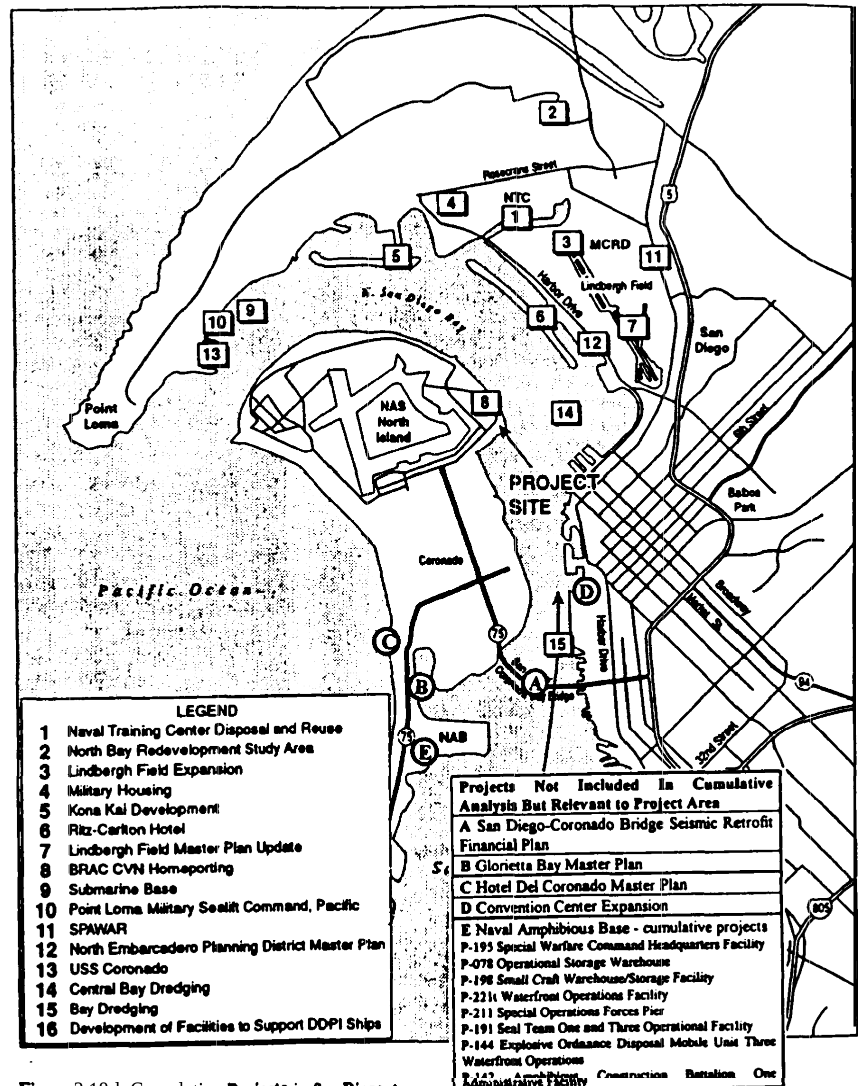
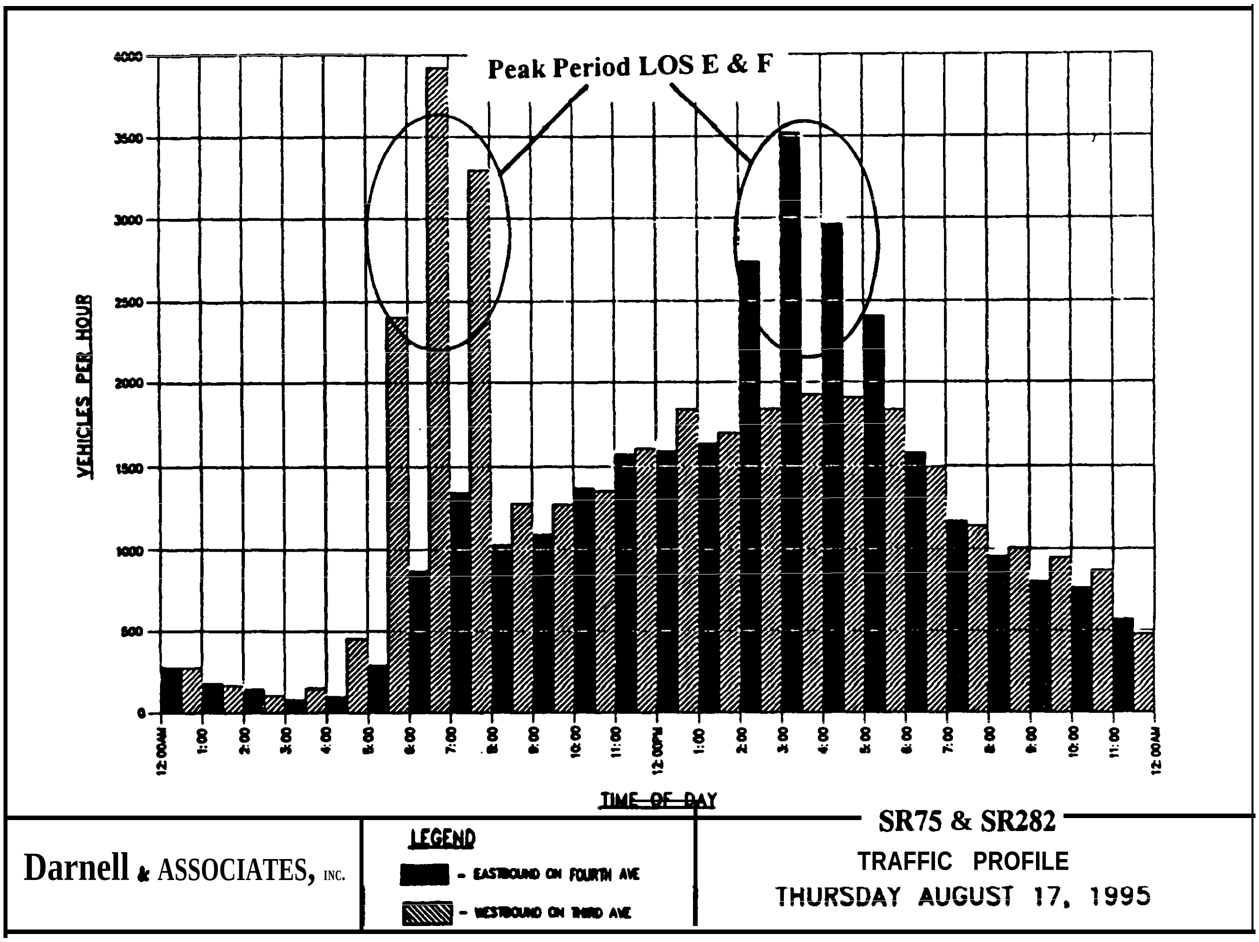


Figure 3.18-1. Cumulative **Projects** in **San Diego Area**

3.18-2



Attachment B

Comment Number	Response

Ed Kleeman, Senior Planner

L.2.1 The list of reasonably foreseeable projects included in the cumulative analysis has been increased to include the San Diego-Coronado Bridge, Seismic Retrofit Financial Plan, Glorietta Bay Master Plan, Hotel Del Coronado Master Plan, and Convention Center Expansion projects. Projects at Naval Amphibious Base have been reviewed by the Navy to identify those that are reasonably foreseeable and appropriate to this analysis. The Operational Storage Warehouse is currently unprogrammed and would reuse an existing warehouse. The Seal Teams One and Three Operational Facility is a very small project currently under construction that would also reuse existing facilities. The Amphibious Construction Battalion One Administration Facility includes minor construction and is also unprogrammed. For these reasons, those three projects are not included in the list of cumulative projects, although all other projects recommended for inclusion by the City of Coronado have been added. No projects have been eliminated from consideration in order to allow for the most rigorous analysis possible.

L.2.2 Although Routes 75 and 282 are shown to operate at levels of service E and F during the peak periods at the undesignated location depicted on the chart that was attached to the comment memorandum, the proposed action (Alternatives One, Two, or Three) would not result in a significant impact because the incremental increase in traffic generated by the proposed action would be less than significant. The traffic analysis in section 3.9.1.2 has been revised to evaluate the incremental increase in traffic that would occur as a result of the proposed action based on the existing condition at NASNI between 1994 and 1998 that included a total of two homeported carriers. Alternatives One, Two, and Three would provide the capacity to homeport three CVNs, a port loading similar to the historic loading of three carriers. While historically three carriers have been homeported at NASNI, the number of homeported carriers actually *in port at any one time* has varied. This is a result of the traditional operational deployments and training and maintenance schedules of Pacific Fleet aircraft carriers. Please see section 3.0, Historical Baseline and Existing Conditions, for more detail.

Because the proposed action is the construction of facilities and infrastructure to support homeporting of CVNs, the existing capability to home port carriers at NASNI and the number of carriers in port at any one time was used as a baseline against which impacts of the proposed action and alternatives at NASNI were compared. Table 3-O in section 3.0 shows that the number of homeported carriers in port at NASNI is substantially the same regardless of whether or not NASNI homeporting capacity is fully utilized. In analyzing environmental impacts on those resource areas directly affected by the physical presence of homeported carriers at NASNI (e.g., traffic and air quality) the analysis relied

Comment Number	Response
	upon data collected when two homeported carriers were in port at NASNI. Consequently, the impact analysis addresses the foreseeable impacts associated with homeporting either two or three CVNs at NASNI.

As the number of personnel on the CVNs is greater than that on the CVs, the proposed action associated with Alternatives One, Two or Three would generate approximately 27 or less additional vehicle trips during the peak hours and 150 or less additional trips throughout an average day for 96% of the calendar year (352 days). Please refer to section 3.9.1.2.3, Table 3.9.4 for a presentation of this information. During four percent of the year (thirteen days, of which it is estimated that up to twelve days would be work days), the increase in peak hour and average daily trips would be substantiai: 87% and 4,87%, respectively. it should be noted, however, the occasions when there are no carriers in port is *nearly five times greater than when there are three carriers in port at the same time.* Hence, the analysis supports the Navy's conclusion that the impact resulting from homeporting a second and third additional CVN at NASNI does not result in significant increases in either peak hour or average daily trip traffic over the 1990 existing condition of one homeported CV and one homeported CVN. This conclusion is consistent with the thresholds of significance cited in the comment, which are 200 peak hour trips and 2,400 average daily trips. Please see the response to comment L.4.5 and L.4.9 for a more detailed discussion on the homeporting *baseline* at NASNI.

CITY OF CORONADO

1625 STRAND WAY
CORONADO. C:A 92116-3099

OFFICE OF THE CITY MANAGER
TEL. (619) 522-7335
FAX (619) 522-7846

November 12, 1998

John H Robertus, Executive Officer
California Regional Water Quality Control Board
San Diego Region
977 I Clairemont Mesa Blvd , Suite A
San Diego, CA 92124-1324

L.3

Re Draft EIS for U. S. Naw Homenonine Facilities

Dear Mr Robertus

On Tuesday, November 10, 1998, the City of Coronado first received, from an interested third party, a copy of the notice purportedly issued by the San Diego RWQCB, dated September 4, 1998, concerning the Board's intent to utilize tlhe Navy's Draft EIS for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U. S Pacific Fleet, in place of an Environmental Impact Report required by the California Environmental Quality Act (CEQA). In view of the circulation and publication requirements applicable to such notices [see CEQA Guidelines, §§ 15225(a), 15087], the City is concerned with the fact that it apparently did not receive a copy of this notice directly from the RWQCB, even though Coronado is a community obviously most directly affected by tlhe Navy action in question We would therefore request that you provide infonmation as to the Board's efforts to comply with the circulation and publication requirements of Section 15087 of the CEQA Guidelines, with respect to the September 4th notice. This response is not meant as a waiver of any defect in the Board's service of this notice: L.3.1

In any event, we consider the September 4, 1998 notice itself to be defective because it fails to comply with the requirements of Section 15225(a) of the CEQA Guidelines, in that it does not state that the RWQCB "believes that the federal document meets the requirements of CEQA." Far from it, the notice itself states instead that the Board is not yet sure if it really is the appropriate lead agency, and goes on to assert thrat if and when it is ultimately determined that the RWQCB is in fact the proper lead agency, "the San Diego Regional Board will need to determine if the environmental document satisfies all requirements of CEQA." All of this clearly indicates that no assessment of the Navy's DEIS for CEQA compliance was done by the Board prior to issuance of the notice, as is contemplated by the CEQA regulation. L.3.2

This is particularly disturbing because of the fact that in the DEIS itself, the Navy expressly takes the position that it interprets CEQA "as being inapplicable to federal projects," (Navy DEIS 1998, pp 1-7), despite the recent enactment by the California1 Legislature, on August 10, 1998, of a bill that clarified the State Legislature's intent to include all federal agencies, as "persons" subject to the provisions of CEQA (Stats. 1998, Chap 272 [codified as Pub.Res.C. §§ 21006, 21066]) Existing CEQA provisions, of course, also require that any attempt to use an EIS produced1 under the National Environmental Policy Act of 1969 (NEPA), in lieu of an EIR, must be conditioned on a finding that the EIS "complies with the requirements of (CEQA) and the guidelines adopted pursuant thereto." (Pub-Res.C. § 21083 5, subd. (a).) And Section 15221(a) of the existing CEQA Guidelines also requires the RWCQB to ensure that any EIS proposed to be used in lieu of an EIR first be determined to be in compliance with the CEQA Guidelines, L.3.3

Furthermore, our independent evaluation of the Navy's DEIS, aided by input from retained environmental consultants, legal counsel, and the public, convinces us that the DEIS is woefully inadequate in failing to identity the various significant adverse environmental impacts that clearly will befall Coronado as a result of this proposed project, and in failing to discuss (let alone incorporate into the project) the feasible measures that are needed to avoid or mitigate those impacts Because we believe that the Navy's DEIS is so seriously flawed that its failings preclude meaningful analysis by government tdecisionmakers and the members of the public who will be affected by the project, we have formally called upon the Navy to return to the drawing board and prepare a revised DEIS, pursuant to 40 C F R § 1502 9(a), rather than proceed to a final EIS at this time. L.3.4

Our detailed response to the Navy's DEIS, dated Novernber 12, 1998, inclluding all attachments, is attached hereto for your consideration and appropriate action as the lead agency (In view of the Navy's selection of "Alternative Two" as its "Preferred Alternative," which clearly will require substantial dredging activities, it is apparent that the RWQCB will have to assume the duties of the lead agency under CEQA.) It should also be apparent from a review of our attached response to the Navy that we believe the inadequacies of the DEIS preclude its use in lieu of an EIR, under Pub Res C § 21083.5(a), since it fails to satisfy the requirements of NEPA, let alone the more stringent requirements of CEQA (especially those that call for the inclusion of feasible mitigation measures in the project [Pub Res.C §§ 2 1002, 21002.1, 2 108 1]) We therefore urge the RWQCB to join us in calling upon the Navy to prepare a revised DEIS that properly addresses tlhe serious environmental issues we have raised in our attached response, and which properly includes necessary mitigation measures [1] At a minimum, we believe that the RWQCB cannot legally accept the Navy's current DEIS as a substitute for the EIR that is required by CEQA. L.3.5

[1] We note that Federal environmental regulations themselves require the hlavy to comply witth State laws that may have additional environmental impact statement requirements that are not in conflict with NEPA 40 C.F R.§ 1506 2(c) We see no conflict in CEQA's additional requirement that mitigation measures be incorporated into the DEIS

In view of the importance of this matter to our community, and our need to know the position of the RWQCB with respect to the Navy's DEIS, it is requested that the Board respond to this letter in writing at its earliest convenience. If you or your staff have any questions concerning the comments and requests made herein, please feel free to call me. I, and my staff, would be happy to meet with you in person to provide any additional information that you require to carry out your duties under the law. My direct telephone number is (619) 522-7335.

Thank you for your anticipated thoughtful consideration of this matter. I look forward to hearing from you.

Sincerely,

L.3

Homer Bludau
City Manager

HLB/ldg

cc: J. Coon, SW' DIV NAVFAC
Attachments

Comment Number	Response

City of Coronado

L.3.1 The RWQCB is responsible for determining their compliance with CEQA. The Navy assumes that the comments regarding CEQA are provided to the California Regional Water Quality Control Board for advisory purposes and not directed to the Navy. The RWQCB has responsibility for complying with CEQA. CEQA is not applicable to federal agency decisionmaking processes. While both CEQA and NEPA encourage agency coordination to streamline the environmental review process, state and local agencies have the authority to and responsibility for implementation of CEQA.

L.3.2 The RWQCB is responsible for determining their compliance with CEQA. Please see response to comment L.3.1.

L.3.3 Please see response to comment L.3.1 for a discussion of the applicability of CEQA to this proposed action.

L.3.4 The Navy considers that the Final EIS, incorporating revisions as a result of public comment, complies with NEPA requirements and no recirculation of the Draft EIS is required. This Final EIS discusses those "responsible opposing views that were not adequately discussed in the draft statement" and "i.ndicates[s] the Navy's responses to the issues raised" as required by 40 CFR 1502.9(b).

L.3.5 The RWQCB is responsible for determining their compliance with CEQA.

CITY OF CORONADO

1625 STRAND WAY
CORONADO, CA 92118-3099

OFFICE OF THE CITY MANAGER
TEL. (619) 522-7335
FAX (619) 522-7646

November 12, 1998

Mr John Coon
Southwest Division (Code 05AL JC)
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92 132-5 190

Re Draft EIS by U S Navy re Homeporting of Three CVNs at NASNI

Dear Mr Coon:

L.4

The City of Coronado appreciates this opportunity to comment on the "Draft Environmental Impact Statement for Developing, Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U S Pacific Fleet" [hereinafter DEIS] The City is further thankful to the Nary for the 30-day extension of time granted to submit these comments, made necessary by the voluminous and complex nature of the DEIS Unfortunately, while considerable time, effort and funds may have been expendled in producing the DEIS, our review and analysis of the document, and that of our consultants, compels us to conclude that the Draft EIS is seriously flawed We therefore request that a revised DEIS be prepared (as opposed to a Final EIS for comment). The revised DEIS should recognize and address the following deficiencies as further detailed in this letter L.4.1

- Cumulative Analysis
- Traffic Analysis
- Parking Analysis
- Noise Analysis
- Air Pollution Analysis
- Radiation Analysis
- Public Safety Analysis
- Project Mitigation

The resulting revision should undergo the same deliberation process as that followed for the original, to include at least a 45 day review and comment period and public hearings in Coronado, followed by a Final EIS process

We believe this added step is necessary, assuming that the Navy desires to produce an acceptable Final EIS that will meet its obligations to the citizens of Coronado and the general public under the National Environmentarl Policy Act (NEPA) Our request for a revised EIS draft is supported in 40 C F R § 1502 9 (a), which states'

> *" If a draft statement is so inadequate as lo preclude meaningful analysis, the agency shall prepare and circulate a revised draft of rhe appropriate portion. "*

Additionally, the Navy has failed to acknowledge recent California legislation (Assembly Bill No 2397), approved by the Governor on August IO, 1998, which clarifies existing law to definitively establish that all Federal agencies are subject to the California Environmental Quality Act (CEQA) This recent enactment (which can be found at Clhapter 272 of the California Statutes of 1998). amended Section 2 1066 of the California Public Resources Code, and added Section 21006 of the same Code Section 1 of the cited Statute found and declared that these statutory changes did not constitute a change in, but were declaratory of existing law CEQA, as you are no doubt aware, requires environmental impact evaluations of significant construction projects The recent State legislation clarifies that CEQA applies to all Federal activities that might require the issuance of permits. licenses, certificates, and the like, even if those actions already undergo review under Federal law CEQA., unlike NEPA, requires that mitigation measures be introduced, funded and performed as required when significant environmental impacts are identified This is not inconsistent with Federal Regulations that implement NEPA, in that the regulatory guidelines promulgated by the Council on Environmental Quality (a Federal entity) also require the Navy to comply with State environmental impact statement laws, even if they impose additional requirements to those of NEPA (See 40 C F R § 1506 2(c)) It is apparent that the DEIS did not consider this California legislation, because is expressly states, at Vol 1, pages 1 . 7, that "the Navy interprets the California Environmental Quality Act (CEQA) as being inapplicable to federal projects " L.4.2

In view of the foregoing, and based upon the additional defects and deficiencies detailed below, the City of Coronado has determined that the Navy's DEIS is so inadequate as to preclude meaningful analysis, and therefore demands that a revised DEIS be prepared, pursuant to 40 C F R § 1502 9(a). prior to consideration of a Final EIS and a Record of Decision by Navy authorities L.4.3

This letter details and substantiates that the DEIS submitted for review is seriously flawed, in that it fails to:

- *Comply with the stated legal and fundamental requirements of NEPA ;*
- *Acknowledge and respond lo rhe requirements of CEQA (see above discussion);*
- *Recognize and acknowledge existing conditions;*
- *Recognize and acknowledge project and cumulative traffic, parking, noise, arr pollution, radiation emissions and public safety impacts;*
- *Acknowledge and analyze realistic future conditions and impacts; and*
- *Identify mitigation measures for community impacts.*

Through the years, NASNI has incrementally expanded its functions and complement of personnel, slowly increasing the scope and intensity of the negative impacts of its operation on Coronado It is obvious to even the casual observer that Coronado already is severely impacted by the traffic and parking congestion, noise and air pollution impacts of the base's operations Therefore, expansion of the base's CVN complement to three ships needs to be looked at in terms of whether this new activity exceeds the ability of Coronado to assume such additional burdens without severely degrading the quality of life of its resitdents The City is concerned that this draft EIS does L.4.4

not adequately address the impact on Coronado of basing two or three CVN's on NASNI, or fulfill the requirements of NEPA L.4.4

L.4.5 The National Environmental Policy Act and its requisite EIS analysis requires full unbiased disclosure of the likely effects of Federal projects The City believes that separating the impacts of the homeporting of three CVNs between two EIS analyses, and then failing to consider the cumulative impacts of these decisions in the most recent EIS, effectively circumvents the fundamental objective of NEPA of guarding the environment "through discussion and disclosure"

L.4.61 This letter sets forth the major concerns of the Coronado City Council, which has sought consultations with independent technical expens and legal counsel, and has received the thoughtful input of the public and City staff. The reports submitted to the City by its consultants RECON (noise and air pollution), PARSONS (traffic and parking), and Joel L. Cehn (radiation), are attached hereto,, and expressly incorporated herein. Also attached is a legal analysis by our environmental counsel, Quinton & Petix We have additionally included herewith the input received1 from the public at open sessions of the City Council that have been devoted to discussion of the issues raised by the homeporting project While we can not independently verify the accuracy of these public comments, many appear to be well founded, and clearly have value as evidence of the public's perception of the environmental problems resulting from the Navy's current and proposed activities, and they are included with the City's comments (Please note this letter's "Attachments List")

L.4.7 After careful consideration of all the foregoing, the City Council is forced to conclude that the DEIS suffers from serious inadequacies, both informational and analytical, that render it disappointingly lacking as an environmental document under NEPA, insofar as it purports to address the environmental impacts on the community of Coronado The City questions the adequacy of the DEIS's analysis of the project's immediate and cumulative traffic, parking, noise, air pollution, radiation emission and public safety impacts on Coronado Moreover, the City questions the lack of proposed project mitigation measures Allow me to share with you the following summary of Coronado's concerns, along with general suggestions for supplemental data and analyses that should help the Navy to move toward corrections of the several inadequacies that have been identified in the DEIS You are also requested to review and comment on the attached reports of the City's technical experts and the submissions of Coronado citizens

General Analysis L.4.81

1 Calculation assumptions, especially those related to traffic, parking, noise:, air pollution and public safety issues, should be stated, methodology noted and data sources should be listed

2 Data, especially data related to traffic, parking, noise, air pollution and public safety issues, should be recent and appropriate to Coronado

L.4

Cumulative Analysis L.4.9

1 The cumulative analysis base line should be one CVN and one CV (plus the depot level maintenance facility) instead of two CVNs and the mamtenance: facility, and should address the recent and expected intensification of activity on the NASNI and in the City in general In sulbject area after sulbject area the phrase "potential impacts would not exceed historical levels from homeporting three conventional carriers at NASNI " is used in the DEIS Such an analysis ignores how the project would alter the environment from existing conditions For this reason, the DEIS analysis fails to compare a reasonable "no action" alternative of the present level of base olperations with the possibility of three stationed CVNs and transient CVNs sharing base facilities This failure results in a significant understatement of the negative effects of the project When considered as part of the base's cumulative impact on the community, and in relation to the excessive traffic and noise impacts that portions of the community already experience, the document's findings of insignificance are contradicted by current traffic and noise data

2. The analysis focuses on a project to construct additional support facilities for the homeporting of three CVNs at NASNI, *not* for the homeporting of the CVNs themselves Therefore, the no action alternative (the Alternative 6 baseline) would still result in a second CVN being homeported at NASNI Since the 1995 EIS failed to address the impact of homeporting a second CVN on base, and the new DEIS assumes the homeporting of the second CVN would have no impact because the necessary facilities are substantially in place, a reasonable consideration of the second CVN's effects on the City is never presented L.4.10

3. The "project" should reflect the true effect of three CVNs based at NASNI, transient CVN use of the base's facilities, and the additional personnel associated with the PIA significant maintenance activities performed However, the DEIS notes on page ES-l that "(t)he proposed action of this EIS does not involve a reexamination of homeporting actions directed by tlhe 1993 BRAC process " As such, the cumulative impacts of the recent decision to homepon the first nuclear aircraft carrier at NASNI appear to have been ignored These impacts were anticipated by the City during the review of the earlier EIS when the City requested that the effects of homeporting multiple nuclear carriers be considered in the 1995 EIS At that time, I wrote in my June 21, 1995 letter " The draft EIS is only analyzing one part of a larger project that will be implemented by the year 2005 or sooner The EIS should be revised so that the project description reflects the actual project to be implemented, which is the homeporting of 3 NIMITZ Class carriers to NASNI, Coronado " L.4.11

Ignoring cumulative impacts, the DEIS instead focuses on the net personnel difference between conventional and nuclear carriers, and then notes a small (noted as insignificant) increase between the base's historic (1993) carrier personnel high and the proposed NASNI three carrier alternatives However, the traffic environment has worsened in the: interim period and that has been ignored by the analysis For example, the DEIS shows 66,000 ADT (presumably 1994 data per L.4.12

L.4

CALTRANS) in the transportation corridor that serves NASNI, whereas present CALTRANS data indicates 70,000 ADT exists Weekday averages are in the 80,000 range and the most serious congestion, noise, and safety problems occur during weekday peak hours Therefore, the baseline of the DEIS should not be 1993, but should be the present Doing so would more accurately recognize the marginal impact of locating additional CVNs to the City L.4.12

Moreover, the impact of nuclear carrier maintenance is unrealistically minimized "The EIS traffic study indicated that the additional personnel associated with the PIA activities would be offset by the planned decrease in personnel at other NASNI operations and that there would be no increase in commuter traffic volumes." (Page 3 9-6 of Volume I) However, the report provides no documentation for the assertion that the increase in maintenance personnel would be offset by decreases in the number of other base personnel. L.4.13

Further, the impact of nuclear carrier maintenance under the PIA concept is far greater than purely a personnel issue. The man-days associated with 6-7 month PIAs, along with the required concomitant material/ logistic support, is significantly greater than that heretofore associated with 3 month Selected Restricted Availabilities (SRAs). L.4.14

Traffic Analysis

1 Current data, using current calculation methodology (1994 Highway Capacity Manual) should be used Much of the data presented comes from the 1995 BRAC EIS which included data from 1993 and earlier Traffic volumes have increased and traffic patterns have changed during this tirme period and need to be reconsidered. (Traffic patterns have changed as the hours of operation of base gates have been restructured and as increased traffic congestion has caused commuters to use streets removed from the main commuting routes) L4.15

2 The DEIS should compare the preferred and other alternatives to the "No Action" alternative and not just to 1993 traffic conditions Instead, the DEIS uses as a baseline 1993 data that was generated before the USS Ranger (CV 61) was decommissioned At that time three CVs were homeported at NASNI Since then, two CVs (currently one CV and one CVN) have been homeported at NASNI. The net change of two additional CVNs on existing traffic conditions on City street segments and intersections should be addressed. Moreover, since the transportation corridor traffic volume has increased from 65,000 ADT in 1993 to 70,000 ADT in 1997, the baseline should be updated to 1997. With a baseline for two CV's established it then becomes possible to L.4.16

1) Add the impact of increased crew size of CVNs versus CVs
2) Add the average impact of three CVNs versus two CVNs (a 50% increase over the baseline)
3) Add the impact of PIA personnel for the maintenance activity on CVNs (man-days, material/ logistic support impact on existing Coronado traffic conditions)

A calculation of the traffic generated by the crew of a carrier in port can be derived from the data worked up for the impact of a single CVN at Pearl Harbor, as set forth in the draft EIS That study puts the peak hour number of trips to the carrier in the morning at 1199, with a like number in the afternoon Preliminary data developed1 by Katz, Okitsu, and Associates for a SANDAG traffic impact analysis indicates that a CVN in port generates 4,256 daily trips with peak hour volumes of 1,702 in the morning and afternoon. These are clearly significant impacts, exceeding, by at least an order of magnitude, the 2% threshold of significance for additional traffic at intersections already operating at Level of Service E or F L.4.16

3 Analysis should not rely solely on average conditions, but should discuss how traffic volumes and impacts, vary with time and the arrival and departure of ships Average conditions seldom exist, and do not reflect the impact that the daily long peak hour conditions impose on the City L.4.17

4. The DEIS should address reasonably expected worst case conditions, which includes at least two of the homeported carriers being in port along with a transient carrier Worse case scenarios, while not common occurrences, should be addressed1 for these have the greatest likelihood of endangering the public through inhibiting the travel of emergency vehicles and for congestion related accident potential L.4.18

5. Assertions (such as "the additional personnel associated with the PIA [maintenance] activities would be offset by the planned decrease in personnel at other NASNI operations and that there would be no increase in commuter traffic volumes "[page 3.9-6]) should be substantiated The impacts of additional personnel associated with PIA maintenance activity must include the personnel contracted from the four local commercial ship repair facilities L.4.19

6. The Navy should explain the discrepancy as to how the DEIS and the old BRAC EIS can claim so little growth in on-base activity, when the traffic counts on Third and Fourth Streets outside NASNI have shown a continual significant increase The DEIS should also address what the Navy has done to mitigate such growth, and should discuss appropriate mitigation measures to alleviate Coronado traffic problems L.4.20

7. Analysis of the cumulative traffic impacts of the project should focus on the traffic corridor in question and such fundamental changes under consideration as the possible elimination of the bridge tolls and the related transportation mitigation subsidies from the tolls, instead of projects proposed on Harbor or Shelter Islands L.4.21

8 The EIS should detail exactly how many CVNs and CVs and other large vessels can be berthed on NASNI if the additional quay wall Berth J is constructed, and then address how often this situation could occur and what impact would result from such occurrences Berths L through P historically have accommodated three CVs Berth K can now accommodate a CVN Response to comment C-l 3 on page C-2 of Volume 2 of the 1995 BRAC EIS acknowledges (in part) " (f)our L.4.22

L.4

aircraft carriers (i e , a mix of CVs and CVNs) could be presented at NASNI on rare occasions in the future At least one of these four carriers would be a transient carrier, and would not be homeported at NASNI " The DEIS should state how four CVNs are precluded from visiting the base at one time, or for that matter, how they would, given present and proposed facilities, be precluded from being stationed at NASNI With the passage of time and the closure of bases, more large naval slhips (both American and foreign) will make port calls to San Diego and utilize Berths L through P, and their likely presence should be considered by the DEIS L.4.22

Parking Analysis

L.4.23

1. The project should include the on-base parking required to mitigate any off-base impact. and the timing for developing such parking.

2. The existing parking impacts of base operation on t'he surrounding residential neighborhoods should be addressed in a cumulative impact analysis L.4.24

3. The DEIS should compare existing parking conditions to the "No Action" alternative and not just to 1993 parking conditions The net change: of two atdditional CVN's on existing parking conditions on and near the base must be discussed. L.4.25

4. The DEIS should document (with the supporting, data, assumptions and calculations) the DEIS assertion that other staff downsizing on NASNI will partly mitigate the need for additional parking for the project. L.4.26

Noise Analysis

1. The noise analysis needs a discussion of cumulative impacts Current noise levels on Third and Fourth Streets already exceed Coronado General Plan, State and Federal standards. The cumulative effect of Navy related traffic on these roadways is not considered as part of the analysis. L.4.27

2. The noise analysis needs additional information to allow confirmation of its results Calculation assumptions and data sources should be given L.4.28

3. The noise analysis should be specific to the project, not just copied from the BRAC 1995 EIS The "City of Coronado Noise Study 1998" conducted by RECON found that Leq noise measurements along 'Third and Fourth Streets exceed 70db and are well above the 1993 figures set forth in the EIS These levels above 70db exist today with two carriers homeported art NASNI, and exceed the threshold of "Clearly Unacceptable noise levels for residlential land use" as defined in the City of Coronado General Plan Therefore, the DEIS analysis should be L.4.29

based on the currently proposed project, not Just adapted from the BRAC EIS for conditions that were current in 1993 L.4.29

Air Pollution Analysis

1. The air polllution analysis should compare future conditions without the project to future conditions with the project The DEIS at present concludes that air quality in the future will be better than it is today It does not present the fact that the air impacts in the future with the project will be worse than the future without the project L.4.30

2. The air polllution analysis should consider the required generation of electricity off-site to operate berthed CVNs Such electricity generation would not be necessary without the extra carriers present, and would have an impact on the regional air basin L.4.31

3. Emission figure discrepancies between the BRAC EIS and the new EIS must be reconciled The BRAC EIS provides data that indicates emissions about three times greater than those provided in the present DEIS There is no explanation in the new EIS for this discrepancy L.4.32

1. The analysis needs additional information to allow confirmation of its results Calculation assumptions and data sources should be given For example, the traffic information presented in the report is not sufficient to allow for an assessment of the accuracy of the emissions factors L.4.33

Radiation Analysis

1. Calculation assumptions should be stated, methodology noted and data sources should be listed Conclusions and scenarios should, in addition to the technical presentation, be presented in a manner and in language which may be understood by the general public Additionally, the people of Coronado, while appreciating the quality of the past Navy safety record, need to be told what the risk to the public will be if an accident actually occurs, i e , what is the real risk when the probability of the accident is backed out or becomes one hundred percent L.4.34

2. Data should be recent and appropriate to Coronado L.4.35

3. In order to reassure and further safeguard the public, the DEIS should address the need to incorporate into the project description long-term radiation monitoring at the base boundary with civilian residential areas The system should at a minimum have the following characteristics be easily expandable, provide easy access to data, include wind and weatlher information, and be cost effective: L.4.36

4. The following questions need to be answered for Appendix "F" to the DEIS L.4.37

L.4

1) What EPA method is used to estimate airborne releases from normal operations? Please provide the calculations to support the method L.4.37

2) What is the distance assumed between the base-boundary resident (MOI) and all release points7 What are the assumed distances to farms providing food to the residents7 L.4.38

3) For the fire scenario, what fraction of the facility's radioactive inventory is released in the fire? What exposure pathway causes the largest portion of the dose7 L.4.39

4) For the spill scenario, what assumptions are made about residents' consumption of seafood taken from the Bay? What is the assumed distance from the release point(s) to the nearest resident (MOI)? What exposure pathway causes the largest portion of the dose? L.4.40

5) For the fire and spill scenarios, what would be the economic impacts of these events7 L.4.41

6) What monitoring is performed to detect an abnormal release of radioactivity? L.4.42

Public Safety Analysis

1 The DEIS should acknowledge the existing traffic safety conditions on the transportation corridors serving the project,, and identify appropriate mitigation. L.4.43

2. The DEIS should provide a risk analysis addressing the escalated threat to the public of terrorism and risk exposure due to the consolidation/ co-location of three or four aircraft carriers at one geographic location L.4.44

Project Mitigation

1 Amend the project description to incorporate full Federal financial support for construction of a bored two lane tunnel onto NASNI from the bridge toll plaza in order to mitigate project and cumulative traffic, noise and air pollution impacts L.4.45

2 Amend the project description to incorporate full Federal financial support for construction and operation of a radiation monitoring system along the base boundary in order to reassure and further safeguard the public L.4.46

3 In the DEIS, the Navy describes plans to evacuate NASNI within two hours if a radiological accident occurs In regard to this issue, the document should address the following questions L.4.47

1) Where does that evacuation boundary start and stop? L.4.47

2) Where will evacuees be taken? No plans for such evacuation of Coronado citizens is mentioned other than 'vague definitions of communication at state and local level, despite the fact that some Coronado residents are closer to the CVNs than are many of the base population L.4.48

3) The Navy has previously stated that their emergency plans are classified How can the City of Coronado develop an emergency response plan if full disclosure of tlhe threat and Navy plans for evacuation and other reponses is not made' L.4.49

4) Does the Navy intend to cooperate with the city and participate in the development of its emergency response plan for an event involving a radiological incident or accident7 L.4.50

While the issues raised above and in the attached supporting documents are of great importance to Coronado, they do not reflect any lessening of the City's on going support for the Navy and its mission We wish to make it perfectly clear that, by its submission of this letter, the City of Coronado is neither challenging a nuclear powered navy, nor any decision on the part of the United States Navy deemed necessary to carry out its mission L.4.51

Our purpose is simply to insist upon a fair and realistic consideration in the Final EIS of the further environmental degradation that Coronado will certainly face due to the homeporting of three CVNs at NASNI The National Environmental Policy Act and the California Environmental Quality Act clearly require the Navy to have available, and to carefully consider, detailed information concerning significant environmental impacts (including means to mitigate adverse environmental impacts) It also requires that this information be of high quality and be subject to accurate scientific analysis In our view, the DEIS fails to meet these standards, and appropriate corrective action should be taken, while there is still an opportunity to do so within the firamework of the administrative process L.4.52

We are convinced that a thorough analysis of the environmental consequences of the proposed project will demonstrate significant adverse impacts on our community, and would require the incorporation of mitigation measures into the project As you are no doubt aware, in order to address the existing negative impacts of NASNI traffic on the community, the citizens of Coronado have just approved by an overwhelming majority a ballot initiative authorizing the City Council to seek funding for construction of a bored tunnel onto NASNI from the bridge toll plaza In view of the additional burden that would be imposed on Coronado due to the currently proposed project, we would submrt that it is imperative for the Navy to consider the proposed tunnel as a reasonable and feasible mitigation measure We would welcome the Navy's commitment to participate in L.4.53

the: City's efforts to achieve a mutually advantageous solution to the very real environmental problems that we jointly face L.4.53

Coronado wishes to continue its good relationslhip with the Navy, and I believe that can best be achieved through candid communications I would welcome tlhe opportunity to attend a meeting in our offices between Navy representatives and my staff to further clarify and discuss the City's comments Thank you in advance for your consideration of Coronado's concerns, and your continued cooperation.

Sincerely,

Homer Bludau

Homer Bludau
City Manager

L.4

i/cd/ed/carrier4

ATTACHMENTS LIST

<u>Comments from Consultants and Staff</u>:

Memo I 1/10/98, Senior Planner Ed Kleeman;
Later: 10/27/98, Robert Sergeant, PARSONS TRANSPORTATION GROUP;
Letter: 10/16/98, Stephen Petix, Quinton & Petix, Attorneys at Law,
Fax: 10/16/98, Charles Bull, REGIONAL ENVIRONMENTAL CONSULTANTS,
Fax: 10/15/98, Robert Sergeant, PARSONS TRANSPORTATION GROUP;
Letter: 10/15/98, Robert Sergeant, PARSONS TRANSPORTATION GROUP;
Memo: 10/14/98, Joel Cehn;
Letter: 10/14/98, Charles Bull, REGIONAL ENVIRONMENTAL CONSULTANTS,
Letter: 10/14/98, David Gottfredson, REGIONAL ENVIRONMENTAL CONSULTANTS;
Letter: 10/9/98, Robert Sergeant, PARSONS TRANSPORTATION GROUP, and
Memo: 9/28/98, Associate Engineer Ed Walton.

<u>City Council Minutes</u>:

November 3, 1998; (Draft Minutes)
October 20, 1998;
October 6. 1998; and
September 15. 1998.

<u>City Councilmember Comments</u>:

Memo: 1 1/3/1998, Bruce Williams.

<u>Public Comments</u>:

Report: I I/l 1/98, Bernd Franke for Institute for Energy and Environmental Research;
Report: 11/11/98, Prepared for Environmental Health Coalition by Community Health Assessments and Public Participation Center;
Letter: 1 1/10/98, Camille Sears;
Letter: I 1/6/98, Marilyn G. Field;
Fax: 11/6/98, Stephanie Kaupp for Environmental Health Coalition;
Memo: I 1/3/98, J. Sutton Clark for City 'Blue Ribbon Committee on Traffic";
Memo: 10/30/98, Rankine Van Anda for City "Blue Ribbon Committee on Traffic";,
Letter: 10/20/98, Laura Hunter for Environmental Health Coalition (with attachments);
Memo: 9/22/98, Gail Brydges;
Memo: 9/29/98, Louis de Beer;
Letter: 9/24/98, E Miles Harvey for The Landing Homeowners Association;
Memo: 9/10/98, Gail Brydges;
Memo: 9/10/98, Larry Brown for City "Truck Traffic Reduction Committee";
Letter 6/9/98 (date received), Ivonne Estrella;
Letter: 5/26/98, Adam Hamrick; and
Letter: 5/16/98, Dianne Dearie.

L.4

MEMORANDUM

Date: November 10. 1998

To: City Manager, Homer Bludau

CC: Community Development Director, Tony Pena
Engineering & Project Development Director, Tom O'toole
Administrative Analyst, Gail Brydges

From: Senior Planner, Ed Kleeman

Subject: Comment on "Draft Enviaonmental Impact Statement for Developing Home Port Facilities for Three NIMITIZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet.

While the way the EIS addresses cumulative impacts is one of the greatest weaknesses of the document, this and other EIS failings are well documented in the comments already submitted to the City Council. However, I do think it should be noted that page 3.7-3 of the document notes that ". . .the City of Coronado adopted a *Local Coastal Program* (LCP) in 1987 as part of their General Plan." In fact, the City adopted its LCP in 1983, and it was never made a part of the General Plan. In 1987 the City adopted a "Local Coastal Element" to its (General Plan that notes in summary form the type of issues that the City's LCP addresses. Moreover, a separate issue is that the document's "So&economics" section should better address Coronado cumulative impacts in addition to its present regional impact focus. 'L.4.54

i/cd/ed/carrier4

PARSONS

Barton-Aschman Associates, Inc. • A Unit of Parsons Transportation Group Inc.
9404 Genesee Avenue, Suite 140 • La Jolla, California 92037 • (619) 453-8919 • Fax (619) 453 9652

October 27, 1998

Mr. Edward Kleeman, A.I.C.P.
Senior Planner
City of Coronado
1825 Strand Way
Coronado, California 92118

Subject: ***Comparison Between Home Port Facilities Draft EIS and the SANDAG San Diego-Coronado Bridge Toll Removal Impact Study***

Dear Mr. Kleeman:

Al the request of the City of Coronado, Parsons Transportation Group has reviewed the traffic and circulation section of the Draft Environmental Impact Statement (DEIS) prepared by the Navy for the Development of Home Port Facilities at Naval Air Station North Island (NASNI) and compared it to the traffic information provided in the SANDAG San Diego-Coronado Bridge Toll Removal Impact Study, published October 14, 1998. L.4.55

The purpose of the SANDAG study was to determine the affects of removing the toll from the bridge on traffic, air quality. noise and safety on the most significantly affected portion of the City of Coronado, namely 3rd and 4th Streets. AR part of this analysis a traffic analysis was prepared by Katz, Okitsu & Associates which evaluated four traffic scenarios:

- Existing Conditions (1997).
- Year 2015 with Toll,
- Year 2015 without Toll, and
- Y eat '201 5 without loll, 3 CVN's at NASNI, and the elimination of the toll funded commute services.

The existing conditions were based on traffic volumes collected specifically for this study, from counts conducted by Caltrans and from other traffic studies. These traffic counts ranged in date from 1993 to 1998 with the majority of the data being collected in the last two years. In almost all cases, existing traffic volumes reported by roadway link for the SANDAG report are higher than those reported for the DEIS. This discrepancy in traffic volume data further supports the claim that traffic volumes used for the DEIS are too old to be used as a base from which to evaluate project conditions. This claim was further substantiated, as discussed in prior letters to the City. by looking at SANDAG and Caltrans published volumes. The data used in the DEIS needs to be updated to actual existing conditions.

MR. EDWARD KLEEMAN
CITY OF CORONADO
October 27, 1998
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The year 2015 without Toll conditions were evaluated with and without the CVN's at NASNI and the elimination of the toll funded commute services. As part of the analysis for this scenario, SANDAG's traffic consultant conducted surveys at NASNI during conditions with one, two and three carriers in port. All of these surveys were conducted during 1998 and were used to determine numbers of trips generated by one, two and three carriers. These numbers included assumptions based on Navy provided information about crew members, number of live aboard crew members, and duty rotations and work hours. Additionally, the number of outside contractors that come on base to service the carriers by carrier was developed based on survey of maintenance contracts. This number was then converted to an average number of contractors, since the levels of maintenance do not remain constant throughout the year. Similarly, numbers of truck delivery trips were averaged based on a study of truck traffic carried out by SANDAG in early 1998. Table 1 outlines the assumptions made by SANDAG. L.4.55

L.4

	Assumptions
Crew	3,360 per CVN
Live-Aboard	25% of the crew size (840)
Duty	1 out of every 6 needs to remain on-board daily
Trips per Day	each commuting crew member makes two trips per day
Work Hours	7:00 AM to 4:00 PM Monday through Friday
Contractor Trips	146 per carrier
Commuting Crew	1,982 per CVN (approximately 59%)
Peak Hour Factor	40% of daily trips will be made during the peak hour
Distribution	AM in/out ratio 5:95, PM in/out ratio 95:5

The total number of daily trips determined by SANDAG per CVN is 4,256. If this number is divided by the number of crew members, the trip generation rate becomes 1.27 trips/crew member.

The trip generation rate proposed by the DEIS is 2.1 trips per employee which is a more conservative rate. However, the DEIS assumes a peak hour factor of 26.5% during the peak hours. This peak hour factor is based upon a survey of a similar facility in Puget Sound, Washington. The distribution ratio of these trips is 91:9 during the AM peak hour and 9:91 during the PM peak hour. Applying the smaller peak hour factor to the higher trip generation rate, the number of trips projected in the DEIS per carrier is larger than that projected by the SANDAG report based on local data. This independent check on the trip generation rate gives credence to the fact that the number of trips projected for the DEIS is accurate.

MR. EDWARD KLEEMAN
CITY OF CORONADO
October 27, 1998
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Traffic growth rates reported in the SANDAG study we in the range of 6 to 17 percent between 1997 and 2015 if tolls are removed, with lower percent increases expected if the toll remains. This averages to between a 0.33%- 0.94% growth rate per yew. The DEIS assumes a 5% growth rate between t 993 and the final project implementation date of 2005. This averages ♦□ • 0.4% growth rate per year. L.4.55

In summary, a review of the SANDAG Toll Removal Impact Study has reinforced the contention that the existing traffic data used for the DEIS is out of date. The review has also reinforced the need to accurately determine an acceptable growth rate. The study has confirmed that the trip generation rates used for the DEIS are reasonable when compared to trip generation data collected locally. Other issues raised in our previous letters, such u the lack of sufficient analysis of the impacts of the project on puking and use of outdated traffic engineering methodology, are not affected by data obtained from the SANDAG report. We hope that this brief review of the SANDAG report as it compares to the traffic analyses in current DEIS has proved helpful. We appreciate the opportunity to be of service to tk City of Coronado and remain available to discuss or elaborate on these comments.

Very truly yours,

PARSONS TRANSPORTATIN GROUP

Robert M. Sergeant

Robert M. Sergeant
Vice President

RMS:LMD:basc

c: Tom O'Toole

QUINTON & PETIX

Attorneys at Law
Koll Center
501 West Broadway, Suite 710
San Diego CA 92101-3544

Michael E. Quinton, Esq.
Stephen V. Petix, Esq.

619/234-1113
FAX: 619/544-9817
s.v.petix@counsel.com

October 16, 1998 • FAX & 1ST CLASS MAIL

Homer Bludau, City Manager
City of Coronado
1825 Strand Way
Coronado, CA 92119

Re: Draft EIS by U.S. Navy re: Homeporting of Three CVNs

Dear Mr. Bludau:

L.4

I have completed my review of the Navy's Draft Environmental Impact Statement (DEIS) which was prepared to comply with the requirements of the National Environmental Policy Act, 43 U.S. Code § 4331, et seq. (NEPA), in connection with the Navy's proposal to construct facilities to support the homeporting of a total of three NIMITZ-class nuclear-powered aircraft carriers at Naval Air Station North Island (NASNI), located at Coronado, California. I have also had an opportunity to review the reports of the environmental consultants retained by the City to analyze the portions of the DEIS which pertain to their particular areas of expertise, namely, traffic, air quality and noise. I am forced to conclude that the DEIS is seriously flawed in at least those areas of inquiry, and that the Navy should be urged to make substantial corrections and additions to its assumptions, methodologies and factual conclusions, in accordance with the findings of the City's three independent environmental experts. L.4.56

We start with a fundamental premise stated in the regulatory guidelines for implementation of NEPA, promulgated by the federal Council on Environmental Quality (CEQ), at 40 C.F.R. § 1500.1:

> (b) NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be

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City Manager, City of Coronado
re: Navy DEIS re: Homeporting 3 CVNs
October 16, 1998

> of *high quality. Accurate scientific analysis,* expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail. (Emphasis added.) L.4.56

These principles have recently been reiterated by the Ninth Circuit Court of Appeals, in the case of *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, at 1151 (9th Cir. 1998).

Another fundamental principle that the Navy should have followed in preparing the DEIS is set forth in 40 C.F.R. § 1502.24, entitled "Methodology and scientific accuracy":

> Agencies shall insure the professional integrity, including scientific integrity, of the discussion and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement. An agency may place discussion of methodology in an appendix.

Unfortunately, the City's consultants have identified several instances in the DEIS where the Navy has failed to comply with the above NEPA implementing regulations. It appears that the Navy has failed to provide information of "high quality" and in fact: has totally omitted any supporting data with respect to key environmental issues that most concern the City of Coronado and its residents and visitors, namely traffic, air quality and noise pollution.

Furthermore, while the Navy's DEIS appears to pay lip-service to the requirement of discussing the cumulative impact the current project will have on the environment of Coronado, ostensibly devoting an entire section of the DEIS to that topic, it arguably fails to include an adequate listing of past projects and overall traffic growth and therefore erroneously concludes that the current proposal's impact will not have a cumulative effect on the environment. L.4.57

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City Wanager , City of Coronado
re: Navy DEIS re: Homeporting 3 CVNs
Cktobrr 16, 1998

Presumably the Navy is aware of its obligation to include 8 discussion of cumulative impacts in its EIS. As the U.S. Court of Appeals for the Ninth Circuit has recently observed: L.4.57

> The duty to discuss cumulative impacts in an Environmental Impact Statement is *mandatory*. *See* 40 C.F.R. § 1501.16. The controlling regulation defines "cumulative impact" • e:
>
> > the impact on the • nvirozuwnt which results from the incremental impact *of* the action *when* to other *past*, present and reasonably foreseeable future • ct ion. *regardless* of what agency (federal of non-federal) or *person* undertakes much other • ctionm. Cumulative impacts can result from *individually minor but collectively signi ficant* • cfionr taking place over 8 period of time.
>
> 40 C.F.R. § 1S08.7.

City of *Carmel-by-the-Sea* v. U.S. *Dept.* of *Transp.*, 123 F.3d 1142, at 1160 0th Cir. 1997) (emphasis added).

Both Mr. Robert Sergeant, the City's traffic consultant, and Mr. Charles Bull, the noise consultant, have commented that the Navy's DEIS is deficient in its discussion of cumulative impacts in each of their • re8e . Mr. Sergeant observes that the traf fic analysis in the DEIS • imply "does not address cumulative impacts." [Page Two of Sergeant's report.] Mr. Dull similarly notes that: "The noise discussion [in the DEIS] does not address cumulative impacts associated with traffic on area roads." [Pago 3 of RECON revised noise study.] *no further* states that: L.4.58

> (w] hile no • pecif ic individual project is probably responsible *for* the existing condition, there is clearly an adverse noise ♍□■♎♓♦♓□■ on Third and Fourth • reetr. This adverse condition is the result of numerous individual projects, none of which may have, in and of themselves, caused a direct • *@rre impact. The projected noise exposure to residents • loag Third and Fourth Streets of 71 decibels is clearly • bree and • result of cumulative Navy and City projects. As such, the EIS should include • discussion of this ef fect and identify measures which the City and the Navy might take to minimize those • ♐✐♐♏♍♦□⌧ not just for the proposed project but for all those projects which contribute to traffic on Third and Fourth Streets. [*Id.* (Emphasis supplied.)]

L.4

City Manager, City of Coronado
re: Navy DEIS re: Homeporting 3 CVNs
October 16. 1999

Mr. David Gottfredson, the air quality consultant, 8180 implies a deficiency, in tbat he characterizes the cumulative air quality discussion in the DEIS as "somewhat misleading," since the Navy's conclusion that emissions will be reduced is bared solely on 8 present-to-future comparison of the proposed action alternatives, which fails to take into account the future-to-future comparison of proposed "preferred" Alternative #2 to the *no-action* Alternative (6. This latter type of comparison would more accurately yield the result that *increased* pollutant e missions could be expected, not an overall decrease in • ❍♓♎□■❍⌧ as the Navy • srertr. L.4.59

In view Of the foregoing, it • eemm fair to conclude that the Navy has not fulfilled it. duties under NEPA in conducting its inquiry *into* the environmental consequences of the preferred home porting alternative. Again, getting back to basic principles, it may be helpful to recall the fundamental purpose of NEPA, as stated by tho federal Council on Environmental Quality, in its regulations implement ing NEPA: L.4.60

> 40 C.F.R. Sec. 1500.1 Purpose.
>
> (a) The National Environmental Policy Act (NEPA) is our basic national charter for protection of the environment. It establishes policy, sets goals (section 101), and provides means (section 102) *for* carrying out the policy. Section 102(2) contains "action-forcing" provisions to make sure that federal agencies act • ccorrdhg to the letter end spirit of the Act. *(Quotation* marks in original.)

Preparation of accurate end informative environmental documents is an • ssential part of th8 Navy's obligations under NEPA, since this is an integral pert *of* the • *aMion-forcingw* procedure that leads decisionmakers to take 8 "hard look" et environmental consequences, and hopefully, as 8 result, make decisions that an wise for the public good. *Robertson* v. *Methow Valley Citizens Council*, 490 U.S. 332, 109 S.Ct. 1835, at 1846 (1989). To that end, the federal CEQ has further declared its policy, in *part*, as follows:

> 40 C.F.R. § 1500.2 Policy.
>
> > Fedex.1 agencies shall to the fullest extent possible:
> >
> > . . .
> >
> > (b) Implement procedures to make the NEPA process more useful to decisionmakers and the public; to reduce paperwork and the

City Manager, City of Coronado
re: Navy DEIS re : Homeporting 3 CVNs
October 16, 1998

● ccmhtion of extraneous background data; and to emphasize real ● nvimunental issues and ● ●♦❒❍♦♓❖♏♏✍ Environmental impact statements shall be concise, clear, and to the point, and shall be supported by ● vidoncm ♦♒♋♦ ● gpmcier have made the necessary ● nvironwnt81 analyses.

. . .

(e) Use the NEPA process to identify and assess the reasonable alternatives to proposed ● Ctfolru that will avoid Or minimize adverse effects of the88 actions upon the quality of the human ● wiramnmnt.

(f) Use all practicable means, consistent with the requirements of the Act and other ● rsentirl considerations of national policy, to restore and enhance the quality of the human ● nvtronmant and avoid or minimize any possible ● dvermo effects of their actions upon the quality of the human ● nviromnent.

L.4.60

It is certainly arguable that the DEIS under ● cnMay fails to measure up to the ● turdrrdr ● ♏♦ forth above in section 1500.2 (b), and would be subject to legal challenge, if the Navy were to ignore these defects when they are brought to its ● ttention.

As we have previously discussed, I concur with the proposal that the City submit timely comments to the Navy ● xpmrring its disagreement wfth the factual findings and the analyses and conclusions contained in the DEIS, bawd upon the reviews conducted by its independent e nvironmental experts, with the hope that the Navy would reconsider its position on these issues which are critical to the City, acknowledge in its Final EIS the deficiencies in its information and methodologies, and own up to the reality of theadverse ● ✧♁ronmental consequences t&t have been identif ied by the City's independent consultants, so that it can move on to a discussion of the ● pproprlnte mitigation measures necessary to ameliorate those adverse consequences. See 40 C.F.R. §§ 1502.14 (f) and 1502.16(h), along with § 1500.2(f), ● apra. If the Navy fails to correct these deficiencies in its Final EIS, the City would have appropriately exhausted its administrative remedies under NEPA and would be in 8 position to pursue judicial review Of the Navy's action in federal district court.

L.4

city Manager, City of Coronado
re: Navy DEIS re: Homeporting 3 CVNs
October 16. 1998

If you have any questions or concerns that may be raised by the foregoing discussion, please do not hesitate to C811 me. We, of course, stand tardy to ● mrirt In the preparation of any final submission to the Navy concerning the DEIS, and will continua to work with City Staff, in whatever wry that may be Ihelpful. I look forward to discussing the matter further when we wet next Tuesday.

L.4.60

Sincerely yours,

QUINTON & PETIX

STEPHEN V. PETIX

cc: R. Krauel, City Attorney (by fax only)
J. Gail Brydges, Admin. Analyst (by fax only)

RECON

FAX TRANSMITTAL

TO:	Ed Kleeman	DATE:	10/16/98
FAX NO.:	435-6009	TIME:	9:30 am

1

FROM:	Charles Bull	JOB NO.:	3022N
FAX NO.:	(619) 270-5414	PHONE NO.:	(619) 270-5066

1

L4

NUMBER OF PAGES: 2 (including transmittal page)

DESCRIPTION OF MATERIALS BEING FAXED:

Some bullets for your report.

COMMENTS:

☐ Hard copy to follow ☒ For review and comment

Noise L.4.611

The cumulative effects of the project area are not adequately addressed in the EIS. Current noise levels on Third and Fourth Streets exceed City standards. The cumulative effect of Navy related traffic on these roadways is not considered as part of the analysis.

The information presented in the report is not sufficient to allow for an assessment of the accuracy of the conclusions

The noise analysis is not based on the currently proposed project, but is adapted from the BRAC EIS for conditions which were current in 1993.

Air quality

The analysis in the EIS does not compare the proposed project in the future to future conditions without the project. The EIS concludes that air quality in the future will be better than it is today. It does not present the fact that the air impacts in the future with the project will be worse than the future without the project. L.4.62

The air quality analysis does not consider the air effects of increased demand for electrical power generated off site. The report concludes that since it is generated off site consideration is not needed. A discussion of energy generation demands is needed. This is potentially an important indirect effect. L.4.63

Emissions associated with the construction of a berth are based on the BRAC EIS. The BRAC document provides data that indicate emissions about 3 times greater than those provided in the present EIS. There is no explanation for the discrepancy. L.4.64

The traffic information presented in the report is not sufficient to allow for an assessment of the accuracy of the emissions factors. L.4.65

Note regarding the project description. L.4.66

The "project" is defined as the development of support facilities. The "project" is not the home porting of aircraft carriers. When a new facility is required to support a ship, the impacts of that facility and the impacts of the ship are considered. When a new facility is not required, the impacts of the ship are not considered.

Because of this reasoning, the no project alternative in the EIS assumes that there will be two CVN's at NASNI. The preferred project alternative considers three carriers. Additional facilities are only required if the third carrier is stationed at North Island.

L.4

PARSONS TRANSPORTATION GROUP
FAX TRANSMITTAL

DATE: October 15, 1998

TO: Ed Kleeman
COMPANY: City of Coronado
PHONE: 522-7329
FAX: 435-6009

FROM: Bob Sergeant
LOCATION: Parsons Transportation Group
San Diego, California
PHONE: (619) 453-8919
FAX: (619) 453-9652

SUBJECT: Home Port DEIS
TRANSMITTING COVER PLUS 4 PAGES
HARD COPY TO FOLLOW: NO

Following our review of the Home Port DEIS and the previous EIS for the Home Porting of the current nuclear carrier, John Stennis a number of questions remain that should be addressed to the Navy. These include: L.4.67

1. Why was the traffic data not completely updated to current (1998) data? Much of the data presented comes from the 1995 EIS which included data from 1993 and earlier.

2. Why was the proposed project compared to 1993 conditions and not the No Action (Alternative 6) condition which includes a reduction in traffic to levels that are acceptable on many street segments and intersections? L.4.68

3. Why were the parking conditions not compared to the No Action condition as opposed to the 1993 condition? L.4.69

4. Is the trip generation rate based on average conditions or on conditions when one, two or three carriers are in port? Neither the current nor 1995 analysis discusses this condition. We understand the EIS should address reasonably expected worst case conditions which probably includes at least two of the home ported carriers being in port along with a transient carrier. L.4.70

5. The DEIS makes statements that additional parking will be provided to accommodate maintenance workers and that other staff downsizing will occur to offset the increase in maintenance staff. Could the navy provide some documentation for this including areas where parking is to be provided along with the timing and similar discussions about staffing? L.4.71

6. The Caltrans traffic counts on 3rd and 4th Streets just outside of NASNI show a continual increase in traffic. Since there has been no substantial change in land use outside of the base can the Navy explain how this long term commutative increase occurred and what they have they done to mitigate the impacts? L.4.72

7. Why did the analysis utilize the "1985 Highway Capacity Manual" methodology instead of the more current "1994 Highway Capacity Manual", which better addresses the analysis of unsignalized intersections? L.4.73

I trust these questions will assist you in working with the Navy to obtain a complete and current analysis of the potential traffic impacts resulting from their current homeporting plan.

WARNING: This fax communication may contain information that is privileged or confidential. It is intended for the sole use of the individual or entity to whom it is addressed. If you have received this communication in error, please notify us immediately by telephone and return the original message to us at the above address via U.S. Mail. If you are not the intended recipient of this message, or the employee or agent responsible for delivering the message to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited.

PARSONS

De Leuw, Cather & Company • A Unit of Parsons Transportation Group Inc.
8404 Genesee Avenue Suite 140 • La Jolla, California 92037 • (619) 453 8011 • Fax (619) 453-9052

October 15, 1998

Mr. Edward Kleeman, A.I.C.P.
City of Coronado
1825 Strand Way
Coronado, California 92118

Subject: ***Comparison Between Home Port Facilities Draft EIS and the 1995 FEIS***

Dear Mr. Kleeman:

L.4

At the request of the City of Coronado, Parsons Transportation Group has reviewed the traffic and circulation section of the Draft Environmental Impact Statement (DEIS) prepared by the Navy for the Development of Home Port Facilities and compared it to the Final Environmental Impact Statement (FEIS) prepared by the Navy for the Development of Facilities to Support a Nimitz Class Aircraft Carrier, 1995. Our letter of October 9 to Mr. Thomas O'Toole, City of Coronado outlined several areas in which the DEIS is lacking sufficient detail and substantiating data and analysis to support it's conclusion of no significant traffic impacts in the vicinity of Naval Air Station North Island (NASNI). We recommend the City of Coronado request the Navy provide a complete, current and comprehensive analysis of potential traffic impacts at NASNI at least to the level of detail provided for the Pearl Harbor installation. This new analysis should address the issues outlined in our previous letter. L.4.74

The current transportation analysis (Section 3.9) is not based on new and current information. Rather, it seems to rely on information developed for the 1995 EIS to support Homeporting of one CVN. A few volumes included in the DEIS appear to have been updated between the 1995 report and the current draft report. However, the majority of the traffic information was carried over from the 1995 report. Neither Table 3.9-1 nor Table 3.9-2 show the count dates for Average Daily Traffic (ADT) volumes or for intersection turning movements.

The majority of the traffic analysis has been based on older data (1993 or older) and older analytical tools (1985 Highway Capacity Manual as opposed to the 1994 manual). By using current information and analytical processes a more comprehensive evaluation of potential traffic impacts on the surrounding community will be developed and provided to the public and decision makers.

At the time of the FEIS, the existing levels of service at some roadway segments and intersections were operating below acceptable standards. The FEIS indicated that the proposed project did not cause significant impacts because the total number of base personnel, and therefore the total traffic generated by the base would decrease. A similar argument is being raised now by the DEIS. According to traffic volumes collected by SANDAG and Caltrans, 1998 ADTs on 3rd and 4th Streets (SR282) are greater than those reported in the DEIS. The majority of traffic using this facility goes to and from the base, if there has been a decrease in personnel, the traffic using these facilities should be lower. Additional investigation into the cause of this

discrepancy needs to be completed. Also the DEIS No Action Alternative would improve traffic to acceptable levels on many street segments. This should be the basis of comparison for the preferred project alternative. L.4.74

We hope that this brief comparison between the traffic analyses in the 1995 FEIS and the current DEIS has proved helpful. We appreciate the opportunity to be of service to the City of Coronado and remain available to discuss or elaborate on these comments.

Very truly yours,

PARSONS TRANSPORTATION GROUP

Robert M. Sergeant
Vice President

Memorandum

OCT 15 1998

DATE: October 14, 1998

TO: HOMER BLUDAU, CITY OF CORONADO

FROM: Joel I. Cehn, CHP, Radiation Safety Consultant

RE: Interim Report on Radiation Monitoring Study

Background

A.75

This study of radiation monitoring options for the City of Coronado was initiated on September 16, 1998. As welt as a mvbw of options, it also includes a look at the benefits from Independent monitoring of radiation levels by the City, and a review of experiences by other jurisdictions. Although work is still in progress, this interim report is submitted to encourage early feedback, from the City to the Consultant.

L.4

Experiences of Others

A survey has turned up numerous independent monitoring stations operated by city, state and Federal agencies. For example, a network of 44 stations is funded by the U.S. Department of Energy, to monitor nuclear research and weapons facilities. Individual cities and schools operate these stations. They rely on either the Los Alamos Laboratory (in New Mexico) or the U.S. EPA (in Las Vegas) for support. In response to my inquiry, I was told that a station in Coronado could be added to this network, but funding would have to be found.

Five states operate monitoring stations (see Table 1.) These are mostly around nuclear power stations. Georgia has a network of stations, and is planning on adding a station, next to the Navy's Kings Bay Submarine Base. California performs limited monitoring around the state (including in Coronado,) but the instruments used do not give real-time (immediate) information. Results are only available months after the monitoring period.

In summary, there is precedent for independent monitoring and the instrumentation is readily available. Reports from operating stations have been positive. Information on station costs—both capital and operating costs—is still being collected. This will be presented with specific options available to the City, in the final report.

Benefits

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In discussions with other jurisdictions, two reasons were given for their independent monitoring: community outreach and emergency response. People were reassured, knowing that "somebody is monitoring." Also, the monitoring date are occasionally accessed directly by Interested individuals and students. Access is either by visiting the station or via the Internet. In case of radiation accidents, govemment agencies would rely heavily on the monitoring data, which is stored on a computer. With this in mind, many stations also collect data on wind speed and direction.

EIS Review & Comments

A task was added to this study, for review of a portion of the Navy's *CVN Homeporting EIS*. The Navy's comment period on the EIS has been extended to November 12th. This task has been started and preliminary comments on the two Appendices (E and F) have been developed. These are included In this Interim Report, following Table 1.

L.4

Table 1. Independent Monitoring of Nuclear Facilities

Jurisdiction	Facilities Monitored	Monitoring Instruments	Comments
State of Illinois	nuclear power plants (8)	PIC [1]	Also monitor stack emissions
State of New Jersey	nuclear power plants (2)	PIC	Total of 19 monitoring stations
State of Alabama	nuclear power plants (2)	PIC	
State of Idaho	large nuclear research site	PIC and wind data	Readings are on a Web site [2]
State of Georgia	nuclear power plants (3) nuclear weapons site planning for Navy sub base	GM [3]	Readings are on a Web site [2]
State of California	various	TLD [4]	Five TLDs currently around NAS-NI
Dept. of Energy [5]	nuclear weapons complex - various U.S. locations	PIC and wind data	Large Federal network of stations Readings are on a Web site [2]
U.S. EPA	nuclear weapons test site (Nevada)	PIC and other data	Part of Federal network

Notes: (see next page)

L.4.75

Notes to Table 1.

1. PIC = pressurized ion chamber, detects low-level radiation.
2. Web sites addresses: Idaho - http://www.noaa.inel.gov/
   Georgia - http://www.ganet.org/
   Federal - http://newnet.jdola.lanl.gov/
3. GM = geiger counter
4. TLD = dosimeter; accumulates mdiation levels; provides monthly total only.
5. Dept. cd Energy assisted by U.S. EPA, local agencies and schools; 44 monitoring stations; more information at Web site.

L.4.75

COMMENTS ON
APPENDIX E
INFORMATION ON RADIATION EXPOSURE AND RISK
CVN HOMEPORTING EIS

L.4

4.75

Summary

This Appendix presents an overview of what is known about the hazards of exposure to radiation. The stated purpose is to "give the reader a basic understanding of the . . . extremely small risks associated with exposure to low levels of ionizing radiation." Nevertheless, the facts presented are accurate and represent, pretty well, where the radiation safety community stands on the risks of radiation exposure.

These risks can be summarized as follows: High levels of radiation can be lethal, moderate levels can result in illness and injury (such as cancer), and low-levels may carry a small risk of cancer. As with anything, the dose makes the poison. Some controversy surrounds the risks, if any, of low-level exposures. Studies of groups receiving low-level exposures (such as radiation workers) have been inconclusive—meaning the risk is too small or too difficult to measure. Most scientists assume a small dose results in a small risk, scaled down from known risks from high and moderate exposures.

Data are presented on average radiation exposures to the Navy's nuclear fleet personnel and radiation workers. The data are interesting but don't have much meaning for Coronado residents (unless they happen to work at NAS-NI.) These exposures are comparable to those received by other radiation workers (such as nuclear power plant workers.) However, averages don't tell the whole story—it is important to look at maximum doses and dose distributions.

Comment for Navy

The City should request that references be provided for the studies cited in this section. For example, a study of nuclear shipyard workers by Genevieve Matanoski was cited, but no reference was given to the publication or journal article that was published on the study results.

COMMENTS ON
APPENDIX F
DETAILED ANALYSES OF NORMAL OPERATIONS AND ACCIDENT CONDITIONS FOR RADIOLOGICAL SUPPORT FACILITIES,
CVN HOMEPORTING EIS

4.75

Summary

The Navy, in this Appendix, estimates potential radiation doses to Coronado residents, in several different ways. First, they estimate airborne effluents from normal operations and calculate the resulting radiation dose to selected on-base and off-base individuals. Second, they estimate airborne effluents from a hypothetical fire at a radiological support facility, and the resulting radiation dose. Finally, they estimate the dose from a hypothetical spill of radioactive liquid into the Bay.

The Appendix does not describe the "normal operations" that cause airborne radioactivity to be released. It is known that radioactive waste can contain gases, such as evaporated liquids. These gases can be released to the air during movement off of ships or during maintenance activities on ships. The Navy appears to have estimated these releases as some fraction of the total radioactive inventory, although this is not clear.

Calculations are nude to estimate dispersion of these releases downwind, and estimate the radiation dose due to inhalation and ingestion of tbe released radioactivity. The dose to the off-base individual, assumed to reside at the base boundary, is calculated ● [illegible] This consultant performed an independent calculation and obtained 0.6 millirem. Both doses are vay small, but the Navy calculations could not be replicated.

The dose to a Coronado resident at the base boundary is calculated for the fire scenario. In this case, the release of radioactivity is much higher than for the normal operations case. The release size used is arbitrary—its derivation is not given. The off-base dose is correspondingly higher: 200 millirem. This dose can be compared to the California dose limit for a facility boundary: 100 millirem. Although he Navy's calculated dose is twice this limit, the limit applies to normal operations, not accidents.

Finally, the radioactive spill into the Bay scenario produced a calculated dose to a base-boundary resident of 56 millirem. Again, the release quantity used is arbitrary and many assumptions go into the calculation (e.g., the amount of seafood collected from the Bay and consumed.) These assumptions were not discussed in the Appendix, so the calculated dose could not be verified.

Comments for Navy

The City should request answers to the following questions:

L.4.75

II) What EPA method is used to estimate airborne releases from normal operations? Please provide the calculations to support the method. Since radiation monitoring of work-sites & buildings is performed by the Navy, these data-not theoretical estimates-should be used to evaluate the impacts of routine and other emissions.

2) What is the distance assumed between the base-boundary resident (MOI) and all release points? What are the assumed distances to farms providing food to the residents?

3) For the fire scenario. what fraction of the facility's radioactive inventory is released in the fire? What exposure pathway (causes the largest portion of the dose?

4) For the spill scenario, what assumptions are made about residents' consumption of seafood taken from the Bay? What is the assumed distance from the release point(s) to the nearest resident (MOI)? What exposure pathway causes the largest portion of the dose?

L.4

5) For the fire and spill scenarios, what would be the economic impacts off these events?

6) What monitoring is performed to detect an abnormal release of radioactivity? These data, when used in Appendix F, would improve the quality of the radiological impact analyses.

This page updated on November 5

MEMORANDUM

L.4.76

DATE: November 9, 1998

TO: Homer Bludau, City of Coronado

FROM: Joel I. Cehn (510-268-1571)

RE: RADIATION MONITORING STATION

CC:

Per your request I am faxing some preliminary information about a possible radiation monitoring station for the City. What follows are criteria for such a station. These criteria represent what is achievable with today's technology, at reasonable cost Specific vendor names and details will be in my final report.

- Off-the-shelf hardware. We don't what a custom system that will require time and effort to set up and trouble-shoot.
- Easily expandable. We want a main monitoring station that can receive and process readings from additional stations. The additional stations may eimply be radiation sensors on top of utility pobe. We want the option of easily adding more sensors in the future. (I'm planning for initial monitoring of 3 or 4 locations abng the fence-line.)
- Easy access to data. I want to put the monitoring readings on a World Wide Web eite, for anyone to access (even the Navy.) The Web site would automatically update the readings every few minutes.
- Wind and weather data included. If high radiation readings are detected, the first thing to cb is look at wind direction. Ie the carrier up-wind? Measuring wind speed and direction at the station would be useful.
- Cost-effective. A main monitoring station and 3 satellite stations, with all of the above features, can be had for under $100,000, and poeeibly cloecr to $50,000. Upkeep and maintenance would be on the order of $10,000 per year.

I would guess that the Navy's negative feelings about Cii monitoring have to do with false alarms. While these are possible, the station will not be wired to set off sirens end klaxons. In the worst case, the Navy will receive a few extra phone calls requesting help in ● xpkeining higher than average readings. If they really are good neighbors, they should be willing to cooperate with us. Also, the ♑□□⬧♓■♑ experience ⬧♓⧫♒ these ● yetems, from oth communities does not give any baeie for their fear.

Please al me at any time, if you would like lo discuss this further

RECON

RECEIVED OCT 1 5 1998

October 14, 1998

Mr. Ed Kleeman
City of Coronado
1825 Strand Way
. Coronado, CA 92118

Reference: Naval Air Station North Island (NASNI) CVN Noise Review (RECON Number 3022N)

Dear Mr. Kleeman:

Based on our conversations, I have revised my noise letter of September 15, 1998. The following discussion presents the September 15 information with a more detailed discussion of the nature of the significance of noise impacts. ..4.77

The noise Information presented in the environmental impact statement (EIS) for the homeporting of the NIMITZ-class aircraft carriers (CVN) at NASNL The data provided in that report is for several locations that we recently evaluated as part of our 1998 noise study for the City of Coronado. The following discussion compares the results of the Navy's consideration of area sound levels and those that resulted from our analysis.

Noise is considered in three areas in the EIS. Section 3.11 of the main report, Appendix C ad the EIS, and Section 3.11 of the supplemental information for NASNI all present data regarding area noise. Community Noise Equivalent Levels (CNELs) are presented in Table 3.11-1 (page 3.1 l-2) of the EIS. Measured hourly equivalent noise levels (L_{eq}) are provided in Table 3.11-l of the supplemental information. CNEL is a 24-hour average with weightings applied to evening and nighttime hours. L_{eq} is an hourly average noise level, which in this case was measured. There is a discussion of the relationship between our recent evaluation of CNEL and our measured hourly L_{eq}s below.

I should point out that this discussion appears to be the same discussion that was presented for the 1995 report on the development of facilities in support of one NIMITZ-class aircraft carrier. Not just the same assumptions, but the same discussion.

I have included a table for each of these sets of data which compares our recent results to those presented by the Navy. While the locations considered by each study may differ slightly, they are close enough for reasonable comparisons.

I have addressed two types of noise impacts: (1) direct effects and (2) cumulative effects. "Direct effects" are those resulting from traffic specifically caused by the proposed action. "Cumulative impacts" result from incremental increases in traffic when considered with other traffic-producing projects and aggravating preexisting conditions.

L.4

4241 Jutland Drive, Suite 201
San Diego, CA 92117-3653
619/270-5066
fax 270-5414

For direct impacts, I considered the extent to which the proposed increase in traffic as a result of the project will increase noise levels on area roads. For cumulative impacts, I considered whether the noise conditions near area roads were unacceptable and whether the incremental change, resulting from the project, would contribute to that condition,, L.4.77

Based on my review of the Navy's report and consideration of the recent noise study I completed for the City, I believe that the Navy's conclusion that there will not be a direct adverse noise impact as a result of the proposed project is correct. I do, however, believe that there is the potential for an adverse cumulative impact as a result of project.

This potential is further supported by the discussion of cumulative effects in the 1995 report entitled Draft Environmental Impact Statement for the Development of Facilities in San Diego to Support the Homeporting of One NIMITZ Class Aircraft Carrier Volume 1. In that report, the current project is considered as a contributor to cumulative impacts. Page 6-17 of that document indicates that:

> The ambient noise levels would incrementally increase with the additional traffic associated with potential homeporting of two additional CVNs and any associated traffic increase related to future potential base realignment actions at NASNI.

CNEL

RECON's predicted CNELs are similar to the Navy's in all cases except for receivers along Third and Fourth Streets, and a limited area along First Street. The predicted CNELs were four decibels different cm First and Third Struts and three decibels different on Fourth Street. Our predicted CNEL levels were based on traffic volumes published by SANDAG for the year 2015, using speeds and traffic mixes established during hourly measurements and corresponding traffic counts.

The basis for the CNEL levels in the Navy's study are hourly L_{eq}s calculated using the Federal Highways Noise Prediction Model. The supplement information section states that many agencies consider the peak hour sound level to be consistent with the CNEL. I assume that the Navy used the peak hour noise level as the CNEL.

To the extent that the traffic distribution over a 24-hour period meets certain assumptions, the peak hour L_{eq} and the CNEL could be equivalent. An unusual distribution of traffic over the day could, however, make this assumption invalid. Differences could be based on differences in modeled speeds or traffic mixes or percentages of heavy trucks, medium trucks, and automobiles. I could not find the traffic mix or speed assumptions used in the modeling process in the materials I had from the Navy documents, so I could not assess these assumptions.

Mr. Ed Kleeman
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The Navy's CNEL figures are based on existing traffic, while ours our based on future traffic volumes. This is not a significant difference because future traffic volumes are not predicted to substantially exceed current volumes. In each case, this difference in average daily traffic would account for less than one decibel. L.4.77

While the assumptions employed by the Navy are not in the EIS, the conclusion that there is not a direct effect as a result of the project is reasonable. The basis for my concurrence is that the projected increase in traffic is not sufficient to result in a noticeable increase in noise.

The assumptions employed by the Navy are important for consideration of cumulative impacts, however. The Navy presents noise levels baaed on existing traffic volumes. The Navy predicted a CMEL of 67 and 68 A-weighted decibels [dB(A)] on Third and Fourth Streets, respectively. With these noise levels, the incremental increase resulting from the proposed project would probably not represent a significant impact. RECON's noise prediction based on future traffic conditions was 71 decibels for each of these roadways. The difference between the existing traffic used by the Navy and the future traffic volumes we used is not enough to account for the differences in the two CNELs.

L.4

There is no definitive standard for assessing cumulative impacts. The cumulative discussion for noise combines the Base Realignment and Closure (BRAC) CVN and the current project and concludes that there would be no significant cumulative effect. The noise discussion does not address cumulative impacts associated with traffic on area roads. The cumulative discussion for transportation, on the other hand, considers a "future baseline scenario** which includes a five percent growth factor over existing traffic.

The dilemma presented by the existing proposal is that while no specific individual project is probably responsible for the existing condition, there is clearly an adverse noise condition on Third and Fourth Streets. This adverse condition is the result of numerous individual projects, none of which may have, in and of themselves, caused a direct adverse impact. The projected noise exposure to residents along Third and Fourth Streets of 71 decibels is clearly adverse and a result of cumulative Navy and City projects. As such, the EIS should include a discussion of this effect and identify measures which the City and the Navy might take to minimize those effects, not just for the proposed project but for all projects which contribute to traffic on Third and Fourth Streets.

Hourly L_{eq}

Our measured L_{eq}s were equivalent on Third Street and on Alameda between Third and Second Streets and higher on First Street and on Alameda between Third and Fourth Streets.

The differences in the measured levels must be based on traffic conditions during the relative measurement periods. Both sets of measurements were made with

Mr. Ed Kleeman
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calibrated Larson Davis series 700 integrating sound level meters and each were configured similarly. There was some difference in the precise location of the meters, but it is most likely that traffic speeds, volumes, and mix were different during the measurement period. The Navy report did not present the traffic data associated with the hourly measurements. L.4.77

In conclusion, it would appear that the Navy has underestimated the CNELs on First, Third, and Fourth Streets. For Third and Fourth Streets, both the Navy's and our prediction of future conditiona exceed the City's general plan standard. On First Street, our predicted CNEL would exceed the {standard by one decibel while the Navy's estimate would be under the City's 65 dB(A) CNEL standard. In either case, the Navy's report concludes that the noise on City streets is not an effect of the proposed homeporting because there is not a significant change in traffic on area streets. To the extent that the traffic assumptions are correct, there would not be a significant change in noise as a result of the homeporting. Since predicted CNELs exceed the general plan standard, there clearly is a cumulative noise impact from traffic to residences on Third and Fourth Streets resulting from all contributing sources.

I hope this comparison is useful. If I can answer any questions, please call.

Sincerely,

Charles Bull
President

CSB:sh

RECON

October 14, 1998

RECEIVED OCT 1 5 ...

Kleeman
city of Coronado
1825 Strand Way
Coronado, CA 92 118

Reference: Naval Air Station North Island CVN EIS Air Review (RECON Number 3022N)

Dear Mr. Kleeman:

We have reviewed the air quality information presented in the environmental impact statement (EIS) for developing home port facilities for three NIMITZ-class aircraft carriers (CVNs) at Naval Air Station North Island (NASNI). This EIS will herein be referred to as the CVN Homeporting EIS (U.S. Department of the Navy [DON] 1998a). Air quality is considered in three areas in the EIS. Section 3.10 of the main report, Appendix K of Volume 2, and Section 3.10 of Volume 3. L.4.78

The air quality discussion is broken into two broad areas: construction-related emissions and operation-related emissions. Construction emissions include dredging and other offshore activities and construction of onshore support facilities. Operation emissions include vessel emissions, emissions associated with maintenance activities, onshore emissions associated with support facilities and activities, and commuter vehicle trips.

It is noted that the proposed action is for the construction of support facilities for the homeporting of three CVNs at NASNI, nor for the homeporting of the CVNs themselves. Therefore, the no action alternative (Alternative 6) would still result in a second CVN being homeported at NASNI. No new dredging would occur nor would any new facilities be constructed under this alternative.

The following discussion focuses on those areas where the accuracy or the adequacy of the provided air quality information is uncertain.

Construction

Dredging

Emissions associated with the dredging activities were based on the emissions determined for the Base Realignment and Closure (BRAC) CVN EIS (DON 1995) and ratioed by the projected dredging volume for the proposed action (CVN Homeporting EIS, page 3.10-6). The emissions projected in the BRAC EIS (DON 1995) were later found to be underestimated after the required addition of screens to the dredging equipment to prevent the intake of munitions from the bay floor resulted in increased dredging inefficiencies. The BRAC dredging emissions were subsequently reevaluated by the Navy (DON 1998b) and found to be under-estimated by a factor of 2.5 as stated in the CVN Homeporting EIS. Therefore, for

4241 Jutland Drive, Suite 201
San Diego, CA 92117-3653
619/270-5066
fax 270-5414

L.4

the current proposed action, the emissions determined from the BRAC EIS were increased by a factor of 2.5 to reflect the revised estimates. A.78

The EIS concludes that the annual emissions resulting from dredging and disposal activities would be 0.6 ton of volatile organic compounds (VOC), 4.5 tons of carbon monoxide (CO), and 13.8 tons of oxides of nitrogen (NOx).

Based on the discussion in the CVN Homeporting EIS, it appears that the dredging emissions have been adequately addressed.

Facility Improvements

It is stared in the EIS that air quality impacts from construction of a new berth and structures for one additional CVN "were based on similar activities associated with homeporting a CVN at NASNI" (CVN Homeporting EIS, page 3.10-6). In the BRAC EIS (DON 1995), the construction, of the new CVN berth is identified as activity P-700. The peak annual emissions associated with activity P-700 are 15.46 tons of CO, 2.28 tons of VOC, 22.1 tons of NOx, 2.01 tons of oxides of sulfur (SOx), and 1.35 tons of IO-micron particulates (PM10) (DON 1995).

In the CVN Homeporting EIS (page 3.10-7) it is stated that "the peak annual emissions associated with facility improvements would be 0.9 tons of VOC, 5.1 tons of CO, and 7.1 tons of NOx." Table 3.10-3 of Volume 3 of the CVN Homeporting EIS also indicates peak annual emissions of 0.7 ton of SOx and 0.4 ton of PM10 for these activities.

Therefore, the BRAC EIS activity P-700 emissions are approximately three times those provided in the current EIS. Then is no explanation given as to why the emissions stated in the CVN Homeporting EIS are approximately one-third those presented in the BRAC EIS.

Operations

L.4.79

Infrastructure Sources

Page 3.10-S of the EIS states: "Since off-site utility plants would provide the electrical power to generate the steam demand for each vessel, emissions from this activity are not presented in this analysis."

There is insufficient information provided in the Homeporting EIS to determine if the proposed action would result in an increased electrical demand. If the proposed action would result in an increased demand on the electrical supply grid within the San Diego region, this additional demand could be supplied by existing power plants within the San Diego Air Basin. The incremental increase in electricity production would result in a proportional increase in air emissions to the air basin. Therefore, although these emissions would occur off-site. they would contribute to regional air quality emissions and should, therefore, be addressed

L.4

Vehicular Sources and Total Emissions Resulting from the Proposed Action L.4.80

The discussion of vehicular emissions focuses on the supposition that vehicle emissions will decrease over time **and compares future emissions** to current conditions (present-to-future **comparison).** Although it is **acknowledged** in the **EIS** that the proposed **action** would increase **the** number of average daily **trips** in **the** project **area,** the **following** statements **are made:**

"Due to the implementation of state and federal vehicle emission standards, the average emissions per vehicle mile: traveled (VMT) for the California vehicle fleet will decrease by approximately 44 percent from **1998, when one CV** [conventional carrier] **would depart NASNI, to 2005, when the second CVN would arrive."** (**NOTE: The arrival of a second CVN would** result in a total of three **CVNs** stationed at **NASNI.)** "Consequently, emissions associated with the **increase** in project traffic at **NASNI from baseline conditions will be more than offset by the lower** average emissions Per **VMT associated with future vehicle fleets."**

While this is presumed to be true, the reduction in vehicle fleet emissions is not a result of the proposed action and benefits all projects and actions in the dr basin equally. Furthermore, this approach does **not** consider the fact that **the preferred alternative** (Alternative 2) would **result** in air **emissions to the air basin that would not occur if the no action alternative (Alternative 6) were adopted**

Using Table 3.10-1 of the **EIS,** it **is** indicated that implementation of **the** preferred **alternative** (Alternative 2) would result in an increase in VOC **emissions** of 9.2 tons/year and **decreases** in CO. **NOx, SOx,** and PM1 0 emissions of **40.8, 1** 16.9, 1133.4, **and** 29.9 **tons/year,** respectively, **relative** to baseline (existing) **conditions. However,** there is no **analysis** of future **conditions without** the project **compared** with future conditions with **the** project **(future-to-future)** included in the **EIS.**

We performed an assessment of the emissions resulting from the project alternatives in the year 2005 to provide this comparison. Insufficient information was presented in the EIS to verify the emission factors provided in Section 3.10 of Volume 3 or Appendix K of Volume 2. It is stated that the composite emission factors presented are based on the following speed distribution: 5 percent of the vehicles traveling at 5 miles per hour (mph), 40 percent at 25 mph, and 55 percent at 55 mph. This would be the speed distribution over the length of one commuter trip. However, no vehicle mix data are provided for the commuter vehicles at NASNI (commuter vehicle mix data are provided for the Everett calculations).

Therefore, the emissions **factors** provided **were assumed** to be **correct. Data provided** in **Volume** 3 indicate that **removal** of **a** conventional **carrier would result in a decrease of 15,329,542 VMT per year while addition of •** CVN **would result in** ID **increase of 15, 830,997 VMT per year. This is based on an assumed average commuter trip length** of 13 **miles** (one wry). All **other emission source** data **(vessels and auxiliary equipment, onshore** i t - **etc.) were used unchanged.**

The **results** of this **comparison** indicate that by completion of **the** proposed action **(year 2005), the preferred action** (Alternative 2) would result **in** an increase in **emissions of all criteria air pollutants** that would not occur if the no action **alternative (Ahemative 6) were implemented.** Specifically, Alternative 2 **would** result in emission increases **of 12.1** tons per year of **VOC, 66.9** tons per year of CO. **18.4 tons Per year of NOx, 0.6 ton Per year of SOx, and 1 .O ton per year of PM10 to** the air basin that **would not** occur with the no action alternative (Alternative 6). L.4.80

These are **the maximum air emissions that would occur as a result of the proposed** action. Consequently, the conclusion of the **EIS** that the preferred action would result in **a** reduction in air quality emissions does not seem **justified.** For this reason, these increases **should** be discussed **in** the air quality conformity **analysis** presented **in** Appendix K.

A conformity determination for federal actions is required for each pollutant when the total of direct and indirect emissions in a nonattainment **area** caused by a federal action would **equal** or exceed the following rates:

VOC or **NOx**	**50** tons/year
c o	100 tons/year
SO, or NO,	**100 tons/year**
PM	loo **tons/year**

The increases **discussed above** remain below the specified thresholds. Therefore, the proposed action would still **be** determined to conform to the State Implementation Plan **as concluded** in the **EIS.**

It is important to note that the thresholds for requiring **a** conformity determination are **compared** to the sum of **all** direct **and** indirect emissions **resulting from the proposed federal** action. **If the proposed** action would result **in** an **increased** electricity demand **(as discussed** above), the **resulting incremental increase** in emissions due to the **electricity generation** would add to the operational emissions discussed above. Additionally, changes to the traffic **generation rates** or total vehicle **miles traveled** would change the **vehicle** emissions discussed **above** (for example, the EIS **assumes an average commuter** trip **length** of 13 **miles).** If change8 to these **emissions** were found to be **substantial,** it **is** possible **that** the total **operational emissions could exceed the conformity determination threshold.**

Nevertheless, given the **information provided,** the **operational** emission8 **resulting** from the **proposed action are** not **anticipated** to exceed the **thresholds. Therefore,** the conclusion in the **EIS that air** quality **impacts are less** than **significant** would **remain unchanged.**

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Cumulative

The cumulative air quality discussion in the EIS (page X18-12) states, "Implementation of the proposed action would produce insignificant air quality impacts in the region, as the increase in most pollutant emissions (except VOC) from addition of one or two CVNs (Alternative One through Four, and Six) would be reduced by a greater amount from the removal of two CVs." L.4.81

As indicated above, this is somewhat misleading since this conclusion Jr based solely an a present-to-future comparison. A future-to-future comparison of the proposed action alternatives, as discussed above, reveals that the preferred alternative (Alternative 2) would result in increased emissions when compared to the no action alternative (Alternative 6). Nevertheless, the resulting Increases in emissions calculated from the available information would not exceed significance thresholds or trigger a conformity determination under the 1990 Clean Air Act. Therefore, the conclusion of no significant cumulative air quality impacts appears to be correct.

L.4

Sincerely,

David Gottfredson
Environmental Analyst

DMG:llg

References Cited

U.S. Department of the Navy (DON)

1995 Final Environmental Impact Statement for the Development of Facilities in San Diego/Coronado to Support the Homeporting of One NIMITZ Class Aircraft Carrier. Southwest Division, Naval Facilities Engineering Command.

1998a Draft Environmental Impact Statement for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet. Southwest Division, Naval Facilities Engineering Command, San Diego. August.

1998b Addendum to the Previously Certified Environmental Impact Report for Navy Homeporting Project for Issuance of Required Air Pollution Control District Permits. Prepared by Office of Counsel, Southwest Division, Naval Facilities Engineering Command, San Diego. March 4.

PARSONS

De Leuw, Cather & Company • A Unit of Parsons Transportation Group Inc.
9404 Genesee Avenue, Suite 140 • La Jolla, California 92037 • (619) 453-9910 • Fax (619) 453-9652

October 9, 1998

PARSONS ENGINEERING-SCIENCE, INC.
9404 Genesee Avenue, Suite 140
La Jolla, CA 92037
Date:
Job No:
# of Pages:
Phone: (619) 453-[illegible]
Fax: (619) 453-[illegible]
To: Tom O'Toole
Co: City of Coronado
Location:
Fax: 522-7846
From: Bob Sergeant
Message:

Mr. Thomas R. O'Toole
Director Engineering and Development
City of Coronado
1395 First Street
Coronado, California 92118

Subject: Home Port Facilities Draft EIS

Dear Mr. O'Toole:

At the request of the City of Coronado, Parsons Transportation Group has reviewed the traffic and circulation section of the Draft Environmental Impact Statement (DEIS) prepared by the Navy fix the Development of Home Port Facilities. In general we found the document Jacked sufficient detail and substantiating data and analysis to substantiate it's conclusion of no significant traffic impacts in the vicinity of Naval Air Station North bland (NASNI). We recommend the City of Coronado request the Navy provide a complete and comprehensive analysis of potential traffic impacts at NASNI at least to the level off detail provided for the Pearl Harbor installation. L.4.82

The transportation analysis (Section 3.9) does not appear to be based on new and current information. Rather, it seems to rely on information developed for the 1995 EIS to support Homeporting of one CVN. This leads to the use of older data (1993) and older analytical tools (1985 Highway Capacity Manual as opposed to the 1994 manual). By using current information and analytical processes • more comprehensive evaluation of potential traffic impacts on the surrounding community will be developed and provided to the public and decision makers. L.4.83

A significant deviation from normal environmental practice is the lack of a "plan to plan" comparison. Specifically the discussion does not compare the preferred and other alternatives to the No Action alternative. This is particularly important because with no further actions (this assumes the addition of one CVN and removal of two CV's for a total of two CVN's) traffic conditions along Third and Fourth Streets will improve to the point that some street segments will return to operating within capacity. The addition of a third CVN would then take these street segments over capacity again resulting in a significant impact. L.4.84

A similar situation also occurs in the area of parking which is another significance criteria. There is currently an intrusion of parking from NASNI into the surrounding neighborhoods as demonstrated by the need for permit parking. This has likely resulted from steady growth in operations at NASNI but has not been addressed by the DEIS. As with the traffic discussion, the parking situation will probably improve with the removal of the two CV's that will occur under the No Action alternative. The preferred alternative would then return the parking problem resulting in a significant impact which is not identified in the traffic section. L.4.85

Mr. Thomas R. O'Toole
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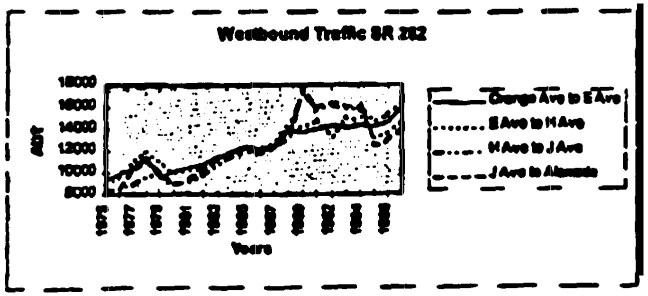
L.4

The analysis appears to be based on average conditions and does not specifically look at how traffic volumes will vary over time, particularly as ships arrive and depart. A trip generation rate based on average base population has been used. There, however, is no discussion about what went into the development of this rate, particularly, does it average a rate when carriers are in port and at sea. A common technique for evaluating uses with seasonal variations is to evaluate conditions under two scenarios. In this case it would be more common to evaluate traffic conditions with one carrier in port and with three carriers in port and then make some judgement about the likelihood of each scenario occurring. L.4.86

The trip generation rate also does not address the issue of transient carriers which will be at NASNI on a "routine" basis. Due to this planned activity, the amount of time carriers are in pat may be higher than current practices thus causing the assumed trip generation rate to be too low. L.4.87

A number of statements are made throughout the section without any substantiation. Specifically the DEIS states that the 450 workers associated with the planned maintenance activities "would be offset by the planned decrease in personnel at other NASNI operations and there would be no increase in commuter traffic volumes." Similarly it states "The Navy plans to construct additional parking lots on base to accommodate the increased parking demands generated by the CVN homeporting project as well as other activities at the base." Again this may be the case but the DEIS does not elaborate on when or where the action will occur. If it is assumed to offset project impacts then it should be included in the project description. L.4.88

The above statement also alludes to "other activities at the base" which brings up the issue of cumulative impacts. The analysis does not address cumulative impacts. The following graph shows the growth in traffic on Third and Fourth Streets east of NASNI over the past 20 years. It clearly shows a growth in traffic that can only be associated with NASNI operations since the surrounding area in Coronado has been fully developed for a number of years. L.4.89



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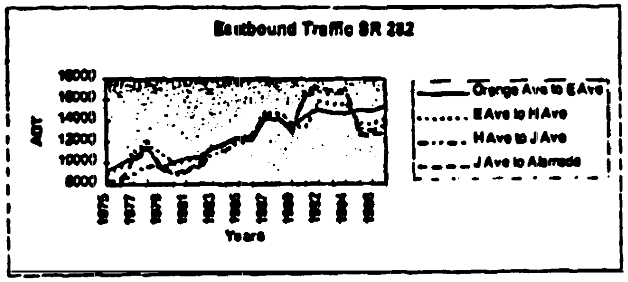
Page Three

L.4.89



We appreciate the opportunity to be of service to the City of Coronado and remain available to discuss or elaborate on these comments.

Very truly yours,

PARSONS TRANSPORTATION GROUP

Robert M. Sergeant
Vice President

ENGINEERING & **PROJECT DEVELOPMENT**
INTEROFFICE MEMORANDUM

DATE: September 28.1998

TO: Tom **O'Toole,** Director

FROM: Ed **Walton, Associate** Engineer

SUBJECT: E.I.S. Homeporting Facilities

Tom, I **glanced through** Volume **I of the E.I.S. and** have **the** following comments: L.4.90

ES-8 Line 23 - The baseline for NASNI is stated as two CVs; this is confusing when compared to the alternatives which discuss the removal of the existing two CVs and the addition of new CVNs. In the alternatives the total minus the removal is one greater than the baseline. I believe the baseline number should be two CVs and one CVN.

2-25 Line 12 - The probability of all three homeported CVNs and a transient CVN simultaneously in port at NASNI would be extremely low.. . . This appears to be the extent of evaluating the 4th CVN berth; however, given the fact that the Navy is expending resources to keep it indicates that this will happen and should be taken into consideration in the "worst case scenario." L.4.91

3.9-3 Table 3.9-1 - The reported ADT for the Coronado Bay Bridge is 66,000. The ADT over the bridge for 1996 and 1997 was 70,000. L.4.92

3.9-5 Line 7 -- The E.I.S. states that a factor of 2.46 vehicle trips is based on a study done in the mid-1980's; however, for this E.I.S. a factor of 2.1 has been assumed the average with 1.72 trips generated for the base as a whole. Was the methodology used to arrive at the 1.72 trips/person for NASNI the same as the mid-1980's study? If not, what were differences? L.4.93

3.9-6 Line 7 -- The PIA activities have largely been ignored; this passage indicates that the additional personnel would be offset by the planned decrease at other NASNI operations. The study should indicate the cumulative impacts, both the increase and decrease of past, present and future projects. L.4.94

3.9-8 Line 8 -- The reports state the additional trips when compared to the 32,000 total trips/day are less than significant. It then states the traffic would use First and Third Streets. The report should break down the traffic numbers that are expected to use First and Third and compare them to the total trips for each street. When compared to each other rather than combined, the numbers may show some significance. L.4.95

3.9-8 Line 38 - What is the significance criteria threshold for changes in traffic volume as defined by this report? L.4.96

3.18-1 Line 3 - Cumulative impacts on environmental resources result from the incremental effects of the project when added to other past, present, and reasonably foreseeable future projects. The E.I.S. approaches this as an independent project and not with respect to past projects that have combined to adversely affect the quality of life. The cumulative impacts have gone on unrecognized and unmitigated. L.4.97

3.18-11 Line 40 - Special activities such PIAs are temporary fluctuations and are not included in the quantification. With the possibility of three carriers with 2 PIAs every six years for a six-month duration, this equates to 6 PIAs (3 carriers x 2 PIAs) every six year for six months. Reducing this amounts to six months of every year a PIA should be occurring. This seems more than a temporary fluctuation. L.4.98

L.4

10e. Council Review and Comments on "Draft Environmental Impact Statement for Developing Home Port Facilities for Three Nimitz Class Aircraft Carriers in Support of the U.S. Pacific Fleet." Homer Bludau, City Manager, introduced this item, stating that Council is being asked to comment on the draft seven-page letter to be sent to the Navy. Staff attempted to amplify on issues identified at the last public hearing, and have commented on Cumulative Analysis, General Analysis, Traffic Analysis, Parking Analysis, Noise Analysis, Air Pollution Analysis and Radiation Analysis. staff is requesting that Council review the draft letter, receive public comment, and direct staff as to the content of the letter. Mr. Bludau further stated that additional information would be forthcoming from Joel Cehn.

Councilmember Blumenthal commented on the process. He thought it might be helpful to know what will happen when the Navy receives these comments from the City. Tony Pena responded to Mr. Blumenthal's request. stating that NEPA is a requirement for federal projects. California's equivalent is CEQA. Procedurally, they are similar. When a project gets to the size that ao EIR or au EIS is requiredl, a draft EIS must be prepared and notification must be provided such that the affected agencies and the public will be alerted to its release. In this case, the Navy has prepared the Draft EIS. The comment period bas been extended by 30 days to allow for more thorough examination and commenting. When that period expires. it is the Navy's responsibility to incorporate and respond to those comments generated by the draft with a final EIS. There is no deadline for the Navy to do that. Many of the comments received by the City on the Draft EIS state that the Draft is inadequate as a NEPA document. The City is requiring a much more thorough analysis with greater detail on the assumptions that were provided to the Navy's consultants. The City's consultants have not been able to confirm the findings the Navy provided in the Draft EIS because the assumptions the Navy used can not be substantiated in many cases. The final EIS should not look very similar to the Draft EIS if the Navy responds to the City adequately. When the Final EIS is completed, the City and public will have 45 days to respond, and then the document will be certified by the Navy as having completed the requirements for NEPA. The last time this process was undergone by the City and the Navy, the City provided a long list of comments that were responded to by the Navy 's Fii EIS in lip service only. The data from the Draft was not justified, as requested. If the same thing happens again, the City will have to determine how it wants to proceed.

L.4

Councilmember Williams stated that Mr. Pena has carefully pointed out the difficulties being encountered by the City's consultants in the review of the EIS. The draft of the letter by the City states tbat the fundamental objective of NEPA (guarding the environment through discussion and disclosure) has been effectively circumvented by the Navy's approach. This leads to questions about the process the Navy followed in the development of the Draft EIS. Mr. Williams suggested that Council add some verbiage to the letter concerning that process. The following questions should be asked: 1) What was the process that was followed in selecting an EIS contractor? 2) Was it an independent environmental contractor selected that does not have close business ties to the Navy? 3) What. was the scope of work stated by the Navy? 4) What was the identity of the prime contractor assigned the task of developing the EIS? 5) Who were the subcontractors for the various sections of the EIS. if indeed there were subcontractors? 6) What were the qualifications and prior experience of the contractors involved in the preparation of the study? 7) What was the type of contract awarded, i.e. Was this project advertised for bid? Was it awarded sole source? Was it just an add-on change order to an existing contract? 8) What was the total cost of the Draft EIS to the Navy? 9) What was the type of contract from a fixed price, cost plus or time and materials perspective? These are all questions the City needs to have answered.

Councilmember Ovrom commented on the Navy's presentation of what the Navy feels deserved mitigation in the North Island options, which was eel grass. Mr. Ovrom assumes that the reason the Navy said that is because it is relatively inexpensive to mitigate the eel grass. Other than that, there was a complete lack of talking about transportation and some other issues that are very important to Coronado probably because mitigation of these issues would be very expensive. He suggested that in the second page of the letter some words could be added to give more emphasis to the need for more mitigation, particularly in those areas that arc caused by traffic such as traffic, noise, parking, pollution, etc. Those are the most serious and most flagrant areas that were missed by the Navy. That means that this report was either poorly prepared or done in an attempt to avoid those issues because of the expense of mitigation.

Mr. Blumenthal suggested that the letter says what is needed and expresses the frustration the City is experiencing. The General Analysis section could be lengthened somewhat: to include the point that Mr. Ovrom made. For example, Item #2: "Data should be recent and appropriate to Coronado," could be rephrased to say, 'Data. especially relating to traffic and noise, should be recent and appropriate to Coronado." Mr. Blumenthal stated his biggest concern is that the Navy has already decided what it is going to do. Is there any reason to go through this with the expectation that there is some recourse that the City has if the Navy bases a decision on such a faulty document?

Mayor Smisek stated that the Navy plans to put two additional CVN's in Coronado. The EIS is being prepared to address all the different alternatives and all the environmental effects of those alternatives. The Navy states that its preferred solution is to place the CVN's here. The City needs to be careful with wbat its expectations are. The expectation that might be sought after is that if the City can show that by virtue of the CVN's coming to Coronado, that there will be a change to Coronado. then the City should be provided some mitigation for that change. One of the biggest problems with the analysis is in its definition of the baseline. The City has stated that the baseline should be one CVN. Historically, there have been a number of carriers that are non CVN's, but are big aircraft carriers which cause a lot of people to come to and from the base. Perhaps one CVN should be looked at because there was an EIS done on one CVN and a conventional carrier as the baseline. The City needs to determine what the baseline is and then focus on addressing the impacts of all of additional traffic based on the general population growth in the area. How does this idea of placing CVN's here fall into place in that larger picture?

Mr. Williams expressed his concern with the definition of the baseline. He stated that the 'no action" alternative results in a second CVN being homeported in Coronado and is what the Navy considers to be the baseline. The reason for this is because the necessary facilities are substantially in place: to accommodate the second CVN.

Mayor Smisek agreed that there is no agreement as to what the baseline is. The Navy is stating that the baseline is two CVN's. Coronado is saying that the cumulative baseline should be one CVN. Mayor Smisek felt that it might be most accurate as a compromise between the two - to have either three conventionals or one CVN and one conventional. Mr. Blumenthal suggested that that would imply acceptance of the Navy's preferred alternative, which would leave Coronado to seek effective mitigation only. That abandons any possibility of asking the Navy to consider two CVN's instead of three. It is difficult to simply accept the actions of the Navy and to wait for them to make things right for Coronado.

Mayor Smisek commented that if Coronado can show that the impacts of a third CVN would be so large that the mitigation might be more than the Navy would want to undertake, the Navy might reconsider its preferred alternative. The problem stems from the maintenance facility already being in place at North Island and from the fact that three carriers have been homeported at North L.4 Island previously. Those generic things make it seem insignificant to go with the Navy's preferred alternative. However, there are differences between the CVN and conventional carriers that need to be considered in this equation.

Councilmember Ovrom stated that the Navy's preferred alternative is being driven by Op Area and training and not necessarily by training or facilities. The decision has been made to have three CVN's here. Coronado needs to have the Navy address mitigation. Mr. Bludau added that NEPA requires that feasible alternatives be looked at. Even id the Navy doesn't like the alternatives or if they aren't interested in using any of them. the final document would be incomplete without them. If the City's figures arc correct, and the savings to the Navy arc in the neighborhood of $62 to $87 million, the Navy should be forced to admit that this is a viable option. If the Navy does not like the alternative, they should inform the City of their reasons.

Councilmember Williams agreed that it is critical to get the Navy to acknowledge that mitigation is required. NEPA rules will not require that mitigation is undertaken, but at lease Coronado would have the ammunition required to go elsewhere. Mr. Williams requested three tapes be made of this portion of the meeting to provide to the Senators' and Congressman Billbray's offices..

Mayor Smisek invited public comment.

Miles Harvey, 1099 First Street, Landing Homeowner's Association,, suggested that the letter needs a complete separate section on mitigation. The tunnel vote will be in and should be included in the letter, to tell the Navy what the City of Coronado thinks about that aspect of getting from the bridge to North Island. There is a noise study that could be given to the Navy. A cost analysis

of what is required to make this work from the City of Coronado's standpoint could be completed. The Draft EIS assumes that the Third Street gate is a reality. That point needs to be hit on. Coronado needs to outline for the Navy every aspect of mitigation that can occur and where Coronado can cost it for the Navy. Millions of dollars are being spent to build these carriers. Hundreds of millions of dollars are being spent to operate them. The Navy can certainly spend a few million dollars to straighten out the Third Street gate problem and to participate in the tunnel problem and anything else Coronado comes up with in the way of mitigation. This is the one opportunity to lay those things out with a proposed remedy. As far as the Draft EIS is concerned, it is fatally flawed in not using reality as the baseline. The reality is that the CONSTELLATION is here and the STENNIS is here. The baseline has to be as of the date of the EIS. As of the date of this Draft EIS, those carriers were at North Island. For that reason, the Draft EIS can not merely be amended. This EIS needs to be redone. whether it is in the form of a Final EIS or another Draft EIS, although another Draft EIS would be preferable. Another aspect that is not being mentioned is that which comes from aggregating the largest warships in the world. Are there any mitigations which need to be provided to Coronado to accommodate for this?

Sut Clark, 344 A Avenue, stated that traffic congestion, high accident rates, noise, air pollution and the need for radiation monitoring are conditions which exist today with one CVN. The addition of the second and the third can only exacerbate these conditions. At the same time, Coronado needs to recognize that the Navy has valid reasons for wanting to horneport three CVN's at North Island. These reasons include proximity to training and operations areas, missile and gunnery ranges, technical and team training schools, and the carrier air wings. Given the Navy's well-documented recruiting and retention problems, Coronado should understand the Navy's need to homeport ships where they can access these facilities while minimizing time away from home pon. The fundamental questions that must be answered in developing an answer to the Draft EIS are: 1) What outcome does Coronado seek ? and 2) How best can that outcome be achieved? If the premise is accepted that the adverse conditions previously cited exist with two CVN's then a strategy should be pursued which seeks mitigation of these conditions rather than discussion alternatives which remove one carrier and with it a!! hope of mitigation from the federal government. Coronado's residents, commuters and business are better served by a policy of support for the Navy's preferred alternative, conditional on provision of mitigation in the form of funding for the tunnel proposal and for appropriate radiation monitoring. If a proactive strategy is going to be adopted to seek mitigation, a firm but not antagonistic approach should be taken. Coronado needs to convey a desire to work together toward mutually beneficial solutions.

Larry Brown, 326 First Street, commented that the desirable end game needs to be kept in mind. The Navy has decided that its preferred alternative is to homeport three CVN's in Coronado. This should not be second guessed. But Coronado does need to insist on mitigation and should give the Navy some idea of what it is after. The basis for follow on action needs to be laid out. Coronado needs to accept three CVN's and should say so to the Navy and mitigation should be insisted on in a non-manner.

Rankine Van Anda, 1044 Olive Avenue, stated that Coronado sought a solution to its traffic problems eighteen months ago. The result of the search was a bored tunnel from the bridge to North Island. This would take more than half the weekday bridge traffic off the streets of Coronado, remove the couplet barrier, improve safety and allow options which don't now exist to ease the traffic flow elsewhere in the City. The tunnel fully mitigates the traffic congestion, noise and related pollution caused by the homeporting of three CVN's. Every member of the City Council supports the tunnel concept. Somehow the word "tunnel" has been left out of the response to the Draft EIS. Specific examples need to be given which will show that the two carriers situation today would not pass NEPA analysis and that mitigation is in order today. For example, the EIS acknowledges that the intersection at 4th and Orange is at Level of Service F. Any increase in traffic volume over 2% is "significant." That means mitigation, The 55 vehicle peak-traffic-per-hour addition the Navy forecasts gets into that 2% zone. 55 vehicle peak-traffic-per-hour is unrealistic. The Pearl Harbor study shows that a CVN contributes 1500 peak trips per hour plus another 500 for the support maintenance. The Free Bridge Study for SANDAG puts the peak hour traffic for a single CVN in port at 1700. These numbers take the volume capacity ration well into the 1.6/1.7 area. well beyond the 1.02 that is significant. A noise study has just been completed, with a before and after tunnel analysis. The study shows the CNEL noise level along Third and Fourth to be above 70 dbs, which exceeds City, State and Federal standards.
L.4 Only the tunnel will remove enough vehicles to bring these numbers into compliance. The biggest concern with this response is that it is reactive and not proactive.

Tom O'Toole, Director of Engineering and Project Development, stated that in his last five years in the Navy in the Civil Engineer Corps, one of the things he did was manage various projects going on in Everett, Washington. Everett was proposed as one of the new home ports under the 600-ship Navy concept proposed by President Reagarn. Concentrating; all the efforts in one place raises terrorist concerns. There was resistance from an Indian group in Everett, which eventually caused the project; to be terminated., This was done by proving a defective process in the EIS the Navy completed. At the same time there were back room negotiations going on to effectively talk about what the Indians really wanted • jobs, financial assistance, etc. That compromise would have allowed the project to go forward. The difficult task still has to be done of making the case that the EIS is defective. That is what the law requires first. Simultaneously, the political discussions can be going on.

Marilyn Field, First Street. expressed her concern over focusing on the negotiated settlement when the problem has not been clearly defined as of yet. NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. Some of the consultants have reported that this document is badly flawed. How can the City of Coronado make a jutdgment on whether this project is something where the risks and impacts can be mitigated before the risks and impacts arc known? Many questions and concerns have been pointed out. Before mitigation can be discussed, the Navy must provide full disclosure. That means going back and re-issuing a new Draft EIS. She is also concerned over the seeming resignation to the idea that the Navy is going to do what it is going to

do.

Mark Smith, Bay Bridge Anchorage, stated that this is a huge risk and that due to the decline in education nationwide the Navy does not and can not get the personnel it needs to operate its nuclear reactors safely. This will be an expansion of the Navy's nuclear program. The danger in this is not just to the Navy, but to the entire community. The problem with the EIS is that the Navy self-certifies. There is. however, a way to stop this nuclear invasion1 of Coronado. But, if an indisputable fact such as there not being sufficient personnel to operate this equipment safely, is combined with the use of lobbying. seeking a court injunction, petitioning the Congress and the President, and publicizing the danger to the community on this indisputable fact, Coronado can meet with success in blocking this action.

Bev Dyer. 93 Trinidad Bend, applauded the Council for getting actively involved in this issue. Ms. Dyer mentioned the terrorist threat of this action. Additionally, there are only two ways to exit Coronado. That will not facilitate ease of evacuation. Facilities are being built to accommodate six times or more the toxic and nuclear wastes for 5 years or even more until there is another place to take it. Waste must be considered.

Ed Kleeman. Senior Planner, concurred1 with Tom O'Toole's comments. He amplified on one Point Mr. O'Toole made, saying that the City needs to highlight the deficiencies of the analysis process. The draft letter was toned down with respect to one aspect that had been focused on earlier. That was the fact that the alternatives reviewed in the EIS were selected in a way so as to not include an altematiive that might have looked better tlhan the preferred alternative. This is a good indication of the preordained nature of the analysis. This point was downplayed in the letter ad should remain in the letter.

Mayor Smisek summarized by saying that the letter needs to be reworked. The tack taken may need to be changed and formed into a mice package that will be impressive and make the point to the Navy that Coronado requires some kind of justification for where this is going, why this report has come out the way it has, and what the Navy is going to do about fixing it. There may be some major changes in portions of the report,, especially if the City can convince the Navy to look at reality, go into an historical perspective of how they got there, what kind of impacts this has upon tbe City and recommended ways of alleviating the problem. One of the items Ms. Field expressed her concern over was how the City made light of the deficiencies in the report. Mayor Smisek stated that the objective is to point out the deficiencies and at the same time make recommendations.

Mr. Williams suggested that the question that needs to be asked with respect to the threat of terrorism is, has the Navy evaluated the threat level? The Navy should be able to tell the City that. The point needs to be made in the letter that the enclosures are part of the letter and provide comments to which the City needs responses. For example, the letters from the attorneys have several questions in them that need to be answered. The Manager should be asked to take the

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comments from this meeting and mail them in. It is important to address the tunnel as a mitigation prospect. The expected mitigation to include the tunnel, or assistance with the tunnel, should be a separate part of the letter. The biggest part of the letter is to make it clear that the City does not think that a satisfactory job has been done on the EIS.

Mr. Ovrom reminded everyone that there is a deadline that must be met. He suggested that a comminee be assembled to work with the City Manager to gather all these comments and concerns in a revised draft of the letter. The following needs to be emphasized in that letter: 1) the technical flaws that are in the EIS, 2) the reality baseline needs to be talked about • today there is one CV and one CVN. 3) the cumulative effects as the City sees them, and 4) the need for mitigation. Certain areas need emphasis and should be called out specifically.

Councilmember Blumenthal agreed with Mr. Ovrom and stated that with respect to mitigation, the City needs to be forceful enough to include it in either a separate section of the letter, or inject mitigation throughout the whole letter. Certain conditions are pointed out that are not addressed by the Navy and could be pointed out with relevant mitigation suggested.

L.4

Mr. Pena provided a brief scenario based upon his experience with previous EIS docunnents. In his opinion, the Navy is not going to prepare another Draft EIS. They will go right to a Final EIS. The Draft EIS is still the main document and will take on a new name • the Final EIS. There will be one column with all the City's questions and all of the requirements for additional analysis and proper assumptions. There will be a column responding to those issues. Mr. Pena anticipates that those responses will not be adequate. A few figures may be thrown in. But the document will not say that the Navy is going to minimize the impacts. At that time, there will be two primary options available to the City. First, the City can pursue that matter in court to get a proper document and have the Navy admit that they have created a lot of negative impacts, which will allow the City to place mitigation labels on those individual impacts that have been identified. Second, the City can release its consultants to prepare a parallel document. making: its own assumptions, and making its own analysis, and coming up with it.5 own impact figures conclusively that is defensible, stating that these are the real figures and this requires mitigation.

During further discussion. general consensus was that a special Council meeting should be held to review the revisions made to the draft letter, with all agreeing that the letter needs to be structured in a way that ensures that the letter states exactly what the City wants. Mr. Bludau suggested that the Special Meeting to go over the next draft of the letter be sometime around the 10th of November.

Betsy Gill. First Street, asked how the public would be aware of that meeting. Mr. Krauel responded that a 24 hour notice is required for Council meetings.

Councilmember Williams commented that the department should be complimented on preparing the temporary public services yard and the "laydown" area for the equipment. The treatment of the landscaping has made a difference to that area.

AYES:	Blumenthal, Ovrom, Schmidt, Williams and Smisck
NAYS:	None
ABSENT:	None

c. Council Review and Comments on "Draft Environmental Impact Statement for Developing Home Port Facilities for Three Nimitz-Class Aircraft Carriers in Support of the U. S. Pacific Fleet." City Manager Homer Bludau stated that the purpose of this agenda item is to allow the public to address the City Council with their concerns over this issue and for the Council to move toward comments that will be prepared and submitted to the Navy prior to the deadline on Nlovember 12th. Representatives from Parsons Engineering have examined the traffic aspects of the EIS; Recon Consultant Charlie Bough has examined noise impacts; and Recon consultant David Godlforson has examined air quality impacts. Mr. Bludau stated that Joel Cehn has examined the radiation assessment and radiation monitoring.

Joel Cehn, Radiation Safety Consultant. stated he has examined Appendices E & F of the Draft EIS that deal with the risk of radiation exposure to the residents of Coronado, stating that four areas are covered: 1) background information on the risks of radiation exposure;, 2) assessment to residents of normal operations of routine releases of airborne radioactivity from the base; 3) assessment of the impact of accidental release of radiation from the base via a facility fire; and 4) assessment of a spill of radioactive liquid into the Bay. The information available from the EIS is skimpy from the perspective of allowing an independent study to be completed. He tried to do an independent assessment of normal operations, because the Navy's assessment showed a very low exposure to the residents of Coronado. His result was also a very low exposure, however, not one which matched that of the Navy. Mr. Cehn assessment was six times higher than the Navy's, but it was still very low.

Mr. Cehn continued that the highest exposure to residents of Coronado would come from a facility fire at the base. The numbers were 2000 timer higher than normal operations in terms of radiation exposure. which puts that in the low to moderate exposure category • not a life threatening one. A liquid spill into the Bay resulted in smaller exposure figures than that of the fire, but higher than normal operations according to the Navy. Mr. Cehn suggested that the City should request more detailed information from the Navy on what assumptions were used in calculating these impacts; how far away is the resident from the facility fire; etc. Does the Navy have any real numbers that they use? What type of measurements are being made?

Councilmember Williams asked Mr. Cehn about the interim report he provided with respect to the monitoring experiences of others. The Navy has stated that there is no way to monitor and that a system of monitoring around the base would not provide information that would be helpful. Mr. Williams stated that Mr. Cehn has shown a network of 44 such stations throughout the country which monitor nuclear research and weapons facilities and are funded by the Department of Energy. He asked if any of those specifically monitor facilities such as those at North Island as a base for a CVN? Mr. Cehn responded that the Kings Bay Nuclear Sub Base in Georgia has a facility that would monitor such data.

Councilmember Ovrom commented that the monitoring instruments in Mr. Cehn's report are not stated as either "real time" or whether the data received would have to be sent off for evaluation. Mr. Cehn responded that he tried to stick with real time measurements to allow constant monitoring information available at any time. The only instrument that does not do that is the badge used by State of California personnel and at the base entrance. The badge accumulates radiation and after laboratory (examination will quantify the exposure. Mr. Cehn stated that is not his recommendation for this system.

Councilmember Blumenthal suggested chat: it might be difficult for the Navy to have any real numbers to use in this discussion. If they did have any such numbers, where would they have come from? Mr. Cehn responded that monitoring is being done all over the place, with real measurements, and that the Navy must be dloing this as well.

Parsons Transportation Group addressed the traffic issue. Bob Sergeant examined the traffic analysis that was included in the EIS, stating it was sketchy at best. It appears to have been based on information from a traffic study performed in 1994/95. There have been a limited number of updates since that time. The traffic volumes incorporated into the current EIS are traffic volumes that were occurring on the streets of Coronado in 1993/94. This is substantially dated material. The traffic study also addressed a condition that compared the condition with the nuclear carriers with the condition, which occurred in 1993/94. That is different than the way a typical environmental study is conducted. A proposed condition should be compared to a "'no action" condition. The "no action" condition removes a carrier so that there would only be two nuclear carriers. That changes the significance of adding the carriers. In the EIS, a condition of three nuclear carriers is being compared to three conventional carriers. This is not a fair comparison because of the different numbers of sailors. Comparing the two-carriers scenario with the preferred alternative condition results in A difference of 3 to 4 thousand personnel. That provides a much more substantial traffic impact. This also relates back to the parking conditions. The "no build" condition would likely eliminate the need for the permit parking and improve the parking conditions.

Mr. Sergeant continued that the study also has not addressed the cumulative, long-term growth that has occurred on NASNI over the years. Older analytic techniques are being used in the study. Better techniques are available today and should be used. The study addresses non-signalized intersections, when the majority of the intersections involved are signal&d. There are better ways to evaluate the delays that motorists will incur. There is also a lack of substantiation on a number of statements made in the EIS.

L.4

Recon Consultant Charlie Bough addressed the noise aspects of the Draft EIS. He divided noise into two categories: a direct effect by the additional vehicles going onto 3rd and 4th Streets and the cumulative effect of the traffic on those streets in general. The direct effect is going to be clearly associated with the traffic numbers. If the EIS is accurate in the traffic numbers, the direct effect should not be significant. That would mean that the noise would not change perceptibly. New numbers would mean a different impact on noise. The problem is that there is very little noise information in the EIS. The EIS relied on a series of measurements made in 1993, at 4 to 6 locations on City streets. There is significant lack. of information and innate analysis associated with this particular project. Even so. it would seem that the direct effect of noise will probably not be a noticeable impact. On the other hand, the cumulative effect on noise is a potentially significant issue.

Recon Consultant David Godforson addressed the air quality analysis from the Draft EIS. This, too, held insufficient data to independently verify the calculations given in the EIS. Many assumptions were made in the EIS that were not necessarily good assumptions to make. The future preferred alternative condition was never compared1 to the "no action" alternative. The vast majority of the emissions from the project will be from the traffic related to the project. The EIR recognizes that the preferred alternative will increase the amount of traffic, but because the California motor vehicle fleet is going to be more efficient over time, the emissions in the future will actually be less than they are today. The prcfenred alternative would mean 3 new nuclear carriers, which would mean 1,500,000 more miles traveled per year. This would certainly mean higher emissions, but the EIR contends that emissions will be less. The conclusion that air quality impacts will not be significant may be accurate, but the reasons the EIR gives for this are not valid.

Mayor Smisck invited public comment.

Art Osborne, 345 Alameda, stated that there is one aspect of the incremental increase in traffic that should be examined by the consultants and that is the change in overhaul procedures for the new CVN's vs. tlhe old carriers. Power requirements should be readily available to the consultants.

Laura Hunter, Environmental Health Coalition, provided some information for analysis, stating that Dr. David Richardson, Department of Epidemninology, School of Public Health, University of North Carolina at Chapel Hill, has reviewed Appendix E which talked about the health study that had been done. Dr. Richardson noted that the Navy failed to oote the findings on radiation doses and the relationship to cancer incidents at. Three Mile Island. There was also a leukemia study done around the Pilgrim Power Plant that was not analyzed in the EIS and Dr. Richardson felt it should have been. He also disputes the Navy's interpretation of the: Portsmouth Naval Study. The second item Ms. Hunter highlighted was an article in Business Journal that reports on the purchase of NASCO by General Dynamics and the speculation that more nuclear repair work would need to be done here.

Lou de Beer, 845 E Avenue, spoke on a letter from Pam Willis dated October 13, 1998. This letter requested data in support of the EIS. It might be helpful to more clearly request what data is needed from the Navy, perhaps in the form of a list of references.

Betsy Gill, 411 First Street, commented that the purpose of an EIS is to gain information and disclose environmental impacts that may result from the venture. 'This does not entitle the city to any mitigation, but it does entitle the city to disclosure and information. It seems that that obligation has not been met. it would seem that the only way to get more complete disclosure is through litigation.

Mark Smith, Bay Bridge Mooring, stated that in figuring out the amount of radiation that the Navy could release, they referred to the San Diego Bay as a rural area. The Navy claims that they can operate a safe nuclear program. The Navy's aviation program safety has suffered greatly due to lack of qualified recruits. The Navy does not have and can not get the personnel needed to operate a safe nuclear program. Aviation accidents result in men and women dying. Nuclear accidents would mean the death of San Diego and Coronado. Please seek an injunction against the Navy until it can show that it can get the personnel needed to operate safely..

L.4

Larry Brown, 326 First Street, commented that the staff report and the work done by the consultants have been good. The comments in the staff report seem to be limited to the impact of additional personnel as a result of these CVNs. Perhaps that should be expanded to include all of the other directly supporting activities lo that maintenance.

Marilyn Field, 1101 First Street, stated that this EIS has many of the same flaws as the previous EIS. First of all, the Navy has not done a realistic worst-case accident scenario analysis from either a toxic chemical spill or a radiation release. The City should ask the Navy to pick up the cost of a perimeter monitoring system that is managed by the City for the citizens. The EIS should be redone to provide a well thought out plan for exactly how a toxic chemical or radiation release would be handled. An accident plan needs to exist. Federal regulations have recently been changed to allow the stockpiling of potassium iodide to be released through the states. The Navy also needs to tell the City what it would do if there were a problem with one of the reactors.

Mayor Smisek reminded the public of the Public: Hearing on these issues on October 27, 1998. al Village Hall, at 7p.m.

Councilmember Ovrom stated that the document Ms. Hunter referred to as a Navy Study was actually put out by Pacific Shipbuilding Corporation. It is not an official Navy document and is dated 1993.

The City Council received the Consultant reports, and directed staff to continue compiling comments from staff, consultants, and the public.

5g. Approval of Request from Fire Department for Placement of Fire Department Open House Banners on City Property October 7th through 11th. Staff reported that the requested banners are approximately three feet high and fifteen feet long and would be placed in the center median of Change Avenue and facing incoming traffic on Third Street at Glorietta Blvd. **The City Council approved the request as submitted.**

6. **COMMUNICATIONS - ORAL:**

a. Director of Administrative Services Jack Van Sambeek, on behalf of Bob Caesar, Recreation Director, introduced the two newly hired full-time Coronado lifeguards. Lieutenant Tom Grall has been working as a part-time Lifeguard Lieutenant in Coronado for 12 years and is now the new full-time Lifeguard Lieutenant. Sean Carey is the new Lifeguard Sergeant. He was with the City of Imperial Beach for eight years as a Senior Lifeguard who supervised the Junior Lifeguard Program there.

b. Councilmember Ovrom stated he met with Captain O'Brien at the Air Station with regards to the Strand Management. He spoke about the naval reorganization at the base, commencing on October 1st, and wondered with whom the Council would be discussing issues.

7. **PUBLIC HEARINGS:**

7a. Council Discussion of City Response to Carrier Homeporting Environmental Impact Statement. City Manager Homer Bludau reviewed the Staff Report, stating that the Council discussed the EIS on Nuclear Carrier Homeporting at the last meeting. The Mayor requested that the comment period be extended by 30 days. That request was granted. The City Manager was told to bring on board whatever consulting expertise is necessary in order to look at technical data associated with the EIS. That technical data has been identified as traffic, radiation issues, noise, and air quality. Staff has obtained the consulting expertise. RECON will look at noise and air quality. Parsons Transportation Group will assess traffic. Joel Cehn will examine radiological issue assessment.

Mayor Smisek inquired as to whether all questions and comments will be sent off to the Navy or will that be done as part of the Public Hearing process. Mr. Bludau responded that the City's comments can come • ♦ the Public Hearing or at any time prior to the close of the comment period. The first meeting in November would be the final opportunity for Staff to come to Council with a draft letter with all concerns included.

Councilmember Schmidt stated that one of the reasons for the formation of the "umbrella" group (discussed by Council under Item 10j) was that Council would like to be involved in the commentary period of the EIS. Larry Brown, 326 First Street, TTRC, stated that the primary function of this coordinating body would be to make sure the air was clear on the EIS impacts from all of these different perspectives. Mr. Brown stated that there has been substantial informal coordination among the people in these various groups, but no formal mechanism for them to get together to discuss issues, misunderstandings, direction for the City, etc.

Mr. Williams announced the Public Hearing on October 27, 1998, at 7:00 p.m., at Village Hall is for the submission of questions and comments. While there will not be my answers given at that time, all questions will be answered in writing.
all the input is looked at properly. The City Manager's recommendation is appropriate.

Mayor Smisck Opened the Public Hearing.

Stephanie Kaup, 1133 First Street, requested that Council provide the Public with copies of the consultants' reports before the October 20th City Council meeting. And that at the October 20th meeting the City allow an open question and answer session and not restrict the Public to a three-minute time limit.

Mark Smith, Bay Bridge Mooring B-8, commented on the bigger picture. The Navy needs the help of the Public. The Navy does not need these nuclear carriers and the Navy can not afford them. He handed out copies of an article to Council on this matter.

Betsy Gill, 411 First Street, stated that the City's response to the EIS three years ago was we*. It seems that the City is attempting to make a stronger response this time. The two carriers will heavily impact the City. Make the strongest record possible with regard to this.

Marilyn Field, 1101 First Street. suggested that there is opportunity here. The article Mr. Smith handed out stated that Nuclear Aircraft Carriers provide no military advantage over conventional carriers and are many, many times more expensive to operate. This project may be able to be stopped. Lowering the recruiting standards of the Navy has been mentioned. This is a cause for concern. She requested that, the Council make available its draft comments to the Public so that comments can be made before the final draft is written.

There being no further public comment, Mayor Smisek Closed the Public Herring.

Mayor Smisek stated that all materials contained in the Council agenda packets are available the Friday prior to the Council meeting and are available for public review at the Coronado Library.

City Manager Homer Bludau stated the consultants are under contract to review the EIS' technical information with the purpose of finding any holes in the EIS and allow adequate time to address than. The reports will come in very close to the Council meeting on the October 20th The City will not submit comments at the Public Hearing on October 27th, but will finalize comments at the Council mating of November 3rd. He addressed the issue of the 5:15 pm. time certain for the EIS discussions. Council consensus was to continue to have the Council discussions on the EIS at 5:15 p.m. at the meetings of October 20th and November 3rd, in order to allow the public to be present and to participate..

In answer to Council inquiry, Mr. Bludau stated that the City Manager and Director of Community Development Tony Pcna will be responsible for coordinating the City's comments.

8. **ADMINISTRATIVE HEARINGS: None**

9. **COMMISSION AND COMMITTEE REPORTS**,

9a. Report from the Port commissioner Concerning Port Activities. Port Commissioner Paul Speer reported on the following: the South Bay Power Plant; the Aviation Offices at the airport being moved; the Embarcadero 'Visionary Plan; the EIR for the Skateboard Park at Tidelands Park in Coronado was approved; the Spirit of St. Louis has been built and will be on display and will ultimately hang in the baggage claim area of Terminal 2 at the airport; the Capital Development Programs have been reviewed and now include the Ferry Landing Dock at Peohe's; the rental car legislation was siigncd by the Governor which means that the Port can levy a transaction fee now; and the Mooring RFP deadline passed, with 19 responses.

9b. Recommendation from the Traffic Operations Committee to Install a Yellow No Parking Curb Zone on First Street Near the Ferry Landing Marketplace. Engineering and Project Development staff have requested that a yellow no parking curb zone be installed on First Street near the Ferry Landing Marketplace. By installing an 18-foot yellow no parking curb zone, parking would be restricted during the business hours when deliveries are made, but available at other times. The Traffic Operations Committee (TOC) recommended that a yellow curb zone be installed and a resolution be forwarded to the City Council for approval. Under Consent, the City Council approved A RESOLUTION OF THE CITY COUNCIL TO DESIGNATE A YELLOW NO PARKING CURB ZONE ALONG FIRST STREET NEAR THE FERRY LANDING MARKETPLACE The Resolution was read by title, the reading in its entirety unanimously waived and adopted by the City Council as RESOLUTION NO. 7597.

9c. Recommendation From the Traffic Operations Committee to Reduce the Red Curb Parking Zone on Sixth Street Near the Fire Station. The City Council directed Staff to evaluate whether the red curb and green parking zones could be reduced. The Traffic Operations Committee (TOC), at its August 27, 1998 meeting, recommended that the red curb be reduced and a resolution be forwarded to the City Council for approval. Under Consent, the City Council approved A RESOLUTION OF THE CITY COUNCIL TO REMOVE RED NO PARKING CURB ZONES ALONG SIXTH STREET NEAR THE FIRE STATION. The Resolution was read by title, tbe reading in its entirety unanimously waived and adopted by the City Council as RESOLUTION NO. 7598.

9d. Recommendation from the Traffic Operations Committee to Install Marked Parallel Parking Stalls Along Ninth Street. Staff reported that in an effort to improve the parking at 911 Ninth Street, Mr. and Mrs. Adkins, with other residents, have and that the City Manager should continue to review any applicants who may care to submit an application.

Mr. Bludau asked for and received clarification that Council is directing that the City Manager continue to look for people who would submit applications, even though the Motion seems lo state that this person would serve both purposes (the EIS and the monitoring). Council stated that the City Manager should be prepared to look: to others if Mr. Cehn does not work out. Mr. Blumenthal added that the City should not wait until we find out we may not be satisfied with the person we have,

10g. Council Review and Comments on "Draft Environmental Impact Statement for Developing HoNimitz-Classcilities for Three ... s Aircraft Carriers in Support of the U.S. Pacific Fleet." Tony Pena, Director of Community Development, stated that comments are due on the draft EIS by October 12th. City Council comments and public comments need to be included. An extension on the October 12th deadline for comments has been requested and is expected. Mr. Pena noted that there is some concern over the lack of analysis of cumulative impacts within the present draft EIS. There is also a minimization of the number of personnel required to maintain nuclear carriers.

Mayor Smisek invited public comment.

Laura Hunter, Environmental Health Coalition, commented on the draft EIS. Sk supported a strong request for an extension of the time period for comments. Impacts of the three nuclear carriers will be significant, and the airwing will also have impacts on traffic both in the air and on the ground • that is ignored in the EIS. This is also going to be the EIR for the project. We need more time for commenting.

Lou deBeer, 845 E Avenue, suggested that congressional representatives be contacted to stress the desire for an extension. A detailed,. quantitative analysis needs to be done on traffic, noise and pollution. The Navy is not going to be swayed by emotion. We need hard, quantifiable facts.

Marilyn Field, 1101 First Street, agreed with the prior comments from the public. The draft EIS is very technical and lengthy. She urged the City to renew its request for an extension.

Mark Smith, Bridge Mooing B8, agreed that the EIS is not responsive. We need more time to review this. Mr. Cehn is not an adequate person for this job.

Betsy Gill, 411 First Street, endorsed the other comments. Mr. Pena was very unclear as to what kind of consultant he was urging the City to hire.

Richard Dittbenner, 260 A Avenue, commented on the difficulty in obtaining a copy of the draft EIS and on the importance of obtaining an extension.

During further Council discussion, thre Mayor stated tlhat Council met previously in closed session on this item. There was no action taken, however, there was a recommendation made that a two person subcommittee, composed of Mayor Smisek and Councilmember Williams be formed. Mayor Smisek would contact Captain Deal, the author of the EIS, and up through his chain of command (Admiral Skip Bowman, head of the Navy's Nuclear Power Program, has already offered his help on this issue); and Mr. Williams would concentrate on the legislative side to request that there be a seventy-five day total review period. The areas of the biggest coucem will be addressed by consultants and the Council authorized the subcommittee to approve consultant services. The Mayor stated the focus; is in the area of working with the Navy on a common problem. The objective is to suggest solutions to the problem of City and Navy, including factual data, and recognition of cumulative effects. Councilmember Williams recommended that a request be sent to the Navy asking that Coronado residents be allowed to provide comments first at the public hearing; with comments from residents outside Coronado being heard thereafter.

Council consensus was to form the above subcommittee for the stated purpose.

10h. Approval of a Resolution Calling for a Public Hearing to Establish Underground Conversion District #10 Along Portions of Pomona Avenue, Glorietta Boulevard and Ynez Place. Staff reported that Underground Conversion District 110 has been discussed in conjunction with the Glorietta Bay Master Plan and has been reviewed 'by the utility companies. The next step in the process is the adoption of a resolution for a public hearing. At the public hearing, the district and its boundaries are officially adopted. Councilmember Williams requested that the City Manager include in the packet for the public hearing the Silver Strand Corridor Management Committee's recommendation to Navy to underground utilities along the Strand and the elements of the Scenic Highway Action Program be considered at the public hearing as it relates to the $228,000 of uncommitted funds..

Under Consent, the City Council adopted A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CORONADO CALLING FOR A PUBLIC HEARING TO DETERMINE WHETHER PUBLIC NECESSITY, HEALTH, SAFETY, OR WELFARE REQUIRES THE FORMATION OF AN UNDERGROUND UTILITY DISTRICT ALONG PORTIONS OF POMONA AVENUE, GLORIETTA BOULEVARD AND YNEZ PLACE HEREINAFTER CALLED UNDERGROUND CONVERSION DISTRICT #10; and set the Public Hearing, to be held by the City Council, for October 20, 1998 at 5:30 p.m., in the Council Chamber of City Hall, 1825 Strand Way, Coronado CA. The Resolution was read by title,, the reading in its entirety unanimously waived, and adopted by the City Council as RESOLUTION NO. 7594.

INTER-OFFICE
MEMORANDUM

DATE:	November 4, 1998
TO:	Honorable Mayor and Council city Manager
FROM:	Bruce Williams, Councilmember
SUBJECT:	Comments for Inclusion in City's EIS Comments

I would like for this memo to be included with the City's comments on the Nuclear Carrier Homeporting Environmental Impact Statement.

Because of the obvious and significant flaws in the EIS, I recommend we request the following information be provided to the public:

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IA. What was the process followed in selecting an EIS contractor? Was an independent environmental contractor selected which does not have close business ties to the Navy?

1B. What was the scope of work stated by the Navy?

1C. The identity of the prime contractor assigned the task of developing the EIS.

2. What were the qualifications for the various sections, if there were subcontractors

3. The qualifications and prior experience of the contractors involved in the preparation of the study.

4. The type of contract awarded: i e., was this project advertised for bid; was it awarded sole-source; was it an add-on change order to an existing contract?

5. What was the total cost of the EIS to the Navy?

6. Was the contract firm fixed price; cost plus; or time and materials?

Bruce Williams, Councilmember

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The following letters were previously received and have been identified as attachments to comment letter 0.12 from Environmental Health Coalition

- Letter from Bernd Franke for Institute for Energy and Environmental Research to Laura Hunter, Environmental Health Coalition, November 11, 1998
- Report prepared by Community Health Assessments and Public Participation Center for Environmental Health Coalition, November 11, 1998.
- Letter from Camille Sears to Laura Hunter, Environmental Health Coalition, November 10, 1998.

These letters were resubmitted by the City of Coronado as part of their attachment and numbered by the City as pages 55 through 73.

MARILYN G. FIELD
1101 FIRST STREET, APT. 208
CORONADO, CA 92 1 18

November 6,1998

Mayor Tom Smisek,
Members of the Coronado City Council and
Homer Bludau, City Manager
City Hall
1825 Strand Way
Coronado, CA 92118

BY FAX: 522-7846

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RE: DEIS for Additional Nuclear Carrier Homeporting

Dear Mayor Smisek, Council members and Mr. Bludau,

Thank you for giving me the opportunity to comment on the City's comment letter on the Navy's DEIS for the homeportlng of an additional two to three nuclear aircraft carriers in Coronado and the construction of related support facilities.

As I stated at the Council meeting last Tuesday, I believe the! City is prematurely focusing on mitigation measures before it has a true picture of the impacts and risks of the Navy's proposal. The purpose of the DEIS process, as spelled out in Fedleral laws and regulations and as described to the City in the opinion of its outside counsel, Quinton and Petlx, is to provide citizens and politicians with a complete analysis of the Impacts and risks of a project prior to their.making any decisions on the acceptability of a project and whether or what mitigations might make it acceptable. This DEIS has not met this initial standard of disclosure according to the City's own lawyers, staff and outside consultants hired by the City to advise It. Until the City has a complete appreciation of the problem It is premature, even foolish, to try to negotiate a solution.

At the Council meeting last Tuesday I heard the Mayor and others txpress tht view that the Navy was going to do what It wanted to do and the best the City could hope for was some mitigation in the form of some money for the tunnel. But the Council also heard Mr O'Toole of the City staff, speaking as a citizen. point out a situation in Washington state when an Indian tribe was able to STOP a Navy project with determination and

agressrve lawyering. This possiblity also exists for Coronado if the City has the will to pursue it. However, first the City must insist on the facts and should insist on a reissuance of the DEIS which will give it the opportunity to evaluate the impacts before making a decision on how to proceed.

Congressman Bob Filner has already called for the reissuance of the DEIS with full disclosure. Congressman Bilbray and Senators Boxer and Feinstein should be asked to do the same.

Permitting the Navy to respond to the extensive flaw6 in the DEIS by making minor modifications in the Final EIS is insufficient f or two reasons: 1) the Navy is likely to ignore or respond Inadequately to the many fundamental deficiencies in the DEIS, just as it did in the EIS for the Stennis and 2) the nature of the deficiencies is so fundmental that the City and the citzens should have adequate time to digest and evaluate the new information before making any decisions on the acceptability of, or mitigation for, this project.

Even if the ultimate goal of the City is only to get some money for the tunnel, this is best achieved by taking the strongest possible stance at this early stage rathrer than leaping forward to suggest tepid, and I believe inadequate!, mitigation measures. In that regard, I note that ther letter merely suggests 'f iaancial support" --not even full funding-- for the tunnel and a radiation monitoring system. Even If the City should ultimately believe, after full analysis of a revised DEIS, that radiation monitoring is adequate mitigation (I do not) for t:he risk that the population could be exposed to an accidental release Of radiation in a hazardous amount, what about accidental releases of toxic chemicals? Should not the City at least consider monitoring for airborne toxics? After all., the maintenance of these carriers will require much greater use and storage of highly toxic chemicals (NASNI recently got a 600% increase in its hazardous waste storage permit) and these chemicals can be just as hazardous as radiation. Moreover, there have been at least two recent accidents Involving toxic chemicals at NASNI in the last two years: 1) the mercury spill in the Bay and 2)a chemical fume release at a NASNI: cleanup site that: sent six workers to the hospital for treartment (the cause: the Navy contractor violated written safety procedures). Air toxlcs monitoring Is but one example of other types of mitigation that might be considered upon a full evaluation of the risks of the project.

I continue to have serious reservations about whether the City should accept any additional carriers here because I believe the population could be exposed to the risks of a serious accidental radiation release o1: toxic chemical release or explosion (such as happened recently at the Hanford Nuclear Reservation when a chemical explosion caused a release of plutonium.into the air) or the risk of a terrorlsl: attack (made all the more likely by the concentration of such a large part of the Pacific fleet in one place). In such an event, monitoring could detect the release but would not solve the Impossible problem of evacuating 25,000 people from this island with its limited means of egress, possibly no egress if the bridge or Strand were impassible.

I also have some specific comments on Appendices E and F. I start by noting that these Appendices are extremely difficult for a lay person to understand. I suspect there are few, if any, people in Coronado who have struggled with It as I have and that most people, possibly including the Council members and City staff, do not understand it and Instead rely on the reassuring probability statistics thrown out by the Navy at its public meetings. These statisics are highly misleading and greatly understate the risks for several reasons:

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1. In all the risk probability analyses ,except possibly one,the risk has been calculated by multiplying the assumed risk by the Navy's own estimate of the probability of an accident.(See page F-l, line 14 et. seq.). The Navy assumes this probability is an extremely tiny fraction (5 x 10 to the minus three power) (See page F-19, line 11 et. seq.) The effect of this is to greatly understate the risk if an accident occurred, i.e., if you multiply anything by a tiny fraction, the end result is a tiny number. But what the City and citizens deserve to know is what the risk Is if there is an accident. The City should Insist that the numbers be restated to back out this probability factor.

2. The one set of tables (Table F-9 and Table F-11)that may back out the probability factor are to me lmcomprehensible. In Table F-9 the risk to a maximally exposed off site individual at NASNI is stated to be 1.0 x 10 to the minus 4 power. Does that mean anything to you? To the average citizen? The City should insist that the risk analyses be stated in language that people can understand.

3. The risk analyses present the cancer risks of radiation exposure in terms of the average ANNUAL risk. I for one am less interested in what my risk is of developing cancer in any given year than I am in whether the exposure to radiation will cause me to develop cancer during my lifetime. The Navy method of calculation again greatly understates the cancer risk. The City should insist that the data be recalulated to show lifetime risk rather than average annual risk.

4. The risk analyses show the risk of FATAL cancers. not total cancers. Again, this understates the risks. The City should insist that the analyses be restated to include all cancers.

5. The cancer risk assumptions used in Appendix F and described in Appendix E do not reflect current scientific thought about the cancer and other adverse health consquences of ionizing radiation at much lower doses than previously thought. In September of this year I attended a scientific symposium on the

health effects of low level radiation at the New York Academy of Medicine. Although this is a field is which some controversy exists, the findings of most of the papers presented were that cancer risks exist at much lower levels than previously thought.(See the comments of Dr. David Richardson submitted to the Council by letter of the Environmental Health Coalition dated 10/20/98.) Whether or not the Navy agrees with this research, In a disclosure document of this nature, it is misleading not to at least acknowledge it and analyze the data on the basis of this more current research as well. Because the DEIS does not take the higher risk factors Implied by current scientific thought Into account, the Navy's risk calculations again may greatly understate the cancer risk. The City should insist that the data be redone using these more current and conservative risk assumptions.

6. The DEIS risk analyses model Only two modest accidents, Including only one accident involving an airborne release Of radioactivity. There are many other possibilities for accidents, such as airborne radioactive steam from a Carrier's reactor (such as happened in the Puget Sound accident): sabbotage (such as happened in the Groton, Conn. submarine base where the fuel rods controoling the reactor were almost severed): a spill of radioactive primary coolant on land while it Is in the process Of being transported from the carriers to the radioactive Waste reprocessing plant; an earthquake on the faults that are right next to this operation that caused the radioactive waste storage facility and/or the radioactive waste reprocessing plant to collapse or the loosely compacted landfill on which part of this project is located to liquify; a reactor going critical (the Navy has yet to explain if the carrier could be towed out to sea at low tide and how they would persuade the civilian operated tugboats to maneuver it out of the Bay). The City should insist that all possible accident scenarios be modeled using worst case assumptions.

7. The meteorology assumptions are not clear. The DEIS says it assumes 95% worst case meteorology. What does this mean? For Coronado, the worst case meteorology is the prevailing winds which blow from the base towards Coronado residences 87% of the time. Do the Navy analyses assume the worst case is winds blowing toward Coronado or winds blowing towards downtown San Diego (which might be considered worst case by the Navy because it would expose a larger population)? If the analyses assume the wind is blowing towards San Diego, does it understate the risk of the maximally exposed individual living In Coronado7

8. I note that Append1x F describes the Navy's plans to evacuate NASNI within two hours In the event of a radiological accident, Including practice drills, but there are no such plans for the residents of Coronado. There is only a vague statement on page F-6, line 11 et. seq. about "emergency response" and Communications with state and local authorities. This is obviously inadequate. I point out that the Navy has refused to

release its emergency response plans for a San Diego Radiological Emergency in response to a FOIA request by the Environmental Health Coalition on the ground that it is classified! This is unacceptable. Emergency plans which are not well known and well rehearsed are not effective. I further note that the City currently has no means to even notify its residents in the event of a radiological emergency, which unlike most other types of emergencies, wrould not necessarily be 'apparent to people. You may recall that it was several days before the residents surrounding Three Mile Island were notified of the radiation hazard and, because radiation is invisible and odorless, they were unaware of it: until notified.

9. All that most citizens know about radiation risk in connection with the nuclear carrier homeporting is the reassuring numbers presented at the Navy hearings, i.e., cancer risk of 1 in 2 billion. This number (Table F-l, page F-2) not only is dramatically understated by the factors described above, it is the AVERAGE annual risk of a fatal cancer of all people living in a 50 mile radius of the project. This rnumber dilutes the risk by averaging in the enormous population of Tijuana to the South and the highly populated areas to the North and West of San Diego, and by assuming that the risk of upwind populations is the same
L.4 as downwind populations, and assumes NORMAL operations, i.e., NO ACCIDENT. Even the companion maximally exposed individual risk factor of 1 in 19 million assumes NORMAL operations. The City must insist that Appendices E and F be redone to make it clear to the City and citizens what the true risks are.

10. It is not clear what assumption have been used to calculate the risk to the MOI, i.e., the most expo!Bed off base person. The City should insist the the assumed distance of the MOI be stated and that the exact distance of the Base boundary from the closest element of the project, which I believe is the carrriers, be used. I suspect that inappropriate distance assumptions were used because the non-worker on-Base population is shown to have a higher risk that the closest Coronado resident, but in fact, resident of Coronado are closer to the carrriers than most on-Base residents and workers. If the assumed distance has been estimated from the reprocessing plant rather than the carriers (the carriers could be the locus of a n accidental release of radiation just as happened in the Puget Sound accident) or the distance to residences been overstated, this would again operate to understate this risk to residents. Instead of considering the MOI figures as the relevant statistics, we should be considering oruselves exposed to the risk of the on-Base population, or greater since residents are actually closer to the carriers than tlhe on- Base population. (Again, I note that the On-Base population has evacuation plans and Coronado residents do not, possibly based on these assumptions which would not seem to be correct.)

I may have more comments when I complete my analyses next

week.

I am also attaching several documents: 1) a list of questions submitted by citizens to Richard Guida several years ago, most of which were never answered (the City should insist on answers to these questions.): 2) a document entitled A Short History of Navy Nuclear Accidents prepared by the Environmental Health Coalition which the Council should consider as bearing on their responsibility to seriously evaluate the risk and implications of a radiological accident, and 3) a Navy document obtained in a FOIA request by the Environmental Health Coalition which describes the overwork culture which resulted in the Mystic mercury spill in front of the turning basin just two years ago (which the City should consider as a indication of the conditions' which are likely to Intensify as the Navy finds itself even more shorthanded and which will increase the liklihood of accidents in years to come).

The City should insist on reissuance of the DEIS in draft form to reflect these comments and the comments from the experts hired by the City, from City staff, from the Environmental Health Coalition and from citizens and should insist on time to evaluate! the true risks and impacts of the project before it decides whether this project imposes acceptable risks and impacts on the City and before it begins to suggest mitigations. If the City falls to seriously evaluate the rrsks and Impacts before making the decision to oppose or mitigate, it will be derelict in its duty to protect the health and safety of the men, women and children who live here and who are trusting the City to protect them.,

I suspect that the reason more citizens have not expressed concerns about this project is attributable to their faith in the Navy and the City Council to tell them the truth about the risks of this project. So far, all the citizenz have heard from both the Navy and the City Council is that the project has negligible risks. Now the City's nuclear consultant ,Joel Cehn, has informed the City that the 'draft EIS does not adequately present the expected radiological Impacts to Coronado1 residents" (Memorandum from Joel Cehn to Homer Bludau dated 10/5/98). The City can no longer avoid this, issue and must insist that this City and the citizens be told the truth. If more people appreciated the risks of the proposed project, I suspect that the public attitude toward this project would be overwhelmingly negative.

At the many Council meetings I have attended over the past three years, it often appears that certain of the Council members are more sensitive to the concerns of the! Navy than to the impact of this project on Coronado citizens and are all too ready to accept Navy assurances of no risk without asking the hard questions to determine the facts for themselves. Several Council members have Navy or other military ties that seem make them dissinclined to challenge the Navy, even by asking hard questions, or to take a strong position. But the City's interests are not always the same as the Navy's and in this instance the city's interests are adverse. It is disturbing that the interests of the citizens are being represented by Council members, who seem unwilling to take, or even consider, an adversarial position, or even seriously investigate whether the facts warrant a strong adversarial position. I hope the Council members will think hard about, and consider seeking legal advice about, whether their financial, social and emotional ties to the Navy or the military are creating a conflict of interest which interferes with their responsibility under law to consider ONLY the interests of Coronado residents in carrying out their official role as Council. members in this process. If they can not, or are unwilling to do this, they should recuse themselves from any considerations of this matter.

Very truly yours,

Marilyn G. Field

cc. Mona Wilson
Chuck: Marks

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The following was previously received and has been identified as an attachment to comment letter 0 12 from Environmental Health Coalition:

- A *Short History of Naval Nuclear Accidents* prepared by the Environmental Health Coalition.

This information was resubmitted by the City of Coronado as part of their attachment and numbered by the City as pages 81 through 83.

rcg. 3-7-96
FROM DOD
TO EHC

USS SALT LAKE CITY WATCHSTANDING INCIDENT
LIST OF DEFICIENCIES

1. A petty officer from the propulsion plan ducy section left the ship, got drunk, destroyed government property and was arrested by the base police.

2. This same petty officer was returned to the ship and subsequently stood watch as SEO and SRO while under the influence of alcohol.

3. Separately: the Ship's SEO left his watchstation without a proper relief, signed out of the logs, and subsequently left the ship.

4. The cr. watch SRO, who was aware of the problem; described above, failed to take appropriate action. It was the ship's practice to have the SEO spend most of his watch outside maneuvering.

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5. The EDPO did not make his required tour at 0300.

6. The SRO logged the EDPO for a tour in the Engineering Log, although he was aware that no tour had been completed. This was a standard practice among some of the ship's SROs.

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7. The EDPO under instruction made a tour in lieu of the EDPO.

8. The ship failed to promptly inform its chain of command of the details and seriousness of this incident.

9. The ship did not conduct a formal critique. The ship intended to proceed with a primary plant hydrostatic test without adequately resolving or understanding the issues described above, indicating a lack of appreciation of the scope and seriousness of the problem.

Falsification of Doc is a standard pract

Encl (1)

0084

10 Jul 96

Fm: LT E. N. Panlilio, MYSTIC AOIC
To: Reporting Senior

Subj. LT MID-TERM COUNSELING

1. This memorandum is my input to my mid-term counseling.

2. I no longer want to be here at Deep Submergence Unit. I feel I have no control whatsoever over the very jobs that I am tasked to do.

-Training: How can I train a crew over which I have absolutely no control. This crew has not been able to train at all since we loaded out in March. The only way I can establish effective training is to be able to establish a predictable routine. EVERYTHING we do here is a crisis! That is no way to run an organization. The best gift I would be able to give this crew is a predictable routine, but I do not have the control to do it. No one here at this command has the control to do it.

-Routine: This place goes against everything that the Navy has taught me about controlling the work load and work day. You can't work people the way this crew has been worked and not expect something to go wrong. I thankful no one has been killed up to this point, but eventually someone will get killed unless things change around here. You can mark my words.

Also, you can't compare this crew to AVALON. They are at the end of an operating cycle and therefore have the highest possible levels of proficiency.

-Scheduling operations: You people are writing checks in our name that we can't cash. MYSTIC never had a chance in hell of ever going to SORBET ROYAL. My biggest fault is in not recognizing this in the first place and crying foul. Look in the training manual. You don't send a unit out of overhaul directly on deployment. I can't believe the leadership (from CSDG-1 on down) did not recognize this. Post overhaul refresher training and pre-deployment workup for a regular submarine takes from a year to a year and a half. I do not think that it would take that long for a DSRV to regain enough proficiency to not embarrass SUBPAC on a mission, but I do think it takes much longer than we were alloted. You people are blind to the historical realities of this program. Simply mandating change does not cause change to occur.

-TQL: This is not going to work here. With the scheduling you write for us, we do not have the luxury of sitting back and analyzing the living dog crap out of every leaky fitting and burnt resistor we find around here. THIS IS DEEP SUBMERGENCE AND SHIT HAPPENS. Fire me for saying that if you like. I do not buy into this process improvement program at all. Process improvement did not stop Tudor from shocking himself, or SEA CLIFF from tipping over, or ATV from being dropped, or MYSTIC from blowing mercury all over Oscar pier, or any of the other MYRIAD of fucked up things that have happened around here. You people have not come to the realization that here at the ragged edges of the sub force, operations are much more dangerous, support is much more scarce, senior experience is lacking and the relative importance of what we do for the Navy is much less. All process improvement did was waste huge amounts of man power which could have been put to use on some of our primary missions.

-Manning: We are not manned to do the job CSDG-1 mandates. They demand we treat this little submersible like a nuclear submarine. I am the only nuke here. I do not have time to do my job and try to examine every engineering problem in detail just because I am the resident nuke. A real submarine has 150 people to fill out all the little jobs. We have only 20. This is a small unit, not "Battlestar Galactica".

-Let me put this in perspective, from my point of view: in my ten years in the Navy, I graduated top of the class out of 701 recruits in basic training; I was class honorman in my Nuclear Field A school class; I graduated #2 out of 400 students in Enlisted Nuclear Power school with the highest GPA ever achieved to that point on the final comprehensive examination; I graduated first in class in Nuclear Prototype training; was the Navy's #2 pick out of all applicants for NECP, graduated as a Distinguished Naval Graduate with a Magna Cum Laude in Physics from AUBURN NROTC while acting as regimental XO for over 400 midshipmen and Officer Candidates. I was in the top 5 students at Officer Nuclear Power school; I graduated #2 from Officer Prototype training; I had an extremely successful JO tour

0085

DE 2 for ID

aboard my first submarine where for all intents and purposes I was a Department Head my last year. I have been told by senior officers (not in Deep Submergence) that my career potential is unlimited: I was screened for Flag aide jobs for SUBPAC & 7TH Fleet (now CINCPACFLT), but I respectfully declined to be considered for those jobs because I wanted to come HERE (boy was I stupid!) and qualify as a Deep Submergence Rescue Vehicle pilot. I AM the Navy's poster child, but now for the first time in 10 years I don't want to get out of bed to come to work. This job should be every young boy's dream job, but in reality it's a living hell and a personnel meat grinder. It will not get any better, so all I want to do is leave. If I were senior enough to have gone through DH screening (I am a year away), I would request to rotate early to SOAC and back to a real submarine where things make sense. I am very bitter and disillusioned about my job here. You are destroying good people for no good reason. I don't want to be a part of it anymore.

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APR 5 1996

Questions from Marilyn G. Field, 1101 1st Street, to be raised by the Coronado City Council at April 9, 1996 meeting with Richard Guida and the city's independent nuclear consultant.

1. Can the Navy guarantee that there will be no accidental or routine releases of radiation into the air from the Controlled Industrial Facility or the nuclear powered vessels berthed at NASNI?

2. If there could be an accidental or routine release of radiation into the air, can the navy guarantee that no radiation could ever escape the boundaries of the Navy base? If the answer is yes, as stated in prior Navy statements on this issue, please explain the basis for this conclusion. In particular focusing on the proximity of residential housing (about one short block'? and the prevailing winds which blow over the base towards Coronado residential housing.

3. What is the maximum distance and area over which radiation would travel in the worst case accident?

4. What kind of radioactive isotopes could be released in any conceivable accidents?

5. What kinds of exposure and health risks to Coronado residents would result under various accident scenarios including the worst case scenarios?

6. What is the redundancy of the systems designed to protect against nuclear accidents? How many systems would have to fail in order for radiation to be released into the air from a) Controlled Industrial Facility, b) from the nuclear powered vessels berthed at NI?

7. What kinds of problems is redundancy designed to prevent?

8. On February 29, 1996, there was a release of radioactive steam into the air from Navy vessel in Puget Sound. ~~Who~~ How or why did this accident occur?

9. Could the same type of accident occur on the Stennis?

10. Could the same type of accident occur on the other nuclear powered vessels that are to be berthed at NI on a permanent or visiting basis?

11. What other types of things can go wrong causing radiation to he released from the Controlled Industrial Facility? From nuclear powered vessels?

12. Radiation has been detected in San Diego Bay. What testing has been done to determine the source of this radiation? What are the results of such testing?

13. The Navy has stated that they have had an extensive program to monitor radiation in the Bay. Why didn't this monitoring program detect the radioactive slag adjacent to NASNI found by the CA Department of Toxic Substances last year?

14. The FEIS states that radioactive wastes will be taken to a permitted radioactive waste storage facility. How many such facilities currently exist? How long will they be accepting nuclear waste? What will happen if no such facilities are accepting wastes over the lifetime of the NASNI Controlled Industrial Facility?

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15. What is the minimum storage capacity for solid and liquid nuclear waste at NI stated in terms of volume and weight? How much radioactivity would this represent at maximum capacity?

16. What is the average length of time that radioactive material could be stored at NASNI? What is the maximum length of time radioactive wastes could be stored at NASNI?

17. How would radioactive waste be transported from NASNI to a permanent waste storage facility? What route would be used,? What safeguards are in placc to prevent an accident?

18. What is the half life of the radioactive materials to be stored on the base? What is the amount and concentration?

19. The FEIS states that only low level radioactive materials will be used, processed, stored at or transported form NASNI. What is the Navy's definition of "low level"? How does it compare with the definition of low level radiation used by publicly regulated facilities in this country? How does it compare with European standards?

20. There will be processing and storage of solid and liquid radioactive materials. Can radiation from these materials be released into my air? Under what circumstances% How would an earthquake of various levels of magnitude on the faults closest to the facility affect this?

21. a) With respect to publicly regulated nuclear facilities how far must they be located from residential housing?

b) Are there any publicly regulated nuclear facilities as close to densely populated residential areas as will be the case at NASNI (Coronado residences within one block. hospital. day care center. school. convalescent home within one mile)?

22. Why does the Navy consider it to be safe to have a facility. which could release radiation into the air within one block of densely populated residential area and which. because of island geography. cannot be evacuated in any reasonable time frame. Please comment on this increased risk of a release of radiation in the event of an earthquake which could also make methods of egress impossible?

23. What would be the Navy's procedure for notifying residents in the event of a release of radiation?

24. Please provide a layman's language explanation of the Controlled Industrial Facility both physically and functionally, explaining step by step what will be done including a description of the system for filtering or decontaminating radioactive liquids or solids for reuse.

Please explain whether after one or multiple uses the "filtration" or "decontamination" or "processing" equipment itself becomes contaminated and if so what is the level of contamination (is it still 'low level' radioactivity?)

4/5/96 pg 2

4/5/96 pg 3

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QUESTIONS FOR MR. GUIDA:

1) When will the full, independent baseline survey of the base (NASNI) be done for radiation?

2) What is the amount and temperature of hot water that will be discharged into the San Diego Bay from the reactors cooling systems? How will that hot water discharge affect the fish and wildlife?

4:03 PM

3) What extra measures and backup systems is the Navy implementing to protect the public in the case of a HEPA failure and from release of radiation into the community?

4) Will the Navy make all Operational Reactor Safeguard (ORS) Examination Reports available to the public?

5) When will the Navy disclose all accidents and incidents regarding nuclear propulsion and radioactive waste to the public?

6) Can the Navy conduct the radioactive repair work during the refits and refueling at facilities that already exist? What are the total costs for building a facility at NASNI?

7) Since Navy policy is to have at lease 50 feet of water to bring nuclear carriers in, and the current average depth of the bay channel is only 45 feet, is the Navy putting the carriers, the bay, or the community in any danger by bringing these carriers into San Diego Bay?

8) How often is the cooling water and other emissions from the reactors tested? What are they tested for? Are the results made public?

9) Do the reactors and vessels undergo some kind of annual testing? Are the results of these tests or evaluations made public?

10) Will the Navy commit that all radioactive materials coming off the ship be in final disposition and already packaged in Department of Transportation (DOT) approved containers?

11) The Navy has stated that Long Beach Naval Shipyard is not a possibility because it is the worst air basin in the country and the homeporting project would never be permitted there. How will the air impacts from the homeporting of one to three carriers affect Coronado and the other San Diego Bay communities?

12) How much power is generated by each of the nuclear reactors on the carriers? How does this compare to those at the Submarine Base? To San Onofre?

13) What criteria does the Navy use to assess the necessary clearance to ensure safety of neighboring Navy housing and civilian populations? Is this public information?

14) What does it mean to be a "nuclear-capable" or "nuclear-certified" shipyard? Could Coronado become a nuclear fueling shipyard in the future?

15) Will a reactor that is disabled or otherwise needing repairs be brought to NASNI for repairs?

16) Are there any sirens or audible alarms that will sound in the event of a nuclear emergency?

17) How large is the plume of impact from a melt-down of a reactor on board the carriers? How many people will be affected?

) Are the current nuclear arcs derived from a "one" carrier assumption? Where is that "one" carrier assumed to be berthed? Won't a carrier berthed further east along the quay wall force the explosion arc into homes on First Street?

) What sampling of cooling water takes place while the reactors are in port?

) Will the Navy support permitting of nuclear reactors used for naval propulsion under the reauthorization of the Clean Water Act?

ank you. I look forward to having the above addressed at the Tuesday, April 9 meeting.

phanie Kaupp
33 First Street #418
ronado, CA 92118
9) 435-5703

5 April, 1996 Page 1

Questions directed to Mr. Guida, from Sandor Kaupp.

Many questions have been forwarded to you (I assume) through Captains Steuer and Chamberlain, and indirectly through *The Eagle*, a local Coronado newspaper. There have been numerous general and specific questions asked to date, and, undoubtedly, many will be asked once again. I would like to suggest a format and general areas of query. These topics have been the focus of many of our community group ("Concerned Citizens of Coronado") discussions. The Coronado residents in this group vary greatly in their opinions of homeporting of CVNs and building of a facility to service the nuclear power plant aspects of these ships. The information I am asking for will enable a more informed debate. To date, much of the information from the Navy spokesman and through the publication in the *Eagle* has been poorly communicated, often using comparisons that can only be characterized as ill advised. For example, Deputy Secretary of the Navy, Duncan Holaday, relayed a comparison of exposure to the public as being no worse than being a farmer and spreading fertilizer on crops for several decades. This was quickly converted to "no worse than fertilizing your garden" by residents. It did not take but a few days for many residents to independently discover that phosphate fertilizers used in commercial agriculture is laced with radioactive uranium and a known health risk to those who apply it. I have no doubt that the Deputy Secretary meant to allay the fears of the public, but this analogy made him look silly (and worse in some peoples eyes). I implore you to speak directly to the Council and public in terms that communicate. When you are restricted from discussing some details, just say as much.

Here is my suggested list of topics to be covered:

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1. Describe the "Controlled Industrial Facility" as to what is contained within it in some detail. As I would describe my home to a friend, for example.

2) Describe the functional details of the above "floor plan". Please give us information on the nature of the beast. So far the information, from all sources, has been piecemeal and inferred.

3) How is radioactively contaminated material moved from ship to processing facility? Please elucidate safety features of this transfer, potential accidents and how these are ameliorated.

4) What is the amount of radioactive material expected to be transferred for processing over time, and in what form is it expected? That is, so much radioactive isotope is in disposable garments, rags, etc., so much in contaminated liquids, so much rendered from machining contaminated parts, etc.

5) In this synopsis of material to be accumulated at the facility, please give an estimate of the quantity and nature of the radionuclides, and the concentration in the stored forms.

6) Given that not all wastes are going to be stored in a like manner, some informed words on the danger of the material in the stored form as a health risk, the safety features of the storage containers, storage area, and precautions used by workers in and round the facility. In general, the concern for the sailors and workers in these ships and facilities is of utmost importance to the residents of Coronado.

7) How long will material be stored and how much material will be on site at any one time once the facility reaches capacity?

8) Please describe the security precautions in and around this facility, and during transfer of contaminated waste. An ancillary question: is the choice of the site a secure location for this facility? Many residents have expressed the opinion, that [illegible] the submarine base on N. [illegible] as a better site for this facility for security reasons.

5 April, 1996 Page 2

9) What kind of problems will be expected on a routine basis? What is prepared for more extreme accidents?

10) What are the policies for notification of problem? From the most pedestrian to the most disastrous. What are the Navy's policies?

11) Even though the intent of your presentation is to focus on the facility to be built pier-side, some commentary about safety procedures with nuclear ships in general would be informative. How big are the reactors on a CVN, how much waste is produced (redundant, from above), etc. Recently, a thoroughly drunk sailor served a watch on an idling submarine in port here. He was not relieved for hours. This incident did not convey confidence in the nuclear Navy. How should these kinds of problems been handled? What has been done since to change the (inevitable) drunk sailor from taking over duty which can so clearly endanger others?

I cannot stress enough that a forthcoming presentation from the Navy is needed to enjoin the debate in our community. I hope you can provide sound information.

Thank you for your efforts.

Sandor E. Kaupp
1132 First St., #418
Coronado, CA 92118
(619) 435-5702

ENVIRONMENTAL HEALTH COALITION

1717 Kettner Boulevard, Suite 100 • San Diego, CA 92101 • (619) 235-0281 Fax (619) 232-3670

April 5, 1996

Mayor and City Council
Coronado City Council

BY FAX

Mayor and City Council:

Environmental Health Coalition (EHC) would like to submit the following questions for response by the US. Navy regarding the Homporting and nuclear expansion project. This is a project that will impact, not only Coronado, but the entire region as well. Thank you for helping the public seek the information we need to know the true impact of this project.

1. We have heard that the size of each reactor is around 500 megahertz. Is this accurate? If not, what is the size or energy output of each carrier reactor. Do the carrier reactors have secondary containment like commercial power plants, do? Do they have back up cooling systems?

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2. What are the nature of the cooling discharges from the reactors? How hot is the water? How will impacts on marine life be assessed?

3. Will a permanent, continuous monitoring station be established in Coronado to monitor airborne radiation? How will results be communicated to the public?

4. We understand that the Navy has special teams that respond to nuclear emergencies. How close is the nearest team to Coronado? Will a special team be located here on a permanent basis?

3. We understand that the reactors undergo testing and a Reactor Examination. Are the results of these examination available to the public? How can we get copies?

6. Other that the Radiological Safety Committee of the Navy and the Nuclear Regulatory Commission, does any agency have jurisdiction or independent oversight of the Navy nuclear operations?

7. The accident in Puget Sound this February was not reported to local officials. What assurance do we have that the Navy will report all accidents/incidents/releases to local officials immediately?

8. What size release of radiation must occur before the Navy evacuates the area? the base? Coronado?

9. What is the size of the area expected to be impacted in the event of a core-melt down?

Thank you for your consideration.

Sincerely,

Laura Hunter

Laura Hunter, Director
Clean Bay Campaign

FROM : PHONE NO. : 61 07 1998 10:48AM P16

IVAN A. GETTING
1760 AVENIDA DEL MUNDO 103
CORONADO, CA 92118-3036

RECEIVED
APR 5 1996

COR04 036

April 5, 1996

Coronado City Council

Subject: Questions for meeting with Richard Guida
Attention; City Clerk

1. Can the Navy absolutely prevent a melt-down of a nuclear reactor in a Navy ship while in the San Diego harbor or docked at North Island?

2. What provisions is the Navy making to supply ● ♎□❑◆♋♦♏ cooling of a reactor facing a melt-down while docked?

3. Can the Navy guarantee no nuclear radioactive material spillage, either resulting from an ● ccident or a mishap into the harbor?

4. Can the Navy guarantee that there will not be a release of radioactive gases or dust into the air of Coronado - or San Diego - at a level above the normal ambient radioactivity (radon,, cosmic rays, ● tc)?

5. Does the Navy plan to refurnish or replace nuclear fuel in any of the nuclear propelled ships in the San Diego Harbor - and particularly docked at North Island (Coronado].

6. If the answer to 5. is yes, where does the Navy propose to store the radioactive fuel elements - or will the Navy move the radioactive fuel ● lerront's to some othrer repository; end if so, how will the ● hipaent be handled?

7. In this age of terrorist activities, what physical safety precautions will the Navy install to protect the nuclear-propelled ships from sabotage and/or direct attack. Will these precautions be adequate ● gain6t modern remotely launched1 precision weapons?

8. Why was the San Diego arm chosen for berthing and depot maintenance of nuclear propelled ships?

Submitted by I. A. Getting, formerly:
Scientific Advisor to Senator "Scoop Jackson", chairman of the joint committee con Navy nuclear matters,
Chairman of the President's Scientific Advisory Committee (PSAC) Panel on Navy matters,
Member of the EPRI (Electric Power Research Institute) Committee on the Three-Mile Nuclear Reactor Accident.

I. A. Getting

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0096

April 5, 1996. before noon

QUESTION for Mr. Richard Guida- (Tuesday, April 9th)

1. If radioactive Iodine(131I), Cesium(137CS), and Plutonium(239PU) were released accidentally from one of the nuclear carrier reactors In the form of steam or vapor for 30 minutes, and Coronado residents were downwind, what affect, would it have upon the residents?

Should the above question be already asked then: (or 2 questions are allowed)
2. Since Navy nuclear reactors have bad accidents or spills In the past, but have not been reported1 to the public, why should the public ● ●☒□♏♍♦ to be notified of a carrier or submarine nuclear accident here In Coronado/San Diego?

Earle Callahan
Earle Callahan
660 Cabrillo Ave.
Coronado, CA 32118
437-1334

0097

L.4

* * * FAX * * *

Date: November 6 1998

To: Homer Bludau, City Manager
Fax: Phone: (619) 522-7335
Phone: Fax: (619) 522-7846

Re: Response to City's Comment Letter to the Navy

No. of Pages (including cover sheet) 6

From: Stephanie Kaupp
Phone: (619) 522-7335
Fax: (6 19) 522-7846
E-Mail: stephk@san.rr.com

Homer:

As a member of the Environmental Health Coalition, and resident of Coronado, I would like to submit the following 740 names of residents from cities within the San Diego County, including Coronado

These are names of residents. read into the record, who could not attend the public hearings on the draft EIS and who oppose the U S Navy's Homeporting of Three CVN's at NASNI and supported the testimony made by the Environmental Healt h Coalition and Peace Resource Center.

Please include these names with the comment letter the City of Coronado is sending to the Navy

Thank you very much

Stephanie

The following was previously received and has been identified as an attachment to comment letter O.12 from Environmental Health Coalition:

- Sdn Diego Residents Opposed to the *Nuclear* Megaport and Supporting Testimony of Environmental Health Coalition and Peace Resource Center

This information was resubmitted by the City of Coronado as part of their attachment and numbered by the City as pages 99 through 103.

November 3, 1998

To: Coronado City Council
From: Sut Clark
Subject: Draft letter re Three CVN draft EIS

1. General. Traffic congestion, high accident rates, noise, air pollution. and the need for radiation monitoring are conditions which exist today with one CVN homeported at NASNI. The addition of a second (a done deal ?) and third CVN (subject of this EIS) can only exacerbate these conditions. At the same time, we need to recognize that the Navy has valid reason8 for wanting to put three carriers at NASNI. These reasons include proximity to training/operations areas, m issile/gunnery ranges, technical and term training schools, 8nd the Carrier Air Wings. Given the Navy's well documented recruiting and retention problems , we should understand their need to homeport ships where they can access these facilities while minimizing time away from hoaeport. The fundamental questions we must answer in developin a response to this draft EIS are, first, what outcome do we reek ? and, second, how best can we achieve that outcome ? If we 8cceplt the premise that the adverse conditions cited above exist with two CVN's, then , I think we should pursue a strategy which reek8 mitigation of these conditions. Rather! thsn discussing alternatives which remove one carrier (and with it, probably, all hope Of mitigation from the Federal government), I believe Coronado's residents,
commuters, and business are better served by 8 policy of support for the Navy's preferred homeporting alternative conditional on provision of ● itiSst!ton in the form of funding for the tunnel proposal and for appropriate radiation monitoring. Hopefully, by tomorrow,, you will have a mandate to seek such mitigation.

2. Tone. If a pro-active strategy to reek mitigation is adopted by the Council, I would ● U&lle8t 8 firm but less antagonist ic approach through softening some of the language in the drsft letter. Words such as **specious" and "disingenuous" do not convoy a desire to work together toward mutually beneficial solutions. I would be happy to work with Staff in producing such 8 strategy snd draft letter should Council so direct and have attached a list of recommended changes toward this end.,

3. T-word'. We 811 know the T-word; the T-word is TUNNEL!!! Lets not b• afraid to say it.

Sincerely,

Sut

J. Sutton Clark

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0104

Suggested changes to draft letter on three CVN draft EIS

1. Page 1, para 1, line 81 delete "if the Navy desires"; replace "an" vith "8"; delete "acceptable".

2. Page 1, para 3, line 4: replace "refusing" with "failing".

3. Page 2; delete para 3 under General Analysis.

4. Page 3: rcplrce "specious" with "are contradicted by current traffic and noise data".

5. Page 4: rcplrce "disingenuous" with "is misleading in that tbe children of these CVN families. ...".

6. Page 6, Noise Analysis: Cite recently completed Coronado Noise Study.

I'. Page 7, Radiation Analysis: Questions ulth respect to seafood and farm products1 appear gratuitous.

0105

RECEIVED OCT 3 0 1998

ANALYSIS OF THE TRANSPORTATION ELEMENT OF THE DRAFT EIS ON CVN HOME PORTING AT NASNI, AUGUST 1998

Traffic congestion is generally regarded as the most pressing problem impacting the quality of life of Coronado residents. Bridge traffic to and from Coronado has more than doubled over the last 20 years with weekday volumes now at 80,000 vehicles. Traffic to NASM constitutes over 55% of this weekday volume and, more importantly, contributes to peak traffic volumes on Route 282 that reach capacity for 1 hour in the morning and 3 hours in the afternoon. The Coronado Blue Ribbon Committee on Traffic concluded, after a year of study, that a tunnel from the Bridge toll plaza to NASNI, was the only effective means to deal with the traffic congestion as it exists today. This condition exists when two, not three, carriers are home ported at NASM. The proposed tunnel should provide sufficient capacity to handle the traffic generated by the three CVNs.

Volume I, Section 3.9 of the EIS deals with the impact of future additional traffic that would be generated by 3 CVNs being home ported at NASM. This section devotes, just 9 pages to the traffic issue and the report uses data as far back as 1993. The conclusion of this abbreviated analysis is that "None of the home port (Coronado) area roadways and intersections would be significantly impacted because the changes in traffic volumes and Levels of Service are below the significant criteria thresholds "

The Navy arrives at this erroneous conclusion through the following analysis Prior to the decommissioning of the USS Ranger in 1993, NASM supported 3 CVs. Therefore the only personnel increment to that 1993 baseline would be the crew size of a CVN relative to a CV. The Navy puts this number at 102 personnel, and calculates the net traffic impact of the 3 CVNs to be +430 ADT, and an increase in peak hour traffic of just 55 vehicles. Additionally, the Navy addresses the issue of "up to 1300" additional personnel required for the six months Industrial Availability, by saying that reductions in force elsewhere at NASM will offset this personnel increase. No detailed delineation of this reduction in force is given.

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Conrrut this abbreviated analysis of the traffic impact on Coronadlo with the 38 page detailed study done for Pearl Harbor- with a more current date of October, 1997. Considerably more effort went into a traffic analysis of a facility the Navy has no intention of using to homeport a CVN. As the study notes, no carriers have been home ported at Pearl Harbor since World War II, and major changes to the infrastructure would be required. Furthermore, there is no air base in Hawaii to take the Carrier Air Wing, and work ups would have to take place in SOCAL, which takes 6 days to reach from Pearl Harbor. It is clear that a traffic analysis of homeporting 3 CVNs at NASM comparable to that done for pearl Harbor would show a significant impact on the traffic congestion of Coronado, with a requirement for mitigation, and such an analysis should be done.

An updated analysis would use a more current baseline (1997) instead of 1993. This analysis can be done by calculating the number of "Carrier Days in Port" to determine the net change from the 1997 baseline whets 2 CVs were home ported at NASM, and 2005 when 3 CVNs will be home ported at NASNI.

Using the EIS and other sources, the "Days in Port" for the CVNs can be calculated as follows:

CARRIER 24 MONTH CYCLE

	MONTHS IN HOME PORT	MONTHS AT SEA/ NOT AT HOMEPORT
DEPLOYMENT		6
STAND DOWN	1	
INDUSTRIAL AVAILABILITY	6	
WORK UP CYCLE	6	4
PRE-DEPLOYMENT	1	
TOTAL EQUIVALENT MONTHS	14	10
PERCENT IN PORT (14/24)	58 3%	

Calculation: 58 3% of 365 days = 213 average days in port per year X 3 cat-tiers = 639 carrier days in port per year by year 2005.

By checking the daily shipping activity log of the Pon Officer, it was determined that in 1997 the Constellation was in port 150 days and the Kitty Hawk 265 days (9 months of an 11 month extensive overhaul occuned in 1997), for a total of 415 "Carrier Days in Port".

Thus it can be seen that by 2005 the roads of Coronado will be carrying an increment of tragic generated by an additional 224 "Carrier Days in Port", which represents an increase of 54% in carrier generated traffic

A calculation of the traffic generated by the crew of a carrier in port can be derived from the data worked up for the impact of a single CVN at Pearl Harbor, as set fonh in the EIS. That study puts the peak hour number of trips to the carrier in the morning at 1199, with a like number in the afternoon Preliminary data developed by Katz, Okitsu & Associates (who are working on a traffic impact analysis of a free Bridge for SANDAG) indicates a CVN in port at NASM generates 4,258 daily trips. with the peak hours volume, (which extends beyond one hour) in the morning and afternoon of 1,700.

The EIS enumerates only one intersection in Coronado at Level of Service "F", which is Orange and Fourth. That intersection has a capacity of 2450 vehicles per hour (As determined by Linscott, Law, and Greenspan, and verified by the Coronado Blue Ribbon Committee on Traffic) That intersection is at, or close to, capacity for 3 hours each weekday afternoon. There is no way that additional vehicles can be accommodated in the peak hours without extending those hours, or, more likely, spreading the Navy commuter traffic onto other residential streets of Coronado. That this has already happened cm be demonstrated by First Street, where traffic in the past 3 years has doubled during the afternoon peak hours.

The EIS fails to note that many unsignalized intersections along the Rt. 282 commuter road to NASM are also at LOS "F". The Linnscott report on the Third Street Gate sets forth these additional intersections at LOS "F" during peak hours

3rd&B, 3rd&C, 3rd&H, 4th&H, 4th&C, 4th&B, 4th&A, 4th&Pomona, 4th&Glorietta, Alameda& 1 st, and Alameda&3rd.

There is no mention of safety concerns along Rt 282- particularly that segment south of Orange Avenue Caltrans has expressed concerns about an inordinate accident rate- a situation which will be exacerbated by the increased traffic generated by the third carrier.

More extensive shipboard maintenance will be done on the home ported CVNs at NASNI than was done with the conventional carriers. Up to 1300 outside contract personnel (including personnel from Puget Sound Naval Shipyard) will come to work during the 6 month period of Industrial Availability. Witlh 3 CVNs in the cycle, this wilt occur 270 days out of the year. Again, a measurement of the impact can be made by reference to the Pearl Harbor Traffic Study, which put the additional peak hour traffic load of this activity at 477 trips in each direction in the peak hours.

Finally, there are other factors which will increase traffic, but are difficult to quantify

a) Additional truck traffic associated with the Industrial Availability activity not previously performed at NASNI.

b) Additional home port days resulting from Navy personnel retention concerns.

c) Additional 'visiting ships" due to the increase in the number of dlecp water berths from 3 to 5.

d) Cadre staff at the maintenance facility when no PIA is in process.

Paragraph 3 9 1 2 of the EIS states:

"The project's impacts to the ground transportation system would be considered significant if one of the following impacts occur: Additional traffic generated by the homeporting activities would result in an increase of 0 02 or greater in the volume/capacity ratio of an intersection that is projected to operate at LOS E or F". This will clearly be the case at intersections already classified as LOS F along Route 282. For example; the intersection of Fourth and Orange is currently at capacity (1 .0) with 2,450 vehicles per hour. An increase of 02, or just 49 vehicles, is required to make the impact "significant". The additional carrier will add 1,199 trips and the Industrial Availability will add 477 trips for a total of 1676 peak trips resulting in a volume/capacity ratio of 1.68. Even averaging the peak by using the incremental carrier-days-in-port, the volume/capacity ratio would still be I .41.

CONCLUSION

The homeporting of 3 CVNs at NASNI will have a significant (using the EIS definition of the word) impact on traffic conditions in Coronado. An *updated and* more *thorough traffic analysis*, similar to what was done for Pearl Harbor, is warranted. If the Navy finalizes the homeporting of 3 CVNs at NASNI, then mirigrtion is in order, and that mitigation should consist primarily of financial support for the proposed tunnel to NASNI from the Bridge toll plaza. Over the past 5 years alternative forms of mitigation such as van pools, bus and ferry subsidies, at a cost of over $3,000,000 per year, have been tried with minimal impact (2-3% range) on Bridge traffic. The tunnel will remove approximately 50% of the weekday bridge traffic (including most trucks) from the streets of Coronado In addition to relieving congestion, the tunnel will bring noise and pollution figures into compliance with State and Federal standards.

Rankine Van Anda, Coronado Blue Ribbon Committee on Traffic, 10/30/98

L.4

ENVIRONMENTAL HEALTH COALITION
1717 Kettner Boulevard, Suite 100 . San Diego, CA 92101 . (619) 235-0281 . Fax (619) 232-3670
e-mail: ehcoalition@igc.apc.org . Web address: http://www environmentalhealth.org

October 20. 1998

Mayor and City Council
City of Coronado
1825 Strand Way
Coronado, CA 92 118

Dear Mayor and City Council:

Environmental Health Coalition (EHC) appreciates the City's scheduled hearings, on the Draft Environmental Impact Statement (DEIS) currently under public review. EHC would like to formally submit the following material into the City's official record which we feel has bearing on the City's comments on the DEIS for Homeporting of Additional Nuclear Carriers in San Diego Bay.

1. Comments on the DEIS from Dr. David Richardson, Department of Epidemiology, School of Public Health Uolvcrsity of North Carolina, Chapel Hill, NC

EHC Comments: Please see attached expert comments raising the concerns that the health studies upon which the Navy relied in the DEIS were primarily focused on external exposure to radiation of workers and that these studies did not assess the impacts to community members from internal exposure (i.e. inhalation of releases of radiation). Dr. Richardson is the first of several of technical experts from which MC has sought expert review of the DEIS.

2. A copy of a proposal for • **carrier dry-dock at NASNI** taken **from** the **Administrative** Record **associated** with our **legal action against** the **Navy** due to the **first carrier** home **port** and **a** copy of the ***San Diego Business Journal* article discussing** future **nuclear repair work** by **NASSCO.**

ERC **Comments:** EHC *remains* **very concerned about** *the* possibility of construction of both **submarine and** carrier dry-docks in San Diego Bay that could **lead to** the refueling **and defueling** of **reactor cores in San** Diego. **The** Navy's verbal **promise that "there are no current plans" is** not good enough **and** will **not** protect our communities **from** such **activity** in **the future.** EHC **has repeatedly requested** that a prohibition on such activity **be included** in environmental documents. The Navy, in turn, has repeatedly refused. This should be an alert to the City and the public and the City should also request such a prohibition in its comments on the DEIS. The City should also request an explanation regarding this dry-dock proposal including its generation, its merits, its future, and its prohibition.

3. A copy of the Navy's recent refusal to release full information regarding "Lessons Learned" report regarding the mercury spill in the Turning Basin.

EHC Comments: EHC has requested, under FOIA, release of information regarding this accident. The Navy is still refusing to release over 150 documents including the Lessons Learned report. Although the crew is of the nuclear submarine force, the accident did not occur on a nuclear submarine, did not involve radiation or National Security, and there is no existing or pending litigation. The reason for the Navy's refusal to release this information is unexplainable and should be queried by the Council.

Accidents involving release of hazardous materials due to fatigue and overwork of the nuclear work force is of relevance to the homeponing of additional nuclear carriers and the DEIS and is of significant interest to the public.

L.4

4. Excerpts of the Court Martial Transcript in which much discussion of the fact that overwork and fatigue lead to the accident on the USS Mystic that discharged elemental mercury into the Bay. This accident resulted In $1.7 million dean-up and full records are still being withheld (See above]).

EHC Comments: EHC is concerned that overwork is frequently part of the Nuclear Naval work. experience and that this culture of fatigue is one element that could contribute to an accident. This transcript and this accident authenticate that concern. The Council should request that the full record regarding this accident be released.

Finally, The Council should request that full information be provided to the public on this project. This view was recently supported by over 120 Coronado residents wbo postcard or wrote letters of opposing the Mixed Waste and Hazardous Waste permits at NASNI until the Navy fully discloses all information regarding the impacts from the nuclear megaport and public safety is guaranteed. These records available upon request. There is much information that the Navy is still withholding regardin g this project. A complete disclosure of information and analysis of the full project should be done prior to any additional carriers being homeported at NASNI. The DEIS still does not analyze the full Nuclear Homeport project. The City should request that the Navy detail the entire project and that environmental review on the entire project be conducted for the benefit of the public

While EHC greatly appreciates the opportunity lo provide the City with information on the DEIS, we must state for the record that we are unaware of any official role the City has in the decision of home porting nuclear carriers in San Diego and that failing to raise issues at the

Coronado City Council meetings does not lessen EHC's ability to legally challenge the Navy's homeporting project.

Thank you for the opportunity to comment on this document.

Sincerely,

Laura Hunter

Laura Hunter, Director
Clean Bay Campaign

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ENVIRONMENTAL HEALTH COAL
1717 KETTNER BLVD STE 100
SAN DIEGO CA 92101-2532

0126

UNTY'S AWARD-WINNING WEEKLY VOL. 19, NO. 41

USINESS JOURNAL

OCT 1 3

GD's Return May Bring Nuke Ship Repairs

Nuclear Expertise Could Grab Carrier, Submarine Contracts for NASSCO

BY ANDREA SIEDSMA
Staff Writer

General Dynamics Corp.'s pending acquisition of San Diego's National Steel and Shipbuilding Co. may bring nuclear ship repair work to local workers.

In a $370 million deal announced last week, General Dynamics entered a definitive agreement to acquire NASSCO Holdings Inc., NASSCO's parent company. Since NASSCO is an employee-owned company, the shipyard's employees will sell their stock to General Dynamics for $225 a share.

The deal comes as the Navy begins to homeport nuclear aircraft carriers in San Diego. In August, the nuclear-powered carrier *USS John C. Stennis* arrived at North Island Naval Air Station. The Navy is studying the possibility of homeporting two additional nuclear carriers here. Meanwhile, Naval Submarine Base on Point Loma has been a longtime home to nuclear subs.

Usually, work performed on the nuclear propulsion systems of Navy ships stationed on the West Coast is performed at the Puget Sound Naval Shipyard in Bremerton, Wash., the only West Coast yard with people qualified for such work.

The Puget Sound naval yard has sent 450 workers to San Diego to perform repair work on the Stennis.

That may change.

NASSCO will now be able to tap into General Dynamics' nuclear expertise; General Dynamics' Electric Boat Division is the Navy's premier designer and builder of nuclear submarines.

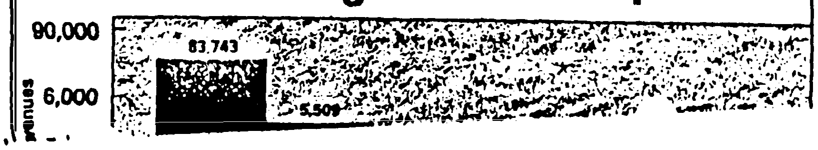
"If the Navy chooses to put (nuclear) work in the private sector, with access to General Dynamics' capabilities, it might provide additional work for some NASSCO employees," said Fred Hallett, the shipyard's senior vice president and chief financial officer.

General Dynamics officials declined to comment further, saying it was premature to speculate on future nuclear ship or submarine contracts.

General Dynamics won't be the only nuclear presence in San Diego. Newport News Shipbuilding,

Off the Charts . . .

Fast-Growing Private Companies



Cruise Ship Bill Blockage Is a Setback For San Diego

The following letters were previously received and have been identified as attachments to comment letter O.12 from Environmental Health Coalition:

- Comments of Dr. David Richardson, Department of Epidemiology, School of Public Health, University of North Carolina, Chapel Hill, NC.
- Proposed Dry Dock for NAS North Island, San Diego's Proactive Stance Committee Report, San Diego Shipyard Demographics, NAS North Island "Dry Dock" Point Paper, Current and Proposed Berthing/Dry Dock Plan, February 16, 1993.

These letters were resubmitted by the City of Coronado as part of their attachment and numbered by the City as pages 112 through 125.

DEPARTMENT OF THE NAVY
COMMANDER NAVAL BASE
937 NO. HARBOR DR.
SAN DIEGO, CALIFORNIA 92132-[illegible] 0058

IN REPLY REFER TO:
5720
Ser N512/3764
October 16, 1998

Ms. Laura Hunter
Director, Clean Bay Campaign
Environmental Health Coalition
1717 Kettner Boulevard, Suite 100
San Diego, CA 92101

Dear Ms. Hunter:

This is in final response to your Freedom of Information Act (FOIA) request of June 30, 1998, addressed to the Naval Facilities Engineering Command, Southwest Division, in which you seek records concerning the creation of a Lessons Learned Report from a July 1, 1996 mercury spill into San Diego Bay from MYSTIC (DSRV 1). Your request, along with a responsive document, was forwarded by Commanding Officer, Naval Air Station, North Island to this command for partial action and a release determination.

We are now in possession of a lessons learned report prepared by the Naval Facilities Engineering Command, Southwest Division (NAVFAC SWDIV) for Commanding Officer, Naval Air Station, North Island (NASNI). The responsive document was given a "lessons learned" report nomenclature but does not appear to constitute a final action. Careful review of this document leads to the conclusion that it is a "deliberative" record, as that term is defined within 5 U.S.C. § 552(b)(5) and Section 3-200 of the DoD Directive 5400.7-R (Freedom of Information Act Program), in that it pertains to preliminary, decision-making processes of this agency. Per Section 3-200 of the above-cited directive, non-factual portions of staff papers, to include "*lessons learned*" (original emphasis), are exempt from disclosure. We enclose a complete copy of the NAVFAC SWDIV transmittal memorandum and those reasonably segregable portions of the responsive document which do not express staff opinions or recommendations exempt from disclosure.

Be advised that the Navy Lessons Learned System (NLLS) you referred to is applicable to "fleet users" which may not include non-operational based commands such as NAVFAC SWDIV and NASNI. However, in the interests of thoroughness, by copy of this action

0128

.SSCO:

...ued from Page 1

...s acquired San Diego's [redacted] Mari- Services Inc. last year, is the country's other builder of nuclear-powered war- . Newport News officials have also d to go after nuclear repair work.

...eanwhile, potential nuclear work is not ...ely reason why General Dynamics pur- d NASSCO.

...e $5 billion defense contractor also plans a contender for the Navy's new class of ...ary dry cargo ships. Funding for the ...s expected to be approved by Congress ...year, with contracts beginning in 2000. Navy plans to build 14 of the ships, ...ng about $275 million each.

...ith NASSCO now part of the family, ...ral Dynamics is more confident about ...ng such contracts.

...ASSCO will further strengthen our position as a prime contractor for ship design and construction by extending our reach, both geographically and in product mix," said Nicholas Chabraja, General Dynamics' chairman and CEO.

"The country's six major shipyards are national treasures. NASSCO has been a great player historically and we intend for that to continue."

NASSCO's success may grow even stronger with the expertise of its General Dynamics' sister, Bath Iron Works of Maine, the Navy's leading supplier of combatant ships.

"One of our objectives is to become the best shipyard, and we say that knowing that we have a long way to go," Hallett said. "We want to be better than the Japanese. To do that requires significant modernization. By being a member of General Dynamics, we have the financial capability and technical background to help us achieve that goal."

Shipyards in the Far East control about 60 percent of the world's shipbuilding market, largely due to cheaper labor and better cost efficiencies, Hallett said.

During the 1940s and 1950s, U.S. shipyards were the most-efficient yards in the world. That status began to sink because the steel industry did not put money into modernizing their facilities, Hallett said.

Now that the steel industry is up to par, it's time for U.S. shipyards to step up, he said.

"It is time for the shipbuilders to do what's necessary to be the most efficient shipyards in the world. I am a strong believer that American shipbuilding can again be competitive in the world market."

Hallett said NASSCO will also continue to seek contracts for oil tankers, cruise ships, container ships and roll-on, roll-off cargo ships.

NASSCO has been doing pretty well on its own. The shipyard, which has a $1.6 billion backlog of contracts and expects $485 million in revenues for 1998. NASSCO has also maintained a steady work force over the last couple of years. It currently has 4,000 workers.

It is one of three major shipyards in San Diego. The others are Continental Maritime and Southwest Marine Inc.

"NASSCO and the shipbuilding and repair industry have long been an important part of San Diego's economic strength and vitality," said Ben Haddad, president and CEO of the Greater San Diego Chamber of Commerce.

"The combination of General Dynamics and NASSCO is a perfect mix of a San Diego-based company who has grown to become an industry innovator and leader, combined with a seasoned veteran of worldwide shipbuilding markets."

General Dynamics is no stranger to San Diego. At one time, the defense contractor was San Diego's largest employer. That changed with the recession of the early 1990s and with cutbacks in the defense budget.

In the early 1990s, General Dynamics laid off thousands of workers due to drops in defense spending. It sold its Convair Division, which built the Tomahawk cruise missile, to Hughes Aircraft Co., which moved the operation to Arizona.

General Dynamics also sold its space division to Martin Marietta, which moved the operation out of town.

The layoffs and move left a lasting bruise on the local economy.

Is San Diego ready to welcome back General [redacted] with open arms?

Hallett seems to think so.

"General Dynamics remembers that San Diego has an excellent work force," he said. "We look forward to their return."

Late last week, General Dynamics' stock closed at $54, with a low of $53 1/16 and a high of 54 9/16.

...I Joins With Canadian Firm for Treatment of Disease

...ructural [redacted] Inc. [redacted] BioChem Pharma ac- ...d a lead [redacted] for the treatment of a ...n viral infectious disease in their col- ...ation.

SBI entered into a collaborative agreement with BioChem in August 1997 to find leads for viral and [redacted] targets. SBI will receive future fees from additional research including [redacted] of clinical trials.

0127

5720
Ser N512/3764
October 16, 1998

your request is forwarded to the Navy Tactical Support Activity (NAVTACSUPPACT) in order to determine whether such lessons learned report exist8 within NAVTACSUPPACT data baece.

Because that portion of your request has been partially denied, you are advised of your right to appeal this determination in writing to the Assistant General Counsel (FOIA), Navy Department, 901 M Street SE, Bldg. 36, Washington, DC 20374-5012.

This appeal must be received in that office within 60 calendar days from the date of this letter to be considered, and a copy of this letter ehould be attached along with a statement regarding why your appeal should be granted. It is recommended that the letter of appeal and the envelope both bear the notation, "*Freedom of Information Act Appeal*."

I ram the official responsible for the denial of your request. If you have any questions, please contact Mr. James B. Maeingill, Attorney Advisor, at (619) 532-1418.

Sincerely,

A. A. REYNOLDS
Captain
Judge Advocate General's Corps
U.S. Navy
Staff Judge Advocate
By direction of the Commander

Enclosure

Copy to: NASNI (OA) (w/o encl)
NAVFAC SWDIV (Code 09C) (w/o encl)
NAVTACSUPPACT (w/copy of FOIA req of June 30, 1998 and unredacted encl)

0129

L.4

The following was previously received and has been identified as attachments to comment letter 0.12 from Environmental Health Coalition:

- Memo with Enclosures from Commander, Southwest Division Naval Facilities Engineering Command to Commanding Officcr, Naval Air Station, North Island RE: Mercury Spill Lessons Learned, November 18, 1997.
- Memo from Gail Brydges to Ed Kleeman, Senior Planner, RE: Comments on the DEIS for Nuclear Homeporting, September 22, 1998.

This information was resubmitted by the City of Coronado as part of their nttachmcnt and numbered by the City as pages 130 through 151.

RECEIVED SEP 3 0 1998

Comments on Navy Draft EIS Aug 1998
sept 29.1990
From: Louis de Beer.

The following is an informal overview of the traffic portion of the Draft NAVY EIS for NASNI Coronado ,Ca .

L.4

1.Letter to Mr .Dan Muslin SW Division Naval Facilities Eng.Command San Diego Ca. From Off ice of the Mayor Coronado Ca. Fog 7.1997
Cowent: The EIS does not directly address any of the questions in reference.

2 .Ref Volume 1 page 3.9-3,1 .Comment: What was specif ically observed i.e. date,time,lenght of observation.

3 . page 3.9-4 "Based on 1993 traffic count,...:
Comment : Data is 5 years old.

4. 3.9-5,8 DON 1995a ,1997a... .'used the factor of 2.46 vehicle trips per clay..:.Trip rate based on mid 1980's study at Mayport ,Fla NAVSTA... ."3.9-5,10 "Traffic count at NASI gate ..:
Comment : Date(s), time , per iods of observation.

5. 3.9-5,14 .. ..rate of 2.1 trips per person has been assumed. . . "
Comment:Averaging two widely seperated facilities is not a credible technique for evaluating average or peak traffic conditions.What were the criteria,assumptions etc. for this technique?

6. 3.9-111-20
Comment: Need detailed supporting data.

7. 3.9,7-11 ". . . would be offset by the planned decrease in personnel at other NASNI operations.. ."
Comment: What decrease,numbers,time period.

General Comment .
The traffic: analysis in the draft EIS is not doquatm.fhora is no cumulative [illegible] nal:vsir,no recent(1997.1998) data included. Averaging ltuo NAVSTAs traffic count is not credible unless the detailed criteria is presented.Traffic data in the tables doom not indicate date,time,length of observation.

1110

THE LANDING
A Beautiful Point of View.

SEP 2 4 1998

September 24, 1998

line Mayor and City Council
City of Coronado
1825 Strand Way
Coronado, CA 92 118

Re: The Navy's Drafi Environmental Impact Statement (DEIS), Developing Homepott Facilities for Three Nimiu-Class Aircraft Carriers in Support of the U.S. Fleet

Dear Mr. Mayor and Members of the City Council,

The Landing Homeowners Association represents the 92 residential units at The Landing and the approximately 180 residents thereof. As you are aware, we have, for many years objected to the traffic generated on First Street because of the First Street Gate at NASNI and the designation of First Street as a truck route. Because of our concern, we have read the DEIS, but, of course, do not have the factual data to question many of the statements charts. and conclusions mentioned1 in the DEIS concerning traffic, noise, air quality, health and safety and cumulative impacts.

However. we do have the following comments on the DEIS:

I. It is fundamentally and fatally flawed in that the information contained in the DEIS does not speak as of the date of its' issuance and the basic facts relied upon do not exist today.

Throughout the DEIS it refers to the "current situation" as being two CV's homeported at NASNI and throughout gives credit to the removal of 2 CV's. This simply is not th as the only major ships homeported at NASNI are one CV (the Constellation) and one CVN (the recently arrived Stennis). For references to removal of 2 CV's see pp. ES-8, ES-9. ES-17, ES-19. 2-44, 2-49 and "the Status Quo" described on p. 2-44.

It is also stated that "Beginning in 1998, 3 aircraft carriers wi ll be homepotted at NASNI again" 2-8&9. This is not true, has not been true, and will not be true.

There is no way a reasonable person could analyze the volumes of information by simply subtracting one CV.

The DEIS says that the population of NASNI is 20.500 and has ranged from 17,700 to 21,300. 2-9. A check with the Air Station Public Affairs Office produced the information that the population of the Atr Station and the Amphibious Base is currently 1 I.000 with the Amphibious

1099 FIRST STREET
CORONADO CA 92118
(619) 435 3991

Base population being between 3.000 and 5.000. These figures do not include personnel on board the carriers.

The DEIS states: "'The Navy is currently in the process of redesigning the Main Gate so that the entrance would be aligned with 3rd Street at Alameda Boulevard and the exit aligned with 4th Street." 3.9-4 and 3.18-l 1. The implication is that the gate will be realigned and that this will mitigate the traffic problems. This, however, doe not comport with the recent statement of Mayor Smisck that due to the cost of the realignment and SANDAG's lack of funding the realignment "is dead."

2. So many of the facts and figures used in the DEIS are outdated and should be updated to the current situation (downsizing. one CV and one CVN, current terrorist threats evidenced by the: increased security at NASNJ, etc.). Traffic trips rates based on a mid- l 980"s study at Mayport Naval Station in Florida would be laughable if they were not in a serious DEIS. 3.9-S. "Daily traffic volumes "were collected from Cal Trans, the City of Coronado and the Navy in 1995" 3.9-3. There must be information that is less that 3 years old and reflects the different population and ship mix at the Air Station at the present time. We also now have experience with the delays in traffic caused by a threat alert condition and suicides and accidents on the bridge that completely snarl up the access to our island.

3. Unfonunately. by trying to justify a conclusion, there are, what we believe to be, substantial omissions of two vital mitigation measures. There is no mention of the realignment of the Madn Gate as a mitigation measure (although the DEIS seems to erroneously assume that it will happen) and there is no mention of the proposed bored tunnel although it is on our municipal ballot next month.

L4 4. We have neither the capability nor the resources to analyze the many, many other facets of the DEIS but urge the City to do so or to employ those who can do so.

5. Last, but not least. we believe there must be discussion (probably under Health & Safety) of the increased threat of terrorist activity or strategic targeting by foreign powers caused by the accumulating of three (and four if the transient dock is used) of the worlds largest warships in a confined space. This must have an impact on the desirability of gaining maximum results from an illegal act. This really needs to be treated in the DEIS if it is to "evaluate potential impacts" from the proposed homeporting of three nuclear carrier with a transient doc k for a fourth visiting nuclear carrier.

6. Because of the faulty factual foundation of the DEIS, it does not fulfill its purpose of evaluating "environmental effects from constructing and operating facilities and infrastructure needed to support 3 Nimitz-class carriers" and the requirement of informing "of reasonable alternatives to avoid or minimize adverse impacts." It is interesting to note that the DEIS 'acknowledges that 'NASNI can't support 3 additional CVN's for a total of 4." 2-69.

W'c respectfully request that the City Council request that the DEIS bc rewritten in the present factual situation using current information and providing data on mitigation measures. This is

one of the most important matters facing the City of Coronado and our success with t'he last EIS was miserabbe. Unfortunately, although the law requires the Navy to prepare a supplemental EA or EIS "should new information relevant to environmental concerns bearing on the impacts of the proposed action become available" (2-3). the Navy should really go back to the drafting boards and prepare a new DEIS to avoid the confusion that would entail if it merely issued a supplement to the current. draft.

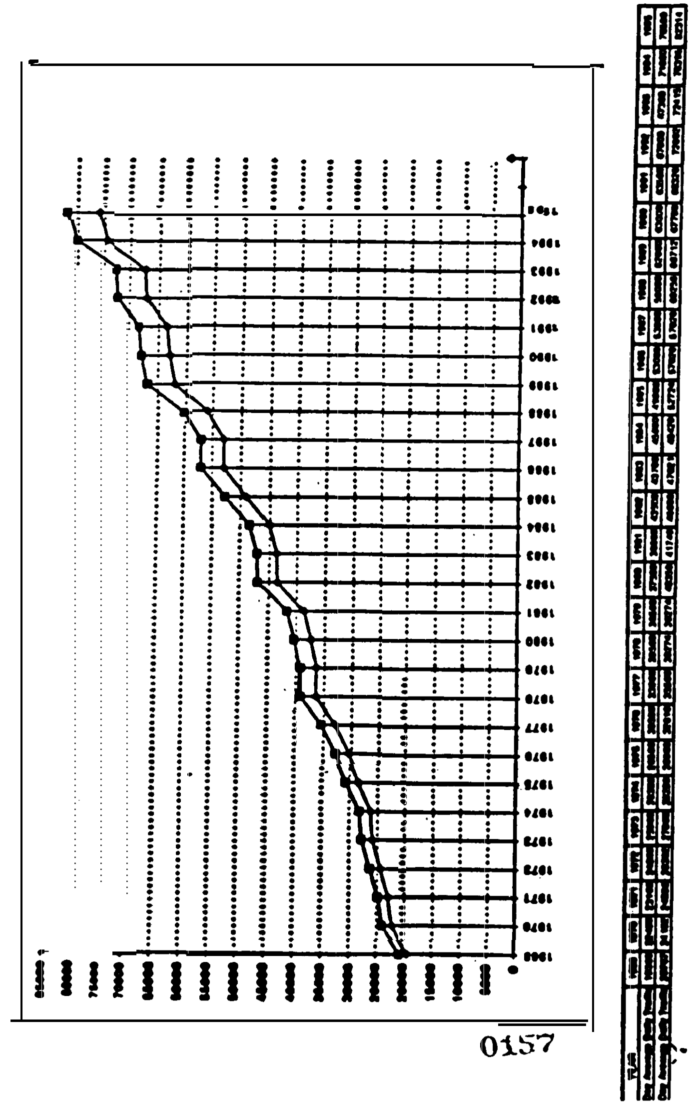
Again, we implore you to give the review of the DEIS the highest priority and take such actions as maybe necessarv or convenient to insure that our quality of life is impacted as little as possible by the proposed homeporting and that the City gets the benefit of the maximum amount of mitigation possible.

Sincerely yours,
The Landing Homeowners Association

by E. Miles Harvey
Chairman, Public Affairs Committee

cc: Board of Directors

ATTACHMENT A



SAN DIEGO TOLL BRIDGE
AVERAGE DAILY TRAFFIC
1969-1995

0157

MEMORANDUM

DATE: September 10, 1998

TO: Ed Kleeman, Senior Planner
cc: City Council
City Manager

FROM: Gail Brydges, Administrative Analyst

SUBJECT: CVN EIS Review and Proposed Alternative

After preliminary review of the August 1998 CVN EIS, including the Navy's preferred Alternative Two, I recommend City's "Proposed Alternative" for the following reasons:

- **Cost savings of $62,366,439**
- **Meets operational objectives**
- **Reduces environmental impacts**
- **Improved strategic disbursement of ships**

Comparison of Alternatives

	Navy's Preferred Alternative Two	City's Proposed Alternative
Cost	$185,787,212	$123,420,773
Operational Objectives	Meets operational objectives	Meets operational objectives
Environmental Impact	NASNI-cumulative environmental impacts exceed thresholds of significance for traffic, noise and air quality	NASNI - reduces environmental impact; mitigates long term cumulative impacts
Ship Location	NASNI - 3 CVN PSNS - 1 CVN, 4 AOE Everett - 1 CVN PHNSY - N/A	NASNI - 2 CVN PSNS - 2 CVN, 2 AOE Everett - 1 CVN, 2 AOE PHNSY - N/A

Further, I recommend that the cost savings of $62,366,439, resulting from the Proposed Alternative, be committed by the Navy as shared, cooperative funding toward construction of a major capital bridge approach improvement (such as a tunnel) in the City of Coronado. This would provide mitigation for the long term cumulative environmental effects resulting from traffic related to NASNI. The traffic data in Attachment A shows an increase in weekday Average Daily Traffic from 20,000 in 1969 to 80,000 in 1995.

Attachments B, C and D provide further, in-depth analysis of the Proposed Alternative in comparison to alternatives considered in the EIS.

0156

ATTACHMENT B

a CVN. The analysis also included evaluating the feasibility of homeporting more than one CVN at each location with respect to (1) what additional construction projects would bt required and (2) what other related (but not CVN-specific) projects might be required based on the number of CVNs homeported.

The Navy then determined a reasonable range of combinations of CVNs and AOEs for each location (DON 1997a). Some combinations of CVNs and AOEs were considered but eliminated as they did not satisfy the CVN Home Port Objectives and Requirements. Finally, combinations of CVNs at locations were brought together into five alternatives, each capable d providing home ports for the! three CVNs addressed in this EIS. Each alternative requires a varying level of facilities development, but satisfies CVN Home Port Objectives and Requirements. In addition to the reasonable range of five alternatives, a No Action Alternative is included as required by NEPA. The results d the analysis determining a range of reasonable home port alternatives used in this EIS are displayed in Table ES-1. Table ES-1 is also reproduced at the end of Volume 1.

CVN Home Port Facility and Infrastructure Improvements

Table ES-2 illustrates the facilities and improvements required for each of the five CVN Home Port alternatives in order to satisfy the CVN Home Port Objectives and Requirements. No improvements would occur under the No Action Alternative.

CVN HOMEPORTING ALTERNATIVE COSTS

The costs associated with each of the CVN homeporting alternatives are compared below based on "best information available" estimates. Alternative Six (the No Action Alternative) costs purposefully have been calculated at zero by subtracting "status quo" and "baseline" costs to facilitate homeporting alternative comparisons. The status quo is defined as the current situation: two CVs at NASNI, four AOEs at PSNS, and one CVN at NAVSTA Everett. The cost of the status quo is $1,220,995,960, representing the operations and housing costs of these ships. The baseline cost, $25,344,462, is the cost associated with operating, maintaining, and housing the three CVNs and four AOEs as described in Alternative Six. Status quo and baseline costs have been subtracted from all alternatives in order to accurately reflect the incremental cost of each alternative.

Alternatives	Cost
Alternative One	$138,283,235
Alternative Two	$185,787,212
Alternative Three	$598,148,324
Alternative Four	$204,168,718
Alternative Five	$409,119,289
Alternative Six	$0
Proposed Alternative	$123,420,773

L.4

ATTACHMENT C

Table ES-1. Numbers of CVNs and AOEs at Home Port Location Alternatives within the U.S. Pacific Fleet

	Alternatives: One	Two	Three	Four	Five	Six (No Action)	Proposed Alternative
Home Port Locations							
NASNI	3	3	3	2	1	2	2
PSNS	2	$1_{(4)}$	$1_{(4)}$	$1_{(4)}$	$2_{(2)}$	$2_{(4)}$	$2_{(2)}$
NAVSTA Everett	$0_{(4)}$	1	0	2	$1_{(2)}$	1	$1_{(2)}$
PHNSY	0	0	1	0	1	0	0

Proposed Alternative	
NASNI	One Additional CVN with Removal of Two CV's: Total of Two CVNs
PSNS	One Additional CVN and Removal of Two AOEs: Total of Two CVNs
NAVSTA Everett	No Additional CVN and Addition of Two AOEs: Total of One CVN
PHNSY	No CVN: No Change

Alternative One	
NASNI	Two Additional CVNs with Removal of Two CVs: Total of Three CVNs
PSNS	One Additional CVN and Removal of Four AOEs: Total of Two CVNs
NAVSTA Everett	Removal of Existing CVN and Addition d Four AOEs: No CVNs
	No CVN No Change
Alternative Two	
NASNI	Two Additional CVNs with Removal of Two CVs: Total d Three CVNs
PSNS	No Additional CVN: No Change = Total d One CVN
NAVSTA Everett	No Additional CVN: No Change – Total of One CVN
PHNSY	No CVN: No Change
Alternative Three	
NASNI	Two Additional CVNs with Removal of Two CVs: Total of Three CVNs
PSNS	No Additional CVN: No Change = Total d One CVN
NAVSTA Everett	Removal d Existing CVN: Total d No CVNs
PHNSY	One CVN: Total of One CVN
Alternative Four	
NASNI	One Additional CVN with Removal of Two CVs: Total d Two CVNs.
PSNS	No Additional CVN: No Change – Total of One CVN
NAVSTA Everett	One Additional CVN: Total d Two CVNs
PHNSY	No CVN: No Change
Alternative Five	
NASNI	No Additional CVN with Removal of Two CVs: Total of One CVN
PSNS	One Additional CVN and Removal of Two AOEs: Total of Two CVNs
NAVSTA Everett	No Additional CVN and Addition of Two AOEs: Total of One CVN
PHNSY	One CVN: Total of One CVN
Alternative Six	(No Action Alternative)
NASNI	One Additional CVN with Removal of Two CVs: Total of Two CVNs
PSNS	One Additional CVN: Total of Two CVNs
NAVSTA Everett	No Additional CVN: No Change – Total of One CVN
PHNSY	No CVN: No Change

Notes: Numbers given are total number of CVNs at a site. NASNI and PSNS each have one CVN assigned and they are not addressed by this EIS action.
(2) – Location of Two AOEs
(4) – Location of four AOEs

ATTACHMENT D

PROPOSED ALTERNATIVE Cost Estimate		
Alternative Locations:	Changes in Ship Homeporting:	CVN & AOE Totals:
NASNI	+1 CVN, -2CV	2 CVN
PSNS	+1 CVN, -2 AOE	2 CVN, 2 AOE
Everett	+0 CVN, +2 AOE	1 CVN, 2 AOE
PHNSY	N/A	N/A
Cost Elements	Description	Estimated Costs
Construction at:		
NASNI	P-700 (Wharf)	$54,440,000
PSNS	*Second CVN* Electrical Trans	$1,000,000
Everett	Dredge, North Wharf	$450,000
	Utilities, North Wharf	$3,375,000
	Structural Repairs	$550,000
	Mooring Dolphins	$270,000
	Electrical for AOE's	$2,500,000
Proposed Alternative Construction Subtotal =		$62,585,000
Operational		
Operation & Maintenance	2% of facilities cost	$43,075,066
Utilities	5% of facilities cost	$6,077,250
TDY	NASNI DMF PIA	$46,901,783
PCS	NASNI CVN DPIA	$59,212.67'3
PCS	Everett CVN DPIA	$59,212.67'3
PCS	Move CVNs	$21,442,000
PCS	Move AOEs	$3,999,130
Training	Steaming to/from PNW	$47,843,464
	Everett Cross Sound	$12,703,027
Proposed Alternative Operational Subtotal=		$300,467,066
Housing		
NASNI	1st additional CVN	$279,839,770
PSNS	1st additional CVN	$254,385,877
Everett	1 CVN	$274,987,291
PSNS	AOE 1 & 2 (2@$47,442,966)	$94,885,932
Everett	AOE 3 & 4 (2@$51,285,130)	$102,570,259
Proposed Alternative Housing Subtotal=		$1,006,669,129
CONSTRUCTION, OPERATIONS, HOUSING TOTAL=		$1,369,721,195
Less cost of status quo		($1,220,955,960)
Less cost of baseline		($25,344,462)
COST OF ALTERNATIVE FOUR COMPARED TO TAKING NO ACTION		$123,420,773

L.4

September 10.1998

MEMORANDUM

To: MI Kleeman, Senior Planner, City of Coronado

From: Larry Brown, for the Truck Traffic Reduction Committee (TTRC)

Subject: Preliminary comments on the 3CVN Draft Environmental Statement (DEIS)

These comments are furnished in support of the City Staff's review of the 3CVN DEIS. The comments are based on a first reading of the Executive Summary and the traffic-related portions of the DEIS and a brief discussion by the TTRC of salient points relating to truck traffic. Any significant additional comments generated from further study of the document will be provided as soon as practical.

• Page ES-1, lines 15-18 contain a NEPA-based statement of what the EIS must provide. The City's analysis of the DEIS should be focused on whether it provides the "full and fair discussion of significant environmental impacts...etc." promised

• Pages ES-8&9. The difference between the 'status quo' and Alternative Six • No Action is puzzling at first glance. It may be explained as the legitimate separate bases for evaluating costs as compared to assessing environmental Impact, but the explanation is not readily apparent. It should be studied carefully from the skeptical perspective of whether it permits the understating of costs and environmental impact to support the prejudgment of the preferred alternative.

• Page ES-16. The basis for cumulative analysis is [illegible] as "...projects proposed for construction after 19913 ...", etc. Is this a 'full and fair' basis? The City's major objection to the EIS for the BRAC home! porting of USS Stennis was that it disregarded cumulative impacts, particularly in its insistent disregard of the potential home porting of additional CVNs and other ongoing NASNI activities as well as ignoring the existing situation. The 3CVN DEIS again ignores the incremental Stennis impact as well as ongoing NASNI activities and the existing situation. To what extent does this analysis meet the City's request regarding cumulative impact in the 3CVN EIS scoping letter (February 7.1997).

• Page ES-17, lines 13-31 and ES-18, lines 36-39. Summary of impacts for NASNI does not mention traffic (ground transportation), although it is assessed as significant for PHNSY. There is a recognition of "projected annual growth in the region" for PHNSY, which seems to bave overlooked in the NASNI assessment. Is there a reasonable and fair explanation for this? Also note that noise impact is mat mentioned.

• Page ES-20, lines 29-30. Reference is made to Appendix B containing responses to issues raised in scoping sessions and letters. This appendix has not yet been reviewed, but should be studied to see how the City's scoping requests were addressed.

• Page 3.9-3, Table 3.9-1. Tbe Daily Traffic Volume on the bridge is obviously understated, and makes all the other numbers in the table suspect, as well as the results of the analysis (including LOS in Table 3.93) using the numbers.

- **Page 3.9-4, lines** 4-g. **Why** are 1993 **traffic** counts used, when more **up-to-date is** or **easily** could be made **available?** Arc these **data consistent with** the **traffic volume** data (e.g. Table 1) **given** in the Traffic Impact **Analysis** - NASNI Third Street Gate study **conducted by LL&G in fall** 1,996, or more **recent** Clty **traffic** counts7

- **Page** 3.94, **lines** g-12. **The "redesigning the Main** Gate" at NASNI **is** characterized as an **action** that **will** 'greatly improve traffic **operations ...etc."** In fact the **project** has **been** dormant for some **time pending** resolution **of issues related** to **disagreement within the City** as to the net **benefits** of **a re-configured the Main** Gate, and to **whether** the Clty MS **willing** to **contribute substantially** to **payment** of **associated** costs on **which** the **Navy made** the project **contingent.** Therefore, whatever the **actual merits** of the **redesigned configuration, the implication** that the project **is ongoing** Is **disingenuous.**

- **Page** 3.9-5, **lines** 3-20. **This analysis is** suspect **because of** the data upon **which it is based.** HOW **relevant is a trip** rate that **is** based on a **1980s** study at the **Mayport Naval Station in Florida?** How valid **are the traffic** counts at **NASNI** upon **which** the 1.72 trips per person **is** based, or the 2.46 **rate** used **for other** home **porting** analyses, or **the rationale** of **taking** the **average** of the two for **application here? The analysis is full of assumptions** that must be better **justified** If the **analysis is** to be **credible.**

- **Page** 3.9-6, **lines** l-11. **Analysis supporting** personnel **loading** at NASNI **ignores** the **cadre** staff **at** the **maintenance facilities.** Are these **facilities** to be completely **unmanned** between **PIAs?** The **Stennis EIS** also Ignored **this** aspect of **personnel loading, and now, the 3CVN DEIS** takes **it** as an **existing condition** and therefore not **included in** the analysis. The **final** sentence **(lines** 9-11) **implies** that **having** the **additional** personnel (and consequent Increment of **traffic) for** a **PIA** for **three CVNs** every **two** years **carries** the same **impact** as a **PIA** for one CVN. In other **words, the increased impact is not worse, It just lasts longer, and is therefore inconsequential.** Is **that** a **valid** conclusion?

- Page **3.9-8, lines 10-12.** The **characterization** of **construction traffic** as **insignificant** because **it is small in comparison to the very large existing volume reflects** the **insensitivity** of the Navy (or at last those **officials involved** in **drafting** and **approving this DEIS)** to the **impact of Navy-related truck** traffic on Coronado. **The 850 truck trips per day generated by NASNI** (a **number derived from the LL&G study mentioned** above) represents, on **avenge, a truck entering** or **exiting NASNI via the 3rd-4th** Streets **couplet,** Alameda **Blvd** and 1st **Street every 45 seconds. In** other **words, the** DEIS **is saying that adding** more **trucks** to **an already intolerable** volume **is insignificant. Al**though **truck traffic volume** may not add **significantly** to overall **traffic congestion (which is also** at **an** intolerable **level) trucks have a disproportionate** impact **on a residential community in comparison to small vehicles because of their noise and air pollutant characteristics and** more **imposing mass and intrusiveness. These points should be emphasized in the City's comments to the Navy.**

- **Page 3.9-8, lines** 2022. **The consideration of barging for construction materials and conclusion** that **it was infeasible is apparently** based an the **recent concrete batch plant** study **which did in fact** show **that RO/RO barging of concrete ready mix trucks** MS **infeasible. The** Navy has not been **able to show us any other analysis that demonstrates the general infeasibility of barging -- only in quite limited** • ppllatfons and assumed **circumstances.** A **comprehensive analysis of barging is required, not just for construction material,** but **for day-to-day logistic support** of

L.4

NASNI activities (including ships berthed there). **(The** Clty-Navy **Truck Traffic Working** Group **is formulating** such **a recommendation.)**

- **Page 3.9-8, lines** 25-30. The **assertion** of 'no Increase **in** truck volumes" **is** based **solely** on the fact **that** two **CVNs replace** two **CVs with** an **identical** "'number of **deliveries." This** Ignores the **difference in** maintenance requirements associated **with** nuclear propulsion **vis-a-vis** convendonal steam **propulsion,** and, probably **more** important, the recent **radical** changes **in** Navy **ship** maintenance policy **in which** substantially more depot level **maintenance is** performed **in** home port **(i.e.,** maintenance tbat **heretofore was accomplished** In shipyards). **That's** reflected **in** the **six-month PIA** referred to elsewhere **in** the **DEIS** and the massive CVN **maintenance facilities** just **completed at** NASNL

- Page **3.9-8, line 42 cont'd** to **page 3.9-9 lines** 1-3. Although we **should** welcome **additional** parking space **at NASNI** to accommodate **vehicles that** formerly parked **on** our City streets, the need for it begs the question of **significance in regard** to **parking** requlremonts **vis-a-vis traffic** increases.

- **NASNI Supplemental Transportation Information,** Table 3.9.5 **following** page 3.9-l. The Baseline Traffic **Volume** numbers here at not the same as those! shown In **Table 3.9.1** (see above. **page** 3.9-3). Why? Is that **significant** to the **analysis results?**

- **NASNI** Supplemental Air **Quality Information,** Tables **3.10-1** through 3.1012. The! **air** quality standards **in** Table 3.10-I are given **in different units** than the comparable **CV-CVN emissions in** the Tables 3.102 through 3.1012, **which precludes meaningful comparison** for most **readers.**

- **NASNI Noise Supplemental Information,** page 3.111-l. Table 3.11-l. The sound **level** measurements **in the table** were taken **in** 1993. **These levels** should be compared **with California** recommend& standards for low density **residential land use (CNEL** 60dB **according** to the Coronado **Master Environmental Assessment, 1995),** and to the **results** of the **recently** completed **City** Noise Survey, for a **meaningful** assessment of **noise** Impact **in comparbon** to the **DEIS** assessment (le. **see** comment **referring** to page ES-17 **above.).** The **issue** of **cumulative** impact **is relevant** here as **well.**

RECEIVED
JUN - 9 1998
OFFICE OF CITY CLERK
CITY OF CORONADO

CM

City of Coronado
Thomas Smisek
Mayor
1825 Strand Way
Coronado 92118

Dear Thomas Smisek:

I am a student at Southwestem College in Chula Vista, CA. As part of an environmental project for a Business Law class I was asked to research the Nuclearization of the Metropolitan San Diego area. As a result of this research, I discovered facts that troubled me greatly. I wanted to communicate these findings to you so that you would use your influence to help stop the expansion of thii project.

During the next several years there is a proposal for the home porting of 3-4 nuclear aircraft carriers in San Diego bay. Each of these carriers will have 2 nuclear reactors on board. The potential dangers; that these reactors represent should be a matter of both local & national concern. The concern should be because of the significant increased health risks to area residents. This project is designed within 50 yards of an active earthquake fault that has a maximum credible earthquake of 7.0. The fault is on fill soils & thus susceptible to liquefaction. In the event of an earthquake the weakening of the Coronado Bridge could make evacuation difficult. 'Should radiation be released from the reactors due to fire in the radiation repair facility the cancer risk to the community could be devastating. The mere presence of the nuclear reactors makes us a prime target for terrorism & thus the unleashing of many of the hazards of this project.

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This is but a small sampling of the potential danglers associated with this project. I urge you to get involved and stop this now that something can be done before it is too late. I fear for our safety & well being.

Sincerely,

I Estrella

Ivonne Estrella

CM.

RECEIVED
JUN 15 1998
OFFICE OF CITY CLERK
CITY OF CORONADO

May 26, 1998

Thomas Smisek
Mayor
1825 Strand Way
Coronado CA 92118

Dear Mr Smisek,

This letter is in regards to a proposed plan by the United States Navy, that if approved will drastically effect all of us in the years to come. The Navys' nuclear homeport project stationed at North Island is a plan that has been put on hold for the time being because of the states hazardous waste permits that are pending. The Navys' idea to bring three Nuclear aircraft carriers to San Diego sounds great if you only look at the economical value of the scenario. Yes, it will boost the economy by millions of dollars but the down side to this plan is the millions of pounds of hazardous waste and tons of cubic feet of radioactive refuse that will be added to the burden of the base. This is all upwind from downtown San Diego and right next to Coronado. Personally, I am outraged at this plan by the Navy. The idea that the Navy is going to pollute the ocean I fish in and surf in all year round and also pollute the air that we breathe is sickening to my stomach. The very land they are trying to protect is the same land the are depleting. It is so ironic and wrong. I urge you to represent my opinion and the same opinion of most of San Diego County. In your position, given the right to choose, please choose the right one for us!

Thank You,
Adam Hamrick
Adam Hamrick

RECEIVED JUN - 8 1998 OFFICE OF CITY CLERK CITY OF CORONADO

May 14 1998

Dear Fellow American:

On Memorial day we remember the service of the men and women of the armed forces and their commitment to defending our safety and our democracy. Has the Navy forgotten this commitment? Is its mission still to protect the way of life we are entitled to under the constitution?

A new nuclear expansion project planned for the Naval Air Station at North Island, Coronado calls into question their focus on that commitment.

The project proposes a repair facility for nuclear aircraft carriers. A segment of the project also includes a 48,000 square foot "Controlled" Industrial Facility to house nuclear waste. Liquid and solid waste materials will be transported via the streets of the community to this storage area. Repair work will be conducted onboard and pier-side at a negligible distance from residential Coronado. San Diego is also just a few miles downwind. The precariousness of these plans is made all the more dangerous by the fact that the intended site is atop an active earthquake fault. And, unbelievable as it may seem no viable plan has been established for the event of an accident.

The impact to our Bay would begin with a colossal dredging project. Deposits amounting to roughly four and one half times the volume of Qualcomm stadium would be drawn from the Bay and ocean. The damage to ocean wildlife would be irrevocable.

There are also disastrous potential economic implications. One area of anxiety would be the tourist trade. Our shoreline is a virtual treasure to this industry. Radioactive contamination would mean an end to that source of business.

You may be asking yourself why we would ponder such a project considering what is at stake. This project is for obvious reasons a health and safety concern for human and animal inhabitants. It goes without saying that the Navy's project must be reevaluated for a better locale. A densely populated city such as San Diego is not the place for this type of project. But, without speaking up this project will go forward. As a voice for our community please support a reevaluation of this plan. The lives and health of our citizens depends on your support.

L.4

Sincerely,

Dianne Dearie

0166

Memorandum

DATE: November 5, 1998

TO: HOMER BLUDAU. CITY OF CORONADO

FROM: Joel II Cehn, CHP. Radiation Safety Consultant

RE: Final Comments on CVN Homeporting Draft EIS

My preliminary comments on the Navy's EIS were transmitted to you on October 14th As we discussed, my final comments are in addition to these The main additional comment is to request that the Navy use existing radiatron monitoring information from North Island and other bases, to analyze the Impacts of spills and emissions In the draft EIS, the Navy uses only estimates When real data are available, it should be used My updated list of comments is attached (and can simply replace the October 14th list) L.4.99

In summary, the draft EIS does not adequately present the expected radiological impacts to Coronado residents Tlhe risk values given in the EIS cannot be independently verified and their presentation cannot be understood by the average resident L.4.100

L.4

Comments for Navy

The City should request answers to the following questions

1) What EPA method is used to estimate airborne releases from normal operations? Please provide the calculations to support the method Since radiation monitoring of work-sites & buildings is performed by the Navy. these data-not theoretical estimates--should be used to evaluate the impacts of routine and other emissions L.4.101

2) What is the distance assumed between the base-boundary resident (MOI) and all release points? What are the assumed distances to farms providing food to the residents? L.4.102

3) For the fire scenario, what fraction of the facility's radioactive inventory is released in the fire? What exposure pathway causes the largest portion of the dose? L.4.103

4) For the spill scenario. what: assumptions are made about residents' consumption of seafood taken from the Bay? What is the assumed distance from the release point(s) to the nearest resident (MOI)? What exposure pathway causes the largest portion of the dose? L.4.104

5) For the fire and spill scenarios. what would be the economic impacts of these events' L.4.105

6) What monitoring is performed to detect an abnormal release of radioactivity? These data, when used in Appendix F, would improve the quality of the radiological impact analyses L.4.106

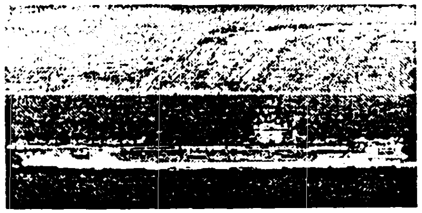
The following was has been identified as comment letter 1.78:

- Letter from Stephanie S. Kaupp and Elizabeth Gill, November 12, 1998.

This letter was resubmitted by the City of Coronado as part of their attachment.

The United States Navy
Navy Fact File

Aircraft Carders - CV, CVN



Revised: 16 Oct. 1998

Description: Aircraft carriers provide a wide range of possible response for the National Command Authority.

The Carrier hlission
- to provide a credible, sustainable, independent forward presence and conventional deterrence in peacetime,
- To operate as the cornerstone of joint/allied maritime expeditionary forces in times of crisis, and
- To operate and support aircraft attacks on enemies, protect friendly faces and engage in sustained independent operations in war.

Features: The aircraft carrier continues to be the centerpiece of the forces necessary for *forward presence*. Whenever there has been a crisis, the fit question has been: "Where are the carriers?" Carriers support and operate aircraft that engage in snacks on airborne, afloat, and ashore targets that threaten free use of the sea; and engage in sustained operations in support of other forces.

1.4 Aircraft carriers are deployed worldwide in support of U S interests and commitments. They can respond to global crises in ways ranging from peacetime presence to full-scale war. Together with their on-board air wings, the carriers have vital roles across the full spectrum of conflict

The *Nimitz* -class carriers, seven operational and two under construction, are the largest warships in the world. *USS Nimitz* (CVN 68) is undergoing its first refueling during a 33-month Refueling Complex Overhaul at Newpon News Shipbuilding in Newport News, Va.. in *1998*

The last of the *Forrestal* -class carrier was decommissioned September 30. 1998.

Point of Contact:
Public Affairs Office
Naval Sea Systems Command
Washington, DC 20362

General Characteristics, *Nimitz* Class

Builder: Newport News Shipbuilding Co., Newport News, Va.
Power Plant: Two nuclear reactors, four shafts
Length, overall: 1.092 feet (332 85 meters)
Flight Deck Width: 252 fee; (76.8 meters)
Beam: 134 feet (40 84 meters)
Displacement: Approx. 97,000 tons (87,300 metric Ions) full load
Speed: 30+ knots (34.5+ miles per hour)
Aircraft: 85
Cost: about $4.5 billion each
Ships:
USS Nimitz (CVN-68), Newport News, Va.
USS Dwight D. Eisenhower (CVN-69), Norfolk, Va.
USS Carl Vinson (CVN 70), Bremerton, Wash.
USS Theodore Roosevelt (CVN-71), Norfolk, Va.
USS Abraham Lincoln (CVN 72), Everett, Wash.
USS George Washington (CVN 73), Norfolk, Va.
USS John C. Stennis (CVN-74), San Diego, Calif.
USS Harry S. Truman (CVN-75), Norfolk, Va.
Ronald Reagan (CVN-76) (under construction), San Diego, Calif
Crew: Ship's Company: 3,200 - Air Wing: 2,480
Armament: Four NATO *Sea Sparrow* launchers, 20mm *Phalanx* CIWS mounts (3 on *Nimitz* and *Dwight D Eisenhower* *Vinson* and later ships of the class)
Date Deployed: May 3. 1975 (*USS Nimitz*)

General Characteristics, *Enterprise*

Builders Newport News Shipbuilding Co. Newport News. Va.
Power Plant: Eight nuclear reactors, four shafts
Length. overall: 1,101 feet 2 inches (335 64 meters)
Flight Deck **Width:** 252 feet (75 6 meters)
Beam: 133 feet (39 Y meters)
Displacement: 89,600 tons (80,640 metric tons) full load
Speed: 30+ knots (34 5 miles per hour)
Aircraft: 85
Ship: USS Enterprise (CVN 65), Norfolk, Va.
Crew: Ship's Company 3,350 - Air Wing 2.480
Armament: *Sea Sparrow* Missile launchers, Three *Phalanx* 20 MM CIWS mounts
Date Deployed: November 25, 1961 (*USS Enterprise*)

General Characteristics;, *John F. Kennedy*

Builders: Newport News Shipbuilding, Newport News. Va
Power Plant: Eight boilers. four shafts, 280,000 total shaft horsepower
Length. overall: 1052 feet (3 15 6 meters)
Flight Deck Width: 252 feet (76 8 meters)
Beam: 130 feet (39 6 meters)
Displacement: 82.000 tons (full load)
Speed: 30+ knots (34 5 miles per how)
Aircraft: Approximately 85
Ship: USS John F. Kennedy (CV-67); Mayport, Fla.
Crew: Ship's Company 3.1 17, Air Wing 2,480
Armament: *Sea Sparrow* missiles with box launchers, Three 20mm *Phalanx* CIWS
Date **Deployed: September 7. 1968**

General Characteristics, *Kitty Hawk* Class

Builders,:
CV 63 - New York Ship Building Corp. Camden. NJ
CV 64 - New York Naval Shipyard, Brooklyn, N Y.
Power Plant: Eight boilers, four geared steam turbines, four shafts. 280.000 shaft horsepower.
Length, overall: 1062 5 feet (323 8 meters)
Flight Deck Width: 252 feet (76 8 meters)
Beam: 130 feet (39 meters)
Displacement: Approx 80.800 ION (72.720 metric tons) full load
Speed: 30+ knots (34 5+ miles per hour)
Aircraft: 85
Ships:
USS Kitty Hawk (CV-63), Yokosuka, Japan
USS Constellation (CV-64), San Diego. Ca.
Crew: Ship's Company: 3. 150, Air Wing: 2.480
Armament: *Sea Sparrow* launchers, 3 20mm *Phalanx* CIWS mounts
Date Deployed: April 29. 1961 (USS *Kitty Hawk*)

Return to the **Fact File Table of contents.**

NEPTUNE PAPERS • No 3

NAVAL ACCIDENTS 1945-1988

WILLIAM M. ARKIN
AND
JOSHUA HANDLER

JUNE 1989

GREENPEACE

Institute for Policy Studies

L.4

Table of Contents

William Xi Arkin is the Director of the National Security Program at the Institute for Policy Studies, Washington, D C A former U S Army intelligence analyst, Arkin is author of numerous books and monographs on military policy and the nuclear navies, including Nuclear Battlefields: Global Links in the Arms Race (with Richard W Fieldhouse) He is co-editor, with Thomas B Cochran and Robert S. Norris, of the Nuclear Weapons Databook series, and a member of the editorial board of the Bulletin of Atomic Scientists. He is also a consultant to Greenpeace and co-editor of the Neptune Paper series.

Joshua Handler is the International Research Coordinator for the Greenpeace Nuclear Free Seas campaign, and was formerly a military analyst with the Arms Race and Nuclear Weapons Research Project at the Institute for Policy Studies He is co-author of Neptune Papers No. 2: Nuclear Warships and Naval Nuclear Weapons: A Complete Inventory, and has published articles and reports on naval issues. He has an M A. in International Relations from the University of Chicago

Introduction

The sinking of the Soviet Mike class submarine and the explosion and tragic loss of life aboard the battleship USS Iowa (BB-61) in April 1989 are reminders that peacetime naval acctdenu are a fact of life. Since the end of World War II. the world's navies have had over 1,200 documented mapr acctdents. resulting in dozens of ship sinkings, hundreds of explosions and fires, costly repairs and early vessel reurements, and major loss of life.[1] The accidents have occurred in shipyards and ports, in harbors and coastal waters, and on the high seas throughout the world Many of the accidents were spectacular and are well known. The majority, however. are obscure and little publicized

A comprehensive historical record of naval accidents does not exist. Official secrecy. particularly that of the Soviet Union, as well as sporadic news media interest in reporting routine acctdents. are major impediments to compiling a complete record Without full documenuuon, it is difficult to determine fluctuations or variations in the frequency or types of accidents. Changes in the naval accident rate. furthermore. are not necessarily related to higher or lower operating tempos No doubt safety pracoces. damage preparedness, ship control technologies. and aids to better seamanship have improved greatly since World War II. but this has not eliminated serious mishaps.

Naval accidents occur in a unique environment The oceans can be violent and unrelenting. The nature of naval operations, maneuvering in close quarters in a borderless medium. the presence of explosives and other combustible materials, the fact that ships are dangerous places. full of moving machinery and electrical equipment increases the potential for acctdents. whether brought on by "acts of God" or human error. There are also numerous accidents (U S -Soviet. western-Soviet, and others between unfriendly nations) which have resulted from aggressive or even hostile maneuvering, a reminder that routine seagoing activity carries with it unequalled potential for crisis or crisis escalation

It must also be noted that the U S Navy and the Soviet Navy, and to a lesser degree British, French, and Chinese navies, routinely operate warships and submarines with nuclear weapons aboard- All five nations also have nuclear-powered ships. This brings an added dimension to naval acctdenu. namely the potential for nuclear weapons or reactors being damaged, destroyed. or lost. The number of nuclear weapons and reactor acctdcnts is a well-guarded secret of the military establishments, but the information available indicates that numerous serious accidents have taken place This report concludes that there are some forty-eight nuclear warheads and seven nuclear-power reactors on the ocean floor as a result of these acctdents.

The purpose of this study is to establish a database of information about naval acctdenu, and then to investigate that record in order to assess the nsks of naval activity during peacetime and crisis periods. This assessment will help answer questions about public safety surrounding the controversial nuclear ship visits to foreign (and domesuc) ports. Finally, while naval arms control focuses on the large issues of the types and numbers of nuclear weapons. the day-to-day costs and potential dangers are little recognized or understood. and the long-utm implications of naval nuclear propulsion are hardly *even* raised.

Overview

This report documents 1.276 accidents of the major navies of the world between 1945 and 1988. By frequency of occurrence, 406 accidents involved major surface combatants (not including aircraft carriers), 359 Involved submarines, 228 involved aircraft carriers, 182 involved logistic support ships, 142 involved minor military ships, and 75 Involved amphibious warships (see table I) Seventy-five acctdents were actual sinkings. 60 of military vessels, and 17 of civilian boats. The accidents have resulted mover 2.800 deaths, with U.S. and Soviet fatalities constituting about 65 percent of the total. The majority of acctdents occurred in the Atlantic Ocean (624. or 49 percent). not including the Mediterranean Sea. 318 (or 25 percent) occurred in the Pacific, 110 (9 percent) occurred in the Mediterranean Sea, and 34 occurred in the Indian Ocean.[2]

Of the 1,276 accidents, 799 have involved naval ships of the United States This preponderance of U S. accidents does not mean a higher accident rate than other navies, particularly the Soviet Navy Many hundreds more Soviet accidents cue known to have occurred, but due to inadequate data and excessive secrecy, we have been unable to document their specific dates or circumstances.

[1] This report does not include accidents or damage to ships resulting from wars or military conflict, although it does include operating accidents that occurred during those conflicts which were not a result of hostilities.

[2] A lesser number of accidents occurred in the Arctic and Antarctic (2 percent). The remaining 170 accidents (14 percent) occurred in unknown locations, because information was not available Since the majority of these accidents are British, it is assumed that most occurred in the Atlantic

The accidents are divided into 12 major categories by cause (see table 2):

. Collisions: The most prevalent type of major accidents has been collisions, of which there have been 456 documented cases, 190 between military ships, 184 between naval vessels and civilian ships. There have been 51 collisions involving aircraft carriers. There have also been 36 confirmed snaggings of submerged submarines by fishing trawlers or nets, and 82 collisions by ships with docks during mooring or unmooring, or with unidentified objects

. Fires: There have been 267 documented major fires aboard ships, although many more are suspected as having taken place In addition, hundreds of minor fires have occurred at sea, during ship construction and overhauls These have by and large not been included in the chronology. Fires are by far the most prevalent cause of ship damage, but their regular occurrence precludes a comprehensive statistical analysis. According to official Navy statistics, from 1973 to 1983 there were an average of 148 fires per year on U.S. ships or at shore bases.[3]

. Groundings: There have been 130 documented groundings of ships and submarines, either surface ship groundings on sandbars, rocks, and reefs, or submerged bottomings of submarines. Some of the groundings have been quite serious For instance, the grounding of the nuclear-powered ballistic missile submarine USS Nathanael Greene (SSBN-636) in the Irish Sea on 13 March 1986, ultimately led to a decision to retire the submarine early,

. Explosions. There have been 114 documented explosions and other ordnance mishaps, including ammunition explosions, and explosions which were the result of fires. Between 1985 and 1988, the U S Navy had at least 49 ordnance detonation accidents and hundreds of ordnance malfunctions on its surface vessels (see table 3)

. Equipment failures: There have been 98 documented accidents involving major material failures and equipment mishaps, not involving propulsion equipment.

. Sinkings: There have! been 75 documented sinkings as a result of accidents, either of military ships, or civilian ships struck by military ships. This includes 27 sinkings of submarines. The most spectacular recent sinking during the 1945-1988 period was the missile explosion and subsequent scuttling of a Soviet Yankee I class ballistic missile submarine off the coast of Bermuda in October 1986 The Yankee submarine disaster is now joined by the sinking of the Mike attack submarine in April 1989. although this accident is outside the period covered by this report.

. Weather conditions* There have been 65 documented accidents involving adverse weather conditions, affecting 107 different ships. An example of a recent weather-related accident was a freak wave which crashed over the deck of the nuclear-powered aircraft carrier USS Carl Vinson (CVN-70) on 16 August 1986, sweeping seven men overboard.

. Propulsion accidents: There have been 59 documented propulsion accidents involving engines or boilers, nuclear reactor accidents, and accidents involving the leaking of fuels or primary coolant water, either at sea or in dockyards,.

. Ordnance accidents (non-explosive): There have been 54 documented major ordnance accidents which did nor result in explosions. These are accidents relating mostly to the handling and movement of weapons, or misfired or aimed weapons.

. Aircraft crashes on ships: There have been 34 documented serious accidents that have occurred when aircraft or helicopters have crashed on takeoff or landing from aircraft carriers. amphibious assault ships, or other surface warships 'The greatest number of crashes occurred in 1981. On 9 September 1986. a helicopter crashed on the deck of the amphibious ship USS Saipan (LHA-2), lulling nine. On 17 July 1988. A French Navy nuclear capable fighter-bomber crashed onto the deck of the aircraft carrier Clemenceau, killing the pilot.

. Floodings: There have been 27 reported cases of flooding. mostly of submarines, mostly a result of open hatches and access panels.

. Miscellaneous: There have been 80 miscellaneous accidents. involving ships capsizing and going adrift, gas leaks, ships hitting stray mimes or torpedoes, friendly aircraft or ordnance striking ships, accidents involving civilian interference, and cases of sabotage or arson.

[3] George W Schiele, "Letting Our Bridges Burn," Proceedings (December 1988): 125.

[4] LCDR Dave Parsons, USN, "Naval Aviation Safety: A State of the 'Union' Perspective," Wings of Gold (Summer 1988) 39. In 1987, the Navy and Marine Corps had 74 "class A mishaps" (defined as at least $500,000 in property damage, a permanent disabling injury, or a death), 51 by the Navy and 23 by Marine Corps aviation. In the 74 mishaps, 73 aircraft were destroyed and 66 personnel lost their lives. Fifty percent of the mishaps in 1987 had pilot error as the primary cause factor The 1987 rate contrasts with 1958, when 524 aircraft were destroyed in 1,106 accidents During most of the 1960s, an average of about 300 aircraft were lost per year to non-combat related causes. This average fell below 200 in the 1970s

Nuclear Weapons Accidents

In the early 1950s, U.S. naval vessels began carrying nuclear weapons. followed by Soviet vessels in the late 1950s.[5] Since then, nuclear systems have become commonplace aboard major surface warships and submarines, bringing a nuclear dimension to many accidents. Naval nuclear weapons now number 15,000 to 16.000. It is difficult to calculate how many accidents have involved nuclear weapons, particularly in the early years when nuclear weapons were first being incorporated into naval forces. There is. however. ample evidence that numerous accidents halve occurred involving nuclear weapons (see table 4). There are also approximately forty-eight nuclear warheads and seven nuclear-power reactors on the bottom of the oceans as a result of various accidents (see table 5).

Aside from secrecy, the other problem in comprehending the extent of naval nuclear accidents results from the way the navies define an "accident." Official bureaucratic definitions differ from what the public or a lay person might think of as an accident, and so by a definitional sleight of hand the navies can claim that a nuclear weapons accident has not occurred. A nuclear weapons accident (also called a "Broken Arrow"). according to U.S. Navy instructions, includes:

a. Nuclear detonations or possible detonations other than war risk detonations.
b Non-nuclear detonation or burning of a nuclear weapon.
c. Radioactive contamination.
d Seizure, theft or loss of a nuclear weapon or nuclear component. including jettisoning.
e. Public hazard. actual or implied."

There are two additional lesser types of accidents which are also defined by the U S. Navy: a nuclear weapons "incident" (or "Bent Spear") and an "unexpected event" (or "Dull Sword"). A nuclear weapons Incident is defined as an incident which does not fall into the category of a nuclear weapons accident but:

a. Results in damage to a nuclear weapon or component requiring a major rework. complete replacement or examination/recertification by the Department of Energy (DOE).
b. Requires immediate action in the interest of safety.
c. May generate adverse public relations (national or international) or premature release of information.
d. The potential consequences are such as to warrant interest or action by the recipients of Bent Spear messages.

An unexpected event is a still lower accident category which is neither a Broken Arrow or a Bent Spear. but which fits one of the following criteria:

a. The possibility of detonation or radioactive contamination is increased.
b Errors are committed in the assembly testing, loading or transporting of equipment which could lead to a substantially reduced yield. increased dud probability, or to unintentional operation of all or part of a weapon's arming and/or firing sequence.
c. The malfunctioning of equipment and material which could lead to a substantially reduced yield,, increased dud probability, or to unintentional operation of all or part of a weapon's arming and/or firing sequence.
d Any natural phenomena over which man has no control which results in damage to a weapon or component.
e. Any unfavorable environment or condiuon. however produced. which subjects a nuclear weapon to vibration, shock, stress, extreme temperatures. or other environments sufficient to cause questioning of the reliability or safety of the weapon. This Includes exposure or suspected exposure of the weapon or major components to electrical or electromagnetic energy which could energize or damage weapons components.

[5] Nuclear weapons were introduced into the U.S. Navy in December 1951 when the aircraft carrier USS Philippine Sea (CV-47) completed tests at San Diego of assembly capabilities of nuclear bombs.

[6] U.S. Navy, Office of the Chief of Naval Operations, "Minimum Criteria and Standards for Navy and Marine Corps Nuclear Weapons Accident and Incident Response," OPNAVINST 344.15 Change 1, 13 June 1983 (released under the Freedom of Information Act).

The irony of the official definitions of nuclear weapons accidents, incidents and unexpected events is that the Navy may categorize a minor event as an accident while the public might not. Conversely, other accidents that clearly have grave implications for public safety are not defined as official nuclear weapons accidents. The U.S. Department of Defense acknowledges that 32 nuclear weapons accidents have occurred, including three Navy accidents.[7] In one Navy case (and eight Air Force cases), however, the accident did not even include an actual assembled nuclear warhead, and there were no nuclear materials present, yet it was still reported as an "accident."[8] The Navy accident, for instance, is described as:

> On 25 September 1959, "a U.S. Navy P-5M aircraft, assigned to NAS Whidbey Island, Washington, crashed in the Pacific Ocean about 100 miles west of the Washington-Oregon border. It was carrying an unarmed nuclear antisubmarine weapon containing no nuclear material. The weapon was not recovered."[9]

If this qualifies as a nuclear weapons accident, then there are a number of general naval accidents which involved fully assembled nuclear weapons that should be included as well. The most dramatic one uncovered during the research for this report was a collision and subsequent fire between the aircraft carrier USS **John F. Kennedy** (CV-67) and the cruiser USS **Belknap** (CG-26) on 22 November 1975 in rough seas during night air exercises about 70 miles east of Sicily. The collision caused major damage to both ships, as the overhanging flight deck of the aircraft carrier struck the **Belknap's** superstructure, causing fires and explosions which lasted over two hours. Six were killed aboard the **Belknap** and one was killed aboard the Kennedy. The collision is one of the best-known naval accidents. The damage to the **Belknap** was so serious that it was taken out of commission for extensive repairs and did not return to the active fleet until 1980. But in all that has been written about the accident, no mention has ever been made of the nuclear weapons present on both ships, or the grave danger which the Navy believed the nuclear warheads aboard the **Belknap** might face as a result of raging fires.

Just minutes after the collision, the commander of Carrier Striking Forces for the Sixth Fleet (Task Force 60) sent a secret nuclear weapons accident "Broken Arrow" message to the Pentagon and higher commands, warning that a "high probability that nuclear weapons on the USS **Belknap** were involved in fire and explosions," but that there were "no direct communications with Belknap at this time" and "no positive indications that explosions were directly related to nuclear weapons." In the end, the W45 nuclear warheads stored aboard the Belknap for the Terrier surface-to-air missile system escaped detonation as the fire was contained aft of the launcher and storage magazine. Nuclear weapons stored aboard the Kennedy also escaped fires and explosion.

The U.S. Navy and the Department of Defense have failed to acknowledge that nuclear weapons aboard both ships were threatened. The justification for keeping the details about the Belknap and Kennedy secret is highly political, and relates to the U.S. Navy's policy of "neither confirming nor denying" the presence of nuclear weapons aboard ships. To admit that the two ships had nuclear weapons aboard, the Navy would have to deal with the controversy, if not the restrictions, over port calls where non-nuclear sentiments or policies prevail. The **Belknap** visited Spain, Italy, and Greece, and carried out a patrol in the Black Sea, with its nuclear weapons aboard prior to the accident.

Fear of the political consequences was clearly the reason for secrecy surrounding the two other "official" Navy nuclear weapons accidents (besides the P-5M accident discussed above) which have been acknowledged by the Department of Defense (DOD). The first, presumably the sinking of the attack submarine USS Scorpion (SSN-589) between 21-27 May 1968, is described by the DOD as "Spring 1968 / At Sea, Atlantic: Details remain classified." It is well known that the Scorpion sank 400 miles southwest of the Azores in more than 10,000 feet of water, killing 99 crewmen. What the Navy is not admitting is that the ship was carrying two ASTOR nuclear torpedoes.

The second accident is even more vivid in terms of the secrecy surrounding routine Navy practice relating to the carrying of nuclear weapons. In 1981, the DOD admitted that it had lost a nuclear warhead at sea in 1965 and described the accident as follows:

[7] On 19 January 1966, a W45 nuclear warhead separated from a Terrier surface-to-air missile during loading operations aboard the USS Luce (DLG-7) at Naval Air Station Mayport, Florida. The warhead fell about eight feet and was dented, but no other damage occurred. This accident was included in a "Chronology of Nuclear Accident Statements" released by the Department of Defense in 1968 but was removed from the list of nuclear weapons accidents released by DOD in April 1981. In 1974, the Navy changed its definitions of nuclear weapons accidents, significant incidents, and incidents, and this accident was removed from the rolls of accident or significant incident.

[8] Given the early design of warheads, it was a standard safety and security procedure to keep the "capsule" of nuclear material separate from the warhead containing the high explosives. Therefore, a number of early accidents involved unassembled nuclear weapons, where nuclear materials were not present during the accident.

[9] DOD, "Narrative Summaries of Accidents involving U.S. Nuclear Weapons: 1950-1980," April 1981.

> December 5, 1965 / A-4 / At Sea, Pacific: An A-4 aircraft loaded with one nuclear weapon rolled off the elevator of a U.S. aircraft carrier and fell into the sea. The pilot, aircraft, and weapon were lost. The incident occurred more than 500 miles from land.

But the details, which have been uncovered in preparing this report, present a different picture. While steaming en route from bombing operations off Vietnam to the U.S. Navy base at Yokosuka, Japan, the aircraft carrier USS Ticonderoga (CVA-14) experienced a nuclear weapons accident when an A-4E attack jet loaded with a B43 thermonuclear bomb rolled off the Number 2 elevator, and sank in 2700 fathoms (16,000 feet) of water. The aircraft carrier was positioned about 70 miles from the Ryuku Islands chain and about 200 miles east of Okinawa.[10] Two days after the accident, the aircraft carrier entered Yokosuka, Japan, for a rest and relaxation stop before returning to bombing operations off the coast of Vietnam.

In 1981, when the DOD released its innocuous version of the accident, failing to identify the ship involved and actually lying about the location of the airplane and bomb (even going to the extent of saying that it occurred more than 500 miles from land), it was trying to avoid the political repercussions of admitting that nuclear weapons were on board aircraft carriers involved in bombing operations during the Vietnam War, that U.S. ships routinely carry nuclear weapons into Japanese ports, and that a nuclear bomb is lying 70 miles off the Japanese coast.

New details were also discovered about several other accidents. On 18 August 1959, the aircraft carrier USS Wasp (CVS-18) had a major fire which burned out of control in hanger bay Number 1, necessitating the flooding of the forward magazines, with foam being pumped through the flight deck. Preliminary preparations were also made to flood the nuclear weapons storage spaces, but the commanding officer decided not to do so as the fire was brought under control.[11] Other significant weapons handling accidents included a Bullpup missile accident aboard the USS Bon Homme Richard (CV-31) on 10 February 1970, when the missile slipped off its hoist and broke open, spewing toxic gases and liquids;[12] and a failure in the top-side warhead handling hoist for the Talos surface-to-air missile aboard the cruiser USS Albany (CG-10) on 16 April 1975.[13] Still, the extent of accidents involving nuclear-armed ships is unclear due to secrecy.

Nuclear Reactor Accidents

Naval vessels, particularly submarines, began using nuclear reactors for propulsion in 1954, with the commissioning of the USS Nautilus (SSN-571). Naval nuclear reactors now number almost 550, with some 360 vessels nuclear-powered. Between 1945 and 1988, there were 212 confirmed accidents involving nuclear-powered vessels, 49 involving ballistic missile submarines, 146 involving attack and cruise missile submarines, 13 involving aircraft carriers, and 6 involving other nuclear-powered surface ships (see table 6).

In July 1983, when the Fund for Constitutional Government published a report by David Kaplan entitled "The Nuclear Navy," the U.S. Navy prepared a response in which it stated "there has never been a reactor accident in the history of the U.S. Naval Nuclear Propulsion Program.... The safety of the Navy's nuclear powered warships is on the record. The Navy stands unequivocally behind that record."[14] This statement is repeated annually when the Navy testifies before the Congress. The most complete statement that could be found was in 1980, when Admiral Hyman Rickover stated, "In the over 25 years of the naval nuclear propulsion program since the Nautilus land prototype first operated, there has never been an accident involving a naval reactor nor has there ever been a release of radioactivity which has had a significant effect on the environment, on the operators or the public." (emphasis added)[15] When asked recently if the record remained the same, the U.S. Navy offered this statement: "As of the spring of 1989, the Navy has had over 3,500 reactor years of operation without a reactor accident."[16]

[10] Deck Log of the USS Ticonderoga (CVA-14) for 5 December 1965, located at the National Archives.

[11] Deck Log of the USS Wasp (CVS-18), 18 August 1959, located at the National Archives.

[12] Deck Log of the USS Bon Homme Richard (CVA-31), 10 February 1970, located at the National Archives; "Missile Splits—Emergency on Carrier," San Francisco Chronicle, 11 February 1970.

[13] Naval Weapons Evaluation Facility, Command History 1976, p. 7 (released under the Freedom of Information Act); Deck Log of the USS Albany (CG-10), located at the National Archives.

[14] U.S. Navy, "Navy Response To Article Entitled 'The Nuclear Navy,'" 20 July 1983.

[15] U.S. Congress, House Armed Service Committee, Naval Nuclear Propulsion Program—1980, 18 March 1980, p. 3. Testifying before the House Armed Services Committee in February 1987, Admiral Kinnaird R. McKee, chief of the nuclear propulsion program stated, "Our record continues unblemished. We have had no accidents." U.S. Congress, House Armed Services Committee, Naval Nuclear Propulsion Program—1988, Hearings, 26 February 1987, p. 2.

[16] Statement of Naval Reactors Office, 23 February 1989. According to an earlier Navy statement, "in over 3,100 reactor years of US naval reactor operations there has never been a reactor accident or a problem resulting in fuel damage." Michael White, "Catalogue of faults in UK nuclear subs," Guardian, 3 March 1988, p. 1.

Yet in the research for this report, a submarine accident was uncovered that indicates in fact that the U.S. Navy has had at least one nuclear reactor accident which affected the operators. On 21 April 1973, the nuclear-powered attack submarine USS Guardfish (SSN-612), experienced a primary coolant leak while running submerged about 370 miles south-southwest of Puget Sound, Washington. The submarine surfaced, ventilated, decontaminated, and repaired the casualty unassisted. Four crew members were transferred to the Puget Sound Naval Hospital for radioactive monitoring. The severity of the accident is unclear, but the way it is reported in an official Navy document indicates that it fits the definition of an official "accident." The accident has never been reported in the media, and other official documents about the Guardfish do not acknowledge that an accident occurred. According to the deck log of the USS Guardfish for 21 April 1973, for instance, the submarine was reported as operating "submerged as before" during the entire day without incident. The command history of the Guardfish for 1973 also makes no mention of an accident during the year.[18] Also, the Navy admits to a primary coolant leak aboard the USS Nimitz (CVN-68) on 11 May 1979, and the attack submarine USS Swordfish (SSN-579) suffered a propulsion casualty of unknown cause on 24 November 1985.[19]

How many other nuclear reactor accidents have really occurred is unknown since assessing the number of nuclear reactor "accidents" hinges once again on the U.S. Navy's narrow definition of what constitutes a nuclear reactor accident.[20] According to one naval regulation, such an accident is defined as

> An uncontrolled reactor criticality resulting in damage to the reactor core or an event such as a loss of coolant which results in significant release of fission product from the reactor core.[21]

The U.S. Navy, however, has no qualms about lambasting the Soviet nuclear reactor accident record, stating that there have been numerous serious accidents. "Over the years," the U.S. Navy reported in 1982, "Soviet nuclear submarines have experienced a number of propulsion related casualties, evidenced by the need for outside assistance, including towing."[23] According to the U.S. Navy,

> There have been a number of reports from various sources concerning radiation related illnesses and deaths of Soviet nuclear submarine crewmen and workers, particularly in earlier units. Soviet nuclear submarine crewmen have been reported to receive what is referred to as "childless pay" and special treatment for radiation related illnesses.[24]

The most serious Soviet reactor accident involved the Lenin, an icebreaker that began operations with three reactors installed on 15 September 1959. According to the U.S. Navy, "There is strong evidence this ship experienced a nuclear related casualty in the 1960s requiring the ship to be abandoned for over a year before work was begun to ultimately replace the three reactors with two."[25] Propulsion casualties are also known to have occurred aboard a Hotel class ballistic missile submarine in 1961 and in late February 1972; aboard a November class attack submarine (which sank on 12 April 1970); an Echo II cruise missile submarine in August 1978; an Echo class attack submarine in August 1980; and the icebreaker Rossia in November 1988.

The accident record of the other nuclear powers is even less well known. With only a few nuclear-powered submarines in comparison to the U.S. and Soviet Union, the accident rates are assumed to be less. The Royal Navy

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17 Naval Historical Center, Operational Archives Division, "Chronology of U.S. Naval Events: 1973."

18 USS Guardfish (SSN-612), "Command History 1 January 1973 to 31 December 1973," 19 March 1974 (released under the Freedom of Information Act).

19 U.S. Pacific Fleet, "Command History of the Command in Chief U.S. Pacific Fleet 1 January 1985—31 December 1985," p. 56 (partially declassified and released under the Freedom of Information Act).

20 See, e.g., David Kaplan, "The Nuclear Navy," (Washington, D.C.: Fund for Constitutional Government, 1983); David E. Kaplan, "When Incidents Are Accidents: The Silent Saga of the Nuclear Navy," Oceans (July 1983); and Appendix F of Norman Polmar and Thomas B. Allen, Rickover (New York: Simon and Schuster, 1982). Numerous reports have come out claiming, for example, that a disabled submarine reportedly discharged radioactive coolant water into Apra Harbor, Guam, in 1975. According to reporting in the New York Times, 20 January 1976, radiation levels at nearby public beaches reached over 50 times the government limit.

21 The Navy, Office of the Chief of Naval Operations, "Nuclear Reactor and Radiological Accidents: Procedures and reporting requirements for," OPNAVINST 3040.5B, 3 April 1981 (released under the Freedom of Information Act). A "radiological accident" is defined as "A loss of control of radiation or radioactive material which presents a hazard to life, health, or property or which may result in any member of the general population exceeding exposure limits for ionizing radiation."

22 HASC, Naval Nuclear Propulsion Program—1983, Hearing, 1 March 1983, p. 17.

23 HASC, Naval Nuclear Propulsion Program—1982, Hearing, 29 April 1982, p. 18.

24 ibid., p. 19.

25 ibid., p. 18.

claims to have the same "unblemished" record as the U.S. Navy. Yet according to internal Royal Navy statistics, there were 712 "incidents" between 1962 and 1978 involving nuclear power reactors aboard British attack and ballistic missile submarines.[26] Of the first 435 of the 712 report incidents, 205 were caused by mechanical problems, 107 by operator error, and 123 due to electrical faults. Of the 106 reactor "scrams," 29 were caused by operator error.

Submarine Accidents

The recent sinking of the Soviet Mike submarine has focused attention on the general question of submarine accidents. Major submarine accidents often prove to be the most catastrophic of all naval accidents. Since the end of World War II, there have been 359 major documented submarine accidents, 51 involving ballistic missile submarines and 311 involving attack and cruise missile boats. The frequency of submarine accidents does not appear to have declined as newer technologies were introduced.

In recent years, there have been a number of major accidents. A Soviet nuclear-powered Echo II class attack submarine was spotted on the surface under tow on 13 January 1986, with an evident propulsion casualty. On 13 March 1986, the nuclear-powered ballistic missile submarine, the USS Nathanael Greene (SSBN-636), ran aground in the Irish Sea, the extent of damage leading to the vessel being chosen as one of the early Poseidon submarines to be retired to satisfy SALT II numerical limitations. The nuclear-powered attack submarine USS Atlanta (SSN-712) also ran aground in the Strait of Gibraltar on 29 April 1986, and the USS Sam Houston (SSN-609) ran aground in Puget Sound, Washington, on 29 April 1988. The diesel-powered submarine USS Bonefish (SS-582) suffered explosions and major fires in the Caribbean, killing three, on 24 April 1988.

There have been at least 27 total submarine sinkings since 1945, including five Soviet, four U.S., three British, and four French submarines. Twenty-one submarines have been lost at sea, while six have been salvaged either because the sinkings took place in port or in shallow water. Two U.S. nuclear-powered attack submarines have been lost in the Atlantic, the USS Thresher (SSN-593) on 10 April 1963, which imploded and sank in 8,500-foot waters 220 miles east of Boston, Massachusetts, killing 129 crewmen and civilian observers;[27] and the USS Scorpion (SSN-589) between 21-27 May 1968, which sank 400 miles southwest of the Azores in more than 10,000 feet of water, killing all 99 aboard.[28] Two diesel class U.S. submarines have also sunk in the postwar era: the USS Cochino (SS-345) off the coast of Norway on 26 August 1949, and the USS Stickleback (SS-415) off the coast of Hawaii on 28 May 1958.

Five Soviet submarines are known to have sunk by the end of 1988. Sometime in the late 1950s, a Northern Fleet Whiskey class submarine which had been converted as a cruise missile test platform, sank. A Soviet Golf class ballistic missile submarine with three SS-N-5 missiles and nuclear torpedoes sank about 750 miles northwest of the island of Oahu, Hawaii, on 11 April 1968. On 11 April 1970, a November class attack submarine experienced a nuclear propulsion casualty while operating in heavy seas approximately 300 nautical miles northwest of Spain. After failing to get a tow line to a Soviet bloc merchant ship which was standing nearby, the submarine apparently sank the following day.[29] On 3 October 1986, a missile aboard a Yankee I class nuclear-powered ballistic missile submarine exploded while the submarine was on patrol 880 kilometers east of Bermuda. On 6 October, after being taken in tow, the submarine sank with an estimated 34 nuclear warheads (including two nuclear torpedoes) and two reactors. Two additional Soviet submarine sinkings are also known, one of a Charlie class submarine in the Pacific in June 1983 (which was subsequently raised), and one unconfirmed sinking of a nuclear submarine off the Kola peninsula in 1968.

Other submarine sinkings which have occurred on the high seas include:

- Spanish C-4 submarine (27 Jun 1946).
- French submarine 2326 (5 Dec 1946).
- British submarine HMS Truculent (13 Jan 1950).
- British submarine HMS Affray (16 Apr 1951).

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26 Michael White, "Catalogue of faults in UK nuclear subs," Guardian, 3 March 1988, p. 1; Captain J. Jacobsen, et al., "The Safe Operation of Nuclear Submarines," Journal of Nuclear Science, Vol. 5, No. 2; Professor J. Edwards, "Royal Navy Requirements and Achievements in Nuclear Training: Part 2," Journal of Nuclear Science, Vol. 4, No. 4.

27 "Blind Hunt for the Thresher," Proceedings (April 1988): 56.

28 The cause of the Scorpion accident was never determined but it was possibly associated with a collision of the submarine during a storm in Naples, Italy, on 15 April 1968.

29 HASC, Naval Nuclear Propulsion Program—1982, Hearing, 29 April 1982, p. 19.

- French La Sibylle (2s Sep 1952).
- Turkish Dumlupincr (4 Apr 1953).
- Bntish submarine HMS Sidon (17 Jun 1955).
- West German submannc Hai (14 Scp 1966).
- Israeli submarine Dakar (22 Jan 1968).
- French submanne Mincrvc (27 Jan 1968).
- French submarine Eurydicc (4 Mar 1970).
- Pakistani midget submarine (2 Jan 1977). and
- a Peruvian submarine (28 August 1988).

Details on other lesser catastrophic submarine accidents — fires. collisions. groundings. and the like -are difficult to collect or confirm "For the United States. some recently released information indicates that submarine accidents occur with great regularity, even though often no details are revealed to the public as to the specific boats or circumstances During the five-year period from 1983 to 1987. for instance, according to the Navy, there were 446 reported material damage mishaps in the submannc force. with a dollar loss of 536.8 million, and 475 operating days lost.[11] A little more than one-third of all material mishaps occurred while ships were on the high seas. and 20 percent occurred in shipyards. The remainder occurred in or around ports.

The major submarine accidents reported during the five-year period from 1983 to 1987 (see table 7) included

- Collisions. There were 56 collisions. 50 by submarines. 6 by submarine support ships. The collisions caused particular damage to submarine sonar domes and propellers. The majority (22 collisions) occurred to ships that were: moored or in the process of mooring or unmooring, eight occurred to ships that were moored, 13 occurred in rcstncicd waters. and 13 occurred on the high seas. Seventy-six percent of the collisions occurred while the submarines were on the swface. There were ten collisions by submarines with other submarines.
- Fires: There were 149 fires in the submarine forces (113 aboard submarines, 36 aboard support ships); the most frequent type of material mishap accounted for 32 percent of all mishaps. Forty of the fires occurred while ships were in the shipyard, 36 occurred in port. and 37 occurred at sea.
- Groundings: The accidents included 12 groundings, including six "at sea" submerged bottomings, five entering or leaving port and one during mooting/unmooring. According to the report, "All but one of these 12 groundings involved some lack of supervisory involvement. e.g.. charts not being updated. inattention to the piloting situation, failure to analyze sounding data. failure to operate the fathometer properly, running too fast for the conditions, and others."
- Explosions: There Were 85 explosive mishaps. 15 percent occurred during loading and unloading of weapons. and 33 percent occurred during torpedo tube operations. There were 14 non-ordnance explosions,[12] four in the electrical systems. and three related to diesel engine crankcases
- Equipment failures: The Were 82 non-ordnance related equipment mishaps. 55 percent of which were as a result of personnel error.
- Weather conditions: There were 14 heavy weather accidents, seven while submarines were in port.
- Floodingr: There were 48 cases of floodings in the various seawater systems, followed by flooding as a result of problems with hatches and escape trunks.

The comparable accident statistics for the Soviet Union are not available. But we can assume that the accident rate is clearly much higher than the documented cases reported here. The former Director of Naval Intelligence Admiral John L. Butts testified before Congress in 1986 that, "Since the early 1950s. the Soviet submarine force has experienced numerous. serious submarine casualties — sinkings. propulsion failures, fires and navigational accidents."[13] Admiral James Watkins testified as Chief of Naval Operations in 1985 that "In the last ten years,

[10] Virtually no details are available for the submarine forces of non-U S. or Soviet navies. For the U.K., there have been numerous reports of submarine accidents. A fire, for instance, did put at least one Royal Navy nuclear powered submarine (HMS Warspite) out of action for lengthy repairs in recent years.

[11] Naval Safety Center, "Submarine Force: Mishap Statistical Summary, Calendar Years 1983 thru 1987," n.d. (released under the Freedom of Information Act).

[12] Nine explosive detonations are also known to have occurred on submarines between July 1986 and October 1988 as reported in Mech (The Naval Aviation Maintenance Safety Review), April-May 1985 to January-February 1989.

[13] HAC, FY 1987, DOD, Part 4, p. 438.

they [the Soviets] have had over 200 submarine accidents, some of which have been very serious."[14] According to another source, Soviet submarine fires "are far above the norm in proportion to their numbers."[15]

Dangers of Routine Naval Operations

Naval accidents have been prominently featured in the news media in recent years, not least of which because many have been spectacular disasters. This higher profile is coincidental with increasing public interest about the nuclear arms race, arms control. and accidental war. The peacetime record revealed in this report demonstrates that naval accidents are not rare or isolated occurrences. They arc a routine byproduct of seagoing activity and as such should be a pressing issue of public concern.

Accidents and naval disasters arc also a byproduct of the use of naval forces in gunboat diplomacy or open warfare The nature of the navies of the superpowers and most NATO members, particularly the global mobility of modern blue-water navies, facilitates the deliberate placement of combatants and support ships in areas where there are ongoing conflicts Most recently, we have seen naval vessels of a number of countries involved in attacks in the Persian Gulf. These attacks — on the USS Stark (FFG-31) on 17 May 1987 and the US'S Samuel B. Roberts (FFG-58) in March 1988 — carry with them a danger of potential crisis escalation. The attack on the Stark, furthermore, as well as the downing of the Iranian civilian airliner by the USS Vincennes (CG-49), were further complicated by human cnor dunng a crisis.

Permanently mobilized military forces, and the frequent use of naval forces for suasion and political signaling means the intermingling of opposing navies (whether U S. and Soviet or those of non-superpowers). This is particularly so during crises mobilizations, and has become more common in recent years during wide ranging and intense naval exercises.[16] There have been 23 documented accidents between the vessels of the United States and the Soviet Union. or between the United Kingdom and the Soviet Union. These accidents should provide some insight into the potential costs of routine operations in close proximity to other forces or homelands. The scrape between the USS Yorktown (CG-48) and the USS Caron (DD-970) and a Soviet destroyer and frigate in the Black Sea on 12 February 1988, the collision in the Sea of Japan between the aircraft carrier USS Kitty Hawk (CV-63) and a Soviet Victor I class nuclear-powered attack submarine on 21 March 1984, the possible collision between the nuclear-powered attack submarine USS Augusta (SSN-710) and a Soviet submartne in late October 1986. and the reported scrape between the British Royal Navy nuclear-powered attack submarine HMS Splendid and a Soviet submarine in early January 1987 in the Barents Sea off Murmansk, are just the latest in a line of such confrontations.

Other accidents are also suspected as having occurred. In 1976. the New-York Times reported that there had been "At least nine collisions of nuclear-armed submarines over the past 10 years. many with Soviet submarines."[17] These collisions occurred during U.S. reconnaissance patrols near the Soviet Union, a practice which continues to this day In addition, there have been a number of submanne confrontations between the superpowers during crises in other parts of the world. Accordmg to a recent book of U S. counterterrorism policy, for instance. a U S and Soviet submarine collided in the waters off North Africa when an armada of ships from both sides was mobilized there pnor to the bombing of Libya in April 1986.[18]

After researching and documenting the naval record. the overwhelming conclusion is that accidents will happen, that no amount of engineering or mechanical fixes will eliminate the failures which accompany complex machinery and operations. In narrative after narrative, the common element is human error and fallibility. The human factor cannot be underestimated, particularly where there is constant movement in a medium where weather and oceanographic conditions are unpredictable, and where military ships must contend with increasingly saturated stimuli caused by dense seas and airspace, all complicated by the proltfcratron of sensors. sources of intelligence information, and rapid communications.

The human factor is not only apparent in errors related to equipment handling or poor command decision-making There are 31 dccumenud cases of sabotage or arson causing major accidents,, 19 of which occurred in the

[14] HAC, FY 1986 DOD, Part 2, p. 928 See also SASC, FY 1986 DOD, Part 8, p. 4359.

[15] Jim Bussert, "The Safety of Soviet Nuclear Submarines," Jane's Defence Weekly, 18 April 1987, p. 715.

[16] See, e.g., John Lehman, "Things That Go Bump in the Sea," Washington Post, 3 April 1984, p. A13; "Some Bumps in the Night," Newsweek, 2 April 1984, pp. 40-41.

[17] New York Times, 20 December 1976

[18] David C. Martin and John Walcott, Best Laid Plans: The Inside Story of America's War Against Terrorism (New York: Harper & Row, 1988), p. 271

1970s There are also other incidents in which disgruntled sailors have been involved in serious criminal incidents aboard ships that did not involve damage to equipment or the ship For instance, on 11 October 1967, a sailor aboard the USS Mullany (DD-528) stabbed 11 men and then jumped overboard about 100 miles off Long Beach, California.

In addition to cases of sabotage and arson, there have been 3 number of incidents and accidents which were connected to drug use by the ship's crew In 1976, 37 crewmen of the ballistic missile submarine USS Thomas Jefferson (SSBN-618) were removed from the submarine because of a marijuana investigation Following a crash of 3 Marine Corps EA-6B electronic warfare airplane while landing on the USS Nimitz (CVN-68) on 26 May 1981, killing 14 and injuring 48, a debate was provoked between Rep Jospeh P. Addabo (D-NY). Chairman of the Defense Appropriations Subcommittee of the House of Representatives and the Navy over whether drug use on board the carrier may have contributed to the accident.

Suicides are also a serious issue. From 1983 to 1987, there were 31 suicide deaths in the U S. submarine force (20 in the Atlantic Fleet, 11 in the Pacific Fleet), including suicide by one submarine officer [39] Overall, the Navy lost 79 persons to suicide in 1986. an increase of 23 percent over the average number of suicides in the Navy between 1982 and 1985.[40] The rate of suicides rose from 9 2 per 100,000 in 1984 to 12.4 per 100,000 in 1987.

In an environment where naval accidents occur regularly, and where human mistakes, sabotage, suicide, and drug use are constant problems. the issue of nuclear weapons and reactor safety is an obvious one for a concerned public Many of the: accidents described in this report are affected by the routine presence of nuclear weapons aboard ships and submarines. and the proliferation of nuclear propulsion. Nuclear weapons were aboard the USS Belknap when it was operating in the Mediterranean in 1975, including its voyage to the Black Sea near the Soviet Union Nuclear weapons were aboard the USS Ticonderoga, when it was operating in the South China Sea during the Vietnam War, and when it visited Japan for rest and relaxation before returning to its bombing operations. Today, nuclear weapons are routinely present on all aircraft carriers, logistics support ships, submarines, and most surface warships that have the capacity to carry them.

This routine carrying of nuclear weapons aboard naval vessels has become a much more controversial issue since: the break in U S.-New Zealand relations. and the hardening of the U.S. government's policy of "neither confirming nor denying" the presence of nuclear weapons on ships. In many countries, particularly in Japan and the Nordic nations, the issue has not diminished wiuh the U.S. show of intransigence. In fact, as has been demonstrated by the recent Danish elections and base negotiations between the United States and the Philippines and Spain, the nuclear issue, and increasingly naval nuclear weapons, continue to be of great concern.

The non-nuclear policies of various *governments.* however, is often expressed as, or advanced as, a safety issue Questions are raised as to the adequacy of indemnity agreements and commitments in the case of accidents. and of the adequacy of emergency and disaster response plans in ports which regularly host nuclear-powered and nuclear-armed vessels While this report das not evaluate those issues, no assessment of dangers could be complete without 3 historical record of accidents which have occurred.

As the nuclear Issue has heated up in dhe 1980s, and as local communities have become more involved in evaluating dangers to themselves, other causes of friction between the navies and the civilian community have become more pronounced In this report, 185 of the accidents involved civilian ships. while 377 of the accidents occurred in porn. or in harbor or bay areas immediately offshore. A number of collisions and groundings have been the result of the navies' reluctance to rely on local harbor pilots, or other instances of poor cooperation with local authorities A number of miscellaneous incidents involved airplanes or practice ordnance (missiles or artillery) which accidentally attacked civilian vessels, or land-based homes and businesses. An inert Sidewinder missile struck the civilian oil tanker Western Sun on 30 July 1986 during an exercise off Norfolk, Virginia, for instance. On 27 July 1987, U S Navy planes conducting night bombing practice near Okinawa, Japan, hit a Malaysian freighter. The Japanese Defense Force diesel submarine Nadashio collided with a Japanese sports fishing boat in Tokyo Bay on 23 July 1988, killing 30 An unarmed Harpoon missile from a U S. F/A-18 fighter accidentally hit an Indian merchant ship some 200 miles northwest of Hawaii on I II December 1988, killing one The needs of the military for larger and larger training areas to practice their modem weaponry, and the encroachment of the civilian community on military and naval bases that is occurring worldwide will surely grow as an issue of contention in the future.

Many of the contentious issues clouding military-civilian relations exist and are made vastly more complicated by the existence and abundant presence of nuclear weapons and military nuclear reactors. Official secrecy about nuclear weapons is so ingrained that it impedes the flow of information necessary for public dialogue and

[39] Naval Safety Center, "Submarine Force Mishap Statistical Summary, Calendar Years 1983 thru 1987," n.d. (released under the Freedom of Information Act)
[40] See LCRD Daniel H Ottaviano, Chaplain Corps, "Shipboard Suicide Prevention," Proceedings (September 1988) 104-6

debate. But secrecy is not the real issue. nuclear weapons are Ongoing debates about the environmental effects of nuclear accidents, or the safety of specific nuclear weapons. or nuclear reactors. or nuclear strategies, could go on forever with no resolution, with competing contentions voiced about levels of relative risk and ultimate safety The forty-eight nuclear warheads and seven reactors sitting on the bottom of the oceans as a result of naval accidents should not provoke the question of whether they are safe or not, but how and why they got there in the first place. Ultimately, society must determine whether the costs are greater than the good which nuclear weapons supposedly provide. An open record of nuclear abuses is a great danger to those who support the nuclear system and the status quo. A fuller airing of the accidents, nuclear testing and research. nuclear diplomacy. nuclear strategies, and the extent to which nuclear waste and residue has been strewn over countless countries and the seven seas, is shifting the public's views about continuing the nuclear era.

Chronology of Naval Accidents: 1945 • 1988

02/01/45: In February the USS Washington (BB-56) and USS Indiana (BB-58) collide in the Pacific.

02/08/45: A U.S. Navy minesweeper sinks after colliding with a U.S. destroyer off Boston Harbor, Massachusetts.

03/17/45: A new submarine floods and sinks after a worker opens a torpedo tube at the Boston Navy Yard.

04/09/45 A U.S. Liberty ship loaded with aerial bombs explodes, setting three merchant ships afire and causing many casualties in Bari harbor, Italy.

04/09/45: The Allied tanker Nash-bulk collides with the U.S. freighter St. Mihiel in fog off Massachusetts, killing 15.

04/23/45: A U.S. Navy PE-56 patrol ship sinks after an explosion off Cape Elizabeth, Maine, killing 49.

05/22/45: Acetylene torch fumes ignite in the hold of a U.S. Navy attack boat, Todd Shipyards, Brooklyn, killing two.

06/21/45: The USS Franklin (CV-13) suffers a boiler room fire at New York Harbor during decoration ceremonies; damage is slight.

08/25/45: A French minesweeper explodes near Marseilles, killing five.

09/17/45: The Royal Navy battleship HMS Vanguard is damaged by an explosion at Clydebank, Scotland.

10/08/45: The Royal Navy destroyer HMS Zodiac suffers an explosion

10/12/45: The Royal Navy vessel HMS Loch Eriboll sinks after colliding with the U.S. merchant ship Sidney Sharman in the English Channel off Start Point, U.K.

10/27/45 The Royal Navy tug HMS Swarthy sinks in a gale at Spithead, U.K.

11/01/45: A U.S. Navy shore-liberty boat capsizes in San Francisco Bay, California.

11/30/45: The Royal Navy destroyer HMS Kempenfelt suffers an explosion.

01/22/46: The Royal Navy cruiser HMS Cleopatra experiences an engine room explosion

01/30/46: The Royal Navy minesweeper HMS Rbyl runs adrift.

02/04/46: The cruiser USS Prinz Eugen (IX-300) collides with a tug on a pre-test run from Boston to Philadelphia.

02/10/46: The Royal Navy diesel submarine HMS Saga collides with the trawler Girl Lena at night in the English Channel, sinking the Girl Lena.

02/11/46: Fire damages four Royal Navy minesweepers docked at Dover, U.K., threatening the magazine of one.

02/12/46: The lend-lease Royal Navy dock landing ship HMS Oceanway is involved in a collision

02/18/46: A U.S. tank landing ship suffers an explosion of ammunition in Shanghai, China, killing six and injuring 44.

03/01/46: In March the French diesel submarine Orphee explodes in Casablanca, Morocco, killing two

04/17/46 The USS Wasp (CV-18) runs aground off New Jersey

05/01/46 The USS Solar (DE-221) is destroyed by an explosion while unloading ammunition at Earle, New Jersey

05/14/46 The USS Franklin (CV-13) leaks carbon dioxide fumes while at the Brooklyn Naval Shipyard, New York, killing two

05/30/46: The flagship USS Estes (AGC-12) is slightly damaged after a collision with the USS Los Angeles (CA-135). off Shanghai, China.

06/27/46: A Spanish C-4 submarine sinks after colliding with the Spanish destroyer Lepanto off the Balearic Islands, killing the 46 aboard the submarine.

08/27/46: The Royal Navy destroyer HMS St. James sinks a tug during firing practice.

09/24/46: The Royal Navy tanker HMS Green Ranger is struck by a torpedo during naval firing practice in Portland harbor, U.K. The vessel is struck below the waterline but stays afloat

11/06/46: A U.S. Navy launch hits a buoy and capsizes in Portland harbor, U.K.

11/15/46 The USS Frank Knox (DD-742) and USS Higbee (DD-8106) are damaged after colliding off Oahu, Hawaii.

11/20/46: The USS Antietam (CV-36) suffers an explosion at the Hunters Point Navy Yard in San Francisco, killing one and injuring 34

12/05/46: The French submarine 2326, an ex-German U-boat, sinks 20 miles off Toulon in the Mediterranean while carrying out diving tests, killing 21

12/13/46 The USS Missouri (BB-63) is hit by a star shell during target practice in the North Atlantic.

04/04/47 The USS Ernest G. Small (DD-838) runs aground off Block Island, Rhode Island.

04/15/47: The Royal Navy battleship HMS Nelson is damaged in a collision with the diesel submarine HMS Sceptre in Portland harbor, U.K.

05/27/47: The USS Johnston (DD-821) and the USS Torsk (SS-423) are damaged in a collision off New London, Connecticut.

06/04/47: The Royal Navy diesel submarine HMS Seneschal suffers an explosion.

06/12/47: The USS Valley Forge (CV-45) suffers an explosion at the Philadelphia Naval Base, injuring 17

07/01/47: The Italian munitions ship Panigaglia explodes while unloading munitions at Santo Stefano, Sardinia, Italy, killing 68.

07/02/47: The Royal Navy diesel submarine HMS Aurochs is involved in a collision.

07/17/47: The Canadian destroyer Micmac is damaged in a collision with the freighter Yarmouth County in Halifax, Nova Scotia, killing five.

09/29/47: The USS Douglas H. Fox (DD-779) hits a mine in the Adriatic Sea 18 miles from Trieste, Italy, killing three.

11/24/47 The U.S. Army transport Clarksdale Victory is wrecked off Hippa Island near British Columbia, Canada.

02/18/48: A USS Midway (CV-41) launch capsizes off Hyeres, France, killing eight.

02/23/48: The Royal Navy diesel submarine HMS Aeneas runs aground and is refloated the same day

03/02/48: The USS Duncan (DD-874) is damaged by an explosion in the Pacific, killing one.

03/11/48: A Royal Navy firing practice inadvertently places fishermen under fire off Walton-on-the-Naze, U.K.

04/19/48: The U.S. Navy drydock O'Boyle No. 24 sinks off Cape Hatteras, North Carolina.

06/01/48: A U.S. Navy launch nearing an aircraft carrier sinks in heavy seas off Norfolk, Virginia, drowning 30.

07/13/48: The USS Portsmouth (CL-102) runs its prow unto a mudbank in the St. Lawrence River but is subsequently refloated.

09/04/48: The U.S. minesweeper No. 46 runs aground off Pigeon Island Light, Lake Ontario, New York.

10/19/48: A liberty boat of the Royal Navy aircraft carrier HMS Illustrious sinks in Portland harbor, U.K., drowning 29.

11/25/48: The USS Chandler (DMS-9) and the USS Ozbourn (DD-846) collide in the Yellow Sea.

02/15/49: The Royal Navy sloop HMS Sparrow proceeds to Port Stanley in the Falkland Islands after freeing itself from ice in Admiralty Bay.

02/26/49: The Royal Navy aircraft carrier HMS Vengeance is holed by ice during testing of special armament and equipment in the Arctic.

02/28/49: The USS Taussig (DD-746) and USS Marsh (DE-699) are damaged in a collision during maneuvers in the Pacific.

03/23/49: The USS Perch (SS-313) and the USS Orleck (DD-886) are damaged in a collision during maneuvers off San Diego, California.

03/26/49: The Royal Navy destroyer HMS Broadsword accidentally discharges an artillery shell over Portsmouth, U.K.

04/15/49 A gun accidently explodes aboard the USS Hollister (DD-788) during maneuvers near Pearl Harbor, Hawaii, killing four.

04/23/49: The USS Fechteler (DD-870) and USS Leonard Mason (DD-852) are damaged in a collision off Oahu, Hawaii, injuring two.

04/30/49: The Royal Navy destroyer HMS Myngs is damaged by a practice torpedo during exercises.

05/07/49: Pan-American Airways says anti-aircraft fire from a U.S. carrier task force burst near a plane on a Bermuda-New York flight.

06/01/49: The Royal Navy destroyer HMS Chevron is damaged in a collision.

06/03/49: The Royal Navy frigate HMS Loch Fada experiences an explosion.

08/02/49: The USS Livermore (DD-429) runs aground at Bearse Shoal off Cape Cod, Massachusetts.

08/26/49: The USS Cochino (SS-345) explodes and sinks in Arctic seas off Norway, drowning six Navy rescuers and a Cochino technician On 21 September the Soviet publication Red Fleet alleges the Cochino was sunk off Murmansk while scouting out military information.

09/22/49: The Argentine minesweeper Fournier sinks after striking a submerged rock in the Magellan Straits, killing 77

10/09/49 The USS Chehalis (AOG-48) sinks after an explosion and fire in Tutuila, American Samoa.

11/09/49 The USS Tusk (SS-426) is rammed while submerged by the USS Aldebaran (AF-10) 175 miles off Labrador, Newfoundland, Canada. The submarine suffers damage to its periscope and superstructure.

12/31/49: In 1949, a Polish ammunition ship carrying 500 tons of bombs sinks in the English Channel off Folkestone, U.K., after a collision. During 1968 harbor clearing operations the ship explodes with such force it causes earthquake reports as far away as Antarctica.

01/13/50: The Royal Navy diesel submarine HMS Truculent sinks after colliding with the Swedish tanker Divina ten miles east of Sheerness, U.K. in the Thames Estuary, killing 64.

03/18/50: The net-laying ship USS Elder (AN-20) is damaged by an explosion off Kwajalein Atoll in the Pacific Ocean.

04/08/50: A Royal Navy midget submarine explodes in Portsmouth harbor, U.K., killing one.

05/17/50: The USS General M.B. Stewart (AP-140) collides with a buoy in Port Said Harbor, Egypt, damaging the ship's propeller.

06/14/50: The Royal Navy diesel submarine HMS Trenchant suffers an explosion.

07/15/50: Eight ammunition barges explode in Portsmouth harbor, U.K. On 18 July British officials say sabotage is a suspected cause of the explosions.

07/15/50 The Royal Navy aircraft carrier HMS Vengeance drags its moorings and collides with a quayside at Stavanger, Norway.

07/18/50: The USS Missouri (BB-63) runs aground in Chesapeake Bay, suffering light damage. On 19 July, the Soviet publication Red Fleet ridicules the grounding of the Missouri.

07/25/50: The USS Benevolence (AH-13) collides with SS Mary Luckenbach while on a trial run after being taken out of mothballs for service in the Korean War. The Benevolence sinks outside San Francisco Bay, California, killing 18.

08/31/50: The Royal Navy boom defense vessel HMS Bamind experiences an explosion.

09/15/50: The French weather-observation frigate La Place sinks after an explosion while at anchor in the Baie de la Fresnaye near St. Malo, killing 51. The explosion is believed caused by a drifting magnetic mine.

09/16/50: The Royal Navy destroyer HMS Armada is involved in a collision.

09/21/50: A torpedo fired from the British naval range at Bincleaves deviates from its course and sinks two sailing boats in Portland harbor, U.K.

09/30/50: The French destroyer Amyot d'Inville is damaged by an explosion off Indochina.

10/18/50: The Royal Navy cruiser HMS Phoebe is involved in a collision.

10/27/50 The Royal Navy cruiser HMS Newcastle experiences a fire in a turret.

11/09/50: The USS Brownson (DD-868) and USS Charles H. Roan (DD-853) collide in the Atlantic during nighttime fleet maneuvers, killing four

11/11/50 The USS Buck (DD-761) and USS Thomason (DE-203) are damaged in a collision in the Korean Bay.

01/16/51 The Royal Navy destroyer HMS Broadsword suffers a fire, killing one.

01/23/51 The Royal Navy destroyer HMS Daring suffers a fire.

02/12/51 The Royal Navy battleship HMS Vanguard is damaged in a collision with the aircraft carrier HMS Indomitable in the Mediterranean.

02/14/51: The Portuguese gunboat Garo sinks after colliding with a Portuguese warship off Portugal.

04/16/51: The Royal Navy diesel submarine HMS Affray sinks in the English Channel 30 miles north of the Island of Guernsey, killing 75. Possibly the submarine was flooded after its snorkel mast weldment failed. On 22 April all British "A" class submarines are docked pending an investigation of the Affray accident.

04/28/51: The Royal Navy munitions ship HMS Bedenham explodes in Gibraltar, killing nine.

05/16/51: The small seaplane tender USS Valcour (AVP-55) is set afire in a collision with a collier. The fire threatens the ship's magazine.

05/18/51: The USS Bairoko (CVE-115) suffers a blast, killing five.

05/19/51: The French tank landing ship Adour explodes in Nha Trang, Vietnam.

05/23/51: A stray U.S. Navy torpedo sinks a fishing boat in Narragansett Bay, Rhode Island.

05/24/51 A U.S. Navy liberty launch capsizes at Newport, Rhode Island, killing 19.

06/08/51. The Royal Navy cruiser HMS Bermuda suffers an explosion.

08/23/51 The USS Wisconsin (BB-64) is freed after grounding on mud flats in New York Harbor.

09/08/51 The Royal Navy battleship HMS Duke of York collides with a ferry in the Mersey River, U.K.

10/03/51: The Royal Navy destroyer HMS Grenville collides with an Italian vessel.

10/15/51: The UN troopship Kongo Maru is wrecked by a typhoon off southern Japan.

11/04/51: The Argentine motorship Maipu sinks after colliding with the troop ship USS General M.L. Hersey (AP-148) in fog in the North Sea off Bremerhaven, West Germany. There are no reported casualties.

11/10/51: The Royal Navy diesel submarine HMS Thorough is damaged in a collision.

12/02/51: A converted U.S. Navy landing craft sinks off San Diego, California, killing six.

01/19/52: The Royal Navy destroyer HMS Chivalrous is in a collision near Malta.

03/28/52: The USS Mount Baker (AE-4) collides with a South Korean freighter, killing 24 South Koreans.

04/26/52: The destroyer minesweeper USS Hobson (DMS-26) sinks after colliding with the USS Wasp (CV-18) in the mid-Atlantic, killing 176 aboard the Hobson. The ships were part of a task force headed for the Mediterranean to join the Sixth Fleet. The collision occurred when the Wasp turned into the wind to receive aircraft.

04/26/52: The USS St. Paul (CA-73) suffers a powder blast in a gun turret while operating off Korea, killing 30.

05/08/52: The Royal Navy destroyer HMS Tenacious is grounded in the River Foyle, Northern Ireland.

06/10/52: The Royal Navy cruiser HMS Cumberland runs aground on Tinker Shoal, two miles off Plymouth, U.K.

06/14/52: The Royal Navy diesel submarine HMS Sleuth collides with the destroyer HMS Zephyr in heavy fog while leaving Portsmouth harbor, U.K. The Zephyr suffers flooding in one of its magazines.

06/14/52: The Royal Navy diesel submarine HMS Seneschal's collision with the Danish frigate Thetis south of the Isle of Wight is reported. The submarine's periscope and radar mast are damaged.

07/11/52: A blast aboard a French cruiser in Toulon kills one.

08/06/52: An unidentified Royal Navy submarine carries away the fishing gear of the Fleetwood Queen Alexandria trawler off the Isle of Man, U.K. The submarine is not damaged.

08/07/52: The USS Boxer (CV-21) suffers an explosion and fire off Korea, killing nine.

08/14/52: The USS Gregory (DD-802) and USS Marshall (DD-676) are slightly damaged after colliding off San Diego, California.

09/25/52: The French diesel submarine Sibylle (ex-HMS Sportsman) fails to surface after a dive off Toulon, France, killing 46. The submarine is believed to have burst

10/24/52: The USS Tigrone (SS-419) suffers a fire at the Philadelphia naval base, injuring two civilians.

11/12/52: The high speed transport USS Ruchamkin (APD-89) is rammed by a tanker 60 miles east of Cape Henry, Virginia, during maneuvers, killing five soldiers. The tanker captain denies he knew maneuvers were being conducted in the area.

11/16/52: The USS Picking (DD-685) and USS Porter (DD-800) are slightly damaged after colliding in dense fog off Virginia.

11/17/52: The Royal Navy aircraft carrier HMS Implacable is mildly damaged by a dockside fire in London.

11/23/52: The USS Wiseman (DE-667) strikes a submerged rock in Korean waters, causing damage to her sonar and hull. It proceeds to Sasebo, Japan, for repairs.

11/28/52: An Israeli naval ship disappears during a storm in the Mediterranean.

12/11/52: The USS Sitkoh Bay (CVE-86) collides with a freighter in the Pacific, but none are hurt.

01/13/53: The minesweeper USS Condor (AMS-5) is heavily damaged by fire.

01/27/53: The Royal Navy destroyer HMS Dutchess suffers an explosion while in the U.K., damaging the ship and killing one.

02/03/53: Sabotage inquiries are under way in Devonport, U.K., after damage to the Royal Navy aircraft carriers HMS Warrior and HMS Triumph is reported.

02/03/53 The Royal Navy aircraft carrier HMS Indomitable suffers an explosion while in Malta, killing three.

02/19/53: The USS Prichett (DD-561) and USS Cushing (DD-797) collide while operating off the coast

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of Korea. Both ships require dry docking in Sasebo, Japan.

03/05/53: The Royal Navy destroyer HMS Termagant suffers a fire.

03/06/53: A bomb dislodged from a plane landing after a combat mission over Korea bouncer twice across the deck of the USS Oriskany (CV-34) and explodes, killing two and injuring 15.

03/07/53: The Egyptian minesweeper Sollum sinks during a storm off Alexandria, killing 54.

04/04/53: The Turkish diesel submarine Dumlupiner (formerly USS Blower (SS-325)) sinks after colliding with the Swedish freighter Naboland in the Dardanelles. The captain of the Naboland is held by Turkish authorities in connection with the incident, and on 11 April Sweden protests his arrest.

04/28/53: The USS Bennington (CV-20) suffers an explosion off Cuba, lulling 11.

05/13/53: The USS Wright (CVL-49) is hit by a target drone off Key West, Florida, killing three.

05/18/53: An unidentified fast patrol boat suffers fii and explosons in Aarhus harbor, Denmark, which slightly damage the Royal Navy vessel HMS Gay Archer, moored alongside.

05/20/53: The Royal Navy minesweeper HMS Coquette is in a collision.

07/16/53: The Royal Navy destroyer HMS Vigo suffers a fire.

07/18/53: The Royal Navy destroyer HMS Carron suffers a fin.

08/01/53: In August the USS Harder (SS-568) is towed across the Atlantic to New London. Connecticut, by the USS Tringa (ASR-16) after breaking down off the east coast of Ireland.

08/25/53: The Netherlands charges that U.S. Navy ships fired on a KLM civilian airliner over the Caribbean Sea The U.S. Stale Department later reports anti-aircraft artillery shells were accidentally fired within two miles of the plane.

09/13/53: The Royal Navy destroyer HMS Delight is damaged by fire in Glasgow. Scotland.

09/15/53: The Royal Navy destroyer HMS Contest suffers a fire.

10/01/53: The Royal Navy destroyer HMS Diamond collides with the cruiser HMS Swiftsure during exercises.

10/06/53: The Royal Navy minesweeper HMS Rattlesnake suffers a gun firing accident.

10/16/53: The USS Leyte (CV-32) is badly damaged by an explosion and subsequent fire caused by the accidental ignition of hydraulic fluid on a catapult while moored at Charlestown Naval Yard. Boston. killing 36. The fire takes live hours to extinguish.

12/28/53: The Royal Navy frigate HMS Amethyst suffers a fire in its storeroom.

01/18/54: The Royal Navy tanker HMS Wave Victor suffers a fire off the Devon Coast. U.K.

01/21/54: A U.S. troopship rams a U.S. Navy landing craft off Inchon, South Korea. drowning 28 Marines.

03/09/54: An Australian destroyer rams a pier when it attempts to dock without tugs in Melbourne, Australia.

03/17/54: A U S. Navy tank landing ship runs aground at Eleuthera Island, Bahamas.

03/17/54: The Royal Navy destroyer HMS Zest suffers a fire.

05/13/54: The Japanese fishing boat Kine-Maru sustains damage as a result of shots tired by vessels of the Netherlands. Australia, and New Zealand during target practice in "Area George." The Japanese Ministry of Foreign Affairs later presents a claim against the United States on the grounds that Japan had permitted the use of "Area George" to U.S. forces, but had not approved its use by other countries. The U.S. State Department rejects the claim. saying that "Area George" is located on the high seas and that its use does not require permission from the Japanese government.

05/26/54: The USS Bennington (W-20) is damaged by an explosion and fire off Newport. Rhode Island, lulling 103 and injuring 201.

05/27/54: The Royal Navy frigate HMS Curzon runs aground and is later nfloaud.

07/01/54: The Royal Navy destroyer HMS Vigo suffers a fire.

07/14/54: The Royal Navy tanker HMS Wave Commantder is involved in a collision.

09/03/54: The Royal Navy aircraft carrier HMS Eagle is damaged by an aviauon fuel-tank blast at the Devonport dock, killing one.

09/16/54: Several weeks before its first sea trials, a small steam pipe in the reactor compartment of the USS Nautilus (SSN-571) bursts. filling the area with steam during a test of the sum system while the ship is at the Electric Boat Shipyard in Groton, Connecticut. The test is part of a quality control effort to check the adequacy of the shipyard's inspection system. The Incident initially appears to be minor. There are slight personnel injuries and no radiation hazards. However, subsequent investigation shows the situation is more serious. Specifications called for seamless pipe, but ordinary stanchion pipe had been used. All suspect pipe is ripped out and the mistake leads to more stringent quality control measures.

10/08/54: The USS Lafley (DD-724) hits and sinks the distressed yacht Able Lady while attempting rescue.

10/08/54: The Royal Navy destroyer HMS Chevroo is involved in a minor collision.

10/24/54: The Royal Navy destroyers HMS Battleaxe and HMS Scorpion collide during an exercise in the Bay of Biscay. The Battleaxe suffers a five-foot-hole in its bow, but is able to return to Plymouth Sound, U.K., unassisted.

10/27/54: The Royal Navy frigates HMS Relentless and HMS Vigilant collide off western Scotland during night exercises.

10/31/54: The USS Norris @DE-859) rams the superstructure of the USS Bergall (SS-320) during war games off Norfolk. Virginia. The Norris suffers flooding in five of its compartments and the Bergall suffers damage lo its superstructure. Both proceed to port for repairs.

11/09/54: A Canadian Navy ship collides with a ferry in Halifax, Canada, killing three.

12/12/54: A Norwegian submarine is damaged by an explosion at Bergen, Norway.

12/15/54: The Royal Navy diesel submarine HMS Talent, undergoing a refit, is swept out of a Chatham dockyard by an inrush of water, due to a mistake in estimating the size of the tide.

01/04/55: The USS Monterey (CVL-26) is slightly damaged after colliding with a freighter near the mouth of the Mississippi River.

01/07/55: Three U.S. Navy dock-landing craft capsize in heavy seas off Beaufort, North Carolina. Faulty steering gear blamed.

01/12/55: The USS Power (DD-839) and USS Warrington (DD-843) collide during night exercises off Puerto Rico.

01/14/55: The USS Tench (SS-417) is grounded off Cape Henry Lighthouse, Virginia.

01/22/55: The Royal Navy frigate HMS Flint Castle experiences a fire.

02/21/55: The USS Pomodoo (SS-486) is damaged by an explosion and fire caused by excess hydrogen formation during battery charging in the San Francisco Naval Yard. California, killing five.

03/11/55: A U.S. Navy tank landing ship rams a trawler in Puget Sound, Washington. killing three.

03/18/55: The USS General R.E. Callan (AP-139) runs aground at Red Hook Flats. New York Harbor. News reports are censored for 24 hours.

03/18/55: The USS Cassin Young (DD-793) is driven aground by high winds at Fall River, Massachusetts.

05/10/55: A small military ship (of unspecified nationality) explodes at Kaohsiung. Taiwan, killing 49.

05/11/55: The USS Nautilus (SSN-571) suffers a small leak in a fresh-water line in the steam plant as it leaves on its shakedown cruise from Groton, Connecticut, forcing the ship to return to port for quick repairs. The Navy says the leak did nor involve the reactor.

05/31/55: The Royal Navy minesweeper HMS Northumbria is involved in a collision.

06/02/55: A Yugoslavian naval vessel sinks in the Adriatic Sea, killing 26.

06/17/55: The Royal Navy diesel submarine HMS Sidon sinks after a torpedo explosion in the forward torpedo compartment while the ship is in Portland harbor. U.K., killing 13

07/09/55: The Royal Navy diesel submarine HMS Sturdy suffers an explosion.

07/14/55: The Royal Navy cruiser HMS Blake suffers a fire.

07/19/55: The Royal Navy destroyer HMS Chevron is involved in a collision.

07/27/55: The Danish diesel submarine Saelen is gutted by fire in Copenhagen.

08/14/55: The Royal Navy battleship HMS Kiog George V runs aground while being towed into the Firth of Clyde, Scotland.

09/26/55: The Royal Navy aircraft carrier HMS Hermes loses power when a marking buoy wedges in a propeller bracket The ship is towed to Belfast, Northern Ireland.

10/07/55: The Royal Navy frigate HMS Venus suffers engine room damage.

10/19/55: The USS Wisconsin (BB-64) is grounded for one hour in the East River, New York. Harbor.

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10/19/55: The Royal Navy cruiser HMS Ccyloo suffers a fire.

10/31/55: The USS English (DD-6%) and the USS Wallace L. Lind (DD-703) collide in heavy seas during anusubmarine exercises off Norfolk, Virginia. The English has 31 feet of its bow bent and broken off and the Lind suffers an eight-foot hole. Both head for Norfolk under escort.

10/31/55: A Soviet cruiser hits a mine and sinks sometime in October. Conflicting reports described in the New York Times of 25 April 1956 place the sinking in the Black and Baltic Seas. Possibly the ship is an Italian warship given to the Soviet Union as war reparations, called the Novosibirsk.

11/11/55: The USS Boyd (DD-544) is towed to port after striking a Japanese freighter off San Diego, California

11/12/55: A U.S. Navy plane crashes into the USS Hopewell (DD-681) during maneuvers off San Diego, California, killing three fliers and two sailors.

11/14/55: The radar ship USS Searcher (AGR-4) is damaged by explosions and fire off Cape May. New Jersey, killing three.

11/22/55: Heavy winds damage six U.S. Navy destroyers moored at Newport, Rhode Island.

11/23/55: Six sailors are killed as a result of a Jet landing mishap on the deck of the USS Ticondcroga (CV-14) in the Mediterranean Sea.

12/04/55: A British troopship is blown aground by heavy winds in the River Clyde, Scotland.

01/04/56: The Royal Navy frigate HMS Venus suffers a fire.

01/06/56: The USS Basilone (DD-824) runs aground near Hampton Roads, Virginia.

01/20/56: The USS James V. Forrestal (CVA-59) collides with the USS Pinnacle (MSO-462) at Norfolk, Virginia, slightly damaging the Pioanck.

01/21/56: The Royal Navy diesel submarine HMS Artemis collides with a motor fishing vessel off the Isle of Wight in the English Channel. The submarine is undamaged and continues on exercises.

01/23/56: The Royal Navy destroyer HMS Scorpio0 crashes into the Londonderry, Northern Ireland. dockside.

01/25/56: The Royal Navy minesweeper HMS Mutine suffers a fire.

01/27/56: The Royal Navy frigate HMS Puma experiences a fire.

02/04/56: The Royal Navy diesel submarine HMS Scorcher is damaged in a collision.

02/10/56: The Royal Navy destroyer HMS Chieftain collides with the naval tanker HMS Blue Ranger in foul weather whik en route from Malta to Beirut, Lebanon, and suffers damage to its bows.

02/21/56: The Royal Navy frigate HMS Eastbourne suffers an explosion.

03/11/56: The USS Columbus (CA-74) and USS Floyd B. Parks (DD-884) are damaged after colliding off Luzon, Philippines.

03/18/56: Fifteen ships of a U.S. destroyer fleet break their moorings during a storm off Newport, Rhode Island.

03/18/56: The USS Willis A. Lee (DL-4) runs aground off Jamestown, Rhode Island.

04/22/56: The USS Nautilus (SSN-571) is snared in the nets of a fishing vessel off the New Jersey coast 140 miles southeast of New York, while running at a depth of 150 feet. The submarine nearly drags the vessel under water. but the Nautilus is unaware of the mishap, does not surface, and continues to Groton, Connecticut. The estimated damage is $1,300 to each vessel.

04/26/56: The USS Remey (DD-688) runs aground in the Persian Gulf.

04/28/56: The USS Nautilus (SSN-571) suffers a fire caused by a welder's torch, while berthed at New London. Conneccrcut. during repair of damage caused by snaring of a fishing net on 22 April. The blaze ignites cork insulation and burns paint from the hull. The Navy reports that damage from the fire, the third to break out on the Nautilus, is slight.

05/07/56: The USS Eaton (DD-510) and USS Wiscoosio (BB-64) are badly damaged after a collision in fog off Virginia. Commander Varley of the Eaton is later court-martialed and found negligent.

05/08/56: The Royal Navy frigate HMS Redpok collides with a yacht in Copenhagen, Denmark.

05/10/56: The Royal Navy diesel submarine HMS Talent is involved in a collision.

08/04/56: The USS Windham Bay (CVE-92) is heavily damaged by fire while in Alameda. California.

08/19/56: The experimental sodium-cooled nuclear reactor of the USS Seawolf (SSN-575) suffers a failure in the steam plant during a full power test run while the new ship is at Groton, Connecticut. A leak of sodium-potassium alloy being used as the third flwd in the steam generator aggravates stress corrosion in the system. causing two cracks in steam piping and a leak in a superheater. Makeshift repairs permit the Seawolf to complete its initial x3 trials on reduced power in February 1957. Due to the difficulties of running a sodium-cooled reactor, the Navy decides to replace the Seawolf's sodium-cooled reactor with a water-cooled reactor, and use only water-cooled designs in the future.

09/22/56: The Royal Navy destroyer HMS Decoy suffers an explosion.

09/29/56: The Royal Navy minesweepers HMS Broatdly. HMS Etchingham, and HMS Bisham are extensively damaged by fire at Portsmouth harbor, U.K.

09/29/56: A shell explodes aboard the USS Buck (DD-761), killing one.

10/06/56: The Royal Navy frigate HMS Keppel collides with a Torpoint ferry, near Plymouth, U.K.

10/06/56: The Royal Navy frigate HMS Orwell is involved in a collision.

10/13/56: The Royal Navy diesel submarine HMS Anchoritc runs aground in Rothesay Bay. U.K., and is refloated two days later.

10/15/56: During the height of the Suez crisis the USS Nautilus (SSN-571) accidentally fires two dummy practice torpedoes at a British merchantman during naval maneuvers in European waters. The Nautilus mistakes the ship for an aircraft carrier on its sonar.

10/23/56: The USS Antietam (CVS-36) is grounded for six hours off Brest, France.

11/22/56: The Royal Navy diesel submarine HMS Scorcher suffers a fire during exercises.

01/03/57: The Royal Navy coastal minesweeper HMS Ilmington suffers a fire.

03/07/57: The USS Mission San Francisco (AO-123) suffers explosions and fires when it collides with the Liberian freighter Elna II in the Delaware River near New Castle. Delaware, killing un.

05/15/57: A U.S. Navy A3D Skywarrior aircraft crashes while landing on the USS Boo Homme Richard (CVA-31) off San Diego, California, killing three.

05/15/57: The USS Franklin D. Roosevelt (CVA-42) reportedly hits a submerged object off Florida. The object is not thought to be a submarine. The Navy later denies that the carrier had hit an object, claiming instead that a propeller had broken.

05/20/57: The USS Aotietam (CVS-36) crashes into a river wharf in New Orleans, Louisiana. The wharf is heavily damaged, while damage to the carrier is light.

05/21/57: A U.S. Navy experimental X-1 submarine is damaged by a blast at the Portsmouth Naval Shipyard. There are no injuries.

06/08/57: Eleven depth charges explode prematurely off the stem of the USS Whitehurst (DE-634) 18 miles off Pearl Harbor, endangering the lives of a Hollywood movie cast on board to shoot a movie scene.

06/19/57: A high-pressure steam line explodes aboard the USS Fraokliu D. Roosevelt (CVA42) off Jacksonville, Florida, killing two and injuring five.

07/06/57: The Royal Navy aircraft carrier HMS Eagle suffers a fire.

07/13/57: The Royal Navy frigate HMS Redpole is involved in a collision.

07/15/57: A Royal Navy destroyer depot ship suffers a fire.

07/18/57: A TNT device aboard the USS Somersworth (PCER-849) explodes off Monouk Point, New York, killing three.

07/27/57: The USS Mauna Loa (AE-8) suffers a fire off New York. The fire is extinguished before it reaches the ship's 3,500-ton cargo of explosives.

08/07/57: The USS Cobbler (SS-344) and USS Tusk (SS426) are slightly damaged after an underwater collision during maneuvers off New Jersey.

08/19/57: The USS Wisconsin (BB-64) scrapes its bottom near a sea buoy off Cape Henry, Virginia, during a storm.

08/25/57: The USS Lenawee (APA-195) and USS Wantuck (APD-125) collide in the Pacific, killing one.

08/28/57: The Peruvian diesel submarine Iquique is freed from a sand bar where it had run aground during trials in the Long Island Sound, New York.

08/29/57: The Royal Navy coastal minesweeper HMS Badminton is in a collision.

09/01/57: In the first few days of September, the USS Nautilus (SSN-571) suffers damage to two periscopes while rising under ice conditions during an exploratory trip under the Arctic icepack. The Nautilus returns from under the icepack to the open sea to perform repairs on the surface. It takes 12 hours in rough seas. freezing temperatures. and gale winds to fix one periscope. The other is damaged beyond repair.

09/05/57: The Royal Navy destroyer HMS **Decoy** runs aground.

09/11/57: The Royal Navy cruiser HMS **Blake** suffers an explosion and fire while in Glasgow, Scotland.

09/12/57: The USS **Wasp** (CVS-18) suffers a second fire while in drydock in Boston, Massachusetts, causing minor damage.

09/20/57: The Royal Navy diesel submarine HMS **Taciturn** collides with a merchant ship during exercises off Brighton, U.K., in the English Channel. No damage is reported.

09/21/57: The Royal Navy destroyer HMS **Delight** is rammed by the Clyde tug **Forager** at the Princess Pier, Greenock, Scotland.

09/26/57: A U.S. Navy A3D Skywarrior crashes while attempting to land on the USS **Forrestal** (CVA-59) during NATO exercises in the Norwegian Sea.

09/29/57: The USS **Purdy** (DD-734) and the British trawler **British Columbia** collide off The Netherlands, sinking the trawler. A small hole is punched in the **Purdy**'s hull above the waterline.

10/09/57: The USS **Mission San Miguel** (AO-129) runs aground on a reef in the mid-Pacific.

10/23/57: The USS **Forrestal** (CVA-59) is slightly damaged after a collision with an oiler at sea.

11/16/57: The Washington Post reports that the reactor compartment of the USS **Nautilus** (SSN-571) flooded several days ago after a small leak developed while the submarine was in port in Connecticut. The leak was due to the malfunctioning of a valve, and according to the Navy caused no radioactive contamination or damage to the power plant.

12/11/57: The Royal Navy minesweeper HMS **Alcaston** loses power.

12/12/57: The USS **Manley** (DD-940) is badly damaged in heavy seas in the eastern Atlantic.

01/10/58: A plane catapult explodes aboard the USS **Kearsage** (CVA-33) off Yokosuka, Japan, killing three.

01/14/58: The Royal Navy boom defense vessel HMS **Barcombe** runs aground off the Island of Oronsay, Argyll, Scotland.

01/18/58: The USS **Essex** (CVA-9) is damaged by fire at sea.

01/31/58: A bomber explodes on the flight deck of the USS **Hancock** (CVA-19), killing two.

02/04/58: The Swedish diesel submarine **Illern** sinks in a shipyard, Malmo, Sweden.

02/12/58: A rocket propelled antisubmarine weapon backfires aboard the USS **Eaton** (DD-510), killing one.

02/16/58: The fuel supply submarine USS **Guavina** (ASSO-362) runs aground in high winds and foul weather after dragging its anchor in San Salvador, El Salvador.

02/27/58: The USS **Tripoli** (CVU-64) is towed to Bremerhaven, West Germany, after running aground in the Weser estuary.

03/03/58: The Royal Navy destroyer HMS **Decoy** suffers a fire.

04/01/58: The USS **Corregidor** (CVU-58) cracks its hull in a storm off the Azores.

04/02/58: The Royal Navy fleet supply ship HMS **Fort Duquesne** suffers a fire.

04/17/58: The Royal Navy aircraft carrier HMS **Bulwark** is involved in a collision in the Suez Canal.

04/24/58: The USS **Yarnall** (DD-541) is damaged by a dummy torpedo fired by a submarine during practice.

04/25/58: The USS **Nautilus** (SSN-571) springs a small saltwater leak in one of the steam condensers shortly after leaving Groton, Connecticut, as the submarine heads south toward the Panama Canal to transit to the Pacific for its expedition to the North Pole. After passing through the Canal and experiencing a fire (5/4/58), the **Nautilus** puts into Mare Island Naval Shipyard, near San Francisco, California, for repairs. The source of the leak cannot be pinpointed, however, and the ship proceeds to Seattle, Washington. During the trip to Seattle, the captain decides to use the same type of additive that is sold for leaky car radiators to try to repair the leak in the condenser. Upon arriving in Seattle in late May or early June, 140 quarts are purchased and half are poured into the cooling system. The reactor plant is started and the leak stopped.

05/04/58: The USS **Nautilus** (SSN-571) suffers a fire in the insulation around one of its turbines as the ship is running submerged in the Pacific shortly after leaving Panama on its way to its Arctic mission. The insulation had become oil-soaked during the submarine's three years of operation and had caught fire. The fire is put out with minor injuries, but the submarine must surface to ventilate.

05/23/58: The Royal Navy cruiser HMS **Lion** suffers a fire.

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05/28/58: The USS **Stickleback** (SS-415) sinks after being rammed by the USS **Silverstein** (DE-534) off Pearl Harbor, Hawaii. There are no casualties. The submarine had lost power and drifted into the **Silverstein**'s path.

06/11/58: The trawler **St. Clair** catches a Royal Navy submarine in its net off Land's End, U.K. There is little damage.

06/20/58: The Royal Navy minesweeper HMS **Hound** is involved in a collision.

07/03/58: The USS **Chemung** (AO-30) runs aground 500 yards off Alcatraz Island in San Francisco Bay, California, during a naval procession.

07/06/58: The USS **Caney** (AO-95) loses power during a monsoon in the Arabian Sea, and is in danger for several days until it can be towed by U.S. ships.

07/08/58: A U.S. Navy barge used for research in underwater explosions suffers an explosion and flash fire while in port at Norfolk, Virginia.

07/19/58: The USS **Piper** (SS-409) runs aground on a sandbar off Provincetown, Massachusetts, but is pulled free after seven hours with minor damage.

07/23/58: A fuel tank accidentally falls from a FJ4B Fury fighter being launched from the USS **Ticonderoga** (CV-14) while operating off California, killing two.

07/24/58: The USS **Skate** (SSN-578) suffers damage to its propeller when it collides with the USS **Fulton** (AS-11) while the tender is moored to a pier in New London, Connecticut.

08/22/58: The USS **Prestige** (MSO-465) sinks after running aground off Shikoku, Japan.

09/03/58: The Royal Navy diesel submarine HMS **Amphion** hits a British naval training ship.

09/24/58: The Royal Navy destroyer HMS **Camperdown** suffers a fire.

09/29/58: The Royal Navy destroyer HMS **Hogue** collides with the British trawler **Northern Foam** while trying to prevent the arrest of the trawler by an Icelandic patrol boat for illegally fishing in Icelandic waters.

10/10/58: The Royal Navy diesel submarine HMS **Andrew** is involved in a collision.

10/14/58: An explosion floods the engineering room of the USS **Saratoga** (CVA-60) at Jacksonville, Florida.

10/21/58: The USS **Rich** (DD-820), USS **Moale** (DD-693), USS **Ellyson** (DD-454), and the destroyer USS **Sumner** are damaged in a severe storm off North Carolina.

10/23/58: The USS **Lindenwald** (LSD-6) is disabled off Greenland when the steering engines fail.

10/23/58: The Royal Navy frigate HMS **Grenville** inadvertently surges forward while preparing to leave Portland harbor, U.K., and collides with the minesweeper HMS **Shoulton** and the submarine support ship HMS **Chaser**.

10/27/58: The Royal Navy frigates HMS **Undine** and HMS **Ulysses** are both damaged above the waterline in a collision off the Ile d'Ouessant, Brittany, France.

11/05/58: The USS **Growler** (SSG-577) springs a leak during a deep-sea dive but surfaces without damage off the Isle of Shoals, southeast of Portsmouth, New Hampshire. The **Growler**, designed for launching the Regulus II sea-to-land missile, was several hundred feet below the surface when the leak developed in an improperly adjusted sonar compartment fitting for an electrical cable.

11/06/58: The Royal Navy destroyer HMS **Alamein** experiences a fire.

11/10/58: The USS **Ranger** (CVA-61) suffers an explosion in the magazine area seven decks below the waterline while off San Francisco, California, killing two. A careless act by two crewmen trying to obtain gunpowder from the magazine to fuel a minature ram jet engine they had built caused the explosion. The Navy said the two men were known rocket enthusiasts and were not authorized to be in the magazine area at the time of the explosion. The "relatively minor" damage takes about a month to repair due to the location of the accident.

11/12/58: The Royal Navy diesel submarine HMS **Alaric** collides with a jetty.

11/18/58: The Royal Navy diesel submarine HMS **Rorqual** experiences a fire.

11/28/58: The Royal Navy destroyer HMS **Caesar** suffers a fire.

12/23/58: The Royal Navy frigate HMS **Undaunted** collides with the minesweeper HMS **Maxton** off Cyprus.

12/30/58: The Royal Navy destroyers HMS **Jutland** and HMS **Dunkirk** collide during daytime maneuvers off Malta, causing slight damage.

12/31/58: In the late 1950s, a Soviet Northern Fleet diesel-powered submarine, possibly a Whiskey class submarine, reportedly sinks. The vessel was specially converted to be a test platform for a Soviet cruise missile, which was under development. The submarine went to sea carrying empty missile containers and sank on its return voyage.

01/11/59: The USS **Valley Forge** (CVS-45) is damaged in a storm off North Carolina.

01/28/59: The port propeller of the USS **Skate** (SSN-578) is damaged in a collision with the USS **Cubera** (SS-347). The accident occurs during routine operations off the U.S. east coast just after the **Cubera** delivered mail to the **Skate** and moved away. The Navy says nobody was hurt.

03/02/59: A depth charge explodes aboard the USS **Conway** (DD-507) in the Atlantic, injuring two.

03/05/59: The USS **Kenneth D. Bailey** (DDR-713) and the USS **Haiti Victory** (T-AK-238) collide in the Strait of Gibraltar, killing one.

03/16/59: The Royal Navy destroyers HMS **Corunna** and HMS **Barrosa** collide.

04/07/59: The USS **Triton** (SSN-586) suffers a galley fire caused by testing of a deep-fat fryer, while in New London, Connecticut. According to the Navy, the fire spread from the galley into the ventilation lines of the crew's mess. But quick action by crew members "resulted in the saving of the ship's equipment and possible loss of life."

04/09/59: The U.S. Navy announces the USS **Raton** (SSR-270) and the USS **George K. Mackenzie** (DD-836) recently collided during maneuvers in the western Pacific.

04/09/59: The Royal Navy aircraft carrier HMS **Ark Royal** is damaged by fire in Devonport, U.K., while undergoing a refit.

04/13/59: The British admiralty discounts sabotage in three small fires aboard the Royal Navy aircraft carrier HMS **Eagle**.

05/01/59: The USS **Randolph** (CVA-15) suffers a flash electrical explosion at the Norfolk Naval Base, Virginia, killing one.

05/21/59: The Royal Navy boom defense vessel HMS **Barnard** runs aground.

05/21/59: The Royal Navy frigate HMS **Rocket** collides with a buoy.

05/28/59: A U.S. Navy FJ Fury jet crashes aboard the USS **Essex** (CVA-9) east of Jacksonville, Florida, causing explosions and fire, killing two, and injuring 21.

06/18/59: The Royal Navy submarine depot ship HMS **Maidstone** suffers a fire.

06/30/59: The starboard rudder guard of the USS **Macon** (CA-132) is scraped off in the Welland Canal (connecting Lake Erie to Lake Ontario), delaying shipping for 17 hours.

07/08/59: The Royal Navy cruiser HMS **Birmingham** and destroyer HMS **Delight** collide during exercises off Malta, killing two.

07/11/59: The USS **Gearing** (DD-710) is damaged after colliding with a freighter in Chesapeake Bay.

07/31/59: The USS **Upshur** (AP-198) is heavily damaged by fire at the Brooklyn Army Terminal, New York.

08/11/59: The Royal Navy destroyer HMS **Broadsword** suffers a fire off Iceland.

08/13/59: A Soviet warship, believed to be a destroyer shadowing NATO maneuvers, collides with the West German coastal vessel **Christel** in fog 30 miles off Kiel, West Germany. The Soviet ship reportedly stands by with its engines stopped while the **Christel**'s crew works to plug a hole, then steams off when the **Christel** is out of immediate danger.

08/15/59: The U.S. Navy discloses that a ruptured water pipe aboard the USS **Nautilus** (SSN-571) partly flooded a compartment while the ship was submerged off Newfoundland four months ago. No injuries resulted.

08/18/59: The USS **Wasp** (CVS-18) is heavily damaged by an explosion and subsequent fires when a helicopter engine explodes while being tested in hangar bay Number 1 as the ship is operating 250 miles east of Norfolk, Virginia. The fires and reflashes take over two hours to control. The ship was carrying nuclear weapons. In the first 30 minutes as the fires burned out of control and the forward magazines were flooded, preliminary preparations also were made to flood the nuclear weapon magazine. It was not flooded, however, and 30 minutes later the nuclear weapon magazine reported no significant rise in temperature. But water from the fire-fighting efforts eventually leaked into the nuclear weapon magazine around electrical cables.

08/25/59: A U.S. Navy F8U Crusader jet crashes into the rear of the USS **Independence** (CVA-62) off Norfolk, Virginia, killing one man and causing a fire.

08/27/59: The Royal Navy destroyer HMS **Hogue** is involved in a collision.

08/29/59: The USS **Decatur** (DD-936) suffers an engine room fire while docked in Naples, Italy. The fire is extinguished after two hours during which the ammunition stores

are flooded as a precautionary measure.

09/01/59: The Royal Navy diving tender HMS **Deepwater** suffers a fire.

09/29/59: The USS **Bristol** (DD-857) collides with the Italian merchant vessel **Italia Fassio** in fog in the Nantucket Shoals area off Massachusetts. The **Bristol** is slightly damaged.

10/04/59: The USS **Tench** (SS-417) runs aground on a mudbank in Portsmouth, U.K. The submarine is lifted off the mudbank without damage.

10/04/59: The USS **Franklin D. Roosevelt** (CVA-42) collides with the USS **Pawcatuck** (AO-108) during refueling off Virginia. Both vessels are slightly damaged.

10/05/59: The USS **Seadragon** (SSN-584) on the surface at night during its sea trials collides with a whale, or possibly a large shark, off Portsmouth, New Hampshire, bending one of its propellers. The submarine proceeds to Portsmouth for repairs on its own power using its other propeller.

10/07/59: The Royal Navy frigate HMS **Redpole** collides with an oil lighter, sustaining an eight-foot hole in its bow.

10/15/59: "Apparently intentional" damage to electrical cables of the USS **Nautilus** (SSN-571) is discovered during overhaul at the naval shipyard in Portsmouth, New Hampshire. The Navy says the damage appears to confined to the electrical system and "does not extend to the nuclear reactor plant." The Navy disclosure of the incident follows an article in the Portsmouth Herald which reports a series of incidents involving "sabotage-type" damage to the craft including fires, cut cables, broken pipes, and other damage to vital parts.

11/04/59: The USS **Willis A. Lee** (DL-4) suffers a fire after an explosion of an anti-aircraft round during exercises off Newport, Rhode Island.

11/06/59: The USS **Threadfin** (SS-410) is rammed by the Greek freighter **Nikolas Mikhalos** at the entrance to the Suez Canal as both ships are exiting to the Red Sea.

11/08/59: The Soviet cruiser **Sverdlovsk** collides with the German coastal vessel **Hilda Rebecca** in the Kiel Canal. The **Sverdlovsk** continues into the Baltic while the **Hilda Rebecca** has to be beached for repairs.

11/09/59: A fire is discovered in the pump room of the USS **Midway** (CVA-41) at the Subic Bay Navy Base, Philippines. Arson is blamed for the incident.

11/27/59: The Royal Navy cruiser HMS **Tiger** suffers a fire.

12/16/59: The USS **Searcher** (AGR-4) reaches Boston, Massachusetts, safely under tow after being disabled at sea for five days with boiler trouble.

01/11/60: An arresting gear cable aboard the USS **Independence** (CVA-62) breaks as an aircraft lands while the ship is operating off the Florida coast, killing one.

02/04/60: Eleven men are swept overboard from the USS **Daly** (DD-519) during sea trials 200 miles off the Virginia coast, killing seven.

02/13/60: The USS **Skate** (SSN-578) suffers "very minor" damage after colliding with a concrete pier at Electric Boatyard, Groton, Connecticut.

02/28/60: In late February in the Atlantic the USS **Triton** (SSN-586), shortly after departure for a submerged global circumnavigation, suffers a leak in a main condenser circulating water pump, necessitating the shutdown of the port reactor for five hours to effect repairs.

03/01/60: In the beginning of March the USS **Triton** (SSN-586), while traveling down the Atlantic, springs a severe leak in its starboard propeller shaft due to loose bolts and an improperly installed water seal.

03/19/60: The USS **Darby** (DE-218) collides with the Swedish ore carrier **Soya Atlantic** off Cape Henry while returning from exercises off the Virginia Capes, killing two.

04/04/60: The Royal Navy diesel submarine HMS **Narwhal** runs aground in high winds off Scotland.

04/07/60: The USS **Shangri-La** (CV-38) suffers an explosion of an air separator operated by a gasoline motor while near Valparaiso, Chile, injuring three.

04/24/60: The USS **Triton** (SSN-586) suffers a serious casualty in the after torpedo room when a hydraulic line to the stern plane mechanism bursts just prior to the end of its global circumnavigation. Quick action by crew members prevents the accident from getting out of control. The leak is stopped and hydraulic power is restored.

05/25/60: The USS **Saratoga** (CVA-60) collides with the ore carrier **Bernd Leonhardt** off North Carolina. The accident touches off a jet fuel fire on the **Saratoga** which is quickly extinguished.

05/30/60: The USS **Saratoga** (CVA-60) suffers an oil-fed flash fire at the Norfolk Naval Shipyard, Virginia, where the carrier had docked after a collision on 25 May. The fire scorches the vessel's amidships hull.

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06/08/60: Sabotage is suspected in an incident involving damage to a shipyard fire hose used on board the USS **Nautilus** (SSN-571) for testing the ship's evaporators while the ship is undergoing overhaul at Portsmouth Naval Shipyard, New Hampshire. The Navy says, "No damage occurred to the ship."

06/14/60: The USS **Sargo** (SSN-583) suffers an explosion and fire in its aft end while docked in Pearl Harbor, Hawaii. The fire starts from a leak in a high-pressure line that was pumping oxygen aboard. The explosion occurs a few moments later. When dock units and boats are unable to bring the fire under control quickly, officers take the **Sargo** a short distance from the dock and deliberately submerge it with the stern torpedo hatch open to put out the blaze. The Navy says the ship's nuclear reactors were sealed off, and there was "absolutely no danger of an explosion from the reactor compartment." The submarine is extensively damaged and is drydocked taking three months to repair. The **Sargo** is the first nuclear ship in the Pacific Fleet and was scheduled to take the visiting King and Queen of Thailand on a cruise the next day.

07/19/60: The USS **Ammen** (DD-527) and USS **Collett** (DD-730) collide in heavy fog off Newport Beach, California. Eleven of the **Ammen**'s crew are killed and 20 are injured, and the ship is damaged beyond repair.

08/10/60: The USS **Bennington** (CV-20) and USS **Edwards** (DD-619) collide during refueling 175 miles off California. A Navy spokesman later says that the **Edwards** "apparently lost steering control" and its superstructure smashed into the **Bennington**'s Number 3 elevator. The destroyer is extensively damaged while the carrier is only slightly damaged.

08/12/60: The USS **Exultant** (MSO-441) suffers an oil fire in the engine room while operating off Georgia, killing five.

08/24/60: A U.S. Navy minesweeper is swamped at Charleston, South Carolina.

08/28/60: Unexplained engine room damage delays the sailing of the Royal Navy destroyer HMS **Dainty**. Sabotage is suspected.

09/14/60: The Australian destroyer **Anzac** accidentally fires a salvo into the hull of the Australian destroyer **Tobruk** opening a hole above the waterline during maneuvers off Australia.

11/04/60: The USS **Cree** (ATF-84) is accidentally bombed by a plane from the USS **Coral Sea** (CVA-43) during exercises in the western Pacific.

11/28/60: About this date six men are soaked by reactor coolant while working on the USS **Nautilus** (SSN-571) at Portsmouth Naval Shipyard, New Hampshire. One man accidentally bumped a valve releasing the water onto himself and the others. Clothes and dosimeters were thrown away, making radiation measurement impossible.

12/19/60: Fire breaks out on the hangar deck of the USS **Constellation** (CVA-64) in the last stages of construction at the New York Naval Shipyard. Reports list 50 dead and an estimated damage of $45 million. A Navy court of inquiry investigation later finds there were 42 small fires earlier in the year. The fire delays the ship's commissioning by several months to 27 October 1961.

01/06/61: A Sea Vixen helicopter crashes into the sea at night after a deck accident on the Royal Navy aircraft carrier HMS **Ark Royal** while the ship is near Malta.

01/12/61: The Royal Navy diesel submarine HMS **Oberon** runs aground at Rothesay Bay in the Firth of Clyde, Scotland, while maneuvering to tie up to a buoy. The **Oberon** is refloated the next day without damage.

01/14/61: The USS **Johnston** (DD-821) and USS **Keppler** (DD-765) are slightly damaged in a "glancing collision" 200 miles off the North Carolina coast.

01/18/61: The Royal Navy frigate HMS **Brighton** suffers a fire.

01/23/61: The USS **Saratoga** (CVA-60) suffers a fire caused by a ruptured oil line while in the Ionian Sea en route to Athens, Greece, killing seven.

01/27/61: The USS **Ticonderoga** (CV-14) suffers a brief fire when a diesel generator blows up while the ship is at Naval Air Station North Island, San Diego, California.

02/03/61: The Royal Navy diesel submarine HMS **Alaric** strikes a sandbank and is grounded for 20 minutes near Sheerness off the east coast of the U.K.

03/02/61: The USS **Glacier** (AGB-4) and USS **Staten Island** (AGB-5) break free after being stuck in the ice in Antarctica for nine days.

04/12/61: The Royal Navy diesel submarine HMS **Finwhale** arrives in the Firth of Clyde, Scotland, with a six-by-two-foot hole in her casing caused by heavy seas in a gale as she sailed to the Arctic for underwater tests. A dent on the aluminum casing forward of the sail measures 20 by 6 feet.

04/25/61: A boiler explosion occurs aboard the USS **Intrepid** (CVS-11), injuring 11.

04/27/61: The USS **Diamond Head** (AE-19) is holed above the waterline

in a collision with the USS **Independence** (CVA-62) in the Caribbean.

04/30/61: The USS **Baldwin** (DD-624) runs aground off Montauk Point, New York. One sailor is killed and one hurt when a steel cable whiplashes during an attempt to free the ship. The ship is subsequently scuttled.

07/10/61: The munitions ship **Save** runs aground and explodes off Mozambique.

07/21/61: The USS **Angler** (SS-240) is slightly damaged in a minor collision with the freighter **Export Adventurer** during maneuvers with a destroyer 15 miles south of Block Island, Rhode Island.

08/09/61: The USS **Kitty Hawk** (CVA-63) suffers a boiler breakdown involving ruptured tubes at Norfolk, Virginia, just prior to its shakedown cruise.

08/19/61: The Royal Navy destroyer HMS **Broadsword** suffers a damaged boiler.

09/26/61: The USS **Charr** (SS-328) suffers an engine room flood while submerged at 100 feet and operating 150 miles west of San Diego, California. Two sailors seal themselves in the flooded compartment and save the submarine and its 76 crewmen by manning the controls until the submarine surfaces.

09/26/61: A U.S. Navy tanker catches fire and explodes while in port at Morehead City, North Carolina, killing one. Flames from the burning ship threaten seven huge storage tanks containing more than ten million gallons of high octane aviation fuel.

10/16/61: The USS **Randolph** (CVS-15) collides with the Liberian tanker **Atlantic Viscountess** 325 miles east of Charleston, South Carolina. The collision ruptures a gasoline line on the carrier causing a flash fire which is extinguished in less than five minutes.

11/02/61: During its sea trials the USS **Thresher** (SSN-593) docks at San Juan, Puerto Rico. Its reactor is shut down and a diesel generator is started up to provide electricity in keeping with usual docking procedures. But after seven or eight hours of operation the diesel generator breaks down. While sailors work on the generator, electricity is provided by an electric storage battery. The generator takes much longer than expected to repair, however, and so the decision is made to restart the reactor. But a nuclear reactor takes several hours and considerable electricity to restart, and the **Thresher**'s battery is depleted before the reactor becomes critical. With no electricity to keep the ventilation system going, the submarine starts to heat up. Temperatures in the machinery spaces reach approximately 140 degrees. Some men are ordered out suffering from the heat and fumes, and the captain fears the heat and humidity could damage electrical equipment and lead to a general evacuation. Ultimately the problem is solved by hooking up electrical cables to the diesel-electric powered submarine **Cavalla** (SS-244) which is moored alongside early the next morning. With electricity from the **Cavalla**, the **Thresher**'s reactor is able to be restarted.

11/06/61: A fire on the newly-commissioned USS **Constellation** (CVA-64) breaks out at sea, killing four and severely injuring nine.

12/05/61: The Royal Navy frigate HMS **Falmouth** collides with the naval auxiliary HMS **Tide Flow** during antisubmarine warfare exercises in Lyme Bay off the Dorset coast, U.K. The **Falmouth** is holed above and below the waterline, but returns to Portland, U.K., under its own power. The **Tide Flow** suffers superficial damage.

12/21/61: A rocket motor aboard the USS **Meredith** (DD-890) ignites and burns on its launcher, causing an intense fire of short duration while the ship is at Mayport, Florida. The commander of the destroyer squadron to which the **Meredith** is attached says that safety features prevented the rocket from leaving the ship.

12/31/61: In 1961, an accident in the nuclear power plant of an early class of Soviet nuclear-powered ballistic missile submarine (probably a Hotel class) reportedly occurs near the coast of England while ship is returning from a training exercise. Crew members were seriously contaminated and parts of the ship and its missiles were also contaminated when a cooling pipe broke. The level of radiation is reported to have been five roentgens per hour in the space where the pipe broke. After a two-month ventilation of the submarine, a decision is made to transfer the missiles to two diesel-powered submarines for their test launches.

01/06/62: Western intelligence sources report that a submarine belonging to the United States or another NATO power was damaged and forced to the surface by a 20-megaton underwater nuclear test blast set off by the Soviet Union in the Barents Sea. The detonation point is said to have been about 100 miles from the submarine whose commander is quoted as saying, "If we had been much closer we might not have survived."

01/16/62: The Royal Navy aircraft carrier HMS **Ark Royal** suffers propeller damage when it runs aground in Plymouth Sound on its way through a deep water channel to the Devonport, U.K., dockyard.

01/31/62: The Royal Navy aircraft carrier HMS **Eagle** suffers unknown damage in an accident.

02/03/62: The Royal Navy destroyer HMS **Carron** suffers damage caused by sailors.

02/20/62: The USS **Balao** (SS-285) is snagged by the tow-line of the ocean tug **Torrent IV** while cruising 110 feet below the surface off the Florida coast. The accident damages one of the **Balao's** masthead lights, punches two small holes in the superstructure supporting the periscope, and breaks one radar antenna and damages another. Neither the tug nor the barge under tow receives damage.

03/05/62: An aircraft arresting cable aboard the USS **Forrestal** (CVA-59) snaps while the carrier is en route from Guantanamo Naval Base, Cuba, to Norfolk, Virginia, killing one.

03/06/62: The USS **Monssen** (DD-798) is grounded by a storm at Beach Haven, New Jersey.

03/12/62: The USS **Proteus** (AS-19) suffers a brief fire during a weekend training cruise in the Irish Sea. The fire, which causes only slight damage, apparently started in a pile of rags.

03/21/62: The Royal Navy frigate HMS **Rothesay** rams the Turkish diesel submarine **Gur** in the western Mediterranean during the NATO exercise "Dawn Breeze." Both ships suffer damage and proceed to Gibraltar.

03/26/62: The Royal Navy nuclear-powered attack submarine HMS **Dreadnought** suffers a fire in a cabin while the ship is under construction at Barrow-in-Furness, U.K.

03/30/62: The USS **England** (DLG-22) suffers an explosion and fire at San Pedro, California, injuring 18 workmen before the fire is brought under control.

04/09/62: The USS **Thomas A. Edison** (SSBN-610) collides with the USS **Wadleigh** (DD-689) during antisubmarine warfare exercises 200 miles east of Norfolk, Virginia. The **Edison's** topside rudder is slightly bent and the destroyer's forward bottom plates are pierced. The **Edison** is repaired at Newport News, Virginia, in several hours while the **Wadleigh** goes into drydock for several weeks. According to a Navy spokesman the collision resulted from a misunderstanding between the two ships and occurred as the **Edison** was surfacing. No one is injured.

04/11/62: Fire breaks out in the rudder section of the USS **Thomas A. Edison** (SSBN-610) at Norfolk, Virginia. The fire is caused by the heat from a workman's acetylene torch and is brought under control within 30 minutes.

04/29/62: A British Gannet aircraft crashes on the Royal Navy aircraft carrier HMS **Ark Royal** while the ship participates in a SEATO exercise in the South China Sea, killing one.

05/03/62: Police investigate damaged electrical cables on the Royal Navy aircraft carrier HMS **Eagle**. Further damage is found the next day.

05/10/62: The USS **Permit** (SSN-594) is run over by the cargo ship **Hawaiian Citizen** while the **Permit** is on a submerged test run near the Farallon Islands 30 miles from San Francisco, California. A Navy spokesman said the only damage to the submarine was a bending of the doors to the conning tower. The crew had to force the doors open to raise the radio antenna to communicate with freighters standing by.

06/03/62: The USS **Thresher** (SSN-593) is damaged in a collision with a commercial tug that was berthing it at Port Canaveral, Florida, receiving a three-foot gash in the submarine's ballast tanks about a foot below the waterline. The submarine went to New London, Connecticut, under its own power to effect repairs.

06/07/62: The U.S. destroyer USS **Sumner** runs aground off Golfe Juan in the Mediterranean during a windstorm.

06/15/62: The Royal Navy frigate HMS **Blackpool** suffers damage caused by a sailor.

06/25/62: The USS **Tiru** (SS-416) suffers a fire which forces the vessel to make an emergency surfacing 15 miles southwest of Pearl Harbor, Hawaii, with 18 men suffering from smoke inhalation. A malfunction of a practice torpedo in the torpedo room caused the fire.

07/01/62: A U.S. Navy F8U Crusader aircraft crashes into the USS **Ranger** (CVA-61) at sea off California, injuring two.

08/01/62: The Royal Navy destroyer HMS **Battleaxe** collides with the frigate HMS **Ursa** in the Clyde river, Scotland, during the night. The **Battleaxe** is subsequently scrapped.

08/28/62: A British Meteor aircraft hits the mast of the Royal Navy minesweeper HMS **Appleton** while exercising off Malta. The aircraft is piloted safely to Luqa airport, Malta.

08/29/62: The Royal Navy aircraft carrier HMS **Ark Royal** suffers a gale mishap.

09/13/62: A Japanese fishing boat collides with a submarine, believed to be Soviet, and sinks off Northern Japan. The crew of 16 escapes on rafts and rubber boats.

10/04/62: The Royal Navy frigate HMS **Ashanti** breaks down during sea trials in the Caribbean Sea.

10/09/62: A Danish diesel submarine gets caught in the net of a British fishing trawler. The submarine surfaces with damage to neither vessel and apologies were exchanged.

10/10/62: The USS **Triton** (SSN-586) suffers a fire during repairs in New London, Connecticut. A spokesman for Electric Boat Division of General Dynamics Corporation said there was only minor damage to one compartment and that no one was injured. He said no radioactivity was involved. The cause of the fire was said to be undetermined.

10/13/62: The Royal Navy diesel submarine HMS **Odin** touches the bed of the English Channel at 150 feet five miles south of Portland Bill during a night exercise, damaging the rudder. The submarine is towed back to Portland harbor, U.K.

10/15/62: The New York Times reports that one of six Soviet diesel-powered attack submarines operating in the Caribbean during the Cuban missile crisis experiences mechanical trouble and is unable to submerge except for short periods. On 15 November the Associated Press reports that a Canadian Air Force patrol plane sighted the Soviet submarine off Halifax still unable to submerge. It eventually returns to the Soviet Union on the surface with a trawler escort.

10/25/62: The New York Times reports that well before the Cuban missile crisis a mechanical breakdown occurred in a Soviet diesel-powered submarine in the Gulf of Alaska. The submarine could not submerge and was escorted home by a trawler.

11/05/62: The USS **Kearsarge** (CVS-33) and USS **Mattaponi** (AO-41) are slightly damaged in a collision during refueling off California.

11/14/62: The USS **Wasp** (CVS-18) and the USS **Holder** (DDE-819) collide during refueling while in the Atlantic while taking part in the U.S. quarantine of Cuba during the Cuban missile crisis.

11/20/62: The Royal Navy aircraft carrier HMS **Centaur** suffers a steam leak in the boiler room, killing five.

11/26/62: The Royal Navy aircraft carrier HMS **Albion** collides with a tug in Aden harbor, Aden. The tug sinks with two missing.

12/03/62: The USS **Kearsarge** (CVS-33) and the SS **Oriana** collide in dense fog off Long Beach, California. The **Oriana** suffers a 20-foot hole near its bow and the **Kearsarge** suffers a 25-foot rip about ten feet aft on the starboard side.

12/14/62: The Royal Navy diesel submarine HMS **Otter** rams a trawler off Plymouth, U.K. The crew of the trawler abandon ship and are rescued by a nearby launch.

12/31/62: During 1962, the engine room of the USS **Skate** (SSN-578) begins to flood after a seawater circulation line fails while the submarine is submerged at 400 feet on the way through Baffin Bay off Thule, Greenland. Seawater sprays in and starts to flood the engine room. The submarine does not lose power and surfaces safely. On the surface, with the water pressure greatly reduced, the flooding is successfully stopped.

01/03/63: The USS **Core** (AKV-41) runs aground in heavy fog off Fort Baker under the Golden Gate Bridge, San Francisco, California.

01/15/63: A jet fighter attempting to land snaps a cable aboard the USS **Constellation** (CVA-64) while the ship is operating in the eastern Pacific, injuring 11, including three whose legs have to be amputated.

02/09/63: In the mid-Atlantic a wave washes over the Number 1 elevator on the USS **Enterprise** (CVAN-65) while the elevator is in the down position. Four men are washed overboard. Two are rescued, but one later dies.

02/20/63: An aircraft crash aboard the USS **Enterprise** (CVAN-65) sweeps the carrier's deck with fire while it is operating in the Atlantic, killing two.

02/28/63: The USS **Baussell** (DD-845) runs aground off Djakarta, Indonesia, prior to a scheduled visit to that city. The ship is refloated four days later.

03/13/63: The side of the USS **Valley Forge** (CV-45) is slightly damaged by a fire when an oil film on the water is ignited by sparks from a welder's torch at Long Beach, California.

04/01/63: The Royal Navy diesel submarine HMS **Grampus** returns to Gosport, U.K., after spending three weeks under the polar icecap looking for holes in the ice. During the patrol it superficially damages its hull on the ice.

04/01/63: The Royal Navy diesel submarine HMS **Tabard** collides with a wharf damaging its sonar equipment while berthing in Brisbane, Australia.

04/01/63: In April the Royal Navy minelayer HMS **Manxman** runs aground.

04/05/63: The USS **Ranger** (CVA-61) suffers an explosion and fire in the boiler uptakes while en route

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from Beppu, Japan, to Iwakuni, Japan.

04/05/63: The USS **Great Sitkin** (AE-17) suffers slight damage during a fire of unknown origin while tied up at the Main Ship Repair Corporation in Brooklyn, New York.

04/08/63: An unidentified submarine becomes entangled in the nets of the trawler **Sunappee** off New England and drags overboard about $3,000 worth of fishing gear.

04/10/63: The USS **Thresher** (SSN-593) sinks in approximately 8,400 feet of water 220 miles east of Boston while conducting post-overhaul trials, killing all 129 men on board. The Navy Court of Inquiry concludes a flooding casualty in the engine room brought about by a piping system failure in one of the submarine's saltwater systems is the most probable cause of the sinking. The **Thresher** is never recovered.

05/04/63: The Royal Navy destroyer HMS **Diamond** suffers an engine room fire.

05/07/63: A fire occurs aboard the USS **Flasher** (SSN-613) at the Electric Boat shipyard, Groton, Connecticut, killing three and injuring two. Damage to the ship is reportedly negligible. The fire occurred in the trimming tank of the submarine, scheduled to be launched on 14 June.

05/08/63: The submerged Royal Navy diesel submarine HMS **Tabard** collides with the Royal Australian Navy frigate **Queensborough** off Jervis Bay, New South Wales, Australia, during exercises. The submarine suffers superficial damage and a bent fin and returns to Sydney.

05/08/63: The USS **Woodrow Wilson** (SSBN-624) suffers a fire while under construction at Mare Island Naval Shipyard in Vallejo, California, injuring three. The fire causes only minor damage to the **Wilson** and occurs when a heavy cable comes in contact with a switchboard on the submarine.

05/22/63: The Royal Navy destroyer HMS **Devonshire** suffers engine trouble.

05/29/63: A flash fire breaks out in the boiler room of the USS **Blandy** (DD-943) shortly after it arrives in Portland, Maine, to participate in Memorial Day exercises.

06/04/63: The USS **Asterion** (AF-63) and the Japanese freighter **Kokoku Maru** collide.

06/07/63: The USS **Tinosa** (SSN-606) collides with the USS **John Adams** (SSBN-620) while being moved in the Portsmouth Naval Shipyard, New Hampshire, when a tug towline snaps. The **Tinosa** received, what the Navy said, was a "small dent below the waterline" in the bow.

06/10/63: The Royal Navy diesel submarine HMS **Rorqual** is caught in a trawler's net.

07/04/63: The USS **Salmon** (SS-573) suffers personnel casualties when mercury from a broken thermometer comes into contact with a hot grid, creating toxic mercury vapor, resulting in the intoxication of 14 crewmembers.

07/22/63: The USS **William C. Lawe** (DD-763) rams and sinks a U.S. Navy tug when the tug loses steering control and crosses into the path of the destroyer in the St. John's River near Jacksonville, Florida.

07/27/63: The U.S. freighter **Irish Spruce** strikes the docked USS **Pratt** (DE-363) at Norfolk, Virginia.

07/29/63: The Royal Navy frigate HMS **Leopard** is in a collision.

08/02/63: The USS **Tingey** (DD-539) and USS **Vammen** (DE-644) collide during a Naval Reserve exercise 200 miles off southern California. The **Tingey** is partly flooded from a deep gash in its starboard side and the **Vammen** suffers a damaged bow, but both ships make it back to their homeports.

08/15/63: A F3H Demon aircraft lands on the fouled deck of the USS **Saratoga** (CVA-60) while the ship is operating in the Mediterranean, killing two and seriously injuring nine. Fifteen aircraft sustain damage.

08/19/63: The USS **Constellation** (CVA-64) suffers an arresting gear accident while operating in the western Pacific.

08/27/63: The USS **Grayback** (SSG-574) suffers a serious fire in the after crew's berthing as a result of a casualty to the main propulsion circuit breaker while operating in the northern Pacific, killing one man and injuring five.

09/10/63: The USS **McDermut** (DD-677) collides with the USS **Gregory** (DD-802) during night antisubmarine warfare exercises off southern California. The **McDermut** suffers damage to its bow and the **Gregory** suffers a split in her starboard side to the main deck.

09/21/63: The USS **Grouse** (MSCO-15) runs aground on Cape Ann, Massachusetts. After attempts to free the ship fail, the **Grouse** is destroyed by fire.

09/26/63: Fire breaks out in a fuel system of the Royal Navy aircraft carrier HMS **Centaur** at the Portsmouth naval base, U.K., killing one.

09/27/63: The USS **Barry** (DD-933) accidently discharges a torpedo into the deck house of the USS **Decatur** (DD-936) moored alongside in Newport, Rhode Island. There are no injuries or significant damage.

10/03/63: The USS **Medregal** (SS-480) is struck by an MK-37 torpedo fired by the USS **Sabalo** (SS-302) during exercises. Damage is not major.

10/09/63: The USS **Caliente** (AO-53) and USS **Nereus** (AS-17) collide in the San Diego, California, operating area during refueling exercises. Both ships are damaged.

10/18/63: The Royal Navy diesel submarine HMS **Porpoise** collides with the aircraft carrier HMS **Centaur** when it is caught by an ebb tide and drifts broadside onto the bows of the berthed carrier while leaving Portsmouth harbor, U.K. The submarine suffers superficial damage.

10/24/63: The USS **Roberts** (DE-749) collides with the Swedish ore carrier **Luossa** inside the Baltimore, Maryland, harbor in dense fog. The **Roberts** suffers minor flooding due to a small gash in its starboard quarter.

11/29/63: A U.S. Navy tanker and a runaway barge each loaded with gasoline collide at New Orleans, Louisiana, putting an eight-foot gash in the side of the tanker.

12/16/63: The USS **Essex** (CVS-9) en route to the United States is struck by two heavy waves while west of the Azores, causing a radar mast to snap. The mast falls to the deck, damaging both the radar and aircraft.

12/20/63: The second Royal Navy nuclear-powered attack submarine HMS **Valiant** suffers a fire at the Vickers-Armstrong Yard at Barrow-in-Furness, U.K., while the ship is fitting out after being launched on 3 December. The fire is in the reactor compartment in a wooden structure where workers change their clothing. Mr. R. M. Nicholson, the shipyard general manager, says there is no nuclear hazard since the core of the reactor was not installed.

01/04/64: The Royal Navy diesel submarine HMS **Trump** tows a yacht.

01/10/64: The USS **Lake Champlain** (CVS-39) loses 41 feet of its catwalk in a storm in the Virginia Capes area.

01/10/64: The Royal Navy diesel submarine HMS **Tiptoe** runs aground in the Clyde River, Scotland, coincidently right in front of the house of the area's senior naval officer.

01/14/64: The Royal Navy cable ship HMS **Bullfinch** runs aground.

01/24/64: The Royal Navy aircraft carrier HMS **Hermes** suffers a fire, believed to be caused deliberately.

02/09/64: The USS **Blue Jacket** (T-AF-51) collides with the German fishing boat **Coaster Dirk**, killing six of the fishing boat's seven-member crew.

02/10/64: The Royal Australian Navy destroyer **Voyager** sinks after colliding with the Australian aircraft carrier **Melbourne** off New South Wales, killing 82.

02/16/64: An A3J Vigilante aircraft crashes aboard the USS **Hornet** (CVS-12) operating in the Pacific before the barricade could be rigged, killing the pilot and injuring two crew members.

03/03/64: The USS **Newman K. Perry** (DD-883) collides with a sulfur barge in Tampa Bay, Florida, sinking the barge and flooding the destroyer from stem to Frame 8.

03/11/64: The USS **Searcher** (AGR-4), on station off the U.S. east coast, loses a propeller in heavy seas. A Coast Guard ship takes the **Searcher** in tow.

03/27/64: The USS **Antares** (T-AKR-294) suffers a fire 40 miles off North Carolina.

04/01/64: During night flight operations, the Number 3 elevator of the USS **Randolph** (CVS-15) tears loose from its mountings, dropping five men and a S-2F Tracker antisubmarine warfare plane into the Atlantic. Only three men are rescued.

04/02/64: The Royal Navy frigate HMS **Nubian** is in a collision.

04/02/64: The USS **Harlan R. Dickson** (DD-708) runs aground a mile east of Deer Island Light off Boston, Massachusetts. The ship is refloated in two hours with damage to screws, the sonar dome, and plating.

04/04/64: The USS **General Simon B. Buckner** (AP-123) collides with a Liberian freighter in high winds in the harbor at Upper Bay, New York.

04/16/64: The USS **Mission San Antonio** (AO-119) and a small South Korean fishing craft collide off the west coast of Korea in foggy weather. There is no damage to the tanker and five Koreans are rescued, but two are killed.

05/06/64: The USS **Lake Champlain** (CVS-39) and USS **Decatur** (DD-936) collide in the Atlantic 150 miles east of Cape Henry, Virginia. The **Decatur** sustains heavy damage to its superstructure, but there are no personnel injuries.

05/22/64: The Royal Navy destroyer HMS **Cavalier** is damaged in a collision.

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06/03/64: The USS **Lake Champlain** (CVS-39) collides with the Norwegian freighter **Skauvaag** in the Chesapeake Bay. There are no injuries.

06/12/64: The USS **Bon Homme Richard** (CVA-31) suffers a major propulsion system casualty while participating in an exercise about 160 miles southwest of Sasebo, Japan. The casualty results in the loss of 50 percent propulsion capability.

06/12/64: The Royal Navy frigate HMS **Puma** suffers a fire.

06/13/64: Fire damages the hull of the USS **Haddock** (SSN-621) still under construction at Pascagoula, Mississippi. Captain John B. Guerry, supervisor of shipbuilding for the Navy, said no radioactive material was installed in the **Haddock**.

06/13/64: A fire slightly damages the USS **Randolph** (CVS-15) while the ship is in Norfolk, Virginia.

06/26/64: The Royal Navy destroyer HMS **Diamond** collides with the frigate HMS **Salisbury**.

06/28/64: The USS **Sea Leopard** (SS-483) suffers a fire in the forward engine room during overhaul at the Norfolk Naval Shipyard, Virginia.

07/01/64: The USS **Henry Clay** (SSBN-625) runs aground on a shoal in the mouth of the James River and is pulled free an hour later by two tugs. The submarine was en route from Newport News, Virginia, across Hampton Roads to pick up Deputy Secretary of Defense Cyrus Vance in Norfolk, Virginia. No damage is reported.

07/26/64: A suddenly intensifying storm causes damage to three navy ships anchored in Buckner Bay, Okinawa. The USS **George Clymer** (APA-27) and the USS **Eldorado** (AGC-11) collide after dragging their anchors, and the USS **Weiss** (APD-135) is grounded when the anchor chain parts. There are no injuries.

08/15/64: The Royal Navy depot ship HMS **Tyne** experiences a flooded magazine.

09/05/64: The Royal Navy cruiser HMS **Lion** collides with the frigate HMS **Lowestoft**.

09/11/64: A rocket motor used to boost aircraft explodes aboard the USS **Constellation** (CVA-64) while the ship cruises in the South China Sea, killing one and injuring three.

09/12/64: Flooding damages the command ship USS **Wright** (CC-2), the National Emergency Command Post Afloat, including the steering compartments so that the ship has no rudder control and can only maneuver with the aid of tugs.

09/29/64: The USS **Franklin D. Roosevelt** (CVA-42) sustains damage to its Number 1 propeller during normal operations in the Mediterranean. The USS **Independence** (CVA-62) relieves the **Roosevelt** on Mediterranean duty and it returns to the U.S. to drydock.

09/29/64: An explosion aboard the USS **Sproston** (DD-577) in Pearl Harbor, Hawaii, is caused by a short circuit during work on an indicator light. The propellant in a rocket ignites and the magazine is flooded to prevent further damage. Three people are extensively burned.

10/08/64: Three U.S. Navy officers and three Filipino civilian workers are killed in an explosion and fire aboard the floating drydock AFDM-8 at Guam.

10/13/64: The Royal Navy aircraft carrier HMS **Ark Royal** suffers an electrical fire when an electrical circuit is tested, which in turn ignites some cardboard boxes in a storeroom, while the ship is in a Devonport, U.K., dockyard undergoing a refit.

10/15/64: The Royal Navy frigate HMS **Keppel** suffers damage.

11/03/64: The Canadian aircraft carrier **Bonaventure** suffers an explosion and fire in a refrigeration unit while the ship is undergoing refit in Saint John, New Brunswick, Canada, killing one dock worker and injuring four.

01/09/65: The USS **Ethan Allen** (SSBN-608) collides with the Norwegian freighter **Octavian** in the eastern Mediterranean while at periscope depth. The U.S. Department of Defense says "damage was negligible," no casualties occurred, and both the submarine and the freighter continued on their way after exchanging identification.

01/16/65: The USS **Whitehurst** (DE-634), a Naval Reserve Training Ship, collides with the Norweigian freighter **Hoyander** at the entrance of Vancouver harbor 2,500 yards west of the Lions Gate Bridge, British Columbia, Canada, in dense fog at night as both ships are leaving the harbor. Both ships are grounded and the **Whitehurst** is holed in the stern. The **Whitehurst** is refloated the next day.

02/27/65: A plane from the USS **Midway** (CVA-41) is inadvertently shot down by a USS **Preble** (DLG-15) missile when it overflies the missile range during southern California maneuvers for the "Silver Lance" exercise. The pilot is killed.

04/15/65: The USS **Ranger** (CVA-61) suffers an engine room fire off South Vietnam, killing one.

06/16/65: The USS **Hartley** (DE-1029) collides with the Norwegian

merchantman **Blue Master** off Cape Henry, Virginia. Its engine room floods as a result and the **Hartley** is towed to Norfolk, Virginia, by the USS **Kiowa** (ATF-72).

06/20/65: The Royal Navy aircraft carrier HMS **Hermes** suffers damage to a number of gauges while the ship is undergoing a major refit at Devonport, U.K. Sabotage is suspected.

07/09/65: The Royal Navy diesel submarine HMS **Orpheus** is in a collision.

07/13/65: The USS **Medregal** (SS-480) collides with the Lebanese merchant ship **The Rodos** in the South China Sea suffering some damage in international waters 18 miles south of Hainan island. The U.S. Department of Defense says the submarine was on routine operations, but China claims the incident took place within its territorial waters.

07/14/65: The Royal Navy diesel submarine HMS **Tiptoe** collides with the frigate HMS **Yarmouth**.

07/17/65: The USS **Frank Knox** (DDR-742) runs aground on Pratas Reef in the South China Sea while underway to Taiwan. The ship is pulled free on 22 August.

07/21/65: The Royal Navy destroyer HMS **Devonshire** suffers an engine fault.

07/24/65: The fishing trawler **Snoopy** explodes apparently after snagging a torpedo off the North Carolina coast, killing eight.

08/26/65: The USS **Shangri-La** (CVA-38) and USS **Newman K. Perry** (DD-883) collide off Sardinia, killing one sailor and injuring another on the destroyer. The **Perry**'s bow is crushed and twisted to starboard. Both are repaired at Naples and return to duty with the Sixth Fleet.

09/22/65: The United Kingdom announces that HMS **Dreadnought**, its first nuclear-powered submarine, will be withdrawn from service due to metal failures which involve hairline cracks in its internal bulkheads. The submarine returns to service on 2 February 1966 modifications are made to the hull.

10/12/65: The USS **Franklin D. Roosevelt** (CVA-42) and the French merchantman **Charles le Borgne** collide off southern France. The carrier sustains little damage and continues its participation in "Lafayette IX," a two-day bilateral U.S.-French exercise in the western Mediterranean. The merchantman sustains minor structural damage and proceeds under its own power to Marseilles escorted by the USS **Douglas H. Fox** (DD-779).

10/13/65: The USS **Barb** (SSN-596) and USS **Sargo** (SSN-583) collide while on maneuvers 15 miles west of Oahu, Hawaii. Minor damaged resulted to the forward end of one submarine and to the mast and sail of the other, but there were no injuries and both ships returned to port under their own power.

10/30/65: The Royal Navy aircraft carrier HMS **Ark Royal** suffers a fire in a boiler room, which causes considerable damage to wiring and other equipment and puts the ship out of operation for three weeks while the ship is undergoing routine overhaul in a Singapore dockyard.

12/05/65: At 2:50 p.m. local time, while the USS **Ticonderoga** (CVA-14) is en route from operations off Vietnam to Yokosuka, Japan, an A-4E aircraft of Attack Squadron 56 loaded with one B43 nuclear weapon goes overboard. The aircraft was being rolled from the Number 2 Hangar Bay to the Number 2 Elevator when it rolled off the elevator with the pilot Lieutenant Junior Grade D. M. Webster and the bomb and sank in 2700 fathoms of water. Searchers fail to find the pilot. The Department of Defense states this accident took place "more than 500 miles from land" when it reveals the accident in 1981. However Navy documents show the accident occurred about 80 miles east of the Japanese Ryukyu Island chain and 250 miles south of Kyushu Island, Japan, and about 200 miles east of Okinawa.

12/06/65: The USS **Bushnell** (AS-15) suffers a major fire in the Gulf of Mexico. The fire is extinguished with the aid of the USS **Penguin** (ASR-12).

12/07/65: Fire breaks out in a machinery room on the USS **Kitty Hawk** (CVA-63) in the South China Sea, killing two and injuring 28. An ammunition magazine is flooded as a precautionary measure.

12/13/65: An aircraft fuel tank ruptures on takeoff from the USS **Independence** (CVA-62) starting a fire 220 miles southeast of Norfolk, Virginia, injuring 15.

12/20/65: The Royal Navy nuclear-powered attack submarine HMS **Dreadnought** suffers a fire in its control room while undergoing repairs at Rosyth, Scotland. It is quickly put out by the crew.

12/31/65: Mid 1960s — the New York Times (5/25/75) reports that at a mid-1960s briefing on a naval intelligence gathering operation, codenamed Holystone, a U.S. official is shown a photograph of the underside of a Soviet Echo class nuclear-powered submarine apparently taken inside Vladivostock harbor. He recalls being told the submarine scraped the bottom of a Soviet Echo class submarine and knocked off some of its equipment during this mission. Briefing participants are told this happened at least two other times as well (see 5/25/75 entry).

01/14/66: The USS **General Daniel I. Sultan** (T-AP-120) suffers extensive hull damage and a ruptured fuel tank when it runs aground in shoal water west of Okinawa. No casualties are reported. The **Sultan** is refloated on 15 January.

01/19/66: An "actual nuclear incident" occurs when the nuclear warhead on a Terrier anti-air missile separates from the missile and drops about eight feet on the USS **Luce** (DLG-7) while the ship is docked at Mayport Naval Station, Florida. It is recorded "there were no personnel casualties, and aside from the dent in the warhead, no equipment was damaged."

01/22/66: The missile tracking ship USS **American Mariner** (AGM-12) runs aground off Cape Kennedy, Florida.

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01/23/66: A U.S. Navy tank landing ship explodes while docked in Kawasaki, Japan, killing four Japanese workers.

01/27/66: The USS **Wasp** (CVS-18) is extensively damaged during a storm in the Caribbean.

02/04/66: The USS **Brinkley Bass** (DD-887) and USS **Waddell** (DDG-24) are heavily damaged in a collision while forming for operations in the Gulf of Tonkin.

03/11/66: The USS **Summit County** (LST-1146) runs aground while entering the inner harbor at Chu Lai, South Vietnam, puncturing the hull plating and flooding the main engine room.

03/23/66: The Royal Navy frigate HMS **Juno** suffers a fire.

04/05/66: The USS **Alamo** (LSD-33) and USS **Kawishiwi** (AO-146) collide during underway replenishment at sea.

05/21/66: The USS **Coral Sea** (CVA-43) and the USS **Iwo Jima** (LPH-2) brush briefly in San Diego, California, causing slight damage.

05/22/66: The Royal Navy survey ship HMS **Vidal** collides with the freighter **Hong Kong Fair** in the mid-Atlantic. Both are damaged, but stay afloat.

05/27/66: The USS **Mars** (AFS-1) is slightly damaged in a collision with the merchant ship **Seiwa Maru** in dense fog at the entrance to Tokyo Bay, Japan.

06/03/66: The Royal Navy frigate HMS **Galatea** is in a collision.

06/04/66: The USS **Banner** (AKL-25) collides with the Soviet vessel **Anemometer** in the Sea of Japan. Both ships suffer minor damage.

06/25/66: USS **Stalwart** (MSO-493) explodes, burns, capsizes, and sinks at a pier in San Juan, Puerto Rico. The minesweeper is later towed to Norfolk, Virginia.

06/29/66: The Royal Navy destroyer HMS **Cambrian's** accidental firing on a Hong Kong village is investigated.

08/10/66: Cracks in welds are discovered in the Royal Navy nuclear-powered attack submarine HMS **Valiant** during the final stages of its construction at Barrow-in-Furness, U.K. British steel firms say the cracks do not represent a serious structural failure and are not dangerous to the vessel or its crew.

08/11/66: The Royal Navy cruiser HMS **Tiger** fires a dummy shell into a dock wall.

08/19/66: The USS **Raleigh** (LPD-1) bumps the cruise liner **France** at the Hudson River pier in New York City, none are hurt.

08/30/66: The Royal Navy diesel submarine HMS **Rorqual** suffers an explosion off Mozambique while en route to Singapore, killing two and injuring 20.

09/01/66: The Royal Navy destroyer HMS **Devonshire** is in a collision.

09/14/66: The West German training diesel submarine **Hai** sinks in the North Sea in 140 feet of water 175 miles northwest of Wilhelmshaven, West Germany, during a storm, killing 19.

09/15/66: The HMS **Resolution**, the Royal Navy's first Polaris nuclear-powered ballistic missile submarine, is launched at Barrow-in-Furness, England. A week later cracks are reported to be found in the steel hull similar to cracks found in other nuclear submarines built in Britain. The cracks occur in thick steel welding. The Navy has known about the cracks ever since it was discovered that the original specification for steel for the submarines was not of high enough standard. The cracks do not mean the submarines will not go to sea, but if there are too many the metal will have to be rewelded. And, if cracks develop quicker than expected, Polaris submarines would require excessive amounts of welding when they come in for refits between patrols.

09/16/66: The Royal Navy destroyer HMS **Relentless** suffers a fire.

10/26/66: A major fire on the USS **Oriskany** (CVA-34) occurs while the carrier is operating off Vietnam. The fire starts when a crewman panics and throws a flare, which had accidently ignited while being moved, into a storage locker located at the forward starboard corner of

Hanger Bay 1. The locker contains some 650 other flares, which ignite in turn. The resulting fire takes three hours to control, kills 44, destroys or damages six aircraft, and puts the carrier out of action for several months.

11/03/66: The USS **Tiru** (SS-416) runs aground on Frederick Reef in the Coral Sea and is freed on 6 November.

11/04/66: A flash fire occurs in a storage compartment containing oil and hydraulic fluid four decks below the hangar deck of the USS **Franklin D. Roosevelt** (CVA-42) while the ship is on station in the South China Sea, killing seven.

11/10/66: The USS **Nautilus** (SSN-571) collides with the USS **Essex** (CVS-9) while running submerged about 350 miles east of Morehead City, North Carolina, during underway replenishment exercises. Both ships return to port unassisted. The submarine receives extensive damage to its sail area and goes to New London, Connecticut. The carrier sustains an open hull cut in the bow area and proceeds to Norfolk, Virginia.

12/07/66: The USS **Manley** (DD-940) suffers an accidental shell explosion and small fire while in South Vietnam, injuring three.

12/30/66: The USS **Mahnomen County** (LST-912) runs aground at Chu Lai, South Vietnam. The ship is decommissioned and abandoned on 31 January 1967 after four weeks of unsuccessful salvage efforts.

12/31/66: According to raw CIA intelligence reports, around 1966, a leak occurs "in the reactor shielding of a [Soviet] nuclear submarine home based in Polyarnyy" on the Kola Penisula. "As the submarine entered the port the captain requested permission to proceed directly to the shipyard. Permission was not granted but the captain took the vessel there nonetheless.... A 'special brigade' was formed to repair the submarine and part of the crew was sent to a special center on an island near Murmansk where naval personnel with radiation sickness were sent to be treated.... Those sent to the island did not come back."

12/31/66: In the late 1960's (1966-67 according to some accounts), the Soviet nuclear-powered icebreaker **Lenin** experiences a reactor meltdown according to raw CIA intelligence reports, or at least a "nuclear related casualty" according to the U.S. Navy. The CIA reports suggest that up to 30 people may have died and many others were affected by radiation sickness. The ship is abandoned for over a year before work to replace the **Lenin's** three reactors with two begins.

12/31/66: According to raw CIA intelligence reports, the Soviet November class nuclear-powered attack submarine, **Leninskyj Komsomol**, burns near the North Pole sometime in 1966-68. "The accident involved crew members being burned inside a bulkhead that was locked from the outside on both sides. The fire was caused by a spark of oxygen and did not involve the propulsion unit." The submarine was saved. The submarine "was one of several submarines which reached the North Pole under ice. The expedition was publicized in the Soviet press at the time without mention of the incident."

01/03/67: The Royal Navy destroyer HMS **Caprice** suffers a breakdown.

01/10/67: The Royal Navy diesel submarine HMS **Amphion** is in a collision.

01/15/67: A U.S. Navy minesweeper is hit by the freighter **Muifinh** in Saigon harbor, South Vietnam, and sinks.

01/15/67: The South Korean destroyer-escort **Chungnam-Ho** and ferry **Hanil-Ho** collide off South Korea, sinking the ferry, killing at least 13, with over 60 missing.

01/27/67: The USS **Essex** (CVS-9) runs aground during training operations five miles off Puerto Rico.

02/02/67: The USS **McMorris** (DE-1036) and USS **Tombigbee** (AOG-11) collide during a training exercise 75 miles southeast of Honolulu, Hawaii, killing two and injuring seven.

02/04/67: The USS **Clamagore** (SS-343) collides with the catamaran **Mango** outside of San Juan harbor, Puerto Rico.

02/11/67: The Royal Navy diesel submarine HMS **Walrus** suffers a fire.

02/15/67: The Royal Navy diesel submarines HMS **Orpheus** and HMS **Opportune** collide at the entrance to Portsmouth harbor, U.K., in darkness and heavy weather.

03/09/67: A U.S. Navy river patrol boat is rammed by a British freighter and split in two in the Saigon channel, South Vietnam.

03/13/67: The Royal Navy destroyer HMS **London** suffers a fire.

03/17/67: A five-inch artillery shell accidently explodes aboard the USS **Manley** (DD-940), causing a fire and injuring five off Da Nang, South Vietnam.

03/21/67: The USS **La Salle** (LPD-3) and the Israeli freighter **Deganya** are in a minor collision in fog off Cape Henry, Virginia.

03/24/67: The USS **Wasp** (CVS-18) and the USS **Salamonie** (AO-26) collide while refueling east of San Juan, Puerto Rico. No one was injured, but both ships took "moderate damage."

04/20/67: An explosion occurs in a gun mount aboard the USS **Bigelow** (DD-942) operating in the Vietnam area, injuring six.

05/10/67: During joint maneuvers of Japanese and U.S. fleets taking place in the Sea of Japan the Soviet Kotlin class destroyer **Besslednyi** scrapes the USS **Walker** (DD-517) despite repeated warnings not to get too close. Both ships suffer minor damage.

05/10/67: The Royal Navy destroyer HMS **Hampshire** suffers an explosion.

05/11/67: For the second time in two days a Soviet destroyer and the USS **Walker** (DD-517) collide in the Sea of Japan. This second incident occurs when the Soviet destroyer "turned into and toward" the **Walker**, and, according to the U.S. Department of Defense announcement, the two ships "brushed together." The United States delivers what the Department of State describes as a severe protest over the incident, which again involved a Navy task force conducting antisubmarine warfare exercises.

05/26/67: The Royal Navy nuclear-powered attack submarine HMS **Warspite** suffers a water leak in one compartment while undergoing routine maintenance in Faslane, Scotland. The U.K. Ministry of Defense says the "defect is not connected in any way with her nuclear plant. Her damage is slight and there are no casualties. The leakage of water was brought quickly under control by **Warspite** herself."

05/28/67: A 750-lb. bomb explodes during a loading operation on a Vietnam-bound ship at the U.S. Navy ammunition shipping piers at Naval Weapons Station, Concord, Port Chicago, California.

06/01/67: In June the Royal Navy assault ship HMS **Intrepid** suffers an overheated starboard turbine, necessitating 12 weeks of repair in Devonport, U.K.

06/12/67: The USS **Repose** (AH-16) is superficially damaged and the USS **Tappahannock** (AO-43) is slightly damaged when they collide during routine underway replenishment operations off Vietnam.

06/16/67: The USS **Kitty Hawk** (CVA-63) collides with the USS **Platte** (AO-24) during refueling west of San Francisco, California.

06/21/67: The Royal Navy frigate HMS **Blackwood** is damaged by ice floes.

06/22/67: A steam line ruptures aboard the USS **Raleigh** (LPD-1) as it is being repaired while the ship is moored at Norfolk Naval Air Station, Virginia, killing two.

06/29/67: The USS **Coconino County** (LST-603) loses all propulsion and auxiliary power after suffering two underwater explosions while off-loading near Dong Ha, South Vietnam.

07/23/67: The USS **Greenling** (SSN-614) strikes a buoy off Hingham, Massachusetts. There is only minor damage and little interuption to training.

07/24/67: The Royal Navy inshore minesweeper HMS **Birdham** suffers a fire.

07/29/67: A Zuni rocket is inadvertently fired from one of several aircraft being readied for launch over Vietnam from the USS **Forrestal** (CVA-59). The rocket travels across the flight deck, strikes the fully-fueled drop tank of another aircraft, and explodes. The resulting fire kills 134, damages or destroys 63 aircraft, and puts the ship temporarily out of action.

08/31/67: The USS **Simon Bolivar** (SSBN-641) armed with 16 Polaris missiles collides with the target ship USS **Betelgeuse** (T-AK-260) when practicing a torpedo attack, 70 miles southeast of Charleston, South Carolina. No one is hurt, but the **Bolivar** suffers about $1 million damage to its periscope and communications antennae. The **Betelgeuse** suffers a hole in its hull. The Navy tells a press conference that the missiles aboard the **Bolivar** were not armed and there was no danger of explosion or nuclear radiation. The missiles were undamaged the Navy emphasizes. The **Bolivar** surfaces and the crew cuts away a 4-foot-high, 15-foot-long section of the conning tower so the submarine could proceed to port.

09/05/67: The USS **Corporal** (SS-346) collides with the racing sloop **Media IV** in Block Island Sound off Rhode Island. The sloop's owner claims the submarine rammed the sloop and left without offering aid. The Navy says the submarine was stopped dead when hit.

09/10/67: The USS **Wasp** (CVS-18) suffers a fire in the combat information center while in drydock at the South Boston Annex of the Boston Naval Shipyard, causing minor damage.

10/01/67: The Royal Navy assault ship HMS **Intrepid** sails for sea trials, but within 48 hours is forced to return to Devonport, U.K., when a leak develops in a steam pipe, taking five or six days to repair.

10/18/67: The Royal Navy assault ship HMS **Intrepid** suffers a fault in a valve in her main engines, taking several days to repair.

10/26/67: The USS **Lexington** (CVS-16) hits a wharf three times in docking in New Orleans, Louisiana.

10/27/67: The USS **Coral Sea** (CVA-43) suffers a rocket explosion while operating in the Tonkin Gulf, off Vietnam, injuring nine.

11/05/67: The Royal Navy nuclear-powered ballistic missile submarine HMS **Repulse** goes aground in Walney Channel, Barrow-in-Furness, U.K., 30 minutes after her launch at Vicker's shipyard. Seven tugs are required to pull her free. She then docks at the fitting-out berth in Devonshire Dock, Barrow, U.K.

11/12/67: The Royal Navy aircraft carrier HMS **Victorious** suffers a fire while at drydock in Portsmouth, U.K., wrecking part of the chief petty officers' mess and killing one.

11/21/67: Navy ships arrive at the scene of the grounding of the USS **Clarke County** (LST-601) at Duc Pho, Vietnam, observing that the ship is now perpendicular to the beach with the bow directly into the sea and the stern anchored by two army tanks.

11/24/67: The Royal Navy aircraft carrier HMS **Victorious** suffers a fire, while in Portsmouth, U.K. It is confined to the tobacco store and damage is slight.

11/24/67: The U.S. nuclear-powered cargo ship **Savannah** springs a leak in its reactor auxiliary cooling system off New Jersey. The Atomic Energy Commission and the Maritime Administration say no radioactive materials escaped as a result of the leak. The ship returned to Hoboken, New Jersey, for repairs.

11/27/67: The Royal Navy destroyer HMS **Diamond** suffers a fire.

12/18/67: The USS **Kitty Hawk** (CVA-63) suffers a three-hour fire which was centered in an airplane tire stowage area while the ship is docked in Subic Bay, Philippines.

12/23/67: The USS **Kearsarge** (CVS-33) suffers a fire while docked in Sasebo, Japan, for the holidays, killing three and injuring two.

12/24/67: The USS **Guardfish** (SSN-612) runs aground on a reef in Pearl Harbor, Hawaii. The Navy says the vessel rested on a World War II bomb which turned out to be a sand-filled practice bomb.

12/25/67: The Observer (1/7/68) reports that speculation is circulating that a U.S. nuclear-powered ballistic missile submarine suffered serious damage during maneuvers in northern waters just before Christmas. The U.S. Navy declines to confirm or deny the reports which come from unidentified sources at the U.S. Naval Base in Rota, Spain, due to security reasons. In London it was suggested the damage was caused by pressure changes during a deep dive.

12/26/67: The USS **Lynde McCormick** (DDG-8) suffers an explosion while in Sasebo, Japan, injuring two.

12/31/67: Before January 1968, the USS **Ronquil** (SS-396) reportedly narrowly avoids capture by Soviet naval forces while engaged in a Holystone intelligence gathering mission. The submarine caught fire near the Soviet coast and was surrounded by Soviet destroyers which attempted to force it to surface. The **Ronquil** eluded the Soviet ships and escaped to safety (also see 5/25/75 entry).

12/31/67: In 1967 a Soviet November class nuclear-powered attack submarine has a mishap in the Mediterranean believed to be related to its propulsion system. The submarine is towed.

01/09/68: The London Times reports that the Royal Navy nuclear-powered ballistic missile submarine HMS **Resolution** recently developed a defect in its electrical generator while on its final trials in the Atlantic before test missile firings at Cape Canaveral, Florida. On 8 January the submarine was on the surface sailing back to Faslane, Scotland, for repairs. U.K. officials said the repairs would not delay the **Resolution**'s arrival at Cape Canaveral.

01/11/68: The French trawler **Fomalhaut** snags the Royal Navy diesel submarine HMS **Grampus** in its net in the English Channel. The **Grampus** surfaces and both crews spend more than three hours disentangling the nets.

01/13/68: The Royal Navy diesel submarine HMS **Alliance** runs aground and is stuck for three days on a rocky ledge off the Isle of Wight in the English Channel.

01/22/68: The Israeli diesel submarine **Dakar** with 52 aboard disappears in the eastern Mediterranean 250 miles off Israel. The USS **Turner** (DDR-834), USS **Conyngham** (DDG-17), and USS **Charles H. Roan** (DD-853) are subsequently diverted to search for the missing submarine, but it is not found.

01/27/68: The French diesel submarine **Minerve** with 52 aboard sinks in the Mediterranean off Toulon.

01/30/68: The USS **Seawolf** (SSN-575) runs aground while submerged approximately 65 miles east of Cape Cod, Massachusetts, and damages its rudder. There are no injuries and the submarine returns to Groton, Connecticut, for repairs.

01/31/68: The USS **Rowan** (DD-782) is slightly damaged when it is struck by the Soviet merchant ship **Kapitan Visiobokov** in the Sea of Japan about 100 miles east of Pohang, South Korea. There are no casualties, but the destroyer suffers a three-foot hole above the waterline in the port bow.

02/01/68: Early 1968 (shortly after the Pueblo was seized on 22 January 1968) The USS **Sergeant Joseph E. Muller** (AG-171) loses power and drifts toward Cuban waters under emergency protection of combat air patrol. After several failures, the ship is towed to safety by its escorting destroyer.

02/06/68: The USS **Bache** (DD-470) drags anchor off Rhodes harbor, Greece, in hurricane force winds and runs aground on rocks, splitting the ship from stem to stern, but there are no serious injuries. On 17 February the ship suffers further damage in a two-day storm. The ship is so badly damaged, rather than refloated it is decommissioned on 26 February.

02/06/68: A U.S. Navy rescue ship sinks after being hit by an errant Bullpup missile launched from an A-4 Skyhawk aircraft during firing exercises near Point Mugu, California. There are no injuries.

03/18/68: The USS **Theodore Roosevelt** (SSBN-600) runs aground while submerged off the coast of Scotland. There were no injuries, but the bow of the submarine is damaged.

04/09/68: The USS **Robert E. Lee** (SSBN-601) snags the nets of the French trawler **Lorraine-Bretagne** in the Irish Sea, causing the trawler to lose considerable amounts of fishing equipment. The submarine is undamaged.

04/11/68: A Soviet diesel-powered Golf class ballistic missile submarine sinks about 750 miles northwest of the island of Oahu, Hawaii, in about 16,000 feet of water, killing approximately 80. In late March 1975 numerous papers carry stories on the CIA's attempt, called "Project Jennifer," to raise the submarine in the summer of 1974 using the specially constructed **Glomar Explorer** deep-water salvage ship. Part of the submarine is raised on 4 July 1974. The submarine was carrying three nuclear-armed ballistic missiles and unnamed official sources are quoted as saying the evidence also suggests that nuclear-tipped torpedoes were on board.

04/13/68: The USS **Independence** (CVA-62) collides with the USS **Wrangell** (AE-12) off South Carolina during underway replenishment, damaging both ships slightly.

04/15/68: The USS **Scorpion** (SSN-589) collides with a barge during a storm in Naples harbor, Italy. The submarine was alongside the barge which was used as a buffer between the submarine and another U.S. warship. The barge and the **Scorpion's** stern came together and then the barge was swamped and went down. The **Scorpion** returned to Naples on 20 April and divers descending to untangle a fishing line from its propeller made a partial inspection of its and reported no damage.

05/09/68: The USS **Guadalcanal** (LPH-7) is adrift off North Carolina due to a burned out bearing in the propulsion system.

05/27/68: The USS **Scorpion** (SSN-589) sinks about 400 miles southwest of the Azores, killing all 99 men on board. The U.S. Department of Defense reveals in 1981 that in the Spring of 1968 a nuclear weapons accident occurred in the Atlantic, the details of which remain classified. Despite the Pentagon's equivocation, this is taken to refer to the Scorpion and, nevertheless, it is generally known that two nuclear-armed ASTOR torpedoes were on board when the submarine sank.

06/03/68: Shells from the Royal Navy frigate HMS **Arethusa** fall into farmland.

06/12/68: The USS **Wasp** (CVS-18) and the USS **Truckee** (AO-147) are badly damaged in a collision during underway replenishment off the U.S. east coast.

06/13/68: The USS **Waldron** (DD-699) and the USS **Kiowa** (ATF-72) collide during operations off the U.S. east coast.

06/15/68: The USS **Cossatot** (AO-77), carrying 130,000 barrels of jet fuel, is badly damaged in a collision with the merchant ship **Copper State** in fog off Santa Cruz, California. The tanker loses 20 feet of its bow.

06/16/68: U.S. Air Force F-4 jets sink a U.S. patrol boat and attack the USS **Boston** (CAG-1) and the Australian destroyer **Hobart** near the demilitarized zone off Vietnam, mistaking the ships for low-flying enemy helicopters.

07/02/68: The Norfolk Ledger-Star reports that several months ago a U.S. nuclear-powered attack submarine collided with a Soviet submarine, causing severe damage to the U.S. vessel which spent two months in Rota, Spain, for repair. The Navy declined to comment on the story by the paper's military correspondent who quoted a usually reliable source. The reporter noted that it is known that during recent

months Soviet attack submarines have lain off overseas U.S. Polaris submarine ports, and that U.S. submarines have been given "wiping off" missions to prevent the Soviet submarines from following the Polaris boats. These missions apparently can get quite rough, amounting to what one officer says is "underwater chicken," with U.S. and Soviet submarines set on collision courses until the "chicken" turns away. "Presumably this is what happened" to the U.S. and Soviet submarines.

07/03/68: The Royal Navy survey vessel HMS **Fox** suffers a gas accident, killing one.

08/01/68: The USS **Caliente** (AO-53) runs aground on a mud bank while entering Auckland Harbor, New Zealand. The oiler is pulled clear with no hull damage.

08/09/68: The USS **Von Steuben** (SSBN-632) collides with the towed commercial tanker **Sealady** about 40 miles off the southern Spanish coast. The **Von Steuben** was submerged when struck or was struck by a submerged tow cable connecting a tug and the **Sealady**. The submarine surfaces immediately and then collides with the towed ship. The submarine sustains minor external damage to the superstructure and main deck.

08/15/68: Two small fires occur aboard the Royal Navy nuclear-powered attack submarine HMS **Valiant** while it is in dock at Chatham, U.K. Damage to the ship is slight and there are no casualties.

08/31/68: An East German naval vessel collides with a Swedish ferry and sinks off Denmark. Six East German sailors are reported missing.

09/08/68: The USS **Douglas H. Fox** (DD-779) suffers a fire en route to Charleston, South Carolina, killing two and injuring six.

09/13/68: A shell goes through the rigging of a trawler in Lyme Bay off Dorset, U.K., during Royal Navy gunnery practice.

10/19/68: The Royal Navy nuclear-powered attack submarine HMS **Warspite** is damaged by ice during exercises in the North Atlantic, suffering slight damage to its conning tower and superstructure. The Royal Navy says there was not risk of "radioactive leakage." The submarine returns to Faslane, Scotland, for repairs.

11/12/68: The Royal Navy diesel submarine HMS **Alliance** suffers a fire.

11/26/68: The USS **Hancock** (CVA-19) and the USS **Camden** (AOE-2) collide during underway replenishment off South Vietnam. There are no injuries but the Camden is slightly damaged.

12/30/68: An inquiry into an explosion aboard the Royal Navy destroyer HMS **Antrim** is held.

12/31/68: Late 1960s — Reportedly a U.S. government official is briefed about a collision between a U.S. submarine engaged in a Holystone intelligence gathering mission and a North Vietnamese minesweeper in the Gulf of Tonkin. The minesweeper sinks within minutes (see 5/25/75 entry).

12/31/68: According to raw CIA intelligence reports, in 1968, a Soviet nuclear submarine sinks off Severomorsk on the Kola Penisula, killing all 90 on board. The submarine was overdue from patrol, and after waiting one or two days authorities initiated a search. Divers found the submarine on the bottom of the estuary to the Kolskiy Zaliv. When the submarine was recovered it was determined that all food had been consumed and it was estimated the submarine had been at the location for 30 days.

01/01/69: During the winter — the French trawler **Belle Poule** catches the Royal Navy diesel submarine HMS **Porpoise** in its nets off the U.K. or France.

01/14/69: The USS **Enterprise** (CVAN-65) suffers explosions and a fire during its two-and-a-half-day Operational Readiness Inspection 70 miles southwest of Pearl Harbor, Hawaii, killing 28 and injuring 343. The fire starts when a tractor used to start aircraft is backed under the wing of a F-4 Phantom aircraft loaded with Zuni rockets. The tractor has a small jet engine mounted on its rear, the hot exhaust of which is put directly onto a Zuni rocket's warhead. In about a minute the warhead cooks off, spraying shrapnel over the flight deck, puncturing tanks and starting fires. The fires cause other Zuni rockets and 500-lb. bombs loaded on planes and piled on deck to cook off, exploding planes, blowing holes in the solid steel deck, and spilling aviation fuel from punctured fuel storage tanks. The captain of the ship recalls his concern over containing the fire to the aft part of the flight deck, since so little fire-fighting equipment was on the flight deck, commenting "If the fire had spread to the hangar deck, we could have very easily lost the ship." Despite the lack of equipment the fire is successfully contained and after three hours burns itself out, whereupon the ship proceeds back to Pearl Harbor. Damage includes 15 aircraft destroyed and 17 damaged.

01/22/69: The Royal Navy cruiser HMS **Blake** suffers a fire.

02/19/69: The USS **Chopper** (SS-342) plunges to the sea bottom after suffering a control casualty off Cuba on a routine training mission, injuring two and causing minor damage to the submarine.

05/10/69: The Swedish diesel submarine **Sjoebjoernen** hits the bottom after diving too fast and suffers slight damage.

05/15/69: The USS **Guitarro** (SSN-665) undergoing final fitting-out at the San Francisco Bay Naval Shipyard at Vallejo, California, sinks in 35 feet of water next to the pier. No fissionable material is on board. The report of the U.S. Congress House Armed Services Subcommittee convened to investigate the accident charges culpable negligence on the part of shipyard workers responsible for the submarine: two civilian work crews pumped water into fore and aft sections of the boat; neither crew knowing what the other was doing.

05/25/69: The USS **King** (DLG-10) suffers a fire in the fireroom while operating off North Vietnam, killing four. The ship proceeds to the Philippines for repairs.

05/26/69: The Japanese fishing vessel **Tayo Maru** sinks after colliding with a Soviet patrol boat which was chasing it off the Kurile Islands, eight are rescued.

05/27/69: The Royal Navy cruiser HMS **Blake** suffers another fire.

06/01/69: The USS **Lowry** (DD-770) suffers a gun explosion during a training mission off Puerto Rico, killing one and injuring eight.

06/01/69: In June a Japanese freighter passing off De-Kastri in the Tartar Strait is severly hit and damaged by dozens of splinters from a Soviet missile, which the Japanese government later identifies as a Soviet SS-N-3 Shaddock cruise missile.

06/02/69: The USS **Frank E. Evans** (DD-754) collides with the Australian aircraft carrier **Melbourne** in the South China Sea approximately 650 miles southwest of Manila, cutting the destroyer in two. The bow section of the **Evans** sinks in about two minutes, killing 74, while the aft section of the **Evans** is quickly secured alongside the **Melbourne**. The collision occurred during the SEATO exercise "Sea Spirit."

06/12/69: The Royal Navy aircraft carrier HMS **Ark Royal** suffers a fire in a Devonport dockyard, U.K., while undergoing an extensive overhaul.

06/13/69: The Royal Navy diesel submarine HMS **Rorqual** bumps into the USS **Endurance** (MSO-435) while docking at River Point pier in Subic Bay, Philippines.

07/08/69: The USS **Cambria** (APA-36) and USS **Shadwell** (LSD-15) collide off Malta during a night exercise.

07/15/69: The USS **Forrestal** (CVA-59) suffers a small, localized fire while the ship is in the Norfolk Naval Shipyard, Virginia.

08/09/69: A Japanese fishing boat collides with a Soviet patrol boat off Hokkaido, killing 11. Japan rejects Soviet claims the fishing boat violated Soviet territorial waters.

08/22/69: The USS **Coral Sea** (CVA-43) collides with a tug and Navy barge in San Francisco Bay, California, injuring one barge crewman.

09/04/69: The USS **Dewey** (DLG-14) suffers an explosion and fire in the boiler room while preparing to sail from Toulon, France; killing three.

09/05/69: The French trawler **Pointe de Barfleur** catches the Royal Navy diesel submarine HMS **Onyx** in its nets about 20 miles north-northeast of Cherbourg in the English Channel. The trawler faced some resistance when it hauled up its nets. A flare was seen shooting up and then the submarine broke the surface. After some explanation the two boats went their way.

09/08/69: The USS **Lexington** (CVS-16) suffers a fire in a boiler room as the ship is in drydock in Boston, Massachusetts, injuring two.

09/08/69: The USS **Intrepid** (CVS-11) runs aground off Jamestown, Rhode Island, but is freed after two hours.

10/13/69: The Royal Navy nuclear-powered ballistic missile submarine HMS **Renown** collides with the Irish motor vessel **Moyle** as it is surfacing during the night in the Mull of Kintyre off the west coast of Scotland. The U.K. Navy Department says damage was slight and at no time was there a risk of a nuclear explosion. There are no casualties. Apparently the **Renown** was carrying out work-up trials preparatory to going on its first operational cruise in a few weeks, but was not carrying any missiles.

10/30/69: The Royal Navy destroyer HMS **Glamorgan** fires a missile which lands near a farm, causing damage.

10/31/69: Fall 1969 — reportedly 18 months prior to 31 March 1971 — a U.S. submarine engaged in Holystone intelligence gathering operations is beached for about two hours off the Soviet Union's coast, creating concern in the U.S. National Security Council because of the possibility of an international incident if the submarine is discovered (see 3/31/71 and 5/25/75 entries).

11/10/69: An unarmed torpedo fired from a Royal Navy submarine on exercise narrowly misses the Clyde ferry **Countess of Breadalbane** in the Loch Long, Scotland. The U.K. Ministry of Defense says the torpedo's mechanism went wrong after being fired correctly on course.

11/14/69: The New York Times (7/6/75) reports the USS **Gato** (SSN-615) collides with a Soviet submarine the night of the 14 or 15 of November 15 to 25 miles from the entrance of the White Sea in the Barents Sea. A crewmember is quoted as saying the **Gato** was struck in the heavy plating that serves as a protective shield around the nuclear reactor, but the ship sustained no serious damage. However the ship's weapons officer immediately ran down two decks and prepared for orders to arm a nuclear-armed SUBROC antisubmarine warfare missile and three nuclear-armed torpedoes. The accident reportedly occurred during a Holystone operation (see 5/25/75). According to former **Gato** crewmembers their commanding officer was ordered to prepare false reports showing the submarine had suffered a breakdown and halted its patrol two days prior to the collision. The **Gato**'s commanding officer refused to comment when he was contacted due to security reasons.

11/14/69: The Royal Navy diesel submarine HMS **Otter** strikes a 20-foot wooden ferry in the Manchester Ship Canal, U.K. The two passengers in the ferry jump into the water when they see the outline of the submarine bearing down on them. The submarine strikes the ferry a light blow, slightly damaging the ferry. The men swim safely to shore. The **Otter** was one of four submarines on a four-day goodwill visit to Manchester.

12/12/69: The USS **Parsons** (DD-949) collides with the Filipino fishing boat **Orient** off southern California. The **Orient** sinks but its crew is rescued.

12/27/69: The ammunition aboard the merchant ship **Badger State** comes loose and explodes when a big wave throws the ship on its side 1,500 miles northeast of Hawaii as it is en route to Vietnam with a cargo of ordnance; 26 are dead or missing. The ship is rocked by explosions and fire for a week, leading the Navy to abandon salvage plans. The ship subsequently is sunk with gunfire.

01/10/70: The Royal Navy nuclear-powered attack submarine HMS **Dreadnought** encounters serious problems at the Rosyth, Scotland, dockyard during the first nuclear reactor refueling at a British yard, delaying the completion of the refit for at least ten months.

01/10/70: A Soviet Foxtrot class diesel-powered submarine loses 20 feet of its bow section in a collision somewhere in the Mediterranean in January. Reports variously attribute the accident to a collision with another Soviet naval vessel or with the Italian liner **Angelina Laura** near the Bay of Naples. The damaged submarine was anchored off Morocco in early February and departed into the Atlantic with an escort on 7 February.

01/10/70: The USS **Shangri-La** (CVA-38) suffers a fire during training off Jacksonville, Florida, when an A-4 Skyhawk aircraft parked on the flight deck ignites, killing one.

01/17/70: The USS **Volador** (SS-490) and the Japanese freighter **Miyahime Maru** are lightly damaged in a collision at the mouth of Tokyo Bay, Japan.

01/21/70: The USS **Yancey** (AKA-93) is driven through a section of the Chesapeake Bay Bridge-Tunnel by strong winds, which tore it from its anchorage near Hampton Roads, Virginia. No injuries are reported on the ship or on the roadway, but the roadway is closed to traffic.

01/29/70: The USS **Nathanael Greene** (SSBN-636) is grounded for seven hours in thick fog in Charleston harbor, South Carolina. The Navy closes the harbor while the submarine is refloated. Officials will not say whether any Polaris missiles are on board, but a Navy spokesman says there appears to be no danger of nuclear leakage or reactor damage. The next day the Navy says the ship suffered no damage.

02/10/70: A Bullpup missile aboard the USS **Bon Homme Richard** (CVA-31) cracks and leaks toxic gases and liquids when its pneumatic hoist fails and drops it on the deck of the weapons magazine while the ship is berthed at Naval Station North Island in San Diego, California. A Navy spokesman says the missile is capable of carrying a nuclear warhead but was not believed to be armed at the time. Two hundred crewmembers are evacuated from the surrounding areas and the rest of the 3500-person crew stands by to take the ship to sea if necessary as a precaution. The broken rocket motor is safely lifted out of the ship and transferred to the dock.

02/10/70: The USS **Semmes** (DDG-18) is heavily damaged and the USS **Samuel B. Roberts** (DD-823), USS **Charles F. Adams** (DDG-2), and USS **Yellowstone** (AD-27) are slightly damaged when a Greek freighter sideswipes the four ships in Naples harbor, Italy.

02/10/70: Coincidently, minutes before the Bullpup missile drops in a starboard magazine, an electrical fire breaks out in a port side magazine aboard the USS **Bon Homme Richard** (CVA-31) while the ship is docked at Naval Air Station North Island, San Diego, California.

02/11/70: The Royal Navy diesel submarine HMS **Auriga** suffers a battery explosion while submerged

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in the Gibraltar area during NATO exercises. Ten people are injured, but the vessel surfaces safely and returns to port.

02/13/70: The USS **Point Defiance** (LSD-31) and USS **Ponchatoula** (AO-148) are slightly damaged in a collision during refueling operations north of Hawaii, injuring three.

03/04/70: The French diesel submarine **Eurydice** explodes and sinks during dive 35 miles east of Toulon, killing all 57 crewmen on board.

03/19/70: The USS **Orleck** (DD-886) collides with the USS **Neches** (AO-47) during underway replenishment off the coast of Vietnam. The **Neches** loses its starboard side replenishment capability.

03/20/70: The USS **McKean** (DD-784) and the USS **Cacapon** (AO-52) sustain minor damage in a collision during underway replenishment off Okinawa.

04/12/70: A Soviet November class nuclear-powered submarine sinks in the Atlantic Ocean approximately 300 miles northwest of Spain. On 11 April the submarine is sighted dead in the water with personnel on deck trying to rig a tow line to two accompanying Soviet ships. By the morning of 12 April U.S. Navy P-3 patrol planes find only two oil slicks on the surface where the submarine had been, and the submarine is considered lost at sea. The accident is believed to be related to a problem in the nuclear propulsion system. After the sinking Soviet survey vessels reportedly guard the area almost continuously for six months. Thereafter routine patrols are conducted until 1979, after which only occasional visits are made.

04/20/70: The Royal Navy frigate HMS **Plymouth** collides with the French frigate **Enseigne de Vaiseau Henry**.

05/19/70: An inquiry is held into a fire aboard the Royal Navy minelayer HMS **Manxman**.

05/28/70: The USS **Daniel Boone** (SSBN-629) proceeding on its initial sea trials collides with the Philippine merchant ship **President Quezon** off Cape Henry, Virginia. The submarine incurs minor damage, but the **President Quezon** receives extensive damage to her bow.

05/31/70: The West German destroyer **Bayern** suffers a gas explosion in an empty munitions storeroom, ripping a hole in the side of the ship, killing one and injuring two.

06/01/70: The Royal Navy oiler HMS **Ennerdale** sinks after running aground in the Seychelles.

06/13/70: The USS **Little Rock** (CLG-4) is in a minor collision with the Greek destroyer **Lonzhi** in the Gulf of Laconia off Greece during the NATO exercise "Dawn Patrol 70."

06/18/70: The USS **Eugene A. Greene** (DD-711) and the USS **Waccamaw** (AO-109) are in a minor collision in the eastern Mediterranean during refueling operations.

07/08/70: An inquiry is held into the fire aboard the Royal Navy aircraft carrier HMS **Eagle**.

07/17/70: A sailor is found guilty of causing a power failure aboard the Royal Navy frigate HMS **Ajax**.

07/25/70: A fitter at the Chatham Naval Dockyard, U.K., working on the Royal Navy nuclear-powered attack submarine HMS **Valiant** receives a radiation dosage when he accidentally inhales radioactive material. According to the Ministry of Defense, the fitter "feels no ill effects and seems to be well," but is banned for a year from further work involving radioactivity.

07/30/70: Suspected sabotage to the main gearbox of the Royal Navy nuclear-powered attack submarine HMS **Conqueror** in the final stages of completion at the Cammel Laird shipyard Birkenhead, U.K., is under investigation. The shipyard says the damaged gearbox does not affect nuclear safety as it is separated from the reactor compartment.

08/04/70: The USS **Rogers** (DD-876) collides with a Singapore-bound commercial tug in the South China Sea. There are no injuries.

08/19/70: A Soviet vessel reportedly equipped with electronic surveillance gear capsizes in the North Sea, near where NATO ships are maneuvering as part of exercise "Minflotex 70." Before the NATO ships could come to its aid, a Soviet tug took in her in tow. The ship sinks in heavy seas on 25 August.

08/20/70: The French diesel submarine **Galatee** and the South African diesel submarine **Maria von Riebeeck** collide on the surface off Toulon, France, killing four.

09/11/70: The Royal Navy nuclear-powered attack submarine HMS **Dreadnought** suffers an air pipe fault, delaying its sea trials.

09/18/70: The Royal Navy coastal minesweeper HMS **Wolverton** collides with a yacht on which a family was spending its holiday, sinking the yacht at its moorings in Great Yarmouth harbor, U.K. The family leaves the yacht safely.

10/01/70: The Royal Navy aircraft carrier HMS **Ark Royal** suffers faults to its flight-deck machinery and has to return to Devonport, U.K., for unscheduled repairs.

10/14/70: The Royal Navy aircraft carrier HMS **Eagle** is sent into drydock after a collision.

11/04/70: A boiler room explosion occurs aboard the USS **Goldsborough** (DDG-20) six hours out of Taiwan, killing two and injuring four.

11/09/70: A Soviet Kotlin class destroyer and the Royal Navy aircraft carrier HMS **Ark Royal** collide in the eastern Mediterranean. The **Ark Royal** is only slightly damaged, while the Soviet ship is badly scraped along her port side.

11/14/70: The USS **Seawolf** (SSN-575) suffers a breakdown in the engine room main drain south of Guantanamo Bay, Cuba, en route to the Pacific. It surfaces dead in the water and asks for assistance. The USS **Blandy** (DD-943) gets underway to rendezvous and escort or tow the submarine. The next day the submarine is able to correct the problem itself and gets underway on its own power for Guantanamo.

11/16/70: The Royal Navy destroyer HMS **Fife** catches fire during "Lime Jug 70" exercises.

11/21/70: The Royal Navy frigate HMS **Ulster** is damaged by hitting a Swansea, U.K., quay.

11/28/70: The USS **Sylvania** (AFS-2) and the USS **Concord** (AFS-5) are slightly damaged in a collision in Rota, Spain, when the **Sylvania** attempts under pilot to moor alongside the **Concord**.

11/29/70: Fire breaks out in a baggage storeroom in the stern of the submarine tender USS **Canopus** (AS-34) while it is in the Holy Loch submarine base, Scotland. The Daily Telegraph reports that it was carrying nuclear-armed missiles and that two U.S. nuclear-powered ballistic missile submarines, the **Francis Scott Key** (SSBN-657) and **James K. Polk** (SSBN-645), were moored alongside. The **Francis Scott Key** cast off, but the **Polk** remained alongside. U.S. naval authorities in Holy Loch and London dismiss any suggestion that a nuclear explosion aboard the **Canopus** could have occurred or that "even a remote danger" from missiles or other materials existed. "We have drills and precautions which rule out any danger whatsoever," the London spokesman says. There are precautions against every eventuality in Holy Loch." The fire was brought under control after four hours. Three men were killed and the cause of the fire was unknown. U.S. Navy documents record that "damage was extensive in the small area in which the fire was contained," but "repairs were effected on site and **Canopus** was never 'off the line'".

01/01/71: The USS **Sphinx** (ARL-24) loses power about 120 nautical miles northwest of Okinawa.

01/15/71: U.S. Navy barge loaded with diesel fuel sinks off Puerto Rico and spreads a mile-long oil slick.

01/19/71: The USS **Roark** (DE-1053) is badly damaged by an engine room fire in the western Pacific. The ship is taken in tow by the USS **Towers** (DDG-9) toward Midway Island from whence it will be towed to Pearl Harbor.

01/20/71: The USS **Wasp** (CVS-18) and USS **Chukawan** (AO-100) collide while refueling southwest of Bermuda.

01/24/71: The USS **Hamner** (DD-718) and USS **Camden** (AOE-2) collide during underway replenishment in the Gulf of Tonkin.

02/02/71: The French nuclear-powered ballistic missile submarine **Redoutable** collides with a fishing trawler off Brest, France. The trawler is holed, but the crew is safely picked up by a French navy escort vessel.

02/03/71: The Royal Navy diesel submarine HMS **Opportune** collides with an unidentified merchant vessel in the English Channel while running submerged, receiving slight superstructure damage.

02/12/71: The USS **Great Sitkin** (AE-17) arrives under tow at Roosevelt Roads, Puerto Rico, having lost power off the Virgin Islands when four spring bearings wiped. Sabotage is suspected.

02/19/71: Water breaks into the French diesel submarine **Flore** when a valve of the snorkel device malfunctions as the submarine cruises submerged at a depth of 15 to 20 feet off Toulon. The submarine surfaces, but water had damaged its electrical circuits, and the engines could not be started. The submarine is slowly towed to Toulon through rough seas.

03/01/71: In March the USS **Detroit** (AOE-4) collides with a Navy oiler 70 miles off the South Carolina coast. Damage was slight.

03/26/71: The Royal Navy aircraft carrier HMS **Albion** suffers a fault in a drive shaft bearing and returns to Portsmouth, U.K., for repairs.

03/31/71: The New York Times reports that a U.S. Navy Sturgeon class nuclear-powered attack submarine collides with a Soviet submarine 17 nautical miles off the coast of the Soviet Union while on a secret reconnaissance mission as part of the Holystone submarine intelligence gathering operations (see 5/25/75 entry).

04/03/71: The Royal Navy nuclear-powered attack submarine HMS **Conqueror** suffers flooding due to a failure of material while in a fitting-out basin in Cammel Laird shipyard, Birkenhead, U.K., over the weekend. Firemen and yardworkers spend about 17 hours pumping seven feet of water out of the submarine.

04/21/71: A fire of electrical origin and short duration occurs aboard the USS **John F. Kennedy** (CVA-67) in the Virginia Capes area.

05/01/71: The Royal Navy destroyer HMS **Sheffield** suffers an explosion as it is fitting out, killing several workmen.

05/06/71: The USS **Bigelow** (DD-942) suffers a possible momentary grounding while en route to an anchorage in Aarhus Bay, Denmark, causing minor damage.

05/06/71: The USS **Hanson** (DD-832) collides with the Soviet fleet tug **Diomid** in the Korean Straits, causing minor damage but no injuries. The **Hanson** conjectures the accident was caused by a deliberate attempt by the tug (with an icebreaker bow) to ram the **Hanson**. A sliding collision, however, was the only result.

05/08/71: A Nationalist Chinese fishing boat sinks off Kaohsiung, Taiwan, when it attempts to pass between the tug USS **Molala** (ATF-106) and its tow ARD-22, striking first the bridle and then the bow of the ARD.

06/07/71: The French escort ship **Surcouf** and the Soviet tanker **Busharov** collide in the Mediterranean 60 miles south of Cartagena, Spain, at night, cutting the **Surcouf** in half and killing nine. The front half sinks, but the stern section is taken in tow by the French destroyer **Tartu**.

06/28/71: The casing of a valve ruptures filling the engine spaces with steam aboard the USS **Trenton** (LPD-14) while the ship is undergoing shakedown training in the Guantanamo Bay, Cuba, operating area, killing four and seriously injuring seven.

07/01/71: The Royal Navy diesel submarine HMS **Artemis** sinks without warning while moored in 30 feet of water at Gosport, England.

07/10/71: The USS **Constellation** (CVA-64) suffers a one-hour machinery room fire while moored at San Diego, California.

07/16/71: An unidentified U.S. Navy ship spills 40,000 gallons of oil off New York, subsequently contaminating the waterfronts of Coney Island and Staten Island, New York.

07/27/71: The USS **Harlan R. Dickson** (DD-708) runs aground off Cape Cod Canal, Massachusetts, after a mechanical failure, but is freed the next day.

08/15/71: The USS **Saratoga** (CVA-60) suffers flooding in an engine room while anchored off Athens, Greece.

08/17/71: The USS **Regulus** (AF-57) is severely damaged when, struck by typhoon Rose, it is torn from its moorings and tossed aground on Kau Yi Chau Island near Hong Kong.

08/20/71: The USS **Saratoga** (CVA-60) suffers another engine room flood shortly after leaving Athens, Greece, where repair from a similar flood of 15 August just was completed.

09/08/71: The Royal Navy diesel submarine HMS **Odin** suffers a fire.

09/26/71: The USS **Holder** (DD-819) runs aground momentarily in Vieques Passage off Puerto Rico. There is no damage.

09/30/71: The Royal Navy diesel submarine HMS **Alliance** suffers a hydrogen buildup and explosion in a battery compartment due to a faulty ventilation system while in Portsmouth, U.K., killing one and injuring 14.

10/11/71: The USS **Talbot** (DEG-4) suffers an engineering casualty and is towed by the USS **Skylark** (ASR-20) to Newport, Rhode Island.

10/15/71: In mid-October the Royal Navy aircraft carrier HMS **Ark Royal** suffers a fire while in Portsmouth, U.K.

10/21/71: The Royal Navy aircraft carrier HMS **Ark Royal** suffers a second fire while in Portsmouth, U.K., taking six hours to control.

10/26/71: The Japanese fishing boat **Minato Maru** collides with an unidentified submarine in the Sea of Japan about 300 miles northwest of Niigata, Japan.

10/30/71: The USS **Benjamin Stoddert** (DDG-22) suffers a four-and-one-half hour fire in the motor generator set room while undergoing overhaul at Pearl Harbor, Hawaii.

10/31/71: The USS **Niagara Falls** (AFS-3) is slightly damaged by a main deck fire while moored at Hong Kong. The fire is later determined to be caused by arson.

11/01/71: The USS **Hardhead** (SS-365) suffers minor structural damage when it is struck by an Italian ferry in the Straits of Messina, off Italy.

12/29/71: The USS **Dace** (SSN-607) inadvertently discharges 500 gallons of water used as coolant for its nuclear reactor into the Thames River at New London, Connecticut, during a routine water transfer between the submarine and the USS **Fulton** (AS-11). The Navy says measurements in the area showed "no increase in radioactivity of the environment" on the following day and claims the coolant contains a "very small amount of radioactivity." Navy sources at the Pentagon acknowledge there have been a "a few" leakages at the base during such transfers in the past, although none were disclosed, but also none were of sufficient size to endanger anybody. Reportedly the Navy disclosed this accident only when rumors of a nuclear incident started circulating in New London.

12/31/71: On two occasions in 1971 defective U.S. nuclear-powered ballistic missile submarine distress buoys accidently shot to the surface signalling the submarines had been sunk by enemy action and each set off "a massive U.S. alert," raising the "threat of accidental war." A spokesman for the Pentagon admitted there had been two involuntary releases in 1971, one in the Mediterranean and one in the North Atlantic. But in each case, he said, the submarine informed its home base immediately and "There was no alert of any kind." One release was due to a mechanical problem and one to a human error. The Navy said technical corrections had been made since 1971 to prevent a recurrence of the accidental launchings.

01/16/72: The USS **Albert David** (DE-1050) collides with a North Vietnamese junk in the Gulf of Tonkin and two people from the junk are lost.

01/24/72: The USS **Sea Horse** (SSN-669) is grounded for two hours while outbound from Charleston, South Carolina.

02/01/72: In February the Royal Navy diesel submarine HMS **Alliance**'s engine room begins to flood while the ship is submerged during a trial dive off Plymouth, U.K., in the English Channel. The submarine touches the seabed at 122 feet after diving too steeply due to incorrect trimming in response to the flooding. The **Alliance** leaves the bottom after bouncing off the seabed.

02/07/72: The USS **Wahoo** (SS-565) sustains damage to its starboard shaft when it collides with Queens Pier in Hong Kong after being carried by a tidal current.

02/19/72: The hull of the USS **Preserver** (ARS-8) is cracked in three places when it strikes a rock while entering Portsmouth, New Hampshire, harbor during stormy weather.

02/23/72: The USS **Shreveport** (LPD-12) and USS **Nashville** (LPD-13) are slightly damaged in a collision during exercises in the Caribbean.

02/24/72: A U.S. Navy P-3 Orion patrol plane sights a Soviet Hotel II class nuclear-powered ballistic missile submarine on the surface 600 miles northeast of Newfoundland. The submarine had an apparent nuclear propulsion problem which resulted in the loss of all power. Several deaths are thought to have occurred. The next day the U.S. Coast Guard cutter **Boutwell** sights the disabled submarine in company with five Soviet ships. An offer of assistance by the **Boutwell** receives no reply. The Soviet ships start back to the submarine's home base through heavy, stormy seas. On 18 March the submarine is still slowly moving across the north Atlantic now accompanied by nine Soviet ships and the U.S. Coast Guard cutter **Gallatin**. On 5 April, the West German Navy reports the submarine had reached its home waters in the White Sea.

02/25/72: The USS **Beacon** (PG-99) suffers a large hole and an engine room flood after colliding with the Dutch fishing ship **Syriname** east of Cape Maisi, Cuba, and is towed to Guantanamo Bay.

03/15/72: The USS **Joseph Hewes** (DE-1078) loses power about 600 miles east of Jacksonville, Florida, when a main engine line shaft bearing breaks in stormy seas.

03/16/72: The U.S. Navy reports the rare sighting of a Soviet Yankee class nuclear-powered ballistic missile submarine on the surface northeast of Iceland. It was not clear whether the submarine was in difficulty.

04/11/72: The USS **Benjamin Franklin** (SSBN-640) collides with and sinks a tugboat at the General Dynamics Electric Boat Division docks at Groton, Connecticut. The submarine, being overhauled at the shipyard, was not damaged.

04/16/72: Two antiradiation missiles inadvertently fired by a U.S. support aircraft explode near the USS **Worden** (DLG-18) while the ship operates off Vietnam, killing one, injuring nine, and putting the ship out of action. The ship proceeds to Subic Bay, Philippines for ten days of repairs.

06/28/72: The USS **Oriskany** (CVA-34) and USS **Nitro** (AE-23) are in a minor collision during underway replenishment 150 nautical miles east of Da Nang, South Vietnam.

07/06/72: The USS **Guadalupe** (AO-32) sustains damage to its bow, bridge, and fueling probe in a collision with the USS **Alamo** (LSD-33) 30 miles north of Da Nang, South Vietnam, during underway replenishment when the **Alamo**'s rudder jams hard left and does not respond.

07/10/72: The computer system of the USS **Forrestal** (CVA-59) is damaged by a fire determined to have been caused by arson while in Norfolk, Virgina.

07/19/72: Damage to the reduction gears of the USS **Ranger** (CVA-61) while in San Diego, California, is determined to have been caused by sabotage.

07/20/72: The USS **Oriskany** (CVA-34) loses a propeller and a section of the propeller's tail shaft while operating in the Pacific, thus limiting the carrier to three engines.

07/20/72: A sailor who is said to have started fires aboard the Royal Navy frigate HMS **Puma** because the first lieutenant got on his nerves, is sentenced by a Portsmouth, U.K., court-martial.

08/16/72: The Royal Navy diesel submarine HMS **Onyx** suffers a fire started by chemicals while undergoing refit at a Portsmouth, U.K., dockyard, causing slight damage.

10/01/72: The USS **Newport News** (CA-148) suffers an accidental explosion in a gun turret while operating off Vietnam, killing 19, injuring ten (one mortally) and putting the ship out operation.

10/05/72: The USS **Mizar** (T-AGOR-11) and the U.S. Coast Guard cutter **Edisto** collide about 720 miles north of Iceland in the Greenland Sea, as the **Edisto** tows the disabled **Mizar**. Both are disabled and are in danger of being beset by ice.

10/06/72: The USS **Tullibee** (SSN-597) collides with the West German freighter **Hagen** as it is cruising just beneath the surface about 150 nautical miles east of Cape Hatteras, North Carolina, during stormy weather, causing slight damage to the submarine. The collision did not impair the operations of either ship.

10/11/72: The French diesel submarine **La Sirene** sinks at its moorings after emergency bulkheads fail to prevent an inrush of water through an open torpedo tube, no reported injuries.

10/22/72: The USS **Silas Bent** (T-AGS-26) is badly damaged by fire while conducting surveillance off the South Korean coast. There are no casualties and the ship returns to Pusan under its own power.

10/25/72: The USS **Snook** (SSN-592) is slightly damaged when it strikes bottom in Dabob Bay, Washington, while on a celebration run. The submarine surfaced without any problems.

10/29/72: The USS **Saratoga** (CVA-60) suffers a machine room fire while in port at Singapore, killing three.

10/30/72: The USS **Florikan** (ASR-9) suffers a fire in a forward hold, killing one and injuring another.

10/31/72: While the USS **Mississinewa** (AO-144) is getting underway, sabotage is discovered in the ship's boiler system which is shut down before damage is incurred.

11/03/72: A flash fire in the after fire room of the USS **Henderson** (DD-785) puts the Number 4 boiler out of commission. However, the ship continues operations off southern California.

11/12/72: The USS **Kretchmer** (DER-329) while crossing the Atlantic is forced to divert to Ponta Delgado, Azores, after suffering a series of material casualties.

11/14/72: The Royal Navy frigate HMS **Russell** is damaged in a gale.

11/15/72: The USS **Preserver** (ARS-8) completes a month-long trans-Atlantic tow of the USS **Brumby** (DE-1044) from Greenock, Scotland, to Charleston, South Carolina, after the **Brumby** suffers damage to its steam generators.

12/01/72: According to raw CIA intelligence reports, in December a Soviet nuclear-powered submarine from the Northern Fleet suffers a nuclear radiation accident while on patrol off the eastern coast of North America. The accident involved leakage from a nuclear-armed torpedo in the Mine-Torpedo Department in the forward section of the submarine. Reportedly, "Doors were immediately secured in accordance with regulations and some crew members were trapped within the space where the nuclear radiation leakage occurred."

12/02/72: The USS **Proteus** (AS-19) experiences a blast in a boiler room while in Pearl Harbor, Hawaii, suffering only slight damage.

12/13/72: The USS **Ranger** (CVA-61) suffers a fire in the main machinery room while the ship operates off Vietnam. The fire takes two hours to control.

12/31/72: According to raw CIA intelligence reports, probably in December 1972 or January 1973 an undetermined accident during Soviet naval operations cripples a Soviet nuclear-powered submarine in the Atlantic. Reportedly, the submarine is towed "at a speed of two to three knots" for six weeks to Severomorsk on the Kola Peninsula, arriving in February 1973. Also, "The crew members trapped in the forward space initially consumed dry rations that were permanently stored in the compartment and later they received food through a small opening from the weather deck. Upon arrival at Severomorsk, crew members were permitted to debark the submarine. Several men died shortly after the accident, others later.... The majority of the submarine crew members suffered from some form of radiation sickness."

01/05/73: The USS **Henry B. Wilson** (DDG-7) while outside Saigon, South Vietnam, suffers an in-bore premature explosion in Mount 51 which destroys a foot of the barrel and injures two crewmen.

01/21/73: The USS **Cascade** (AD-16) experiences flooding and small fires in port at Sigonella, Italy. Sabotage is suspected.

01/22/73: The USS **Batfish** (SSN-681) suffers bottom damage after running hard aground at Charleston, South Carolina, while proceeding to sea. The submarine is pulled free by tugs and returns to the dock.

01/23/73: The Royal Navy fleet auxiliary **Scarab** collides with the Cleddau King ferry at Neyland, Pembrokshire, Wales. An engineer on the ferry, which crosses the Cleddau River, is hurt when the impact threw him against the engines.

01/23/73: The Royal Navy frigate HMS **Scylla** collides with a Tamas River ferry between Plymouth and Torpoint in the river. The ferry's hull is split near the bows, leaving a three-foot-wide gash from handrail to waterline. The frigate continued down river for the sea.

01/23/73: The Royal Navy frigates HMS **Russell** and HMS **Hardy** collide with minor damage in Portsmouth harbor, U.K. as they maneuver for a formation departure. Both continued to their exercise area.

01/27/73: The USS **Jason** (AR-8) suffers minor damage when struck by the Japanese cargo ship **Koro Maru** while en route from Sasebo, Japan, to Keelung, Taiwan.

02/04/73: The USS **Tolovana** (AO-64) is slightly damaged by a fire apparently of electrical origin while in port at Subic Bay, Philippines.

02/05/73: The USS **Basilone** (DD-824) suffers a boiler room explosion during training 120 miles southeast of New York City, killing seven.

02/07/73: An explosion of fuel leaking from a broken pipe sets off an engine room fire on the USS **Agerholm** (DD-826) while the ship is off San Diego, California, killing three.

02/10/73: The USS **Fairfax County** (LST-1193) is holed by an uncharted reef during amphibious exercises off Carbonaras, Spain, but is able to continue participation.

02/23/73: The USS **Franklin D. Roosevelt** (CVA-42) suffers minor damage from a brief fire in the hangar deck while the carrier is undergoing restricted availability in Mayport, Florida.

03/11/73: The USS **Manitowoc** (LST-1180) experiences a brief fire in a pump room while in port at Little Creek, Virginia. There are no injuries.

03/27/73: The USS **Hammerhead** (SSN-663), operating east of the Virginia Capes area at about 300 feet, strikes a submerged object of unknown nature thought to be non-metallic, perhaps a whale. The impact was heavy enough to be heard and felt throughout the ship. There was no discernable damage.

03/27/73: The USS **Greenling** (SSN-614) goes below its safe diving level while training about 250 miles northwest of Bermuda because a needle on a depth guage sticks. The true depth is disclosed on another gauge before the submarine reaches a depth that would have crushed her hull. On 30 March the submarine arrives at its homeport of Groton, Connecticut. On 10 April the **Greenling** docks at Portsmouth Naval Shipyard, New Hampshire, for a thorough check.

04/04/73: The USS **Beacon** (PG-99) runs aground at Beaufort Inlet, North Carolina, during "Exotic Dancer VI" exercises and is refloated the next day.

04/05/73: While sailing in the Virginia Capes area, the USS **Independence** (CVA-62) suffers a 45-minute fire in a catapult ventilation system which affects its operational readiness.

04/10/73: The USS **Guadalupe** (AO-32) runs aground off Harbor Island in San Diego Bay, California, no reported injuries.

04/21/73: The USS **Guardfish** (SSN-612) experiences a primary coolant leak while running submerged about 370 miles south-southwest of Puget Sound. The submarine surfaces and is ventilated and decontaminated, and repairs the casualty unassisted. Four crewmen are transferred to the Puget Sound Naval Hospital for monitoring.

04/23/73: The USS **Force** (MSO-445) catches fire and sinks about 820 miles west of Guam in the Philippine Sea. Seventy crewmen who abandon the Force are picked up the next day by the British merchant ship **Spratnes**.

05/21/73: The USS **Sturgeon** (SSN-637) strikes the bottom of the ocean suffering minor damage while operating in deep water during a dive off the U.S. Virgin Islands. The Navy says there were no injuries to the crew and the submarine's nuclear power plant was not affected. The submarine put into the nearest U.S. port at Frederiksted, St. Croix, under its own power.

05/28/73: The USS **Charles Berry** (DE-1035) and a Japanese cargo ship suffer minor damage in a collision in Kobe harbor, Japan.

06/03/73: The USS **Hull** (DD-945) suffers a minor fire in an air conditioning unit while in port at San Diego, California.

06/04/73: The USS **Higbee** (DD-806) suffers damage to its sonar dome when it is grounded for five hours at Subic Bay, Philippines.

06/06/73: The USS **Skipjack** (SSN-585) hits an uncharted sea mount during "Dawn Patrol" exercises in the Mediterranean Sea. The submarine suffers minor damage and proceeds on the surface to Soudha Bay, Crete, for hull inspection.

07/14/73: The USS **Robert H. McCard** (DD-822) damages its sonar dome when it runs aground on an uncharted sand bar while exiting Tampa Bay, Florida.

07/17/73: The U.S. Army Reserve transport ship **Hickory Knoll** collides with U.S. Coast Guard buoy tender **Firebrush** in Baltimore harbor, Maryland, shortly after being freed from a sand bar. Neither ship is seriously damaged. The Army says the **Firebrush** failed to concede the right of way.

07/28/73: The Canadian diesel submarine **Okanagan** and the tanker **Grey Rover** collide off the Scottish coast, no reported injuries.

08/03/73: The USS **Victoria** (AK-281) experiences an engine room fire while berthed at Erie Basin, Brooklyn, New York, delaying its sailing by two weeks in order to make repairs.

09/05/73: The U.S. Defense Department reports that a damaged Soviet Echo II class nuclear-powered cruise missile submarine has been sighted in the Caribbean south of Cuba with an eight-foot gash in the port bow deck. This is apparently the result of a collision with another Soviet ship, perhaps a cruiser with visible scrapes on its hull, during maneuvers of the Soviet Caribbean task force. The Pentagon spokesman said the submarine did not appear to be in danger of sinking.

09/09/73: The USS **Claud Jones** (DE-1033) experiences an engine room fire while en route to Pearl Harbor, Hawaii, causing substantial damage but no casualties.

09/22/73: The USS **Saratoga** (CVA-60) experiences a fire on the third deck, between the flight deck and the hangar deck, which takes nine hours to extinguish while the ship is in drydock at Norfolk, Virginia.

10/07/73: The Soviet Kanin class guided missile destroyer 252 accidently releases a torpedo after an explosion in a torpedo tube while shadowing the Royal Navy aircraft carrier HMS **Hermes** during NATO "Swift Move" exercises in the North Sea. Other torpedoes are jettisoned to clear the tubes near the fire.

11/01/73: A U.S. Navy 100-foot underwater demolition team's vessel rams a minisubmarine in San Diego harbor, California, as both vessels are returning to Coronado amphibious base from routine exercises with 40 other vessels, killing one.

12/11/73: A fire, probably due to a fuel line failure, occurs in the main engine room on board the USS **Kitty Hawk** (CVA-63) while the ship is 700 miles east of the Philippines, killing six.

12/12/73: An explosion rips through the stack of the USS **Detroit's** (AOE-4) after engine room, causing much material damage while the ship is in Newport, Rhode Island, for repairs and upkeep.

12/29/73: An oil slick 11 miles in length results when a fuel tank of the USS **Pvt Joseph F. Merrell** (T-AK-275) is opened in a collision with the Liberian freighter **Pearl Venture** off the Californian coast. The **Pvt Joseph F. Merrell** is towed into San Luis Obispo Bay the next day while the oil slick dissipates at sea.

01/08/74: The USS **Kittiwake** (ASR-13) receives minor hull damage in a collision with the USS **Finback** (SSN-670) at the destroyer-submarine piers at the Norfolk Naval Base, Virginia.

01/21/74: The U.S. Navy says it is investigating possible sabotage in the cutting of electrical wires in the USS **Spadefish** (SSN-668), which is undergoing a one-year overhaul in the Norfolk Naval Shipyard, Virginia. Electrical wires on the submarine had been cut several times since the fall of 1973, prompting the Navy to investigate.

02/13/74: The USS **Gurke** (DD-783) experiences an electrical fire while operating in the Okinawa area, which damages a switchboard and associated equipment and injures two.

02/14/74: The USS **Schofield** (DEG-3) suffers a propulsion casualty and is taken in tow by the USS **Bainbridge** (DLGN-25) near the entrance of the Red Sea in the Indian Ocean. Repairs are completed the next day.

04/07/74: The USS **Wyandot** (T-AKA-92) is in collision with merchant ship **Sacramento Venture** off the entrance to Keelung, Taiwan. There were no casualties.

04/17/74: The Royal Navy nuclear-powered ballistic missile submarine HMS **Renown** strikes the seabed while carrying out an exercise in the Firth of Clyde. The submarine had just completed an expensive refit in Rosyth but was not carrying nuclear warheads. The captain, Commander Robin Whiteside, faced a court-martial on 11 June.

04/25/74: The USS **DuPont** (DD-941) collides with the left swing span of a bridge at Yorktown, Virginia. The ship suffers damage to the forward mast while the bridge is closed to traffic for about an hour.

05/01/74: In May the USS **Pintado** (SSN-672) reportedly collides almost head-on with a Soviet Yankee class nuclear-powered ballistic missile submarine while cruising 200 feet deep in the approaches to the Petropavlovsk naval base on the Kamchatka Peninsula. The Soviet submarine surfaced immediately, but the extent of damage was not known. The **Pintado** departed from the area at top underwater speed and proceeded to Guam where it entered drydock for repairs lasting seven weeks. The collision smashed much of the **Pintado's** detection sonar, a starboard side torpedo hatch was jammed shut and diving plane received moderate damage. The **Pintado** was on an intelligence gathering mission in Soviet territorial waters.

05/06/74: The USS **Jallao** (SS-368) experiences an explosion in the engine room while providing services in the Guantanamo Bay, Cuba, operating area. An electrical arc ignited the engine room atmosphere causing a quick flash. The submarine surfaces and returns to port needing minor repairs and soot clean-up. Sixteen crewmembers are hospitalized with smoke inhalation effects and one with burns.

05/23/74: An explosion in the hold of USS **John R. Craig** (DD-885) under overhaul in drydock at a civilian shipyard at Swan Island, Oregon, rocks the destroyer and buckles its plates, injuring 18. Welding was being done in the area where the explosion occurred.

07/27/74: The USS **Enterprise** (CVAN-65) suffers a fire in an electrical maintenance area off California, no reported injuries.

08/03/74: A wave sweeps over the forward deck of the USS **Hawkins** (DD-873) as it is refueling from the USS **Marias** (T-AO-57) in the Indian Ocean, injuring seven. An emergency visit to Diego Suarez, Madagascar, is made so the men can be treated at a hospital.

08/05/74: The USS **Lipan** (ATF-85) collides with the tanker **Atlantic Prestige** between Vancouver Island and Washington while towing another vessel.

08/31/74: The Royal Navy coastal minesweeper HMS **Brinton** collides with a museum ship.

09/01/74: The first and only Japanese nuclear-powered merchant ship, the **Mutsu**, develops a reactor leak during its first test voyage in the Pacific. The leakage apparently results from a faulty design in the reactor's shielding system and involves the release of radiation — gamma rays and neutrons escaping through a hatch cover — rather than an a leak of actual radioactive materials. Emergency repairs are made reportedly with a thick layer of sticky boiled rice. However, the ship drifts for weeks off northern Japan due to protests by fishermen who are concerned about contamination of their scallop beds in the vicinity of the ship's homeport of Mutsu and refuse to allow the the ship to dock. The fishermen end their protest after the government promises compensation and the ship docks in Mutsu on 15 October. In 1978 the ship is moved to Sasebo, Japan, and work on repairing the leak begins in August 1980 at the Sasebo Heavy Industries Company.

09/03/74: Shortly after getting underway in Norfolk, Virginia, the USS **Butte** (AE-27) suffers a major fire in the main switchboard, disrupting all ship support electrical supply. The **Butte** is towed back to the naval base for repairs which include replacing the switchboard.

09/19/74: The Royal Navy nuclear-powered attack submarine HMS **Sovereign** develops a steering defect during exercises off the west coast of Scotland while on the surface. On 23 September the ship is towed from the Coulport naval base to the submarine base at Faslane, Scotland, for investigation and repair.

09/27/74: The New York Times reports that Turkey's semi-official Anatolian News Agency said that a Soviet Kashin class guided missile destroyer exploded and sank in the Black Sea with no survivors about two weeks ago. Both Turkish Navy officials and the U.S. Defense Department refuse to confirm reports of the sinking. The Kashin class can carry nuclear-capable SA-N-1 Goa surface-to-air missiles, but qualified sources doubted the destroyer was carrying any nuclear-armed versions since the ship was on its sea trials. Later newspaper accounts based on U.S. intelligence sources report that 75 or more people may have been rescued, but even so a minimum of 275 perished.

10/19/74: The USS **Richard S. Edwards** (DD-950) experiences one-foot deep flooding in the fire room while in Pearl Harbor, Hawaii. The water is pumped out.

11/02/74: A four-hour fire aboard the Royal Navy cruiser HMS **Bristol** damages the turbine and boiler rooms and injures four sailors. The ship was on sea trials off Pembrokeshire, U.K., and had to be towed back to port.

11/03/74: The USS **James Madison** (SSBN-627) collides with an unknown Soviet submarine in the North Sea according to Jack Anderson's regular newspaper column of 1 January 1975. The collision left a nine-foot scrape in the **Madison**. According to Anderson the two submarines came within inches of sinking one another. The **Madison** proceeded to Holy Loch, Scotland, to effect repairs. The U.S. Navy refused to comment on the incident.

12/06/74: The USS **Yukon** (T-AO-152) experiences a fire in the electrical control board which renders the ship dead in the water in the western Mediterranean. The fire occurs in heavy weather and the ship drifts toward the Algerian coast.

12/12/74: The USS **Edson** (DD-946) experiences a fire in the after fire room while training with USS **Coral Sea** (CVA-43) off Hawaii. The fire was caused by the ignition of oil which was spraying from a rupture in a lube oil guage line. The area was secured and fire extinguished with no personnel casualties. The destroyer returned to Pearl Harbor under its own power for repairs.

12/13/74: The USS **Saratoga** (CV-60) suffers a major aircraft accident when a jet blast deflector is inadvertently raised into the the turning propeller of a plane while the ship is involved in exercise "National Week XVII" in the Tyrrhenian Sea, injuring five crewmen and damaging five planes.

12/14/74: The USS **Kamehameha** (SSBN-642) strikes submerged fishing gear during independent exercises in the central Mediterranean. Deep hull scrapes on the port side, a sheared underwater log sword, and a damaged screw result. The vessel returns to port under its own power for repairs.

12/24/74: The Argentine warship **Candido de Lasala** suffers an explosion in its boiler room in the English Channel, killing two and injuring three.

12/31/74: Before 1975, a U.S. submarine engaged in a Holystone intelligence gathering mission reportedly is temporarily grounded in Vladivostok harbor. This apparently occurs when the vessel was running on low power to avoid detection and strikes the harbor bottom. It eventually frees itself. (See 5/25/75 entry. This accident is specifically reported as separate from other New York Times accounts of Holystone operations.)

01/05/75: The USS **Enhance** (MSO-437) is disabled by an engine room fire when a ruptured "O" ring in a lube oil filter causes the turbo charger to explode while operating off San Diego, California.

01/20/75: The USS **Newman K. Perry** (DD-883) strikes an unknown object off New Jersey, cutting a small hole in the engine room and causing minor flooding.

02/16/75: The USS **Swordfish** (SSN-579) runs aground near Lanai, Hawaii, while conducting post-overhaul trials. The submarine surfaces safely and returns to Pearl Harbor for inspection and repair. The Navy says the submarine damaged sensor devices mounted on hull, but there were no breaks in the hull. The Honolulu Star-Bulletin, however, receives reports that a torpedo room flooded. The Navy denies this.

02/24/75: The USS **Kansas City** (AOR-3) is struck by the USS **Henry B. Wilson** (DDG-7) while moored at Subic Bay, Philippines, and both ships receive minor damage.

03/03/75: The USS **Iwo Jima** (LPH-2) and USS **Nashville** (LPD-13) are severely damaged when the **Iwo Jima** loses steering control and rams into the **Nashville** during highline transfer about 1,000 miles southwest of the Azores.

03/05/75: The USS **Edward McDonnell** (FF-1043) is struck from astern by a Finnish merchant ship while entering Hamburg, West Germany, in rain and fog. The collision opens an eight-foot-square hole above the waterline of the frigate.

03/24/75: The USS **Dace** (SSN-607) collides with a fishing vessel while surfaced in the Narraganset Bay area off Rhode Island. There was no reported damage to the submarine.

03/26/75: The USS **Holland** (AS-32) suffers a Class Alpha fire caused by spontaneous combustion of fiber glass materials in a sanding room while undergoing overhaul at the Puget Sound Naval Shipyard, Washington.

04/08/75: The USS **Koelsch** (FF-1049) experiences flooding in the diesel generator room when an air conditioning main ruptures while in Mayport, Florida.

04/08/75: The USS **Meredith** (DD-890) suffers an explosion and fire in a freshwater tank in the forward fire room while undergoing overhaul in Jacksonville, Florida, killing two civilian workers.

04/23/75: The USS **Snook** (SSN-592) becomes entangled in a net of a probable Soviet fishing trawler while submerged at a depth of 150 feet in a submarine diving area 30 miles off San Francisco, California. The **Snook** is pulled to periscope depth immediately astern of the fishing ship, however it breaks free and clears the area. About 25 Soviet fishing vessels are in the area when the incident occurrs.

04/29/75: The USS **Patterson** (FF-1061) experiences flooding in a machinery room when an air compressor saltwater cooling line ruptures while in upkeep in Mayport, Florida.

05/25/75: A lengthy story in the New York Times details a secret

U.S. Navy submarine intelligence gathering program code-named Holystone. Using specially equipped submarines the Navy has spied on the Soviet Union and other countries since the early 1960s, at times within their three-mile limit. Several accidents resulted from these missions including the damaging of a U.S. submarine which surfaced under a Soviet ship during a Soviet fleet exercise as well as accidents listed at 12/31/65, 12/31/67, 12/31/68, 10/31/69, 11/14/69, 3/31/71, 5/1/74, and 12/31/74. Further exposes of the Holystone program are in the Washington Post (1/4/74), New York Times (7/4 and 7/6/75), Village Voice (2/16/76), Chicago Tribune (12/4/77) and Baltimore Sun (4/18/81). According to the reports, most of the submarines involved in Holystone missions were Sturgeon class nuclear-powered attack submarines, which also were armed with nuclear weapons.

06/10/75: The USS **Kitty Hawk** (CV-63) suffers major flooding in its Number 1 machinery room while 135 nautical miles northwest of Wake Island, crossing to the western Pacific.

06/15/75: A boiler flareback explosion damages two boilers and adjacent uptakes of the USS **Independence** (CV-62) while moored at Norfolk, Virginia.

06/20/75: The Navy announces eight minor fires that occurred aboard the USS **John F. Kennedy** (CV-67) earlier in the week may have been set by a sailor in an effort to forestall its departure from Norfolk, Virginia, on a seven-month deployment.

08/05/75: The Royal Navy Reserve minesweeper HMS **Killiecrankie** rams a yacht, sinking it, and damages two other pleasure craft in Great Yarmouth harbor, U.K., when the minesweeper tries to turn while leaving Yarmouth at the end of a courtesy visit.

08/07/75: The USS **Dahlgren** (DDG-43) collides with the Panamanian freighter **Eurybates** about three-and-one-half miles east of Port Colon in the Panama Canal Zone. There are no injuries.

09/29/75: The USS **Albany** (CG-10) suffers a Class Bravo fire after a fuel oil strainer explosion east of Norfolk while en route to northern Europe, killing one. On 1 October the **Albany** rejoins the Second Fleet task group headed for northern Europe, with repairs scheduled to take place in Europe.

10/24/75: The USS **Farragut** (DDG-37) is momentarily grounded while departing Den Helder, Netherlands, for Brest, France. Both sonar domes are damaged and the ship proceeds at reduced speed.

11/12/75: The Royal Navy frigate **Achilles** collides with the tanker **Olympic Alliance** in thick fog in the English Channel, no reported injuries.

11/20/75: The USS **Independence** (CV-62) is in a minor collision with the USS **Denebola** (AF-56) during night replenishment in the North Sea.

11/21/75: The USS **Belknap** (CG-26) is involved in an oil spill during refueling with the USS **Waccamaw** (T-AO-109) in the Ionian Sea about 25 nautical miles from Italy.

11/22/75: The USS **John F. Kennedy** (CV-67) and the USS **Belknap** (CG-26) collide in rough seas at night during air exercises about 70 miles east of Sicily. The overhanging flight deck of the carrier cuts into the superstructure of the cruiser setting off fires on the **Belknap** which are not controlled for two-and-one-half hours on account of frequent flarebacks. The commander of Carrier Striking Forces for the U.S. Sixth fleet, reporting to higher commands shortly after the collision, declares a possible nuclear weapons accident — a Broken Arrow — stating there was a "high probability that nuclear weapons [W45 Terrier missile warheads] on the USS **Belknap** were involved in fire and explosions," but there were "no direct communications with the **Belknap** at this time," and "no positive indications that explosions were directly related to nuclear weapons." He also notes that casualties recovered thus far show no exposure to radiation. Nonetheless, monitoring and medical teams were "alerted to the possibility of contamination." He adds that the nuclear weapons on board the **Kennedy** were not affected. An hour after the Broken Arrow message was sent the USS **Claude V. Ricketts** (DDG-5), alongside the **Belknap** fighting the fire, reported that **Belknap** personnel said "no radiation hazard exists aboard." Six people aboard the **Belknap** and one aboard the **Kennedy** are killed. The **Belknap** suffers serious damage, is put out of commission, and towed back to the U.S. to effect repairs lasting four years. It returns to the fleet in 1980. Smaller fires and other damage on the **Kennedy** are quickly contained and the carrier continues operations.

11/24/75: An ASROC motor prematurely ignites seriously burning one man while the USS **Richard S. Edwards** (DD-950) is en route to the Pacific Missile Range Facility, Barking Sands, Kauai, from Pearl Harbor, Hawaii. A manufacturing defect in one of the rocket motor components is determined to be the accident's cause.

11/25/75: A plane attempting to land on the USS **Midway** (CV-41) strikes the ramp, bolts, impacts the barricade, and strikes another plane during post- "Midlink" exercises in the Indian Ocean. Flying debris injures two crewmen.

12/06/75: The USS **Haddock** (SSN-621) develops a leak and floods during a deep dive while on a test run near Hawaii. The U.S. Navy confirms the incident, but denies the vessel is unsafe as crew members had charged in late October. A number of enlisted men had protested sending the ship to sea, claiming it had cracks in the main cooling piping, leaks, and malfunctions and deficiencies in other systems, including the steering mechanism. The Navy replied that in accordance with strict safety procedures any problems are corrected before the ship goes to sea.

12/15/75: The USS **Saratoga** (CV-60) and the USS **Mississinewa** (AO-144) are in a minor collision during underway replenishment off the Florida coast.

12/16/75: The USS **Inchon** (LPH-12) and the USS **Caloosahatchee** (AO-98) are in a minor collision during refueling in rough seas west of Italy.

12/20/75: The USS **Santa Barbara** (AE-28) suffers a Class Alpha fire while moored at Charleston, South Carolina, without crew and ammunition in preparation for regular overhaul.

12/31/75: Around 1975, according to The Virginian-Pilot and The Ledger-Star, the USS **California** (CGN-36) spills 15 to 20 gallons of primary coolant while the ship is at the Norfolk Naval Base, Virginia.

01/27/76: The USS **Guadalcanal** (LPH-7) exiting Augusta Bay, Sicily, goes aground on a peak of coral which pushes in areas on either side of the bow, but does not crack or hole the ship. On 30 January, with cargo, personnel, helicopters, and fuel off-loaded to assist the effort, the ship is refloated.

01/27/76: While anchored in Augusta Bay, Sicily, the USS **Spiegel Grove** (LSD-32) is struck on the bow and starboard quarter by the Panamanian merchant vessel **Honesty** which had dragged anchor during winds of 50 knots.

02/13/76: The USS **Iwo Jima** (LPH-2) experiences a boiler casualty while participating in a "Rum Punch" exercise in the Caribbean. The casualty limits the ship's speed to 15 knots and half power. An embarked Royal Netherlands Marine Unit was airlifted to Roosevelt Roads, Puerto Rico, and the helicopter carrier got underway for New Orleans.

02/29/76: The USS **New Orleans** (LPH-11), crossing from the western Pacific to San Diego, California, suffers vibrations at speeds above ten knots. It is discovered that one blade is missing from the four-bladed screw. On 2 March it alters course from California to Hawaii as the damage impedes its progress.

02/29/76: The USS **Sellers** (DDG-11) conducted an emergency underway at Iskenderun, Turkey, as heavy weather made its position at the NATO fuel pier untenable. The destroyer suffered some scraping and minor damage along the main deck but was able to clear without injuries to crew or damage below the waterline.

03/21/76: The British iron ore carrier **Cape Ortegal** is hit by a rocket, believed to be fired by a Japanese defense force aircraft during an exercise.

03/30/76: The USS **Elmer Montgomery** (FF-1082) suffers a fire in a storeroom while in port at Norfolk, Virginia. The ship's crew with assistance from the USS **Mitscher** (DDG-35) and the base fire department extinguish the fire. No personnel are injured and the damage is minor.

04/16/76: The USS **Albany** (CG-10) experiences a nuclear weapons incident — Dull Sword — when during handling of TALOS nuclear warhead trainers a top-side hoist fails as the ship is finishing repairs and upkeep at the Norfolk Naval Shipyard, Virginia. On 4 May 1976 a TALOS safety working group convenes aboard the **Albany** to observe and evaluate modifications made to the hoist as a result of the accident.

05/01/76: Early May — a Norwegian fishing vessel in international waters off Murmansk snags a Soviet nuclear-powered attack submarine's fin at about 450 feet below the surface. The Soviet boat surfaced and the fisherman could see the Soviet crewmen cutting at the entangling cables with hammer and chisels. The submarine was later towed toward Murmansk by Soviet rescue ships.

05/01/76: In May fuel oil leaks into the lower level of the ballistic missile magazine aboard the USS **Proteus** (AS-19) while the ship is in Apra Harbor, Guam. According to the Navy, the leak was detected by magazine personnel and stopped.

05/01/76: The Sixth Fleet flagship USS **Little Rock** (CG-4) experiences a casualty in the main engine lube oil system in the Tyrrhenian Sea. On 2 May it enters Naples for repairs.

05/02/76: The Royal Navy nuclear-powered attack submarine HMS **Warspite** suffers a fire in a diesel generating room while berthed in Royal Seaforth Dock, Crosby on the Mersey, U.K., injuring three. The Ministry of Defense says "There is

absolutely no nuclear hazard." Originally it is anticipated that its patrol would be delayed one week. However, in January 1979 it is reported that the fire was caused by a failure of a coupling on a lubricating oil pipe, which allowed oil to be sprayed over a diesel generator. And, that repairs were still believed to be continuing at a cost of 5,194,000 pounds sterling.

05/08/76: The USS **Corry** (DD-817) while sailing outbound on the Delaware River is struck on the starboard side by the West German merchantman **Mormannia**. The **Corry** suffers minor hull damage above the waterline with no personnel injuries.

05/31/76: The USS **Vesole** (DD-878) suffers a fire while moored alongside a pier at Taranto, Italy. It was started by a yard worker welding on the base of the Number 1 stack. Electrical cables were shorted and the destroyer's operational capability was affected. There were no injuries.

06/09/76: The USS **Wabash** (AOR-5) and USS **Flint** (AE-32) collide while conducting towing exercises about 900 nautical miles northwest of Hawaii. Both ships continue onward to a western Pacific deployment.

07/01/76: The Norwegian fishing trawler **Sjovik** snags the bow of a Soviet November class nuclear-powered attack submarine and is dragged backward for about a mile in the Barents Sea north of the Soviet naval base at Murmansk. The submarine surfaces, cuts itself free, and proceeds on the surface toward Murmansk.

07/02/76: A fire breaks out in the main engine room of the USS **Kilauea** (AE-26), while it is drydocked for overhaul at Richmond, Virginia.

08/11/76: The Royal Navy patrol vessel HMS **Reward** collides with the freighter **Plainsman** and sinks off the coast of Scotland. All 40 crewmen are rescued.

08/25/76: The USS **Conyngham** (DDG-17) and USS **Josephus Daniels** (CG-27) are in a minor collision during "National Week 21" exercises in the western Mediterranean.

08/25/76: The USS **Pollack** (SSN-603) snags the nets of Japanese fishing boats in the eastern channel of the the Tsushima Strait. Two boats cut away and abandon their nets. The **Pollack** suffers no major damage and there is no known damage to the fishing boats.

08/28/76: A Soviet Echo II class nuclear-powered cruise missile submarine strikes the USS **Voge** (FF-1047) with its sail on the port quarter below the helicopter hangar, about 150 miles southwest of Souda Bay, Crete. The submarine departs the area under its own power to the Kithera Anchorage off Greece escorted by Soviet ships. The **Voge** suffers split bulkheads, buckled plating, and a damaged propeller and is towed to Souda Bay by the **Moinster** (FF-1097) and **Preserver** (ARS-8). The submarine damages its sail. In September the **Voge** is towed to Toulon, France. On 7 September the U.S. State Department announces that the U.S. and Soviet Union had exchanged notes, each blaming the other for the collision.

09/01/76: The Turkish diesel submarine **Dumlupinar** and the freighter **Fizik Vavilov** collide in the Dardanelles, no reported casualties.

09/14/76: The USS **Raleigh** (LPD-1) leaves Moorehead City, North Carolina, after a week's delay caused by inoperative feed pumps to participate in the "Teamwork" exercises off Norway. While crossing the Atlantic, the ship experiences further engineering problems, causing the ship to be diverted to Plymouth, U.K. The ship arrives 24 September for two weeks of repairs to the feed pumps before sailing on 9 October.

09/14/76: The USS **Bordelon** (DD-881) experiences steering control difficulties during refueling and collides with the USS **John F. Kennedy** (CV-67) 75 miles northwest of Scapa Flow, Scotland, causing topside damage to the **Bordelon** and injuring six. Damage to the **Kennedy** is minor. The **Bordelon** proceeds to Plymouth, U.K., for repairs before going to the United States. The Navy subsequently decommissions the ship because repairs would be too expensive.

09/20/76: The Royal Navy frigate HMS **Mermaid** and the minesweeper HMS **Fittleton** collide during the NATO exercise "Teamwork 76" in the North Sea. The **Fittleton** capsizes and sinks, killing 12.

09/24/76: The Royal Navy destroyer HMS **Glasgow** suffers a fire while being fitted out at Swan Hunter Tyneside yard, Newcastle-Upon-Tyne, U.K., killing eight workmen.

10/01/76: According to raw CIA intelligence reports, during October the launch compartment of a Soviet nuclear submarine of unknown class catches fire in the Atlantic. Three officers are reported killed. The submarine is able to return to port under its own power.

10/08/76: A Japanese fishing vessel snags a Soviet Charlie class nuclear-powered cruise missile submarine off the Kamchatka Peninsula. The fishing boat is dragged backward until it reels in its nets and the submarine surfaces. The nets are cut to free the submarine.

11/02/76: A major explosion takes place in a boiler of the USS **Ponchatoula** (AO-148) in port at Pearl Harbor, Hawaii. The explosion blows out the side and back wall of the Number 2 boiler.

12/19/76: A F-14 Tomcat aircraft misses a landing on the USS **Enterprise** (CVN-65), and its wingtip strikes two other aircraft on the flight deck before it veers out of control and crashes into the South China Sea.

12/31/76: In 1976 a barge carrying 500-lb. bombs breaks away from the USS **Detroit** (AOE-4) and floats down the York River, Virginia. The barge was stopped after 30 minutes and no damage was reported.

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12/31/76: According to raw CIA intelligence reports, during 1976 a sailor who had served on board a Soviet nuclear-powered ballistic missile submarine of unknown class dies of "excessive exposure to radiation." He was exposed to radiation on board through his own negligence at least a year prior to his death and was in and out of hospitals before being permanently hospitalized in 1975.

01/02/77: A Pakistani midget submarine is lost off Karachi, Pakistan, killing eight.

01/02/77: The USS **Mizar** (T-AGOR-11) suffers a casualty to the port main propulsion drive shafting while en route to Karachi, Pakistan, to participate in Arabian Sea survey operations.

01/12/77: The USS **Franklin D. Roosevelt** (CV-42) collides with the Liberian freighter **Oceanus** as the **Roosevelt** proceeds south through the Strait of Messina. Both ships are able to proceed to port under their own power.

01/17/77: An LCM-6 landing boat from the USS **Trenton** (LPD-14) carrying more than 100 marines and sailors returning from liberty overturns in a collision with the Spanish freighter **Uriea** in Barcelona harbor, Spain, killing 48.

02/08/77: A fire breaks out in the engine room of the USS **Preserver** (ARS-8) near the Bahamas. The ship is towed by the USS **Bowen** (FF-1079) to Mayport, Florida, for repairs.

02/08/77: A minor boiler explosion occurs aboard the USS **Fanning** (FF-1076) as the ship operates 15 miles from San Francisco, California, injuring three.

02/11/77: The USS **Barnstable County** (LST-1197) collides with the moored Liberian ship **Pounentes** while clearing berth under pilot control at Curaao, Netherlands Antilles, resulting in minor damage.

02/20/77: The USS **Ranger** (CV-61) experiences a Class Alpha fire in the anchor machinery room while drydocked at Puget Sound Naval Shipyard, Washington.

03/12/77: The USS **Mauna Kea** (AE-22) loses propulsion because of a mechanical failure in the Number 1 boiler while en route from Guam to Okinawa. It enters Apra harbor, Guam, the next day under tow.

03/16/77: The USS **Manley** (DD-940) suffers a flash-back in a mount during gunnery exercises off Guantanamo Bay, Cuba, injuring four. The mount is placed out of commission due to fire and water damage when a second powder casing explodes after the mount is evacuated.

03/18/77: The USS **Hepburn** (FF-1055) suffers a Class Alpha fire caused by spontaneous combustion of refuse while off San Diego, California.

03/18/77: The Royal Navy coastal minesweeper HMS **Maxton** accidentally fires at the Royal Navy frigate HMS **Achilles** off the Scottish coast when live shells instead of blanks are used in a practice firing. Two shells hit and cause moderate damage to the **Achilles**.

03/20/77: The USS **Dyess** (DD-880) suffers a wardroom fire apparently caused by arson while in port at Mayport, Florida. There is minor damage.

03/24/77: An inquest records accidental death verdicts for three sailors who died in an engine room fire aboard the Royal Navy frigate HMS **Ashanti**.

04/07/77: All nine ships in U.S. Navy Task Group 21.2 including the USS **Independence** (CV-62) suffer varying amounts of damage when they encounter a storm with 20-foot seas about 1,000 miles west of Rota, Spain. Some **Independence** planes land at Lajes Air Base in the Azores.

04/20/77: The USS **Independence** (CV-62) and the USS **Truckee** (AO-147) collide in the Tyrrhenian Sea during underway replenishment when the **Truckee** loses steering control.

05/14/77: The USS **Neches** (T-AO-183) runs aground in the inner anchorage at Port Suez, Eygpt, while awaiting a pilot. It is refloated three days later following four failed attempts.

05/19/77: The USS **Mizar** (T-AGOR-11) suffers an engine room explosion and fire while west of Sumatra, Indonesia. The ship proceeds on one engine to Singapore for repairs.

05/29/77: The USS **Sampson** (DDG-10) runs aground at the entrance to San Juan, Puerto Rico, but is cleared within an hour by the ship's engines and one tug. The sonar dome is slightly damaged.

06/06/77: Several U.S. Navy ships, including the USS **California** (CGN-36) and the USS **El Paso** (LKA-117), part their moorings and suffer minor damage during high winds in the Norfolk, Virginia, area.

06/15/77: The USS **Trippe** (FF-1075) suffers damage to its sonar dome during a search and rescue operation for a crashed Kuwaiti helicopter in the Persian Gulf.

07/12/77: The USS **Rich** (DD-820) and the USS **Caloosahatchee** (AO-98) collide north of the U.S. Virgin Islands following underway replenishment when the **Rich** loses steering control, strikes the oiler's starboard bow, and then continues across the bow raking the **Rich's** port side. The **Rich** is escorted to Mayport, Florida.

07/20/77: The USS **Direct** (MSO-430) is badly damaged by a two-hour engine room fire about 120 miles southeast of Newport, Rhode Island, and is taken under tow to Newport where it arrives the next day.

07/22/77: The USS **Henry L. Stimson** (SSBN-655) fouls the fishing nets of a Spanish trawler while undergoing refresher training in the Rota area off Spain.

08/06/77: A major Class Bravo fire occurs in the forward engine room of USS **Hunley** (AS-31) while the ship is part of the Atlantic Fleet. "The excellent response of the Duty Damage Control Party and action of other individuals on board limited the fire to the forward engine room and extinguished it 25 minutes from its start. Fire, smoke, and/or firefighting water damaged the Number 2 main engine, Numbers 1 and 2 main propulsion generators, Numbers 1 and 2 ship service generators, Numbers 1 and 2 low pressure air compressors, Number 2 force draft blower, Number 2 evaporator and salinity indicating system, plus runs of electrical cable in the vicinity of the fire. The forward switchboard, 1S, was grounded by firefighting water rendering the forward part of the ship without normal electrical power."

08/23/77: While the USS **Saratoga** (CV-60) is en route to the Strait of Messina, an aerosol can explodes in the Number 2 incinerator of the ship, causing a fire which threatens the aircraft of Hangar Bay Number 2. According to the Navy, "The fast and professional reaction of the crew and the decision to call away GQ [General Quarters] can be directly credited for the successful handling of the potential disaster."

09/20/77: The USS **Ray** (SSN-653) strikes the bottom south of Sardinia, Italy, damaging its bow area. The **Ray** surfaces and proceeds to La Maddalena naval base on Sardinia escorted by the USS **Grayling** (SSN-646).

09/29/77: The USS **Archerfish** (SSN-678) and USS **Philadelphia** (SSN-690) collide stern to stern at slow speeds at the Groton submarine base, Connecticut, with minor damage reported.

10/06/77: The USS **Saratoga** (CV-60) collides with the Austrian container ship **Ville d'Orient** in the Strait of Messina with no injuries and minor damage reported.

10/12/77: The USS **Sealift Atlantic** (T-AO-172) becomes dead in the water about 800 miles northeast of Puerto Rico after suffering a propeller casualty. On 15 October the ship is placed under tow by the USS **Gear** (T-ARS-34) headed toward Puerto Rico.

10/27/77: A seaman is acquitted of starting fires on the Royal Navy frigate HMS **Gurkha**.

11/24/77: The Washington Post reports NATO sources believe that the Soviet Navy is experiencing trouble with its Yak-36 V/STOL aircraft after an incident where the flight deck of the **Kiev** assault ship was set on fire by one of the aircraft. The **Kiev** itself had only been at sea for two weeks since deployment to the Northern Fleet in Fall 1976.

12/04/77: The USS **W.S. Sims** (FF-1059) loses power after a boiler casualty results in the loss of a generator during training 70 miles south of Bermuda. The frigate is able to get underway for Mayport, Florida, after the USS **Ainsworth** (FF-1090) rigs emergency power from alongside.

12/06/77: The USS **Pintado** (SSN-672) sustains damage to the top of its rudder in a minor collision with a South Korean Navy ship during exercises off Korea. The **Pintado** initiated emergency deep dive procedures when the surface ship turned toward the submarine at close range.

12/31/77: Around 1977, according to a report in The Virginian-Pilot and The Ledger-Star, 40 to 50 gallons of primary coolant spill from the USS **California** (CGN-36) while the ship is in Norfolk, Virginia.

12/31/77: According to raw CIA intelligence reports, in 1977 a Soviet nuclear-powered submarine suffers an internal fire while in the Indian Ocean. The submarine is forced to surface in an attempt to fight the fire which takes several days to extinguish. A Soviet trawler subsequently tows the submarine to a port near Vladivostok.

12/31/77: According to raw CIA intelligence reports, in 1977 about 12 Soviet naval officers serving on a nuclear-powered submarine in the Atlantic return to Leningrad via an Aeroflot flight from Canada. The reason for the return was not announced but it was known at the time that these officers were taken from a Soviet submarine in the Atlantic by a Soviet fishing trawler and subsequently transported to Canada where they boarded the plane. The CIA sources suggest this may have been a medical emergency connected with radiation exposure.

12/31/77: Sometime during 1976-77, the Royal Navy nuclear-powered ballistic missile submarine HMS **Repulse** suffers a fire, causing 200,000 pounds sterling damage.

01/12/78: The French Navy escort vessel **Duperre** is pulled off by a tug after it runs aground in a storm off Brittany at night. The ship is towed into Brest, France.

01/15/78: An A-7 Corsair II aircraft crashes upon landing aboard the USS **Forrestal** (CV-59) while the carrier operates about 50 miles off St. Augustine, Florida, killing one and injuring ten.

01/18/78: The USS **Cree** (ATF-84) is struck by three Mark 82 bombs near a target ship during exercises by planes of the USS **Enterprise** (CVN-65) off San Diego, California. Two explosions close to the **Cree** cause flooding while a third lodges in the starboard side and is later defused by an explosives ordnance disposal team. The tug is taken in tow after damage control teams control the flooding.

02/22/78: The USS **L.Y. Spear** (AS-36) and the Liberian merchant ship **Zephyros** receive minor damage in a collision in the Mississippi River.

04/01/78: The USS **Sealift Mediterranean** (T-AO-173) runs aground off Rondo Island, Indonesia, about 30 nautical miles off Sumatra's northwestern tip.

04/03/78: The USS **Fort Snelling** (LSD-30) and the USS **Waccamaw** (T-AO-109) receive structural damage in a collision north of Corsica, France, when the **Waccamaw** loses steering control during refueling. Both proceed under their own power to Naples, Italy, for repairs.

04/25/78: The USS **Concord** (AFS-5) is badly damaged by a fire in its cargo spaces while moored at Palma de Majorca, Spain. One hundred and five people are treated for smoke inhalation and minor burns.

05/03/78: The USS **Dewey** (DDG-45) suffers a fire which damages the missile fire control system while in port at Naples, Italy.

05/14/78: While surfacing in the western Pacific the USS **Darter** (SS-576) suffers flooding when about 45,000 pounds of seawater enter the engine room after a snorkel head valve fails. The USS **Schofield** (FFG-3) escorts the submarine toward Yokosuka, Japan. It arrives 19 May for repairs.

05/23/78: While workers are draining a piping system aboard the USS **Puffer** (SSN-652), radioactive water spills on the drydock surface at the Puget Sound Naval Shipyard, Bremerton, Washington. A Navy spokesmen says that "less than 5 gallons" of slightly radioactive water spilled as the workers were draining the liquid into two five-gallon plastic containers, a routine operation. The spill, says the Navy, was due to the inattention of the personnel doing the draining. The water being drained reportedly was part of the submarine's secondary cooling system. The drydock drain was contaminated, but was closed before any spillage escaped into the sea. According to the Navy, no workers were contaminated. Shipyard employees disputed the Navy's account, saying that the spill was much bigger, about 100 gallons; that response to the spill was slow; and that several workers suffered skin contamination. These reports could not be verified. Subsequently a contaminated 15-by 20-foot section of drydock is jackhammered up, sealed in drums and shipped to a nuclear waste site in Hanford, Washington.

05/26/78: About two cups of radioactive water leak from a pipe fitting aboard the USS **Aspro** (SSN-648) while the submarine is in the Puget Sound Naval Shipyard, Washington, when a worker fails to shut a valve tightly. According to the Navy, no personnel suffered skin exposure, but the worker detected a small spot of radioactivity on his pants, which was removed and disposed of as radioactive waste. No radioactivity escaped to the outside environment.

05/31/78: The USS **Midway** (CV-41) suffers a fire which originates in the exhaust ventilation system, quickly spreads through the 3A boiler uptakes on the second deck, and terminates in the main uptake space, while it is docked in Yokosuka, Japan. The cause of the fire is later thought to be welding in a vent system containing a fine oil mist which ignited and spread.

06/16/78: The propeller shaft of the USS **Tullibee** (SSN-597) snaps just outside the hull causing limited engine room flooding and loss of propulsion while it is submerged in the Mediterranean. The flooding is stopped by tightening the emergency packing on the propeller shaft. The submarine quickly surfaces and is assisted by other U.S. naval vessels. Subsequently it is towed to Rota, Spain, for repairs.

07/19/78: A helicopter crashes after striking the Royal Navy destroyer HMS **Devonshire** while executing a flyby of the ship during an air display off the U.K.

07/25/78: The USS **Opportune** (ARS-41) is struck by a dummy training round fired from a U.S. destroyer south of Guantanamo Bay, Cuba, while towing a target sled during gunnery exercises.

08/19/78: A Soviet Echo II class nuclear-powered cruise missile submarine is sighted dead in the water near Rockall Bank 140 miles northwest of Scotland after experiencing problems with her nuclear power plant. On 20 August a U.S. P-3 Orion aircraft observes the submarine under tow to the Soviet Union south of the Faroe Islands. The exact cause of the problem and the number of possible personnel casualties is unknown.

08/21/78: While operating in the Mediterranean, the crew of the USS **Forrestal** (CV-59) is called to general quarters about noon due to widespread smoke reported on the third deck amidships. Shortly afterwards, burning boxes are discovered in a fourth deck storeroom. The fire is put out within ten minutes of the initial alarm.

09/27/78: The USS **Detector** (MSO-429) suffers a fire in the main engine room ten miles south of New London, Connecticut, and is towed to Newport, Rhode Island.

09/28/78: The USS **General H.H. Arnold** (T-AGM-9) is adrift for several hours about 300 nautical miles northwest of Adak, Alaska, in the Bering Sea after failure of the main reduction gear bearing.

09/29/78: The USS **Fairfax County** (LST-1193) suffers extensive damage to its Number 3 engine room and second division berthing compartment in a major fire while en route to Naples, Italy. Two crewmembers are injured and the ship is placed in tow.

10/19/78: The commander of the Royal Navy diesel submarine HMS **Oracle** is reprimanded for allowing his ship to touch bottom during trials in the narrow Loch Fyne, Strathclyde, Scotland. The bump dented four torpedo tubes, but the hull remained intact and the submarine rose safely to the surface. The submarine was running deeper than usual to avoid a yacht on the surface, but failed to monitor how close it was to the bottom.

10/31/78: The Royal Navy frigate HMS **Minerva** suffers an explosion.

11/01/78: In November the Royal Navy fleet auxiliary HMS **Hebe** suffers a fire started by a crewmen while at the Gibraltar naval base.

11/02/78: The Greek trawler **Ayos Nikolaos** sinks after colliding with a **Turkish** gunboat in the Mediterranean, killing one.

11/20/78: The USS **Coral Sea** (CV-43) suffers a fire of unknown origin while moored at Puget Sound Naval Shipyard, Washington, which causes damage to the medical and dental spaces.

11/21/78: The USS **Saratoga** (CV-60) and the USS **Waccamaw** (T-AO-109) collide during refueling operations 50 miles south of Crete, with only minor damage and no injuries.

12/04/78: The Royal Navy diesel submarine HMS **Olympus** dives too slowly and is struck by an unknown merchant ship in the Portland, U.K., exercise area.

12/06/78: The USS **Ranger** (CV-61) experiences an explosion and flash fire during fleet exercises off Baja California which result in minor burns to nine crewmen.

12/13/78: The Royal Navy helicopter carrier HMS **Hermes** is damaged by fire in a mess deck. Damage is not severe.

01/17/79: A mechanic who helped to contain a steam burst after an explosion in the engine room aboard the Royal Navy nuclear-powered ballistic missile submarine HMS **Revenge** wins the Queen's Gallantry Medal. He crawled along a foot-wide catwalk below a hot cloud of escaping high-pressure steam as he searched for the leak in the turbo-generator room.

01/22/79: The USS **Aylwin** (FF-1081) suffers a disabling casualty and is towed to Charleston, South Carolina, by the USS **Petrel** (ASR-14).

02/01/79: In February a fire breaks out in the forward boiler room of the USS **Manley** (DD-940) during preparation to get underway from Mayport, Florida. Twelve men are injured, one later dies and the cost is put at $75 million.

02/09/79: The USS **Davidson** (FF-1045) loses power after a brief fire puts out a boiler in the Philippine Sea. The frigate is towed to Subic Bay where it arrives five day later.

03/01/79: The French diesel submarine **Marsouin** is caught in the nets of the French trawler **St. Blaise** off Brittany. Neither vessel is damaged.

03/04/79: The USS **Francis Marion** (LPA-249) is holed above the waterline and receives structural damage when it is struck by the Greek bulk carrier **Starlight** near the entrance to Chesapeake Bay off Cape Henry, Virginia.

03/07/79: The USS **Alexander Hamilton** (SSBN-617) becomes

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tangled in the nets of a Scottish fishing trawler in the sound of Jura off the west coast of Scotland. The **Hamilton** tows the trawler backward for about 45 minutes until the nets are cut. No injuries or serious damage result.

03/14/79: The USS **Wainwright** (CG-28) runs aground for six hours in Charleston harbor, South Carolina, near the Mount Pleasant Range.

03/28/79: The USS **Independence** (CV-62) experiences a brief control room fire in the Roosevelt Roads area off Puerto Rico. Thirty people suffer from minor smoke inhalation.

03/29/79: The USS **Ranger** (CV-61) suffers a main engine turbine casualty requiring extensive repair while training in the Subic Bay operations area off the Philippines.

04/04/79: The USS **Ranger** (CV-61) sustains substantial damage in a collision with the Liberian tanker **Fortune** near the eastern approaches to the Strait of Malacca. There are no injuries and the **Ranger** heads toward Subic Bay while the tanker, holed in the port side from the main deck to the waterline, is towed to Singapore. On 20 April the **Ranger** voyages to Yokosuka, Japan, after completing interim repairs to her bow.

04/09/79: Five fires set by an arsonist aboard the USS **John F. Kennedy** (CV-67) kill one shipyard worker and injure 34 other people while the carrier undergoes overhaul at Norfolk Naval Shipyard, Virginia.

04/27/79: The USS **Pargo** (SSN-650) is briefly grounded while entering New London, Connecticut, harbor in heavy fog.

05/09/79: The USS **Savannah** (AOR-4) collides with the USS **Forrestal** (CV-59) after suffering a gyro casualty while servicing the **Forrestal** in the Caribbean. Both ships suffer minor damage with no personnel casualties.

05/11/79: Primary coolant water leaks from one of the two nuclear reactors aboard the USS **Nimitz** (CVN-68). A Navy spokesman says there was no release of radioactivity, no danger to the core, and no danger to the ship's crew. The ship was operating off the Virginia coast.

05/14/79: The USS **Cook** (FF-1083) and the USS **Mars** (AFS-1) collide off Point Loma near San Diego, California, injuring seven.

05/24/79: The USS **Andrew Jackson** (SSBN-619) incurs slight damage to its rudder when it runs aground briefly while entering the New London, Connecticut, harbor in reduced visibility.

05/26/79: The USS **Gray's** (FF-1054) living barge receives structural damage of over $1,000,000 in a fire caused by arson while the ship is berthed at Todd Pacific Shipyard, Seattle, Washington.

06/04/79: The USS **George Washington Carver** (SSBN-656) snags the nets of a Spanish fishing vessel and drags the boat through the water off Rota, Spain.

06/04/79: The USS **Woodrow Wilson** (SSBN-624) runs aground in heavy fog at Race Rock while en route to New London, Connecticut. The submarine backs off and proceeds to port for inspection and damage assessment.

06/05/79: Two fires break out aboard the USS **John F. Kennedy** (CV-67) at the Norfolk Naval Shipyard, Virginia, but cause no injuries or significant damage.

06/12/79: A Mk 48 conventional torpedo jams between loading equipment and a bulkhead when a chain breaks on the loading mechanism allowing the torpedo to drop several feet aboard the USS **Memphis** (SSN-691) docked at the Norfolk Naval Station, Virginia. The torpedo is removed two days later. It did not have a triggering device, but Navy sources say had it exploded it easily could have sunk the submarine.

06/20/79: The USS **Hawkbill** (SSN-666) reactor's primary coolant system develops a leak while the submarine is on maneuvers in Hawaiian waters which lasts for four days. Originally the leak is about two gallons an hour, but by the time the submarine docks at Pearl Harbor, Hawaii, on 23 June, the leak has been reduced to three-quarts an hour. On 24 June it is stopped. The Navy says none of the water escaped, as it was captured and stored in tanks designed for such contingencies and that none of the crew was in danger. Supplemental coolant water was pumped in to prevent overheating. According to the Navy, "The leakage was caused by normal wear of inside parts of valves. Such leaks happen occasionally."

06/21/79: The USS **Enterprise** (CVN-65), under overhaul at the Puget Sound Naval Shipyard, sustains a two-hour Class Alpha fire in a catapult room, machine shop, and passageway.

06/26/79: The USS **Forrestal** (CV-59) suffers three minor fires while in Mayport, Florida. Arson is suspected.

06/29/79: A steward is sentenced for setting fires aboard the Royal Navy frigate HMS **Sirius** while docked at Devonport, U.K.

07/03/79: The Royal Navy diesel submarine HMS **Onyx** is freed from the fishing nets of a stationary trawler off Holy Island in the Firth of Clyde, Scotland.

07/03/79: While at Norfolk Naval Shipyard, a fire sweeps through two berthing spaces aboard the USS **Iwo Jima** (LPH-2), injuring five. A sailor is arrested on arson charges on 6 July.

07/06/79: The USS **Lexington** (AVT-16) suffers a Class Alpha fire off Pensacola, Florida, and is dead in the water for over an hour when all boilers are shut down as a result.

07/12/79: The USS **Sealift China Sea** (T-AO-170) loses power over 150 nautical miles off Subic Bay, Philippines, as a result of an engine casualty. The USS **Beaufort** (ATS-2) is directed to rendezvous and render assistance.

07/13/79: The USS **Conyngham** (DDG-17) suffers two minor fires on consecutive days in the First Division Berthing Compartment and the Anchor Windlass Room. An investigation leads to the arrest of an arsonist on 14 July, the day of the second fire.

08/02/79: The USS **Comte de Grasse** (DD-974) incurs extensive smoke damage in a three-hour engine room fire while berthed at Norfolk, Virginia.

08/09/79: A fire, caused by a broken acetylene line, breaks out aboard the USS **Midway** (CV-41) while berthed at Yokosuka, Japan, killing one worker and injuring 17 sailors.

09/02/79: The USS **Truxtun** (CGN-35) spills some 13 gallons of radioactive "high-purity water" into San Diego Bay, California. A U.S. Navy spokesman says the spill contained a small amount of radioactivity which was too small to have an impact on the environment. Initial reports had said the ship spilled as much as 80 to 100 gallons of radioactive water.

09/19/79: The Dutch diesel submarine **Tonijn** experiences a fire in the port engine room and loses power while en route for Naples, Italy. The USS **Harlan County** (LST-1196) leaves Cartagena, Spain, to provide towing assistance to Gibraltar.

11/06/79: Two part-time officers are reprimanded after the Royal Navy coastal minesweeper HMS **Alfriston** runs aground.

12/16/79: Storm-force winds over southern England cause a giant crane at the Royal Navy Devonport dockyard to collapse. Thousands of pounds sterling damage to the Royal Navy frigates HMS **Minerva** and HMS **Ambuscade** result.

01/03/80: The Malaysian oil tanker **Santo Prestige** loses power and collides with the USS **Milwaukee** (AOR-2) moored at portside in Norfolk, Virginia. The collision results in a 40- by 15-foot gash in the hull of the **Milwaukee**.

01/04/80: The USS **Pecos** (AO-65) collides with the moored USS **Bradley** (FF-1041) at Terminal Island, Los Angeles, California, injuring one, and causing minor damage to the **Bradley** and a two-foot hole in the **Pecos**.

01/16/80: The USS **Okinawa** (LPH-3) is placed in tow when it suffers an engineering casualty. The casualty is corrected on 18 January.

02/05/80: The USS **Inchon** (LPH-12) collides with the USS **Spiegel Grove** (LSD-32) while refueling in the Atlantic while en route to the Mediterranean Sea, with reportedly no injuries and only minor damage.

03/03/80: The USS **William H. Standley** (CG-32) sustains a ruptured tube casualty to the Number 1B boiler during exercises off the Strait of Hormuz and proceeds to the U.S. Navy Facility at Diego Garcia.

04/18/80: A Soviet Mirka class frigate collides with the Danish minesweeper **Fyen** in the Baltic Sea during Warsaw Pact exercises. The Danish Ministry of Foreign Affairs protests the incident, but receives no formal reply.

05/05/80: Two West German Navy ships collide in the Mediterranean off Toulon, France; no injuries.

05/13/80: The Royal Navy diesel submarine HMS **Onyx** runs aground in Portsmouth harbor, U.K. It takes a tug 20 minutes to pull the ship free.

06/04/80: A lieutenant on the Royal Navy frigate HMS **Nubian** is reprimanded for negligence following a collision with a Dutch ship.

06/26/80: The USS **Constellation** (CV-64) collides with a Bangladesh merchant ship in the Arabian Sea. The U.S. Navy says there was minor damage to both ships.

07/08/80: The small Danish Home Guard cutter **MHV 94** is rammed by the East German minesweeper **Komet** nine miles south of Gedser, Denmark, in the Baltic Sea. The collision causes severe damage to the front of the cutter. Denmark protests to East Germany over incident.

07/20/80: The USS **Gurnard** (SSN-662) spills 30 gallons of water containing radioactive material into San Diego Bay, California. A Navy spokesman says the leak occurred when a crewman of the **Gurnard** accidentally opened a valve allowing the water to escape. The spokesman said a water sample was taken and there was no increase in the general background radioactive level in the area where the spill happened.

07/26/80: The Royal Navy patrol boat HMS **Sabre** crashes at Alderney, Channel Islands, in the English Channel.

07/29/80: The USS **Midway** (CV-41) collides with the Panamanian merchant ship **Cactus** while transiting the passage between Palawan Island of the Philippines and the coast of Northern Borneo 450 nautical miles southwest of Subic Bay en route to Singapore. The **Midway**, the U.S. Navy says, sustained no serious damage although two U.S. sailors were killed, three were injured, and three F-4 Phantom aircraft parked on the flight deck were damaged.

08/12/80: The Royal Navy nuclear-powered attack submarine HMS **Sovereign** breaks down during routine tests in Plymouth Sound, U.K. According to the Royal Navy the breakdown was caused by a "minor mechanical defect." The submarine was towed back to Devonport, U.K.

08/21/80: A Soviet Echo class nuclear-powered submarine suffers a serious casualty and loses power about 85 miles off the east coast of Okinawa. At least nine crewmembers are believed to have died from a probable fire in the propulsion spaces. A Soviet freighter arrives to evacuate the crew and a tugboat is readied to tow the submarine to Vladivostok escorted by several warships. The next day Japan advises ships to avoid the area, citing possible radiation leaks and refuses to allow the submarine to pass through Japanese territorial waters unless Moscow guarantees there are no nuclear weapons aboard and no danger of radiation leaks. The Soviets initially refuse to guarantee the safety of the reactor and enter Japanese waters despite Japan's warnings. But on 24 August, Moscow acquiesces to Japan's demands concerning safety, and informs Japan there was no radioactive leakage or nuclear weapons on board. Subsequently, Japanese examination of air and water in the area reportedly finds evidence of radioactive contamination.

08/31/80: In late August some cracks in the USS **Vulcan's** (AR-5) outer hull which allow oil seepage are discovered. These are repaired while the ship is in Norfolk, Virginia, and afterward the ship sails for Norway.

09/09/80: The USS **Valdez** (FF-1096) suffers a material failure to the ship's sole gyro compass following a departure from Antwerp, Belgium. The ship operates on magnetic compass only for the next six weeks, throughout exercise "Teamwork 80." This degrades the performance of weapons systems and satellite navigation, and makes refueling at sea more complicated.

10/20/80: The USS **Saratoga** (CV-60) suffers five minor fires from 20 to 26 October while undergoing a major overhaul at the Philadelphia Naval Shipyard, Pennsylvania. The Navy investigates the possibility of arson.

12/01/80: In December the Royal Navy frigate HMS **Amazon** strikes a coral reef off Belize in the Caribbean.

12/01/80: In December, the Royal Navy nuclear-powered attack submarine HMS **Dreadnought** suffers serious machinery damage — reportedly cracks in the secondary cooling system — which necessitate a complete reactor shutdown. This damage and troubles with scheduling a refit lead to a decision to retire the aging submarine.

12/03/80: During a test, about 150 gallons of low-level radioactive water leak from a faulty valve on the USS **Hawkbill** (SSN-666) undergoing overhaul at the Puget Sound Naval Shipyard, Washington. Five workers receive low-level radioactive contamination. A Navy spokesman says they received a dose of radiation "less than that typically received by a chest X-ray."

12/03/80: The USS **America** (CV-66) and USS **Caloosahatchee** (AO-98) collide during an underway replenishment maneuver 250 miles east of Charleston, South Carolina, when the oiler loses rudder control. Despite an emergency breakaway, the **America** suffers minor damage to a catwalk, a storage compartment, and a flight deck safety net rail. But there are no injuries and both ships continue operations.

01/10/81: The USS **Biddle** (CG-34) and USS **Raleigh** (LPD-1) are slightly damaged when the **Biddle** strikes the moored **Raleigh** while approaching a pier in Norfolk, Virginia.

01/23/81: The USS **Birmingham** (SSN-695) suffers a failed sonar dome while operating in the Mediterranean and is ordered into Gibraltar for damage assessment. On 30 January the ship is in Gibraltar for repairs.

01/27/81: The USS **Guam** (LPH-9) suffers a minor fire of suspicious origin in an unoccupied compartment while in Norfolk, Virginia.

01/28/81: The USS **Sylvania** (AFS-2) and USS **Kalamazoo** (AOR-6) collide amidships during underway replenishment in the Virginia Capes area with no serious damage.

02/20/81: The USS **Downes** (FF-1070) is under tow by the USS **Narragansett** (T-ATF-167) from Diego Garcia to Subic Bay, Philippines, for repairs following casualties to both boilers. On 22 February the **Downes** is able to bring one boiler back into operation and continues to Subic Bay on its own power in company with the **Narragansett**.

02/21/81: The USS **Okinawa** (LPH-3) experiences a brief fire during training off San Clemente Island, California, but the ship continues its scheduled operations.

03/14/81: The naval reserve destroyer USS **Cone** (DD-866) is temporarily grounded while departing Charleston, South Carolina. After being freed by a tug the **Cone** returns to Charleston for hull damage assessment.

03/19/81: The USS **Yellowstone** (AD-41) and the USS **Robert A. Owens** (DD-827) collide off Florida, causing extensive damage but no casualties.

03/26/81: The USS **Guardfish** (SSN-612) touches ground while in the San Pedro Channel on the way to San Diego, California. There were no personnel injuries and an on-board inspection revealed no hull or equipment damage.

04/03/81: A fire breaks out in the engine room of the USS **Taluga** (T-AO-62) while the ship is operating 80 miles west of San Diego, California. Two injured crew members are airlifted to San Diego by helicopter. The fire is extinguished and the **Taluga** proceeds to port.

04/04/81: Workers at Coastal Drydock in New York (formerly Brooklyn Navy Yard) inadvertently cause a fire on the USS **Aylwin** (FF-1081) while welding. The frigate's Combat Information Center is damaged.

04/09/81: The USS **George Washington** (SSBN-598) collides with the 2,350-ton Japanese freighter **Nissho Maru** in the East China Sea about 110 miles south-southwest of Sasebo, Japan. As it is surfacing, it runs into the underside of the freighter, damages its it hull and causes it to sink in approximately 15 minutes, killing two Japanese crewmen (13 others are rescued). The submarine suffers minor damage to a small section of its sail. The accident sparks a political furor in Japan, straining U.S.-Japanese relations a month before a meeting between Prime Minister Zenko Suzuki and President Ronald Reagan. The United States is criticized because: it took over 24 hours to notify Japanese authorities; the submarine and a U.S. P-3 Orion aircraft overhead did not make a rescue attempt; and the submarine was operating so close to Japan, less than 20 miles outside the 12-mile limit. The U.S. Navy initially says the submarine surfaced but could not see any ship in distress due to fog and rain. On 11 April President Reagan and other U.S. officials express regret over the accident, make offers of compensation and reassure the Japanese there is no cause for worry about radioactive contamination, but refuse to say what the submarine was doing so close to Japan or whether it was armed with nuclear missiles. Over the next several months as the controversy continues, the U.S. Navy: accepts responsibility to preclude lengthy litigation; is criticized for its preliminary report which says the submarine and Orion claimed not to have realized the freighter was sinking; and relieves and reprimands the commanding officer and officer of the deck of the submarine. On 31 August the Navy releases a final report which concludes the accident resulted from a highly coincidental set of circumstances, compounded by errors on the part of some members of the submarine crew.

04/13/81: The USS **William H. Bates** (SSN-680) is reported to run into gillnets near the Hood Canal in Washington state.

04/27/81: The USS **Manitowoc** (LST-1180) and the USS **Trenton** (LPD-14) begin a five-day visit to Alexandria, Egypt. The USS **Jack** (SSN-605) also is in port. The **Trenton** and **Jack** suffer minor damage when the **Jack**, moored alongside, surges against the **Trenton** in a sea swell.

05/01/81: In May the Royal Navy destroyer HMS **Glasgow** collides with the Soviet cruiser **Admiral Isakov** in the Barents Sea. The **Glasgow's** captain reports the Soviet ship was maneuvering dangerously.

05/15/81: A hairline crack is discovered in the main cooling system of the Royal Navy nuclear-powered attack submarine HMS **Valiant** as it returns to Devonport, U.K., after developing a fault in its cooling system while operating off the Cornish coast. The crack does not affect the operation of the reactor and the vessel returns to Devonport under its own power. The Royal Navy denies claims that contaminated water was discharged into Plymouth Sound, saying "A very small quantity of water leaked out and this was drained off into a lead tank in a barge for treatment." The reactor is cooled down before the leak is plugged.

05/26/81: A Marine EA-6B Prowler aircraft crashes while landing on the USS **Nimitz** (CVN-68) operating 70 miles off Jacksonville, Florida, killing 14 and injuring 48. The aircraft reportedly applied power as it was landing and then suddenly drifted to the right, running into parked aircraft, causing ammunition to explode, and starting numerous fires that took at least one hour to put out. Three F-14 Tomcats are destroyed and 16 other aircraft are damaged, and, overall, approximately $100 million in damage results. The **Nimitz** returns to Norfolk, Virginia, for several days of repairs. The crash sparks a five-month debate between Representative Joseph P. Addabo (D-NY) Chairman of the House Defense Appropriations Subcommittee and the Navy over whether drug use on board the carrier may have contributed to the crash.

06/01/81: The USS **Nitro** (AE-23) is badly damaged by a fire in the main machinery room while en route to Athens, Greece, 60 miles northeast of Souda Bay, Crete. It is taken under tow the next day by the USS Neosho (T-AO-143) for Souda Bay.

06/04/81: A Soviet Kondor class minesweeper suffered heavy damage when she was in a collision in international waters with a Danish naval oiler in the southern area of the Baltic Sea.

06/10/81: The USS **Detroit** (AOE-4) runs aground on a sandbar near Old Point Comfort, Hampton Roads, Virginia, as the ship is preparing to enter port at Norfolk. There are no injuries or apparent damage. The ship is refloated the next day after off-loading its fuel.

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06/29/81: The USS **Dahlgren** (DDG-43) suffers a two-hour fire in the radiomen's storeroom while in the Caribbean. The damage is light and the ship proceeds to Guadeloupe.

07/14/81: The USS **Coontz** (DDG-40) accidentally fires a Harpoon anti-ship missile with a high-explosive warhead during a maintenance test about 70 miles from St. Croix, U.S. Virgin Islands. The missile impacts and is lost at sea.

07/19/81: A U.S. Marine Corps Reserve CH-53 Sea Stallion helicopter crashes and burns while landing aboard the USS **Guam** (LPH-9) during training operations in the Atlantic 35 miles southeast of Moorehead City, North Carolina, killing four and injuring 11 other Marine and Navy personnel.

08/06/81: Wardroom 1 of the USS **Ranger** (CV-61) catches fire, causing extensive damage while the ship is moored at Naval Air Station North Island, San Diego, California. Reportedly "reconstruction was monumental" and "communication's problems extended into work-ups."

08/15/81: A fire on board the USS **Independence** (CV-62) while in overhaul at the Norfolk Naval Shipyard, Virginia, damages the air operations and carrier control approach spaces. There are no injuries.

08/27/81: The USS **Dallas** (SSN-700) damages the lower portion of its rudder when it runs aground while approaching the Atlantic Underwater Test and Evaluation Center site at Andros Island, Bahamas. The submarine works itself free after several hours and returns to New London, Connecticut, on the surface for repairs.

09/01/81: According to raw CIA intelligence reports, in September a Soviet nuclear submarine operating in the Baltic "underwent a series of strong and sudden physical shocks. An emergency was declared and ... crew members were sealed into the compartment in which they were standing duty. The submarine was no longer navigable following the shocks and was taken under tow. It was towed for a total of 36 hours but was actually only moved during darkness." The submarine was towed to Kaliningrad and "the sailors that had been sealed in the compartment were then flown to Riga and hospitalized." The CIA source reports all the sailors exhibited signs of terminal radiation sickness.

09/06/81: A landing A-7 II Corsair aircraft collides with a taxiing F-14 Tomcat fighter on the USS **Kitty Hawk** (CV-63) killing one crewman and injuring two others while the carrier is operating in the Indian Ocean. The A-7 is recovered and the F-14 crew ejects safely, but the F-14 rolls overboard.

09/17/81: A U.S. Marine Corps CH-53C Sea Stallion helicopter crashes while attempting to land on the USS **Guadalcanal** (LPH-7) during Sixth Fleet training exercises in the Mediterranean near Sardinia, Italy, killing all five crewmen.

09/20/81: The USS **Conyngham** (DDG-17) runs aground momentarily while making a slow approach to the Mauritian coast causing minor damage to the sonar.

09/20/81: The Philippine Navy frigate **Datu Kalantiaw** is forced aground by 127 miles per hour winds from Typhoon Clara while on anchor near Calayan Island, 340 miles north of Manila, with only 18 of 97 crew surviving.

09/24/81: The USS **Guadalcanal** (LPH-7) and the USS **Waccamaw** (T-AO-109) collide during underway replenishment south of Sardinia, Italy, causing minor damage but no injuries.

09/25/81: An Israeli missile boat runs aground on a Saudi Arabian reef in the Gulf of Eilat after its electrical system goes bad, knocking out its navigational equipment. The Saudis permit the Israelis to rescue the boat; 12 days later it is removed.

09/30/81: The USS **Pegasus** (PHM-1) collides with the USS **Newport** (LST-1179) while making an approach to connect for towing north of Cuba, causing minor damage.

10/07/81: The USS **Inchon** (LPH-12) suffers a boiler explosion while preparing to get underway from Norfolk, Virginia.

10/13/81: The USS **Waccamaw** (T-AO-109) collides with the USS **Raleigh** (LPD-1) while the USS **Detroit** (AOE-4) is alongside. The ships are underway in the Mediterranean.

10/17/81: The USS **Waccamaw** (T-AO-109) is struck by an Italian tug in Cagliari, Sardinia, Italy, when the tug loses control while making an approach to aid in maneuvering. The oiler is holed but no pollution results.

10/21/81: The USS **Cook** (FF-1083) observes a Soviet Foxtrot class diesel-powered attack submarine under tow while conducting intelligence operations off Socotra Island in the Indian Ocean.

10/27/81: A Soviet Whiskey class diesel-powered attack submarine runs aground 10 kilometers from the Swedish naval base of Karlskrona, 300 miles south of Stockholm. The Swedish government alleges the submarine was engaged in illegal reconnaissance or mine-laying work and there was good reason to believe the vessel is carrying nuclear weapons. The Swedes demand an apology and an explanation. When the submarine captain is questioned he contends bad weather and a faulty compass led to the inadvertent intrusion into Swedish waters. But the Swedish authorities maintain that good navigation was necessary for the vessel to come this far into their waters. On 29 October a Soviet tug is turned back by Swedish warships and another unidentified submarine is spotted within Swedish waters and is pursued by Swedish antisubmarine warfare helicopters until it disappears. On 2 November the submarine is refloated by Swedish tugs to prevent heavy seas from battering the ship. On 5 November the Swedish government announces that the submarine probably has nuclear weapons aboard. Foreign Minister Ullsten says "it must be very embarrassing" to have this information released when the Soviets "have created the impression that they are more in favor than the United States" of arms control. On 6 November the submarine is returned to the Soviets. The same day the Swedish government expresses the view that previous Soviet proposals in regard to the Baltic as a "sea of peace" were no longer credible. Officials said the incident would affect Swedish attitudes toward Nordic nuclear-free-zone proposals from the Soviet Union. It is later reported on 6 May 1982 that the Soviet government had agreed to pay Swedish costs of $212,000 arising from the incident.

11/02/81: At the Holy Loch naval base in Scotland a Poseidon submarine-launched ballistic missile is dropped 13 to 15 feet as it is moved aboard the submarine tender USS **Holland** (AS-32) after an error by the crane operator. The fall is arrested by a safety device, but critics suggest there was a serious chance that a conventional explosion could have taken place, dispersing radioactive material. This explosion could have occurred because the Poseidon warhead uses an unstable conventional high explosive called LX-09. Moreover, the Navy is upbraided for not immediately reporting the incident or notifying surrounding communities of possible danger. The U.S. Navy refuses to confirm or deny whether there were nuclear weapons on the missile and states "there was no damage done, no injuries occurred; there was no danger to personnel."

12/03/81: An arresting wire breaks during the landing of an A-7 Corsair aircraft on the USS **John F. Kennedy** (CV-67) while operating in the Caribbean Sea, killing two men and injuring three. Four aircraft including the A-7 are damaged.

01/04/82: A U.S. Navy ship collides with an Italian tanker in the Straits of Messina.

01/10/82: The USS **Mispillion** (T-AO-105) and the civilian tanker **Texas Trader**, under Navy contract, collide during a routine fuel transfer in the Indian Ocean. There are no personnel injuries and no serious damage to either ship.

01/16/82: Five U.S. Navy personnel die in a diving accident aboard the USS **Grayback** (SS-574) off the coast of Subic Bay, Philippines.

02/01/82: In early February, the USS **Seattle** (AOE-3) is hit by a tugboat while getting underway from Craney Island, Norfolk, Virginia, causing extensive damage to equipment on the ship's aft end.

02/02/82: The USS **Ponce** (LPD-15) collides with the USS **Fort Snelling** (LSD-30) during a towing exercise which causes minor damage to the **Ponce**'s port side, mainly to the accommodation ladder and flight deck catwalk. The two ships were en route to Portsmouth, U.K.

02/18/82: The South African Navy flagship the frigate **President Kreuger** collides with the naval supply ship **Tafelberg** during night maneuvers in rough seas and gale force winds south of the Cape of Good Hope and sinks. Thirteen of her crew are reported missing and 177 sailors are saved.

03/01/82: In March both of the USS **Inchon**'s (LPH-12) emergency diesel generators become inoperable during training in the Caribbean. The ship is unable to finish training. A portable emergency diesel generator is attached to the flight deck and the ship is escorted back to Norfolk, Virginia, by the USS **Pensacola** (LSD-38).

03/13/82: Fourteen aircraft from the carrier USS **Forrestal** (CV-59) are diverted to Homestead Air Force Base, Florida, after a boiler failure causes a "partial electrical failure" on the carrier. The ship was on exercises off Guantanamo Bay, Cuba.

03/18/82: The USS **Newport** (LST-1179) suffers a Bravo Class fire in a main engineering space while anchored at Berbera, Somalia.

03/22/82: The USS **Jacksonville** (SSN-699) collides with the Turkish cargo ship the **General Z. Dogan** while running on the surface 25 miles east of Cape Charles, Virginia. Damage to the **Jacksonville** is reported as minor and characterized as "bumps and scrapes," while bow damage is reported on the **General Z. Dogan**.

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04/10/82: The West German built submarine **Pisaqua**, built for Venezuela, collides in the Danish Straits with a merchant ship as it is completing its sea trials. The ship is towed to Kiel, Germany.

04/19/82: The Irish fishing boat **Sharelga** capsizes and sinks in the Irish Sea after being dragged by the Royal Navy diesel submarine HMS **Porpoise** which had become entangled in the trawler's nets. The British government initially denies a submarine was in the area, and then admits responsibility two weeks later.

04/20/82: Seven people are injured in an explosion aboard the USS **Garcia** (FF-1040) which is being overhauled at General Shipyard in Boston, Massachusetts.

04/20/82: The USS **Brewton** (FF-1086) suffers a casualty to its service diesel generator, curtailing the ship's participation in "Rimpac 82" exercises.

05/08/82: The USS **Chauvenet** (T-AGS-29) runs hard aground on Dauisan Reef in the Cagayan Islands in the Sulu Sea while underway from Subic Bay, Philippines, to survey grounds in Indonesian waters. After two-and-one-half weeks of salvage efforts, the ship is refloated by U.S. Navy salvage teams and towed to the Ship Repair Facility in Subic Bay.

05/15/82: Swedish coastal authorities report a Soviet destroyer or large frigate is on fire in the Baltic Sea, 22 miles off Latvia.

05/22/82: The USS **Fletcher** (DD-992) strikes the USS **Towers** (DDG-9) and the USS **Francis Hammond** (FF-1067) causing minor damage while attempting to moor alongside the two ships in Subic Bay, Philippines.

06/11/82: The USS **Seattle** (AOE-3) and the USS **Aylwin** (FF-1081) collide when the **Seattle** loses steering control while refueling the frigate during transit across the Atlantic to the Mediterranean.

06/12/82: The USS **Bonefish** (SS-582) suffers main engine casualties when all three main engine spaces are flooded while operating on the surface in the Pacific. No material damage on personnel injuries occur.

06/12/82: The USS **Cleveland** (LPD-7) and the USS **Ashtabula** (AO-51) collide in the Gulf of Thailand during underway replenishment. Damage is minor and there are no injuries.

06/17/82: Ten persons are injured when a 1,200-lb. steam valve ruptures aboard the USS **Saratoga** (CV-60), which is undergoing a Service Life Extension Program overhaul in Philadelphia Naval Shipyard, Pennsylvania.

06/20/82: A target hulk being towed by the USS **Reclaimer** (ARS-42) scrapes a Chinese tanker while the vessels are leaving Singapore. There are no injuries and damage is minor.

07/12/82: The USS **Seattle** (AOE-3) suffers a "freak explosion" in the after portion of the ship while moored alongside a fuel pier at Porto Torres, Sardinia, Italy. A chemical reaction between fuel vapors and a chemical stored in one of the blast-torn spaces causes the explosion which damages the after steering compartment and Enlisted Dining Facility. The **Seattle** is able to get underway for Naples less than 12 hours after the general quarters alarm was first sounded.

07/15/82: In mid-July the 30-foot yacht **Fyfield Five** is struck by an underwater object off the Tuskar Rock off Ireland and sinks. The owner Ken Roberts insists he was sunk by a submarine — reportedly a periscope crashed up through the keel of his boat. The press is initially skeptical, but then a dockyard worker tells the **Morning Star** newspaper that the Royal Navy diesel submarine HMS **Opossum** was having emergency repairs done to her conning tower in Portsmouth. The Ministry of Defense admits the **Opossum** was damaged in a collision at sea 400 miles west of Plymouth, U.K., on the day Robert's boat sank, but says this is well to the west of where Robert's vessel went down. The Ministry of Defense is unwilling or unable to provide details, but does not deny reports the **Opossum** was hit by a Soviet spy trawler.

08/19/82: A Royal Navy board is set up to investigate damage done to the Royal Navy nuclear-powered ballistic missile submarine HMS **Revenge's** gearbox caused by the presence of a small, extraneous piece of metal as the submarine is nearing the end of a two-and-a-half-year major refit at Rosyth, Scotland. The damage delays the submarine's scheduled completion date.

09/21/82: The U.S. shrimp boat **Howard M.** operating in the Pacific off Washington state snags what may have been a Soviet submarine, according to the U.S. Department of Defense. The skipper of the boat Danny Parker reports he was dragged about a mile and a half until a cable snapped.

09/28/82: The USS **Sam Houston** (SSN-609) spills less than 50 gallons of low-level radioactive water during a test while it is in the Puget Sound Naval Shipyard, Bremerton, Washington, undergoing routine maintenance, according to the Navy. The spill was stopped, the water was contained within the ship, and no radioactivity was released to the environment. The submarine's reactor was not operating. Two individuals were in the area during the spill and one of these individuals received low-level radioactive contamination.

11/29/82: The USS **Thomas A. Edison** (SSN-610) collides with the USS **Leftwich** (DD-984) in the South China Sea 40 miles east of Subic Bay, Philippines. The **Edison** was at periscope depth preparing to surface; it damaged its sail and sail planes, but there was no flooding. Both ships remain operational after the accident.

12/01/82: The Royal Navy nuclear-powered attack submarine HMS **Spartan** is caught in the nets of the English trawler **Algrie** off Land's End, Cornwall, U.K., in the Celtic Sea. As the trawler is dragged forward the fishermen radio to shore, and several minutes later the submarine surfaces with the nets and tackle laying across the vessel. The nets, costing 7-8,000 pounds sterling, are cut free, and the submarine continues on its patrol.

12/31/82: In late 1982 the USS **Permit** (SSN-594), cruising on the surface, collides with the USS **La Jolla** (SSN-701), at periscope depth, while they are on sea trials about 30 miles off San Francisco. The **Permit** recieves a ten-foot-long, three-foot-wide "scrape" in the paint on the keel, while the **La Jolla** suffers minor rudder damage.

01/03/83: The USS **Arkansas** (CGN-41) collides with the Italian merchantman **Megara Ilea** in the Strait of Messina, and is "slightly damaged on the port side."

01/19/83: The USS **Kitty Hawk** (CV-63) has a minor collision with the Canadian Maritime Forces Ship **Yukon** off the coast of Washington state. There are no personnel injuries or serious damage.

01/22/83: The East German passenger ship **Volkerfreundschaft** collides with a **West German** submarine north of Rostock, East Germany, in the Baltic Sea with no injuries resulting.

02/10/83: In the Atlantic the USS **Antrim** (FFG-20) suffers a fire in the wardroom and Computer/Radar Electronics spaces after it is struck by a drone during live firing of the Phalanx self-defense close-in-weapon-system Gatling gun. A civilian instructor dies from burns caused by the ignition of residual fuel in the target drone.

02/25/83: The Royal Navy minehunter HMS **Brocklesby** and the coastal minesweeper HMS **Nurton** collide about two miles off Portland harbor, U.K., during routine exercises.

03/11/83: A Danish trawler catches a Danish submarine in its nets off Bornholm Island in the Baltic Sea.

03/15/83: About 15 miles south of the Danish island of Bornholm in the Baltic Sea, the West German fishing trawler **Gertraud** catches a Soviet or Polish Whiskey class diesel-powered attack submarine in its nets. The trawler is surrounded by Warsaw Pact warships on maneuvers in the area as the submarine surfaces so its the crew can cut the submarine free. The submarine resubmerges, leaving the trawler with a damaged net.

03/16/83: The USS **Antrim** (FFG-20) collides with the USS **Flatley** (FFG-21) 160 miles north of Puerto Rico during training exercises. Both received only superficial damage.

04/01/83: In April during an Indian Ocean deployment the USS **Dale** (CG-19) collides with the Royal Navy frigate HMS **Ambascade**. The **Ambascade** is laid up in Bombay during May while work on "new bow material" is carried out.

04/28/83: The USS **Enterprise** (CVN-65) runs aground within sight of the port of San Francisco, California, after eight months at sea; it is stranded for five hours until the tide and tugs pull it free.

06/01/83: In June a Soviet Charlie class nuclear-powered cruise missile submarine sinks somewhere east of the Soviet naval base of Petropavlosk, near the southern tip of the Kamchatka peninsula in the Pacific. U.S. intelligence reports most or all of the 90-person crew are lost. The cause of the accident is not known, but the lack of radioactive contamination is said to indicate that the accident was probably due to mechanical failure, not a nuclear power plant accident. The submarine is salvaged by the Soviet Navy in early August 1983.

07/01/83: In July a gunnery computer malfunction causes the USS **George Philip** (FFG-12) to fire a 3-inch shell toward a Mexican merchant vessel during a drill about 40 miles off San Francisco, California. According to the Navy the round landed nine miles behind the merchant ship, but some **George Philip** crewmen say it actually landed just one mile behind the ship.

07/18/83: The USS **Ranger** (CV-61) collides with the USS **Wichita** (AOR-1) during refueling 100 miles off San Diego, California. The **Ranger's** flight deck elevator is damaged, but no injuries are reported. The **Wichita** damages its refueling capability. The port fueling riggings are put out of commission, including the loss of all fuel hoses. Also part of the **Wichita's** aft superstructure is crushed on the starboard side.

07/19/83: The USS **Texas** (CGN-39) is holed above the waterline after hitting a quay while leaving the port of Brisbane, Australia.

07/26/83: A West German reconnaissance ship collides with an East German naval vessel.

08/01/83: In August the USS **Davidson** (FF-1045) suffers a Class Alpha fire while in the Pacific.

09/18/83: The Royal Navy nuclear-powered attack submarine HMS **Conqueror** suffers a fire while in drydock in Devonport, U.K., for a refit. No injuries are reported.

09/30/83: The Royal Navy assault ship HMS **Fearless** is slightly damaged in collision with a West German tanker.

10/26/83: The Brixham, U.K., trawler **Esther Colleen** is badly holed when it rams the Royal Navy frigate HMS **Ambuscade** in heavy fog off Torbay, Devon, U.K. The frigate suffered minor damage.

10/26/83: A seaman is dismissed and jailed for starting a fire aboard the Royal Navy frigate HMS **Penelope**.

10/31/83: The USS **McCloy** (FF-1038) is towing a sonar array west of Bermuda when suddenly the cable goes slack. The next day a Soviet Victor III class nuclear-powered attack submarine is sighted motionless on the surface 282 miles west of Bermuda and 470 miles east of Charleston, South Carolina, by a U.S. P-3 Orion patrol aircraft. U.S. Navy officials believe that while the submarine was following the **McCloy**, the sonar array caught in the submarine's propeller. There is no indication of leaking radiation, according to a Navy spokesman. On 5 November the submarine is taken under tow by a Soviet salvage ship in the direction of the Cuban port of Cienfuegos. Further observation while the submarine is under tow leads the Navy to believe the damage is relatively minor and relates to the submarine's propeller.

11/01/83: A fire breaks out aboard the USS **Ranger** (CV-61) while deployed in the North Arabian Sea, killing six and injuring 35. The fire is in one of the four main machinery spaces and reportedly is extinguished within an hour although there is one reflash which is extinguished. The vessel continues operations in the North Arabian Sea.

11/17/83: The Soviet Krivak I class frigate **Razyaschy** collides with the USS **Fife** (DD-991) in the North Arabian Sea, causing minor damage to the **Fife** but no casualties. Reportedly the **Razyaschy** attempted to approach the USS **Ranger** (CV-61). When the **Fife** attempted to head off the Soviet ship, the two ships grazed hulls, leaving two 15-foot scrapes in the **Fife's** paint. Reports say the Soviet ship earlier narrowly had missed a collision with another U.S. vessel.

11/22/83: The USS **Kitty Hawk** (CV-63) and the USS **Wabash** (AOR-5) have a minor collision during refueling in Oakland, California.

11/27/83: The lead ship of the Soviet Slava class cruisers returns to the Black Sea after sustaining possible engine damage while on its maiden voyage to the Soviet Northern Fleet. The ship had left the Black Sea on 16 September.

12/10/83: The crew of the Royal Navy patrol boat HMS **Vigilant** is rescued after the vessel gets into difficulties off Northern Ireland.

12/19/83: The Trident submarine USS **Florida** (SSBN-728) is slightly damaged when it hits an unidentified object while submerged during sea trials in Long Island Sound. No one is injured and a Navy spokesman says he has no cost estimate on the damage.

12/31/83: In 1983 hull collision damage was repaired and the sonar dome rubber window was changed on the USS **Leftwich** (DD-984).

12/31/83: In 1983 extensive temporary sail repairs are accomplished on the USS **Thomas A. Edison** (SSN-610).

01/09/84: The USS **Detroit** (AOE-4) suffers a Class Bravo fire in the 1A1 Forced Draft Blower while moored at Souda Bay, Crete. Several crew members are treated for smoke inhalation.

02/14/84: During attempts to move an assault craft to Radio Island, near Moorehead City, North Carolina, the USS **Ponce** (LPD-15) suffers a major casualty when her sterngate is damaged and eventually lost. The **Ponce** goes to Philadelphia Naval Shipyard for repairs.

02/15/84: The U.S. Navy's Nuclear Weapons Training Group Atlantic submits an "OPREP-3 Navy Blue Bent Spear [nuclear weapons incident] as a result of a material failure in a W80 trainer [warhead for the] (Tomahawk) [sea-launched cruise missile]."

03/01/84: A Soviet Kresta II class cruiser suffers a two-hour fire while it is monitoring a NATO exercise in the Mediterranean.

03/08/84: An unidentified submarine drags the Clogerhead, Ireland, trawler **Oriel** astern for two miles east of County Louth, Ireland. The skipper cuts the nets to free his boat. An official Irish Ministry of Transport inquiry takes place but its findings are never made public.

03/21/84: The USS **Kitty Hawk** (CV-63) is struck during night operations by a surfacing Soviet Victor I nuclear-powered attack submarine in the southern Sea of Japan, approximately 100 miles from mainland Japan, while en route to the Yellow Sea. The **Kitty Hawk** sustains a minor hole below the waterline in an aircraft fuel tank on the starboard side and continues normal operations. The Soviet vessel is observed dead in the water for a while with a dent across its aft deck. It is assisted by the Soviet Kara class cruiser **Petropavlovsk** and later is towed by a Soviet salvage vessel to the Vladivostok naval base. U.S. Navy officers say there was no evidence of nuclear leakage from the submarine. The **Kitty Hawk** had been taking part in joint U.S.-Korea "Team Spirit 84" exercises. The submarine had been following the **Kitty Hawk** carrier group with other surface ships for several days. Navy officials claim the carrier's escort ships deliberately broke contact with the submarine after simulating its destruction 15 times to begin a new phase in the exercise where the **Kitty Hawk** would use deception techniques to lose the trailing Soviet surface ships. The Soviet submarine apparently lost track of the **Kitty Hawk** and was surfacing to find it when the collision occurred.

03/29/84: The Danish fishing boat **Ane Kathrine** is dragged under by the West German diesel submarine **Simpson**, which was on sea trials in the North Sea prior to delivery to Chile, killing three.

04/01/84: In April the USS **Barbour County** (LST-1195) runs aground on the Coronado strand in San Diego, California, but the ship is successfully extracted in less than 24 hours.

04/02/84: The Glasgow Herald reports the U.S. Navy at Holy Loch, Scotland admits that the paint on the USS **Sam Rayburn** (SSBN-635) was mildly radioactive when it returned from patrol in February 1984. The Navy says this is very low-level radioactivity, so low that it could not be detected by a geiger counter. Reports about the radiation had been circulating for a month, leading to claims that the **Sam Rayburn** had been in a collision sometime in the fall of 1983 which had caused the ship to leak or become contaminated with radiation. The Navy's statements serve to add to the controversy.

04/02/84: At midday in the South China Sea the Soviet carrier **Minsk** fires eight signal flares at the USS **Harold E. Holt** (FF-1074) when the latter passes the **Minsk's** starboard side at a distance of 300 meters after disregarding a request from the **Minsk** to stand clear. Three flares strike the **Holt** but no one is injured. A U.S. Navy official acknowledges equal U.S. blame for the incident.

04/12/84: The Royal Navy frigate HMS **Plymouth** collides with the West German frigate **Braunschweig** in heavy fog while taking part in NATO exercises in the Baltic Sea.

04/23/84: While getting underway from Norfolk, Virginia, the USS **Kittiwake** (ASR-13) backs down on the USS **Bergall** (SSN-667), causing damage to the **Bergall's** sonar dome and the **Kittiwake's** propeller.

05/17/84: A fire breaks out aboard the USS **Guitarro** (SSN-665) during a training exercise 65 miles northwest of San Diego, California, near San Clemente Island. Officials said that the fire originated in the submarine's battery well due to high heat from electrical discharge on one of the cells. A sailor making rounds discovered heat, steam, and a glow emitting from the battery well when he opened a well hatch. The submarine headed for port and the crew had the fire under control but still burning when the submarine arrived.

05/19/84: The Royal Navy Antarctic support ship HMS **Endurance** returns from Antarctica with a hole in its hull.

06/06/84: The USS **Sumter** (LST-1181) undergoes repairs to the starboard propeller shaft until 18 June at the Little Creek Amphibious Base, Virginia. Sections of the pitch control rod and hydraulic control components within the starboard shaft and propeller assembly are repaired.

06/11/84: During work-ups off the coast of North Carolina the USS **Inchon** (LPH-12) develops a leak in the fuel oil transfer system and returns to Norfolk, Virginia, for repairs.

06/14/84: The Royal Navy frigate HMS **Jupiter** hits the London Bridge while attempting a U-turn in the Thames River.

06/15/84: While operating in the Indian Ocean, a F-14 Tomcat aircraft from Fighter Squadron 33 crashes on the flight deck of the USS **America** (CV-66) in a Class Alpha accident causing more than $500,000 in damage but no injuries.

06/20/84: A Soviet Whiskey class diesel-powered attack submarine is trapped for three and a half hours in

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fishing wire of a Norwegian trawler in international waters in the North Sea. The submarine is freed only after surfacing and being aided by the Norwegian Coast Guard.

08/11/84: The USS **Nathanael Greene** (SSBN-636) reportedly loses her propeller in the Irish Sea. The submarine proceeds back to Holy Loch, Scotland, using its secondary propulsion system. Facilities at the U.S. base are unavailable, so the submarine is towed to the nearby British submarine base at Faslane, Scotland.

08/11/84: The Royal Navy large fleet tanker HMS **Olwen** is hit by a storm 700 miles northeast of the Falkland Islands, killing two.

08/14/84: An unidentified submarine drags the British trawler **Joanne C.** around the English Channel for three hours at night after becoming entangled in the trawler's nets eight miles off the U.K.'s southwest coast. When the boat radioed for help the Coast Guard told it to cut its nets as the Royal Navy did have a submarine in the area. The Ministry of Defense later says the only Royal Navy submarine in the area was 30 miles away and that no U.S. submarines were nearby, leading to speculation the submarine belongs to the Soviet Union or another Warsaw Pact nation. Yet on 15 September the skipper of the **Joanne C.** receives compensation of more than 2,000 pounds sterling from the Ministry of Defense, something the Ministry earlier said it would do if a Royal Navy ship was found to be at fault.

08/18/84: A fire reportedly breaks out on board a drydock at the Faslane Royal Navy nuclear submarine base in Scotland while the USS **Nathanael Greene** (SSBN-636) is in the dock for repairs. A U.K. Ministry of Defense official says the fire was caused by an electrical fault in a capstan motor which ignited a small quantity of canvas atop the motor. He denies the fire threatened the submarine, since it broke out in a sealed compartment some distance from the boat. A spokesman for the U.S. Navy confirms the submarine was not damaged, though he refuses to say whether the ship had nuclear weapons on board.

09/10/84: Fire in the exhaust vent of the USS **Ticonderoga** (CG-47) injures 13 crew members and forces the vessel to return to its home base of Norfolk, Virginia, for repairs. The cause of the fire is unknown.

09/18/84: A Soviet Victor I class nuclear-powered attack submarine is badly damaged in a collision with a Soviet tanker in the Strait of Gibraltar. The submarine reportedly was travelling in the "noise shadow" of the tanker while exiting the Mediterranean Sea. Jane's Defense Weekly notes that the alternating layers of cold and warm water in the narrows of the Strait make it likely for a submarine "to encounter sudden thermal gradients which make her porpoise upwards," and this is thought to be the cause of the accident. The collision rips off the twin-hulled submarine's bow section, exposing the sonar and torpedo tube compartments. The submarine proceeds to the Soviet anchorage at Hammament, Tunisia, for emergency repairs, before returning to its homeport on the Kola peninsula in early October.

09/18/84: The Japanese shrimping boat **Sumiyoshi Maru** catches a submarine in its net in the Sea of Japan. The vessel is pulled backward until the 3-centimeter steel wire holding the net is cut. On 20 September a Soviet Golf II class diesel-powered ballistic missile submarine is sighted on the surface with white smoke coming out of its conning tower in the Sea of Japan, 380 miles west of Tokyo. Reports speculate the smoke comes from a fire started by an electrical overload caused by the snagging of the fishing boat's net. Over the next two days the submarine is attended by several Soviet ships, before proceeding toward Vladivostok under its own power on the 23 September.

09/21/84: The USS **Jacksonville** (SSN-699) collides with a Navy barge off Norfolk, Virginia, while travelling on the surface. The **Jacksonville** strikes the barge amidships and is reported to have caused minor damage to her bow.

09/26/84: The USS **Shasta** (AE-33) collides with the USS **Cleveland** (LPD-7) during a practice replenishment at sea 30 miles west of Long Beach, California. Both ships sustain minor damage. The **Shasta** is able to continue normal operations.

10/19/84: The Royal Navy frigate HMS **Glamorgan** collides with the German frigate **Bremen** in a gale.

10/26/84: The USS **John A. Moore** (FFG-19) collides with the USS **Ouellet** (FF-1077) near Hawaii during "FleetEx 85-1" exercises in the Pacific, causing minor damage.

10/29/84: The USS **Roanoke** (AOR-7) is grounded just outside the entrance to Pearl Harbor, Hawaii, after suffering a steering casualty, but rides free eight hours later and returns to port.

12/17/84: The USS **Coral Sea** (CV-43) suffers a minor engine room fire during overhaul at Norfolk Naval Shipyard, Virginia. The fire is extinguished in an hour with three men injured and $6,000 damage to the vessel.

12/31/84: In 1984 the USS **Tattnall** (DDG-19) suffers a major fire.

12/31/84: In 1984 the USS **Sterett** (CG-31) has an emergency drydock-

ing to repair the sonar dome rubber window, replace the inflatable shaft boots, repack the rudder posts, and do other various underwater hull work.

12/31/84: In 1984 the USS **Beaufort** (ATS-2) receives underwater hull, shafting, and controllable pitch propeller repairs for damage sustained as a result of a grounding.

12/31/84: In 1984 the USS **Thomaston** (LSD-28) has an emergency drydocking to accomplish underwater hull repairs sustained as a result of a grounding.

12/31/84: In 1984 the USS **Ranger** (CV-61) suffers two major fires.

12/31/84: In 1984 ship repair contractors in Sasebo, Japan, accomplish $288,965 of repair work on the USS **Darter** (SS-576) during an emergency 45-day drydocking to repair damages following a collision.

02/05/85: The USS **Ingersoll** (DD-990) suffers a casualty to the port oil distribution box, requiring the ship to leave its battle group in the Indian Ocean.

04/11/85: The USS **Coral Sea** (CV-43) collides with the Ecuadorean tanker **Napo** during air operations 45 miles southwest of Guantanamo Bay, Cuba. A 30-foot hole in the carrier's bow is punched in, and some radar and communications equipment is damaged. The **Coral Sea** returns to drydock in Norfolk Naval Shipyard, Virginia. Eleven aircraft airborne at the time of the accident are diverted to Guantanamo Bay. The **Napo** is holed above the waterline and spills 7,600 barrels of oil before reaching Guantanamo for repairs. A formal investigation later blames the Commanding Officer of the **Coral Sea** for the incident, saying he "used poor judgment in electing to be absent from the bridge during the entire launch and recovery cycle ... with a Soviet vessel within 1,500 yards and with other vessels well within" the closest point of approach limits the captain had established.

06/10/85: The Royal Navy nuclear-powered ballistic missile submarine HMS **Resolution** is struck by the U.S. yacht **Proud Mary** off Cape Canaveral, Florida, in the early morning. The submarine suffers minor damage, but the yacht has to be towed back to port. The **Resolution** on its way to test-fire one of her Polaris missiles on the U.S. Navy's Atlantic Test Range after undergoing a major refit in Rosyth naval shipyard, Scotland.

07/22/85: A dive team embarks on board the USS **Powhatan** (T-ATF-166) to debeach the USS **Boulder** (LST-1190) in Chesapeake Bay.

08/05/85: The Royal Navy aircraft carrier HMS **Ark Royal** is blown from its berth at Portland, U.K., by 50-mile-per-hour winds. No damage is done and two Navy tugs move the ship back into place.

09/01/85: In the Pacific, an H-46 helicopter crashes on board the USS **Fife** (DD-991) and slips off the deck, but is somehow held to the side by the **Fife**'s crew. Nearby vessels provide assistance and no injuries occur.

09/01/85: In September the USS **Darter** (SS-576) collides with a Bahamanian merchant ship about 10 kilometers off Pusan, South Korea. The U.S. Navy says there were no injuries.

09/25/85: The Soviet military training auxiliary ship **Khasan** collides with the Turkish fast attack craft **Meltem** in the Bosporus, slicing it in two. There is thick fog at the time of the collision.

10/15/85: The USS **Estocin** (FFG-15) runs aground near Key West, Florida.

10/24/85: The USS **Swordfish** (SSN-579) suffers a propulsion casualty while operating as part of the U.S. Pacific Fleet.

10/31/85: A Soviet minesweeper collides with a Swedish spy ship in the Baltic Sea.

11/02/85: The USS **Enterprise** (CVN-65) is grounded on Bishop's Rock shoal about 100 miles west of San Diego, California. Reports say the **Enterprise** sustains a 60-foot gash in the outer hull and damages one propeller. The aircraft carrier continues planned operations, taking part in the "ReadiEx 86-1" exercise before going into drydock on 27 November.

11/04/85: The USS **Caloosahatchee** (AO-98) grounds on the Elizabeth River near Norfolk, Virginia, taking two days to refloat.

11/17/85: The CH-46 vertical replenishment helicopter of the USS **San Diego** (AFS-6) crashes into a parked Marine Corps helicopter on board the USS **Iwo Jima** (LPH-2) during a night replenishment, killing one and injuring four personnel.

11/25/85: The USS **W.S. Sims** (FF-1059) and USS **Moosbrugger** (DD-980) collide at sea in the Guantanamo Bay, Cuba, operating area.

12/10/85: The USS **Lockwood** (FF-1064) collides with the Philippine merchant ship **Santo Nino** while crossing the Uraga Suido outbound of traffic lanes at the entrance to Tokyo Bay, Japan. Damage includes a hole 15-feet wide and 12-feet deep running 25 feet down the starboard side, with three crew injuries. The **Santo Nino** suffers damage above the waterline.

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12/31/85: The USS **Narwhal** (SSN-671) drifts for several hours in Palma Bay, Palma Majorca, Spain, after its mooring cable breaks on New Year's Eve.

12/31/85: In 1985 the USS **Forrestal** (CV-59) is discovered to have a reduction gear problem unrelated to its Service Life Extension Program overhaul work (which finished 20 May). The defect forced the ship to return to her homeport of Mayport, Florida, with one propeller trailing to undergo repairs later in the year.

01/13/86: A Japanese maritime patrol aircraft spots a Soviet Echo II class nuclear-powered cruise missile submarine under tow by a Soviet salvage ship about 280 miles northwest of Okinawa in the East China Sea, heading northward. The submarine evidently suffered a propulsion casualty.

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01/29/86: The USS **Ingersoll** (DD-990) makes a heavy landing against the Canadian tug **Provider** at Esquimalt, British Columbia. Responsibility is charged to an inexperienced tug operator and to brisk winds. Damage to both vessels is minimal.

02/10/86: The USS **Willamette** (AO-180) collides with the USS **Jason** (AR-8) 75 miles southwest of Pearl Harbor, Hawaii, during a formation steaming exercise, killing one and injuring eight. The collision smashes the **Willamette's** starboard bow from the rail to below the waterline. A large vertical rupture from deck to waterline on the port side of the **Jason** forces the ship to be towed back to port.

03/13/86: The USS **Nathanael Greene** (SSBN-636) runs aground in the Irish Sea, suffering external damage to its ballast tanks and rudder. A spokesman for the U.S. Navy says "There was no effect on the propulsion, no injuries and no damage to the Poseidon nuclear missiles." The submarine initially sails to Holy Loch, Scotland, under its own power for emergency repairs. It then leaves Scotland on 25 April and travels submerged to Charleston, South Carolina. The extent of the damage subsequently leads to a decision to decommission the vessel, partly in order to satisfy SALT II limitations.

03/22/86: The USS **Secota** (YTM-415) loses power and collides with the stern planes of the Trident submarine USS **Georgia** (SSBN-729) off Midway Island in the Pacific and sinks, just after completing a personnel transfer. Ten crew are rescued, but two drown. The **Georgia** is undamaged.

03/23/86: The USS **Midway** (CV-41) collides with a South Korean fishing boat in the Yellow Sea, damaging the boat but leaving the carrier unscathed.

04/04/86: The Royal Navy aircraft carrier HMS **Illustrious** suffers an explosion and severe gearbox fire, costing some four million pounds sterling in repairs.

04/04/86: The USS **William H. Standley** (CG-32) suffers a main space fire in its Number 1 engine room during "Readiex 86-3" exercises, causing minor damage and no injuries. The **Standley** continues operations.

04/29/86: The USS **Atlanta** (SSN-712) runs aground in the Strait of Gibraltar, damaging sonar gear and puncturing a ballast tank in the bow section. Navy officials stress that no radiation leaked from the nuclear reactor and no crew members were injured. The vessel limps to Gibraltar for repairs, with water entering through holes in the ballast tank.

05/14/86: The Soviet Navy logistic support ship **Berezina** collides with the Soviet ship Capitan Soroka while proceeding into the Mediterranean near Istanbul, Turkey. The **Berezina** receives a breached hull to the waterline on the port side.

07/02/86: The USS **Roanoke** (AOR-7) collides with the Liberian oil tanker **Mint Prosperity** while steaming into Long Beach, California, in low visibility. The **Roanoke** sustains only minor damage to its bow and enters Naval Station Long Beach under its own power.

07/29/86: A inquiry begins into a recent boiler fire aboard the Royal Navy frigate HMS **Plymouth** which killed one.

07/30/86: A U.S. Navy Sidewinder air-to-air missile hits the 30,000-ton tanker **Western Sun** carrying 26,000 barrels of oil 60 miles east of Norfolk, Virginia, leaving a reported two-to-three foot gash in the ship's superstructure. One report says the impact started several small fires. The Navy states that it was an inert missile used by an F-14 Tomcat fighter in an exercise within a designated warning area, and that a notice to ships of the exercise had been sent on 24 July.

07/31/86: In late July the USS **Guitarro** (SSN-665) reportedly suffers a minor mishap involving a shipboard valve while at sea. In response to inquiries the Navy says no serious equipment or safety problems occurred aboard the **Guitarro**.

08/13/86: The USS **Inchon** (LPH-12) suffers a casualty to the ship's evaporators while underway for Moorehead City, North Carolina, causing the ship to return to Norfolk, Virginia, for two days of repairs.

08/16/86: A freak wave crashes over the USS **Carl Vinson** (CVN-70) injuring one man and sweeping seven others into the Pacific Ocean. They were quickly rescued.

09/09/86: A CH-46 Sea Knight helicopter crashes into a CH-53 Sea Stallion helicopter on the flight deck of the USS **Saipan** (LHA-2) while operating off northern Norway during "Northern Wedding" exercises. The Sea Knight flips into the water, killing nine.

09/22/86: The USS **Yellowstone** (AD-41) collides with the USS **Truckee** (T-AO-147) during underway replenishment off Virginia. The **Truckee** has minor superstructure damage, while the **Yellowstone** sustains a two-foot gash in the hull on the port side.

10/03/86: A Soviet Yankee I class nuclear-powered ballistic missile submarine suffers an explosion and fire in one of its missile tubes 480 miles east of Bermuda, killing at least three. General Secretary Gorbachev sends President Reagan a private communication regarding the accident in advance of the public announcement on 4 October, assuring him that there was no danger of nuclear explosion, radioactive contamination, or accidental launching of nuclear missiles. U.S. forces sample the air and water around the submarine and detect no radioactivity. The submarine sinks under tow on 6 October in 18,000 feet of water about 600 miles northeast of Bermuda. U.S. sources said that the explosion probably originated in the liquid fuel of one of the missiles.

10/31/86: In late October the USS **Augusta** (SSN-710) is damaged in an undersea collision while on a routine training patrol in the Atlantic. No crew members are injured and the submarine returns to Groton, Connecticut, for $2.7 million worth of repairs by year's end. Reportedly, according to unnamed U.S. Defense Department sources, it is unclear whether the submarine struck the ocean floor or an underwater object, but there was no risk of the submarine sinking or danger to the nuclear reactor. A Defense Department spokesman refuses to comment on a CBS news report that the submarine "very possibly" collided with a Soviet submarine.

11/03/86: The USS **Towers** (DDG-9) hits the wharf in the Port of Cairns in northern Queensland, Australia, damaging the wharf.

12/31/86: During Fiscal Year 1986 the USS **William V. Pratt** (DDG-44) runs aground while going from Naval Station Charleston, South Carolina, to Naval Weapons Station Charleston, South Carolina, causing $1.3 million damage to her sonar domes.

01/01/87: Sometime in the first half of January the Royal Navy nuclear-powered attack submarine HMS **Splendid** loses its towed array sonar system during a close encounter with a Soviet submarine in the Barents Sea off Murmansk. Reportedly the submarine was a Soviet Typhoon class nuclear-powered ballistic missile submarine. It is unclear whether the Soviet submarine severed the **Splendid's** tow-line accidentally or deliberately in an effort to obtain the sensitive technology. The submarine returns to Devonport, U.K., on 31 January.

01/13/87: The USS **Berkeley** (DDG-15) suffers a casualty to the forward sonar dome pressurization system, forcing the ship to reduce speed to 10 knots in heavy seas, and necessitating an unexpected stop in Guam to ascertain the level of damage and make temporary repairs.

01/14/87: The USS **William H. Standley** (CG-32) sustains minor damage when several ammunition barges which had been secured alongside begin to break loose and pound the sides of the ship in heavy winds and high seas while the ship is anchored in San Francisco Bay, California. The barges are promptly secured, preventing significant damage or their becoming adrift in a crowded waterway.

01/22/87: The USS **Ogden** (LPD-5) suffers a Class Charlie fire.

02/18/87: The Irish trawler **Summer Morn** is dragged backward for 10 to 20 miles for two and one half hours by a U.S. nuclear-powered submarine before it cuts its nets to free the submarine about 14 miles northwest of the Isle of Man in the Irish Sea. The trawler hauls in a submarine communications buoy stuck in its nets. The U.S. Defense Department confirms the submarine was American, but declines to say which submarine it was.

04/07/87: Two sailors are swept from the deck of the USS **Ulysses S. Grant** (SSBN-631) in rough seas three miles outside of the Portsmouth, New Hampshire, harbor; one is rescued but is pronounced dead and the other is lost at sea.

04/21/87: The USS **Richard L. Page** (FFG-5) collides with and sinks the disabled fishing vessel **Chickadee**, which was under tow by another fishing boat, during a high-speed run in heavy fog off Virginia. The incident leads to calls for more drug testing of sailors, though no use on the **Richard L. Page** is ever uncovered.

04/25/87: The USS **Daniel Boone** (SSBN-629) goes aground in the St. James River at Newport News, Virginia, during sea trials following a $115 million dollar overhaul. The grounding delays the ship's return to service.

04/29/87: The USS **LaMoure County** (LST-1194) collides with the USS **Hermitage** (LSD-34) about 300 miles off the Georgia coast while the ships are practicing a resupply exercise. The **Hermitage** sustains a five-foot hole in its bow stem above the waterline while the **LaMoure County** sustains superficial damage to its left side. The commanding officer of the **LaMoure County** is relieved pending an investigation of the accident.

05/27/87: The USS **Belleau Wood** (LHA-3) suffers casualties to both boilers' super heater tubes.

06/03/87: The USS **Patterson** (FF-1061) returns to sea after suffering several small fires from efforts to restart a faulty generator while the ship is conducting drills in the Caribbean. The ship was towed to the Roosevelt Roads naval station, Puerto Rico, for one day of repairs. There were no injuries and no damage to the ship.

06/15/87: The West German supply vessel **Neckar** is struck by 46 mm anti-missile and anti-ship gun shells reportedly fired from a Polish vessel while observing a Warsaw Pact exercise in the Bay of Gdansk, about 375 miles east of Kiel. Four shells strike the **Neckar's** starboard side and one lodges near its rear engine room. The ship springs a leak and fire breaks out, but damage is only minor. A West German Defense Ministry spokesman says "there are indications pointing to technical or human failure... There is no reason to think it was done deliberately."

06/25/87: The Royal Australian Navy ship **Parramatta** hits the wharf at the Port of Cairns, northern Queensland, Australia, damaging the wharf.

06/30/87: In late June or early July, the Trident submarine USS **Nevada** (SSBN-733) suffers a breakdown while conducting routine operations following the improper installation of a power transmission gear during a recent February to April maintenance stop at the Newport News shipyard, Virginia. The damage is estimated at several million dollars, and causes the **Nevada** to cancel a special call at its new home port of Bangor, Washington. In response to queries the Navy says "The safety of the ship and crew was never an issue and the ship is continuing its operations."

07/27/87: U.S. Navy planes conducting bombing practice at night near Okinawa hit the Malaysain freighter **Pomex Saga**, injuring one.

08/15/87: The Royal Australian Navy convenes a board of inquiry to discover why the diesel submarine **Otama** submerged during exercises off New South Wales, Australia, while two submariners were working outside the pressure hull. Both men were killed.

08/26/87: The Royal Navy nuclear-powered attack submarine HMS **Conqueror** suffers a fire while at Devonport, U.K., for a four-month overhaul, damaging its engine room. The British Navy stresses that the fire was far from the submarine's nuclear reactors.

10/01/87: The Royal Navy nuclear-powered ballistic missile submarine HMS **Renown** suffers a leak of reactor coolant during tests in the reactor compartment while at the Rosyth naval base, Scotland, for a refit. The Navy says it was a minor incident, "without any radiation hazard."

11/09/87: The Irish County Down trawler **Angary** is pulled along for a few seconds until its tackle snaps off at deck level, breaking a steel chain tested at 32 tons of stress, and disappears without a trace about 17 miles north of the Isle of Man in the Irish Sea. The fishermen suspect a submarine is responsible, but the U.K. Ministry of Defense says no British submarine was operating in the vicinity.

12/01/87: In December the West German Navy destroyer **Moelders** suffers a major fire while in the English Channel, returning from the Mediterranean. The fire originates in the galley and produces heavy, poisonous smoke which spreads through vents and cable conduits to a number of decks and compartments. It burns for several hours before being brought under control with the assistance of the frigate **Niedersachsen** which then tows the ship to its homeport of Wilhelmshaven.

01/26/88: The Royal Navy nuclear-powered ballistic missile submarine HMS **Resolution** suffers an electrical malfunction while docked in Faslane, Scotland. The Observer newspaper claims that the malfunction shuts down the primary coolant pumps, almost leading to a core meltdown. And, that a crew member who was exposed to radiation had to be scrubbed down for 24 hours. The Ministry of Defense denies these stories, saying the submarine suffered a "minor electrical malfunction;" those that said the submarine's reactor could have melted down didn't know what they "are talking about;" and there had been "absolutely no danger to the crew or the general public."

02/12/88: The USS **Yorktown** (CG-48) and USS **Caron** (DD-970) are bumped by a Soviet destroyer and frigate, respectively, nine miles off the coast of the Crimean Peninsula in the Black Sea. The action came after the two U.S. ships entered the Soviet's 12-mile territorial water limit.

03/06/88: A West German diesel submarine collides with a Norwegian oil platform in the North Sea while taking part in an antisubmarine warfare exercise. The submarine collided with the anchor chain of the oil rig Oseberg B, and while trying get loose struck the rig at 30 meters. The submarine manages to surface in about an hour and proceeds to Bergen, Norway, for inspection and repair.

04/24/88: The USS **Bonefish** (SS-582) suffers explosions and fire in its battery compartment during operations with the USS **John F. Kennedy** (CV-67) and the USS **Carr** (FFG-52) in the Caribbean, killing three. Submarine experts say that the most likely cause was the accumulation of hydrogen gas while the batteries were being recharged, which probably was ignited by a spark.

04/29/88: The USS **Sam Houston** (SSN-609) runs aground in Carr Inlet off the southeast tip of Fox Island in Puget Sound, Washington, while operating in shallow water to determine how quiet the vessel is in water. The submarine is freed the next day by four tugs and the USS **Florikan** (ASR-9) while the submarine's 142-man crew remains aboard. The submarine suffers minor damage to exterior hull equipment.

05/17/88: The Royal Navy nuclear-powered attack submarine HMS **Conqueror** suffers a fire while docked in Gibraltar. The flames are quickly put out and do not affect the nuclear reactor.

06/01/88: In the first week of June the Royal Navy nuclear-powered attack submarine HMS **Conqueror** is accidentally hit by an unarmed training torpedo dropped by an antisubmarine warfare helicopter during exercises off the west coast of Scotland. The deck plating of the submarine is bent on impact and the submarine proceeds to the Faslane submarine base, Scotland, for repairs.

06/18/88: In mid-June the trawler **Strantail** has its nets torn to shreds by a submarine 18 miles north of Tory Island, Ireland. The submarine which bore no identification markings surfaced near the trawler and cleared itself of the remnants of the nets.

07/02/88: The Royal Navy nuclear-powered attack submarine HMS **Courageous** collides with and sinks the privately charted yacht **Dalriada** at night in the North Channel of the Irish Sea. The four persons on board the yacht are rescued by the Royal Navy frigate HMS **Battleaxe** 35 minutes later.

07/16/88: The 78-foot racing yacht **Drum** collides with the partially surfaced Royal Navy diesel submarine HMS **Otus** in the middle of the night as it makes its way around the Mull of Kintyre off the west coast of Scotland. The **Drum** suffers a serious gash on the port side, but is able to make it to Crinan, Scotland, at reduced speed. The **Otus** comes on the radio 20 minutes after the incident offering assistance.

07/17/88: A French navy Super Etendard fighter crashes into the French aircraft carrier **Clemenceau** during a night landing off of Djibouti, killing the pilot.

07/23/88: The Japanese Defense Force diesel submarine **Nadashio** collides with the Japanese sport fishing boat **Fuji Maru** in Tokyo Bay, sinking the boat, killing 30 and causing a political furor over the submarine's lack of efforts to save drowning seamen.

08/02/88: The USS **Constellation** (CV-64) suffers an engine room fire which forces the carrier to cancel scheduled operations and return to port in San Diego, California. The fire, believed caused by a fuel oil leak, begins with an explosion in one of the ship's four engine rooms around noon and is finally extinguished about nine hours later after several subsequent explosions caused by heat from the initial fire. Twenty sailors suffer burns, bruises, and smoke inhalation.

08/28/88: A Japanese freighter collides with a Peruvian navy diesel submarine off Peru, sinking the submarine and killing seven.

08/29/88: The USS **Dwight D. Eisenhower** (CVN-69) collides with an anchored coal ship in Hampton Roads, Virginia, while entering the harbor to dock at Norfolk Naval Station, when wind and current push the carrier off course. Damage is minor to both ships.

09/01/88: In September the Royal Navy destroyer HMS **Southhampton** collides with the container vessel **Torbay** 70 kilometers north of the United Arab Emirates, injuring three aboard the destroyer.

09/03/88: The USS **Berkeley** (DDG-15) strikes the civilian tour boat **Coralita** while trying to dock in Cairns Harbor, northern Queensland, Australia, causing considerable internal damage to the **Coralita**.

09/12/88: The Royal Navy frigate HMS **Penelope** collides with the Canadian naval support ship **Preserver** while participating in the NATO "Teamwork 88" exercise, suffering considerable damage.

09/12/88: The USS **Boulder** (LST-1190) runs aground off Norway during the NATO "Teamwork 88" exercise due to bad weather or uncharted underwater obstructions, causing some major scrapes and tears in the bottom of the hull.

09/15/88: In mid September a Belgian naval ship goes aground off Norway during the NATO "Teamwork 88" exercise due to bad weather or uncharted underwater obstructions.

09/15/88: In mid September a Canadian naval ship goes aground off Norway during the NATO "Teamwork 88" exercise due to bad weather or uncharted underwater obstructions.

09/22/88: An Exocet missile accidentally drops from the Royal Navy fleet auxiliary ship HMS **Regent** onto a barge as it is being unloaded in Plymouth Sound, U.K., almost hitting two men in the barge.

10/23/88: The USS **Hayler** (DD-997) collides with the West German Navy replenishment tanker **Rhon** while exercising in the North Sea. Both vessels take on water. The **Hayler** receives a gash on her starboard side and proceeds to Rosyth, Scotland, for emergency repairs.

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11/01/88: In November, according to a Soviet press account, the Soviet nuclear-powered icebreaker **Rossia** almost suffers a nuclear reactor meltdown when cooling fluid is accidentally released while the ship is in Murmansk. Emergency procedures prevent the core from overheating, averting a possible major accident.

11/09/88: The USS **Towers** (DDG-9) narrowly misses a Japanese helicopter patrol boat with a volley of exercise shells, while exercising off the Boso Peninsula southeast of Tokyo Bay, resulting in a political incident with the Japanese.

11/30/88: A 20 mm cannon on an A-7 Corsair aircraft accidentally fires during maintenance setting six other aircraft ablaze aboard the USS **Nimitz** (CVN-68), operating in the Arabian Sea, killing one. The **Nimitz** continues operations.

12/06/88: The Royal Navy diesel submarine HMS **Ocelot** is reported to return to the Clyde, Scotland, with a forward sonar dome ripped open. The Ministry of Defense denies the tearing is caused by a fishing trawl or cable, saying it was done by wave damage.

12/11/88: A U.S. F/A-18 Hornet aircraft from the USS **Constellation** (CV-64) accidentally strikes an Indian merchant ship with a unarmed Harpoon missile during training operations about 200 miles northwest of Honolulu, Hawaii, killing one. The missile confused a target hulk with the merchant ship which was in the exercise area.

00/00/00: Undated but after 1964 when it was commissioned — The USS **Von Steuben** (SSBN-632) suffers a reactor scram while the diesel engine is disassembled for maintenance. Large amounts of electricity are needed for a reactor restart, and the battery is exhausted without restarting the reactor. The submarine wallows on the surface for at least several hours as the diesel motor is reassembled by flashlight.

00/00/00: Undated but seemingly in the 1950s or early 1960s — The USS **Nautilus** (SSN-571) suffers an involuntary reactor shutdown which took 24 hours to overcome, during which she only had steerageway on the surface with her diesel engines.

Appendix A: Sources and Acknowledgements

This report is based upon a two-year comprehensive search of public information sources, numerous requests for information under the Freedom of Information Act (FOIA), research into U.S. Navy archives and historical documents, and interviews with naval officials and experts. Even so, the report is incomplete, mainly as a result of government secrecy. Little effort has been made on the part of the navies to inform the public as to the extent of naval accidents, particularly those which occur on the high seas. Nuclear weapons and reactor-related accidents, in addition, are hidden by an even greater veil of secrecy.

Yet in the end, using primary sources, we have been able to identify over 1,200 accidents. The overwhelming majority of these are U.S. accidents. The suspicion is that the Soviet Union has an even greater accident record than the U.S., but specific information was not obtainable. A conservative estimate, however, would put the total of major accidents at over 2,000 since the end of World War II, or about one accident every week in the postwar era.

The chronology was begun relying on the work done by a number of other researchers and journalists who have previously looked at nuclear and naval accidents. David Kaplan of the Fund for Constitutional Government and the Center for Investigative Reporting has done the most extensive work to date on accidents in the nuclear navy. Kaplan's first report, "The Nuclear Navy," (Washington, D.C.: FCG, 1983) gives an account of a number of submarine and reactor accidents, some of which could not be confirmed and were excluded from this report. Subsequent articles by Kaplan and various coauthors added some additional information, and these were also evaluated, as were the original newspaper reports Kaplan dug up, as well as his interviews with former crewmen. One set of documents worth mentioning were released to Kaplan partially redacted under the FOIA. They consist of raw intelligence reports submitted by the Domestic Collection Division of the Central Intelligence Agency, on Soviet submarine accidents; they were compiled from interviews with Soviet emigres and defectors, who were asked to recall what they knew about accidents. The reports are unevaluated intelligence reports submitted to U.S. intelligence analysts for their use, and do not reflect what the U.S. intelligence community actually knows about Soviet submarine accidents.

Another set of documents found very useful were released under the FOIA to Ian Lind of the American Friends Service Committee. These documents, "Summary of Nuclear Weapon Accidents and Incidents: 1965-1977," (NWEF Technical Report No. 1070 and supplements; Kirtland AFB, New Mexico: Naval Weapons Evaluation Facility, March 1973) contain statistical data reporting on nuclear incidents in the Navy over an approximate decade long period. The chapter in the yearbook of the Stockholm International Peace Research Institute (SIPRI) for 1977 by Milton Leitenberg, "Accidents of Nuclear Weapons Systems," World Armaments and Disarmament SIPRI Yearbook 1977 (Stockholm, Sweden, 1977) proved a useful departure point for tracking down major accidents.

The annual "Chronology of U.S. Naval Events" compiled by the Operational Archives Division of the Naval Historical Center from 1960 to 1981, was the main new primary information source. Annual command histories and daily deck logs of selected individual ships and commands, and the histories of the Commander of the Pacific Fleet from 1980 to 1987, proved invaluable. The volume of this material prevented a complete review, but many accidents that were previously unreported were contained in these documents, which were either provided by the Navy under the Freedom of Information Act, or reviewed by the authors or research assistants. Files at the National Archives were also consulted. The official "Narrative Summaries of Accidents Involving Nuclear Weapons," released by the Department of Defense in April 1981 is the Pentagon's last word on the subject of nuclear weapons accidents. The criteria for reporting and defining accidents may need to be updated given the new information uncovered in this report. The study by Robert B. Mahoney, U.S. Navy Responses to International Incidents and Crises, 1955-1975, (Alexandria, Virginia: Center for Naval Analysis, 1977), released under the FOIA, was the best chronology of gunboat diplomacy and crisis naval deployments.

The research for the chronology included a comprehensive search of the New York Times and the Times of London indexes, selected Facts on File Yearbooks and Keesing's Contemporary Archives. Miscellaneous newspaper articles from around the world and Associated Press files were also consulted, as well as articles on the subject of naval and nuclear weapons accidents which have appeared in the military trade press, particularly Jane's Defence Weekly, Proceedings, Seapower, Naval Forces, Navy International, Navy Times, The Hook, Submarine Review, and Aviation Week & Space Technology. Chronologies of the U.S. Naval Institute which appear annually in Proceedings in the May "Naval Review" issue, and the compilation published by the Naval Institute Press in 1973, Naval and Maritime Chronology: 1961-1971, proved invaluable. The history and chronologies contained in U.S. Navy, United States Naval Aviation: 1910-1980 (Washington, DC: Government Printing Office, 1981); David Cooney, Chronology of the U.S. Navy: 1775-1965 (New York: Franklin Watts, Inc., 1975); the annual Asian Security (Tokyo, Japan: Research Institute for Peace and Security); and Norman Polmar's Guide to the Soviet Navy (4th ed.

Annapolis, Maryland: Naval Institute Press, 1986) were most useful.

Other books, studies and articles that were consulted and yielded significant original information included William R. Anderson and Clay Blair, Jr., Nautilus 90 North (Cleveland, Ohio: The World Publishing Company, 1959); Edward L. Beach, Around the World Submerged: The Voyage of the Triton (New York: Holt, Rinehart and Winston, 1962); Jan S. Breemer, "Soviet Submarine Accidents: Background and Chronology," Navy International, May 1986; Richard G. Hewlett and Duncan Francis, Nuclear Navy: 1946-1962 (University of Chicago Press, 1974); Norman Polmar and Thomas B. Allen, Rickover (New York: Simon and Schuster, 1982); Jack Sweetman, American Naval History: An Illustrated Chronology of the U.S. Navy and Marine Corps: 1775-Present (Annapolis, Maryland: Naval Institute Press, 1984); Mikhail Turetsky, The Introduction of Missile Systems into the Soviet Navy (1945-1962) (Falls Church, Virginia: Delphic Associates, 1983); U.S. Congress, House Armed Services Committee, "Naval Nuclear Propulsion Program - 1982," Hearings; and Roy Varner and Wayne Collier, A Matter of Risk: The Incredible Inside Story of the CIA's Hughes Glomar Explorer Mission to Raise a Russian Submarine (New York: Random House, 1978).

There are some reported accidents which are not included in this analysis. Thirty-four accidents which were previously recorded in reports, books, or newspaper stories, could not be confirmed. Nine of these come from Appendix F of the book Rickover (Polmar and Allen), which in turn is taken from a Soviet book by V. M. Bukalov and A. A. Narusbayev, Proyektirovaniye Atomnykh Podvodnykh Lodok [Design of Nuclear Submarines] printed in 1968. (David Kaplan included most of these accidents in his report on the nuclear navy.) The Soviet book lists 38 U.S. and two U.K. accidents involving nuclear-powered submarines. Thirty of the remaining 31 accidents are corroborated by other sources and are included in the main chronology. Several of these are listed at different dates than in Rickover, since more precise dates or correct dates could be determined from other sources. One of the accidents listed was determined to be a double entry and was deleted.

Five Soviet submarine accidents from reports in Jane's Defence Weekly also were excluded. One accident, the meltdown of an Alfa submarine's reactor, is unconfirmed and is inconsistently reported in several Jane's reports. The other four are part of a review article containing a chronology of 27 Soviet submarine accidents with no sources listed. Twenty-two correspond with other information in the public domain and are included in the main chronology (the twenty-third accident was the Alfa).

The remaining entries concern accidents between trawlers and submarines, nuclear-powered submarine accidents, and nuclear-capable ship accidents. The trawler-submarine accidents either were drawn from undocumented or insufficiently documented surveys done in the United Kingdom and Ireland several years after the reputed accident occurred and could not be confirmed by contemporaneous press accounts; or there is still some doubt as to whether a submarine was involved; or official information to substantiate the claimed accident could not be located.

Similarly, the nuclear-powered submarine accidents and nuclear-capable ship accidents were reported several years after the purported accident occurred and could not be confirmed by contemporaneous reports or official information.

Special thanks to Matt Carlson, Damian Durrant, Sean Riley, and Amy Wickenheiser for their primary research help and diligence in slogging through reams of difficult technical material. Also thanks to Forrest Bittner for computer consulting and expertise with the database, to Michael Ross for production assistance, to Jackie Walsh and Julie Morrissey for their assistance, and to Nicolau Barcelo, Jacqui Barrington, Andrew Burrows, Faith Doherty, Amy Halloran, David Kaplan, Walter Kilroy, Hans Kristensen, Orla Ni Eale, Malcolm Spaven, Kris Thedens, and Karen Topakian for their contributions and responses to requests for information. Robert S. Norris reviewed the manuscript and offered numerous useful comments. Special thanks to Ruth Young for editing the report and chronology.

William M. Arkin and Joshua M. Handler, May 1989

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Appendix B: U.S. Ship Type Abbreviations

A. Major Combatants

1. Aircraft Carrier Type

CV	Multi-Purpose Aircraft Carrier
CVA	Attack Aircraft Carrier
CVAN	Nuclear-Powered Attack Aircraft Carrier
CVE	Escort Aircraft Carrier
CVL	Light Aircraft Carrier
CVN	Multipurpose Nuclear-Powered Aircraft Carrier
CVS	Anti-Submarine Warfare/Support Aircraft Carrier
CVU	Utility Aircraft Carrier

2. Surface Combatant Type

BB	Battleship
CA	Heavy/Gun Cruiser
CAG	Guided-Missile Cruiser
CG	Guided-Missile Cruiser
CGN	Nuclear-Powered Guided-Missile Cruiser
CL	Light Cruiser
CLG	Light Guided-Missile Cruiser
DE	Destroyer Escort (reclassified to Frigates (FF) in 1975)
DEG	Guided-Missile Destroyer Escort (reclassified to Guided-Missile Frigates (FFG) in 1975)
DER	Radar Picket Destroyer Escort
DD	Destroyer
DDE	Escort Destroyer
DDG	Guided-Missile Destroyer
DDR	Radar Picket Destroyer
DL	Frigate (under pre-1975 classification system)
DLG	Guided-Missile Frigate (reclassified to Guided-Missile Cruiser (CG) in 1975)
DLGN	Nuclear-Powered Guided-Missile Frigate (reclassified to Nuclear-Powered Guided-Missile Cruiser (CGN) in 1975)
FF	Frigate
FFG	Guided-Missile Frigate

3. Submarine Type

ASSO	Submarine converted to an oiler
SS	Diesel-Powered Attack Submarine
SSG	Diesel-Powered Cruise Missile Submarine
SSR	Diesel-Powered Radar Picket Submarine
SSN	Nuclear-Powered Attack Submarine
SSBN	Nuclear-Powered Ballistic Missile Submarine

B. Other Combatant Classification

1. Patrol Combatant Type

PCER	Submarine Chaser Escort Rescue vessel
PG	Patrol Combatant
PHM	Hydrofoil Guided-Missile Patrol Combatant

2. Amphibious Warfare Type

AGC	Amphibious Force Flagship
LCC	Amphibious Command Ship
LHA	General Purpose Amphibious Assault Ship
LKA	Amphibious Cargo Ship
LPA	Amphibious Transport
LPH	Helicopter Amphibious Assault Ship
LSD	Dock Landing Ship
LST	Tank Landing Ship

3. Mine Warfare Ships

AMS	Auxiliary Motor Minesweeper
DMS	Destroyer Minesweeper
MSC	Coastal Minesweeper
MSCO	Coastal Minesweeper, Old
MSO	Ocean Minesweeper

C. Auxiliary Ship Classifications

1. Mobile Logistic Type Ships — Underway Replenishment

AE	Ammunition Ship
AF	Stores Ship
AFS	Combat Store Ship
AO	Oiler
AOE	Fast Combat Support Ship
AOR	Replenishment Oiler

2. Mobile Logistic Type Ships — Material Support

AD	Destroyer Tender
AR	Repair Ship
AS	Submarine Tender

3. Support Type Ships — Fleet Support

ARS	Salvage Ship
ASR	Submarine Rescue Ship
ATF	Fleet Ocean Tug
ATS	Salvage and Rescue Ship

4. Support Type Ships — Other Auxiliaries

AC	Collier
AG	Miscellaneous
AGB	Ice Breaker
AGM	Missile Range Instrumentation Ship

AGOR Oceanographic Research Ship
AGR Radar Ship
AGS Surveying Ship
AH Hospital Ship
AK Cargo Ship
AKA Cargo Ship, Attack
AKL Cargo Ship, Light
AKR Vehicle Cargo Ship
AKV Cargo Ship and Aircraft Ferry
AN Net Laying Ship
AOG Gasoline Tanker
AOT Transport Oiler
AP Transport
APA Transport, Attack
APD High Speed Transport
ARL Small Repair Ship
AVP Seaplane Tender, Small
AVT Auxiliary Aircraft Landing Training Ship
CC Command Ship

D. Support Craft Classifications

1. Tugs (self-propelled)

YTM Medium Harbor Tug

2. Unclassified Miscellaneous Units

IX Unclassified Miscellaneous Unit

E. Military Sealift Command

T- Designates a ship operated by the U.S. Military Sealift Command.

Table 1: Number of Ships by Type Involved in Accidents, 1945 - 1988

	Submarines	Aircraft Carriers	Surface Ships	Amphibious Ships	Support Ships	Other Military	Total Ships
19XX[a]	2	0	0	0	0	0	2
1945	1	1	6	0	3	6	17
1946	4	3	9	1	1	9	27
1947	4	1	5	0	2	0	12
1948	1	0	3	0	1	5	10
1949	3	1	11	0	2	4	21
1950	3	1	9	0	11	2	26
1951	2	2	7	2	3	4	20
1952	5	4	12	0	2	2	25
1953	2	7	11	0	0	6	26
1954	4	2	11	3	2	2	24
1955	6	3	21	4	2	4	40
1956	9	3	32	0	1	5	50
1957	7	8	8	0	7	4	34
1958	14	9	20	1	5	6	55
1959	9	9	19	0	6	4	47
1960	8	6	8	0	0	3	25
1961	7	8	7	0	2	4	28
1962	17	12	11	0	1	1	42
1963	16	10	15	0	6	3	50
1964	5	13	13	0	10	2	43
1965	10	8	7	0	1	0	26
1966	8	5	10	6	5	3	37
1967	14	11	14	7	7	3	56
1968	19	3	9	1	7	5	44
1969	12	7	8	2	1	4	34
1970	14	7	18	2	8	3	52
1971	14	8	9	1	10	4	46
1972	12	6	9	3	8	4	42
1973	9	4	13	2	7	6	41
1974	11	2	9	0	4	3	29
1975	5	7	15	3	6	2	38
1976	9	2	12	5	5	3	36
1977	9	7	18	2	11	5	52
1978	7	7	5	3	7	3	32
1979	11	10	11	2	4	2	40
1980	6	4	6	2	5	6	29
1981	10	5	11	10	11	3	50
1982	13	2	9	5	8	3	40
1983	8	5	16	1	2	6	38
1984	13	5	12	6	7	2	45
1985	4	4	6	2	1	4	21
1986	7	3	5	2	6	2	25
1987	10	0	5	4	0	4	23
1988	12	4	12	1	3	1	33
Total:	376	229	487	83	201	157	1,533
Total Accidents Involving this Type of Ship:	359	228	406	75	182	142	1,263[b]

a. Year unknown.
b. Total less than total accidents (1276) because total does not include accidents when the military ship is unknown. Total is less than total across (1392) because some accidents involve more than one type of ship.

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Table 2: Naval Accidents by Type of Event, 1945 - 1988

	Collision	Fire	Grounding	Explosion	Equipment Fail	Sinking	Weather	Propulsion	Ordnance	Aircraft Crash	Flooding	Misc.	Event Total	Accid. Total
19XX	0	0	0	0	0	0	0	2	0	0	0	0	2	2
1945	4	2	0	6	0	5	1	0	0	0	1	1	20	15
1946	7	1	1	5	0	3	0	0	2	0	0	3	22	20
1947	4	0	2	3	0	0	0	0	0	0	0	1	10	10
1948	1	0	3	1	0	3	1	0	0	0	0	1	10	10
1949	7	0	1	4	0	4	1	0	2	0	0	0	19	17
1950	8	1	1	7	0	3	0	0	1	0	0	1	22	18
1951	7	3	1	4	0	5	1	0	0	0	0	2	23	19
1952	10	3	3	2	1	3	1	0	1	0	0	0	24	20
1953	4	9	0	4	1	2	1	0	2	1	0	1	25	23
1954	9	4	2	3	1	1	0	0	0	0	0	2	22	20
1955	8	6	6	4	2	3	4	1	1	2	0	1	38	31
1956	12	7	5	2	0	0	3	1	2	0	0	1	33	30
1957	11	7	4	5	1	1	2	1	1	2	1	0	36	31
1958	13	9	6	5	0	4	3	4	1	2	1	1	49	44
1959	16	12	2	2	1	0	1	1	2	2	1	1	41	38
1960	5	5	1	1	3	0	1	2	2	1	1	3	25	22
1961	5	7	4	2	2	0	2	2	0	1	1	0	26	24
1962	13	6	4	1	4	0	3	0	0	3	1	5	40	38
1963	16	12	4	1	3	2	4	0	2	3	0	1	48	41
1964	13	9	5	4	2	1	4	1	0	1	2	2	44	37
1965	10	6	2	0	2	0	1	0	3	1	0	2	27	23
1966	10	7	5	4	2	1	2	2	3	0	0	0	36	33
1967	17	11	4	6	6	2	1	2	2	0	1	0	52	49
1968	14	3	5	1	3	6	2	2	3	0	0	4	43	36
1969	13	9	2	4	1	2	1	0	4	0	0	2	38	30
1970	18	6	2	3	5	5	1	3	1	0	0	3	47	40
1971	11	8	3	2	7	3	1	2	0	0	4	3	44	39
1972	10	8	3	2	6	2	4	2	2	0	3	6	48	36
1973	12	12	7	4	1	1	0	1	1	0	1	1	41	37
1974	9	7	1	4	1	1	1	2	0	0	1	2	29	27
1975	14	7	2	3	2	1	0	1	1	1	5	2	39	31
1976	13	6	1	1	3	0	2	3	1	1	0	3	34	32
1977	9	12	3	3	2	1	2	4	1	1	0	3	41	38
1978	5	10	3	2	1	0	0	4	1	2	2	2	32	29
1979	8	15	5	1	3	0	1	4	1	0	0	6	44	37
1980	11	2	2	0	6	0	0	4	0	0	0	0	25	23
1981	12	8	7	2	4	1	2	3	1	5	0	1	46	41
1982	17	2	1	2	4	2	1	1	0	0	1	2	33	30
1983	19	4	1	0	2	1	0	0	2	0	0	2	31	29
1984	16	9	4	0	5	0	3	0	2	1	0	2	42	38
1985	7	0	4	0	3	0	2	1	0	2	0	1	20	18
1986	9	4	3	2	2	2	1	1	1	1	0	1	27	22
1987	7	4	1	0	3	1	2	1	1	0	0	2	22	20
1988	12	4	4	2	3	3	2	1	4	1	0	3	39	28
Total:	456	267	130	114	98	75	65	59	54	34	27	80	1,459[a]	1,276

a. Number of events greater than number of accidents because some accidents involved more than one event.

Table 3: Surface Ship Explosive Mishaps, 1985 - 1988

	Type of Explosive Mishap			Loss	
	Detonation	Malfunction	Other[a]	Death	Injuries
Jan-Oct 1988	11	46	83	0	5
1987	21	53	148	0	14
1986	15	87	226	1	13
1985[b]	2	40	101	0	2
Total:	49	226	558	1	34

Source: Mech (The Naval Aviation Maintenance Safety Review), issues April-May 1985 to January-February 1989.

a. Ordnance item failed to pass test, had observed defect, or other recorded mishap
b. Incomplete data for the year

Table 4: U.S. Naval Nuclear Weapons Incidents, 1965 - 1977

	Nuclear Weapon Type Involved				
	Air-launched	Surface-launched	Sub-launched	Other/Unknown	Total
1965	16	11	6	3	36
1966	15	11	6	0	32
1967	4	12	5	0	21
1968	10	11	5	1	27
1969	13	12	7	4	36
1970	7	12	7	0	26
1971	16	14	8	0	38
1972	17	16	9	0	42
1973	14	16	2	1	33
1974	7	6	2	4	19[a]
1975	8	9	1	6	24[b]
1976	12	5	4	1	22[c]
1977	6	9	2	10	27[d]
Total:	145	144	64	30	383

Source: Official U.S. Navy statistics compiled by the Naval Weapons Evaluation Facility, based upon documents released under the Freedom of Information Act to Ian Lind of the American Friends Services Committee.

a. This includes 13 incidents and six significant incidents.
b. This includes 21 incidents and three significant incidents.
c. This includes 20 incidents and two significant incidents.
d. This includes 27 incidents and one significant incident.

Table 5: Nuclear Weapons and Reactors Lost in the Oceans

10 Mar 1956:	A U.S. Air Force B-47 bomber carrying two capsules of nuclear materials for nuclear bombs, en route from MacDill AFB, Florida, to Europe, fails to meet its aerial refueling plane over the Mediterranean Sea. An extensive search fails to locate any traces of the missing aircraft or crew.
18 Apr 1959:	The U.S. Navy dumps the sodium-cooled liquid metal reactor vessel and the reactor plant components of the USS **Seawolf** (SSN-575) into 9,000 feet of water about 120 miles off the Delaware-Maryland coast in the Atlantic Ocean. (38-30N, 76-06W)
4 Jun 1962:	A nuclear test device atop a Thor rocket booster falls into the Pacific Ocean near Johnston Island after the rocket has to be destroyed as part of the United States' first high altitude atmospheric nuclear test attempt.
20 Jun 1962:	A second attempt to detonate a nuclear device in the atmosphere fails when a Thor booster is destroyed over Johnston Island, and the nuclear device falls into the Pacific Ocean.
10 Apr 1963:	The USS **Thresher** (SSN-593) implodes and sinks 100 miles east of Cape Cod, Massachusetts, in approximately 8,500 feet of water, killing all 129 aboard, including 17 civilian observers.
5 Dec 1965:	An A-4E Skyhawk attack jet loaded with a B43 nuclear bomb rolls off the Number 2 elevator of the aircraft carrier USS **Ticonderoga** (CVA-14) and sinks in 2700 fathoms of water about 250 miles south of Kyushu Island and about 200 miles east of Okinawa (at 27-35.2N, 131-19.3E).
21-27 May 1968:	The USS **Scorpion** (SSN-589) sinks 400 miles southwest of the Azores in more than 10,000 feet of water, killing 99 crewmen. The ship was reportedly carrying two ASTOR nuclear torpedoes.
11 Apr 1968:	A Soviet Golf class ballistic missile submarine with three SS-N-5 missiles and probably two nuclear torpedoes sinks in the Pacific, about 750 miles northwest of the island of Oahu, Hawaii.

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Table 6: Accidents Involving Nuclear Powered Ships and Submarines, 1954 - 1988

	Ballistic Missile Submarines	Attack and Cruise Missile Submarines	Aircraft Carriers	Other Surface Ships	Total
19XX	1	1	0	0	2
1954	0	1	0	0	1
1955	0	1	0	0	1
1956	0	4	0	0	4
1957	0	2	0	0	2
1958	0	3	0	0	3
1959	0	5	0	0	5
1960	0	7	0	0	7
1961	1	1	0	0	2
1962	2	5	0	0	7
1963	2	4	2	0	8
1964	1	1	0	0	2
1965	1	6	0	0	7
1966	0	5	0	0	5
1967	3	4	0	0	7
1968	4	7	0	0	11
1969	1	2	1	0	4
1970	2	6	0	0	8
1971	3	3	0	0	6
1972	3	5	0	0	8
1973	0	7	0	0	7
1974	4	5	1	0	10
1975	0	5	0	1	6
1976	1	7	1	0	9
1977	2	6	0	2	10
1978	0	4	0	0	4
1979	5	3	2	1	11
1980	0	5	0	0	5
1981	1	7	1	0	9
1982	1	6	0	0	7
1983	1	4	1	2	8
1984	2	5	0	0	7
1985	1	2	1	0	4
1986	3	4	1	0	8
1987	4	4	0	0	8
1988	1	4	2	0	7
Total Ships:	50	151	13	6	220
Total Accidents Involving this Type of Ship:	49	146	13	6	212[a]

a. Totals do not add across because some accidents involved more than one type of ship.

Table 7: Submarine Force Mishaps, 1983 - 1987

	1983		1984		1985		1986		1987		
	Atl	Pac	Atl	Pac	Atl	Pac	Atl	Pac	Atl	Pac	Total
Groundings	2	0	0	2	2	0	3	0	1	2	12
Collisions	16	5	7	3	5	3	1	3	10	3	56
Submarines	13	4	5	3	5	3	1	3	10	3	50
Support Ships	3	1	2	0	0	0	0	0	0	0	6
Fires	22	14	19	14	23	3	15	7	26	6	149
Submarines	18	14	13	11	16	3	11	6	16	5	113
Support Ships	4	0	6	3	7	0	4	1	10	1	36
Floodings	11	3	7	3	6	3	7	1	5	2	48
Submarines	11	3	4	2	4	3	5	1	3	2	38
Support Ships	0	0	3	1	2	0	2	0	2	0	10
Ordnance Mishaps	10	6	6	0	8	2	18	12	9	14	85
Submarines	9	5	6	0	8	2	10	8	4	9	61
Support Ships	1	1	0	0	0	0	8	4	5	5	24
Equipment Mishaps	12	10	12	4	10	7	7	3	12	5	82
Explosions	0	0	3	1	3	2	3	0	1	1	14
Heavy Weather	2	2	2	0	2	0	3	1	2	0	14
Suicides	6	4	3	2	4	2	4	2	3	1	31

Source: Naval Safety Center, "Submarine Force: Mishap Statistical Summary, Calendar Years 1983 thru 1987," n.d. (released under the Freedom of Information Act).

Note: According to the source, data presented is representative of a statistically sound sample, but includes less than 50 percent of the required reportable mishaps. Does not include incidents directly involving nuclear reactors or nuclear weapons.

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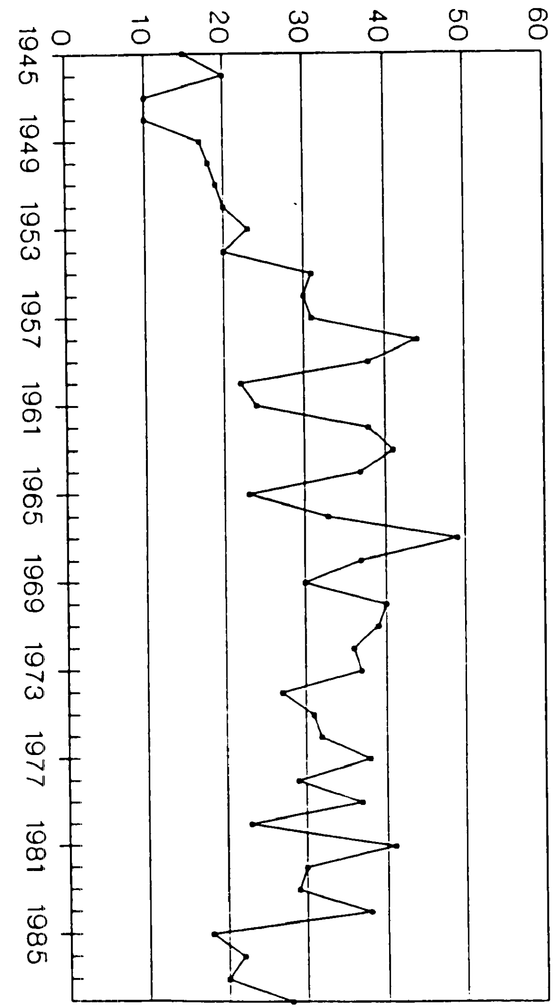
Figure 1: Total Accidents by Year
1945 -- 1988



The Greenpeace Nuclear Free Seas Campaign

The **Neptune Papers** monograph series is published in support of Greenpeace's **Nuclear Free Seas** campaign, a campaign whose goal is the elimination of all nuclear weapons and nuclear reactors from sea-going vessels.

The **Nuclear Free Seas** campaign was launched in July 1987, on the second anniversary of the sinking of the Greenpeace flagship Rainbow Warrior by French secret service agents.

The campaign involves political lobbying, research on naval nuclear issues, and non-violent direct actions to work against the deployment of nuclear weapons and nuclear reactors at sea. The **Nuclear Free Seas** campaign is active in Europe, North America, and the Pacific.

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City of Coronado

L.4.1	The City's general comments are acknowledged and specific comments that follow are addressed. The Navy, as Lead Agency, does not agree with the City's conclusions that a revised Draft EIS needs to be completed and re-circulated for public review and comment before a Final EIS can be published. The Navy does not agree that the Draft EIS is so deficient that it needs to be revised and re-circulated. The Final EIS has been modified to include some limited new information and has responded to public comments.
L.4.2	The RWQCB is responsible for determining their compliance with CEQA. The Navy assumes that the comments regarding CEQA are provided to the California Regional Water Quality Control Board for advisory purposes and not directed to the Navy. The RWQCB has responsibility for complying with CEQA. CEQA is not applicable to federal agency decisionmaking processes. While both CEQA and NEPA encourage agency coordination to streamline the environmental review process, state and local agencies have the authority to and responsibility for implementation of CEQA.
L.4.3	The City's general comments are acknowledged and specific comments that follow are addressed. The Navy, as Lead Agency, does not agree with the City's conclusions that the Draft EIS "is seriously flawed" and a revised Draft EIS needs to be completed and re-circulated for public review and comment before a Final EIS can be published. The Final EIS has been modified to include some limited new information and has responded to public comments.
L.4.4	The City's comments are noted and are included in the Final EIS.
L.4.5	A decision was made early in the initial development of this EIS to not use specific aircraft carrier names or hull numbers to identify prospective replacements or decommissionings. This decision was based on the premise that the Navy's plans for specific aircraft carriers can change subject to a variety of uncontrollable circumstances. Consequently, with the exception of the USS ABRAHAM LINCOLN, which is homeported at NAVSTA Everett, Washington, potential specific replacements or retirements were not identified because (1) the EIS proposes the development of *home port facilities* for a particular CVN class, and (2) this approach retains operational flexibility by allowing for substitution of hulls. The LINCOLN is specifically identified because it is neither a potential replacement nor a decommissioning candidate, but rather its home port is the subject of an examination with a focus toward increasing the efficiency of support infrastructure, maintenance and repair capabilities, and the enhancement of crew quality of life (please see section 1.1 of this EIS).

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Notwithstanding the discussion above, a chronology of events resulting in the potential replacements for aircraft carriers planned for decommissioning in the San Diego area is provided to help the reader understand how NASNI has customarily been home port for three aircraft carriers.

In the 1980s, the Navy reduced the size of its active aircraft carriers from 15 to 12: six in the Atlantic Fleet and six in the Pacific Fleet. Before that time, NASNI had been the homeport for at least three aircraft carriers. In the early 1970s, this included USS TICONDEROGA, USS KITTY HAWK, and USS CONSTELLATION; in the mid-1970s, USS RANGER, KITTY HAWK, and CONSTELLATION; throughout the 1980s, RANGER, KITTY HAWK, and CONSTELLATION; and in the early 1990s, a combination of USS INDEPENDENCE, (while KITTY HAWK and/or CONSTELLATION were undergoing their Service Life Extension effort in Philadelphia, Pennsylvania), KITTY HAWK, CONSTELLATION, and RANGER. All ships listed above are or were conventionally powered carriers, or "CVs."

In 1993, RANGER was decommissioned at the end of its service life and removed from NASNI, temporarily reducing the port-loading to two CVs. In 1993, a Base Realignment and Closure Commission (BRAC) action resulted in the closure of NAS Alameda, California. Because there were no CVN homeport-capable berths at NASNI, the Navy was allowed to shift both NAS Alameda CVNs to the Pacific Northwest, pending completion of construction of suitable homeport facilities at NASNI. Those facilities were the subject of an EIS entitled *Environmental Impact Statement for the Development of Facilities in San Diego to Support the Homeporting of One NIMITZ Class Aircraft Carrier* (DON 1995a). The actual vessel that fulfilled the BRAC mandate and assumed the role of RANGER was USS JOHN C. STENNIS (CVN-74). Arriving in August 1998, STENNIS took over one CVs worth of facility support infrastructure at NASNI. NASNI has had the historical capacity to support three aircraft carriers.

In 1998, INDEPENDENCE (at that time the Navy's "forward deployed" carrier) reached the end of its service life and was decommissioned. KITTY HAWK was designated as its replacement and left NASNI in July 1998, 20 months after the Notice of Intent for this EIS, and relocated to Yokosuka, Japan. This resulted in a reduction of the port loading at NASNI to two homeported aircraft carriers. The USS NIMITZ is currently undergoing an extended maintenance period on the East Coast and will require a homeport berth within the Pacific Fleet area. Long range plans indicate that the most likely arrival date on the West Coast for NIMITZ would be early 2002. *Were the Preferred Alternative selected,* this would bring NASNI back to its historical three carrier port-loading baseline.

USS CONSTELLATION is expected to reach the end of its service life in approximately 2003. At that time, NASNI would once again experience a

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reduction in port loading to two homeported carriers *if the Preferred Alternative were selected by the Navy.* The same long range plans addressing NIMITZ also involve replacing CONSTELLATION with the USS RONALD REAGAN. It is anticipated this will happen in 2005. Once again, *if the Preferred Alternative were selected,* it would bring NASNI back to its historical three carrier port-loading baseline.

The closure of Naval Air Station (NAS) Alameda, California, and the relocation of two CVNs to fleet concentrations in San Diego and the Pacific Northwest were carried out in compliance with the 1993 Defense Base Realignment and Closure Commission (BRAC) recommendations. Consequently, the Department of the Navy constructed homeporting facilities for one CVN at NASNI (DON 1995a) and one at Puget Sound Naval Shipyard (PSNS), Bremerton, Washington (DON 1995b). New facilities were needed at NASNI in order to support the homeporting of a CVN, since prior to 1998, there had been no CVNs homeported there. At the time the Navy proposed the construction of facilities at NASNI to support a homeported CVN, the Navy prepared an EIS to present the analysis of potential environmental effects associated with that action. A Final EIS for that project was completed in November 1995. In this Final EIS, the Navy stated, "The proposed action of this EIS does not affect facilities and activities required for the two conventionally powered carriers (CVs) that are currently homeported in the San Diego area. However, as the older CVs are decommissioned, they will be replaced with newer CVNs. Therefore, a decision to establish the capability to support one CVN in the San Diego area makes it reasonably foreseeable that future decisions on where to homeport additional CVNs (CV replacements) beyond the year 2000 could result in their being proposed for homeporting in the San Diego area. This EIS, therefore, considers the potential cumulative environmental impacts of CV replacement and homeporting a total of three CVNs in the San Diego area. The Navy is not, however, developing proposals addressing where to homeport new CVNs beyond the year 2000 at this time. When the Navy does develop such a proposal, it will prepare the appropriate NEPA documentation." This statement was intended to provide public disclosure of reasonably foreseeable future actions that were not ripe for decision at that time. This is in accordance with 40 CFR 1508.7. The 1995 EIS also states, "This EIS, therefore, considers the potential cumulative impacts of CV replacement and homeporting a total of three CVNs in San Diego." See the 1995 EIS, Volume 1, Chapter 6 (DON 1995a).

The U.S. District Court for the Southern District of California evaluated the Navy's 1995 EIS with regard to the segmentation issue raised by the City. The District Court was aware of the Notice of Intent (December 1996) for this EIS before rendering its decision on the 1995 EIS in May 1997. The District Court concurred with the Navy's implementation of NEPA, and concluded that the Navy had not understated the potential effects of a larger project by preparation

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	of two documents (segmentation). In a Court order dated May 12, 1997, the Court stated, "Because the Court finds that no proposal to homeport three CVNs existed prior to the issuance of the Final EIS, the Final EIS's analysis of the possible cumulative impacts of potential additional home ports suffices under NEPA."
L.4.6	Your comments are noted and are included in the Final EIS. The reports submitted to the City by its consultants are also responded to (the RECON comments are responded to in L.4.61 through L.4.66 and L.4.77 through L.4.81; the PARSONS comments are responded to in L.4.55, L.4.67 through L.4.74, and L.4.82 through L.4.89; the Joel Cehn comments are responded to in L.4.75, L.4.76, and L.4.99 through L.4.106; the Quinton & Petix comments are responded to in L.4.56 through L.4.60; and the Ed Walton comments are responded to in L.4.90 through L.4.98). The comments in the attached minutes from a 3 November 1998 city council meeting are not responded to. The Navy assumes that these minutes were attached as reference to the city's comment letter. The city council meeting was not part of the formal NEPA public hearing on the Draft EIS.
L.4.7	Your general comments are acknowledged and specific comments that follow are addressed. The Navy, as Lead Agency, does not agree with your conclusions that a revised Draft EIS needs to be completed and re-circulated for public review and comment before a Final EIS can be published. Comments did not result in significant changes in the document which would warrant resubmittal of the draft. The Final EIS has been modified to include some limited new information and has responded to public comments.
L.4.8	Your general comments are acknowledged and specific comments that follow are addressed.
L.4.9	Section 3.0 in Volume 1 has been added in the EIS to clarify the nature of the historical baseline and existing conditions at NASNI. Although historically three aircraft carriers have been homeported at NASNI, the number of homeported aircraft carriers actually *in port at any one time has varied.* This is reflective of the traditional operational deployments and training and maintenance schedules of Pacific Fleet aircraft carriers. Aircraft carrier schedules from 1975 through 1998 were analyzed to determine the number of days homeported aircraft carriers were actually in port at NASNI (see Volume 3, Table 3-0). That analysis reveals that all three homeported carriers were rarely in port at the same time. The analysis also shows that the number of homeported aircraft carriers actually in port at NASNI on any given day was *substantially the same irrespective of whether there were two or three aircraft carriers homeported there.* Table 3-0 in section 3.0 displays the average number of days per year homeported aircraft carriers were in port at the same time when three aircraft

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	carriers were homeported at NASNI (dating back to 1975). The table also shows the average number of days per year homeported aircraft carriers were in port during the period when two aircraft carriers were homeported at NASNI (1994-1998). The table illustrates that during the period 1975-1993, one or fewer carriers were in port 72 percent of the time, two or fewer carriers were in port simultaneously 96 percent of the time, and all three aircraft carriers were simultaneously in port only four percent (13 days per year) of the time. Between 1994 and 1998, two carriers were homeported at NASNI. While the capacity to home port three aircraft carriers was not utilized fully during this period, the number of carriers simultaneously in port on a given day did not appreciably change. The average number of aircraft carriers in port per day during 1994 and 1998 was only slightly lower than that observed between 1975 and 1993 when three aircraft carriers were homeported there. These data demonstrate that the average number of homeported aircraft carriers at NASNI *in port at any one time* varies only slightly between conditions when there are three homeported aircraft carriers and when there are two homeported aircraft carriers. The impacts analysis in Chapter 3 has been revised to address the existing conditions at NASNI relative to the period between 1994 and 1998 when two carriers have been homeported there. Section 3.0 demonstrates that the number of carriers in port *at the same time* during this period does not differ substantially from the number of carriers in port during 1975 to 1993, when three carriers were homeported at NASNI.
L.4.10	The impacts of homeporting a second additional CVN under the No Action Alternative (Alternative Six), including those affecting the City of Coronado, are evaluated in the EIS. While the proposed action addresses the need to create the capacity and infrastructure to homeport additional CVNs, the environmental consequence sections do address the impacts of *operation* of up to two additional CVNs. Please see response to comment L.4.9 above for a discussion of NASNI's historical homeporting capacity relative to the number homeported carriers from 1975 through 1998. The EIS analyzes a reasonable range of alternatives for providing capacity to homeport additional CVNs at the four homeporting locations. The focus of the analysis is the evaluation of environmental effects associated with the construction of facilities to support the homeporting of CVNs. Various levels of facilities needed to provide capacity for homeporting CVNs homeported at NASNI are presented. In Alternative 5, (total of one CVN) no additional capacity to homeport CVNs would be built at NASNI. This alternative, with the same resulting number of CVNs as assessed in the BRAC EIS, demonstrates that the Navy has not assumed the homeporting of additional CVNs at NASNI, and that the claim in the comment that the BRAC CVN EIS needed to, but did not, address a second CVN is unsubstantiated. This alternative is evaluated against

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	the proposed action's objectives and was found to be less feasible. One of the alternatives (Alternative Four) would provide capacity to homeport one additional CVN at NASNI. This resulting combination of CVNs at NASNI (Facilities for One Additional CVN: Capacity for Total of Two CVNs) was evaluated in each of the environmental resource issue areas. Another combination of alternatives would provide capacity to homeport two additional CVNs at NASNI (Facilities for Two Additional CVNs: Capacity for Total of Three CVNs), as reflected in Alternatives One, Two and Three. The EIS in section 2.3.3.1 clearly defines the differences in new construction required to provide homeport facilities for these two different combinations of CVNs. The No Action Alternative (Alternative Six) would not permit any new homeporting facilities, and therefore clearly differs from Alternative Four, where new facilities must be constructed. The impacts of the second CVN homeported under the No Action Alternative, including those on the City of Coronado, however, is evaluated in the EIS. The No Action Alternative is required under Council on Environmental Quality Regulations, but is not the "Default" alternative as characterized in the comment. The EIS also states that this alternative would be extremely inefficient and therefore unacceptable in terms of Navy objectives, as it would not provide for critical facilities needed to support the CVN.
L.4.11	The BRAC CVN Homeporting project was analyzed in a 1995 EIS and is addressed in the cumulative impact analysis in section 3.18 of this document. Page ES-1 states that the decision to close certain naval facilities including those in Alameda and Long Beach, California that affect the ability to feasibly homeport CVNs outside of San Diego, Bremerton, Everett, and Pearl Harbor, is not reexamined as part of this EIS. This EIS does identify the cumulative impacts resulting from actions to homeport the BRAC CVN along with up to two additional CVNs at NASNI. The cumulative analysis in section 3.18 evaluates that alternative (in the case of NASNI, Facilities for Two Additional CVNs: Capacity for Total of Three CVNs) which would result in potentially the most adverse of environmental impacts for each CVN homeporting location. Analysis of the impacts of a transient CVN is not necessary because the maximum number of CVNs that can be berthed at NASNI at any one time is three. Any combination of two homeported CVNs and one transient CVN berthed at NASNI at the same time is clearly of less impact than three homeported CVNs that have been analyzed in this EIS under Alternatives One, Two, and Three.
L.4.12	Section 3.0 in Volume 1 has been added in the EIS to clarify the nature of the historical baseline and existing conditions at NASNI. Although historically three aircraft carriers have been homeported at NASNI, the number of homeported aircraft carriers actually *in port at any one time has varied.* This is reflective of the traditional operational deployments and training and maintenance schedules of Pacific Fleet aircraft carriers. Aircraft carrier schedules from 1975 through 1998 were analyzed to determine the number of days homeported aircraft carriers

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were actually in port at NASNI (see Volume 3, Section 3). That analysis reveals that all three homeported carriers were rarely in port at the same time. The analysis also shows that the number of homeported aircraft carriers actually in port at NASNI on any given day was *substantially the same irrespective of whether there were two or three aircraft carriers homeported there.*

Table 3-0 in section 3.0 displays the average number of days per year homeported aircraft carriers were in port at the same time when three aircraft carriers were homeported at NASNI (dating back to 1975). The table also shows the average number of days per year homeported aircraft carriers were in port during the period when two aircraft carriers were homeported at NASNI (1994-1998). The table illustrates that during the period 1975-1993, one or fewer carriers were in port 72 percent of the time, two or fewer carriers were in port simultaneously 96 percent of the time, and all three aircraft carriers were simultaneously in port less than four percent (13 days per year) of the time. Between 1994 and 1998, two carriers were homeported at NASNI. While the capacity to home port three aircraft carriers was not utilized fully during this period, the number of carriers simultaneously in port on a given day did not appreciably change. The average number of aircraft carriers in port per day during 1994 and 1998 was only slightly lower than that observed between 1975 and 1993 when three aircraft carriers were homeported there. These data demonstrate that the average number of homeported aircraft carriers at NASNI *in port at any one time* varies only slightly between conditions when there are three homeported aircraft carriers and when there are two homeported aircraft carriers.

The impacts analysis in Chapter 3 has been revised to address the existing conditions at NASNI relative to the period between 1994 and 1998 when two carriers have been homeported there. Section 3.0 demonstrates that the number of carriers in port *at the same time* during this period does not differ substantially from the number of carriers in port during 1975 to 1993, when three carriers were homeported at NASNI.

The data from Table 3-0 clearly point to the conclusion that 96 percent of the time that three aircraft carriers were homeported at NASNI, *two or fewer aircraft carriers were in port simultaneously.* This fact dovetails nicely with the traffic analysis used in this EIS. The analysis was based on intersection counts that were taken in August 1996 for a study prepared for the City of Coronado titled "Traffic Impact Analysis NASNI Third Street Gate (Linscott, Law and Greenspan, February 1997). These traffic counts represent traffic conditions during the peak summer tourist/recreational season when *there were two homeported aircraft carriers in port.* Follow-up counts taken in the fall of 1998 resulted in traffic volumes that were lower than the August 1996 volumes. It was concluded, therefore, that it would be appropriate to use the August 1996

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data to represent existing traffic conditions as the counts reflected higher-than-average traffic volumes. The use of this data is consistent with the findings of an October 1998 draft report prepared by the San Diego Association of Governments (SANDAG) titled "San Diego-Coronado Bridge Toll Removal Impact Study," which also used the August 1996 data to represent existing conditions. Table 3.9-1 in section 3.9.1.1 has been revised to reflect more recent traffic data that were not available to the EIS preparer when the DEIS was initially prepared (i.e., the traffic volumes documented in the October 1998 SANDAG report). For example, the table is revised to show a volume of 71,000 vehicles per day on the Coronado Bay Bridge. The daily traffic volumes in the 1998 SANDAG report represent the annual average weekday traffic volumes on the roadways in the study area, and represent the most recent compilation of these data. These data reflect a period of time when two carriers were homeported at NASNI.

A 5-day count of Coronado Bridge traffic was collected during the peak summer season in 1996. Although this count reflected traffic volumes of 80,000 vehicles per day for this period of time, the calculations occurred during the peak tourist season in Coronado. Since this count does not reflect the annual average weekday traffic volumes on the Coronado Bridge, and SANDAG's 1998 report does not use this figure to characterize annual average roadway volumes, the worst-case, summer season data are not used in the EIS analysis.

The ground transportation analysis contrasts existing traffic conditions with that associated with the proposed action. For the overwhelming majority of time (352 days per year), the impact to ground transportation associated with Alternatives One, Two, and Three is determined to be insignificant, resulting in 27 additional vehicle trips during the peak hours and 150 additional trips throughout an average day as shown in Table 3.9-4. The same table also shows that on those few occasions when all three aircraft carriers are in port, traffic will increase both in peak hours and in average daily trips. The Navy predicts that there will be 13 days per year when this occurs, although it is estimated that only up to 12 will be workdays. This occurrence is considered so infrequent as to not be significant (for instance: there are approximately five times more days per year when no aircraft carriers will be in port as when all three might be in port) and therefore no mitigation would be required.

Although the proposed action addressed in this EIS would not result in significant traffic impacts and would not require any traffic-related mitigation measures, the Navy is committed to working cooperatively with the City of Coronado in efforts to reduce traffic congestion. Ongoing Navy strategies designed to reduce the level of traffic generated by NASNI include a ferry system, carpool/vanpool programs, installation of bicycle racks on buses and throughout the air station, a guaranteed ride home program (for rideshare users

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	with a mid-day emergency), and an educational program to promote these strategies. In addition, the Navy is considering a redesign of the Main Gate so that the entrance would align with Third Street and thereby provide a more direct connection into and out of the base. Furthermore, on those rare occasions when all three carriers might be in port simultaneously, one carrier would start its work day either earlier or later than the others to lessen the peak hour traffic. Commander Naval Air Force U.S. Pacific Fleet will direct this procedure.
	As a follow-up to the traffic impact analysis presented in the Draft EIS, the impacts of proposed action-generated traffic were determined by using the traffic conditions for the year 2015 as the projected conditions scenario. The year 2015 projected conditions traffic volumes and levels of service were taken from a draft report prepared by the San Diego Association of Governments (SANDAG) titled "San Diego-Coronado Bridge Toll Removal Impact Study." The year 2015 traffic projections represent future traffic conditions taking into account projections of population and employment growth in Coronado and the San Diego region, assuming that the bridge tolls continue to be charged (Scenario 2 from the report). Although the traffic volumes for the year 2015 projected conditions scenario are higher than what would be expected for the year 2005 when a third CVN would be homeported at NASNI, this scenario has been addressed to ensure that the level of anticipated growth and the cumulative traffic increases in Coronado have been considered. The intersection analysis for this scenario is summarized in Table 3.18-2. Based on the criteria for significant impacts, the proposed action's impacts at these intersections would not be significant.
	Similarly, the proposed action's impacts on daily traffic volumes have been analyzed by using SANDAG traffic forecasts for the year 2015 as the projected conditions scenario. Table 3.18-3 in section 3.18.9 shows the projected traffic volumes for the scenarios without and with the proposed action. Based on the criteria for significant impacts, the proposed action's impacts on these roadways would not be significant.
	The 1998 SANDAG report also provides a scenario (Scenario 4) in which the bridge tolls and toll-funded commute services would be discontinued. Under this scenario, traffic volumes travelling the bridge for the year 2015 would be approximately 18% higher, representing a significant cumulative impact. The proposed action would have an incremental, but less than significant, contribution to this cumulative impact.
L.4.13	An average of 450 maintenance workers would be needed to support DMF maintenance activities for six month CVN PIAs at NASNI. Each CVN homeported at NASNI would require two six-month PIAs every six years. Thus,

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	if three CVNs were homeported at NASNI, six PIAs would be conducted every six years, averaging one PIA per year. In addition to PIAs, CVNs must undergo drydocking PIAs (DPIA) once every six years. These maintenance availabilities would be done outside of the San Diego area, and would last for approximately 11 months. The BRAC EIS (DON 1995a) evaluated the traffic impact of DMF workers based on a one PIA in one year concept. The EIS determined that there would be no impact because of overall decreases in base population at NASNI. For example, NASNI has already experienced a decrease of about 2,500 personnel since the BRAC EIS was prepared over 4 years ago (see Volume 3, Table 2-1). While the BRAC EIS analyzed a lesser frequency of PIAs (two every six years), it did analyze what the impact of one PIA in one year would be, thus bounding the condition of this EIS where an average of one PIA each year would be conducted. Thus, the conclusion of no impact stated the BRAC EIS is still valid for this EIS. Please also note that the 1995 BRAC EIS had several conservative aspects built into the analysis. (1) The 1995 BRAC EIS estimated the average DMF workforce at 750 personnel and assessed the impacts at this level. The Navy overestimated this workforce because there had been no actual experience in conducting a CVN PIA. Now that the Navy has conducted several PIAs, the average workforce number at NASNI has been lowered to 450 personnel. (2) The analysis in the 1995 BRAC EIS did not account for the fact that DMF workers average 2.5 persons per vehicle. The 1995 BRAC EIS assessed these workers as all single vehicle operators. Therefore the 1995 BRAC EIS conservatively assessed the number of DMF workers and bounded the impacts of one PIA per year in its analysis. It should also be pointed out that the PIA is a maintenance activity for the CVNs that would essentially replace for maintenance overhaul activities that are currently performed on the CVs. The CV maintenance activities are conducted periodically by the Navy and contract personnel that must commute to NASNI during the maintenance periods. The amount of work for CVs and CVNs are similar in size; therefore, it is not expected that CVN PIA activities at NASNI would vary greatly from past CV maintenance activities at NASNI or result in traffic increases in Coronado. Please refer to response L.4.14 for further information.
L.4.14	Please note that the total amount of work between the old overhaul system and the new PIA maintenance system has not appreciably changed. While a PIA is 6 months in length, it is done once every 2 years. Under the old overhaul system it was not uncommon to perform multiple 3+ month SRAs during the same time

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	period. The main advantage of the PIA system is that it affords the Navy a more even tempo of operations than the old overhaul system. Please also note that some recent NASNI CV SRAs have been nearly a year in duration as noted elsewhere in the City's comments. Because the total amount of work has not appreciably changed between the old overhaul system and the new PIA system, the Navy does not consider further analysis on this issue necessary.
L.4.15	The traffic roadway analysis is based on daily traffic volumes collected by Caltrans, the San Diego Association of Governments (SANDAG), and the City of Coronado in 1998. The daily traffic volumes in the 1998 SANDAG report represent the annual average weekday traffic volumes on the roadways in the study area, and represent the most recent compilation of these data. These data reflect a period of time when two carriers were homeported at NASNI. Table 3.9-1 in the EIS is revised to show an annual average roadway volume of 71,000 vehicles per day on the Coronado Bay Bridge. Although 5-day traffic counts as high as 80,000 vehicles per day on the bridge have been observed during the peak summer tourist/recreational season, these are not representative of average annual roadway volumes and are not used in the EIS (see response to comment L.4.12). Intersection counts taken in August 1996 by Linscott, Law, and Greenspan for the City or Coronado reflect current information when the EIS traffic study was initiated. These intersection counts were representative of existing conditions during the peak summer tourist/recreational season when there were two aircraft carriers in port. Follow-up counts taken in the fall of 1998 resulted in traffic volumes that were lower than the August 1996 volumes. The October 1998 draft report prepared by SANDAG titled "San Diego-Coronado Bridge Toll Removal Impact Study," used the August 1996 data to represent existing intersection conditions. This EIS also used the more conservative August 1996 data to represent the existing intersection conditions.
L.4.16	Please refer to Section 3.0 and the responses to comments L.4.12, L.4.13, L.4.14, and L.4.15 for a more detailed discussion of the existing conditions traffic data that were used, for an additional analysis of traffic impacts using recently-prepared future conditions data, and for a discussion of the PIA activities. The transportation analysis has been revised to incorporate more recent traffic data that were not available to the EIS preparer when the DEIS was initially prepared (i.e., the traffic volumes documented in the October 1998 SANDAG report). For example, Table 3.9-1 is revised to show a average annual volume of 71,000 vehicles per day on the Coronado Bay Bridge. The trip generation rate used in the Draft EIS has been revised to reflect calculations based on 1996 personnel counts (see Table 2-1, Volume 3) and actual gate counts taken during that same year (see Table 3.9-7, Volume 3).
L.4.17	The existing conditions reflecting traffic on the Coronado transportation network intersections were derived from traffic counts taken when two carriers were in

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	port, during the summer when the greatest amount of vehicles would be present, associated with peak tourist/recreational activity (August 1996). The traffic impact analysis is based on incremental changes in site-generated traffic when the proposed CVNs are in port. The intersection impact analysis of two additional CVNs in section 3.9.1.2.3 evaluates conditions that would occur 96 percent of the time when two or fewer carriers would be in port at the same time. The impact created by this condition, 27 vehicle trips during the peak hour, would be less than significant. Also, intermittent, short-term impacts resulting on the 13 days (4 percent of the time) when all three carriers would be in port simultaneously are evaluated. Though substantial, the impacts on intersections and roadways during these days would be short-term and less than significant. Please see response to comment L.4.16 for detail on how the transportation analysis has been revised.
L.4.18	Please see response to comment L.4.12 and L.4.17 for a discussion of how the reasonably expected worse case condition associated with creating the capacity for two additional CVNs is assessed in the Final EIS. The impact analysis of two additional CVNs in section 3.9.1.2.3 evaluates conditions that would occur 96 percent of the time when two or fewer carriers would be in port at the same time. The impact created by this condition, 27 vehicle trips during the peak hour, would be less than significant. Also, intermittent, short-term impacts resulting on the 13 days (4 percent of the time) when all three carriers would be in port simultaneously are evaluated. Though substantial, the impacts on intersections and roadways during these days would be short-term and less than significant.
L.4.19	Refer to the response to comment L.4.13 for a discussion of the PIA activities.
L.4.20	Traffic volumes on Third and Fourth Streets have actually decreased in recent years, which is consistent with the Navy's claim that the level of activity and number of personnel at NASNI is likewise on the decline. On Third Street east of Alameda Boulevard, the average daily traffic (ADT) volume was 16,400 vehicles per day (vpd) in 1992, 16,100 vpd in 1994, 12,900 vpd in 1996, and 13,900 vpd in 1997 according to data in the annual Caltrans "Traffic Volumes on the California State Highway System" publications. On Fourth Street east of Alameda Boulevard, the ADT was 17,100 vpd in 1992, 16,900 vpd in 1994, 12,600 vpd in 1996, and 13,000 vpd in 1997. These trends indicate that the traffic volumes have been decreasing on the two primary access streets that serve NASNI. Also, NASNI has experienced a decrease of about 2,500 personnel since the BRAC EIS was prepared over 4 years ago (see Volume 3, Table 2-1). The Navy has an ongoing series of strategies designed to reduce the level of traffic generated by NASNI, such as a ferry system, carpool/vanpool programs, installation of bicycle racks, a guaranteed ride home program (for rideshare

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	users with a mid-day emergency), and an educational program to promote these strategies. In addition, the Navy is considering a redesign of the Main Gate so that the entrance would align with Third Street and thereby provide a more direct connection into and out of the base.
L.4.21	The traffic analysis considered the cumulative impacts of other proposed projects and general growth in the area by applying a growth factor to the existing conditions traffic volumes to develop the future projected conditions scenario, as presented in the Draft EIS. In addition, a follow-up traffic impact analysis was conducted to determine the impacts of proposed action-generated traffic by using the traffic conditions for the year 2015 as the projected conditions scenario. The year 2015 projected conditions traffic volumes and levels of service were taken from a draft report prepared by the San Diego Association of Governments (SANDAG) titled "San Diego-Coronado Bridge Toll Removal Impact Study." The year 2015 traffic projections represent future traffic conditions taking into account projections of population and employment growth in Coronado and the San Diego region, assuming that the bridge tolls continue to be charged (Scenario 2 from the report). Although the traffic volumes for the year 2015 projected conditions scenario are higher than what would be expected for the year 2005 when, under the proposed action (according to alternatives 1, 2, and 3), a third CVN would be homeported at NASNI, this scenario has been addressed to ensure that the level of anticipated growth and the cumulative traffic increases in Coronado have been considered. The analysis of the study area roadways and intersections for this scenario is summarized in section 3.9.1.2.3 of the EIS and in the response to comment L.4.12. Based on the criteria for significant impacts, the proposed action's traffic impacts would not be significant. With regard to the possible elimination of bridge tolls, the EIS traffic analysis is based on the assumption that the tolls would remain in place. This EIS is not required to consider the impacts of various roadway system modifications unless such modifications are approved or reasonably assured of implementation. As the toll removal concept is only in the initial study phase, it would not be necessary to analyze its impacts in conjunction with the CVN EIS. As the proposed action is estimated to result in a net increase in traffic of only 27 vehicles during the peak hours, it is unnecessary to conduct detailed analyses of various alternative cumulative projected conditions scenarios. The analysis demonstrated that this level of additional traffic would not result in a significant impact according to the criteria. However, the Navy has added to and assessed more cumulative projects in the Coronado area as suggested to section 3.18 of the Final EIS.

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L.4.22	The statement quoted from the 1995 BRAC EIS was made largely due to the unknown future disposition of CVs at the time the document was written. The scenario the Navy considered in this case was that the USS INDEPENDENCE (CV-62) would be kept in service (homeported at Yokosuka, Japan) beyond the 1998 arrival of USS JOHN C. STENNIS (CVN-74) at NASNI. In a scenario such as this, USS KITTY HAWK (CV-63) would still be homeported at NASNI along with the USS CONSTELLATION (CV-64) and STENNIS. If, in the scenario discussed above, all three of these carriers were in port at NASNI, and a Pacific Northwest carrier (either USS CARL VINSON (CVN-70) or USS ABRAHAM LINCOLN (CVN-72)) were to berth at NASNI in a transient capacity, there could have been a rare possibility of having four carriers berthed at NASNI for a very short period of time. However, since INDEPENDENCE has been decommissioned there is little possibility of this four carrier scenario ever happening at NASNI unless KITTY HAWK returns from its forward deployed homeport in Japan or the Navy expands the number of fleet carriers higher than the present total of 12. The Navy does not expect either of these scenarios to happen. Speculating on the size or type of ships that might occupy berths N-P is beyond the scope of this EIS. There is no current proposal to homeport additional ships at NASNI beyond the aircraft carriers proposed in this EIS. The maximum capacity at NASNI for CVNs would become three as a result of the proposed action.
L.4.23	NASNI has been homeport for three carriers in the past, and thus it has been proven that NASNI has the on-base parking capacity to support cars associated with the presence of 3 CVs. The additional number of sailors CVNs bring (102 per carrier) are well within the parking capacity at NASNI. Additionally, the overall base population at NASNI has decreased by 2,500 personnel over the last 4 years (see Volume 3, Table 2-1). Thus, the Navy expects no parking shortfalls as a result of the proposed action.
L.4.24	Please see the response to comment L.4.23.
L.4.25	The existing parking capacity at NASNI can support the personnel associated with a total of three carriers. Please see response to comment L.4.23.
L.4.26	Please see the response to comment L.4.23.
L.4.27	The NASNI cumulative noise impact analysis is found in Volume 1, section 3.18.11. The cumulative noise analysis has been expanded in the Final EIS to consider future traffic growth for cumulative noise impact assessment purposes.
L.4.28	Source citations were provided in the text of the Draft EIS for each of the noise levels assumed for various noise sources. All of the noise attenuation calculations performed for the EIS used standard noise impact quantification

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	methodology and made worst-case assumptions, such as no additional attenuation due to intervening structures. A basic principle of standard methodology is that from a point source, sound level drops by 6 decibels for every doubling of the distance. Additional explanation of noise attenuation calculation has been added to the Final EIS. Volume 2, Appendix C has been revised to incorporate this information.
L.4.29	The U.S. Navy has reviewed the traffic noise data provided in the recently completed "City of Coronado Noise Study - 1998" (RECON October 1998), which was not available at the time the Draft EIS was prepared. The new data have been incorporated into the EIS analysis and the older data from the 1993 noise study have been removed. The new data confirm the findings of the earlier noise study and show that the existing traffic noise situation exceeds the City of Coronado General Plan Noise Element standard of 65 dBA. The Final EIS, Volume 1, section 3.11.1 and Volume 3, section 3.11 have been revised to incorporate this information. The analysis conclusions for the proposed action noise impacts, however, remain unchanged. In addition, a 2-year noise monitoring project completed in August 1998 monitored construction activity along the quay wall and turning basin at NASNI for the BRAC CVN home port (Investigative Science and Engineering 1998). The results of the noise monitoring support the findings of the BRAC CVN EIS (DON 1995a) that BRAC CVN construction noise impacts would be insignificant. Section 3.11.1 of the Final EIS has been revised to incorporate this information.
L.4.30	The proposed action would include construction of facilities to provide capacity to homeport up to two additional CVNs. Table 3.10-1 in Section 3.10 of the Final EIS shows the emission estimates for these future scenarios. These data show that the net change in emissions between scenarios would reduce emissions for all pollutants except volatile organic compounds (VOCs) and carbon monoxide (CO) within the San Diego region. These emission reductions are mainly due to the elimination of the fuel oil-fired boilers of the CVs. Emission factors for the year 2003 were used in the Final EIS to estimate vehicle emissions for Alternatives Four, Five, or Six, so they would coincide with the completion date of either the proposed alternative or future no-project scenarios. Consistent with this approach, emission factors for the year 2005 were used to estimate vehicle emissions for Alternatives One, Two, or Three. As implementation of state and federal vehicle emission standards would continue to reduce emissions per vehicle mile traveled (VMT) beyond 2003 and 2005, vehicle emissions would be less in future years than what is presented for the proposed actions in Table 3.10-1.
L.4.31	The electricity demand from the proposed action would be provided by fossil fuel-fired generating facilities and other sources of electricity, such as nuclear,

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	hydroelectric, wind, and geothermal that occur within and outside San Diego County. Emissions from generating electricity by fossil fuels would be the responsibility of the generating facilities and not the Navy. Owners of these facilities charge users for electricity and they are responsible for mitigating these emissions through the appropriate local, state, or federal air permitting process. Additionally, the net change in electrical demand between the future proposed action (capacity to homeport two CVNs) and the future no-project (no change in homeport capacity) would be minor. San Diego Gas & Electric representatives were contacted to verify this statement (please see section 3.16.2.2).
L.4.32	Emissions that would occur from the CVN berth construction were underestimated in the Draft EIS. Equipment usage from this construction activity at NASNI would be similar to those estimated for construction of the BRAC CVN project wharf, as demolition and construction activities would be nearly identical between the two projects. Therefore, emissions from this construction activity are assumed to be the same as those estimated for wharf construction in the previous BRAC CVN Final EIS (DON 1995) and they have been revised in the Final EIS. This revision did not change the significance of air quality impacts from proposed construction activities.
L.4.33	The air quality analysis in the Final EIS includes additional documentation of assumptions and data sources to verify the analysis. In particular, Section 3.10 of Volume 3 includes EMFAC7G and MOBILE5 model outputs that show the vehicular emission factors chosen for the analysis.
L.4.34	Appendix F provides the details on assumptions, methodology, and source terms used for the radiological analyses. For example, section 2.0 of Appendix F provides detailed information on the accident screening process, receptor locations, pathways evaluated, health effect risk estimators, population distribution, meteorology, computer programs, and exposure times. Section 3.2 of Appendix F provides detailed information on the source terms and the computer code assumptions used for the analyses. This information is provided in adequate detail in the Draft EIS to allow for an independent check of the analysis results. With regard to identifying consequences separate from overall risks, Appendix F already presents the consequence of the event and the probability of the event separately. For example, Tables F-9 and F-11 present the consequences to the individuals and population in terms of both radiological exposure (rem) and health effects (likelihood of fatal cancer for individuals and number of latent fatal cancers for the population). The consequences presented in Table F-9 and F-11 assume that the accident occurs (i.e., the accident probability is one, as the commentor suggests). The overall risk, which is defined as the product of consequence and probability, is presented separately in Tables F-8 and F-10.

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	Tables F-8 and F-10 take into account the annual probability of the fire or spill occurring. This approach to risk assessments is consistent throughout the industry, and has been used by other federal agencies such as the Department of Energy and Nuclear Regulatory Commission. The results from the analysis demonstrate that the radiological risks associated with the proposed action are not significant. Since the commentor's suggestions are already incorporated into the EIS, no changes to the EIS are deemed necessary.
L.4.35	Site specific information was used in the radiological analyses completed for this EIS. Appendix F, section 2.0, presents a discussion of the methodology used for the pathways analysis, including where site-specific information was used for the analyses. In sections 2.1 and 2.3, the discussions state that site specific data was used to determine the location of individual receptors (maximally-exposed off-site individual and nearest public access individual) and the general population within a 50-mile radius of each facility (from 1990 U.S. Census data.) In section 2.4, the discussion presents the method for incorporating site-specific meteorological conditions into the analyses. In addition, when other site-specific information is readily available from local sources, these parameters are incorporated into the analyses. Some examples of such data are surface water area, flow rates and utilization; aquifer volume, flow rates and utilization; population habits for surface water recreation; unique eating habits or food of local importance; and soil characteristics near the site. Since the commentor's suggestions are already incorporated into the EIS, no changes to the EIS are deemed necessary.
L.4.36	The Navy does not agree with the commentor that a radiation monitoring system beyond that which already exists should be incorporated into the list of Navy projects for Naval Air Station North Island. For the reasons stated herein, the Navy considers that such a system is not needed from a technical standpoint to further safeguard or reassure the public about Naval Nuclear Propulsion Program (NNPP) activities near Coronado. The Navy considers that the extensive effort and attention placed on nuclear propulsion plant design, operational practices and oversight already fully safeguard the public with respect to NNPP activities, and no further actions are needed. Chapter 7 of the EIS explains in great detail the NNPP's stringent design and operational practices. For example, Chapter 7 discusses that Naval nuclear propulsion plants include redundant safety systems and are operated by highly trained crews using rigorously applied procedures. Naval nuclear propulsion plants are also designed to withstand battle damage, a feature that increases reactor safety during peacetime operations. In addition, Naval nuclear propulsion plants are less than one-fifth of the typical commercial power plant

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rating, and typically operate at low power levels or are shut down when in port or operating close to land. Therefore, Naval reactors have significantly less fission products (less than 1 percent) available for release, which limits the size of the potential area of concern. There are multiple boundaries to prevent release of fission products to the environment, including the fuel itself, the all-welded primary coolant system, the reactor compartment, and the ship.

Evidence of the Navy's success in safeguarding the public as well as Naval personnel lies in the Navy's safety record: there has never been a reactor accident, nor a release of radioactivity having a significant effect on the environment, in the 50-year history of the NNPP. In addition, as part of its radiological environmental monitoring program, the Navy already monitors ambient radiation levels outside the boundaries of areas where radiological work is performed. The results of this monitoring have demonstrated that NNPP activities have had no distinguishable effect on normal background radiation levels at site perimeters. The results of this monitoring program are publicly available in reports published annually, and the relevant sections are included in the EIS. Additionally, the U.S. Environmental Protection Agency has conducted independent surveys in U.S. harbors frequented by U.S. nuclear-powered ships, which have corroborated the Navy's conclusions.

The extensive effort and attention placed on work controls, emergency planning, and emergency response fully safeguard the public as well. As explained in Chapter 7 of the EIS, control of radioactivity has been a central focus since the inception of the NNPP. To that end, Navy personnel receive extensive training on both plant operations and radiological work practices, and use instrumentation and equipment to detect any significant problem which could lead to a radiological release, long before the actual release would be detected by a perimeter monitoring system. To deal with abnormalities should they occur during plant operations and work evolutions, detailed procedures are prepared and tested using work mock-ups or drills in advance. As such, in the highly unlikely event of a release of radioactivity from either a ship or shoreside facility with off-site implications, there would be sufficient time for appropriate protective actions to be taken.

To ensure the Navy is prepared to handle radiological emergencies, emergency planning and emergency response is an integral part of ongoing NNPP operations. As discussed in section 7.5, in the highly unlikely event of an emergency, the Navy would promptly notify state and local officials, and would communicate with those officials to provide radiological data and recommendations for protective actions. Any action needed to protect the public would be handled by the state and local officials using existing plans for emergencies from natural events, such as earthquakes or hurricanes. A radiation monitoring system would not provide useful, real-time information beyond that

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already available to the Navy from its existing emergency response system, and thus would not provide any further safeguards in the event of an emergency.

The above points demonstrate that there is no basis for the Navy to install a radiation monitoring system to further safeguard or provide additional assurance to the public. Thus, no such system is included in the Navy projects listed to support CVN homeporting at any of the homeport sites, and no such system has been installed around other locations where nuclear-powered ships are berthed.

Additionally, the commentor states that the system should be easily expandable, provide easy access to data, include wind and weather information, and be cost effective. The Navy notes that the latest published Nuclear Regulatory Commission study regarding radiation monitoring systems (NUREG/CR 2644 dated April 1982) noted the following points regarding a ring system of fixed gamma sensitive detectors:

- "While a ring of detectors around a nuclear power station can provide the means for monitoring releases; the number of stations required for two detectors to provide information within a factor of 5 of each other can be as large as 50 or more for one installation."

- "The use of short-time (15-minute) data from a fixed off-site monitoring system to project downwind dose rates is a complex and highly uncertain process. Based on our study, the uncertainty associated with a projected value is at least a factor of 10 or more."

- "Based on this study the cost per monitoring station ranges from $25,000 to $65,000 (1982 dollars). Depending upon the specific site characteristics, the cost for a 32 station system could easily exceed $1,000,000 while only providing data with uncertainties in the range of factors of 10 to 50."

- "The placement of a simple limited ($500,000 - 1982 dollars) detector system in proximity (0.5 mile) to a reactor may not provide reliable information in the case of an emergency for several reasons. Of prime importance is the limited number of stations (8-16) that could be installed and the consequence that a plume might go undetected."

- "In general, it is highly questionable that a fixed station (16-32 units) emergency monitoring system can provide sufficiently reliable technical information to be of use in a decision-making process in the event of an emergency situation. This conclusion should not preclude consideration of the installation of such a system. A monitoring system could be used to develop site-specific meteorological information and could develop

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	improved public relations with the populace. It should be emphasized, however, that the stations should be judiciously placed so as to not convey false information."
	Even if independent monitoring stations were in place around locations where nuclear-powered ships are berthed, the Navy would still rely on its long-standing procedures to respond to a radiological emergency, and not on data from the fixed stations. In addition, the Navy would still coordinate with the proper state and local officials, since the Navy considers its existing emergency response procedures to be fully appropriate and protective with respect to NNPP operations.
L.4.37	As is explained in section 3.1 of Appendix F, airborne emissions of radionuclides from Naval Nuclear Propulsion Program activities are conservatively estimated using procedures developed by the Navy and approved by EPA pursuant to 40 CFR 61. These procedures are a result of extensive, multi-year measurement and evaluation by both the Navy and EPA. An unclassified EPA summary of these procedures has been included at the end of these responses to comments. Section 3.1 also states that the source term for airborne releases is based on emissions at a large Naval shipyard performing maintenance and nuclear refueling work on a variety of nuclear-powered ships. Since the amount of maintenance expected at a homeport facility to support CVN maintenance is less than the amount performed at a large Naval shipyard performing maintenance and nuclear refueling work on a variety of nuclear-powered ships, the normal operations source term is conservative for evaluation of CVN homeporting. As evident from the listing of the normal operations source terms listed in section 3.1 of Appendix F, all of the radionuclide concentrations, with the exception of carbon-14, are the same for each site. The carbon-14 source term is greater for North Island since North Island is the only location where two additional CVNs would be located under any of the alternatives evaluated; only one additional CVN is proposed for the remaining sites under any of the alternatives. Based on the above, no further justification of the source term is deemed necessary. The cumulative radiological emissions from all nuclear-powered ships near a homeport location are included in section 3.3 of Appendix F.
L.4.38	As is explained in section 2.1 of Appendix F, the maximally-exposed offsite individual is defined as a theoretical individual living at the base boundary receiving the maximum exposure. Since that individual receives the maximum exposure, the exposure for the maximally-exposed off-site individual bounds the exposure for an individual in any of the 16 compass directions. Thus, individual distances are not needed to be reported in the EIS. For example, the maximally-exposed off-site individual dose for the hypothetical fire accident scenario is, by definition, the largest dose in any compass direction. The maximally-exposed off-site individual dose from the fire accident is received at the closest location

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	(1189 meters). This is due to the fact that the maximally-exposed off-site individual dose from the fire accident is calculated using 95 percent meteorological conditions in the direction of the closest location, which always results in the largest dose.
	The analyses do not rely on exact locations of farms in the surrounding area to account for the ingestion of contaminated food. As stated in Appendix F, section 3.2, 10 percent of the food consumed is assumed to be locally grown in the resident's garden. With this method, the contamination levels in the food will be largest at locations closer to the hypothetical accident release point and smallest at locations farthest away from the accident.
L.4.39	The derivation of the source term for the hypothetical support facility fire scenario is presented in Appendix F, section 2.0. This section states that the amount of radioactivity released was conservatively established at 1 curie of Cobalt 60 and the associated proportioned amounts of other radioactive elements expected. This level of Cobalt 60 exceeds the typical amount that might reasonably be available for release from a home port nuclear support facility due to normal maintenance and repair activities.
	For the fire accident, the exposure pathway which provides the largest portion of the dose is the direct radiation from the ground surface which is received over a 1 year period of time. This accounts for about 57 percent of the 200 millirem dose to the maximally-exposed off-site individual.
L.4.40	For the spill accident, the exposure pathway which provides the largest portion of the dose is the consumption of contaminated seafood. This accounts for about 91 percent of the 56 millirem dose to the maximally-exposed off-site individual. In addition, the maximally-exposed off-site individual is not assumed to be located at a specific distance from the release point for the hypothetical spill scenario. Rather, the maximally-exposed off-site individual is assumed to be a hypothetical individual who travels to the area containing the contaminated water and partakes in recreational activities such as swimming and boating. The dose to the maximally-exposed off-site individual is determined by assumptions affecting the concentration of radioactive materials in the water, including the release rate of the material, the water flow rate, and other site-specific data.
	The following seafood consumption rates were used in the EIS:

	Maximally-exposed off-site individual	General Population
Ingestion of Fish (grams per day)	179.0	15.47
Ingestion of Crustacea (grams per day)	66.9	2.5

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	Ingestion of Mollusks (grams per day)	53.9	1.85

L.4.41 Appendix F, section 2.7, presents a qualitative evaluation of the secondary impacts of hypothetical support facility accident scenarios. The economic impacts presented in this section are:

a) access to some areas may be temporarily restricted until cleanup is completed;

b) some recreational activities may be temporarily suspended;

c) a small number of individuals may experience temporary job loss due to temporary restrictions on farming, fishing, and other support activities near the facility during cleanup operations, and some costs would be incurred for the actual cleanup operations.

Due to the speculative nature of the above qualitative impacts, no cost figure can be reasonably assigned.

L.4.42 Navy personnel receive extensive training on both plant operations and radiological work practices, and use instrumentation and equipment which would immediately detect any significant problem which could lead to a radiological release. They also have detailed procedures, tested in advance, to deal with abnormalities should they occur during plant operations and work evolutions. In addition, continuous reading air monitoring systems are installed both in nuclear powered ships and in the shoreside Controlled Industrial Facility. In the ships, these systems monitor the air both in the reactor compartments and in the surrounding spaces. Similarly, several air monitoring systems are installed within the Controlled Industrial Facility.

L.4.43 The proposed action would not have a significant impact relative to traffic safety conditions on the transportation corridors serving NASNI as the net increase in traffic volumes would be only 27 vehicles during the peak hours and 150 vehicles per day. This level of additional traffic is not considered to result in a significant increase in traffic volumes such that accident rates on the study area roadways would be affected.

L.4.44 The Navy does not perceive that having three CVNs at NASNI increases the threat from terrorists beyond the potential that has existed for the past several decades. In addition, the robustness of a naval vessel designed to withstand combat damage lessens the potential impact that such an act might incur. The very nature of a military asset diminishes its attractiveness as a target for terrorist. Not only is there a constant posture of security maintained through tightly controlled access and roving patrols, but the ability of the trained "targeted personnel" to react with deadly force increases the risk to the terrorist.

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L.4.45	The EIS concludes that there would be no significant impact to traffic in Coronado as a result of the proposed action. Therefore, in absence of impact, there is no need for traffic mitigation as a result of the proposed action at NASNI. Please see response to comment L.4.12 above.
L.4.46	Please see response to comment L.4.36.
L.4.47	The commentor has incorrectly interpreted the information presented in section 2.8 of Appendix F. This section presents the assumptions for the pathway analysis concerning exposure times to various categories of individuals that may be located on the base or shipyard property at the time of an accident. This section does not address plans to evacuate NASNI within two hours as the commentor implies. Rather, this section provides the assumptions used in the analyses for exposure of the individuals and the general public due to the plume, fallout on the ground surface, and consumption of contaminated food. These assumptions are summarized in Table F-5 of Appendix F. As stated in section 2.8, base residents, workers, and visitors are subject to the control of base security personnel. For the purposes of the EIS analyses, it was assumed that the trained security and emergency response personnel would take actions to ensure that such individuals would be removed from areas affected by an accidental release of radioactive materials within a two hour period of time. This assumption is conservative, as emergency response actions by trained personnel would probably be performed in much shorter time periods. Section 7.5 of the EIS contains a detailed discussion of emergency preparedness and planning at Naval bases.
L.4.48	As discussed in section 7.5, in the unlikely event of an emergency, the Navy would promptly notify state and local officials, and would communicate with those officials to provide radiological data and recommendations for protective actions, including evacuation. Any action needed to protect the public would be handled by the state and local officials using existing plans for emergencies from natural events, such as earthquakes or hurricanes. Reactor design and operational characteristics of Naval nuclear-powered ships are discussed in section 7 of the EIS. Naval nuclear ships and their reactors have been designed to the Navy's exacting and rigorous standards for warship shock design, include redundant systems, and are operated by highly trained crews using rigorously applied procedures. Thus, Navy ships have a very low potential for major radiological accidents. In addition, the radiological impact of any credible accident scenario would likely be localized and not severe, thus it is unlikely that evacuation of other than localized areas of the base would be required.

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L.4.49	NNPP radiological emergency procedures contain sensitive information regarding military technology, which must be protected from uncontrolled release and dissemination. However, these documents only outline procedures for Navy personnel and facilities to follow in the highly unlikely event of an emergency. For many years, the Navy has coordinated emergency preparedness issues with emergency organizations in states where nuclear-powered ships are homeported. Procedures are in place for prompt notification of state and local officials in the unlikely event of an emergency. The Navy would communicate with those officials to provide radiological data and recommendations for protective actions. Any action needed to protect the public would be handled by the state and local officials using existing plans for emergencies from natural events, such as earthquakes or hurricanes. The Navy would continue to coordinate emergency planning issues with the appropriate officials responsible for public health and safety under the proposed action. Should a separate plan be prepared and utilized by the appropriate civilian emergency planning officials, the Navy would still rely on its long-standing procedures to respond to a radiological emergency and would still coordinate with those officials, since the Navy considers its emergency response procedures to be fully appropriate and protective of the public with respect to NNPP operations.
L.4.50	As has been the case for many years, the Navy would continue to coordinate emergency response planning issues with the appropriate emergency organizations in states where nuclear-powered ships are homeported.
L.4.51	Your comments are noted and are included in the Final EIS.
L.4.52	The Final EIS addresses your specific comments.
L.4.53	For the maximum development scenario, the proposed action is estimated to result in a net increase in traffic of only 27 vehicles during the peak hours and 150 vehicles per day. The analysis demonstrated that this level of additional traffic would not result in a significant impact according to the criteria. Traffic-related mitigation measures, therefore, are not needed. Although the construction of a tunnel between the toll plaza and the NASNI Main Gate may offer substantial benefits to traffic congestion along the Coronado streets, it is not needed to mitigate less than significant impacts associated with the proposed action.
L.4.54	This comment provides the information that the City of Coronado adopted a *Local Coastal Program* (LCP) in 1983. In 1987 as part of their *General Plan*, the City

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	adopted a "Local Coastal Element" that notes in summary form the types of issues that the LCP addresses. Section 3.7.1.3 has been revised to incorporate this information.
L.4.55	The comment letter presents a comparison of information provided in the Draft EIS traffic analysis and a recent bridge toll removal study prepared by SANDAG. The key points made in the comment letter are that the Draft EIS traffic data are outdated, the growth rates assumed for the two studies are different, and that the traffic generation assumptions used in the Draft EIS are unreasonable. With regard to the existing conditions traffic data that were used in the Draft EIS, the traffic analysis was based on intersection and roadway counts that were taken in August 1996. The traffic analysis is based on intersection and roadway counts that were taken in August 1996, which reflected current information when the EIS traffic study was initiated. The traffic analysis was based on intersection counts that were taken in August 1996 and average daily traffic volume information that was assembled in 1996 and 1997. Table 3.9-1 in the EIS has been revised to show the highest traffic volumes cited for each roadway in the various source references. For example, on the Coronado Bay Bridge the table shows an annual average volume of 71,000 vehicles per day on an average day. These more recent traffic data that were not available to the EIS preparer when the DEIS was initially prepared. The August 1996 traffic intersection counts that were used to represent the existing conditions scenario reflect traffic conditions during the peak summer tourist/recreational season when there were two aircraft carriers in port. Follow-up intersection counts taken in the fall of 1998 resulted in traffic volumes that were lower than the August 1996 volumes. It was determined, therefore, that it would be appropriate to use the August 1996 data to reflect the existing intersection traffic conditions. This conclusion is consistent with the findings of the October 1998 draft report prepared by SANDAG titled "San Diego-Coronado Bridge Toll Removal Impact Study," which also used the August 1996 data to represent existing conditions (see response to comment L.4.15). In addition, a follow-up traffic impact analysis was conducted to determine the impacts of proposed action-generated traffic by using the traffic conditions for the year 2015 as the projected conditions scenario. The year 2015 projected conditions traffic volumes and levels of service were taken from the draft SANDAG report titled "San Diego-Coronado Bridge Toll Removal Impact Study." The year 2015 traffic projections represent future traffic conditions taking into account projections of population and employment growth in Coronado and the San Diego region, assuming that the bridge tolls continue to be charged (Scenario 2 from the report). Although the traffic volumes for the year 2015 projected conditions scenario are higher than what would be expected for the year 2005 when, under the proposed action (according to alternatives 1, 2, and 3), a third CVN would be homeported at NASNI, this scenario has been

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	addressed to ensure that the level of anticipated growth and the cumulative traffic increases in Coronado have been considered. The analysis of the study area roadways and intersections for this scenario is summarized in the response to comment L.4.12. Based on the criteria for significant impacts, the proposed action's traffic impacts would not be significant.
	With regard to the growth rates assumed for the two studies, the comment letter indicates that the growth rates reported in the SANDAG study range from 6 to 17 percent between 1997 and 2015 with the lower percent representative of the scenario with the tolls remaining. The EIS traffic analysis assumes a growth rate of 5 percent between the existing time frame (1996 for the peak hour counts and 1995 for the average daily counts) and the target year of the analysis, which ranges from 2001 to 2005. The EIS incorporated the assumption that the bridge toll would remain in place. The growth rate used in the EIS (5 percent over a five to ten year span) is actually higher than the rate used in the SANDAG study (6 percent over an 18-year span). To ensure a conservative analysis, the existing traffic volume data presented in the EIS for each roadway segment has been revised to represent the highest traffic counts documented in the various references. Similarly, the future traffic volume data represent forecasts from the SANDAG bridge toll removal study or were estimated by applying a five percent growth factor to the existing traffic volumes (whichever is higher).
	Response to comment L.4.16 explains how the Final EIS transportation analysis methodologies for determining trip generation rates have been revised. The trip generation rate for NASNI staff has been revised from 1.72 to 1.47, based on using accurate personnel counts at the base for 1996 (see Volume 3, Table 2-1) and comparing that to actual gate counts taken during that year (see Volume 3, Table 3.9-7).
L.4.56	The EIS is based on information generated in previously scrutinized and approved NEPA documents, and is supplemented by data prepared by expert environmental analysts. Please refer to Chapter 14.0 of the Final EIS for a list of those expert scientists involved in EIS preparation. Extensive supporting data are provided in Volumes 2, 3, 4, 5, and 6.
	As discussed in the responses to the City of Coronado consultants' letters, additional data are provided as requested. The Navy has provided a detailed listing of the industry accepted, standard methodologies used for EIS analyses in the appendices contained in the EIS (for example, Appendix F provides the methodology and computer simulation programs used in the radiological analyses). Please refer to Navy responses to the consultant's questions for further details.

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L.4.57	This comment addresses the adequacy of the past, present, and reasonably foreseeable projects evaluated in the NASNI cumulative impact assessment. The list of reasonably foreseeable projects included in the cumulative analysis has been increased as requested by the City of Coronado. The revised cumulative analysis in section 3.18 incorporates these projects. Please see response to comment L.2.1.
L.4.58	For the Draft EIS traffic analysis, the cumulative impacts were addressed by applying a five percent growth factor to the existing traffic volumes to estimate the future traffic levels. This rate of traffic growth is higher than the historic growth rate trend in recent years and is higher than the rate assumed in the 1998 SANDAG study of the possible removal of bridge tolls. The cumulative effects of other proposed development and general growth in Coronado have been addressed by applying this conservatively-high growth factor. A detailed traffic analysis of all other projects proposed in the area would not be appropriate considering the relatively low level of traffic that would be generated by the project (27 peak hour trips and 150 average daily trips) and the fact that the applied growth rate adequately accounts for the additional traffic of other anticipated projects in the fully developed City of Coronado. To ensure a conservative analysis, however, the FEIS also used the year 2015 traffic projections from the SANDAG bridge toll removal study to represent future conditions without the project, even though these forecasts would most likely reflect much higher traffic volumes than expected for the year 2005, when a third CVN would be expected to be homeported at NASNI. This approach considers the cumulative impacts of all known projects currently proposed in the study area.
L.4.59	Please see the response to comment L.4.30.
L.4.60	This comment does not address a specific aspect of the EIS and its evaluation of the proposed action. Please see other responses to comments in this letter that address specific concerns. The Executive Summary is intended to serve the decisionmakers and public who wish to obtain an overall grasp of the document's contents. Volumes 2 through 6 provide analytical supportive data in appendices which avoid extraneous background data, and maximize conciseness of the EIS. Chapter 2 carefully discusses the selection of the proposed action's objectives and develops criteria for screening out unreasonable alternatives. Mitigation measures are included throughout the environmental issue analysis to avoid or minimize possible adverse effects on the environment.
L.4.61	The cumulative noise analysis in section 3.18 has been expanded to consider future traffic growth for cumulative noise impact assessment purposes.

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	Source citations were provided in the text of the Draft EIS for each of the noise levels assumed for various noise sources. All of the noise attenuation calculations performed for the EIS used standard noise impact quantification methodology and made very conservative assumptions, such as no additional attenuation due to intervening structures. A basic principle of standard methodology is that from a point source, sound level drops by 6 decibels for every doubling of the distance. Additional explanation of noise attenuation calculation has been added to the Final EIS. Volume 2, Appendix C, has been revised to incorporate this information. New noise data provided in the recently completed "City of Coronado Noise Study – 1998" (RECON 1998), which was not available at the time the Draft EIS was prepared, have been incorporated into the Final EIS analysis and the older data from the 1993 noise study have been removed. The new data show that the existing traffic noise situation exceeds the City of Coronado noise standard. The analysis conclusions for proposed action noise impacts, however, remain unchanged. Volume 1, section 3.11.1 and Volume 3, section 3.11 have been revised to incorporate this information. In addition, a two-year noise monitoring project was completed in August 1998 for the construction activity along the quay wall and turning basin at NASNI for the BRAC CVN homeport (Investigative Science and Engineering 1998). The results of the noise monitoring support the findings of the BRAC CVN EIS (DON 1995a) that BRAC CVN construction noise impacts would be insignificant. Section 3.11.1 has been revised to incorporate this information.
L.4.62	Please see the response to comment L.4.30.
L.4.63	Please see the response to comment L.4.31.
L.4.64	Please see the response to comment L.4.32.
L.4.65	Please see the response to comment L.4.33.
L.4.66	The No Action Alternative would result in one additional CVN at NASNI. This alternative is not acceptable to the Navy, because a berth at NASNI must be available to act as a transient berth. Under the No Action Alternative, unacceptable operational constraints would be placed on the US Navy Fleet Commander. However, the No Action Alternative must be addressed per NEPA regulations (40 CFR 1502.14[d]) no matter how difficult that alternative is to the action proponent. The provision of capacity to homeport a total of two CVNs at NASNI is addressed in Alternative Four. Please see section 2.4.6 for additional discussion of the No Action Alternative.

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L.4.67	With regard to the existing conditions traffic data that were used, the traffic analysis was based on intersection counts that were taken in August 1996, for a study prepared for the City of Coronado titled "Traffic Impact Analysis NASNI Third Street Gate" (Linscott, Law and Greenspan, February 1997). The Draft EIS erroneously referred to "1993 traffic counts" in section 3.9.1.1 Instead, the Draft EIS used the same data as were collected in 1996, referenced above. These traffic counts represent traffic conditions during the peak summer tourist/recreational season when there were two aircraft carriers in port. Follow-up intersection counts taken in the fall of 1998 resulted in traffic volumes that were lower than the August 1996 volumes. It was determined, therefore, that it would be appropriate to use the August 1996 data to represent existing traffic intersection conditions as the counts reflect higher-than-average traffic volumes. This conclusion is consistent with the findings of an October 1998 draft report prepared by SANDAG titled "San Diego-Coronado Bridge Toll Removal Impact Study," which also used the August 1996 data to represent existing conditions. With regard to the existing daily traffic volumes, Table 3.9-1 in the EIS has been revised to show the highest traffic volumes cited for each roadway in the various source references. For example, on the Coronado Bay Bridge the table shows a volume of 71,000 vehicles per day on an annual average day. These more recent traffic data that were not available to the EIS preparer when the DEIS was initially prepared. Please see response to comments L.4.12 and L.4.15.
L.4.68	Section 3.0 in Volume 1 has been added in the EIS to clarify the nature of the historical baseline and existing conditions at NASNI. Although historically three aircraft carriers have been homeported at NASNI, the number of homeported aircraft carriers actually *in port at any one time has varied.* This is reflective of the traditional operational deployments and training and maintenance schedules of Pacific Fleet aircraft carriers. Aircraft carrier schedules from 1975 through 1998 were analyzed to determine the number of days homeported aircraft carriers were actually in port at NASNI (see Volume 3, Table 3-0). That analysis reveals that all three homeported carriers were rarely in port at the same time. The analysis also shows that the number of homeported aircraft carriers actually in port at NASNI on any given day was *substantially the same irrespective of whether there were two or three aircraft carriers homeported there.* Refer to the response to comments L.4.9 and L.4.12 for a more detailed discussion of the historical homeporting baseline and existing conditions at NASNI.
L.4.69	The traffic and parking analysis presented in the Draft EIS is based on the incremental increase in traffic that would occur as a result of the proposed action. NASNI has the current (and historical) capacity to support three carriers. Currently NASNI has the capacity to support two conventionally powered aircraft carriers (CVs) and one nuclear powered aircraft carrier (CVN) for a total of three carriers. Alternatives One, Two, and Three have three CVNs homeported at NASNI. The maximum development scenario for the proposed

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	action is the creation of capacity to homeport two additional CVNs for a total of three CVNs, with an incremental increase in parking demand well within the current capacity of NASNI. Refer to the response to comments L.4.23 for additional parking information.
L.4.70	The trip generation rate for NASNI staff has been revised from 1.72 to 1.47, based on using personnel counts at the base for 1996 (see Volume 3, Table 2-1) and comparing that to actual gate counts taken during that year (see Volume 3, Table 3.9-7) when two carriers were in port. Transient carriers have been an existing mission at NASNI for years as NASNI has been the main staging area for Southern California (SOCAL) operations. The proposed action addressed in this EIS does not alter this long-standing Navy activity. Transient carriers would continue using NASNI as a temporary berth on an occasional basis regardless of which proposed action alternative is selected. A detailed impact analysis of such activity is not warranted for this EIS. A transient carrier would generate only negligible additional vehicle trips while in port, as the vessel would be in port only for a short-term period and few if any dependents visit the crew. The two carriers in port at the same time represent a reasonable worst case condition for 96 percent of the time when three carriers are homeported at NASNI. Please see response to comments L.4.12 and L.4.17 for additional information.
L.4.71	Refer to the responses to comments L.4.13, L.4.14, and L.4.23 for information on PIAs and parking.
L.4.72	Traffic volumes on Third and Fourth Streets have actually decreased in recent years, which is consistent with the Navy's claim that the level of activity and number of personnel at NASNI is likewise on the decline. On Third Street east of Alameda Boulevard, the average daily traffic (ADT) volume was 16,400 vehicles per day (vpd) in 1992, 16,100 vpd in 1994, 12,900 vpd in 1996, and 13,900 vpd in 1997 according to data in the annual Caltrans "Traffic Volumes" publications. On Fourth Street east of Alameda Boulevard, the ADT was 17,100 vpd in 1992, 16,900 vpd in 1994, 12,600 vpd in 1996, and 13,000 vpd in 1997. These trends indicate that the traffic volumes have been decreasing on the two primary access streets that serve NASNI. Furthermore, the decreases in traffic volumes are consistent with the fact that NASNI has experienced a decrease of about 2,500 personnel over the past 4 years (see Volume 3, Table 2-1). The Navy has an ongoing series of strategies designed to reduce the level of traffic generated by NASNI, such as a ferry system, carpool/vanpool programs, installation of bicycle racks, a guaranteed ride home program (for rideshare users with a mid-day emergency), and an educational program to promote these strategies. In addition, the Navy is considering a redesign of the Main Gate so

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	that the entrance would align with Third Street and thereby provide a more direct connection into and out of the base.
L.4.73	The intersection impact analysis in the EIS has been updated using the 1994 Highway Capacity Manual methodology. The results of the impact analysis would be the same regardless of whether the 1985 HCM software or the more recent software updates were used because the level of service calculations are based on the signalized intersection methodology, which is similar for both software packages. The updated software better addresses the analysis of unsignalized intersections; however, all intersections studied in the EIS were signalized.
L.4.74	Please see response to comment L.4.12, L.4.55 and L.4.72.
L.4.75	The comment is a copy of an interim report on radiation monitoring by a consultant hired by the City of Coronado. No specific issues or questions were raised in the text of the comment, and thus the Navy can provide no specific response. However, the Navy addresses the need for a radiation monitoring system in the response to L.4.36.

Response to Comment for Navy on Appendix E:

The references for citations in Appendix E appear in Volume 1, Chapter 13 of the EIS. Appendices E and F of the EIS have been clarified to indicate where references are cited. Assistance in locating specific references is available by contacting the point of contact listed in the introduction to the EIS.

Response to Summary Comments on Appendix F:

With respect to the comment regarding the Navy's description of normal operations, the methodology used by the Navy for the Draft EIS normal operations calculations is described in Appendix F, sections 2.0 and 3.0. This information includes receptor locations, pathways evaluated, health effects calculations, population distributions, site specific meteorology, and computer programs. Please see also response L.4.37.

With respect to the comment regarding the disparity between the Navy and consultant's results, the disparity likely results from differences in assumptions involving meteorological conditions, receptor location, inhalation rates, ingestion rates, calculational method, or other factors. The dose to the maximally exposed member of the public is reported in the EIS as 0.1 millirem. The consultant performed an independent calculation and obtained 0.6 millirem. For perspective, the EPA standard in 40 CFR 61 Subpart I for exposure from airborne radionuclides is 10 millirem per year. The Nuclear Regulatory Commission standard in 10 CFR 20 Subpart D for exposure from nuclear power plant

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	operation is 100 millirem per year above background. Finally, the average U.S. citizen receives about 300 millirem of exposure from background sources per year. The Navy agrees with the consultant that the results from both calculated doses are very small in comparison.
	With regard to the comment regarding the fire scenario, as is described in the response to L.4.39, the derivation of the source term is presented in Appendix F, section 2.0. Other information regarding assumptions used is presented in section 3.2 or can be found in response L.4.39.
	With regard to the comment regarding the spill scenario, the derivation of the source term is presented in Appendix F, section 2.0. Other information regarding the assumptions used is either already presented in section 3.2 or can be found in response L.4.40.
	Response to Comments for Navy on Appendix F:
	With regard to comment 1, please see response to comment L.4.37.
	With regard to comment 2, please see response to comment L.4.38.
	With regard to comment 3, please see response to comment L.4.39.
	With regard to comment 4, please see response to comment L.4.40.
	With regard to comment 5, please see response to comment L.4.41.
	With regard to comment 6, please see response to comment L.4.42.
L.4.76	Please see response to comment L.4.36.
L.4.77	This comment addresses the Draft EIS analysis of traffic-related noise impacts in light of new noise monitoring data compiled for the "City of Coronado Noise Study — 1998" (RECON October 1998). Mr. Charles Bull, President of RECON, the City of Coronado's noise consultant, states, in part, ". . . I believe that the U.S. Navy's conclusion that there will not be a direct adverse noise impact as a result of the proposed project is correct. I do, however, believe that there is the potential for an adverse cumulative impact as a result of the project."
	The Navy has reviewed the data provided in the recently completed noise study, which was not available at the time the Draft EIS was prepared. The new data have been incorporated into the Final EIS analysis and the older data from the 1993 noise study have been removed. The new data confirm the findings of the earlier noise study and show that the existing traffic noise situation exceeds the City of Coronado General Plan Noise Element standard of 65 dBA. The analysis

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	conclusions for proposed action noise impacts, however, remain unchanged. The cumulative noise analysis has been expanded to consider future traffic growth for cumulative noise impact assessment purposes. Volume 1, sections 3.11.1 and 3.18.11 and Volume 3, section 3.11 have been revised to incorporate this information.
L.4.78	Please see the response to comment L.4.32.
L.4.79	Please see the response to comment L.4.31.
L.4.80	Please see the responses to comments L.4.30 and L.4.31. Additionally, inclusion of emissions from off-site electrical power generation into the proposed action conformity analysis would be inappropriate for a variety of reasons, including (1) the emissions are not the responsibility of the Navy; (2) requests to reduce these emissions would not be enforceable by the Navy; and (3) the emissions would occur from facilities that have San Diego County Air Pollution Control District (SDCAPCD) air permits and have undergone New Source Review.
L.4.81	The commentor agrees with the impact assessment approach used in the EIS. Please see the response to comment L.4.30.
L.4.82	Please see response to comments L.4.12, L.4.16, and L.4.55 for an explanation of how the transportation analyses have been revised.
L.4.83	The traffic analysis was based on intersection counts that were taken in August 1996 and average daily traffic volume information that was assembled in 1996 and 1997. Table 3.9-1 in the EIS has been revised to show the highest traffic volumes cited for each roadway in the various source references. For example, on the Coronado Bay Bridge the table shows an annual average volume of 71,000 vehicles per day. These more recent traffic data that were not available to the EIS preparer when the DEIS was initially prepared. The August 1996 traffic counts that were used to represent the existing conditions scenario reflect traffic conditions during the peak summer tourist/recreational season when there were two aircraft carriers in port. Follow-up counts taken in the fall of 1998 resulted in traffic volumes that were lower than the August 1996 volumes. It was determined, therefore, that it would be appropriate to use the August 1996 data to reflect the existing traffic conditions. This conclusion is consistent with the findings of the October 1998 draft report prepared by SANDAG titled "San Diego-Coronado Bridge Toll Removal Impact Study," which also used the August 1996 data to represent existing conditions. Please see response to comment L.4.12 and L.4.15.
L.4.84	Please see response to comment L.4.67 for an explanation of how the transportation analysis has been revised.

Comment Number	Response
L.4.85	The traffic and parking analysis presented in the Draft EIS is based on the incremental increase in traffic that would occur as a result of the proposed action. NASNI has the current (and historical) capacity to support three carriers. Currently NASNI has the capacity to support two conventionally powered aircraft carriers (CVs) and one nuclear powered aircraft carrier (CVN) for a total of three carriers. Alternatives One, Two, and Three have three CVNs homeported at NASNI. The maximum development scenario for the proposed action is the creation of capacity to homeport two additional CVNs for a total of three CVNs, with an incremental increase in parking demand well within the current capacity of NASNI. Refer to the response to comments L.4.23 for additional parking information.
L.4.86	The trip generation rates (trips per person) used for the NASNI CVN analysis (i.e., a rate of 1.47 trips per day per person) is representative of gate counts and personnel levels at NASNI in August 1996 when two carriers were in port (please see response to comment L.4.55). It was assumed for the traffic analysis that the increase in personnel associated with the proposed action would result in a comparable proportional increase in the level of traffic generated by the base. With regard to existing conditions traffic data, the analysis was based on traffic data taken during times of heavy travel demand as opposed to average conditions. The August 1996 traffic counts that were used to represent the existing conditions scenario reflect traffic conditions during the peak summer tourist/recreational season when there were two aircraft carriers in port. Follow-up counts taken in the fall of 1998 resulted in traffic volumes that were lower than the August 1996 volumes. It was determined, therefore, that it would be appropriate to use the August 1996 data to represent the existing traffic conditions. This conclusion is consistent with the findings of the October 1998 draft report prepared by SANDAG titled "San Diego-Coronado Bridge Toll Removal Impact Study," which also used the August 1996 data to represent existing conditions.
L.4.87	Transient carriers have been an existing mission at NASNI for years as NASNI has been the main staging area for Southern California (SOCAL) operations. The proposed action addressed in this EIS does not alter this long-standing Navy activity. Transient carriers would continue using NASNI as a temporary berth on an occasional basis regardless of which proposed action alternative is selected. A detailed impact analysis of such activity is not warranted for this EIS, as a transient carrier would generate only negligible additional vehicle trips while in port. The vessel would be in port only for a short-term period and few if any dependents visit the crew. Please see response to comment L.4.11.
L.4.88	Please see response to comments L.4.13 and L.4.14 for a detailed discussion of the PIA activities and related personnel levels and refer to the responses to comments L.4.23, L.4.25, and L.4.26 for additional parking information.

Comment Number	Response
L.4.89	Traffic volumes on Third and Fourth Streets have actually decreased in recent years, which is consistent with the Navy's claim that the level of activity and number of personnel at NASNI is likewise on the decline. On Third Street east of Alameda Boulevard, the average daily traffic (ADT) volume was 16,400 vehicles per day (vpd) in 1992, 16,100 vpd in 1994, 12,900 vpd in 1996, and 13,900 vpd in 1997 according to data in the annual Caltrans "Traffic Volumes" publications. On Fourth Street east of Alameda Boulevard, the ADT was 17,100 vpd in 1992, 16,900 vpd in 1994, 12,600 vpd in 1996, and 13,000 vpd in 1997. These trends indicate that the traffic volumes have been decreasing on the two primary access streets that serve NASNI. The decreases in traffic volumes are consistent with the fact that NASNI has experienced a decrease of about 2,500 personnel over the past 4 years (see Volume 3, Table 2-1).
L.4.90	Please see response to comment L.4.12 for a detailed explanation of the NASNI historical baseline and existing conditions that have been used in the impact assessment of the Final EIS.
L.4.91	Please see response to comment L.4.22 for a discussion of the four carrier scenario at NASNI. NASNI does not have the facilities necessary to support berthing four CVNs; the maximum development scenario is berthing three CVNs. Please see response to comment L.4.11.
L.4.92	Please see response to comment L.4.15 for a detailed discussion of revised traffic data used in the Final EIS. The traffic analysis was based on intersection counts that were taken in August 1996 and average daily traffic volume information that was assembled in 1996 and 1997. Table 3.9-1 in the EIS has been revised to show the highest traffic volumes cited for each roadway in the various source references. For example, on the Coronado Bay Bridge the table shows an annual volume of 71,000 vehicles per day. These more recent traffic data that were not available to the EIS preparer when the DEIS was initially prepared. Please see response to comment L.4.12 and L.4.15.
L.4.93	The trip generation rate used in the Draft EIS has been revised to reflect calculations based on 1996 personnel counts (see Table 2-1, Volume 3) and actual gate counts taken during that same year (see Table 3.9-7, Volume 3). Please see response to comment L.4.12 and L.4.15.
L.4.94	Please see response to comments L.4.13 and L.4.14 for a detailed discussion of the PIA activities and related personnel levels.
L.4.95	This discussion refers to construction-generated traffic, including trucks. It would be difficult to determine whether a construction worker and/or truck driver would elect to use First Street or Third Street as the access route to the base because both are truck routes and the total driving distance would be the

Comment Number	Response
	same for each route. Assuming that one-half of the construction traffic would use each street, construction activities would result in 150 additional vehicles per day (vpd) on each street (which includes 50 truck trips). The daily traffic volume on First Street is projected to be 4,150 vpd and the daily traffic volume on Third Street ranges from 15,000 to 28,000 vpd. The additional 300 total vehicles per day or an average of 150 vehicles on each street would not result in a significant traffic impact, particularly since the construction traffic would be temporary.
L.4.96	There is no definition of significance related strictly to a change in traffic volume. The significance criteria, as outlined in Section 3.9.1.2 of the Draft EIS, relate to traffic increases that would result in an average daily traffic volume that is above the planned capacity of a roadway segment or traffic increases that would change the volume/capacity ratio by 0.02 or more at an intersection projected to operate at level of service E or F.
L.4.97	The cumulative analysis does take into account past projects that have been responsible for contributing to the existing environmental resource conditions. For example, section 3.18.3 addresses historical and present-day marine water quality conditions. Past projects are considered a component of the environmental setting from which the proposed action and reasonably foreseeable projects could combine to cumulatively affect the environment. The EIS is responsible for addressing impacts that would result from combined past, present, and reasonably foreseeable projects.
L.4.98	One PIA is required for each CVN during its 2-year operational cycle. Therefore, under the preferred alternative, a total of three CVNs at NASNI would result in an average of one 6-month long PIA per year, every year. When PIAs would not be occurring, the permanent staff of approximately 19 would remain. It should be pointed out, however, that the PIA is a maintenance activity for the CVNs that would essentially replace the maintenance overhaul activities that are currently performed on the CVs. The CV maintenance activities are conducted periodically by Navy and contract personnel that must commute to NASNI during the maintenance periods. As the size of the workforce is comparable for the CV maintenance and the CVN PIA activities, it is not expected that CVN PIA activities at NASNI would result in traffic increases in Coronado.
L.4.99	As is explained in section 3.1 of Appendix F, airborne emissions of radionuclides from NNPP activities are conservatively estimated using procedures developed by the Navy and approved by EPA pursuant to 40 CFR 61. These procedures are a result of extensive, multi-year measurement and evaluation by both the Navy and EPA. Thus, the commentor's suggestion to use actual data is already incorporated in the EIS, as actual data was used to develop the procedures for estimating NNPP emissions.

Comment Number	Response
	In addition, the Navy assumes the release of 1 curie of cobalt-60, and the proportioned amounts of other radionuclides expected, in its accident analyses. For perspective, in order to release that amount of radioactivity, approximately 26 million gallons of radioactive water taken from a Naval nuclear propulsion plant would have to be released. This volume exceeds the total amount of radioactive water available throughout the entire nuclear-powered fleet. In addition, as explained in section 7.4.4.5, the total long-lived gamma radioactivity released within 12 miles of shore from all NNPP activities, including accidental releases, has been less than 0.002 curies during each of the last 26 years. The amount of radioactivity modeled by the Navy greatly exceeds this amount. If the Navy were to use the actual amount of radioactivity released, that amount would cause the impacts in the EIS to be much less than those reported. Thus, the suggestion to use actual data in lieu of a conservative estimate is not deemed necessary for the Navy analysis.
L.4.100	The EIS uses accepted methodology in assessing accident probability. The methodology for the analyses is consistent with federal guidance for preparing NEPA documentation. Incidence of fatal cancer was evaluated using International Commission on Radiological Protection (ICRP) methodology (see ICRP 1991, ICRP 1990, Annals of the ICRP 21(1-3), ICRP Publication 60). The ICRP methodology is consistent with the methodology set forth in the National Academy of Sciences Biological Effects of Ionizing Radiation Report (see National Academy of Sciences - National Research Council, 1990 and Health Effects of Exposure to Low Levels of Ionizing Radiation, BEIR V, Report of the Committee on the Biological Effects of Ionizing Radiation). Use of these methodologies and references ensures that the analysis adequately presents the radiological impacts from the proposed action.
	With regard to the radiological analyses, the Navy has fully considered the comments provided by the commentor, comments provided in other letters, and the Navy responses to those comments. Based on this review, the Navy has determined that it has correctly assessed the radiological health risks associated with the proposed action, and thus no significant changes to the radiological analyses contained in the EIS are deemed necessary. Any minor changes to the EIS as a result of the review of these comments are included with the appropriate comment responses. See responses to comments O.12.174-178, O.12.190, and O.12.191-197 for further details.
L.4.101	Please see response to comment L.4.37.
L.4.102	Please see response to comment L.4.38.
L.4.103	Please see response to comment L.4.39.

Comment Number	Response
L.4.104	Please see response to comment L.4.40.
L.4.105	Please see response to comment L.4.41.
L.4.106	Please see response to comment L.4.42.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 1 - 1997

OFFICE OF
AIR AND RADIATION

Admiral F. L. Bowman
Commander, Naval Sea Systems Command
2531 Jefferson Davis Highway
Arlington, VA 22242-5160

Dear Admiral Bowman:

The Environmental Protection Agency (EPA), Office of Air and Radiation has completed its review of your December 27, 1995 application, as supplemented by additional submissions dated November 22, 1996 and January 14, 1997, for approval pursuant to 40 CFR 61.103(a) and 40 CFR 61.107(b) of alternative procedures for measurement and estimation of radionuclide emissions from facilities which are operated by the U.S. Naval Nuclear Propulsion Program ("NNPP"). I am pleased to inform you that your application for approval of alternative procedures has been granted, subject to all of the detailed terms and conditions set forth in your December 27, 1995 application, as supplemented on November 22, 1996 and January 14, 1997. As you have requested, you will be permitted to use the alternative procedures for estimating and measuring emissions both in determining whether particular facilities operated by the NNPP are in compliance with the numerical emission standards in 40 CFR 61.102 and in determining whether an application to construct or modify must be submitted for a particular activity under 40 CFR 61.106(b). As you are aware, the approval of alternative procedures for measurement and estimation of radionuclide emissions is limited to only the procedures described in Attachment A of your December 27, 1995 application. A summary of the approved alternative procedures is enclosed with this letter.

The approval of the requested alternative procedures is effective immediately. The new approved alternative procedures supersede in their entirety the interim alternative procedures approved by EPA on February 17, 1994.

I wish to emphasize that the approval of your application is limited to use of the specified alternative procedures for measurement and estimation of radionuclide emissions in lieu of the particular measurement procedures and estimation procedures which would otherwise apply under 40 CFR 61.107 and Appendix D, and does not affect any other applicable requirements established by Subpart I. As you acknowledged in your letter of January 14, 1997, all use by the NNPP of the approved alternative procedures must be consistent with the quality assurance performance requirements set forth in Appendix B, method 114. In the event that EPA determines that any modification of the approved alternative procedures is necessary to enable the NNPP to comply with these mandatory quality assurance requirements, EPA expects that you will cooperate to assure prompt development and implementation of all necessary modifications.

As in the case of the previously approved interim alternative procedures, each affected facility operated by the NNPP must continue to do a site-specific compliance determination utilizing the computer code COMPLY and source terms determined pursuant to the approved measurement and estimation procedures, and will remain subject to all of the reporting and record keeping requirements set forth in 40 CFR 61.104 and 61.105. Each facility will also remain subject to inspection and enforcement activities as necessary to assure compliance with the approved alternative procedures and with all other requirements in Subpart I not specifically supplanted by the approved procedures.

In closing, I want to express my sincere appreciation for the cooperation and professionalism demonstrated by your staff throughout this effort.

Sincerely yours,

Richard D. Wilson
Acting Assistant Administrator
for Air and Radiation

Enclosure

SUMMARY OF FINAL PROCEDURES

1. Existing Sources:

Type of Source	Final Navy Procedure
Monitored Ventilation	Existing Particulate Sampling
Noble Gases and Radioiodine	Noble Gas and Radioiodine from Norfolk Naval Base Test
C-14	C-14 Based on a Specific Quantity per MW-hr
Tritium	1 Curie plus Planned Releases for Tritium
Engine Rooms	Concentration Equal to Main Shore Facility
Tank Vents	Tank Volume x $5x10^{-10}$ uCi/ml
Hull Decon	Appendix D Release Fraction
Surface Ship RC	$5x10^{-14}$ uCi/ml
Minor Availability RC Exhaust	Concentration Equal to Main Shore Facility

Note: (Noble gases, radioiodine, carbon-14, and tritium apportioned among the sources.)

2. New Sources

Type of Source	Final Navy Procedure
Monitored Ventilation	Particulate Concentration from Similar Source (Construct or Modify)
Potential Sources	Same as Above for Engine Rooms, tank vents, surface ship RC exhaust, hull decon, or minor availability RC exhaust
Noble Gases and Radioiodine	Noble Gas and Radioiodine from Norfolk Naval Base Test
C-14	C-14 Based on a Specific Quantity per MW-hr
Tritium	1 Curie plus Planned Releases for Tritium

Note: (Noble gases, radioiodine, carbon-14, and tritium apportioned among the sources.)

Organizations

ENVIRONMENTAL HEALTH COALITION

1717 Kettner Boulevard, Suite 100 • San Diego, CA 92101 • (619) 235-0281 • Fax (619) 232-3670
e-mail: ehcoalition@igc.apc.org • Web address: http://www.environmentalhealth.org

O.1

August 27, 1998

Mr. John Coon, Project Manager
Southwest Division, Naval Facilities Engineering Command
Code 05AL-JC
1220 Pacific Highway
San Diego, CA 92132
FAX: 532-4998

RE: Request for Extension in public comment period on the Environmental Impact Statement for two more CVNs to be homeported in San Diego Bay.

Dear Mr. Coon:

Environmental Health Coalition (EHC) requests an extension to a minimum of 60 days for comments on the new Environmental Impact Statement (EIS) regarding additional CVN homeporting announced by your office last week. This is a project with significant ramifications for the local community and all due consideration should be given the public in light of the magnitude of the project impacts. In order for the community to secure professional analysis of the EIS and to make informed comment, a minimum of 60 days is needed. Further, there is significant documentation that is needed by the community to assess the impacts of the project that has yet to be made available by the Navy. O.1.1

We make this request assuming that the EIS will be issued in Spanish as well as English for the many Spanish-speaking residents that live downwind of this project. If you are not intending to issue an EIS in Spanish, an additional 30 days will be needed to assure that the appropriate translation can occur by other governmental agencies such as the EPA. O.1.2

There is precedent in San Diego for federal agencies to allow a significant length of time for the public to comment. The US Fish and Wildlife Service recently allowed a 90-day comment period on their draft Environmental Assessment for creation of the South San Diego Bay National Wildlife Refuge. Clearly, creation of the refuge for wildlife has significantly less potential negative impacts on the environment and public health compared to the permanent location of four more nuclear reactors in San Diego Bay adjacent to a densely populated area.

A request for a longer comment period has already been made to you by the City of Coronado in their February 7, 1998 scoping letter (page 1 attached). Since both community groups and civic leaders have requested a longer comment period, we request that you honor these reasonable requests. Please inform us at your earliest convenience of your determination.

Sincerely,

Laura Hunter

Laura Hunter, Director
Clean Bay Campaign

cc.
Senator Barbara Boxer
Senator Diane Feinstein
Congressman Bob Filner
Congressman Brian Bilbray
Ms. Felicia Marcus, EPA
Mayor Tom Smisek
Mayor Susan Golding

AUG 2 0 1998

CITY OF CORONADO

OFFICE OF THE MAYOR
1825 STRAND WAY
CORONADO, CA 92118

TOM SMISEK
MAYOR
(619) 522-7322

February 7, 1997

Mr. Dan Muslin (Code 03PL)
Southwest Division, Naval Facilities Eng. Command
1220 Pacific Highway
San Diego, CA 92132-5190

Re: Environmental Impact Scoping Comments for the Development of Homeport Facilities for Three Nimitz-Class Aircraft Carriers

O.1

Dear Mr. Muslin:

The City of Coronado has reviewed the scoping notice for the above listed project and requests that the following issues be examined and analyzed within the Environmental Impact Statement.

1. Public Review of EIS: Given the expected volume of material associated with the analyses of homeporting three nuclear carriers at four different locations, and in a variety of scenarios, the City requests a two and one-half month review period for the EIS. This is a reasonable period of time considering the expected volume of data. (The review period for the past EIS was 45 days)

2. Public Review and Hearings: The City requests that the Navy conduct at least one Public Hearing in Coronado on the Environmental Impact Statement to provide the public an opportunity to comment in a public forum on questions/concerns they may have on the Draft EIS as well as an opportunity for the Navy to respond. Additionally, the City requests that all other agency reviews of the document such as the Coastal Commission Hearing occur in San Diego to provide the City and the public with the greatest opportunity to participate in the NEPA/Coastal review process.

3. Record of Decision: The City requests a 45 day review period of the Final Environmental Impact Statement (FEIS) along with an additional public hearing conducted by the Navy to provide a second opportunity for the public to comment on

Comment Number	Response

Environmental Health Coalition

O.1.1	The Draft EIS public review period was extended to 75 days.
O.1.2	The Navy has identified several ways in which to ensure public participation to low-income, minority populations in the San Diego area. All responses to public comments generated during the public comment period provided in Spanish are translated into Spanish. The comments are annotated to ensure that the reader has sufficient understanding of the EIS materials without needing to read the EIS itself. The Notice of Availability (NOA), is translated in Spanish, and a telephone 888 support hot line is available in Spanish as well. The Navy considers that these efforts address the CEQ guidance memorandum on compliance with E.O. 12898.

ENVIRONMENTAL HEALTH COALITION

1717 Kettner Boulevard, Suite 100 • San Diego, CA 92101 • (619) 235-0281 • Fax (619) 232-3670
e-mail: ehcoalition@igc.apc.org • Web address: http://www.environmentalhealth.org

0.2

September 8, 1998

Mr. John Coon
Southwest Division (Code 05AL.JC)
1220 Pacific Highway
San Diego, CA 92132-5190

BY FAX

Dear John:

O.2.1

Environmental Health Coalition (EHC) is very concerned about the failure of the Navy to provide copies of the Draft Environmental Impact Statement (DEIS) for the additional homeporting of nuclear powered aircraft carriers to individual public members and some organizations. To date, several of the neighboring residents who are interested in the project and have requested a copy of the DEIS have not received one. Further, the San Diego Chapter of the Sierra Club, an organization commenting during the Scoping period, has yet to receive a copy of the DEIS. EHC modifies our requests for an extension of the comment period to 75-days and requests that the Navy supply adequate copies of DEISs to interested and impacted persons who request it.

The failure of the Navy to provide a copy of the DEIS to those requesting it in a timely manner undermines the ability of the public to participate in federal decision-making and, we believe, it is in violation of public participation requirements. It is also in violation of the Executive Order on Environmental Justice which directs federal agencies to ensure ease of access to information about federal decisions to impacted communities. This action on the part of the Navy further underscores our continued concern that the Navy is making the process of public input very difficult thus leaving the public effectively out of the decision-making process. O.

Because many interested neighbors, public members, and organizations have yet to receive a copy of the DEIS, EHC would like to modify our request for additional comment period as follows: EHC requests 1) additional time to allow for a **75-day comment period** (such as was requested by the City of Coronado initially) and 2) that the Navy **immediately** provide copies to interested individuals for review and comment. We further request that the clock on the comment period not commence until such a time as all public members who request a copy, receive one.

We remind the Navy that 40 individuals commented on the project during the Scoping process and over 178 are on the individual interest list. This is a project that will have serious impacts to the people of the region. There are many people in Coronado and San Diego that deserve the opportunity to review and comment on this document. The requirement to spend hours in the library reading a long and complicated document is not reasonable or acceptable access for working people or those who do not live near or have the ability to access a library.

We feel compelled to restate our **strong** objection to the fact that copies of the DEIS have not been provided to individual public members who have requested it. This directly undermines public participation in this case.

Please notify us as soon as possible regarding your decision.

Sincerely,

Laura Hunter

Laura Hunter, Director
Clean Bay Campaign

cc. Senator Barbara Boxer
Senator Dianne Feinstein
Congressman Brian Bilbray
Congressman Bob Filner
Administrator Felicia Marcus, EPA
Mr. Homer Bludau, City of Coronado

Comment Number	Response

Environmental Health Coalition

O.2.1 The Draft EIS public review period was extended to 75 days.

The Navy provided a copy of the Draft EIS to all individuals that placed a request for the document. A total of 331 copies of the Draft EIS were distributed during the public review period. The Draft EIS was available at several local libraries in each location (see Chapter 10 of the Draft EIS). The Draft EIS Executive Summary was available on the internet for public access.

THE PEACE RESOURCE CENTER OF SAN DIEGO

...working for peace, social justice and the environment since 1980

September 10, 1998

Mr. John Coon, Project Manager
Southwest Division, NAVFAC, Code 05AL-JC
1220 Pacific Highway
San Diego, CA 92132

Dear Mr. Coon,

The Peace Resource Center of San Diego requests an extension of 30 days on the public comment period on the Draft Environmental Impact Statement for two more CVNs to be homeported in San Diego. The requested 30 day extension would extend the comment period to a total of 75 days. O3.1

It is unreasonable to expect the public to review such an extensive document within the current 45 day limit. This project has serious and substantial ramifications for the San Diego area and requires a thoughtful, informed reading and analysis. An extension of time will give the public more time to analyze the document and to also secure professional analysis where needed.

In addition, it has been reported to me that there have been difficulties experienced by both individual citizens and organizations in obtaining copies of the DEIS in a timely manner. A single copy for my organization, for example, was sent to the Environmental Health Coalition office, an action which required me to make a twenty-mile roundtrip to pick it up. This was in spite of a phone conversation with your office earlier this year in which I requested two copies for my organization and was assured that I would receive them and a follow-up letter to your office (on my organizational letterhead with our address) restating my understanding that the Peace Resource Center would receive two copies. Distribution problems add to the burden of analyzing the document within the current deadline and put the entire public review process in jeopardy by undermining the public's ability to comment.

I would appreciate being informed of the Navy's decision regarding an extension as soon as possible.

Sincerely,

Carol Jahnkow

Carol Jahnkow, Executive Director

5717 Lindo Paseo, San Diego, California 92115 Phone: (619) 265-0730
Fax: (619) 265-0791 Email: prcsandiego@igc.apc.org

Comment Number	Response

The Peace Resource Center of San Diego

O.3.1	The Draft EIS public review period was extended to 75 days. Additional copies of the Draft EIS were provided as requests were made. An additional copy was provided to the Peace Resources Center of San Diego.

Laura Hunter

DRAFT
SAN DIEGO HARBOR SAFETY COMMITTEE
@1717 Kettner Blvd., Suite 100
San Diego, CA 92101

(Date authorized)

Mr. John Coon
Southwest Division, Naval Facilities Engineering Command
Code 05AL-JC
1220 Pacific Highway
San Diego, CA 92132

RE: San Diego Harbor Safety Committee request for funding of a vessel traffic system as a mitigation measure to address expected increases in ship traffic in San Diego Bay from proposed additional CVNs to San Diego Bay. O.4.1

Dear Mr. Coon:

The San Diego Harbor Safety Committee (SDHSC) was convened through the Lempert- Keene-Seastrand Oil Spill Prevention and Response Act of 1990. The Committee is charged with developing and implementing a Harbor Safety Plan for San Diego Bay to prevent oil spills in coastal waters. The Committee has conducted a complete analysis and evaluation of current conditions in the harbor as they related to safety which is updated annually.

O.4 The SDHSC would like to comment on the Navy's proposal to homeport two additional CVN aircraft carriers at Naval Air Station, North Island. We note that the dredging has already occurred to part of the navigation channel to accommodate the deeper draft of the USS John C. Stennis. The San Diego Unified Port District is also proposing to dredge the remainder of the navigational channel to allow for transit of the Bay by larger vessels.

This proposed systematic increase of vessels transiting San Diego Bay can be expected to result in changes to vessel traffic and raises the need to take all reasonable measures to ensure prevention of vessel casualties. One such measure, held as a high priority by the SDHSC, is the implementation of an appropriate vessel traffic information system.

The SDHSC requests that the funding and operation of an adequate vessel traffic system be adopted as a mitigation in the environmental review process for expected impacts from both of the above mentioned projects as required to insure that additional or larger vessels transiting the Bay do not compromise safety in the Bay.

In conclusion, the members of the SDHSC respectfully request that 1) the Navy reviews and includes recommendations from the San Diego Harbor Safety Plan as appropriate in the proposed projects for additional homeporting and dredging and, 2) that the mitigation plans for both projects include a commitment for implementation and operations and maintenance of an appropriate system of tracking vessel traffic.

Please call me with any questions regarding this letter at (619) 298-7849 or contact our administrative offices at (619) 235-0281.

Sincerely,

Captain Debra Marks, Chair
San Diego Harbor Safety Committee

Comment Number	Response

San Diego Harbor Safety Committee

O.4.1	The proposed action and alternatives contained in this EIS would not increase the total number of aircraft carriers physically present at NASNI for 96 percent of the time. On only 13 days per year would three homeported carriers be predicted to be in port simultaneously (see response to comment L.4.12). Consequently, there will not be an increase in the harbor ship traffic. Because there would be no impact to existing ship traffic conditions, no mitigation is needed.

SAN DIEGO HARBOR SAFETY COMMITTEE

@ Environmental Health Coalition
1717 Kettner, Suite 100
San Diego, CA 92101

September 14, 1998

Mr. Daniel Muslin (Code 03PL)
Southwest Division Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, Ca. 92132-5190

Subject: Siting of San Diego Harbor Channel Buoys 16, 16A and 17

Reference: (a) SDHSC Letter of September 25, 1997.
(b) COMNAVAIRPAC ltr. 10100, ser. N7/5407 of 24 Nov., 1997.
(c) San Diego Harbor Safety Plan, fifth iteration dated November 12, 1997.

O.5

Ref. (a) forwarded comments by this Committee re: Environmental Impact Statement E.I.S. for homeporting three NIMITZ Class CVN in San Diego. Request was made regarding additional dredging of the harbor channel and concurrent resiting of subject buoys. Ref. (b) expressed inability to justify a proposal to fund the additional dredging and, further, forwarded proposed resiting of subject buoys to Commander, Eleventh Coast Guard District as a matter under his cognizance. O.5.1

Subsequent investigation has revealed that the channel edge between buoys 16 and 16A is included in the current dredging to an even depth with the rest of the main channel. Without the requested widening of the channel resiting of the subject buoys is not advisable nor required. Further, with the line between 16 and 16A being dredged to channel depth it is advisable and required that those buoys remain as now sited.

Therefore all previous recommendations by this Committee for resiting subject buoys are rescinded and canceled. The next iteration of the San Diego Harbor Safety Plan, ref. (c), will delete this recommendation expressed on page 12 thereof.

By copy of this letter Commander, Eleventh Coast Guard District is requested to take notice of recommendation to leave buoys as now sited. Concurrence has been expressed by the San Diego Bay Pilots Association, the U.S. Navy Pilots and is requested of the U.S. Coast Guard Captain of the Port, San Diego.

The San Diego Harbor Safety Committee continues to recommend the additional dredging requested in ref. (a). O.5.1

Sincerely,

Debra Marks

Captain Debra Marks, Chair
San Diego Harbor Safety Committee

Copy to:

COMNAVAIRPAC
Code 7
NAS North Island
P.O. Box 357051
San Diego, Ca. 92135-7051

COMNAVBASE SDIEGO
937 N. Harbor Drive
San Diego, Ca. 92132-5100

COM11CGD (Code POW)
Coast Guard Island, Bldg. 50-6
Alameda, Ca. 94501

CO NAVSTA SDIEGO
3455 Senn Road
San Diego, Ca. 92136-5084

U.S. Coast Guard
Captain of the Port San Diego
2716 North Harbor Drive
San Diego, Ca. 92101

Comment Number	Response

San Diego Harbor Safety Committee

O.5.1	The Navy continues to take the position stated in COMNAVAIRPAC letter, 10100, serial N7/5407 of 24 Nov, 1997 in regard to additional dredging. The Navy concurs with the San Diego Harbor Safety Committee's decision with its recommendation for resiting channel buoys.

SIERRA CLUB, SAN DIEGO CHAPTER
San Diego and Imperial Counties
3820 Ray Street
San Diego, CA 92104-3623

Office (619) 299-1743
Conservation (619) 299-1741
Fax (619) 299-1742
Voice Mail (619) 299-1744
EBBS (619) 299-4018

September 10, 1998

Mr. John Coon (Code 05AL.JC)
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132

Dear Mr. Coon:

This is a request for an extension of 30 days beyond the October 12 deadline for comments on the Draft Environmental Impact Statement (DEIS) for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet. The large magnitude of the homeporting project presents a very complex set of environmental issues. Consequently, we believe that members of the public and community groups be given this additional time to analyze and provide informed comments on this DEIS. O.6.1

Thank you.

Sincerely,

Edward Kimura

Edward Kimura
Water Subcommittee

Comment Number	Response

Sierra Club San Diego Chapter

O.6.1	The Draft EIS public review period was extended to 75 days.

DEVELOPING HOME PORT FACILITIES FOR
THREE NIMITZ-CLASS AIRCRAFT CARRIERS
IN SUPPORT OF THE U.S. PACIFIC FLEET

DRAFT ENVIRONMENTAL IMPACT STATEMENT

DRAFT EIS COMMENTS

Name: Patrick J McClain Director-College Relations

Address: Everett Community College 801 Wetmore Ave Everett WA 98201

COMMENTS:

① We support the preferred Alternative in the DEIS, #2

② The college will open its Instructional Technology Center in early 1999 to further serve the families of the region and the Navy personnel & dependents of the Linco.

③ The college is part of a seven-school consortium designed to bring upper division course work to the Snohomish-Island-Skagit Counties region. A further commitment to the families of this area.

④ From 1983 we knew this would be a good home from the U.S. Navy. Our experience of Navy response demonstrates we have done the job well.

⑤ Keeping the Lincoln in Everett preserves the abundant choices for Navy families in housing, education, recreation, employment, et. al along the I-5 corridor and not abundant in Kitsap Co. Far more choice & flexibility, convenien

⑥ What happens to San Diego families during five year, 9-12 month maintenance periods in Bremerton? O.7.1

Signature: Patrick J McClain

Date: 10/19/98

Note: This form is supplied for your convenience. You are not required to use this form. Comments of any length may be submitted to the address on the reverse side of this form. Your comments should be postmarked on or before November 12, 1998.

Comment Number	Response

Everett Community College, Patrick J. McClain

O.7.1	The Navy's objective is to arrange a ship's schedule such that 2 days are spent in the home port for every day that the vessel is on deployment. Therefore, a ship that has deployed for 6 months must spend a minimum of 12 months back in its home port before it can deploy again. Any continuous period of about 2 months or more out of home port is considered a deployment. Home port changes have normally been executed during deployments to a shipyard for accomplishment of the complex overhaul. An official home port change allows a Navy family to relocate to the ship's "interim" shipyard home port at government expense, thus minimizing family separation. For example, a CVN homeported at NASNI would execute a home port change for accomplishment of a 10- to 11-month dry-docking availability at PSNS. Another home port change back to NASNI would be executed following the availability. Please see Volume 2, Appendix G, for additional information.

To: John H. Dalton, Secretary of the Navy
From: Hempy's, Inc.

Dear Mr. Dalton,

On behalf of myself and the other five staff people at Hempy's, we urge you to say NO to any additional nuclear aircraft carriers in San Diego Bay. One is enough! As a downtown San Diego-based business we don't believe the presence of these carriers is in the best interest of our community. O.8.1

Sincerely,

Albert Lewis

Jerry McKee

Krisit Douglas

Kelly Wilson

Diane Wariner

Diane Wariner

HEMPY'S ® 917 WEST GRAPE STREET SAN DIEGO, CALIFORNIA 92101
Ph. 619-233-HEMP FAX: 619-233-1355 earthwise@hempys.com

Comment Number	Response

Hempy's, Inc.

O.8.1 Thank you for providing your opinion to the Navy, and taking the time to comment on the Draft EIS.

Foot of Sampson Street •San Diego •California •92113
P.O. Box 13308 •San Diego •California •92170-3308
(619) 238-1000 •FAX: (619) 238-0934

SOUTHWEST MARINE INC.

29 October, 1998
Serial No. RAM-160

Southwest Division
Naval Facilities, Engineering Command
Code 05AL-JC
1220 Pacific Highway
San Diego, CA 92132

Attention: Mr. John Coon
Project Manager

Subject: Support for Homeporting CVNs in San Diego

Dear Sir:

Southwest Marine, Inc. takes this opportunity to express its strong support for the Navy's planned expansion of the CVN San Diego Homeporting Program. Our company and our employees welcome these impressive vessels to the Port of San Diego. O.9.1

We are aware of the vocal minority here in San Diego that has raised safety concerns about nuclear ships in San Diego Bay. We only wish that they understood, as we do, the Navy's outstanding nuclear safety record regarding the operation and maintenance of nuclear vessels.

The Navy has distinguished itself in managing nuclear powered ships in every part of the world. Here in San Diego we have long been comfortable with the presence of nuclear powered cruisers, nuclear submarines and nuclear capable repair ships. The Navy knows the nuclear business and we will not second-guess the Navy's abilities.

We are proud to provide our services to support CVNs in San Diego. We look forward to the dramatic and positive effect that these carriers will have on our local economy. We are also proud to do our part in supporting our country's first line of defense.

Sincerely,

SOUTHWEST MARINE

Robert A. McKay
Senior Vice President

RAM:JP

Comment Number	Response

South West Marine, Inc.

O.9.1	Your comments are noted and are included in the Final EIS.

O.10

SIERRA CLUB, SAN DIEGO CHAPTER
San Diego and Imperial Counties
3820 Ray Street
San Diego, CA 92104-3623

Office (619) 299-1743
Conservation (619) 299-1741
Fax (619) 299-1742
Voice Mail (619) 299-1744
EBBS (619) 299-4018

November 2, 1998

Mr John Coon
Southwest Division (Code 05AL JC)
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

Subject: Comments on the DEIS for Developing Home Port Facilities for Three Nimitz-Class Aircraft Carriers in Support of the U.S. Pacific Fleet

Dear Mr. Coon:

The Sierra Club thanks you for this opportunity to provide comments on the subject Draft Environmental Impact Statement.

Our review has found that there are serious flaws in the DEIS. We also must express our disappointment that the DEIS failed to respond to many of the scoping comments on this subject in our letter of February 26, 1998. O.10.1

Our comments are attached in the following pages. We would like to be kept informed on the homeporting issue and request two copies of the final environmental impact statement.

Sincerely,

Edward Kimura

Edward Kimura
Water Subcommittee

Sierra Club Comments
on the Draft Environmental Impact Statement for
Developing Home Port Facilities for Three Nimitz-Class Aircraft Carriers
in Support of the U.S. Pacific Fleet
November 2, 1998

Naval Air Station North Island

1. **Development of Alternatives** Page 2-9, line 23, 24, and 25. The DEIS states here that the pierside facilities are capable of providing staggered maintenance of three homeported CVN's. It states here and elsewhere in the DEIS that 450 workers would have to be transferred to NASNI for nearly six months every two years. This contradicts the prior statement if three CVN's are homeported at NASNI as in alternatives one, two, and three. The staggered maintenance for three CVN's will require that the 450 workers be stationed at NASNI for 18 months out of the two year maintenance cycle. Clarify the number of workers needed to service one CVN and the total time these workers will be on station at NASNI to provide the two year maintenance cycle for each of the three CVN's. Also address the quality of life for these workers. How long and how often would they be required to be away from their homes? O.10.2
2. **Number of CV's stationed at NASNI** The DEIS states that there are currently two CV's homeported at NASNI (page 2-36, line 28). However, one CV, USS Kittyhawk, departed San Diego on July 6, 1998 and is permanently deployed to the Navy base in Yokuska, Japan, leaving one CV. Explain why the DEIS did not use one CV as the correct baseline. Using two CV's compared to one CV as the baseline clearly reduces the environmental impacts of homeporting the CVN's. Transportation and air quality are examples where significant differences in the environmental impacts occur depending on the baseline chosen. Using two CV's puts a more favorable and distorted spin on the air quality and transportation analysis for the CVN homeporting DEIS. O.10.3
3. **Home Port Alternatives Considered** The EIS should address the life cycle costs of the alternatives and include the Government Accounting Office findings presented in its report NSAID-98-1, "Navy Aircraft Carriers: Cost-Effectiveness of Conventionally and Nuclear- Powered Carriers", dated August 27, 1998. According to this report, the 50 year life cycle costs of the conventionally and nuclear-powered aircraft carriers are \$14.1 and \$22.2 billion, respectively. The need for these highly expensive nuclear-powered carriers in view of the GAO findings must be justified in the EIS. O.10.4
4. **Water Quality** Page 3.3-2, line 19 states that no-site specific water quality data exist. This is not acceptable as baseline information is essential in determining any changes in water quality at the NASNI sites in the future. Accordingly, there should be an ongoing water quality monitoring program. O.10.5
5. Page 3.3-4, lines 19 and 23 state that no site specific currents and water quality data exist for the mitigation sites. Line 20 states that the presence of a pier structure is expected to reduce the strength of the current flow in the area of the mitigation site. O.10.6

O.10

After making these statements, the DEIS then concludes that the results of the water quality study near the mouth of the San Diego Bay by Largier are applicable. That is to say, the waters at the mitigation site to a greater extent reflect the water quality of the ocean compared to the waters of the central bay. We cannot accept this highly subjective conclusion. Water quality data for these mitigation sites should be obtained. O.10.6

6. Under ***Operations*** page 3.3-9 the EIS should address water quality impacts on the San Diego Bay waters and mitigation of stormwater runoff from the CVN's, the wharves and piers as well as water run-off from the CVN's during maintenance (e.g., cleaning of ship surfaces and equipment). This issue was raised in our scoping comments letter of 26 February 1997 but has been ignored. O.10.7
7. The DEIS mentions but does not include the Storm Water Pollution Prevention Plan in the document for the reviewer judge its efficacy. The EIS should have this plan included in the appendix. O.10.8
8. ***Thermal pollution***. The CVN's while they are dockside will be transferring heat to their surrounding waters. The EIS should determine if amount of heat transferred can lead to thermal pollution that is harmful to the aquatic marine life in these waters. This issue was raised in our scoping comments letter of 26 February 1997 but has been ignored. O.10.9
9. **Sediment Quality** Page 3.4-7 During operations there should be an ongoing program to monitor sediment quality at critical sites along the NASNI shoreline including the CVN dockside sites. O.10.10
10. **Marine Biology** *Threatened and Endangered Species*, page 3.5-5. There should be strict adherence to the *Memorandum of Understanding between the U.S. Fish and Wildlife and the Southwest Division, Naval Facilities Engineering Command* of February 1993 to prevent adverse effects to the California least tern. O.10.11
11. **Transportation** Table 3.9-3, Page 3.9-5 shows an increase in personnel of 204 for the alternatives one, two, and three as required by the two additional CVN's. The same number is used in Table 3.9-4 to compute the daily average traffic. The DEIS does not include the traffic impact from the 450 workers from a nuclear capable shipyard needed to provide the six month duration maintenance for each CVN. (Lines 4 and 5 page 3.9-6) Assuming that these workers can service only one CVN at time, then these 450 workers must be in San Diego for 18 months every two years to service three CVN's. Explain or correct this apparent discrepancy. O.10.12
12. The use of two CV's as the baseline rather than one has a significant impact on the transportation analysis. O.10.13
13. **Air Quality** Table 3.10-1 is misleading and confusing. The reader can not readily determine the actual emissions for each of the alternatives only the incremental changes. The table nor the text explains how these increments are obtained. The EIS should provide the actual levels of the emissions. As noted previously, the baseline using two CV's at NASNI is highly questionable. Furthermore, as indicated in the comment on the transportation section, the emissions estimates do not include the added vehicular traffic due to the 450 nuclear propulsion maintenance workers. O.10.14
14. **Vehicular source emissions**. Page 3.10-9, lines 6-11. The DEIS appears to assume that all NASNI commuter vehicles meet the California average emissions standards. When in fact many of the Navy personnel as well as other NASNI civilian workers O.10.15

drive vehicles registered out of state and in states with less stringent emission requirements. The EIS should correct the vehicular emission factors to account for this fact. O.10.15

15. Page 3.10-9, lines 13-15. Again the DEIS appears to ignore the fact that three CVN's in alternatives one, two, and three will require that the nuclear propulsion maintenance workers will be in NASNI for 18 months of the 24 month PIA cycle. The sentence beginning with "These data represent worse-case annual emissions..." is ambiguous. It does not state the duration of stay of the PIA maintenance workers. O.10.16
16. As in the above comment on Table 3.10-1, Table K-2 of Appendix K-9 should be revised to give the actual emissions as well as the incremental changes. The air quality impacts should be revised to due to the added vehicular traffic by the 450 nuclear propulsion workers. O.10.17
17. **General Services/Access** *Fire Protection* Page 3.14-1. The DEIS describes only the fire protection for land fires and omits the fire protection for shipboard fires. This inadequacy should corrected. There should be fireboats (Navy and/or civilian) capable of rapidly extinguishing CVN fires. O.10.18
18. **Environmental Justice** The DEIS fails to address the issue of subsistence fishing. During dredging operations the resuspension of sediments containing toxic chemicals could possibly bioaccumulate in fish that are caught and eaten by people for subsistence. The EIS should address mitigation measures to protect the health of these persons. O.10.19
19. **Cumulative Impacts** Page 3.18-11, Transportation. The traffic count should be revised as indicated in the Transportation section to correct the duration of stay of the PIA related workers. This section states that the PIA activities cause temporary traffic conditions, a misleading statement. 18 out of 24 months stay is hardly a temporary condition. O.10.20
20. Page 3.18-11, line 29 states that the Navy is in the process of redesigning the Main Street Gate entrance to improve traffic flow. The sentence on page 3.18-12, line 2 stating that no traffic mitigation measures are proposed is based on the premise that the incremental increase in traffic due to the homeporting plan is insignificant. This also can be taken to mean that the status quo is acceptable. The DEIS only addresses the air quality standards based on the region wide APCD requirements but ignores the localized health impacts due to the commuter traffic emissions. This is another issue, raised in our scoping comments, that has been ignored. We strongly urge the Navy to take positive steps to increase the NASNI commuter vehicle occupancy rate. This has the beneficial impact of reducing not only the traffic congestion but also reducing the vehicle emissions and improving the air quality in Coronado. O.10.21
21. **Radiological Aspects of Nimitz-Class Aircraft Carrier Homeporting** Page 7-1 The introductory paragraph to this chapter of the DEIS states that GAO conducted an independent review of the NNPP in 1991. Did this review include classified information? It has been seven years since this GAO report. Will GAO continue to update their review of the NNPP? O.10.22
22. In our scoping comments we asked for an independent, technically qualified committee, with security clearance, acting to serve the public interest, to provide ongoing oversight of the NNPP and to provide an unclassified critical review available O.10.23

O.10

to the public of the EIS. Since this request was not honored in the DEIS, we again repeat the request. O.10.23

23. The Navy, at the 28 October 1998 public hearing in San Diego, stated that independent sources such as the EPA have approved the classified information of Appendix D of the DEIS. We request that EIS provide signed statements of certification from these agencies outlining the areas that they have reviewed. O.10.24
24. The testing of the nuclear propulsion system, including the reactor at the conclusion of the six month maintenance has not been addressed in the DEIS. O.10.25
25. Page 7-12, line 29. Define the acronym NCRPM in Chapter 11.2. O.10.26
26. Page 7-13, line 4. The EIS should quantify the amount (volume) of radioactive waste that would be generated at NASNI not "... a small fraction of the Navy total". O.10.27
27. We would like to know as we asked in our scoping comments if the Navy will be accepting radioactive and hazardous wastes from other facilities, Federal or non-federal for storage at the NASNI storage facilities. O.10.28
28. **Emergency Preparedness**, page 7-16. In conjunction with the radiological monitoring program, there should be continuous, on-site, meteorological monitoring. This is essential information for emergency response to an accidental release of radioactive matter. O.10.29
29. Continuous monitoring for airborne radioactive material should be conducted at strategic locations beyond the perimeter of the NASNI facility. Monitoring instruments should be paid by the Navy and monitored by APCD. O.10.30
30. **Emergency response planning** The Navy in conjunction with local and State governments should develop emergency response plans including evacuation if required in the event of a release of radioactive material into the environment. The public should be informed of these plans. O.10.31
31. ***Hypothetical Accidents***, Page 7-18. The DEIS states that a fire in the radiological support facility and a spill of radiological liquid from the support facility have the highest risk of occurrence. The DEIS fails to provide a risk assessment of a simultaneous release of radiological matter and hazardous chemicals in the event of a fire. It is not realistic to assume that fires will only release radioactive material. **We believe this to be a serious defect in the DEIS and must be corrected.** O.10.32
32. **Appendix F: Detailed Analysis of Normal Operations and Accident Conditions for Radiological Support Facilities** Table F-2, page F-3 shows the annual risk of a latent cancer from radiological support facility accidents. Explain why the risks shown are independent of the number of the CVN's based at given port location. The PIA maintenance cycle of six months every two years for each CVN will require the radiological facility to be in operation for 18 months out of the two year cycle to service three CVN's compared to just six months in two years for just one CVN. O.10.33
33. The DEIS uses accident probabilities 1 in 200 for a fire and 1 in 10,000 for a spill. How were these accident rates determined? Were they based on actual experience of a facility servicing three CVN's or were they based on assumptions? If the latter, what were the assumptions used? O.10.34
34. The DEIS states that the pierside facilities are capable of providing staggered maintenance for three CVN's (Vol.1, page 2-9) Are there any current Naval facilities providing this level of maintenance and if so, which ones? O.10.35

35. The DEIS states on page F-8, line 28, that the general population distribution includes children but does not indicate if this the same for all sites considered or specific to each site. It is known that the elderly are also more dose sensitive to radiation but this factor is not included in the analysis. SANDAG data shows that the population distribution by age varies in the surrounding communities. Coronado, for example, has a higher percentage of people over age 65 as compared to National City, with a younger age distribution. The DEIS analysis based on a generic population risk factor does not accurately portray the demographics and therefore, the risks in the San Diego region. The EIS should revise its risk analysis of the health effects taking these site specific age demographics into account. O.10.36
36. The risk factors in Table F-2 for the member of the public given the probability of a fire occurring are shown as average values. This is only first order statistics and does not provide adequate information to assess the risks. The statistical distributions (maximum, minimum, and standard deviation) for each of the five equal radial distances should be given. The risk analysis should be re-computed using the site specific demographics including the age related dose response (for the young and the elderly) and present the statistical distributions of the risk factors. In short, a mapping of the statistical data is requested. O.10.37
37. Page F-12, lines 33-35 defines the case of an impacted area used in the radioactive exposure simulations. This is one particular scenario showing that the footprint of the impacted area is contained within the facility boundary for all locations evaluated. There were no other plume scenarios noted in the evaluation of the impacted area in the DEIS. There are other cases presented in the DEIS in which the plume will rise then come back down at varying distances downwind beyond the boundaries of the facility, dependent on the meteorological conditions. Why were not these cases analyzed as we requested in our scoping comments or if analyzed, not reported in the DEIS? O.10.38
38. **Appendix J**, The probability of occurrence of a fire on board a CVN while in port undergoing the six month PIA should be determined and the (health and environmental impacts) analyzed and reported in the EIS. The release of both hazardous substances and radioactive material should be included. This is a serious omission in the DEIS. Non-fire related accidents on the CVN involving release of hazardous substances while undergoing maintenance should also be addressed. O.10.39

E. Kimura

Comment Number	Response

Sierra Club San Diego Chapter

O.10.1 The comments in the Sierra Club's February 26, 1997, scoping letter are summarized below. Following each comment is a reference in parentheses to the location in the Final EIS where information addressing that comment can be found.

1. Project alternatives should address:

   a. Alternative locations other than San Diego for the Nuclear Propulsion Maintenance and Radioactive Waste Storage Facilities. (Construction of the Depot Maintenance Facility for CVN propulsion plant work was covered under reference DON 1995a. This EIS does not construct any additional maintenance facilities at NASNI. Nuclear propulsion plant maintenance is conducted at Puget Sound Naval Shipyard (Chapter 4) and at Pearl Harbor Naval Shipyard (Chapter 6), thus the EIS has addressed alternative sites for CVN maintenance. The EIS also states that performance of maintenance in the ship's homeport is essential for sailor quality of life (Volume 2, Appendix G).)

   b. Alternative locations in the San Diego area for the Nuclear Propulsion Maintenance and Radioactive Waste Storage Facilities. (Please see the response to 1.a. above).

2. <u>CVN support facilities.</u> The EIS should specify if the nuclear repair, processing, and radioactive and hazardous waste storage facilities would be used only for the homeported CVNs or if they would serve transient CVNs and other operations as well. (Transient CVNs would not be subject to PIAs at NASNI as they would be involved with aircraft onloads and offloads- see section 2.3.2.1).

3. Water quality analysis should address:

   a. Thermal pollution from each and all CVNs, including transient CVNs. (Please see section 3.3.2.2).

   b. Ship sanitary and industrial wastewater discharge and treatment while in port- NASNI or civilian plant. (Please see section 3.16).

   c. Stormwater and wash water runoff from CVNs (Please see section 3.16).

   d. Sampling of areas to be dredged, control of turbidity during dredging, and mitigation of sensitive habitats disturbed during dredging or disposal (Please see sections 3.4 and 3.5).

   e. Pollution due to corrosion protection measures (anti-fouling paint and cathodic protection of metals) – (Please see section 3.4).

Comment Number	Response

4. Air quality analysis should address:
   a. Traffic emissions and ambient levels in Coronado neighborhoods adjacent to NASNI access roads during rush hour traffic (see section 3.10)
   b. Construction emissions, including dredging and traffic (see section 3.10)
   c. Operational emissions, including support ships (see section 3.10)
   d. Measures to meet new NAAQS (see section 3.10)
   e. Monitoring stations (location, costs, operational responsibility) (see section 3.10)
   f. Human health impacts (see section 3.10)
5. Health and safety analysis should address:
   a. Procedures and processes used in CVN maintenance that could release hazardous materials (see Volume 1, section 3.15; Volume 2, Appendix J; and Volume 3, section 3.15).
   b. Training and certification of personnel involved (see Volume 1, section 3.15; Volume 2, Appendix J; and Volume 3, section 3.15).
   c. Failure rates (see Volume 1, section 3.15; Volume 2, Appendix J; and Volume 3, section 3.15).
   d. Oversight review of classified maintenance processes (see Chapter 7).
   e. Reactor testing following repair and refurbishment (see Chapter 7).
   f. Monitoring for airborne radioactive materials (see Chapter 7).
   g. Contingency plans for evacuation in case of accidental radioactive release (see Chapter 7).
   h. Hazardous materials emergency response (see Volume 1, section 3.15; Volume 2, Appendix J; and Volume 3, section 3.15).
   i. Risk analysis for radioactive plume from fire in radiological support facility (Chapter 7 and Volume 2 Appendix K).
   j. Health risk from hazardous material release from CVN maintenance facilities (Section 3.15 and Volume 2 Appendix J).
   k. Background air quality levels (section 3.15).
   l. CVN reactor safety issues, including combined health risks for all CVNs (see Volume 1, section 3.15 and Chapter 7; Volume 2, Appendix K and J; and Volume 3, section 3.15).
6. <u>Noise analysis.</u> The EIS should address noise impacts on human health, including vehicular, aircraft, and CVN support operations. (section 3.11).

Comment Number	Response
	7. Security measures. The EIS should address terrorist attack from all pathways: land, air, and water. (The Navy does not perceive that having three CVNs at NASNI increases the threat from terrorists beyond the potential that has existed for the past several decades. Please see response to comment L.4.44). 8. Utilities analyses. The EIS should address impacts of increased electric, gas, and water needs (section 3.16). 9. Cumulative analysis. The EIS should include all foreseeable future Navy and civilian port projects, including increased ship activities that may be facilitated by CVN dredging (section 3.18). 10. The EIS should address: a. Upgraded infrastructure to support Deep Draft Power Intensive ships, e.g., AOEs from PSNS. (Infrastructure improvements for AOEs in San Diego are not proposed by the Navy, nor is such an undertaking an element of the proposed action; see section 2.3.3.1). b. Four E-2 squadrons from NAS Miramar (This is not an element of the proposed action; see section 2.3.3.1). c. Additional fixed and rotary wing aircraft (This is not an element of the proposed action; see section 2.3.3.1). 11. CVN support facilities. The EIS should address any future Navy plans for dry dock, nuclear refueling, or major nuclear propulsion overhaul facilities in the San Diego area to service CVNs. (see section 2.3.2.1, 3.18, and Volume 2, Appendix I). 12. Traffic mitigation. The EIS should include steps to increase vehicle occupancy rate (see section 3.9.1). 13. NAVSTA upgrades. If the project requires any upgrades to NAVSTA San Diego, a separate scoping meeting should be held. (This is not an element of the proposed action; see section 2.3.3.1).
O.10.2	Quality of life issues for Shipyard workers is a matter of concern for the Navy, and are addressed in repair workload assignment decisions outside the scope of this EIS. Retaining core maintenance capabilities, such as skilled Naval Shipyard workers and the facilities they work in, are strategic issues identified in Appendix G of this EIS. These issues are not environmental issues. Strategic issues related to the project will be considered prior to issuing the Record of Decision for this proposed action.

Comment Number	Response
O.10.3	NASNI has an extensive historical background of being a three carrier homeport, and has a majority of shoreside facilities to support that mission. In this EIS, the proposed action would provide the capacity to homeport up to two additional CVNs (total of three CVNs). Please see response to comment L.4.5 for a detailed discussion.
O.10.4	Please refer to response H.1.5 for issues pertaining to the GAO study cited in this comment. Further, it is not within the scope of this EIS to examine the propriety of building nuclear aircraft carriers. In this EIS the Navy is concerned with developing home port facilities for present generation of NIMITZ-class aircraft carriers in support of the U.S. Pacific Fleet. One of those candidate CVNs is the USS NIMITZ, which was commissioned in May 1975. Another is the USS RONALD REAGAN, whose construction started in 1995 and is scheduled for launching in 2000.
O.10.5	Although site-specific water quality data are unavailable, existing information from adjacent areas provides data for characterizing present conditions. The value of periodic monitoring of water quality parameters to detect impacts would be affected by the large natural variability in conditions that would likely obscure any short-term changes related to the proposed project activities. Please refer to sections 3.3.1.1 and 7.4.4.1 for a discussion on quarterly marine water sampling for radioactivity conducted by the Navy.
O.10.6	Section 3.3 has been revised to eliminate comments regarding the possible effects of Pier Bravo on current strength in nearshore areas of the mitigation site. The Final EIS states that currents in the vicinity of the mitigation site would be influenced by tides, and are expected to be similar to those near the adjacent BRAC mitigation site. Although site-specific data are unavailable, existing water quality information for other portions of the North Bay are considered adequate for characterizing the affected environment.
O.10.7	Runoff from a CVN deck, wharf, and pier is not covered under a stormwater permit. Thus, the Navy is not required to treat or monitor stormwater flows for these facilities. However, deck runoff is one of the operational discharges being evaluated under the Uniform National Discharge Standards (UNDS) program. The DOD and EPA will be establishing discharge standards for deck runoff from Armed Forces vessels.
O.10.8	A SWPPP would not be completed until after a decision regarding the proposed action, but would be expected to parallel the existing SWPPP in effect at NASNI. The construction contract associated with any proposed action would require completion of a SWPPP. The California State Water Resources Control Board would complete regulatory approval of the SWPPP. The SWPPP must be approved prior to initiation of construction and/or grading associated with the

Comment Number	Response
	proposed action. The permit must be continually updated as necessary to reflect current and changing conditions on-site. Although a copy of the SWPPP could not be provided as part of this EIS, sections 3.2, 4.2, and 5.2 of the Final EIS have been modified to reflect additional information regarding SWPPPs at Naval facilities.
O.10.9	CVNs, CVs, and other Naval vessels discharge cooling waters during transit within the harbor and while docked pierside. While CVs and CVNs use different sources of fuel (oil vs. nuclear), both types of ships rely upon steam propulsion plants that require seawater cooling. The seawater cooling requirements are similar and the thermal and marine life impacts from CVs and CVNs are comparable.
O.10.10	Sediment monitoring is not needed for berthing vessels, because these activities do not involve any active waste discharges. Any needed monitoring of the NASNI shoreline areas that are not covered by the pier construction and mitigation sites would be addressed by permits for other projects. Monitoring requirements associated with these other projects and actions are outside of the present scope, except as addressed under cumulative impacts in section 3.18. Please refer to sections 3.4 and 7.4.4.1 for discussions of quarterly marine sediment sampling for radioactivity conducted by the Navy.
O.10.11	Reference to the MOU has been incorporated into the Final EIS as recommended by the comment.
O.10.12	An average of 450 maintenance workers would be needed to support DMF maintenance activities for six month CVN PIAs at NASNI. Each CVN homeported at NASNI would require two six-month PIAs every six years. Thus, if three CVNs were homeported at NASNI, six PIAs would be conducted every six years, averaging one PIA per year. In addition to PIAs, CVNs must undergo drydocking PIAs (DPIA) once every six years. These maintenance availabilities would be done outside of the San Diego area, and would last for approximately 11 months. The BRAC EIS (DON 1995a) evaluated the traffic impact of DMF workers based on a one PIA in one year concept. The EIS determined that there would be no impact because of overall decreases in base population at NASNI. For example, NASNI has already experienced a decrease of about 2,500 personnel since the BRAC EIS was prepared over 4 years ago (see Volume 3, Table 2-1). While the BRAC EIS analyzed a lesser frequency of PIAs (two every six years), it did analyze what the impact of one PIA in one year would be, thus bounding the condition of this EIS where an average of one PIA each year would be

Comment Number	Response
	conducted. Thus, the conclusion of no impact stated the BRAC EIS is still valid for this EIS. Please also note that the 1995 BRAC EIS had several conservative aspects built into the analysis. (1) The 1995 BRAC EIS estimated the average DMF workforce at 750 personnel and assessed the impacts at this level. The Navy overestimated this workforce because there had been no actual experience in conducting a CVN PIA. Now that the Navy has conducted several PIAs, the average workforce number at NASNI has been lowered to 450 personnel. (2) The analysis in the 1995 BRAC EIS did not account for the fact that DMF workers average 2.5 persons per vehicle. The 1995 BRAC EIS assessed these workers as all single vehicle operators. Therefore the 1995 BRAC EIS conservatively assessed the number of DMF workers and bounded the impacts of one PIA per year in its analysis. It should also be pointed out that the PIA is a maintenance activity for the CVNs that would essentially replace for maintenance overhaul activities that are currently performed on the CVs. The CV maintenance activities are conducted periodically by the Navy and contract personnel that must commute to NASNI during the maintenance periods. The amount of work for CVs and CVNs are similar in size; therefore, it is not expected that CVN PIA activities at NASNI would vary greatly from past CV maintenance activities at NASNI or result in traffic increases in Coronado. Please note that the total amount of work between the old overhaul system and the new PIA maintenance system has not appreciably changed. While a PIA is 6 months in length, it is done once every 2 years. Under the old overhaul system it was not uncommon to perform multiple 3+ month SRAs during the same time period. The main advantage of the PIA system is that it affords the Navy a more even tempo of operations than the old overhaul system. Please also note that some recent NASNI CV SRAs have been nearly a year in duration as noted elsewhere in the City's comments. Because the total amount of work has not appreciably changed between the old overhaul system and the new PIA system, the Navy does not consider further analysis on this issue necessary.
O.10.13	The traffic analysis presented in the Draft EIS is based on the incremental increase in traffic that would occur as a result of the proposed action. NASNI has the current (and historical) capacity to support three carriers. Currently, NASNI has the capacity to support two conventional aircraft carriers (CVs) and one nuclear carrier (CVN) for a total of three homeported carriers. Alternatives One, Two, and Three have three CVNs. The proposed action would not result in two additional aircraft carriers, but would provide capacity to homeport two additional CVNs. As the number of personnel on the CVNs is slightly greater than that on the CVs, the proposed action would generate approximately 27

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	additional vehicle trips during the peak hours and 150 trips throughout an average day, as outlined in the EIS. The analysis indicates that a traffic increase of this magnitude would not be significant. Refer to the response to comments L.4.5 and L.4.12 for a more detailed discussion of the homeporting baseline at NASNI.
O.10.14	Table 3.10-1 in the Final EIS has been modified to more clearly express the actual emissions from each proposed action alternative. As stated on page 3.10-2 of the Draft EIS under *NASNI Emissions*, emissions from the CVs and CVNs were obtained from the BRAC CVN EIS. Emissions from the remaining source types associated with each vessel group were estimated by the methods described in section 3.10.2.2 of the Draft EIS. In regard to PIA maintenance worker commuter vehicles associated with the proposed actions, please see the response to comment L.4.13. Since the PIA is a maintenance activity for the CVNs that would essentially replace maintenance overhaul activities that are currently performed for the CVs, the net change in worker traffic between the two activities would be minimal.
O.10.15	Data on California and non-California vehicle registration associated with CV and CVN personnel have been obtained from the Navy. These data were used to revise the commuter vehicle emission calculations for the proposed actions in the Final EIS. Emissions from California and non-California registered vehicles have been estimated with the use of the ARB EMFAC7G and EPA MOBILE5 models, respectively. The non-California registered vehicles were simulated with MOBILE5 to operate without any inspection/maintenance (I/M) program to minimize emissions. However, section 118(d) of the 1990 CAA requires federal employee vehicles operated on federal installations to comply with locally applicable I/M standards. As a result, vehicular emissions have been somewhat over-estimated for the proposed actions.
O.10.16	The referenced sentence has been revised to state that the data in Table 3.10-1 over-estimates emissions for four out of every six years from the action, since PIA maintenance would only occur for six months every two years. Additionally, during the third bi-annual maintenance cycle, the CVN would relocate to PSNS Bremerton for 10 months for DPIA maintenance. Section 3.10.2.2 analyzes the addition of one CVN and removal of CV (Alternative Four), which would produce one PIA cycle that would last for 6 months every 2 years. With a total of two CVNs at NASNI, there would be 4 PIA cycles every 6 years. Adding a third CVN would produce one PIA cycle per year, on the average. It is possible that 2 PIA cycles could occur in one year. However, the NASNI DMF would limit annual emissions of VOC and PM_{10} to 15 and 3 tons, respectively. Therefore, performance of 2 PIAs per year at NASNI would not exceed these emission levels.

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O.10.17	The requested changes have been made to Table K-2 in Volume 2, Appendix K. In regard to PIA maintenance worker commuter vehicles associated with the proposed actions, please see the response to comment L.4.13.
O.10.18	Fire protection level of service currently meets the requirements specified by the Department of Defense Instruction (DODI) 60.555.5, as stated in section 3.14. Adequate fire protection has existed for CVs at NASNI, and would continue to exist for CVNs as well. Adequate fire lanes and equipment exist to combat any shipboard fire at NASNI. Section 3.14.1 of the EIS has been revised to state that sufficient resources at NASNI exist to combat any shipboard fire. Additionally, the crew of the ship is trained in shipboard fire-fighting. This training is part of total ship damage control training and all the crew receives the training. In port, the duty section has a core of damage control professionals that are augmented by the Inport Emergency Team, a group approximately 25 in number. They in turn can be augmented by the 200-plus remaining members of the duty section. Fireboats are not needed.
O.10.19	The comment questions impacts to subsistence fishing in the bay that would result from the bioaccumulation of toxics suspended during dredging operations. As stated in Draft EIS section 3.5.2.2, fish would avoid dredge areas, so they would likely not be affected by any contaminants resuspended during dredging. In addition, subsistence fishing in San Diego Bay is generally not considered a prominent and frequent activity. The small number of fish, if any, that could be affected by contaminants resuspended during dredging combined with the relatively few number of individuals who subsistence fish in the Bay result in the unlikely probability that those who fish would catch and consume the affected fish. This is therefore a less than significant impact.
O.10.20	If there were three CVNs at NASNI, then the PIA activities would occur, on average, for 18 months out a 36-month period, which represents 50 percent of the time. In the EIS for the one CVN previously approved for NASNI (DON 1995a), it was demonstrated that the additional personnel associated with the PIA activities would be offset by the planned decrease in personnel at other NASNI operations and that there would be no net increase in commuter traffic associated with the PIA personnel. In essence, the PIA-related traffic is included in the future cumulative projected conditions because no traffic reductions were assumed to account for the anticipated personnel reductions at NASNI by the target years of 2001 and 2005. The addition of two more CVNs at NASNI would not require any additional personnel for the PIA activities over and above the level that has already been approved, but would simply increase the number of months during each three-year cycle that the PIA personnel would be on base. These workers would contribute to the volume of commuter traffic traveling to and from NASNI when the PIA operations would be occurring; however, the overall NASNI-generated traffic volumes would be no greater than the existing

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	levels because of the anticipated decrease in total personnel. The EIS text has been modified to eliminate the reference to PIA traffic as a temporary traffic condition, which would be appropriate for one CVN but not for three CVNs.
O.10.21	This EIS evaluates the impacts of the proposed action relative to the affected environment. This difference would not result in significant long-term impacts on local transportation networks. The Navy will continue to encourage employees to use alternatives to single-occupancy vehicle transportation, consistent with actions such as developing ferry service from the former Naval Training Center, establishing van sharing, and contributing to local bus service. The net change in average daily trips (ADT) from vehicles associated with the addition of one CVN and removal of one CV would be 150 vehicles. With the arrival of a second CVN in the year 2005, 96 percent of the time, two or fewer carriers would be in port simultaneously so that this level of traffic would not change (please see response to comment L.4.12). During 13 days per year that three carriers would be in port simultaneously, an additional 4,579 ADT would occur. This would be short-term and intermittent. Emissions from the second additional CVN would exceed the SDCAPCD major source threshold of 100 tons per year for CO beginning in the year 2005. The majority of these emission increases would occur from vehicles that transport crew dependents from off-base housing to the greater San Diego metropolitan region. These emissions would be spread over a large area and would not be expected to contribute to an exceedance of an ambient air quality standard. Additionally, since the population levels at NASNI would decrease in future years even with the addition of a second CVN (see Volume 3, Table 3-0), future traffic generated by NASNI in the year 2005 would not exceed historical levels. As a result, traffic associated with the alternative would not be expected to exceed any ambient air quality standard within roadways in proximity to NASNI and CO emissions from the action would therefore be insignificant.
O.10.22	The GAO review included unrestricted access to classified information. Regarding the question of whether GAO will continue to update their review of the NNPP, the Navy has no control over what issues GAO reviews, and is not aware of any GAO efforts to re-review the NNPP.
O.10.23	Section 7.1.4 of the EIS cites the results of several independent reviews of the Naval Nuclear Propulsion Program that have occurred, including review of various aspects of the Program by the GAO, NRC, ACRS, and EPA. Although these reviews are not required, they are conducted to provide added assurance and confirmation of that NNPP operations pose no significant risk to public health and safety. In addition, EPA received the entire Draft EIS, including the classified appendix, conducted a review, and provided comments based on their

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	review. The Navy has responded to those comments (see F.3 series). EPA had no comments on the classified appendix.
O.10.24	The commentor's statement concerning what the Navy stated at the Draft EIS public hearing in San Diego on 28 October 1998 is incorrect. From the court recorder transcripts, the Navy spokesman stated, "The classified appendix is not releasable to the public but has been provided to EPA Headquarters for review." The classified appendix was provided to EPA headquarters for review consistent with the implementing regulations of NEPA (40 CFR 1507.3 (c)). EPA is not required to provide written confirmation of review of every section of the EIS, and the Navy is not required to seek such confirmation. However, EPA did review and provide comments based on their review of the entire Draft EIS, and the Navy has responded to those comments (see F.3 series). EPA had no comments on the classified appendix.
O.10.25	There are no extraordinary evolutions involved with testing of the nuclear propulsion plant or any of its components during homeport maintenance operations. Such testing, which has been routinely conducted for over 30 years on numerous nuclear-powered ships, normally involves actions such as verifying proper operation of pumps, and checking the integrity of welds. Thus, such testing would not result in emissions that would exceed those already contemplated in the EIS.
O.10.26	NCRPM stands for National Council on Radiation Protection and Measures. Section 12.2 of the EIS has been modified to add this acronym.
O.10.27	Section 3.15.2.2 already states that "It is expected that for each CVN homeported at North Island, approximately 325 cubic feet of low-level radioactive waste per year would be generated." This is a volume smaller than a cube approximately 7 feet on a side. In addition, section 3.15.2.2 states that ". . . small amounts of mixed waste (less than 3 cubic meters per year from each CVN) would be generated . . . ." This is a volume smaller than approximately 5 feet on a side. Thus, no change to the EIS is deemed necessary.
O.10.28	There are three facilities where different types of waste may be stored at North Island: (1) Controlled Industrial Facility (CIF): Among other functions, the CIF is where the Navy plans to temporarily store radioactive waste generated as a result of operations at North Island. There are no plans to receive radioactive waste at the CIF from any off-site facilities. The types of waste stored at the CIF are discussed in section 3.15.2.2 (under the sub-title Solid Radioactive Waste). In addition, section 3.15.2.2 states that "It is expected that for each CVN homeported at North Island,

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approximately 325 cubic feet of low-level radioactive waste per year would be generated." This is a volume smaller than a cube approximately 7 feet on a side.

(2) The North Island Mixed Waste Storage Facility (MWSF) will temporarily store mixed waste (waste that contains both radioactive and hazardous constituents). The MWSF is permitted to store mixed waste from NASNI or SUBASE San Diego only. The types of waste stored in the MWSF are discussed in section 3.15.2.2. In addition, section 3.15.2.2 states that "...small amounts of mixed waste (less than 3 cubic meters per year from each CVN) would be generated..." This is a volume smaller than approximately 5 feet on a side.

(3) The hazardous waste facility is indirectly discussed in section 3.15.2.2 of the EIS (under the subtitle Operations). This facility is indirectly discussed because the proposed action is not expected to affect this facility based on the premise that CVs are being replaced by CVNs at NASNI, and that the amount of waste generated by the two types of ships is similar. The NASNI hazardous waste facility is permitted to receive waste from other facilities.

O.10.29 Please see response to comment L.4.36.

O.10.30 Please see response to comment L.4.36.

O.10.31 Section 7.5 of the EIS describes the Navy's emergency response plans. For many years, the Navy has coordinated emergency preparedness issues with emergency organizations in states where nuclear-powered ships are homeported. Procedures are in place for prompt notification of state and local officials in the highly unlikely event of an emergency. The Navy would communicate with those officials to provide radiological data and recommendations for protective actions. Any action needed to protect the public would be handled by the state and local officials using existing plans for emergencies from natural events, such as earthquakes or hurricanes.

The Navy would continue to coordinate emergency planning issues with the appropriate officials responsible for public health and safety under the proposed action. Since the Navy considers its existing emergency response procedures to be fully appropriate and protective with respect to NNPP operations, the Navy would rely on its long-standing procedures to respond to a radiological emergency. Thus, development of additional emergency response plans is not deemed necessary.

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O.10.32	Appendix F assesses impacts from a release of radioactive material from a radiological support facility as a result of credible (although unlikely) accidents due to CVN homeporting, and Appendix J assesses impacts from a release of hazardous materials from a pierside hazardous material locker as a result of credible (although unlikely) accidents due to CVN homeporting. Although hazardous materials may be present in a radiological work facility, the amount of hazardous materials in a radiological work facility would be far less than the amount of hazardous materials assumed in Appendix J to be in the hazardous material locker. Consequently, if a fire were to occur in a radiological work facility, impacts from the release of the hazardous materials in the facility would be far less than the impacts from the large hazardous material release analyzed in Appendix J. As such, an analysis separate from Appendix J is not presented for the hazardous materials in a radiological support facility since the analyses already individually represent the highest expected impacts from CVN homeporting for the types of materials evaluated. It is also important to note that section 2.1 of Appendix F states that radiological impacts are presented as risk of developing latent fatal cancer, while Appendix J presents only an evaluation of whether human health impacts may occur. As described in section 4.1.2 of Appendix J, while a determination of whether there would be an impact from a release of hazardous substances can be made, a determination of the extent of that impact cannot be made. Further quantification of the impacts by combining the hazardous material and radiological impacts cannot be accomplished since pathways and impact analyses are not the same for the hazardous and radioactive material releases.
O.10.33	The source term for the accident analysis is not dependent on the number of CVNs homeported at a location or whether a CVN is undergoing a PIA at the time. Rather, the source term is based on the maximum amount of material expected to be available for release from the facility at any time during the year. Use of this methodology ensures that the accident analysis provides a conservative assessment of the risks from a facility accident, and that the analysis is valid any time the CIF is operating. It is important to note that during the six-year operational cycle for each San Diego-based CVN, two PIAs would be accomplished at NASNI and one DPIA would be accomplished outside of the San Diego area. Thus, if three CVNs are homeported at North Island, a total of six PIAs would be accomplished at NASNI over six years, thus averaging two PIAs every two years for the six-year interval, vice 3 PIAs every two years for the six year interval as the commentor asserts. In addition, due to operational schedules, no more than one PIA would be occurring at a time. CVN maintenance cycles are discussed in section 2.3.1.3 of the EIS.

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O.10.34	There is a systematic approach that is followed when estimating probabilities of events. There are two classes of events that are typically evaluated in risk analyses: those that have occurred (historical events) and those that have not occurred (new events). Historical events have occurred often enough for sufficient data to have been accumulated. Some examples of historical events would be motor vehicle accidents, industrial accidents, earthquakes, or weather phenomena (hurricanes, tornadoes, lightning). Usually, historical events are of such interest that theories or models have been developed from the data which provide good estimates of the probability of occurrence. Since data does not exist for new events, the event is broken down into a sequence of events, each of which may be analyzed separately by theory, by analogy with historical events, or by engineering judgment considering experience to date and the detailed analysis of other similar systems or processes. These parts are then used to reconstruct the event, arriving at an estimated probability of occurrence. For the radioactive liquid spill accident, the probability of occurrence is based on an evaluation of the likelihood of several different events (airplane crashes, crane drop of a heavy load, etc.) which could produce a violent impact on the radioactive liquid tank. The estimated probabilities of these events ranged from 10^{-4} to 10^{-8} per year. Thus, the highest probability (10^{-4} per year) was used for the risk calculation in the EIS. For the fire accident, the probability of occurrence is based on fire frequency data for manufacturing and storage properties listed in reference Ganti and Krasner, 1984.
O.10.35	At the present time, PSNS is the primary maintenance provider for CVN propulsion plant maintenance in the U.S. Pacific Fleet. Norfolk Naval Shipyard and Newport News Shipbuilding Company are the primary maintenance providers for CVN propulsion plant maintenance in the U.S. Atlantic Fleet.
O.10.36	As is stated in section 2.2 of Appendix F, the risk factors used for these analyses are those recommended by the International Commission on Radiation Protection (ICRP). Two sets of risk factors are presented: one set for workers and one set for members of the general population. The risk factors for the general population are higher than those for workers since there is a greater number of children in the general population. The ICRP risk factors are applicable to any individual in the population, regardless of the demographic (e.g., age, race, or gender) in which they are included. Therefore, factors such as age and gender are already built into the risk factors used for the analyses in this EIS, and no change to the EIS is deemed necessary.
O.10.37	Site specific information was used in the radiological analyses completed for this EIS. Appendix F, section 2.0, presents a discussion of the methodology used for the pathways analysis, including where site specific information was used for the analyses. In sections 2.1 and 2.3, the discussions state that site specific data

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was used to determine the location of individual receptors (maximally-exposed off-site individual and nearest public access individual from facility maps) and the general population within a 50-mile radius of each facility (from 1990 U.S. Census data.) In section 2.4, the discussion presents the method for incorporating site specific meteorological conditions into the analyses. In addition, when other site specific information is readily available from local sources, these parameters are be incorporated into the analyses. Some examples of such data are surface water area, flow rates and utilization; aquifer volume, flow rates and utilization; population habits for surface water recreation; unique eating habits or food of local importance; and soil characteristics near the site.

For the accident analyses, the data tables in the EIS present the maximum expected consequences. Since the locations of members of the public are different for each of the 16 compass directions evaluated, doses were calculated for each of the 16 possible wind directions, each using the 95 percent meteorological condition. The analysis results reported in the tables for the nearest public access individual, maximally-exposed off-site individual, and the public are the largest of the 16 exposures calculated, and represent conservative estimates of doses to receptors in any of the 16 compass directions. To minimize the complexity of the EIS, exposures and distances for all 16 directions are not reported; however, the impacts would be smaller if the wind was blowing in any of the other 15 directions at the time of the accident.

In addition, see response to comment O.10.36.

O.10.38 As discussed in Appendix F, two separate impacts from accidental releases are evaluated: radiation dose and impacted area. As explained in section 2.4 of Appendix F, calculation of human health effects (and subsequently health risks) was conducted assuming 95 percent meteorology. To gain a more realistic estimate of the amount of land potentially contaminated after an accident that may require some form of cleanup, 50 percent meteorology was assumed. A fundamental difference between these two impacts is their ability to be remediated. A radiation dose, once received from an accident, can not be taken away. However, land and buildings contaminated by an accident can and would be cleaned up by the Navy consistent with the National Contingency Plan (40 CFR 300). In view of this difference, a more conservative approach was taken for estimating radiation dose by assuming 95 percent meteorology, vice 50 percent meteorology for the impacted area calculation. This is consistent with the evaluation of impacts from accidents in other NEPA evaluations.

Appendix F, section 2.7, states that the impacted area was determined for the hypothetical fire accident scenario. As stated above, this estimate was completed to provide perspective on the amount of land that might require some form of cleanup. The impacted area is defined in section 2.7 as that area in

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	which the plume deposited radioactive material to such a degree that an individual standing on the boundary of the fallout area would receive approximately 0.01 millirem per hour of exposure. If this individual spends 24 hours a day at this location, that person would receive a total of about 88 millirem per year from the ground surface shine, which is within the 100 millirem per year limit in 10 CFR 20 for NRC-licensed facilities. This evaluation should not be used to conclude that the plume from such an accident would not travel beyond the boundaries of the site, as the commentor implies. The impacted area calculation merely determines that the radiation levels from the deposited material beyond this impacted area would be less than 0.01 millirem per hour in the case of 50 percent meteorology. As the more conservative analysis results in Table F-9 show, there would be exposure to the public outside of the site boundaries for this hypothetical accident scenario as indicated by the dose estimates for the maximally-exposed off-site individual and the general population, which are greater than zero but still not significant.
O.10.39	A wide range of hypothetical accidents was considered in the development of the analysis presented in the EIS. The risk associated with more probable but less severe accidents are bounded by the accident analyses contained in the EIS. As discussed in the EIS, examining the kinds of events which could result in release of radioactive material to the environment or an increase in radiation levels shows that they can only occur if the event produces severe conditions. Some types of events, such as procedure violations, spills of small volumes of water containing radioactive particles, or most other types of common human error, may occur more frequently than the more severe accidents analyzed. However, they would likely involve only minute amounts of radioactive material and thus are insignificant relative to the accidents evaluated. A release of radioactivity from a fire aboard the CVN would qualify as such an event. The effect of simultaneous exposure to radioactivity and hazardous materials is addressed in O.10.32.

SAN DIEGO AUDUBON SOCIETY

2321 Morena Boulevard, Suite D • San Diego CA 92110 • 619/275-0557

O.11

November 10, 1998

Mr John Coon
Southwest Division (Code 05AL.JC)
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

Dear Mr Coon:

SUBJECT: COMMENTS ON EIS FOR HOMEPORTING OF THREE CARRIERS

The San Diego Audubon Society has concerns about the mitigation plans in San Diego Bay for the subject project. It appears that the proposed mitigation will cause a significant unmitigated loss of considerable intertidal habitat. This would follow a similar unmitigated loss of intertidal habitat that was caused by the Stennis Homeporting mitigation project. From the information available in the EIS, it appears that these unmitigated losses will be compounded in the mitigation for the subject project. O.11.1

This is particularly unfortunate as there has been a much larger proportional loss of intertidal habitat in San Diego Bay than any other habitat type, including the shallow subtidal habitat that is offset by the mitigation project. A large number of the at-risk, threatened, and endangered species of the Bay depend on intertidal habitat. O.11.2

We are also very concerned that no mitigation will be provided for the increase in biocides that will flow into the Bay from hull coatings. These materials will kill elements of the food chain and will contaminate soils. An ecologist could define a habitat enhancement whose yearly output would approximate this continuing impact. Mitigation should be proposed and implemented to offset this impact.

HABITAT LOSSES RESULTING FROM THE STENNIS PROJECT O.11.3

The Stennis phase of the Homeporting Project mitigated its eelgrass impact by grading back about 0.45 nautical miles of shoreline to increase area for eelgrass habitat. The shoreline that was graded had previously been intertidal beach partially covered by dumped concrete rubble. Between the rubble and below the rubble, beach soil provided intertidal habitat value for invertebrates and foraging area for shorebirds. It appears that after the Stennis mitigation project was constructed the intertidal area was reduced by about 30 to 50 feet at lower tides, the prime tide condition for shorebird foraging. This appears to be a loss of intertidal habitat of about 2.5 acres. From a very few observations, there was much less shorebird foraging on the Stennis mitigation site than the shoreline to the east. The Stennis mitigation site was much like the shoreline to the east before the mitigation project was constructed. This suggests that the quality of the intertidal area remaining in the Stennis' mitigation site is lower for shorebird foraging than it was before the mitigation project was constructed. Before the mitigation project, the site also had some value for high tide refuge as there were segments of degraded rubble bank that had gentler slopes and exposed soil which are of greater value for wildlife. So the Stennis' eelgrass mitigation project resulted in a significant loss of intertidal habitat quantity and quality which was not mitigated elsewhere. This was clearly inconsistent with the Clean Water Act. This phase of the Homeporting Project should include mitigation to offset that loss.

HABITAT LOSSES ANTICIPATED FROM THIS PHASE OF HOMEPORTING O.11.4

The subject EIR states that the upland areas of the mitigation project have minimal habitat value. It discusses the habitat value of the Bay itself. The EIS is grossly inadequate as it neglects to identify the shoreline (intertidal) habitat between the upland and the Bay that will be lost because of this project. Similarly, the list of birds that occur at the proposed mitigation site do not include any of the shorebirds that use the area. This shoreline is very important and has significant wetland value and wildlife use. It is far from a pristine, natural shoreline, but since much of the North Bay's shoreline is either rock revetment or sheet pile wall, it is relatively very useful and well used. We request that this inadequacy of the EIS be corrected before the environmental review or the project is advanced.

Unfortunately it appears that this project will to turn the beach and bank of this shoreline into a very steep rock revetment wall, as was done with the Stennis mitigation project. This will result in an additional significant unmitigated loss of intertidal habitat value. The EIR is inadequate in that it does not provide any information to allow us to assess how much intertidal habitat will be lost to the mitigation project. The project is inappropriate because it will needlessly destroy intertidal habitat, a habitat type which has been severely depleted by previous Navy and commercial projects and is desperately needed to support the wildlife of the Bay. There are a wide range of practicable alternatives to this loss of habitat. Therefore this project does not comply with the Clean Water Act. As intertidal and marine habitats are limited in the Bay, mitigation may require the excavation of previously filled areas to offset impacts. O.11.5

STATUS OF THE IMPACTED AREA O.11.6

The relatively intact condition of the current concrete rubble bank on the proposed mitigation site strongly suggests that the rubble was dumped there since the adoption of the Clean Water Act, 1977. The casual nature of the dumping suggests that it was probably not part of a formal construction project for which fill permits were obtained under the Clean Water Act. If these suppositions are valid, the baseline for assessing intertidal habitat value of the pre-construction value of the mitigation sites of both the Stennis and the current phase of the Homeporting project should consider the habitat value that would be there without the current concrete rubble on the shoreline.

BIOCIDES TO BE INTRODUCED THROUGH ADDITIONAL ANTIFOULING COATINGS O.11.7

The large volume of biocides that will be emitted by the hull coatings of these ships will kill elements of the food chain and will contaminate sediments and reduce the wildlife support value of the Bay. An ecologist can define a habitat creation or enhancement whose yearly output would approximate this continuing loss. Mitigation should be proposed and implemented that would sufficiently offset these impacts. The argument that this degradation is relatively insignificant or its impacts are made insignificant by dilution are inappropriate. It is a large quantity of continuous contamination. Its impacts are significant whether diluted or concentrated.

O.11

CUMULATIVE IMPACTS

This EIS is inadequate in that it fails to identify the cumulative loss of intertidal habitat of the current project in conjunction with the loss due to the Stennis mitigation project. It also fails to address the loss of intertidal habitat of the project in conjunction with the recent National City Marine Terminal, Oakwood Apartments, and La Meridian Hotel which also had intertidal habitat impacts. O.11.8

The EIS also fails to identify the cumulative contamination impacts of the additional emissions of the antifouling hull coatings of this project in conjunction with those of the Stennis projects and with all other Navy ships in the Bay. The document's cumulative impacts rationale appears to be that water quality problems already exist, so making them somewhat worse is not a problem. This sort of analysis is not compatible with the needs of San Diego Bay, or with the requirements of NEPA. O.11.9

REMEDIES

We urge that the EIS be upgraded to better identify the negative impact of the project and of the proposed mitigations, and that the mitigation projects be revised to adequately offset the impacts of the project. Particularly we urge that the mitigation be modified as follows: O.11.10

- Either avoid the loss of intertidal habitat inherent in the proposed mitigation eelgrass mitigation project, or create additional intertidal habitat elsewhere to offset its impact.
- Add an intertidal habitat mitigation project to offset the impacts of the Stennis phase of this homeporting project, roughly 2.5 acres.
- Add a habitat creation project that will offset the loss of wildlife support value caused by the continuous emission of biocides for all of the CVNs being homeported in the Bay including the Stennis, or construct a bay-water purification system that will extract a quantity of copper and other biocides equivalent to that emitted by the CVNs.

San Diego Bay is very important to local, regional, and migratory wildlife, but its wildlife support value has been severely diminished by previous Navy and civilian projects and operations. If the Navy is unable or unwilling to offset the impacts of the proposed project, it should choose a less environmentally sensitive site for this project than San Diego Bay.

CONCLUSION

We urge that the inadequacies of this EIS be corrected and recirculated before the environmental review advances, and the proposed mitigations be revised. The public and agencies must be given a chance to assess and comment on the needed amplifications and corrections before moving to the FEIS. The public must especially be allowed to verify that the shallow water mitigation project will not result in loss of intertidal habitat. Please keep us informed of future stages of the environmental review and mitigation planning for this project. O.11.11

Sincerely,

James A. Peugh

James A. Peugh
Coastal and Wetlands Conservation Chair

cc
USFWS, Martin Kenney
USACOE, David Zoutendyk

Comment Number	Response

San Diego Audubon Society

O.11.1 As detailed in responses to comments F.2.10 and F.2.11 and clarified further in Volume 1, section 3.5, there would be 1.5 acres impacted by the new wharf project. Of this 1.5 acres, about 0.8 acres would be low intertidal, abutting the quay wall, and 0.7 acres would be subtidal. Mitigation for the 1.5 acres would be based on selection of one of two options for site design, intertidal or intertidal subtidal, to be determined by the agencies during permitting. Eelgrass would be mitigated using credits from the Navy's Eelgrass Mitigation Bank, with the amount determined based on pre- and post-construction surveys and consistent with the Southern California Eelgrass Mitigation Policy. The new habitat at the mitigation site would be of higher quality, based on a more gradual slope, than the impacted area which is steeply sloping and affords very little if any shorebird foraging habitat. For the BRAC mitigation site, the U.S. Army Corps of Engineers Permit No. 94-20861 and design of the mitigation site was coordinated with several resource agencies, including NMFS, USFWS, and CDFG to determine what the habitat mix should be, specifically that the mitigation site should maximize the area for eelgrass. Thus, the resulting mix of subtidal and intertidal areas, including the slope and construction materials was as specified in the permit. For the P-700A mitigation site the habitat replacement will be as specified above. An optimal natural slope for intertidal habitat exposed to wave action is about 15:1 (Hoffman 1988).

Additionally, as part of the dredged material disposal plan, the Navy will create about 10 acres of intertidal habitat at the NAB Habitat Enhancement Area, as detailed in Volume 1, section 3.5.

O.11.2 As stated in the EIS (section 3.3.2), the amount of copper leaching from a CVN hull is estimated to be slightly greater (0.37 pounds per day) than that from a CV. However, the number of carrier days in port is not expected to change, and the small increase in copper inputs to the bay associated with berthing a CVN is expected to be offset by planned decreases in the size of the Navy fleet, resulting in a net decrease over the next several years in the total copper input from anti-fouling paints on Navy vessels. Thus, CVN homeporting is not expected to exacerbate copper loadings to San Diego Bay. While TBT is also a biocide used in hull paints, it is not used on CVNs. Anti-fouling paints containing tributyltins are not used on aircraft carriers and, therefore, would not be released to bay waters.

See also the response to comment F.2.13.

O.11.3 As stated above for O.11.1, although 1.5 acres of intertidal and subtidal habitat would be eliminated during new wharf construction, 1.5 acres of new habitat would be created at the mitigation site based on one of two option, intertidal or

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	intertidal/subtidal, to be determined by the agencies during permitting. The NAB Habitat Enhancement Area will create an additional approximately 10 acres of intertidal habitat. See revisions to Volume 1, section 3.5 for more details.
O.11.4	Habitat losses, including mitigation for intertidal areas, are addressed in the response to O.11.1 (and F.2.10 and F.2.11) and further detailed in revisions to Volume 1, section 3.5.
O.11.5	The response to this comment is as stated in O.11.1; during construction of the new wharf, 1.5 acres of intertidal and subtidal habitat would be lost, and 1.5 acres of habitat would be created at the new mitigation site. As part of the dredged material disposal plan, additional intertidal habitat will be created at the NAB Habitat Enhancement Area (Volume 1, section 3.5).
O.11.6	Consideration of the Clean Water Act baseline conditions is beyond the scope of the present EIS. The riprap was installed in phases, with the majority placed in 1980 and the final section completed in the early 1990s. Therefore, construction of the USS STENNIS mitigation site was in accordance with Clean Water Act guidelines. The new wharf mitigation site would also be constructed in accordance with permit conditions and it is proposed that this site would replace habitat as based on one of two options: intertidal or intertidal subtidal (Volume 1, section 3.5, and responses to comments O.11.1, F.2.10, and F.2.11). The USS STENNIS mitigation site was constructed in accordance with permit conditions set forth by the resource agencies.
O.11.7	The EIS concluded that the proposed CVN homeporting would not result in significant increases in the mass of copper inputs to San Diego Bay. Therefore, mitigation for this action is not needed. The use of dredged materials for habitat creation will be evaluated in the Final EIS. Please refer to the Navy response to comment III.O.11.2.
O.11.8	The USS STENNIS mitigation site was constructed in accordance with permit conditions set forth by the resource agencies. The new wharf mitigation site would also be constructed in accordance with permit conditions based on one of two options, intertidal or intertidal subtidal, to mitigate for the loss of about 0.8 acres of low intertidal and 0.7 acres of subtidal habitat. As addressed in section 3.18.5, other important recent and planned fill and associated mitigation areas include approximately 13 acres on the north side of NASNI (completed for the STENNIS homeporting project), and about 4 acres of subtidal habitat at Naval Station San Diego being evaluated as part of a project for homeporting DDPI ships. Construction of a mitigation site required to offset impacts for the present project would add 1.5 acres of constructed intertidal or intertidal/subtidal habitat. Enhancement at the NAB disposal area would create

Comment Number	Response
	about 10 acres of intertidal habitat. In comparison, the bay is comprised of over 12,000 acres, even though undisturbed habitat represents only a few thousand acres of that total. Consequently, the fill and mitigation areas resulting from the proposed action, together with past, present, and reasonably foreseeable projects total less than 20 acres, thus representing a cumulatively small percentage of the bay habitat. Moreover, since the mitigation sites are constructed in accordance with permit requirements, including performance criteria for creating a productive biological habitat, there would be no net cumulative loss of bay habitat. Other reasonably foreseeable projects such as the Kona Kai Development, Ritz-Carlton Hotel, Submarine Base, and Point Loma Sealift Military Command that do not propose in-bay dredging or construction would not contribute to regional impacts affecting broader areas of the bay.
O.11.9	Section 3.18 has been revised to address potential cumulative impacts resulting from the leaching of biocides from hull paints on Navy vessels. The EIS does not imply that impacts from the proposed action and their contribution to cumulative effects can be ignored because of existing bay conditions. Rather, the EIS concludes that the contribution from naval vessels to copper inputs to the bay is expected to decrease in the future due to planned decreases in the size of the fleet. The number of Navy ships homeported in San Diego will be reduced from 76 ships in 1992 to 55 ships in 1999. Reductions in hull leachate from Navy vessels are expected to be roughly proportional to decreases in the number of average size of the ships in San Diego Bay.
O.11.10	The USS STENNIS mitigation site was constructed in accordance with permit conditions set forth by the resource agencies. The Pier B mitigation site would also be constructed in accordance with permit conditions, and would mitigate the 1.5 acres lost in the wharf area based on one of two mitigation site designs, intertidal or intertidal/subtidal, as detailed in the responses to F.2.10 and F.2.11. The EIS concluded that the proposed CVN homeporting would not result in significant net increases in copper inputs into San Diego Bay because the number of carrier days in port does not change, the difference in copper releases to the bay from a CVN are similar to those from a CVN, and the overall size of the Navy fleet in San Diego Bay is expected to decrease over time. Therefore, mitigation for this action is not required.
O.11.11	This is a conclusionary statement and summary information in this statement has been provided in previous responses in the letter.

O.12

Environmental Health Coalition comment letter for

Draft Environmental Impact Statement for the Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet

November 12, 1998

ENVIRONMENTAL HEALTH COALITION

1717 Kettner Boulevard, Suite 100 ~ San Diego, CA 92101 ~ (619) 235-0281 ~ Fax (619) 232-3670
e-mail: ehcoalition@igc.apc.org ~ Web address: http://www.environmentalhealth.org

NOVEMBER 12, 1998

Mr. John Coon, Project Manager
Southwest Division, Naval Facilities Engineering Command
Code 05AL-JC
1220 Pacific Highway
San Diego, CA 92132

HAND DELIVERED

RE: *Draft Environmental Impact Statement for the Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the US Pacific Fleet*

Dear Mr. Coon:

Environmental Health Coalition (EHC) hereby submits the following comments on the *Draft Environmental Impact Statement (DEIS) for the Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the US Pacific Fleet in Coronado California...* into the official administrative record. In preparation of this comment letter, EHC contracted with several professional and academic scientists to review and comment on the information in the DEIS. Their responses are included in this letter and are highlighted. EHC has participated in all hearings and comments on all notices issued regarding this project.

The Navy proposes to locate over six nuclear reactors in the middle of a major metropolitan center without additional emergency response planning, without human health protections, without warning sirens, monitoring, or buffer zones. The obvious dangers of such a project are unacknowledged in this document and leave the public without adequate information to make an informed comment on how to improve the project if it can be improved. O.12.1

The DEIS is either incomplete or non-responsive on the issues raised in our February 10, 1997 Scoping letter and this DEIS suffers from the same failings as the *Final Environmental Impact Statement for the Development of Facilities in San Diego/Coronado to support the Homeporting of one NIMITZ Class Aircraft Carrier*, November 1995 (1995 FEIS) and fails to address legitimate comments expressed in our June 26, 1995 and December 8, 1995 letters. O.12.2

These earlier letters are incorporated by reference to this comment letter. O.12.2

Finally, this DEIS does not meet the more complete requirements of CEQA and we are unaware of any CEQA scoping period that was announced. Therefore, it will not adequately comply with CEQA. In addition to the internal and significant flaws and inaccuracies in the DEIS, it does not include the required mitigations or analysis of growth-inducing impacts. O.12.3

Our comments fall under the following major categories.

I. DEIS IS FATALLY FLAWED-- Overarching Fatal Flaws Undermine integrity and acceptability of entire analysis O.12.4

II HEALTH RISKS UNDERSTATED--the DEIS grossly understates and underestimates the health risks from this project in several ways.

EXPERT COMMENT LETTERS

The Institute for Energy and Environmental Research
Bernd Franke and Arjun Makhijani

Department of Pathology, University of Maryland, CHAPP Center
Dr. Katherine Squibb and Ted Henry

Department of Epidemiology, School of Public Health, University of North Carolina, Chapel Hill, Dr. David Richardson

Ms. Camille Sears

III. FAILURE TO DISCLOSE--DEIS is not a full analysis of the project because much important and relevant information is still denied to the public.

IV. CURRENT AND NEW INFORMATION NOT INCORPORATED--DEIS is not a full analysis-- lack of consideration of updated and new information violates the right of informed consent.

V. RADIOACTIVE AND HAZARDOUS WASTES-- DEIS Inadequately Assessed and Mitigated

VI. ACCIDENTS AND EMERGENCY PLANNING--DEIS Analysis for Accident and Emergency Response Planning Inadequate

VII. ENVIRONMENTAL JUSTICE AND PUBLIC PARTICIPATION-- DEIS fails to meet obligations for protecting disproportionately impacted communities

O.12

VIII. IMPACTS UNDERSTATED-- DEIS fails to properly and fully assess direct, indirect, and cumulative impacts and to mitigate them. O.12.4

IX. ALTERNATIVES ASSESSMENT DEFICIENT-- DEIS fails to adequately assess full range of reasonable alternatives

X. CONCLUSIONS

DEIS/DEIR is legally indefensible
Community Call for Navy Consideration
The project is too dangerous in this location

IMPORTANT NOTE: O.12.5

On September 4, 1998 the Regional Water Quality Control Board has notified the public of its intention to use this EIS as the Environmental Impact Report (EIR) required under CEQA without public recirculation with comments due on October 12, 1998. By letter dated October 19, 1998 the Regional Board notified EHC that the Board would recognize the Navy's extension to the comment period to November 12, 1998. **This letter is to serve as EHC's comment letter on the adequacy of the DEIS to serve as an EIR.** That which makes this document deficient as an EIS also make it deficient as an EIR. In fact, this document fails the CEQA test more severely than the NEPA test. **This DEIS does not meet the more complete and requirements of CEQA and will not adequately comply with CEQA. In addition to the internal and significant flaws and inaccuracies in the DEIS, it does not include the required mitigations or analysis of growth-inducing impacts.** Further, we were unaware of a Scoping notice was held for the EIR process. In the interest of brevity however, all recommendations and comments about the DEIS and recommendations for the FEIS should be inferred to also be recommendations about the DEIR and DEIS. This application of this letter to the EIR process is our intent and this is also EHC's comment letter on the EIR.

EHC wishes to re- state our conclusions here: O.12.6

This Draft EIS fails significantly both as an EIS and an EIR. It fails to properly define the project that it intends to support, fails to properly assess the impacts or alternatives, and fails to mitigate those impacts. It will be impossible for the Navy and any state agency to make an informed decisions regarding this project based on the analysis in the document. It must be redone and recirculated.

A COMMUNITY CALL FOR NAVY CONSIDERATION O.12.7

The community has spoken loudly, clearly, and frequently regarding the significant public concern and opposition to the Nuclear Megaport. We request that the Navy take our concerns into account before loading our Bay and our community with ever more nuclear reactors and even more risks to our health and safety.

One thousand people have joined EHC and other opposition groups in opposing this

O.12

project. O.12.7

Issues that have been of concern in the past and are still of concern in this DEIS. Nothing has changed. Nothing except that we have more reactors, more waste, more traffic, and more risk. The concerns we have raised in our previous extensive comments, appeals, and Freedom of Information Requests are still unanswered or ignored. The Health Risk assessments are still improperly manipulated. The Navy accident record is still hidden. Our safety is still unprotected. No meaningful actions have been taken in response to public input, most troubling, around public safety. These are not the actions of a participatory democracy. This does not invoke the important principle of informed consent.

Democracy is also undermined when the Navy completely self-certifies and (for the most dangerous aspects of the project) self-regulates a project such as the Nuclear Megaport. This violates the all important checks and balances of power that is an integral part of our society.

Community members have attended 7 public hearings on 5 separate environmental documents for this one project-- the Nuclear Megaport Project. By splitting the impacts into 5 separate studies, the total impact of the project was obfuscated and hidden. That is called piece-mealing and it is not allowed under the law. O.12.8

Of these 5 separate reviews, NONE has been signed by a person who cared enough about us to come to San Diego and hear first hand from us our concerns about how this project will effect our lives. This is not the action of a government that exists for and cares about the good of the people.

Bottom line, this fifth piece of the puzzle, the DEIS, ignores public input on issues most important to communities. **We request that no decision be made on this project until the new Secretary of the Navy meets with the community to discuss the concerns and the EIS is redone and re-circulated.** O.12.9

THE PROJECT IS TOO DANGEROUS FOR THIS LOCATION O.12.10

The tragedy of Bhopal has lessons for all of us to remember. They are best articulated by Mr. Edward Munoz, former Managing Director of Union Carbide India who stated in an interview,

"*..my reaction (to the accident) was that it was an enormous tragedy...but we all did have a responsibility for...putting a bomb in the middle of a populated place.*"

"*Well, I mean if you, if you do something that is inherently dangerous and somebody does something foolish with it, still you are responsible for doing what was inherently dangerous.*" (Bhopal: Setting the Record Straight by Josh Karliner cited in Working Notes, May/June 1998, page 3).

It is important to remember that Bhopal occurred due to the simultaneous and cumulative failure of 5 safety systems. A recent report revisited the Bhopal accident,

"*While the company blamed disgruntled workers, it is instructive to remember what really happened. Five major safety features were either inadequately designed or at least partially failed; a refrigeration system was not operating; a temperature indicator was not functioning; a vent gas scrubber was inadequately designed; a flare tower was not functioning; and, water curtains could not reach the leaking gas*"(Working Notes, May/June 1998), page 2 attached) O.12.11

The carriers are in the wrong place. Accidents happen. They have happened before and can happen again. **When considering what is at stake, the close proximity of a densely populated area to the nuclear reactors raises significant, justifiable concerns.** Just in the past few years the Navy's past record includes a drunken submariner watch-standing nuclear reactors and seriously fatigued and over-tired crewman causing a hazardous waste to spill into San Diego Bay.

Accidents can happen here. If they do, we are not prepared.

The Navy must take a step back, re-analyze this entire Nuclear Megaport Project, stay the decision to make the CVX generation of carriers nuclear-powered until an environmental and economic assessment can be completed, and then determine a solution for now and future generations of carriers that poses the least significant threat to human health and the environment. The public is owed no less from the Navy. O.12.12

Thank you for the opportunity to comment on this document.

Sincerely,

Laura Hunter

Laura Hunter, Director
Clean Bay Campaign

Continued comments attached

O.12

I. DEIS IS FATALLY FLAWED-- Overarching Fatal Flaws
Undermine integrity and acceptability of entire analysis

While there is much that needs to be changed in the DEIS in order for it to truly evaluate environmental impacts of the proposed project, there are certain fundamental, fatal flaws that undermine the validity of the entire document. These several serious fundamental flaws render its analysis incorrect and render the DEIS unusable as a legal environmental document for NEPA or CEQA document. **Since all analysis is based on assumptions made, the only way in which the flaws can be fixed is for an new DEIS to be written and distributed--an action EHC recommends.** O.12.13

DISCLAIMER: Although EHC will submit comments on this document, our fundamental position that the entire document is improper because it does not address the entire project and has a number of fundamental flaws that render it invalid. The fact that EHC is commenting on the current DEIS should in no way imply or compromise our rights to challenge the impropriety of the manner in which the Navy has failed to comply with NEPA and CEQA.

FATAL FLAW #1--DEIS DOES NOT ADDRESS THE WHOLE PROJECT

This DEIS is the fifth environmental document that has been issued for some part of one project-- the Nuclear Megaport. The Navy strategy to delay analysis and to split the impacts of the project into two or more EIS evaluations is improper. The Navy has piece-mealed the project and thus violated the law. In order to comply with the National Environmental Policy Act (NEPA) and CEQA, the Navy must issue a second Draft EIS that assess the impacts from the whole project. One EIS should be done on the whole of the project including homeporting of three nuclear carriers and related berth construction and dredging, two nuclear repair facilities, massive non-radiological ship repair facilities, a 500% increase in capacity at the Hazardous Waste Treatment Facility, storage and treatment of off-site hazardous waste on NASNI, visiting uses of NASNI by two additional nuclear carriers for training missions, a mixed waste facility, transportation of mixed and hazardous wastes on local streets and highways from over 38 other facilities, and construction of a 10-year storage facility for radioactive waste. O.12.14

Both the National Environmental Policy Act ("NEPA") 42 U.S.C. §4321 et. seq., and the California Environmental Quality Act ("CEQA"), Cal. Public Resources Code § 21000 et.seq., require that an EIS/EIR analyze the "whole of a project" that is being proposed. The Council on Environmental Quality Regulations to NEPA provide that,
"Proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement." 40 C.F.R. § 1502.4(a). They further provide that the scope of an EIS must include *"Actions... which may be:*
(1) Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they:

(i) Automatically trigger other actions which may require environmental impact statements. O.12.14
(ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.
(iii) are interdependent parts of a larger action and depend on the larger action for their justification." 40 C.F.R. § 1508.25(a).

Similarly under CEQA, an EIR must analyze the "whole of a project" being proposed. The CEQA Guidelines define "project" as the "whole of an action, which has the potential for resulting in a physical change in the environment, directly or ultimately..." Cal. Code of Regs, Title 14 § 15378 (a). This approach ensures that, "environmental considerations do not become submerged by chopping a large project into many little ones, each with a potential impact on the environment, which cumulatively may have disastrous consequences." Burbank-Glendale-Pasadena Airport Authority v. Hensler, 233 Cal. App. 3d 577, 592 (1991).

The Navy has been aware since 1994 that the "whole project" was to home port 3 CVNs in San Diego Bay, 2 CVNs in Puget, and realign the AOEs to Everett.
It is clear from the Navy's NEPA Administrative Record for Civil Case # 96-0947-BTM(CM) (Admin Rec.) that the decision to homeport a total of three nuclear carriers and construct related facilities in San Diego Bay was made in 1994. A few examples from Navy memoranda of 1993-94 make the point.

a. February, 1995- The Navy admits that the decision was undergoing an analysis of feasible alternatives "*...despite CNO's already-made decision of where they would go.*" Admin. Rec at Tab 2266.

b. July, 1994 *"NAVAIRPAC SUPPORTS THE OPNAV DECISION TO HOMEPORT THREE CVN'S AT NAS NORTH ISLAND AND TWO IN THE PACNORWEST: PREFERABLY BOTH AT PSNSY WITH A TRADEOFF OF THE FOUR AOE'S TO NAVSTA EVERETT, WA."* Admin Rec at Tab 1272

c. August, 1994 *"Long Beach - I tried to treat this lightly. Didn't want to get into timing because realistically you could reactivate some of Naval Station facilities dredge and upgrade pier and accommodate NIMITZ or CVN 76 in their arrival time."* Admin Rec at Tab 1365.

d. June, 1995 *"IT WILL BE IMPORTANT TO CONVEY TO THE CONGRESSIONAL REPS/SENATORS IN WASH. THAT IT IS OUR INTENT AND ULTIMATELY TWO CVNS WILL BE HOMEPORTED IN PUGET SOUND AREA. WE COULDN'T HOMEPORT FOUR IN SAN DIEGO EVEN IF WE WANTED TO."* Admin Rec at Tab 3402, Bates 072065.

e. June, 1995 One Navy document regarding "*...the latest thinking on PNW CVN scheming...*" states that an issue might approach " *a justification for pursuing what we want without being totally forthright about the real reasons...*" Admin Rec at Tab 3402, Bates 072064.

EHC holds that the earlier federal and state actions all constitute elements of this one project, we incorporate by reference the complete Administrative Records for the earlier NEPA case, the Mixed Waste Facility Permit, Hazardous Waste Facility permit, and the Environmental Assessment and Record of Decision for the Decommissioning of the USS McKee and the EIS and Record of Decision for the 1995 FEIS for homeporting the first Nuclear Carrier as well as the Administrative Records for the multiple actions taken by the Coastal Commission, Regional Water Quality Control Board, and the Air Pollution Control District as well as other actions of which we may not be aware. All of this documentation applies to one project that must be analyzed together so that the public may know the full impact of this one project. O.12.14

FATAL FLAW #2 --DEIS FAILS TO ACKNOWLEDGE THAT THE PROJECT SWAPS ONE CV FOR 2 CVNS

O.12

It is a primary error that the DEIS tries to base its analysis on the assumption that two additional nuclear carriers (CVN) are "replacement" carriers for the two conventionally-powered carriers (CV) that were historically home ported at Naval Air Station, North Island. This is improper. Today there is only one CV and one CVN home ported at NASNI and this current state of affairs is what the Navy must analyze as current conditions and against which future impacts must be considered. The Navy's reliance on removal of a carrier that has not been at NASNI since 1994 and another that was removed prior to the arrival of the USS Stennis, are inappropriately included in the analysis of two more carriers in the future. **The reality is that the Navy is swapping one CV for two CVNs.** This is a far different situation than the one analyzed throughout the DEIS and renders it invalid. This is a significant failing of the DEIS and also renders it unusable as a document that satisfies state environmental law. O.12.15

Under both NEPA and CEQA, an EIR/EIS must consider the potential effects of a proposed action on the environment as it exists at the current time. The CEQ regulations require that an EIS describe the "Affected environment" of the proposed action. 40 C.F.R. §1502.15. While "affected environment" is not defined in the regulations, the definition of human environment "*shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment.*" 40 C.F.R. §1508.14. The definition of "effects" includes "*Direct effects, which are caused by the action and occur at the same time and place.*" 40 C.F.R. § 1508.8(a) (emphasis added). Thus, the effects of actions, i.e. removal of any CVs, which are neither caused by the action nor occur at the same time are not relevant for discussion in the EIS.

Similarly under the CEQA Guidelines, "*An EIR must include a description of the environment in the vicinity of the project, as it exists before commencement of the project*...." Cal. Code of Regs. Title 14, § 15125 (emphasis added). "Environment" is defined as "the physical conditions which exist within the area which will be affected by the proposed project", Cal. Pub. Resources Code § 21060.5, which are "both natural and man-made." CEQA Guidelines § 15360. This language has been interpreted to require that an agency use the

existing environmental conditions at the time of the project application to compare to potential impacts from the proposed project. See *Environmental Planning and Information Council v. County of El Dorado*, 131 Cal. App. 3d 350 (1982), Christward Ministry v. Superior Court, 184 Cal. App. 3d 180 (1986). O.12.15

The many times in the DEIS that the writers brush off impacts from three CVNs by stating that "*..these inputs would be offset by the projected future decommissioning of two existing CVS*"(for one example see page 3.3-11,3.4-7,3.4-17, 3.17-5 etc...) violates the law. Further, since decommissioning of any CV is not a part of the project description, the FEIS must assess and mitigate the impacts from two additional CVNs.

FATAL FLAW #3 -- DEIS IS BASED ON:

A. SIGNIFICANCE CRITERIA THAT ARE UNSUBSTANTIATED

O.12.16

Section 3, the section which outlines environmental consequences and mitigation measures rates, in all areas, impacts of the project against a set of "Significance Criteria". Where these criteria come from is never discussed and none are attributed to a law, policy, or other official document. Further, they seem to appear out of thin air and to be handcrafted to meet the Navy's specific needs to promote their project alternative and to promote a more subjective standard of impact that can be up to Navy interpretation (see frequent use of the standard of a "substantial" impact (3.3-5,3.4-5,3.5-8, 3.6-3 etc...); inclusion of mixing zones even though one has not been granted (3.3-5), requirement of "persistent adverse effects", (3.3-4) etc. By contrast, NEPA requires that "Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement." 40 C.F.R. § 1502.24. Likewise, CEQA requires that "the determination of whether a project will have a significant effects on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on the scientific and factual data." Cal. Code of Regs, Title 14 § 15064(b). Thus, the entire project needs to be re-evaluated against a new complete set of significance criteria in alignment and attributed to existing law.

B. "HOME PORT OBJECTIVES" THAT ARE MANIPULATED

O.12.17

Another, major problem with the DEIS analysis and another fundamental flaw in the document is that the Navy selected the "Home Port Objectives" so narrowly so that the outcome of the Navy's predetermined plan would be assured. Line 18 (page 2-1) states that specific CVN home port locations were selected as a result of their ability to satisfy operations objectives or requirements" The implication of the use of the Home Port Objectives essentially means that the decision was not made on the impacts to the environment but rather how well the location met these objectives. However, other Navy decisions, such as the E-2 Squadron rejected NASNI as a location due to environmental considerations of the Clean Air Act. (See attached)

It is significant that nothing about minimizing impacts to neighbors and public health at large or any objective related to the environment is included in the Navy's bottom-line "objectives" (Page 1-5) Again, the Navy self-selected the objectives and protection of human health, public safety and the environment was not one of the objectives. This must change in the FEIS so that an objective with high priority on minimizing impacts and risks to the natural environmental and surrounding human populations be one of the most fundamental criteria. Then, these homeport locations need to be reconsidered with these objectives in mind. O.12.17

FATAL FLAW #4 -- DEIS FAILS TO ASSESS IMPACTS OF THE PRESENCE OF THE VESSELS O.12.18

The fundamental nature of this flaw is evidenced by the fact that it is included in the very first sentence of the DEIS which states *"...this Environmental Impact Statement analyzes potential environmental impacts resulting from constructing and operating facilities needed to support the homeporting for three NIMITZ-class nuclear-powered aircraft carriers (CVNs)..."* In short, the DEIS appears to restrict analysis of impacts to only those of building the shoreside facilities. This is a serious flaw. If the shoreside facilities are built for the purpose of accommodating carriers, the nuclear carriers and all the environmental impacts they bring will also come and must be analyzed and mitigated **as part of the project description.** Although the DEIS appears to analyze some impacts from the ships themselves (i.e. copper bottom hull paint leaching etc..) we are very concerned that at some point the Navy will abdicate its responsibility to consider and mitigate impacts associated with the vessels themselves using this original statement of intent as the justification. This is another fatal flaws in the analysis and the new DEIS must consider the impacts of the presence of the nuclear carriers (3) as well.

O.12

The Navy simply cannot continue to use the EIS/EIR process to merely justify decisions it has already made. Nor should prior decisions and commitment of resources be used to justify the outcome of this EIS. The NEPA regulations provide that, "Agencies shall not commit resources prejudicing selection of alternatives before making a final decision.... Environmental impacts statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made." 40 C.F.R. § 1502.2(f),(g).

California case law has reached a similar conclusion. In Stand Tall on Principles v. Shasta Union High School District, 235 Cal. App. 3d 772 (1991), the court found that an EIR" must not be used to rationalize or justify a decision already made". Id. at 783. CEQA requires that environmental analysis be conducted when an agency proposes to "approve" a project. "Approval" is defined as, "the decision by a public agency which commits the agency to a definite course of action in regard to a project intended to be carried out by a person." Cal. Code of Regs, Title 14 § 15352(a).

The prior fatal flaws result in the final, overriding fatal flaw;

FATAL FLAW #5--DEIS FLAWED ASSUMPTIONS LEAD TO FLAWED CONCLUSIONS.

The prior listed fatal flaws result in incorrect findings of no significant impact for almost all important issue areas. In turn, the mitigation program is grossly deficient and fails the legal tests of CEQA and NEPA. O.12.19

Frankly, it is hard to believe that the Navy is attempting to get the public to believe that the location of six nuclear reactors adjacent to major American city with associated repair facilities, hazardous and radioactive wastes, fuel spills, releases of radiation and heated cooling waters etc... has no impact and needs no mitigation to protect human health and the environment for the next 50 years or more. The chart that begins on page 2-63 is outrageous. For the record, this project, in part and in total, has significant impacts on water quality, sediment quality, marine biology, land use, socioeconomic, transportation, vessel transportation, air quality, noise, aesthetics, general services, health and safety, utilities, and environmental justice that were not properly analyzed or mitigated in this or the 1995 FEIS on the same project.

The lack of evidence, failure to analyze the entire project, poor analysis for that which is analyzed, etc... all point to a lack of evidence to support the conclusions old the EIS/EIR- namely that there will be no significant impacts from this massive project. An EIS must set forth sufficient information for the public to make an informed evaluation and for the decision-maker to fully consider the environmental factors involved and to make a reasonable decision. Sierra Club v. Corps of Engineers, 701 F.2d 1011 (1983). The DEIS here clearly does not do this. O.12.20

Similarly, under CEQA, the decisions of state and local agencies to allow this project to be permitted must be based upon substantial evidence. CEQA provides that *"The lead agency shall determine whether a project may have a significant effect on the environment based on substantial evidence in light of the whole record."* Cal. Public Resources Code § 21082.2, Laurel Heights Improvement Association v. Regents of the University of California, 47 Cal. 3d 376, 392 (1988). CEQA also requires that the findings of environmental effects of the project which are required to be made after completion of the EIR, must be supported by substantial evidence in the record. Cal. Code of Regs. § 15091 (b). O.12.21

FEIS Should Not Rely on Future Permitting Actions for Mitigation O.12.22

EHC has learned in the past that we cannot rely on the regulatory agencies to act in the interest of protecting public health. The issues outlined as "expected" permit conditions for dredging (Page 3.3-5) and elsewhere must be included as mitigation and committed to as part of the FEIS. The public cannot rely on regulatory agencies that have yet to act on this project to include such conditions.

Further, a list of requests that have been made to the Navy from the community, and denied, is attached. We re-request these actions a reasonable and prudent mitigations to protect the community.

O.12

II HEALTH RISKS UNDERSTATED - The DEIS grossly understates and underestimates the health risks from this project in several ways. O.12.23

DEIS misrepresents various health studies and then relies on those misrepresentations in the analysis

The following letters from technical experts are part of EHC's comments on the DEIS. Although the letters are addressed to EHC staff they should be considered comments to the Navy on the DEIS. The comment letters are from:

The Institute for Energy and Environmental Research
Bernd Franke and Arjun Makhijani
for Section 7, Appendix E, Appendix F

Department of Pathology, University of Maryland, CHAPP Center
Dr. Katherine Squibb and Ted Henry
for Marine Resources, Water and sediment quality, Seismic

Department of Epidemiology, School of Public Health, University of North Carolina, Chapel Hill, Dr. David Richardson
for Appendix E

Ms. Camille Sears
for Accidents scenarios, Health Risks Assessments, Air Modeling

The Navy must respond to these comments and reassess its impact analysis and include the studies that were omitted from the DEIS analysis. As with the significance criteria, only those studies and analyses that supported its predetermined decisions were included. This is not acceptable. The technical experts' more health protective interpretation of existing studies and analysis of additional relevant studies should be the findings in the FEIS. Without a more health protective analysis, the FEIS will understate the health risks to local communities from the project and will be seriously deficient.

EHC incorporates, by reference, the October 14, 1998 memo from Joel Cehn to the City of Coronado in this letter. Further, new information on health risks of low-level radiation is in the peer reviewed literature. An important Symposium at the New York Academy of Medicine in September, 1998 presented a number of papers describing recent studies of low-level radiation and their implications for medicine and the nuclear industry. A program from this STAR (Standing for Truth About Radiation) Conference is attached and the studies therein should be included for analysis. Also, we request that the Navy respond to the articles attached from the O.12.24

North County Times citing raised illness levels around federal weapons plants and research facilities and from the BBC News regarding cancer link near nuclear submarines. (See attached). O.12.24

MORE PROBLEMS WITH THE HEALTH RISK ASSESSMENTS FOR RADIOLOGICAL RISKS O.12.25

Almost every criticism we have made of the previous HRA's for this project still apply to this HRA, in particular:

1. The risk assessment for cancer should be the lifetime risk. Standard methodology for cancer risk assessment is to calculate total lifetime risk, and calculation of annual risk appears to be a device to dilute the risk by dividing it into 72 separate pieces.

2. The risk assessment for cancer should not factor in the probability of a fire or spill occurring. We have made this comment repeatedly. It is not a standard or reasonable way to assess the severity of a risk. O.12.26

3. The risk assessment should include non-cancer health effects from exposure to radiation. This HRA apparently included genetic effects but it is not clear if any other acute or chronic health effects of radiation were included. O.12.27

4. Inclusion of an individual's risk of dying of all cancers is irrelevant and serves to trivialize the risk from the project at hand. O.12.28

Additional comments:

The HRA should include an estimate of how much the average exposure to radiation will increase due to projected losses of protective stratospheric ozone over the next half century. O.12.29

What are the Beyond Design Basis accidents? Acknowledging that the probability of this type of accident is low, we still want to know what is the true worst-case accident that can occur from this facility and its operations. O.12.30

Note that the "no evacuation of public" assumption used in the risk assessments is NOT conservative, since the existence and adequacy of plans to evacuate the public are not available for public review.

Regarding the assessment of risks to the public from releases of radiation: apparently the routes of exposure considered are inhalation, dermal exposure from exposure to ground surface radiation, and dietary exposure. Two important routes of exposure are left out: O.12.31

-Direct ingestion of soil by small children. It is well documented that in the normal course of play, children swallow significant amounts of soil. This route of exposure should be included in assessments of dose. O.12.31

- Ground surface radiation will be carried indoors on people's shoes. The assumption that people are not exposed to radiation while inside of their homes or other buildings is not valid. This has special implications for small children, whose faces are closer to the ground and who crawl and play on the floor. This extra exposure must be addressed in the risk assessment for accuracy and to comply with Executive Order 13, 045 (Children's Health).

Finally, the dietary exposure assumptions do not include any estimate of the increased risk due to eating fish from San Diego Bay. The community health survey recently completed by EHC confirms that residents of Barrio Logan, National City and surrounding bay side neighborhoods do eat fish caught in the bay. O.12.32

III. FAILURE TO DISCLOSE-- DEIS is not a full analysis of the project because much important and relevant information is still denied to the public.

O.12

DISCLOSE ACCIDENT RECORD O.12.33

Although the Navy often states that "*there has never been a reactor accident in the history of the U.S. Naval Nuclear Propulsion Program...*" (FEIS, Vol.2, p.I-75) ", there have been numerous events in which radiation has been released to the environment from nuclear powered vessels. One report detailed 799 accidents involving naval ships of the U.S., 13 nuclear aircraft carrier accidents, and 212 total accidents involving nuclear vessels of all navies. (Neptune Papers from the Greenpeace Institute for Policy Studies). EHC produced *A Short History of Naval Nuclear Accidents* (attached) and there are Web pages on the Internet that list incidents, accidents, and fires on nuclear vessels (attached). In 1996 alone, there were three incidents of concern: a release of radioactive steam from a nuclear-powered vessel in Puget Sound; a bomb found on a carrier at NASNI; and, sabotage of a reactor safety system on a nuclear submarine in Groton, CT.

Regarding fires, the Navy's record is as troubling. The Neptune researchers report that there have been 267 documented major fires aboard ships, although many more are suspected as having taken place. In addition, hundreds of minor fires have occurred at sea, during ship construction and over-hauls. These were not reflected in the above totals. Fires are by far the most prevalent cause of ship damage, but their regular occurrence precludes a comprehensive statistical analysis. According to official Navy statistics, from 1973 to 1983 there were **an average of 148 fires per year on U.S. ships or at shore bases.**" (emphasis added) (Neptune Papers) A fire could cause a release of radiation into the air, threatening downwind populations. O.12.34

Given that the accident scenarios were done for fires, this is critical information. The FEIS must fully disclose the Navy's accident/incident records and records of accidental or planned releases of radiation into the environment so that the public may know the hazards of living next to such operations. O.12.35

The DEIS states "*The history of safe operation of the Navy's nuclear-powered ships and their support facilities is a matter of public record.*" (7-3) No, it is not. In fact, EHC has gone to great lengths to get information about a number of accidents only to be consistently denied. EHC is concerned that the reason the Navy is so secretive about accidents is that they believe admission of accidents would jeopardize the presence of nuclear vessels in foreign ports. This is not a good enough reason to keep us in the dark about accidents. Honesty is the best policy. Please release full information about the following accidents and detail why the Navy does not consider them "accidents". Please include information in the FEIS. O.12.36

1. Falsification of Documents, 1995--USS Salt Lake City O.12.37
Navy investigation documents stating that falsification of documents was a common occurrence aboard the USS Salt Lake City and was one of the reasons for the removal of the Commanding Officer. Documents provided under FOIA.

2. Release of Radioactive Steam, 1996 - USS Arkansas O.12.38
Article in the *Bremerton Sun* detailed a release of radioactive steam from a nuclear powered vessel. Authorities were not notified for 15 hours. Local communities were not notified until an informant called the local press.

3. Radiation Contamination of Sailors, 1995--USS California, 1997-- USS Portsmouth O.12.39
A 100-gallon spill of radioactive water reported in the *Army Times.*

4. Radiation Contamination of Sailors, 1997-- USS Portsmouth O.12.40
Two sailors contaminated at SUBBASE reported in the Union Tribune (UT) and in a Navy News Release.

5. Radiation Contamination of Sailors, 1973--USS Guardfish O.12.41
Contamination with radiation of 5 sailors aboard the USS Guardfish in 1973. Documents released under FOIA. What is interesting about this accident is that the Navy has repeatedly refused to release the report of investigation for this 25 year old accident. EHC's appeal of this denial has also been denied by the Navy.

6. Spills of Radioactive liquid- USS Californian, USS Long Beach, USS Gurnard, USS Truxton, USS Guitarro, USS Nimitz O.12.42
There have been several releases of primary coolant water into coastal waters including San Diego Bay. The Neptune Papers, based on FOIA documentation and news reports, summarizes many naval accidents including releases of primary coolant.

O.12

7. Release of radiation- USS Enterprise O.12.43

A radiation accident caused a $6 million clean up when a shipyard worker improperly welded a propulsion system valve contaminating 9 workers and 4 compartments according to the *Navy Times*.

8. Dangerous Working Conditions in the Nuclear Navy, 1996--DSU Mystic O.12.44

EHC received FOIA documents received regarding the mercury spill into the San Diego Bay Turning Basin by the Nuclear Navy Submarine personnel aboard the DSU Mystic. The Navy released the court-martial transcript to us as well as many other documents demonstrating fatigued personnel, impossible scheduling, and an overworked crew. The Engineer of the Mystic even had a breakdown prior to the incident. One crewman received a court-martial for making false statements and for dereliction in performance of duty. (See more in-depth discussion later in this letter) There are 155 documents still denied to EHC regarding this accident even though it did not involve radiation, or even a nuclear vessel, and there is no litigation pending or threatened.

9. Evacuation of a Navy Nuclear Facility, 1998- Naval Reactors Facility. O.12.45

The Associated Press reports that 200 people were evacuated from the Idaho Naval Reactors facility on May 21, 1998 when elevated radiation was detected.

10. Weapon detonation accident, 1976-- USS Sargo O.12.46

Excerpt from an investigation interview regarding an accident in which a weapon detonated, low order on the nuclear submarine USS Sargo. The officer under questioning stated that *"there was considerable danger"*. The Navy released over 600 pages of documents to us regarding this accident. We believe that it was not reported in the media at the time of the accident.

11. Alleged Sabotage, 1996-- USS San Juan O.12.47

Article from UT regarding potential sabotage aboard a nuclear powered submarine in 1996 in Groton, CT.

NAVY IS DISHONEST ABOUT ITS SAFETY RECORD AND DOES NOT FOSTER A SAFE WORK ENVIRONMENT O.12.48

How the Navy caused and handled the 1996 mercury spill is a cautionary tale for people who live near the site. EHC has learned details about the project through anonymous phone calls. Subsequent FOIA requests revealed that the cause of the accident was an overworked and fatigued crew, one of whom pushed the wrong button that jettisoned hundreds of pounds of mercury onto the deck of the Chouest from the Mini-rescue submarine DSU Mystic. Some mercury then spilled into the Bay. The offending sailor was tried and evidence in the Court-martial Transcript is replete with crewmen testifying to their extreme sleep deprivation:

> *"Each time I brought it up to my chain of command it was always the same thing. I told them that they were working us too hard and I felt that, if they didn't stop, they would kill*

> *somebody."* (Page 6) O.12.48

> *"The month or two preceding the mercury spill, the working conditions were the worse I've ever encountered since I've been in the Navy. The very, very long working hours, very few days off, working under the oppressive shadow of Development Group One and DSU"* (page 97)

> *"I collapsed in March or April because of the working hours and basically passed out. They brought an ambulance down and took me to Balboa because they thought I was having a heart attack. I was in Balboa for two or three days. The doctor's diagnosis was stress from the work environment. I don't' know what my medical record says, but it was stress and fatigue."* (Page 16)

This kind of inhumane treatment of Naval personnel is unconscionable. Who protects the crewmen and women when the Navy will not? They deserve better. The Navy defends their honor by constantly stating that it would never do anything to hurt sailors. This is clearly not the case. It is a painful reminder that, in fact, the most endangered people from this project are the sailors themselves-- and they are also the least able to protect themselves. Did the Navy leadership learn anything from this accident? It appears not. The sailor who pushed the wrong button was court-martialed. To the commander who was responsible for creating this environment--nothing happened.

> *"One of the findings of the investigation was that fatigue was probably a contributing factor to the incident. I don't know if this finding would have any effect on my career. It hasn't done anything to me yet."*(this quote from the testimony of the Commanding Officer who also received a Letter of Instruction raising significant concerns about work levels on the vessel, page 104)

What does the Navy say about the accident to the public? *"The source of the release was readily pinpointed to a piping joint which leaked during prelaunch checks aboard the...Dolores Chouest"* (NASNI Fact Sheet No. 10, August 1997 page 1). The cause was not a leaking pipe on the Chouest. The cause was human error which stemmed from an overworked crew. This is a deliberate attempt to mislead the public by misrepresenting the facts.

It gets worse. EHC filed a FOIA requesting a Lessons Learned Report, summaries of which had been released to the public both in the Fact sheet and in documentation in the library. After 3 requests, the Navy finally released a version of the summary again, but this time about 60% of it was redacted. If the summary released is the same document (and it has the appearance of being that) as was put in the library, the redacted information is very benign and has no real reason to be withheld. This does not make sense to put something in a public Fact Sheet and then hide the same information under FOIA. We can only think of one rational explanation for this behavior that makes sense. The Navy has two similar documents: one for public review and

O.12

one for private Navy review. The public version sugar-coats and misrepresents what happened and the second tells the real story and addresses the real lessons learned. This is not acceptable. O.12.48

Finally, and unbelievably, the Navy misrepresented the cost of the cleanup to Union Tribune reporter, stating that the clean up cost about $68,000 when in fact the cost was almost $2 million. (See attached Union Tribune article, September 12, 1998)

If the Navy did not learn the lesson that fatique and over-work is dangerous and costs more in money, time, and safety in the long run, they should have. If this is not a lesson learned then the risks to public and worker health are even greater. **The Navy should come clean about this accident in the FEIS and include, as a mitigation, agreements regarding safe work and sleep schedules for crew men and women.**

DISCLOSE REDACTED APPENDIX D O.12.49

Information in Appendix D related to area of impact should be disclosed

"Appendix I, which is classified, contains naval reactor design information and analysis of postulated accidents...:"(1995 FEIS) In the first EIS conducted by the Navy on one carrier and repair facilities, the highly relevant information (regarding area of impact from postulated accidents) in Appendix I was withheld in the copy circulated to the public so the public was unable to consider the impact from accidents on surrounding communities. The second EIS hides this information in Appendix D. The FEIS must ensure that the information necessary to make a decision about project impacts and whether or not they are acceptable is publicly available. The Navy's earlier refusal to provide the public full information on the project made it impossible for the public to make an informed decision about the project. We still don't know the area of impact from a serious nuclear accident on a naval vessel but in Navy documents discussing response to emergency radiological accidents it is notable that the distances are measured in <u>miles</u> while civilian populations of Coronado and San Diego are less than 1 mile away. (Annex D to Enclosure (2) of OPNAVINST 3040.5B, Wills). After a 1980 meeting with the Navy, California state emergency officials planned a 315-square-mile evacuation zone around Mare Island Naval shipyard near San Francisco. (Massachusetts Institute of Technology Alumni Association Technology Review, April, 1987)

FEIS must include a full or redacted version of Appendix D or other information that provides information on the effects of a serious nuclear accident and the zone of impact.

DISCLOSE VIOLATION RECORD O.12.50

NASNI has had numerous violations of hazardous waste and health rules. Admin Rec. Tab 4370 and letter of June 25, 1996 to EHC from Department of Toxic Substances Control. NASNI is a major generator of hazardous waste as is Puget Sound. The following are not in the DEIS and should be in the FEIS.

1. The Navy must disclose all accidents/incidents involving hazardous materials and radioactive materials that have occurred.

2. All violations, spills, releases, and worker protection violations by Navy and/or contractors must be disclosed so that the public may know the operating practices of the Navy and the contractors. O.12.50

3. This must include all violations by the Puget Sound work team that will be conducting operations at the site.

EHC has supplied ample comment and documentation in our letters to the Department of Toxics Substances Control regarding the poor compliance record of the Navy. (See May 29, 1998, August 29, 1997 among others incorporated by reference in the Administrative Record) **The FEIS should include as a mitigation a request for increased inspections by the DTSC and a commitment to submit to inspections by DTSC and EPA regarding their radioactive waste facility.**

DISCLOSE DOCUMENTS ABOUT LONG BEACH O.12.51

Evidently, document destruction is done by the Navy regarding information they do not want to be released to the public when it cannot be hidden through classification. Regarding a document that analyzed the cost of construction of the nuclear repair facility at Long Beach instead of NASNI, one Navy document states, *"He emphasized that he would make it available to me on the condition that I take total responsibility for it and ensure that it is destroyed when we are through with it."* Admin. Rec. at Tab 2247.

EHC renews our requests stated in during Scoping that:

1. All such destroyed documents should be listed and summarized in the FEIS so that the public, regulators and elected officials know what is being denied their review and attention.

2. Information contained in the particular document addressed above should be disclosed as part of the Long Beach analysis that should be done in the FEIS as discussed below in the Alternative Assessments comments.

RELEASE THE CARRIER REACTOR EXAMINATION RESULTS O.12.52

Naval nuclear reactors undergo annual examinations to assess safety and procedures of personnel. EHC requested that these be released as part of Scoping. They are not included in the DEIS.

1. The FEIS should include a report on the performance of the various reactors that will frequent San Diego Bay.

2. The Navy should commit to making results from the Nuclear Safeguard Examinations available to the public.

RELEASE EMERGENCY PLANNING DOCUMENTS O.12.53

An important document must be released for public review. The document, LOCAL SAN DIEGO NAVY INSTRUCTION FOR NUCLEAR REACTOR AND RADIOLOGICAL ACCIDENT PROCEDURES FOR NAVAL NUCLEAR PROPULSION PLANTS. Admin. Rec. at Tab 2433. (Navy capitalization) *"...defines line of authority and procedures to be used in the event of an accident."* (Admin. Rec at Index) This document is noted in the index of the Admin

Record but not released. This information is critical to the public's understanding of the risks in locating the nuclear vessels and related repair facilities so close to densely populated areas and should be released to the public. EHC has requested it both through the Freedom of Information Act and in Scoping. It has still not been released. O.12.53

HOW NOT TO "FRIGHTEN PEOPLE" O.12.54

The DEIS states, *"In low-level radiation, as in other areas, a very effective way to frighten people is to claim that no one knows what the effects are."*(page E-11, line 2) This is incorrect. Actually, the most effective way to frighten people is to not tell them information about activities that could impact their lives-- a strategy apparently pursued by the Navy. EHC encourages the Navy to abandon this strategy.

IV. CURRENT AND NEW INFORMATION NOT INCORPORATED-- DEIS is not a full analysis--lack of consideration of updated and new information violates the right of informed consent. O.12.55

The major areas of missing or deficient information are listed below.

The GAO report, *Navy Aircraft Carriers: Cost-Effectiveness of Conventionally and Nuclear Powered Carriers*, August, 1998 was not incorporated into the DEIS.

The conclusion that *"Nuclear propulsion significantly enhances the military capability of aircraft carriers"* (page 7-2, ln 27) has recently been disproved. A recently released Government Accounting Office (GAO) report revealed that nuclear powered carriers (CVN) offer no discernible advantages compared to conventionally powered carriers (CV). This report contains significant new information that should be reflected in the alternatives analysis. The GAO report, *Navy Aircraft Carriers: Cost-Effectiveness of Conventionally and Nuclear Powered Carriers*, was released August 27, 1998 (Executive Summary attached). The report considered three issues related to the CVN nuclear propulsion: 1) relative effectiveness; 2) total life-cycle costs; and, 3) identified implications of an all nuclear carrier force on a continued overseas presence in Japan and in the Pacific region. The results of the GAOs investigation clearly state that nuclear powered carriers offer no discernible advantages and that conventional carriers can meet the Navy's needs at far less expense. The GAO concludes that the CVNs are far more expensive to operate and maintain, costing in excess of $8 billion more, and could cause problems with forward deployment of carriers in the Pacific region. The findings of this study refute the Navy's arguments for pursuing nuclear propulsion for aircraft carriers and raise significant questions regarding the necessity of nuclear carriers in light of the risks they pose to neighboring communities from the reactors and the waste they generate.

The nuclear powered aircraft carrier is the most expensive weapon system in the Nation's arsenal. Although originally the Navy pursued a strategy of an all nuclear carrier battle group,

the Navy ceased building nuclear powered surface combatants (ships that accompany carriers for supply and other tactical reasons) after 1975 because of the high cost and length of maintenance periods. Recently, most of the remaining nuclear-powered surface combatants have been decommissioned early because they were not cost-effective to operate and maintain. O.12.55

While each type of carrier has some unique advantages, **there was no demonstrated preference or compelling advantage of the CVN over the CV.** Conventional carriers spend less time in maintenance and can be available sooner for a large scale crisis because it is easier to accelerate or compress their maintenance schedules. While a CVN is somewhat faster (saving 2 hours on a trip to the Mediterranean from the East Coast) because their companion vessels are no longer nuclear powered this advantage is rendered moot. In the Persian Gulf war, the GAO found that CVNs were not preferred by military commanders over CVS even when the choice was offered. The GAO's analysis demonstrates that a force of 12 conventional carrier groups can provide a greater level of overseas presence than can a larger nuclear carrier force.

Further, acquisition costs of a nuclear carrier are twice as expensive and mid-life modernization (refueling/refurbishing) is at least three times as expensive (compare $866 million with $2.4 billion). Deactivation is almost 20 times more costly ($52 million compared to $955 million) due to the costs of removing nuclear contaminated equipment and spent fuel.

The bottom line is that the GAO's analysis shows that conventionally powered carriers can meet the Navy's mission and strategic needs at a significantly lower life-cycle cost. It is clear that the pursuit of non-nuclear propulsion for the next generation of carriers would cause significant costs to be avoided and public health and the environment to be protected--all without compromising military readiness. **This future strategic commitment should be made as a mitigation for health, environmental and undue economic impacts of nuclear propulsion. The information contained in this report should be included and considered in the FEIS.**

The Navy could turn away from nuclear-propulsion in aircraft carriers without sacrificing military readiness or storage capability and should commit to a plan to do so. One such credible design can be found in a document from the Defense Technical Information Center titled A Short Take Off, Vertical Landing Carrier, S-CVX.(NPS- ME-98-003, DTIC # ADA345638) and is incorporated by reference (see attached). EHC understands that this carrier design holds 80 aircraft while using a smaller personnel group with smaller size and conventional power. The recent Defense Acquisition Board decision to pursue a nuclear CVX should be set aside so that other alternatives should be analyzed (see attached) So should recent decisions by DOD to put more money into research and development for a nuclear CVX. Minimally, an environmental impact study of this decisions should be conducted. Use of conventionally powered CVX carriers could greatly reduce the threat to public safety and the environment in the future from this project, could save money, and is a reasonable alternative.

O.12

EHC HEALTH SURVEY- Children at Risk? A Community-Based Health Survey of Residents in San Diego's Most Polluted Neighborhoods. O.12.56

On November 12 ,1998, EHC released a study on the failing health of children in the communities most impacted by pollution. A full copy of the report is attached. The report found that respiratory illness and associated symptoms among children in the target communities of Barrio Logan, Logan Heights, Sherman Heights, and National City were elevated. Also, adult rates of respiratory symptoms were elevated and children reported more than double the incidence of gastrointestinal symptoms. Another study, *Generations At Risk* released by Physicians for Social Responsibilty and CALPIRG on November 3, 1998 is also incorporated by reference. **These studies must be fully analyzed and addressed in the FEIS.**

Y2K-- DEIS Fails to Address Potentially Catastrophic Year 2000 Computer Virus, Y2K O.12.57

Nowhere in the DEIS is the impending year 2000 computer virus, commonly known as Y2K, mentioned. Y2K arises from the once-common practice of representing years on the computer by only their last two digits. Since computers use mathematical comparisons to determine time sequence, the relationship between the year 2000 and 1999 are changed. The computer will assume the year 00 is 1900. The problem mimics a virus that may induce incorrect calculations and/or cause a system to halt completely. Either way, Y2K poses a very real and potentially catastrophic risk to systems dependent on computerized operations.[1]

The Department of Defense (DOD) is particularly at risk from Y2K. According to the Defense Science Board Task Force on the year 2000 problem, "The Department of Defense uses computers, including embedded ones, to perform or support...strategic/tactical operations (mobilization, deployment, and maneuvering forces and weapons systems used by the forces); and intelligence, surveillance, and security efforts .[2] According to Robert Molter, a computer scientist, information technology directorate, command, control, communications and intelligence for the DOD, the Defense Department might have to start up a chip production line because microprocessors in missiles no longer perform date calculations properly.[3]

Due to the serious ramifications of Y2K, DOD is identifying Mission Critical [MC] systems that need the highest priority of attention. A MC is a system whose degradation would cause a loss of a core capability.[4] As of late 1997, there were 3,143 reported Mission Critical systems. Since there are over 3,000 MC systems, it is highly unlikely that special priority efforts can be placed on each of them. This raises the questions which must be addressed in the FEIS: 1) Are the nuclear aircraft carriers to be homeported in San Diego Bay on this list of Mission Critical systems? 2) How high of a priority are these nuclear carriers in relation to all other MC

[1]Braunberg, Andrew. Diffusing the Millenium Time Bomb. June 1996.

[2]Memorandum for Under Secretary of Defense (Acquisition and Technology) Defense Science Board, January 28, 1998.

[3]Braunberg at 2.

[4]Memorandum of Under Secretary of Defense (Acquisition and Technology) Defense Science Board, January 28, 1998.

systems? Since the Nuclear Homeport project has resulted in nuclear carriers being located in San Diego Bay, are we at additional risks that have yet to be analyzed in any of the five environmental documents? O.12

Predictions about the impending Y2K bug run the gamut from a temporary, fixable computer malfunction to a global technological debacle of catastrophic proportions. The specter of concern has been heightened by the wide range of possible incidences when the Y2K bug indeed comes to pass. The MITRE Corporation has estimated "a cost of between $1 and $8 per line for the more than one billion lines of code in various Defense Department systems.[5] What are the Navy's cost estimates and how are these funds to be budgeted? How will this budget, if any, affect the overall prioritization of Mission Critical Systems and to the immediacy for which these systems will be made year 2000 compliant?

The Navy is planning on homeporting 3 CVN's by the year 2005, with the nuclear aircraft carrier *Stennis* already in port in San Diego Bay. Why, then, has this problem been overlooked by the Navy in the FEIS and prior environmental reviews? The probability for a computer failure and ensuing accidents have not been addressed in the FEIS. What systems are at risk of a malfunction? If a malfunction occurs, what is the worst-case scenario affecting the marine and human environment of San Diego Bay and the surrounding areas? If the Navy has a contingency plan, what is it? If the Navy cannot be responsible enough to inform the public in the Environmental Impact Statement, how can the public trust the Navy once the carriers are permanently in place? There is significant, legitimate concern about the impacts of the Y2K problem on a number of industries, including the nuclear industry. While it is thought that the DoD is further ahead than the private sector in assessing readiness of dealing with the problem, no mention was made in the DEIS of the potential impacts on the community and workers to deal with problems with the Y2K problem, If steps have been taken to prevent any anomalous problems then they should be divulged in the FEIS. Since the DEIS should be re-scoped to include the entire project, the Y2K problem should be addressed regarding existing and new CVNs. In addition, impacts on the Navy's computer-based earthquake preparedness plan cited on page 3.1-9 should be discussed.

DEPLETED URANIUM O.12

The DEIS makes no mention of use or presence of depleted uranium (DU). DU is a very dangerous substance that causes serious health effects and is used in weaponry and is classified as a low-level radioactive waste. Particles of DU contaminated dust can be very devastating to health. According to pioneering researcher Dr. J. W. Gofman, particles of uranium smaller than 5 micron in diameter can become trapped in the lungs. Leonard Dietz has estimated that a trapped uranium particle of this size can expose surrounding lung tissue to approximately 1, 360 rem per year. (Radioactive Battlefields of the 1990s, May 1998 and citations- attached) Since weapons will be present on the CVNs that visit and home port in our Bay the FEIS must disclose

[5]Braunberg at 1.

and analyze for the presence of any and all DU. O.12.58

Further, if DU weaponry is present on the CVNs or NASNI, the issues of Environmental Justice also need additional analysis. People of Color made up nearly 50% of those serving on the front lines of the Gulf War (Race Poverty and The Environment, Spring/Summer, 1995, page 5). The racial make-up of a carrier personnel complement must be disclosed and analyzed to see if this constitutes a disproportionate impact on a community of color.

NUCLEAR CARRIER DRYDOCKING O.12.59

Once again, DEIS fails to restrict Future Facilities and Operations such as carrier drydocking at NASNI. The Navy must be forthcoming about what they are planning for NASNI and the San Diego area. Since the Navy's first EIS we have learned of many other plans, proposals, and evaluations including relocating a floating dry dock to San Diego from Hawaii, relocating tenders and drydocks to NASNI, closing Seal Beach and relocating weapons to NASNI, E-2 squadrons, a fourth carrier, etc.. The Navy must comply with the law by analyzing impacts from all projects which are reasonably foreseeable.

O.12

EHC has requested in our comments to the 1995 FEIS and in the Scoping for this DEIS that a full analysis of the all future nuclear repair work that will be done at NASNI be conducted and that prohibitions for refueling and defueling of any nuclear vessel and construction or location of dry-docks at NASNI must be a condition of certification of the EIS. It appears that we have once again been ignored.

We restate our Scoping comments here because they were not responded to the in DEIS.

In a letter to Congressman Stephen Horn, Mr. Robert Pirie, Jr., Department of the Navy writes " *We are considering feasibility options for replacing our existing drydock capacity in San Diego.*" Admin Rec at Tab 1868. Alone the sentence is ambiguous, but since Mr. Horn's query was regarding the future use of the Navy's carrier drydock in Long Beach and since San Diego does not currently have a dry dock for the nuclear carriers, one reasonable interpretation is that a dry dock could be built or located in San Diego. Further, since the DEIS states (2-25) that all the CVNs would not often be at NASNI at the same time, in part due to the 10-11 month DPIA at PSNS, our concern is further heightened that some cost benefit analysis will soon show that it is cheaper to build a carrier dry-dock at NASNI than have sailors at PSNS (i.e. away from home port) for these many months. And, all three local commercial shipyard have recently been sold to large shipbuilding defense contractors, two of these are already nuclear-certified (Newport News, and General Dynamics). Since the DEIS does not address these specific concerns, the FEIS must do so.

The future of the "large vacant lot next to the new P-701 building...."(Admin Rec. at Tab.1478) should be fully explained.

FEIS must disclose all plans to replace existing drydock capacity in San Diego or plans to add new drydock capacity either at NASNI or at private shipyards.

A mitigation must be included that will permanently disallow a dry dock or floating dry dock to be used at NASNI (Admin Rec at Tab #1478) O.12.59

Again, EHC requests an explanation for the document (Bates #13114) that was in the Administrative Record that is a proposal for a Carrier drydock at NASNI. (See attached)

We repeat, the FEIS must include a specific commitment as a condition of the FEIS a Record of Decision (ROD) that no carrier or other large dry-dock will ever be built or located at NASNI or in San Diego Bay.

NEW DOMESTIC SHIP-SCRAPPING POLICY O.12.60

A new bill required the Navy to conduct pilot domestic ship-scrapping programs (see attached) to conduct hazardous and very polluting ship-scrapping operations domestically where worker and environmental protections can be enforced. The Navy will award a contract for 18 ships on the West Coast. Will these be done in San Diego Bay? This needs to be disclosed, assessed, analyzed, and mitigated in the indirect and cumulative impacts analysis of the FEIS.

PERSTEMPO-- Now in effect.

The impact of the PERSTEMPO adopted in 1985 and will result in even more time for the personnel complement of the CVNs to be in the home port and is reflected in the navy baseline. The impact of PERSTEMPO were understated in the DEIS and need to be fully analyzed in the FEIS. O.12.61

V. RADIOACTIVE AND HAZARDOUS WASTES– O.12.62

DEIS Inadequately Assesses and Mitigates Impacts of Wastes

NASNI already has 95 hazardous waste generators (current County database). Each carrier will use 170 industrial products containing 270 substances needing a Material Safety Data Sheet (Appendix J-3). NASNI has built numerous operations and multiple sites that store hazardous and radioactive wastes to accommodate this project. The DEIS must include a full analysis of the impacts of increased radioactive and hazardous waste storage, treatment, transportation, disposal and generation at NASNI. A full description of all nuclear and hazardous wastes streams must be analyzed and disclosed. A full accounting of and schedule for all permits, waivers, and certifications required must be disclosed.

RADIOACTIVE RESINS

The Navy has done much to understate and under emphasize the risks and impacts from the presence of the highly radioactive resins and filter media that will be removed and trucked on our local streets. These filters and ion exchange resins are the most radioactive operational wastes and are long-lived and are capable of delivering a lethal dose of radiation. (See attached O.12.63

Fact Sheets on Operation of Nuclear Power Stations) The FEIS must fully characterize the nature, radioactivity, and danger of this material as part of their "full and fair" information about the project. The resins are mentioned on page I-1 and a full description of these materials should be inserted here in the FEIS. The health effects to the people, especially workers, must be disclosed and assessed in the FEIS. O.12.63

O.12

PCBs O.12.64

Line 41, page I-1 states that the Navy's use of PCBs and asbestos have been reduced or eliminated wherever possible. The Navy should not still be using PCBs at all. PCBs are a banned substance and there should be a specific mitigation that no PCBs will be used at the home port. The FEIS must include, as part of the mitigation program, a plan that schedules for reduction and elimination all PCB uses on vessels and forbids the purchase of foreign-manufactured PCBs. The continued reliance by the Navy on a substance now banned for manufacture in the United States (and for good reason) undermines our environmental and health security and must not be allowed. A plan to eliminate all uses must be included. Since all the nuclear-carriers are relatively new, they should not contain asbestos or PCBs. Why will these materials be on-site? Why is there a specific PCB facility? This needs to be fully explained and mitigated in the FEIS and its presence time-limited.

CO-60 O.12.65

The DEIS intimates that Cobalt 60 is the primary radionuclide of interest for nuclear plants. The public, who is destined to live near these reactors, is interested in all radionuclides that come from the reactors. While CO-60 is tracked to demonstrate released, it is inaccurate to imply that it is the only element of interest. **The Navy needs to fully list and characterize those radionuclieds that could be released from the multiple power plants.**

DEPLETED URANIUM O.12.66

The DEIS makes no mention of use or presence of depleted uranium (DU). DU is a very dangerous substance that causes serious health effects and is used in weaponry. Since weapons will be present on the CVNs that visit and home port in our Bay the FEIS must disclose and analyze for the presence of any and all DU. (See above)

TRANSPORTATION OF WASTES O.12.67

Throughout the DEIS the transportation of waste (i.e. trucking of wastes on local city streets and highways) is given very short shrift. It limits discussion of accidents to NNPP waste only. (Page 7-13) The presence of a collection center for military radioactive waste is new to our region. While we are all familiar with research, dental x-rays, and medical radiation, military waste is quite a different animal. There are certain documentation of accidents involving radioactive waste (See attached articles). San Diego roads and highways are becoming notorious for traffic. The impacts of trucking hazardous and radioactive wastes was not fully covered in the DEIS and should be.

NASNI IS NOT ON THE NPL O.12

While we would support such a listing, EHC is unaware that NASNI is listed on the National Priorities List as is stated on page 3.2-5, line 1. Please explain.

FEIS SHOULD LIMIT THE TIME MIXED WASTE AND RADIOACTIVE WASTE CAN STAY ON- SITE O.12

The final permit that has been issued by the Department of Toxic Substances Control contains no ultimate limit of time on mixed waste in this facility, in spite of public requests for such a limit (See attached response to comment excerpt from DTSC). Therefore, the FEIS should specify a limit of time (90 days) as the maximum time limit for this waste to stay on-site. If this is not agreed to, the FEIS must conduct environmental analysis for a permanent low-level radioactive waste storage site. Otherwise, the FEIS must contain environmental analysis for this facility to be a mini-Ward Valley and a potential permanent radioactive waste storage site.

DEFINE "SIGNIFICANT" DISCHARGES OF RADIOACTIVITY O.12

Please define *"no __significant__ discharges of radioactivity in airborne exhausts (emphasis added)"*. (3.10-2) We have long known that personnel at the Naval Reactors Office have a much higher tolerance for radiation exposure than the neighbors of the Nuclear Megaport. We also know that the scientific literature states that there are no safe levels of radiation exposure (See attached). Further, the Navy refuses to monitor and disclose release information to the public. The FEIS needs to contain full information about how much radiation is released in airborne exhausts and how often it is released and what the isotopes are. **Without this information a major information deficit will exist in the FEIS.**

MIXED WASTE STORAGE FACILITY PERMIT O.12

EHC opposed and has a pending appeal of the Mixed Waste Storage Facility permit. The permit does not comply with the law and does not fully protect public health and safety. Since it does not comply with NEPA or CEQA and it is part of the Megaport Project and is deserving of full analysis in the FEIS, we will restate some of our concerns here so that the FEIS can incorporate mitigations to respond to these concerns. The permit and permitting process:

- Did not assess the impacts of the full Nuclear Megaport project which is enabled by the issuance of this permit. Instead, the DTSC relied on analysis in the 1995 EIS which was based on significantly different conditions than existed when the permit was issued. the permit is not consistent with the 1995 EIS (i.e. the MWSF will have a __different operator__ than analyzed for in the 1995 EIS, much __more waste capacity__ that included in the 1995 EIS and occurs under a __different permitting action__ that identified in the 1995 EIS) The DTSC response to comments on this subject (responses #171, 172) are grossly inadequate and dodge the critical issues. The FEIS needs to analyze the impacts of this permit action.
- Is based on an inadequate environmental assessment which did not assess the impacts of allowing three CVNs to be homeported in San Diego Bay and did not assess cumulative

impacts.

- Is based on a fatally flawed health risk assessment conducted by the Navy which significantly understated risks to public health from an accident diluting risks by considering probability of accident occurrence. O.12.71
- Fails to include an information oversight forum as repeatedly requested by the community and which is currently not provided for by the Complexes meeting.
- Is not conditioned adequately to protect human health and the environment.
- Was improperly based on a Negative Declaration instead of an Environmental Impact Report which is required, at a minimum, due to a change in circumstances. The mere statements in the response to comments that the second DEIS had been read and provided no need to change this permit is not sufficient.
- Fails to impose an absolute time limit for waste storage. Without this condition, **what other guarantee does the community have that NASNI will not be the Ward Valley** dump site of the future? A time limit requirement should be added.
- Fails to provide for adequate emergency response planning.
- Fails to comply with DTSC's own CEQA policy and the state's new law regarding application of CEQA to Navy projects.

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WHERE WILL THE RADIOACTIVE WASTE GO? O.12.72

The DEIS is not clear where the waste will go. The DEIS speaks tangentially about Ward Valley and Barnwell. It says confidently that waste will be *"disposed of... at a burial site ...licensed by the NRC..."* (Pg. 7-12), but it never really says where the waste will go. Reliance on Ward Valley (3.15-5) is not acceptable as it appears as though the dump site will not open. Activists in Barnwell are trying to shut down that dump site. Even Navy personnel have admitted that they have not quite figured out where the radioactive and mixed waste will go. On an August 28, 1998 radio interview on KPBS when asked where will the radioactive waste go, Capt. Rockland Deal stated, *"We haven't solved that completely yet as a nation..where were going to store it. We have temporary storage facilities in Idaho and elsewhere but ultimate long-term that decision has not been made yet."*

We do know, however, that the radioactive is completely self-regulated by the Navy and the storage facility is built to hold 10 years of waste (Admin Rec at Tab 2424). We know that the mixed waste facility has no time limit for storage (see attached Response to Comments document). What we have, then, is an essentially self-regulated mini-Ward Valley in the middle of San Diego. We are concerned that holding the waste *"...until arrangements can be made..."* (3.15-5) will result in NASNI becoming a permanent low-level radioactive waste site. This is unacceptable. This fact must be disclosed and mitigated in the FEIS. Mitigations that must be included in the DEIS include limits of time and an agreement for there to be independent regulation of radioactive wastes and activities at NASNI.

We strenuously object to the finding that none of the facilities would result in significant impacts to health and safety (3.15-8). This project is very dangerous and has serious potential community health and safety risks that must be mitigated in the FEIS.

VI. ACCIDENTS AND EMERGENCY PLANNING-- O.12.73

DEIS Analysis for Accident and Emergency Response Planning Inadequate

NAVY SHOULD COMMIT TO EVERY SAFETY MITIGATION TO MAKE NUCLEAR REACTOR OPERATION AS SAFE AS POSSIBLE FOR THE PUBLIC AND CREW

In spite of significant Navy propaganda, any reasonable person knows nuclear reactors pose risks. Nuclear power is dangerous. Nuclear power has risks. The whopping 13 sentences written about emergency preparedness in the radiological section (7-16) is not reassuring. **Six nuclear reactors are not as safe as zero nuclear reactors.** The presence of six or more nuclear reactors in close proximity to hundreds of thousands of people should not be allowed. If it is allowed, conditions should be added to make it as safe possible.

The following mitigations should be added to the FEIS to make the project more safe.

1. **Reactors in port should be put in cold, wet lay-up status or cool status with minimum pressure within a minimum time frame upon arriving at NASNI. The reactors could be heated up and made ready for propulsion within a reasonable amount of time through an emergency warmup should an emergency arise. Cold status is much safer and the Navy should agree to this.**
2. **All fluids discharged from boundary valve seat leakage should be collected and prevented from discharge into San Diego Bay. Discharges from tests that are not able to be collected should be mitigated though fisheries management and testing.**
3. **Training, drills, and information on evacuation for all community neighbors that could be effected in the event of a nuclear emergency aboard a carrier should be committed to in the mitigation program.**
4. **Fence line monitoring should be committed to for radiation and toxic air emissions. (See Community Monitoring Section).**
5. **The Navy should relinquish the requirement or operation of fast cruise steaming in port with reactors at critical. We understand that full Reactor Safeguard Examination are only required after a long period of lay-up and the requirement for fast cruises should therefore be relinquished in the name of safety of the residents of our cities.**
6. **Disclose effects of a reactor breach to the public.**
7. **Navy should agree to require that the CVNs have only one reactor operating during transit of San Diego Bay under normal conditions.**

These conditions are reasonable and must be included in the FEIS.

COMMUNITY MONITORING

One of the most egregious omissions of the DEIS is the failure to provide for community monitoring for neighboring populations. Other countries recognize the need for the neighbors to monitor nuclear bases.(See attached e-mail article regarding Canadian air monitoring program in O.12.74

O.12

Halifax Harbor in response to the presence of US Nuclear Submarines in that community) O.12.74

The denial of information on radioactive emissions began with atomic weapons testing in Nevada. The history of this denial, and the resulting illnesses and deaths is told in an article in the October 1995 issue of The American Legion Magazine. The article states that *"over the course of 12 years the AEC detonated 126 atomic bombs above the Nevada Test Site, in spite of repeated warnings from some of AEC's own top scientists. .... It was not until 1978 that congressional hearings finally shattered the veil of secrecy."* During those years " the AEC took pains in brochures and TV to repeatedly assure the local citizenry in St. George, Utah, downwind of the test site that 'there is no danger'." The article concluded "Through a combination of ignorance, negligence and lies, the U.S. Government destroyed the lives of thousands of Americans."

The first public information on the Three Mile Island accident in 1979 was a statement by Lt. Governor Scranton that "The Metropolitan Edison has informed us that there has been an incident at Three Mile Island. Everything is under control. There is was no danger to public health and safety." About five hours later he stated *"This is an update on the incident at Three Mile Island Nuclear Power Plant today. This situation is more complex than the company first led us to believe. And at this point we believe there is still no danger to public health."* Two days later, after the major plume of emissions had passed, Governor Thornburgh ordered an evacuation of pregnant women and children within a five mile radius of the plant.

A U.S. Congressional committee examined the reporting of information during the TMI accident. They concluded "The record indicates that in reporting to State and Federal officials TMI managers did not communicate information in their possession that they understood to be related to the severity of the situation. The lack of such information prevented State and Federal officials from accurately assessing the condition of the plant. In addition the record indicates that TMI managers presented State and Federal official misleading statements (i.e. statements that were inaccurate and incomplete) that conveyed the impression the accident was substantially less severe and the situation more under control than what the managers themselves believed and what was in fact the case."

The citizens in the area surrounding the remaining TMI reactor are no longer uninformed concerning radioactive emissions from the plant. A complete off-site monitoring system operated by the Three Mile Island Citizen Monitoring Network now surrounds the plant with a number of remote monitors which continuously measure airborne radiation and report the data by radio to a central station. The same data is also reported to Harrisburg Emergency Management office who would be able to take immediate action if it is ever required.

Citizen monitoring systems at the Seabrook, NH nuclear power plant, the Yankee plant in Maine and the Pilgrim plant in Massachusetts currently provide timely reassurance to the citizens of the area that they are not being subjected to abnormal levels of radiation.

The importance and value of citizen participation in radiation monitoring has been documented by a paper in Engineering Education, April 1982 *Educating the Public About Radiation: A Role for Engineering Faculty* and a paper in The Journal of Applied Behavioral Science, Volume 19, 1983 titled *Bridging the Information Gap at Three Mile Island: Radiation Monitoring by Citizens.* O.12.74

Pilot programs in monitoring will be awarded grants this year by the Environmental Protection Agency EMPACT Program. The pilot programs will emphasize active partnerships between local and state government, research institutions, non governmental organizations and the Federal government to provide timely environmental information to the public. A requirement of the program is the communication of the monitored information in a time-relevant manner to citizens in a format that is easily understood and will be useful in their day-to-day decision making relative to the environment.

Monitoring for accidents is sometimes considered the main purpose of monitoring systems and these systems only use radiation detectors that measure the high levels that would occur in the event of an accident. While measuring high levels is certainly important, studies referenced above from the STAR Conference presented a number of papers describing recent studies of low-level radiation and their implications for medicine and the nuclear industry. These studies discussed important data on cancers and other illnesses resulting from radiation level previously considered safe. It is therefore necessary for any monitoring system to be able to detect radiation levels as low as background and low energy isotopes which are typically released routinely in the operation of nuclear reactors.

Provision of Community monitoring should be included as a mitigation for the threat of accidental release of radiation from the presence of so many nuclear reactors and operations.

EMERGENCY RESPONSE PLANNING O.12.75

Risks and Lack of Local, Accountable Command

The presence of so many nuclear reactors (up to18 including submarines) and repair facilities in such close proximity to so many people present unique and disturbing risks to the entire San Diego region. The nuclear facilities will be overseen by personnel in Puget Sound and the reactors on the carriers are under the authority of the Naval Reactors Office, both out-of-state commands. Navy reactors are not subject to all of the same safety requirements as commercial reactors (i.e. containment buildings, buffer zones, warning sirens, and community emergency response exercises) even though the risks in the event of an accident are largely the same. These concerns are heightened by the failure of the Navy to plan for emergency response for neighboring communities and the refusal of the Navy to release relevant information regarding emergency response to the public. We need a local commander with authority to make decisions to protect our health and as an interface with the local community.

PROTECTIONS REQUESTED BY COMMUNITY HAVE BEEN REFUSED O.12.76

Repeated local community requests for Navy assistance in planning for emergencies related to an accident or release of radiation from the operations at NASNI (such as emergency response planning exercises for neighbors, warning sirens, and potassium iodide) have been soundly refused. The Navy frequently cites the existing plans adequate preparation for neighbors in the event a serious nuclear accident at Naval facilities. They are not. FEIS should commit to mitigations as repeatedly requested by the community and attached to this letter and in this letter.

NEED FOR EVACUATION AND SHELTERING PLAN FOR DOWNWIND COMMUNITIES IN THE EVENT OF A RADIOLOGICAL EMERGENCY O.12.77

O.12

On August 4, 1997, the Deputy Director of the Naval Nuclear Propulsion Program stated in a letter to Congressman Bob Filner that "*We believe that the emergency response plans which localities have in place for natural disasters, such as earthquakes, are sufficient for responding to this much less severe potential accident.*". The Navy states in the DEIS that "*Naval nuclear propulsion operations and work performed at Naval bases are such that there is no need for unique emergency preparedness programs outside the base.*" (pp.7-16) We disagree with both of these statements. In the event of an earthquake, San Diegans are generally told to stay put and put away stores of water and wait for services to be restored if it is safe to do so. In the event of a radiological emergency the advice could be the opposite-- evacuate as soon as possible to minimize impacts from exposure to radiation. Hence, a revised emergency response plan is needed. So far, the Navy has refused to cooperate in development of a revised plan. The FEIS should include one.

One of the unique problems posed by this project is the fact that Naval reactors are not subject to the same oversight and regulation as commercial reactors. For example, according to County Disaster Preparedness Office, there is an evacuation plan for Camp Pendleton, San Juan Capistrano, and Dana Point in the event of a reactor emergency at San Onofre Nuclear Generating Station but, **there is no equivalent evacuation plan for Coronado, San Diego, or National City.**

It is important to point out that this is the first time radioactive waste has been officially and legally stored (not counting the at least four radioactive waste sites) and that reactor maintenance has occurred on NASNI. This means that there are new and significant potential impacts in the event of an accidental release of radiation and that appropriate emergency planning should be undertaken. The Navy has had accidental releases of radiation into land, air, and water (see attached) and the risk that there could be future releases in San Diego is real.

Although it is known that the Navy has plans for evacuation of the base in the event of a radiological release, they have stated in NAVY CIVIL EMERGENCY MANAGEMENT PROGRAM OPNAVINST 3440.16C that "*The primary objective of Navy emergency management is to protect and restore Navy mission capabilities.*" (6.b) and "*All State resources,*

including the National Guard should be considered before use of DOD resources is requested."(emphasis added) (6.d) They have further stated that no additional plans are needed for neighbors. However, the British Royal Navy recently declassified information on the area of impact from a release of radiation from a Naval nuclear propulsion submarine reactor. Using data in this report, one analysis predicts the need for an evacuation area of 30 km (18 miles) downwind and sheltering and distribution of potassium iodide doses 120 km (74 miles) downwind. The British use the same type of nuclear reactors (pressurized water) as the U.S. Navy. O.12.77

IMPACTS ON PUBLIC SERVICES O.12.78

The significant impact on public services will be the need for medical attention and emergency response in the event of an accident. Potassium iodide, should also be distributed and stockpiled as part of this project and should be made available to all persons within the area of impact who request it such as is done in other countries and communities. (Please see attached information regarding KI distribution to community members)

NEED FOR POTASSIUM IODIDE O.12.79

Recently, the Nuclear Regulatory Committee (NRC) decided to modify its position and adopt the recommendation of the Federal Radiological Preparedness Coordinating Committee to store potassium iodide (KI) as a protective measure for the public(Please see attached). The NRC has announced that it will provide stores of KI free of charge to states that request it. The caveat is that the state must request this protection. To date, the State of California has made no such request although other states have requested KI from the NRC.

If taken in time, KI can block the thyroid's uptake of radioactive iodine and can reduce thyroid cancer or other thyroid diseases. Distribution of KI falls into the category of damage control because it does not protect against all of the other health problems exposure to radiation causes including leukemia. But it is important to remember that, while KI only protects against one of the isotopes and only against one kind of cancer, it is an especially important measure for small children. It is important that KI be distributed as a <u>minimum</u> protection measure. In the event of earthquake and release, massive traffic jams may cause people not to be able to evacuate quickly. Stores of KI at schools and other areas would be a <u>prudent</u>, minimum safety measure.

Downtown San Diego, Coronado, National City, and Chula Vista could suffer significant exposures in the event of a radiological release. It should be a "lesson learned" that the impacts of the Three Mile Island disaster were made worse because responders could not get KI to exposed people for three days. The FEIS should include a mitigation for the distribution of KI.

DISCLOSURE OF NAVY EMERGENCY PLANNING INFORMATION O.12.80

The Navy is essentially self-regulated when it comes to its nuclear propulsion reactors and their repair. The same disclosure, emergency planning, and buffer requirements that apply to

O.12

commercial reactors do not apply to Naval reactors. The Navy has publicly stated that they will not notify neighbors in a timely fashion of all releases of radiation. The Navy has denied EHC's Freedom of Information Request regarding past radiological accidents and has denied us their *Local Instruction for Nuclear Reactor and Radiological Accident procedures for Naval Nuclear Propulsion Plants* in the event of a radiological accident. We believe that this document would outline the area of impact in the event of a serious nuclear accident at one of San Diego's nuclear bases so that the public could know the area of impact. It should be disclosed. O.12.80

FEIS MUST INCLUDE EMERGENCY RESPONSE PLANS AND ACTIONS O.12.81

Recently, operators at a commercial nuclear reactor announced the testing of their 52 warning sirens to ensure that community members in areas surrounding the San Onofre Nuclear Generating Station would be warned in the event of a radiation release. There are no warning sirens for neighbors of NASNI. Under the current conditions, the public is completely dependent on the Navy to notify neighboring communities in the event of a release–a situation we protest. Our concern is founded on past experience. In 1996, a nuclear Navy vessel released radioactive steam in Bremerton, Washington. The Navy did not notify state officials for 15-20 hours and only notified the local community after an informant call the media. (Please see attached) This is not the notification system upon wish we wish to rely.

The following is a list of issues that, minimally, must be addressed to respond to this new nuclear presence in San Diego. The FEIS must include the following items:

1. Development of a Nuclear Safety Element for NASNI, the City, and San Diego County Operational Area Plans that would include development of evacuation plans for downwind communities in the event of a serious accident at NASNI or the SubBase. Description of the coordination between the Navy's evacuation and response plans and those for local communities.
2. Description and Time line for coordination and training of local hospital and emergency responders regarding radiation exposure.
3. Commitment for acquisition of KI for San Diego and plans for the distribution of KI in the event of a release of radiation.
4. A perimeter monitoring and warning systems to warn neighboring populations in the event of a nuclear accident
5. Commitment of additional resources needed to respond to releases of toxics or radiation from the Nuclear Megaport operations.
6. Translation of emergency response plans and information into other languages such as Spanish.

ASSESSMENT OF EXPOSURE PATHWAYS AND AREAS OF IMPACTS CONFLICT WITH FEMA DEFINITIONS, NEED TO BE EXPANDED O.12.82

The Federal Emergency Management Agency (FEMA) publication titled "State and Local Guide 101: Guide for All-Hazard Emergency Operations, Tab 1 to Attachment F, Nuclear

Power Plant Accident" states, O.12.82

"The plume exposure pathway (10-mile EPZ) include everything within approximately a 10-mile radius of the power plant. Human health and safety risks associated with it include" whole body injury from exposure to gamma radiation; and thyroid, lung, and possible other organ injury from inhalation of radioactive materials.

The ingestion exposure pathway (50-mile EPZ) includes everything within approximately a 50-mile radius of the power plant. Human health and safety risks associated with it include whole body and thyroid injury from ingestion of radiologically contaminated water and food."

The FEMA document defines the "Nature of the Hazard" as follows""

"Radioactive materials are produced in the operation of nuclear reactors. The accidental release of these materials into the atmosphere can harm people and damage the environment."

The Nature of the Hazard" associated with the Navy's operation of nuclear reactors within San Diego Bay is identical to that associated with commercial nuclear power plants. In fact, there are some conditions that make them less safe i.e. no concrete containment buildings, no buffer zones, no independent oversight etc...). They both operate by uranium fission. The Navy needs to admit these 10 and 50-mile areas of impact and plan for emergencies related to the hazard in the FEIS.

NAVY DEFINITION OF REACTOR ACCIDENT CONFLICTS WITH DOD DEFINITION OF THE SAME O.12.83

The Navy definition, of "reactor accident" is not consistent with DOD definition which is "*An uncontrolled reactor criticality resulting in damage to the core or an even such as the loss of coolant that results in significant release of fission products from the reactor core.*" (DOD Policy Document 5230.16, Dec 20, 1993. Mr. Richard Guida, in an April 9, 1996 visit to Coronado, stated that "*reactor accident*" was more a "*term of art*" and that what constituted a reactor accident was "*...damage to the fuel, release of fission products.*" There could be a devastating release of radiation that leave nuclear fuel undamaged. These two definitions are very different. Please explain. Please incorporate by reference the letter submitted by Grant Kimball and attached.

ACCIDENT SCENARIOS O.12.84

Even though EHC made extensive comments regarding the kinds of accidents scenarios that should be disclosed and run, few were taken into account in the DEIS and even done. The scenarios that were done were inadequate (see above). Therefore, the FEIS must run and report the outcome and impacted zones for several accidents and emissions schemes including:

1. A small, medium, and catastrophic release of radiation from a carrier reactor.
2. A small, medium, and catastrophic fire in the nuclear waste processing facility.

O.12

3 . A fire in the hazardous waste facility. O.12.84

4. Accidents involving a truck carrying a full load of nuclear or hazardous waste in a community.

5. The complete failure of containment in the event of a reactor melt-down on a carrier.

6. Release of Depleted Uranium.

7. Kelp caught in vessel cooling water systems that have been known to shut down a conventional vessel in the past in San Diego Bay. Such an accident for a nuclear vessel must be assessed.

8. Failure of a weld in the "*all-welded primary coolant system*"(page 7-4). The FEIS should also discuss nature of the welds, alloys, life span, repair and maintenance schedules.

Further, All results should include the risk to the Maximally Exposed Individual. All impacts should be disclosed within a one mile, two mile, 5 mile radius, 10 mile and a 50 mile.
All information should be disclosed for public review.

NIGHT TIME ACCIDENT ANALYSIS O.12.85

Issues raised during Scoping were not addressed in the DEIS. Both of the most recent accidents in the NASNI turning basin in 1996, the mercury spill and the large carrier oil spill, occurred at night. The FEIS must include an analysis of the frequency of accidents in the daytime versus the night. Then, if the accident rate is higher, as a mitigation, night time work should be forbidden to reduce risk of accident and subsequent impacts to neighbors and the Bay.

IMPACTS OF SAILOR RECRUITMENT SHORTAGE ON SAFETY OF PROJECT O.12.86

The attached article from the Navy Times cites a message sent to the commander of the Pacific Fleet because the USS Vinson (CVN) reported a shortage of key nuclear personnel so serious the ship couldn't meet safety standards for getting underway. The VINSON left San Diego with a manning level of 86% (See below). The Navy needs to clarify how this situation will be addressed without working existing crewmen and women to the point of exhaustion. See next area of comment and comments on Mercury Spill.

IMPACTS OF LACK OF SLEEP ON ACCIDENT OCCURRENCE O.12.87

In addition to the accidents in the previous paragraph, it is significant to note that the devastating Exxon Valdez spill, Three Mile Island, Bhopal, and Chernobyl occurred during the night shift. Further, the Challenger disaster resulted from errors made by a sleep-deprived staff working the night-shift. (*Sleepiness and Accidents*, Dr. Daniel Kripke, paper presented to the Stated Land Commission, August, 1998, attached.)[6]. The most recent hazardous waste accident at NASNI that left element mercury in San Diego Bay and cost almost $2 million to clean up also occurred due to sleep-deprived staff. This chronic problem must be analyzed and

[6]EHC notes that two corrections on the first page should be made. The evidence states that about 8-10 lbs of mercury actually entered the Bay even though more was jettisoned from the MYSTIC and the clean up cost $1.7million)

mitigation. Neighbors need the reassurance that the Navy will not drive crews so hard that accidents will occur due to fatigue. This can and must be a mitigation to ensure that crews can operate to the highest standard. **Operating under duress and fatigue is a cultural and chronic problem especially in the Nuclear Navy and it has got to stop. The FEIS must commit to reasonably short shifts (8 hours or less) for crews with adequate time for sleep between shifts.** O.12.87

IMPACTS OF SAILOR RECRUITMENT SHORTAGE ON SAFETY OF PROJECT THE EIS FAILS TO ANALYZE MANPOWER READINESS O.12.88

The DEIS fails to address the Navy's oft-cited lack of manpower readiness. This is a significant oversight that cannot be ignored in the FEIS.

As of May, 1998, the *Navy Times* reported "*a shortage of 18,000 sailors-5.5 percent of the 328,000 enlisted people it needs.*"[7] Since September of 1997, Navy recruiters have not met monthly targets. The personnel shortages are for both petty officers who do unskilled "general detail" work and technical and intelligence specialists who operate sophisticated, high-tech operations. In fact, in February of 1998, the nuclear carrier Carl Vinson reported a shortage of key nuclear personnel so serious that the ship couldn't meet safety standards.[8]

Such significant shortages of sailors can lead to overwork, causing both mental and physical fatigue. In a study by the Walter Reed Army Institute of Research sleep lab, the experts concluded "*that without sleep, the first things to go are critical thinking, the ability to make decisions, to pay attention to detail...and to react to new information and change your mind.*"[9] One prime example of this is discussed above. The ensuing trial revealed that the crew worked an average of 16 hours a day, often longer, for an extended period of time, including weekends. The crew members testified that the accident was directly attributed to fatigue.[10]

What, then, is to be done? The Secretary of the Navy, Richard Danzig, has responded to the Naval service shortage by stating that "*his greatest concern is for the people*" and "*the impact that operational pressures and funding shortages are having on the men and women of the Navy.*" He plans to "*put the people first in deciding where to put limited funds.*"[11] Yet following this statement came a proposed plan to relax the Navy's "*enlistment standards by*

[7]Burlage, John. *Navy Times*. May 7, 1998
[8]*Id.*
[9]Schulte, Bridget. "Get some sleep-and that's an order." Knight Rider News Service. March 3, 1998.
[10]Record of Trial, United States v. Robert Dyar, Southwest Judicial Circuit Courthouse, Naval Station, San Diego, California.
[11]Kreisher, Otto. "Danzig Promises to 'put people first' in spending Navy funds." San Diego Union-Tribune, September 23, 1998.

O.12

allowing lower test scores for recruits"[12] and a decision by the Defense Acquisition Board (DAB) to pursue more costly nuclear propulsion in the CVX (see attached) Thus, the Navy's solution to its personnel shortages and recruiting and retention problems, including the skilled and technical positions, is to consider enlisting men and women who score only 25 to 30 percent on the Armed Forces Qualification Test and pouring more money into more dangerous technologies which require an ever higher level of technical ability. This does not compute. This needs in-depth discussion in the FEIS. O.12.88

Most relevantly, how can the citizens of San Diego feel confident in having inexperienced and unqualified sailors staffing nuclear-powered aircraft carriers homeported in San Diego Bay? What is the status of Navy readiness? Does the Navy have enough men to staff three nuclear-powered aircraft carriers in San Diego Bay without the risk of crew fatigue? Does the Navy have enough skilled and qualified personnel to operate three CVN's? What will the Navy do to minimize the risk of crew fatigue and human error in order to mitigate the affects of a nuclear accident on the surrounding marine and human environments?

The Navy must analyze this critical issue in the FEIS and come up with sensible and realistic solutions. The mercury spill was just the beginning in fatigue-related accidents; we can only speculate about the possible worst-case accident scenarios that are to come.

REACTOR COOLING SYSTEMS O.12.89

Page 2-41 *states "Water depth requirements are designed to limit fouling of ship's condensers...*" What happens if the ship's condensers fail? What are the impacts of an accident of this sort? Additionally, how are the secondary cooling water pipes prevented from fouling? What happens if this system fails? What happens if the intake pipes become clogged with sediment, kelp, or fouling organisms? These questions must be answered in the FEIS.

The memo in Appendix H states that a minimum of 50 feet of water depth is required in the turning basin. EHC does not believe that there is 50 feet of water depth at all times in the inner channel or turning basin. What risks does this create? This needs to be discussed in the FEIS.

EXPLOSION ARCS AND BUFFERS AND ORDNANCE O.12.90

The Admin Record makes many references to explosion arcs and other distance buffers necessary for nuclear carriers. Admin Rec. at Tabs 1259 and 1309 at Bates 032103. The carriers come on/off loading of ordnance, ammunition and other explosive materials. The ordnance come in four classes. Admin Rec. at Tab 1877B. The Navy had discussed seeking waivers to the arcs. Admin Rec at Tab 2371. It is also clear that the Navy will request waivers for these arcs since the carriers will be so closely located next to populated neighborhoods. Admin. Rec.

[12]Crawley, James W. "Navy weighs lower recruiting standards." San Diego Union-Tribune, September 16, 1998.

at Tabs 1234, 1877B. It also appears that submarines have an arc. Admin Rec at Tab 1692 Bates 038901. We object to any waivers to these policies/requirements/goals since they would endanger lives of neighbors. If Navy projects are so close that waivers must be sought, it means the project is too close to densely populated areas (which we believe it is), and should be moved. See "Alternatives" section. O.12.90

At a minimum, all ordnance handling must be disclosed and no special waivers should be sought. Further, it must be a mitigation that no explosion or other waivers to buffers will be sought or secured as a part of this or any other project at NASNI.

RISK FROM FULL AMMUNITION LOAD ON CARRIERS O.12.91

"During periods when the USS Stennis is serving as CINCPACFLT "readiness" carrier, the ship must have a full ammunition load, even though she is in port." Admin Rec at Tab 4340. FEIS must disclose and analyze

1. A detailed list of what ammunition and weaponry constitutes a full load.
2. A list of accidents scenarios and past accidents that have occurred.
3. Determination if the number of homeported carriers that will be in readiness status and what their full complement of ammunition could be.
4. Same information as above for visiting carriers in readiness status.
5. An analysis of the true worst case potential accident.
6. Include a prohibition on use of DU weaponry or waste.

EMERGENCY RESPONSE FACILITY AND PLANS O.12.92

In 1985, an emergency response facility was a requirement for berthing a CVN. Admin Rec at Tab 70 Bates stamp 01869 and page 5-22. FEIS must state whether or not this is still a requirement and if it will be done. Further, FEIS must respond to EHC Scoping comments ignored in the DEIS. In order to meet legal requirements,

1. FEIS must disclose requirement, size, location, personnel, and adequacy of the required emergency response facility for CVN berths.
2. FEIS must clearly explain who will respond to and handle a nuclear fire or other release of radiation.
3. FEIS must clearly state who is on duty and on call to coordinate with local authorities and responders.
4. FEIS must state who will clean up after a nuclear accident. Must state what will be done differently that past clean ups done by the Navy i.e. mercury spill, slag, and oil spills.
5. FEIS must state how often and who will organize accident drills for off-base neighbors.
6. FEIS must state what amount of liquid spilled (in gallons) or steam released is reportable as an accident and what amounts as an incident.
7. FEIS must commit to emergency or accident drills that involve civilians living near the facility.

O.12

PUBLIC NOTIFICATION OF A RELEASE OF RADIATION OR NUCLEAR MATERIAL O.12.93

When the a nuclear powered ship in Puget Sound suffered a release of radioactive steam in February of 1996, the Navy did not notify the State for 15-20 hours and did not tell the local community until after an informant called the press. This is intolerable.

1. FEIS must include a specific process for notifying the immediate neighbors, local governments on both sides of the Bay in the event of a release of hazardous or radioactive material of any amount.

2. FEIS must recognize this as a significant and unmitigable impact.

3. FEIS must include the evacuation plan for Coronado and bayside cities.

RISK MANAGEMENT PREVENTION PLANS O.12.94

Regarding the development of a Risk Management Prevention Plan, Navy documents state that "*...the North Island mixed waste storage area does not come under this regulation or the California Law.*" Admin Rec at Tab 1211. However, Extremely Hazardous material over a threshold quantity requires a Risk Management Prevention Plan. "*If the North Island facility has such material in amounts exceeding the limits in 40 CFR Part 355, it will have to comply with the California Law.*" Admin Rec at Tab 1211.

1. An analysis of whether the California law applies must be disclosed in the FEIS.

2. An assessment must be made regarding the limits and if the additional nuclear carrier maintenance will generate materials above the threshold limits.

3. EIS must include a Risk Management and Prevention Plan whether required by law or not, for the purposes of informing and protecting the public.

FIRE PROTECTION O.12.95

There have been concerns expressed in Navy memoranda in the past regarding the nuclear facility that "*facility fire protection designs ....are not of sound engineering judgment when considering the health hazard risks that come with the CO2 hose reels.... We do not believe it is professionally ethical to clone a system at other facilities because it was approved for one some time back.*" Admin Rec at Tab 2350.

1. Since repair opportunities will increase as a result of more CVNs in San Diego Bay, a full analysis of fire protection should be done to ensure that there is sufficient capability to deal with increased operations.

2. The FEIS must state the status, ability, and type of fire protection designs and certify that they can accommodate the increased fire risk from additional repair operations.

3. FEIS must disclose if the facility fire protection designs are protective of fire fighters, workers, and public members.

HAZARD LIST O.12.96

A hazard list, such as was done for P-703 (Admin Rec at Tab 2478) should be updated and included to reflect the increases in operations for 3-4 nuclear carriers at all industrial facilities on base that use or generate hazardous or radioactive materials or wastes.

IMPACTS OF BUDGET CUTS ON SAFETY OF PROJECT O.12.97

It appears that cost overruns in the project resulted in cost savings (cuts) for the nuclear facility. (Admin Rec at Tab 1433). The nuclear facility was designed, or so we were told, for one nuclear carrier. The FEIS must disclose all cost cutting measures and analyze how they do or do not impact the ability for the Navy to safely conduct repair of additional nuclear vessels at NASNI.

NIGHT WORK HOURS AT THE NUCLEAR FACILITY O.12.98

It appears that Puget Sound and/or SUPSHIP will wish to work on nuclear carriers during the night as well as day (Admin Rec. at 4237) and that a waiver for lights may be sought. Admin Rec at Tab 3735 at Bates 082362. Will the Navy seek waivers to have bright lights at the site? The FEIS must require mitigations for light and additional nighttime noise and traffic on the neighbors.

ACCIDENTS AND EMERGENCY PLANNING O.12.99

FEIS must include accident analysis of a variety of accidents, both from hazardous and nuclear genesis. All explosion and other arcs or buffers must be disclosed as well as a description of all ordnance that will be located close to densely populated areas. Evacuation plans and emergency warning systems for neighboring civilians must be developed and implemented. A condition of required local notification in the event of a release of radiation or other toxic chemical must be included.

HAZMAT RESPONSE O.12.100

The presence of a HazMat team at 32nd Street is not sufficient. Further, the evidence shows that there are serious problems regarding response when an accident happens. The recent past teaches us that even when Public Works wants to address a spill of hazardous materials, NASNI captains have stopped such action in the past.

The Hazmat response to the mercury spill at the NASNI turning basin is instructive. Attached e-mail memo received by EHC through a FOIA request reveal that PWC was taking an aggressive, proactive posture in addressing the cleanup of the mercury and that NASNI leadership continually wanted to wait "*until after the weekend*". (email documents dated 3 July96 through 8July98) One explanation, that NASNI "*...has the day off on Friday*" is not a compelling reason to leave hazardous waste in San Diego Bay. This is evidence that the leadership at PWC understood the severity of the problem and wanted to take action, while NASNI's nonchalant attitude frustrated that effort. This response is unacceptable and should be disclosed and addressed in the FEIS.

O.12

VII. ENVIRONMENTAL JUSTICE AND PUBLIC PARTICIPATION-- DEIS fails to meet obligations for protecting disproportionately impacted communities O.12.101

A growing number of national, regional, and local studies demonstrate a strong correlation between ethnicity, income, and environmental hazards such as hazardous and radioactive waste facilities. These studies have cited many examples of toxic racism in the United States and on Native American lands. In recognition of this unacceptable situation, President Clinton issued Executive Order on Environmental Justice #12898 on February 11, 1994 to ensure that projects did not have *"...disproportionately high and adverse human health and environmental effects...on minority and low-income populations."* The decision to greatly expand the nuclear Navy's presence in San Diego must be evaluated with consideration of environmental justice since the project has the potential to pose significant impacts disproportionately to some communities in San Diego.

Although the Executive Order was brought to the attention of the Navy in the Scoping process, the DEIS does not comply with Executive Order 12898 on Environmental Justice and related guidance. The two paragraph analysis of environmental justice issues is an insult to the communities that, already living in the cloud of toxic industrial pollution, must now live under a darker cloud of toxic and radioactive Navy pollution for years without a voice or hope for the reduction of those threats and impacts. There are three clear public health threats to these communities:

1. Releases of radiation or toxic material. O.12.102

In the event of a release of radioactive steam from one of the nuclear-powered aircraft carriers or other toxic or radioactive release from the site, the prevailing on-shore winds would carry the radioactive plume over many low income and communities of color, including Barrio Logan, Encanto, and East San Diego. There is a very real possibility of this type of accident in San Diego as a result of the new homeporting plans. Will warnings be issued? Will warnings be issued in Spanish or other languages? What are the additional health impacts to downwind communities, based on proper assessment as outlined by the technical experts. None of this is addressed in the DEIS and should be.

2. Contamination of Bay Fish. O.12.103

Another area with particular environmental justice considerations is the release of bioaccumulative chemicals and radiation and the resulting impacts on fish consumption from the Bay. The recently release EHC Health Report *Children at Risk*? showed that people in bayside communities eat fish from the Bay. Some Bay fish already have elevated radiation levels. What effect will six more nuclear reactors in the Bay have on the safety of eating the fish in San Diego Bay? The FEIS must address this specifically and include regular testing of bay fish for contamination.

3. Toxic air emissions from repair work at local shipyards O.12.104

Barrio Logan and National City already suffer from significant exposure to toxic air emissions, with a large majority of those emissions coming from Navy and Navy contractor facilities. (See *Children at Risk? A Community-Based Health Survey of Residents in San Diego's Most Polluted Neighborhoods*.) Since the homeporting of the first nuclear carrier all San Diego operating shipyards that work on Naval vessels have been purchased by out-of-town large, defense contractors. Evidence indicates that local shipyards will secure more defense work with the presence of the Nuclear Megaport thus guaranteeing more pollution for these communities. (See attached article from the San Diego Business Journal) Further, dredging operations will also impact San Diego. The dredging will be done on the east side of Coronado with winds from the west a high percentage of the time. This impact was improperly assess in the FEIS. **These are significant, indirect, and disproportionate impacts from CVN homeporting on a low income, community of color.**

Instead, of addressing this issue the Navy continues to argue that only Coronado is O.12.105
impacted. **This is absolutely wrong**. Toxic and radioactive waste will travel on Coronado **and San Diego** streets. Toxic and radioactive air emissions will travel over Coronado **and San Diego**. San Diego Bay is connected to Coronado **and San Diego, National City, Chula Vista, and Imperial Beach.** Fish will be caught and consumed by Coronado **and San Diego County residents.**

The public hearing on the DEIS tells the tale clearly. The Navy has, until this time, refused O.12.10
to hold a meeting in San Diego. In this case, there was a San Diego and a Coronado hearing. The Coronado hearing was rather lightly attended with primarily, if not exclusively, white Coronado residents in attendance. The San Diego meeting, on the other hand and on the other side of the Coronado bridge, had a large proportion of Latino and African Americans who attended. Further, the over 700 people who asked to have their names read into the record in opposition were from **31 different San Diego County communities.**

Further, the DEIS fails to implement the Department of Defense's proposed strategy for Environmental Justice (DOD Strategy) or the EPA Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses, April, 1998. The DOD Strategy establishes a commitment to "ensure that these communities are considered and addressed by encouraging and enabling minority and low-income community participation in and access to public information on DoD matters relating to human health or the environment." (Page 1 Vision statement)

The DoD strategy also states that it will "*Provide translation of crucial public documents and conduct interpretation of hearings were practicable and appropriate*."(page 4) The Navy has done nothing to educate the Latino community about this project even though it will significantly impact the local community residents. It is practicable and appropriate to translate into Spanish. At a minimum the meetings notices and executive summary should have been translated and distributed. The information hot-line should have a Spanish alternative. There is a precedent in San Diego as a large document, the Comprehensive Management Plan for San Diego Bay was issued in full translation in Spanish as is EHC's own Toxinformer. This request was made by several community leaders including the Mayor Susan Golding of San Diego (See attached). O.12.106

Clearly, the DEIS fails to comply with the Executive Order on Environmental Justice and fails to assess impacts to heavily impacted communities. A full assessment of the cumulative impacts of all emissions and exposures of community members to toxic materials from this project must be conducted and included in the EIS. Impacts such as traffic, security, construction, earthquakes, personnel loading must be fully examined and mitigated. Toxic and radioactive air emissions must be fully analyzed and expected increases in respiratory or other illnesses or conditions disclosed. O.12.107

PUBLIC PARTICIPATION O.12.108

The public outreach was grossly deficient for this document. In spite of several requests none of the DEIS was translated into Spanish. The first set of meetings were scheduled for Yom Kippur and overflow accommodations were not available for the San Diego hearing at which over 270 people attended. The Navy has followed a disturbing strategy of reaching out to Coronado-only throughout this project in spite of the fact that many in the San Diego region are very concerned about this project. A partial list of opponents are attached.

O.12

EHC also is particularly troubled by the process in which both DTSC permits have been handled and the resulting frustration of public input. For example, neither the Hazardous Waste Permit nor the Mixed Waste permit had public testimony heard by the same person who made the final permit decision. This undermines the right of the public to speak directly to decision-makers who make decisions impacting their lives. O.12.109

Also troublesome is that fact that while DTSC appears to have supported public requests that an information committee of some sort be convened for the benefit of informing the community, DTSC let the Navy subvert that request (See attached letter). The Coronado Complexes meeting <u>is not</u> a suitable forum for information exchange between Navy waste operations and the public. **The FEIS must include a commitment to either a stand-alone Public Information Committee or to expand the NASNI Restoration Advisory Board to include information and discussion about on-going emissions and operations at the base.**

None these of actions on the part of the Navy appear to be in alignment with the Environmental Justice or Public Participation Guidelines. O.12.110

VIII. IMPACTS UNDERSTATED-- DEIS fails to properly and fully assess direct, indirect, and cumulative impacts and to mitigate them. O.12.111

The analysis in the DEIS does not meet the requirements of the law to "provide a full and fair discussion of significant environmental impact" or to inform "...the public about reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human or natural environment". The DEIS falls far short of meeting these requirements. The DEIS does not provide full information, does not properly find evidence of direct impacts, or mitigate impacts to public and environmental health and safety. The location of two more nuclear powered aircraft carriers, with two nuclear reactors each, is a dangerous project that poses significant threats to our health and safety without an adequate alternatives analysis and without sufficient information or mitigation.

Bay Water And Sediment Quality O.12.112

Several of the criteria of significance (listed on page 3.3-4,5) are met and merit mitigation. This project will discharge pollution in the form of radiation, jet fuel, oil, abrasive materials, undisclosed industrial process wastes and water, and heat at a minimum. The project will also create turbidity both during dredging and each time a carrier enters or exits the site through the resuspension of sediments by the tugs and the carriers. Additionally, contaminating activities like propeller wash must be assessed as a <u>net gain</u> of one carrier over current conditions (See Fatal Flaw #2) and they are not. These impacts are insufficiently analyzed in this document and need to be analyzed and mitigated in the FEIS.

1995 EIS SEDIMENT TESTING WAS INCOMPLETE AND SHOULD NOT BE RELIED ON O.12.11.

The statements made regarding impacts to sediment and water quality on page 3.3-7 (4-13) in the DEIS are erroneous and/or unsubstantiated. The reliance on the testing performed for the "BRAC CVN" is laughable. It was this same testing that allowed multiple 81mm mortar shells and bullets to be pumped on the beach before all of the dredge spoils were sent entirely to LA-5. This data set is not appropriate for characterizing sediment quality in the vicinity of Pier J/K. (3.4-1) It is an interesting omission that the Navy did not discuss the presence of these ordnance in this section. A full discussion of what happened, how the Navy's "comprehensive" testing missed all the bombs, how the sand on the beaches was lost, how the air was polluted so much that the Navy dredging project became (through variance after variance) the largest NOx source permitted in San Diego in 10 years must be fully disclosed in the DEIS. The public needs to know how wrong the Navy's environmental impact statements have been in the past in order to evaluate the claims in this follow-on EIS. **<u>Continued reliance on the 1995 EIS dredging results will render the FEIS invalid and improperly supported.</u>**

While the Bay Protection and Toxic Cleanup data is an excellent data set and would be appropriate for use, none of the samples collected where in the Pier J/K location and therefore is not useable without additional and **full chemical (chemical and radiation) and toxicity testing on the target sediments being conducted.** Even using this data, it is clear that there are contaminants concerns in the Bay. See Comments of the CHAPP Center attached above. O.12.113

The evidence of elevated levels of mercury, a bioaccumulative heavy metal with serious impacts to living things, (3.4-2) means that there is contamination in the sediments in this area and the entire areas should be fully tested. Dioxin was also found in the sediments during state required sampling. Further, the DEIS statements that the demonstrated bioaccumulation of lead in clams should be disregarded (without justification) is misleading and wrong. If the sediment fails the tests, it fails the test. There was a demonstration in the testing bioaccumulation of lead in clams. Bioaccumulative metals and chemicals such as lead, dioxin, and mercury are a serious, long-term pollution problem for San Diego Bay and must be fully characterized in project specific testing in the FEIS. O.12.114

The DEIS has no business citing incomplete documents without citing the opposition and concerns raised about to such documents such as the RCRA Facility Investigation for Site 1 (3.4-3). EHC has raised several concerns about this draft report. Either reference to it should be stricken or a full accounting of the technical problems with the report should be made. We attached and include by reference a letter from the CHAPP center in comment on this document. The FEIS should reflect these concerns. O.12.115

O.12

The DEIS misrepresents the ER-M (effects range-medium) and ER-L (effect range low) on page 3.4-2. These are the 50% and 10% effects range. The ER-L predicts that 10% of the organisms will be effected. This is not "rarely" as the DEIS states, this is an estimated certain negative impact to 10% of the marine life. This section needs to be rewritten. O.12.116

Further, both "mitigation" sites (1995 EIS and 1997 EIS), must themselves be mitigated as it will destroy valuable habitat (see comments of Jim Peugh, San Diego Audubon Society and SDAS letter). The analysis contained on page 3.7-5 and elsewhere is inaccurate. The two "mitigation" projects would result in the loss of intertidal habitat, one of the most endangered habitats in San Diego Bay. The Navy must mitigate these losses. (EHC incorporate the comments by San Diego Audubon Society in this letter by reference.) O.12.117

OIL, FUEL, AND HAZARDOUS WASTE SPILLS O.12.118

The DEIS states that "the probability of a spill is very small" is <u>flat-out incorrect</u>. Spills happen frequently from Navy vessels including CVs and CVNs. Jet fuel spills occur from CVNs and CVs. In fact, oils spills are so prevalent and serious that the Senate approved a resolution *"that directs the Navy to immediately undertake actions to properly train personnel to "significantly reduce risk of vessel oil spills"...The sense of the Senate resolution responds to six significant Navy oil spills in Puget Sound, WA this year."* (Defense Environment Alert, June 30, 1998, page 8). The impacts of these spills can be significant and the spill record for carriers is very poor. They are not discussed in the DEIS as an impact needing mitigation or a spill

prevention plan and should be. A history of oil spills from CVNs should be included in the FEIS so the record of the Navy can be known. O.12.118

ORDNANCE IN THE BAY

The presence of ordnance in San Diego Bay is hardly unknown. Ordnance are present in San Diego Bay sediments and were discovered in several areas during recent dredging of the Bay. Any discussion of ordnance must include analysis of additional air pollution from dredges that must use a screen to filter out ordnance. The FEIS must include the commitment to use an electric, low-pollution dredge for any dredging. The DEIS is insufficient in this area. Further, since impacts from the whole project should be mitigated, the offset program suggested to the Navy by EHC of purchase of additional Electric Vehicles should be done as a mitigation for air pollution caused by the dredge. O.12.119

In addition, a recent court consent decree between the US Army and the Ft. Ord Toxics Project and CALPIRG could have relevance to the need to clean up these wastes. This action was taken November 4, 1998 and should be evaluated in the FEIS. O.12.120

POTENTIAL RADIATION CONTAMINATION OF SEDIMENTS O.12.121

It is curious that the Navy admits that dredged material may be radioactive *"as a result of past Navy operations"* (3.3-8) yet fails to release information about past releases or to admit that releases of radiation routinely occur. Further, we are unaware of any testing of sediments for radiation done in this area. These areas should be tested for radiation and the results released in the FEIS.

Further, since the NNPP did not find any radiation sediment contamination and the EPA did, it seems that the EPA does a better job of testing for radiation. The red herring contained in the DEIS that *"This concentration is less than 1 percent of the concentration of naturally occurring background radiation..."*(3.4-4) is irrelevant and should be removed. The point is that the presence of Co-60 indicates releases of radiation into San Diego Bay in spite of the fact that the Navy constantly assures us that they do not have accidents. Releases of radiation into the Bay have happened and the Navy needs to acknowledge this and disclose and mitigate these impacts in the FEIS. O.12.122

It is critically important that "can" in line 41 (page 3.4-6) be changed to "will". Booms and curtains **must** be required for any dredging. O.12.123

COPPER LEACHING FROM HULL PAINTS UNDERSTATED O.12.124

Currently, there is one CV and one CVN in San Diego Bay. At a minimum, the Navy cannot analyze the increases only from 2 CVS to 2 CVNs. The increased copper leaching from boat hulls must be assessed as the increase from 1 CVN and 1 CV to 3 CVNs. See Fatal Flaw #2 above. The calculations on page 3.3-9 are just dead wrong.

RELIANCE ON UNDS IS PREMATURE O.12.125

The DEIS cites the Uniform National Discharge Standards (UNDS) as reassurance that the incidental and routine discharges of effluents are being regulated. UNDS is not in place, could undergo serious challenges, and cannot be relied on in this document. Reference to it should be stricken.

HEAT DISCHARGES NOT ASSESSED O.12.126

One again, the impacts of heated discharges were not analyzed in the DEIS. There is also inadequate information on the heat discharges from the cooling systems of the Nuclear-powered aircraft carriers and no disclosure on routine releases of radiation that, according to the Navy, occur. These impacts to water quality need full analysis in an EIR.

ROUTINE RELEASES OF RADIATION NOT ASSESSED O.12.127

According to Navy personnel, Navy nuclear vessels discharge radioactive material into the water. (*San Diego Union* 27 November 1991) In addition to on-going discharges, there is a significant increased risk of accidental discharges. Some fish in San Diego Bay already contain elevated levels of alpha and beta radiation and mercury and arsenic (1990 County Health Risk Study) and more releases over the next 50 years of the life of this project will make this worse.

We believe that this impact will prove to be significant and unmitigable.

- FEIS must assess and publish accurate baseline prior to the project.
- FEIS must assess, and mitigate if possible, the eventual further elevation of radiation in fish and shellfish in San Diego Bay.
- FEIS must assess and mitigate if possible the impacts to bird, resident and migratory, species as a result of radioactive and other contamination as a result of the additional nuclear carriers discharging in the Bay.
- FEIS must disclose and assess the impacts of regular discharges of radioactive fluids and boundary valve leakage from all vessels brought to the site.

Further, EHC staff has been told by a knowledgeable source that every transit of the Bay by a nuclear vessel leaves an ionizing radiation stream in their path which radiates for about one-hour. Please confirm or deny this claim in the FEIS.

Last, reliance on San Diego Bay as the last resort in the event of an serious radiological accident (Pg 7-4) is not optimal by any means. The FEIS must detail response plans that do not render our most precious natural resource a radioactive cesspool for the next 1,000-odd years.

O.12

IMPACTS ON FISHES O.12.128

The presence of 39 difference species of fish including 170 juvenile California Halibut (3.5-3) near the Pier site demonstrate the significant impact to fish that this project will have. We object to a 1:1 ratio as the cumulative impact of filling so many acres of San Diego Bay as a result of this entire project requires a higher ratio. It is important to note that the 620 acres of

fill discussed on page 3.7-5 was never mitigated and was a permanent loss. Restoration of this water should not be considered mitigation for additional permanent losses. O.12.128

MARINE BIOLOGY O.12.129

The use of any studies conducted in South San Diego Bay are inappropriate and are not indicative of bay-wide conditions. The South Bay is much shallower and is heavily impacted by heated discharges from the South Bay power plant. It is an incorrect assumption to assume information from the South Bay has any relationship with the home porting site (3.5-1). A site specific study should be done and results reported in the FEIS.

LAND USE O.12.130

If the full NASNI Master Plan anticipates three carriers and one cruiser (3.7-2), the impacts of a cruiser must be analyzed in this document.

ECONOMICS O.12.131

A proper economic analysis was not done for this project or, at least, was not released to the public. Further, the implications of the CVX and non-nuclear propulsion as discussed above were not addressed at all.

Another issue that was not discussed was the relationship between home porting and residence when personnel leave the service. This could be a major job demand driver since many service people, once they leave the Navy stay in San Diego and need a non-Navy job. The more CVNs, the more of this demand is created. This is a potentially significant growth-inducing impact that needs analysis in the FEIS.

TRANSPORTATION O.12.132

The statement that CVNs and CV would have the same truck traffic is incorrect (3.9-8). There are additional waste streams from nuclear carriers, i.e. nuclear and radioactive waste. Also, because we have nuclear carriers, mixed and radioactive waste facilities were built attracting waste from other bases. These additional impacts and additional trucks were not present with the CVS. (See also cumulative impacts comments regarding traffic from Submarine base) Please reflect accurately the nature of the truck traffic and waste in the FEIS.

VESSEL TRAFFIC O.12.133

EHC notes that the dredging has already occurred to part of the navigation channel to accommodate the deeper draft of the USS John C. Stennis. The San Diego Unified Port District is also proposing to dredge the remainder of the navigational channel to allow for transit of the Bay by larger vessels. These projects is anticipated to increase vessel traffic of more and deeper draft ships transiting San Diego Bay.

This proposed systematic increase of vessels transiting San Diego Bay can be expected to result in increases to vessel traffic and raises the need to take all reasonable measures to ensure prevention of vessel casualties. One such measure, held as a high priority in the San Diego Harbor Safety Plan is the implementation of an appropriate vessel traffic information system. O.12.133

EHC requests that the funding and operation of an adequate vessel traffic system be adopted as a mitigation in the environmental review process for expected impacts from both of the above mentioned projects as required to insure that additional or larger vessels transiting the Bay do not compromise safety in the Bay.

The FEIS should include 1) recommendations from the San Diego Harbor Safety Plan as appropriate in the proposed projects, past and future, for additional homeporting and dredging and, 2) mitigation plans for both projects include a commitment for implementation and operations and maintenance of an appropriate system of tracking vessel traffic.

Again, we must point out how the second fatal flaws listed in the beginning of this letter undermines the adequacy of the analysis. The DEIS states that "*Since these two additional CVNs would replace two decommissioned CVS, no net future increase in traffic would be added to the harbor.*" (3.9-12). This is completely wrong. There will only be one CV lost and two CVNs gained, a net increase.

O.12

Further, the potential impacts to navigational safety were completely unaddressed in the DEIS. The failure of many vessel crews to adequately monitor proper radio channels is a recurring problem in San Diego Bay. The near-miss incident when a carrier almost overran the America's Cup races because it could not be raised on the radio is a perfect example. This issue needs to be discussed and mitigated in the FEIS.

AIR QUALITY

Like the other sections of the EIS, the section discussing potential impacts to air quality is seriously deficient for several reasons. First, this analysis suffers from the fact that it assumes that the baseline for comparison to future impacts is the existence of 2 CV's and 1 CVN at NASNI. However, this is not the case and has not been the case for several years. (See fatal flaw #2, above). O.12.134

Second, the description of the Affected Environment does not acknowledge that San Diego County will not achieve the federal Clean Air Act standards for ozone, as was scheduled for next year. San Diego County has experienced nine exceedances of the federal ozone standard thus far this year, and many exceedances of the state ozone standard. The FEIS should reflect this fact, as well as the fact that federal standards for both ozone and particulate matter have recently been strengthened. The conclusion of this section that this project will have no significant impact on the basin-wide pollution problem is **wholly unsupported**. The nuclear megaport, with its associated addition of criteria pollutants from the dredging, operations, and related traffic, will certainly add to an already serious public health problem. O.12.135

Third, the DEIS entirely fails to analyze the potential for increases in the emissions of toxic air contaminants as a result of this project. While the potential for effects from toxics is mentioned on page 3.10-5, nowhere in the rest of the analysis are expected increases documented, quantified, or analyzed. Neither are the existing cancer and acute health risks from existing operations at NASNI acknowledged. The most recent cancer risk level of 27, and acute health risk level of 1.7, are well above the threshold of significance referenced in the EIS. And yet, the EIS does not acknowledge this or the possibility that this project will make that problem worse. In this case, the project poses the potential for significant increases in the emissions of toxic air contaminants from several facets of the projects, including dredging (the components of diesel exhaust have recently been listed as a carcinogen by the State of California) and maintenance of the additional carriers. O.12.136

Further, the DEIS is incorrect in stating that a health risk assessment need only be prepared if the emission of hazardous air pollutants are above federal thresholds. Instead, the potential health risks from a new operation must be analyzed for any increase in the emission of toxic air contaminants which triggers the need for a new permit to operate. APCD Rule 1200.

Fourth, the EIS is deficient in that it fails to document the cumulative impacts of the added air pollution from this project when taken into account with existing pollution from routine and cleanup operations at NASNI, both in terms of toxic and criteria pollutants. Nowhere are the already significant levels of pollutants documented. The FEIS must provide complete and accurate information regarding the total emissions inventory for both toxic and criteria pollutants from all NASNI operations. O.12.137

Finally, the analysis of alternatives is severely flawed and misleading in that it attempts to show that no additional impacts to air quality result from the homeporting of two additional carriers, instead of just one. The Navy cannot claim that the addition of one more CVN will cause additional impacts to air quality resulting from the construction of additional berthing facilities at NASNI, while the addition of a third CVN will result in no such additional emissions. Rather, an additional CVN can be homeported at NASNI without additional dredging and construction of berthing. It is the homeporting of a third carrier which will lead to these impacts. O.12.138

Further, reliance on future, speculated reduction in air emissions in vehicles (3.10-9) is not proper to mitigate for vehicle traffic emissions. The Navy should purchase polluting vehicles and replace them with non-emission vehicles as a required mitigation for this project. O.12.139

It is important to point out that the National Security Council exempted military training operations from greenhouse reduction commitments and federal climate policies. (Defense Environment Alert, May 5, 1998, page 6) Since this project will bring so many additional operations and associated emissions, this exemption could be a **serious and negative impact on our air quality**. This exemption must be disclosed in the FEIS and mitigation to implement O.12.140

restrictions through the NEPA and CEQA process applied and included. While Assistant Secretary Wasserman-Goodman states that greenhouse gasses at facilities will be reduced (ibid, page 17), **the FEIS needs to tell us how** through incorporation of mitigation into the NEPA and CEQA document. O.12.140

MITIGATIONS NEEDED CAR AND TRUCK TRAFFIC IN THE FORM OF ALTERNATIVE FUEL VEHICLES O.12.141

The DoD missed its acquisition quotas for Alternative Fueled Vehicles required by federal energy law and executive order in FY97 and is expected to miss it again in FY 98 (Defense Environmental Alert, August 11, 1998 page 1, 6-7). While the Navy did the best of the services to comply, the DEIS reliance on compliance with laws and regulations appears to be insufficient at this point. Its claims that vehicles emissions at some undetermined point in the future will be lower is irrelevant. The Navy must deal with the facts, knowledge, and requirements as they are known today. **The NEPA/CEQA mitigation program in the FEIS must contain aggressive commitments to EV and alternative vehicles acquisition.**

HEALTH AND SAFETY O.12.142

The DEIS writers appear to have suffered complete amnesia regarding the debacle of the ordnance discovered in the Bay sediments that completely altered the first EIS project (3.15-1). There was considerable threat to safety by the two 81 mm mortar shells dumped onto the local beaches and by the munitions found by children. San Diego has a tragic history of children finding unexploded shells with fatal consequences. This is part of the Navy's tragic legacy in San Diego. This history should be fully discussed and addressed in this EIS. **The Navy must admit that bombs were dumped in the Bay, that they do not have the ability to find them, that the presence of the ordnance impacts what we can now do in the Bay, and describe a mitigation plan to minimize the risks.** Frankly, since NAVOSH did not protect us in the past, there is no reason to assume it will do any better with even more carriers in the Bay. Claims made that a survey for ordnance would be conducted (3.15-6) fosters no confidence since this technique has already failed.

O.12

Further, the DEIS fails to note the numerous violations of the Hazardous Waste Facility permit that have been issued to the Navy by the DTSC. See attached. O.12.143

Again, these "Significance Criteria" are suspect and do not serve the public interest.

IMPACTS OF AIR WING, AIR PLANES, ADDITIONAL PERSONNEL MANNING O.12.144

The DEIS grossly understates the impacts from activities related to carrier homeporting in form of additional airplane activity and the additional personnel needed to conduct the repair work that is both different from and more extensive than repair work on conventional carriers.

The DEIS is deficient in that while it states *that "the majority of CVNs underway training is in southern California (SOCAL)...."* it fails to assess the impacts of these training

session on our local community. If more CVNs are coming to SOCAL, there will be impacts. Where is the analysis of impacts to the community from visiting, non-home ported carriers? It must be included in the FEIS or the document will grossly understate the full impact of the project. O.12.144

LOADING FOR THE AIRWING O.12.145

Even if the air wing is not in San Diego and meets the carrier at sea, the supplies for the air wing must be trucked on to the base to be loaded on the carrier. We are certain that the planes do not carry all of their own supplies or spare parts. This is a significant impact and raises the amount of traffic for each additional carrier. Both on-loads and off-loads must be assessed and fully described in the FEIS before it can be certified.

AIRWING O.12.146

Claims on page 2-9, line 30-34 that CVN homeporting will not and cannot increase air traffic is unbelievable at best. There is no evidence to support this claim. Further, it flies directly contrary to the "'need" that the Navy has to co-located CVNs with air fields. The DEIS says on the one hand (page 2-17, line 38) *"There are no airfields in Hawaii capable of permanently basing a CVN airwing"* using this as a reason to home port none of the CVNs there, but on the other hand, when NASNI gets three CVNs, the air wings are suddenly independent and unrelated.

The FEIS needs to disclose the full range and types of aircraft that are associated with the carriers, release the noise factors and make this information available in the document. A much more detailed analysis of this issue needs to be contained in the FEIS.

AIRPORT AND AIR TRAFFIC CREATE ADDITIONAL IMPACTS ON HEALTH O.12.147

The increased health impacts from continued and additional use of the airport on NASNI were unassessed in the DEIS and must be assessed in the FEIS. One study done by the Seattle-King County Department of Health cites increased health effects in areas surrounding Boeing Field including a

- 57% higher asthma rate,
- 28% higher pneumonia/influenza rate
- 26% higher respirator disease rate
- 83% higher pregnancy complication rate
- 50% higher infant mortality rate and elevated rates for mortality, heart disease, and cancer death rate as well as lower life expectancy. (See attached)

Our local Air District has fielded many complaints about existing air contaminants from current operations.

Finally, San Diego is already overburdened by the health impacts of current airport operations. The 1997 Rating Guide to Environmental Health Metro Areas by Robert Weinhold, M.A. rates San Diego 307th out of 317 in number of Aircraft Operations. (See attached) These direct and cumulative impacts must be discussed and mitigated. O.12.147

SALTWATER SYSTEM O.12.148

A Saltwater pumping system was discussed for the first CVN although it was not analyzed in the DEIS. It appears that this pumping station would have "*...significant environmental impact...*". Admin Rec. at Tab 3737. FEIS should disclose and analyze the use of any saltwater pumping, flushing or other operation as a result of the presence of the carriers.

INDIRECT IMPACTS OF NUCLEAR HOMEPORTING NEED EVALUATION IN THE FEIS O.12.149

Since the establishment of the Nuclear Home Port for the USS *Stennis* every commercial shipyard (previously locally owned) on San Diego Bay has been purchased by an out-of-state, large defense contracting firm citing "nuclear repair work" as one of the reasons for the buy outs. (See attached articles). This significant impact was completely unassessed in the 1995 DEIS. This impact now increases nuclear repair and other operations along the highly industrialized east shore of San Diego Bay, an area directly adjacent to Barrio Logan a low-income, community of color that already receives a disproportionate portion of toxic materials impacts. This impact of increased work at these shipyard must be assessed in the FEIS.

O.12

SHIP-SCRAPPING MAY CAUSE ADDITIONAL INDIRECT IMPACTS O.12.150

Please see discussion on ship-scrapping above.

NUMBER OF PERSONNEL FOR REPAIR UNDERESTIMATED O.12.151

While the DEIS does much to try to equalize the maintenance schedules of CV and CVNs. This is not acceptable. Clearly, CVNs require much more maintenance than CVS i.e. more people and more time working. CVNs will be in-port more often and associated cars and trucks traveling on the local roads more often. In addition, the Navy proposes three CVNs where there are two carriers currently. See City of Coronado comment letter on traffic impacts.

CUMULATIVE IMPACTS POORLY AND INCOMPLETELY ASSESSED O.12.152

CAL/EPA stated that the 1995 EIS did not provide sufficient information to evaluate cumulative effects of proposed action and ongoing hazardous waste management operations. (B-3). We concur. The DEIS has a grossly deficient list of cumulative impacts that it considers in its cumulative impacts list (Section 3.18). It fails to adequately assess the impacts from the list of projects and fails to consider many other projects. The law requires assessment of past actions and degradation as well. The cumulative impacts analysis is very deficient and must specifically consider and analyzed the following actions that, cumulatively, will degrade the quality of our environment:

•Proposed construction at Naval Amphibious Base,
•Creation of multiple in-bay hazardous waste landfills at NASNI for homeporting CVNs
•San Diego Padres Ballpark,

•Convention Center Expansion, O.12.152
•Conversion of the Campbell's Shipyard into a hotel,
•Proposed development of the Chula Vista Bayfront,
•Approval of massive developments in the Future Urbanizing area which will add road and increased airport traffic.
•Transfer and development of Rohr bayfront property, America's Cup planning and development effort.
•Relocation of work currently done on the MCKEE that has been redirected to commercial shipyards, NASNI, and Naval Station.
•The relocation of the Landing Craft Air Cushions
•Additional loading of vessel traffic due to more carriers (See Fatal Flaw #2) and more repair work being done in San Diego Bay due to the close proximity of the Nuclear Megaport. This is also a serious growth-inducing impact.

Further, and possibly of even more importance environmentally, the DEIS fails to consider the cumulative impacts of permitting and environmental actions. The following must also be analyzed and mitigated in the FEIS as they, too, contribute to degradation of our environment: O.12.153

•Issuance of multiple variances to air quality laws issued by the Air District under significant pressure from the US Navy.
•The impacts of the DTSC's permitting actions to allow 600% increase of mixed and hazardous waste to be stored on NASNI.
•The strong effort on the part of the US Navy to **weaken** the NPDES permits in San Diego Bay beginning with the Navy appeal of the Graving Dock permit.

Further, the DEIS does not mention the already 95 hazardous waste generators at NASNI and the many more at facilities around the Bay. It is not an option for the Navy to throw up its hands stating that cumulative impacts for health risks cannot be used to quantify the extent of the impacts (Appendix J-8). The Navy is bringing these cumulative impacts to our region and they must assess the cumulative impacts of its project. **The FEIS must assess these impacts.** O.12.154

The DEIS is also far off the mark when it relies on the NPDES permitting program to reduce cumulative impacts on water quality (3.18-6) The NPDES permit program has no mechanism for considering cumulative impacts to water quality. Preventing cumulative impacts is **exactly the role the environmental review process.** The FEIS must include aggressive mitigation measures to reduce cumulative impacts on San Diego Bay water quality such as investment in non-polluting vehicles, construction and restoration of treatment marshes, removal of rip-rap and support of strong discharge permits for all Navy projects. O.12.155

Further, we must point out that the Navy has fought NPDES permits for Naval facilities tooth-and-nail and are still not permitted (except for storm water) under the NPDES permitting system. **In the FEIS, the Navy should commit to supporting a strong pollution prevention** O.12.156

requirement as a condition of the FEIS. O.12.156

FATAL FLAW #2 COMPROMISED THIS ENTIRE CUMULATIVE IMPACTS ANALYSIS. O.12.157

The statement "*Therefore, the cumulative impacts on hydrological resources from the addition of two CVNs with the removal of two CVS under the proposed action combined with those from related projects in the vicinity would be less than significant. The proposed action's contribution to this impact would be less than significant*" (3.18-6 lines 30-34). But this conclusion relies on wrong facts. There will be an **addition** of two CVNs to replace one CV that may or may not be moved. This wrong assumption invalidates this entire analysis. The same problem infects Section 3.18.4 and on page 3.18-12 regarding vessel traffic (lines 9-10) and throughout. FEIS must re-analyzed with the current assumptions and recirculated.

CUMULATIVE IMPACTS FROM POLLUTANT DISCHARGES NOT ASSESSED. O.12.158

There will be cumulative impacts from radioactive water discharges and heat discharges that will have a cumulative effect. (3.18-7) This must be admitted and mitigated. Section 3.18.3 must include routine releases of radioactive water from reactors in the analysis.

The conclusions drawn in lines 16-19, page 3.18-7 are not supported. As mentioned above, there is no cumulative assessment built into the NPDES permitting system.

O.12

SEDIMENT QUALITY O.12.159

The DEIS fails to assess the impacts to sediment quality from the constant and frequent propeller wash from additional CVNs and tugs that will continually resuspend contaminated sediments.

MARINE BIOLOGY O.12.160

This section also makes unfounded claims. "*Despite the lack of data quantitative data....*"(3.18-8, ln42) the DEIS goes on to conclude in the same paragraph "*Together these changes have....generally contributing to improving biological conditions...*" This does not follow and is a lot of wishful thinking on the part of the polluters of San Diego Bay. The Navy cites the presence of NPDES permitting system as part of this "improvement", not mentioning that Naval facilities are not yet under that permitting system (except for storm water) an, in fact, are relying on the UNDS program to keep them unregulated permanently. Further, spills from Naval vessels are exempt under the Oil Pollution Act of 1990. The public cannot rely on regulation that does not apply to the Navy to prevent Navy pollution or cumulative impacts. The FEIS must be re-written to conduct a proper and accurate analysis of these issues.

SIGNIFICANCE CRITERIA O.12.161

The cumulative impacts use the same unsubstantiated significance criteria of Section 3. Please see comments above.

REGION OF INFLUENCE IS TOO SMALL O.12.162

The Nuclear Megaport impacts an area far greater than the immediately adjacent areas of Coronado. This project has major significance and impact on the entire San Diego Region. Otherwise, why would the Navy continually discuss the benefits brought in terms of beach sand, jobs, and payroll **for the region**. The project's negative impacts have just as wide an impact, if not greater. **The FEIS must contain an analysis that assesses impacts on the whole region.**

NOISE AND AIR QUALITY O.12.163

The FEIS must factor in the additional helicopter trips and plane traffic that will increase due to the cumulative impacts of all of the home ported and visiting carriers in San Diego Bay. This issue was raised at the public hearing and our staff has had to pause during phone conversations with residents in Coronado due to overhead helicopters on the east side of Coronado.

Cumulative impacts of toxic and carcinogenic air emissions from the dredging operation need to be assessed here.

AESTHETICS O.12.164

The cumulative impacts of three city sized vessels will create a very ugly impact on our bayfront views. This impact is significant and unmitigable. Again, the wrong baseline is used.

HEALTH AND SAFETY O.12.165

"*The region of influence is defined as the area around the carrier piers and NASNI*" (3.18-15, ln 18) This could not be further from the truth when it comes to health and safety. Please see comments in above sections regarding traffic, transportation of waste, accidents and emergency planning, and radioactive and hazardous wastes. The proper region of influence is all those people living in the air basin and who come in contact with San Diego Bay. Please revise analysis in the final document.

ENVIRONMENTAL JUSTICE O.12.166

Once again, the region of influence is too narrow. The Navy would like to restrict area of impact to Coronado but this is not correct for the reasons given in the above comments on environmental justice. Further, the impacts to crew members who are people of color should also be assessed in terms of their cumulative exposure.

IX. ALTERNATIVES ANALYSIS IS DEFICIENT

O.12.167

None of the issues raised regarding alternatives assessment in EHC's Scoping letter were addressed in the DEIS--other than to dismiss them. This is a serious flaw in the document. NEPA regulations provide that the discussion of alternatives to the project "is the heart of the environmental impact statement." NEPA requires that agencies "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss their having been eliminated." Agencies also must "Include reasonable alternatives not within the jurisdiction of the lead agency... [and] the alternative of no action." 40 C.F.R. § 1502.14 (emphasis added). "The statement shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." 40 C.F.R. §1502.13.

There is considerable evidence in the Administrative Record that indicates that the Navy has already decided the final homeporting locations so that alternatives were chosen to support the Navy's **already decided position.** (See evidence presented in Section I of this letter)

O.12

Further evidence illustrates the lack of meaningful analysis of alternatives as required by NEPA and CEQA. Here are some examples of viable alternatives that were dismissed or not even discussed in this analysis. At the time of the Scoping letter, construction of CVN-76 was only 12% completed (NAVSEA 250-574 Shipbuilding Quarterly Progress Report, 1Oct1996) now it is 40% complete. We have since learned, conventional carriers cost billions of dollars less in construction, operation, and decommissioning, generate less dangerous wastes, cause less public health risks, and are more available for deployment. This should be fully revealed and analyzed in the FEIS.

1. Cancellation of the construction of CVN-76 or conversion of it to conventional power such as was done for the USS Kennedy (GAO report on Cost Effectiveness of Nuclear propulsion in Carriers, page 39) should be a major alternative analyzed.

2. Construction of CVN-77 as a conventional carrier should also be analyzed for cost and environmental improvements.

3. A combined alternative including repair work at Long Beach and use of the funds saved by not constructing CVN-76 to build high-speed rail or bullet train between San Diego and Long Beach for the purposes of ferrying personnel efficiently should be analyzed.

4. Further, another alternative that should be examined is to avoid construction and fill of the new pier and home port only two CVNs at NASNI, the second along the quay wall. There is no reason that this is not a viable alternative. At a minimum, the order in which the CVNs should be added and evaluated is to add the CVN berth along the existing quaywall first, then accrue the additional costs for the third. If this was the order of adding CVNs to NASNI, the cost

comparisons would be very different. This is how the cost comparisons should be done in the FEIS. O.12.167

5. The FEIS should also examine the reduction of impacts to local communities from construction of the CVX generation of carriers as non-nuclear.

6. In the DEIS the other San Diego alternative sites were improperly rejected. The evidence of problems and damaging impacts of the piece-mealing of this is no where more evident than on page 2-62 where this DEIS rejects viable alternative sites due to prior FEIS evaluation. A full and fair analysis of all the potential sites should have been conducted for the whole project. But, since the Navy has piece-mealed this project the public is denied their due of full alternatives assessment. An analysis of all potential and feasible sites should be analyzed in the FEIS, including Pier Bravo and the Submarine Base.

7. Finally, the true "No Project Alternative" to the true project the "Nuclear Megaport" is no carriers, no repair facilities, no project. This is required by law to be analyzed in the FEIS.

IMPROPER DISMISSAL OF ISSUES AND CONCERNS RAISED DURING PROJECT SCOPING

O.12.168

Section 1.6 raises, misquotes, then summarily dismisses issues raised by EHC during the Scoping period. The three issues listed in this section should be accurately portrayed and analyzed for in the FEIS.

1. Consideration of Naval Station Long Beach in the alternatives assessment:

EHC raised this alternative for either home porting of one or more carriers or as a repair facility and because **the Navy's own documentation** admits that it could be reopened: *"Long Beach - I tried to treat this lightly. Didn't want to get into timing because realistically you could reactivate some of Naval Station facilities dredge and upgrade pier and accommodate NIMITZ or CVN 76 in their arrival time."* Admin Rec at Tab 1365.
Please analyze in the FEIS.

2. Halting construction of CVN-76 O.12.169

Conversion of this carrier to conventional power should be analyzed and cost savings and reduced threats to human health an safety by host communities should be disclosed. Such a conversion was done on the USS Kennedy which was initially designed as a nuclear carrier and then outfitted with conventional propulsion, because of the high cost of nuclear power. (GAO report on Cost-Effectiveness of nuclear propulsion in carriers, August 1998)

3. Environmental Justice O.12.170

The DEIS erroneously cites our environmental justice concerns as being related only to Tijuana Mexico. They are not. See Environmental Justice comment section. However, impacts to Tijuana should be considered in this document since many American citizens live in Tijuana and could be impacted by this project. O.12.170

MISCELLANEOUS
The Sentence on line 17-19 (page 1-5) is unclear. Please clarify. O.12.171

3.1-11--If flexible moorings are safer, they should be required as part of the FEIS. O.12.172

X. CONCLUSIONS

O.12.173

This Draft EIS fails significantly both as an EIS and an EIR. It fails to properly define the project that it intends to support, fails to properly assess the impacts and alternatives, and fails to mitigate those impacts. It will be impossible for the Navy and any state agency to make an informed decisions regarding this project based on the analysis in the document. It must be redone and recirculated.

A COMMUNITY CALL FOR NAVY CONSIDERATION

The community has spoken loudly, clearly, and frequently regarding the significant public concern and opposition to the Nuclear Megaport. We request that the Navy take our concerns into account before loading our Bay and our community with ever more nuclear reactors and even more risks to our health and safety.

O.12

One thousand people have joined EHC and other opposition groups in opposing this project. Their names are attached.

The issues that have been of concern in the past and are still of concern in this DEIS--nothing has changed. Nothing except that we have more reactors, more waste, more traffic, and more risk. The concerns we have raised in our previous extensive comments, appeals, and Freedom of Information Requests are still unanswered or ignored. The Health Risk assessments are still improperly manipulated. The Navy accident record is still hidden. Our safety is still unprotected. No meaningful actions have been taken in response to public input, most troubling around public safety. These are not the actions of a participatory democracy–This does not invoke the important principle of informed consent.

Democracy is also undermined when the Navy completely self-certifies and (for the most dangerous aspects of the project) self-regulates a project such as the Nuclear Megaport. This violates the all important checks and balances of power that is an integral part of our society.

Community members have attended 7 public hearings on 5 separate environmental documents for this one project-- the Nuclear Megaport Project. By splitting the impacts into 5 separate studies, the total impact of the project was obfuscated and hidden. That is called piece-mealing and it is not allowed under the law.

Of these 5 separate reviews, NONE has been signed by a person who cared enough about us to come to San Diego and hear first hand from us our concerns about how this project will effect our lives. This is not the action of a government that exists for and cares about the good of the people. O.12.173

Bottom line, this fifth piece of the puzzle, the DEIS, ignores public input on issues most important to communities.

We request that no decision be made on this project until the new Secretary of the Navy meets with the community to discuss the concerns and the EIS is redone and re-circulated.

THE PROJECT IS TOO DANGEROUS FOR THIS LOCATION

The tragedy of Bhopal has lessons for all of us to remember. They are best articulated by Mr. Edward Munoz, former Managing Director of Union Carbide India who stated in an interview,

"..my reaction (to the accident) was that it was an enormous tragedy...but we all did have a responsibility for...putting a bomb in the middle of a populated place."

"Well, I mean if you, if you do something that is inherently dangerous and somebody does something foolish with it, still you are responsible for doing what was inherently dangerous." (Bhopal: Setting the Record Straight by Josh Karliner cited in Working Notes, May/June 1998, page 3).

It is important to remember that Bhopal occurred due to the simultaneous and cumulative failure of 5 safety systems. A recent report revisited the Bhopal accident,

"While the company blamed disgruntled workers, it is instructive to remember what really happened. Five major safety features were either inadequately designed or at least partially failed; a refrigeration system was not operating; a temperature indicator was not functioning; a vent gas scrubber was inadequately designed; a flare tower was not functioning, and, water curtains could not reach the leaking gas"(Working Notes, May/June 1998), page 2 attached)

The carriers are in the wrong place. Accidents happen. They have happened before and can happen again. **When considering what is at stake, the close proximity of a densely populated area to the nuclear reactors raises significant, justifiable concerns.** Just in the past few years the Navy's past record includes a drunken submariner watch-standing nuclear reactors and seriously fatigued and over-tired crewman causing a hazardous waste to spill into San Diego Bay.

Accidents can happen here. If they do, we are not prepared.

The Navy must take a step back, re-analyze this entire Nuclear Megaport Project, stay the decision to make the CVX generation of carriers nuclear-powered until an environmental and economic assessment can be completed, and then determine a solution for now and future generations of carriers that poses the least significant threat to human health and the environment. O.12.173

The public is owed no less from the Navy.

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INSTITUTE FOR ENERGY AND ENVIRONMENTAL RESEARCH

Washington, D.C. office:
6935 Laurel Avenue
Takoma Park, MD 20912
Phone: (301) 270-5500
FAX: (301) 270-3029
e-mail: ieer@ieer.org
http://www.ieer.org

November 11, 1998

Ms. Laura Hunter
Environmental Health Coalition
1717 Kettner Blvd., Suite 100
San Diego, CA 92101

O.12

Draft Environmental Impact Statement for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet by the Department of the Navy

Dear Laura:

We have reviewed the radiological impacts of the operations described in the above Draft EIS. The focus of our review was:

- Chapter 7 (Radiological Aspects of Nimitz-Class Aircraft Carrier Homeporting)
- Appendix E (Information on Radiation Exposure and Risk)
- Appendix F (Detailed Analyses of Normal Operations and Accident Conditions for radiological Support Facilities)

We are have organized our review into five sections:

1. normal operations
2. hypothetical accidents
3. radiation doses to workers
4. other comments
5. conclusions and recommendations

1 Normal Operations

O.12.174

The Draft EIS presents an estimate of radionuclide emissions from routine operations. The source term for the release is summarized on page F-15 which no supporting documentation given. It is therefore not possible to verify its accuracy. We were only able to review the internal consistency of the data

O.12.174

Table F-7 contains the results of the dose calculations for three scenarios: (a) a worker located 100 m from the release point (Worker), (b) the maximum exposed off-site individual (MOI), and (c) the nearest public access individual (NPA)

For the NANSI, the EDE doses are reported as follows:

Worker: 1.3 mrem
NPA: 0.19 mrem
MOI: 0.1 mrem

The annual risk of latent fatal cancer to the MOI is calculated to be 1 in 19 million (5.1×10^{-8}) which, at 70 years of exposure, translates into a lifetime risk of 3.5×10^{-6}.

The Draft EIS does not provide the information to allow us to verify the calculations, since crucial input data such as the release height, and the geographic location of the NPA and MOI are not provided. Using the source term data on page F-15 and the San Diego Lindbergh Field meteorological data, and an assumption that an individual eats only local food, IEER used CAP88PC to determine the doses from a ground-level release as a function of distance. The highest exposures were calculated for wind direction to the South, towards the City of Coronado. The calculated doses are listed in the table below. The individual lifetime risk exceeds 1 in 10,000 for distances of 200 m or less and thus two orders of magnitude larger than the risk calculated in the Draft EIS.

Distance	EDE, mrem/yr 100% local food	Individual Lifetime Risk (deaths)
100 m	28	6.9E-4
200 m	7.7	1.9E-4
300 m	3.6	8.8E-5
500 m	1.4	3.4E-5
1,000 m	0.37	9.2E-6

It is evident that the distance between the release point and the receptor is crucial in determining the total dose. Since aircraft carriers are moving sources, it is not conservative to assume that the releases occur only at the CVN berthing sites. The distance between the point of the releases and the closest resident can therefore be closer than the ~1000 m which may be implied from Figure 2-2 on page 2-7. In addition, the calculations imply that the annual source term is evenly distributed over the entire year. The Draft EIS does not contain any information as to the distribution of the source term over time. If a substantial portion of the annual release occurs over a short time period, radiation doses to individuals in the downwind direction would be much larger compared to the same release distributed evenly over the year.

In light of these uncertainties, it is therefore conceivable that the individual lifetime cancer risk from normal operations could exceed 1 in 10,000, though we note that IEER's calculation is illustrative rather than definitive. A detailed evaluation of uncertainties is clearly warranted. This evaluation should focus on

- uncertainties in the magnitude of the radionuclide source term,
- distribution of source term over time,
- uncertainties in the geographic location of the releases,
- uncertainties in meteorological models,
- uncertainties in pathway and dosimetric models, and
- uncertainties in the dose-risk relationship

Unless such a detailed analysis is performed and supported by credible data, the claim that the additional individual risk of a latent fatal cancer is very low is not adequately supported. This aspect of the Draft EIS is therefore seriously deficient from the scientific point of view. O.12.174

Another serious problem is that the Draft EIS does not mention non-cancer risks. The source term on page F-15 lists a routine emission of one curie of tritium per year. Tritium in the form of tritiated water crosses the placenta, and hence can affected developing fetuses. The risks of birth defects and miscarriages as a result of fetal exposures due to routine releases of tritium in the form of tritiated water vapor should be evaluated.

2 Hypothetical Accidents

O.12.175

The evaluation of the consequences of hypothetical accidents is limited to accidents at support facilities. Only two types of accidents are considered:

- a fire in a radiological support facility, and
- a spill into surrounding waters of radioactive liquid from a collection facility.

The non-classified Draft EIS does not address some of the accidents that may occur while the aircraft carriers are in the homeport. A list of credible accidents would include

- reactor accidents onboard the Nimitz class carriers,
- other accidents involving the release of radioactive materials on board the ship,

O.12

On page 7-19, the Draft EIS refers to Appendix D for a discussion of reactor accidents. However, Appendix D is classified in its entirety. It is therefore not possible for us to make an evaluation of its contents. However, we note that the Draft EIS's own description of its conclusions is puzzling. It says that the analysis shows "that NIMITZ-class aircraft carriers can be operated safely" (page 7-19). A lot of things *can* be done safely. That is not the issue. The issue is the probability and consequences of various possible accidents.

At a time when the total amount of plutonium stored at various sites around the United States has been declassified, surely the EIS could reveal the estimated probabilities of various accidents, the basis for the calculation of those probabilities, and the maximum postulated accident consequences. While the Navy has acquired 4,900 years of reactor operating experience, this does not mean that a major reactor accident is impossible. The pressurized water reactor used in naval vessels can suffer a loss of coolant accident as well as other mishaps. Only the probability of accidents is at issue. The accumulation of 4,900 years of reactor operating experience without a loss of coolant accident cannot allow the Navy to conclude that the accident probability is less than 1 in 10 million, the level of probability below which the navy did not evaluate accidents. The Draft EIS should have provided an analysis or at least the data on which its decision to exclude reactor accidents was based.

While the U S Navy acknowledges the risk of nuclear accidents other than the scenario described in the Draft EIS, there is no mention of severe accidents in the public document. A variety of accidents seem to have occurred in nuclear submarines and surface ships. The accident consequences for such accidents may be much greater than for the two scenarios considered in the Draft EIS. An Internet search we conducted yielded a list of accidents that are not discussed in the Draft EIS.[1] We do not reproduce the list here because the limited

[1] See the Internet site http //www nitehawk com/alleycat/nukes html

resources available for this review did not permit a careful verification of the items listed there. The Final EIS should provide a complete list of such accidents and explain which ones are being used as the basis for the calculations in the EIS, which ones are being omitted, and why. If the information provided at http //www nitehawk com/alleycat/nukes html is incorrect, the Final EIS should set the record straight and provide the appropriate data and explanations (or if official reports already exist, references to these reports). O.12.175

In contrast to the potential range of conceivable accident scenarios, the Draft EIS selectively limits the analysis to a relatively minor release of radionuclides in case of a fire or spill. The largest consequences were calculated for the fire scenario. Even this limited analysis is inadequate.

For the NANSI home port, the EDE doses for the fire scenario are reported as follows

Worker:	0 6 rem
NPA:	0 9 rem
MOI:	0.2 rem

More than 95% of the calculated dose is due to cobalt-60 which deposits on the ground and results in external exposures due to gamma radiation. The Draft EIS claims that the meteorological data represents 95 percent condition which is defined as that condition that is not exceeded more than 5 percent of the time.

As is the case in the assessment of normal operations, the Draft EIS does not contain the essential data that is necessary to verify such a claim. The Draft EIS does not indicate the geographic location of the NPA and MOI as well as the meteorological analysis that was apparently performed.

In the case of a 1 Ci release of Co-60, the crucial parameters in determining dose are:

- the dispersion coefficient,
- the deposition velocity, and
- the length of exposure after initial deposition.

If an unfavorable dispersion situation occurs during a 1 Ci release, the dispersion coefficient χ/Q can be expected to be of $\sim 1 \cdot 10^{-4}$ s/m^3. Another unfavorable situation would be a high deposition velocity due to rainfall at the time of the accident resulting in a deposition velocity of 0.1 m/s. Under such circumstances, the cumulative dose would be ~2 rem during the first year and ~16 rem over 20 years following the accident. Thus, even for the scenario selected in the Draft EIS, doses could be one or two orders of magnitude larger than the one calculated in the Draft EIS for the MOI. The discrepancy in the dose estimates indicates the need to conduct a through uncertainty assessment be performed for accidental releases as well. This evaluation should focus on

- the range of potential accidents on board of the aircraft carriers as well as in support facilities,
- the uncertainties in the magnitude of the radionuclide source term in case of accidents,
- uncertainties in the geographic location of the releases,
- uncertainties in meteorological models,
- uncertainties in pathway and dosimetric models, and
- uncertainties in the dose-risk relationship.

3 Radiation Doses to Workers

O.12.176

The Draft EIS does not address radiation exposures to workers less than 100 m of the point of the release. This is an arbitrary assumption, since it is possible that workers may be located closer than 100 m to the release point. The Draft EIS is thus incomplete because the impact of the operations on workers is not adequately addressed.

The Draft EIS provides some data on worker exposure in the NNPP. However, it appears that this is external exposure data only. Doses from internal burdens of radionuclides seem to have been excluded. If internal doses have been included, the Final EIS should so state, and discuss how the measurements were done and records maintained. If internal doses were not included, then the Final EIS should so state. It should discuss why these doses have been omitted and analyze the basis for its claims regarding compliance with dose limits.

4 Other comments

O.12.177

The discussion in the Draft EIS about the naval reactor program is misleading as to its overall environmental impact. While many aspects of the program do not directly impact homeporting, the Draft EIS makes mention of some of them selectively, while omitting others. Specifically, impacts related to uranium mining, processing, enrichment, reprocessing of irradiated reactor fuel (which creates highly radioactive liquid wastes, some of which are still stored in liquid form Idaho, "low-level" radioactive solid and liquid wastes, and gaseous radioactivity emissions), and reactor decommissioning wastes. These impacts are cumulatively considerable. The EIS should either state that it is not considering impacts associated with naval reactors that occur at locations other than the proposed homeports, or it should provide a more complete picture of the most important aspects of such impacts.

O.12

Another problem with the EIS is the discussion of the effects of exposure to low-level ionizing radiation in Section 9.0 of Appendix E. The tone of this section is propagandistic and misleading rather than scientific and analytical. The Draft EIS makes the assertion that the risks to exposures such as those experienced by workers at occupational levels are "extremely small." Occupational limits are currently 5 rem per year. A worker receiving a lifetime cumulative dose of 50 rem would have a 1 in 50 chance of getting a fatal cancer due to this exposure, using the EPA risk factor for radiogenic cancer. This is not an "extremely small" risk by any reasonable standard. Moreover, the uncertainties in this risk estimate are substantial. A 95 percent confidence bound would yield a considerably higher value for risk.

Section 9 was evidently written not to present the facts about what is known and not known, but rather to counter the effects of what the Navy considers to be an "article of faith that no one knows what the effects [of exposure to low levels of radiation] are." The Draft EIS does not cite any example of such an assertion. In many years of work in this field, we have not found this to be a common assertion. If the Navy believes fear-mongering assertions of complete ignorance about the effects of radiation are common, it should cite a few examples and point the public to the literature where others may be found.

It is highly inappropriate and misleading for the Draft EIS to set out to convince the public that risks of radiation are very small. The EIS should seek to inform and to discuss the facts and uncertainties in a scientific manner.

Moreover, the decision about what is "extremely small" is made by the government with public input in a regulatory context. Contrary to the implication in the Draft EIS, a dose of a few millirem is considered significant in the regulatory context. For instance, drinking water may not be polluted to a level greater than that which would produce a dose of 4 millirem per year. This

is more than one thousand times smaller than the occupational dose limit. It is considered significant in EPA regulations, because large numbers of people may be exposed to contaminated water resources, producing consequences that have been deemed to be unacceptable. The Final EIS should contain a more careful discussion of this subject in a more appropriate tone. O.12.177

5 Conclusions and recommendations

O.12.178

The Draft EIS lacks a comprehensive evaluation of radioactive emissions in normal operations and accidents. Crucial information necessary for a validation of the results is not provided. A proper analysis of the uncertainties associated with radiation exposures from routine operations is lacking. Potentially severe accidents on board the aircraft carriers are not considered in what has been published for the public. All information including risks to the public of any reactor accidents that may have been considered is classified. The impact of releases of radioactive materials in routine operation and accidents on workers is incompletely addressed. Relevant non-cancer risks from releases of tritiated water vapor have not been discussed.

A preliminary, illustrative check of some of the calculations using a standard EPA-approved dispersion model indicates that the Draft EIS may be seriously underestimating at least some of the doses. The Draft EIS does not provide an adequate evaluation of the risks associated with the development of home port facilities for three NIMITZ-Class aircraft carriers. It contains serious scientific deficiencies that at the very least should be fully corrected in the Final EIS. A better alternative, which we recommend, would be to provide a second Draft EIS for public comment with the appropriate data and more transparent calculations so that an independent check on the results can be performed.

Please feel free to contact us if you have any questions or comments.

Sincerely,

Bernd Franke

Arjun Makhijani, Ph.D.
President

Comments

on the

Draft Environmental Impact Statement for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet, August, 1998

Prepared for
The Environmental Health Coalition
San Diego, CA

O.12

November 11, 1998

Katherine S. Squibb, PhD

Theodore J. Henry, MS

Community Health Assessment
& Public Participation Center
Department of Pathology
University of Maryland, Baltimore
100 N Greene Street, 4th Floor
Baltimore, MD 21201

Comments
on the
Draft Environmental Impact Statement for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet, August, 1998.

The above referenced Environmental Impact Statement (EIS) was prepared in accordance with the National Environmental Policy Act (NEPA) to evaluate potential environmental impacts from the construction and operation of facilities needed to support the homeporting of three NIMITZ-class nuclear powered aircraft carriers (CVNs) at four locations within the U.S. Pacific Fleet: 1) Coronado, CA, 2) Bremerton, WA, 3) Everett, WA and 4) Pearl Harbor, Hawaii. These comments address the assessment for only one of these locations, the North Island Naval Air Station (NASNI) in Coronado, CA which is the preferred location (Alternative 2) for the homeporting of three CVNs, one which is already located at this site and two which will be added to the fleet by the year 2005. In addition to evaluating the placement of two more CVNs at NASNI, this EIS also evaluates the preservation of the existing CVN transient berth at NASNI. O.12.179

It cannot be overstated that the selection of NASNI as the preferred location for the home porting facilities was not based on this environmental impact assessment, rather it is the site that best satisfies the four main CVN Home Port Objectives and Requirements. Two important advantages of homeporting these ships at NASNI are the presence of an airfield and the close proximity of NASNI to CVN training areas. The quality of life for the sailors was also an important consideration, as was the availability of needed facilities and maintenance/support factors.

This EIS, therefore, was conducted primarily to determine what impacts would occur from this construction/maintenance activity and what mitigations would be required to off-set these impacts. Briefly, the homeporting of two additional CVNs at NASNI and the associated dredging would result in the replacement of existing land uses, with the construction of a new pier to replace Pier J/K, the relocation of a flag/ferry landing, and electrical upgrades. An intertidal and shallow subtital habitat that supports eelgrass would be permanently replaced by a fill area. A proposal to replace the lost habitat is considered as part of this proposal. To provide clearance for the CVNs, the water depth adjacent to the pier will need to be increased from the current level of 42 feet mean lower low water (MLLW) to approximately 50-52 feet MLLW. It is expected that 490,000 cubic yards will be dredged during this effort. As for the pier, the current area is 63,000 square feet, which is short of the needed area of 117,000 square feet. In turn, the J/K Pier would be torn down and replaced. A dike area approximately 1.2-2.5 acre in size would be constructed in support of the new pier which would give rise to the loss of shallow water habitat. Mitigation of this loss would include the creation of new bay bottom and the establishment of eelgrass beds at another location. This site would be at Pier B, near outfall 3, where approximately 50,000 cubic yards of sediment would be replaced. The excavation depths would extend from 1 foot MLLW near shore to 5 feet MLLW offshore. It should be noted that approximately 15,000 cubic yards from this dredging activity may be used to fill in the 1.2 - 2.5 acre area behind the rebuilt Pier J/K area. O.12.179

Comments O.12.180

NEPA requires that an EIS provide a full and fair analysis of the significant environmental impacts of an action and sufficient evidence to support the environmental analysis. It is not clear that this document adequately satisfies these requirements. In assessing the impacts of placing two more nuclear-powered carriers (CVNs) at North Island Naval Air Station (NASNI), one must consider the risks to both human health and the environment from the site construction and development, as well as the ongoing impacts from the operation of the support facilities and the CVNs themselves over their lifetime residence in the San Diego Bay. There are a number of potential risks and impacts have not been adequately addressed.

Faulting and Seismicity (Section 3.1) O.12.181

The proposed homeporting site at NASNI sits on the Rose Canyon fault zone. According to the EIS, an earthquake in this zone could result in "serious damage to dams, dikes and embankments." Given that a dike/embankment area will be constructed during this project, what engineering controls will be utilized to ensure that damage does not occur in such an event, since this area could contain nuclear and other hazardous material at the time of an earthquake? There is no discussion regarding the impacts of these geohazards on the constructed facilities. For instance, if a particular facility has a requirement for electrical power to properly store or control hazardous material, the project analysis should consider the impacts of an earthquake on the supply of power to these facilities and the potential hazards that would result from a power failure.

Additionally, it is stated that tsunamis and seiches are "very rare, unlikely to occur during the lifetime of the project" and are considered an "unavoidable, acceptable risk," indicating that impacts from such events would be considered insignificant. This logic is not necessarily sound, given that the impact of an event usually influences the significance of the risk. In other words, even a very rare event may be considered an unacceptable risk if the ramifications of such an event are massive. In turn, it would seem logical that the impacts from tsunamis and seiches should be evaluated based on the nature of the operations and facilities at the site. This document lacks discussion regarding what types of operations will take place.

Analysis of Normal Operations and Accident Conditions for Radiological Support Facilities (Appendix F) O.12.182

An analysis of the health risk to the general population that would result from a fire accident at a radiological support facility is provided in this section. In Table F-8, the risk presented includes the probability of a fire occurring. Since the probability of a fire (1 in 200) used in this table is the same for all four locations, this implies that this probability does not include a fire resulting from an earthquake. How does the potential for earthquakes at NASNI increase the probability of a fire at this location? O.12.182

Terrestrial Hydrology and Water Quality (Section 3.2) O.12.183

This section discusses underground storage tanks, fuel pipelines and other RCRA/CERCLA sites that are being or have been addressed under the NASNI Installation Restoration Program. In doing so, this section points out that during the construction of the BRAC CVN Homeporting MILCONS, petroleum contamination was discovered, in addition to the previous contamination that was removed in 1997. Given NASNI's long history and known contamination, it is quite possible that additional contamination will be uncovered during the demolition and replacement of the pier and during dredging operations. It is important that this EIS specify what monitoring will be conducted to identify any uncovered contamination in a timely manner and identify what response actions will be possible under different potential scenarios. It is not sufficient to assume that "some" monitoring process to be implemented will be adequate, nor is it appropriate to assume that stakeholders will have a role in the process, which this EIS is suppose to provide. These issues must be delineated within this report.

In the Operations discussion on page 3.2-6, this document acknowledges that two additional CVNs would result in an increase in the quantity of chemicals handled, stored and disposed of at the home port location. As stated, "current regulations should minimize potential releases and there are various statutes and regulations pertaining to storm water retention and treatment and soil and groundwater contamination." The conclusion that these impacts are partially offset by the decommissioning of the two CVs by 2005 is questionable. First, it is our understanding that one CV has not been stationed at NASNI in four years. Second, there is no guarantee that the other CV will be replaced. Third, this conclusion assumes that the hazardous materials associated with the CVNs are equivalent in quantity, quality, handling procedures and toxicity. The EIS should evaluate what types and quantities of materials will be managed at this port as a result of this project. Additionally, it should consider the information and lessons learned from the previous CVN homeporting project to assess what specific impacts may be expected with the two additional CVNs. Calculations should be made to determine whether requirements established under existing permits can be met when the home port facilities are under full operation.

Marine Water Quality (Section 3.3) O.12.184

The presentation of site specific information in this EIS is lacking, making it difficult to accurately assess impacts. Discussions regarding tidal circulations uses descriptors such as north, central and south Bay, and mention that central Bay is between Glorietta Bay and Silver Gate Power Plant. However, no maps identifying these delineations or showing the circulation theories are provided with the text. It is not clear how a concerned individual can evaluate the logic and information presented if important materials are not provided.

In describing the water quality conditions, the document indicates that no site specific water quality data exist for either the homeporting site or the mitigation site. This is a serious concern considering the numerous sediment removal actions that have been performed in the past, the documented sediment contamination near NASNI outfalls and the industrial activities that still take place at this active base. It is noted that some metals, such as copper and silver, have been detected at elevated levels in surface water collected north of the site, and that the National Oceanic and Atmospheric Administration's Mussel Watch Program has detected bioaccumulation of DDT, chlordane, PCBs and PAHs. These data indicate that the impact of dredging contaminated sediments must be more carefully evaluated. Environmental data from sediment sampling collected near the adjacent outfalls by the IR program should be considered in this evaluation. O.12.184

While assessing dredging impacts, the document explains that because the sediments are primarily sandy in nature, the sediments will generally contain "low concentrations of chemical contaminants and low potential for contaminant solubilization or adverse biological effects". However, it must be noted that in the NASNI evaluation of sediment contamination discovered in the characterization of Bay outfalls 3 - 8 (Draft Remedial Investigation RCRA Facility Investigation Report for Site 1- Shoreline Sediments), the distribution of contaminants did not consistently coincide with grain size. Given the many factors influencing contaminant distribution, some of which are discussed within this section, it is difficult to predict the level of sediment contamination and potential for contaminant release in the area proposed for dredging without collecting empirical data.

O.12

In the first paragraph of page 3.3-8, metals and PAH contamination known to be present in the sediments around Pier B is discussed. A 1994 report entitled Dredged Material Sediment Testing Results for Project M1-90 Maintenance Dredging at Pier Bravo, Naval Air Station, North Island is referenced. However, later sampling conducted as part of the Remedial Investigation RCRA Facility Investigation Report for Site 1 - Shoreline Sediments is not discussed. As part of this RI sampling, surface sampling and cores samples were collected at various distances. The PAH, pesticide and metal contamination detected during this investigation should be compiled with other available data, such as the referenced dredge material report, to accurately assess where excavation should and should not be conducted during the mitigation project. In addition, it is difficult to evaluate the quality of the authors' pledge not to excavate contaminated areas if the proposed areas of excavation based on the known contamination are not included within this report. Also, it is important to establish a definition of the term "contaminated."

It is critical that the EIS provide ample information regarding the evaluation of proposed intrusive activities, as well as adequate information on the work plans and best management practices for future activities associated with the CVNs. The specifics regarding the planned excavation and construction projects will have direct impacts during the intrusive work and certainly require more complete discussion and analysis than what is provided in the EIS. The many documents referencedin place of specific analysis is insufficient to evaluate the project within this report and places an undue burden on the stakeholder. The executive summary states that " the EIS must provide a full and fair analysis of the significant environmental impacts," and "sufficient evidence to support the environmental analysis." O.12.184

In the discussion regarding dredging on page 3.3-6 and under Facility Improvements on page 3.3-8, the document explains that elutriate and bioassay tests conducted as part of the BRAC CVN homeporting (note reference DON 1995b appears to be incorrect) indicated that sediment resuspension would not result in significant contaminant releases or mortality of aquatic organisms. It is not clear that these tests would be applicable to the sediments dredged as part of this project. These tests need to be conducted prior to dredging, and all site specific contaminants must be analyzed.

One area under marine water quality that is not addressed at all is the potential for thermal pollution resulting from the cooling water from the nuclear reactors on these aircraft carriers. Have any calculations and/or measurements been made to determine the impact of the heat input into the Bay from the three the CVNs when they are all in port?

Sediment Quality (Section 3.4) O.12.185

In Section 3.4, the EIS indicates that "no numerical sediment quality criteria presently exist." This statement is grossly misleading to the general public. In reality, there are multiple sources for sediment quality criteria available for evaluating current sediment contamination associated with this project. While this may be referring to the absence of enforceable standards similar to the maximum contaminant levels for drinking water, it should be noted that regardless of whether or not comparison criteria have made it through the legal arena, those responsible for conducting this EIS have the responsibility to use the best available scientific information to determine if and how this project will impact sediment quality.

The bulk chemistry section on page 3.4-2 discusses sediment samples collected from the northwest portion of the approach channel and indicates that some contaminants were found above their respective ER-L but below their ER-M values. It also mentioned that total petroleum hydrocarbons, volatile organics and organotins were less than or approaching their respective method detection limits. First, these data were collected for previous studies (i.e. the BRAC CVN Homeporting Project) and it is not clear that they adequately characterize the site in question. Second, discussing bulk chemistry results without providing all the pertinent information simply does not allow one to adequately evaluate the data that are available. The information provided in the report does not delineate where the sampling was conducted, the detection limits of the analyses conducted, what specific compounds were analyzed for, the concentration of each contaminant that was present or how these results relate to various comparison criteria (particularly in cases where ER-L/ER-M values do not exist for a given contaminant). The results from the Woodward-Clyde, 1998 sampling and analysis also should have been provided in this document in Volume 3.

In the discussion of toxicity and bioaccumulation, the text states that Site 1 sediments from the approach channel did not exhibit any major toxicity to test bioassay organisms and that, except for lead in clams, no major bioaccumulation was observed. The text does not indicate where these samples were taken from and what tests were conducted. It should be noted that sediment tests associated with NASNI Bay Outfalls 3 through 8 did reveal toxicity and some bioaccumulation impacts, contrary to the conclusions reported in Section 3.2 for the Site IR study (see attached Comments and Recommendations regarding the Draft Remedial Investigation RCRA Facility Investigation Report. Site 1 Sediments). Two of these sites (Outfalls 3 and 8) are close to the areas being addressed under this project and these results must be considered. O.12.185

Outfalls 9-15 are discussed within the Installation Restoration Program section of this report. It mentions that a time-critical removal action was conducted to construct a confined disposal facility for impacted sediments. The size of the area addressed and the contaminants that prompted the action are not mentioned. Furthermore, it is noted that the disposal facility is located in the area, but there is no discussion regarding its specific location, its design or the potential impacts this proposed project may have on this site containing contaminated sediments.

On a separate note, the EIS indicates that based on available data, sediments from the mitigation area would be suitable for ocean dumping. Clearly some data indicate that there may be areas in the mitigation site with contaminant levels that may not be suitable for ocean dumping. Given the limited core sampling that has been done, it is difficult to predict contaminant concentrations in the sediments that will eventually be excavated and it will be critical to conduct the proper analyses on the dredged material before a disposal approach is selected.

Marine Biology (Section 3.5) O.12.186

Eelgrass is described as a valuable resource in the southern California bays and estuaries. While it is noted that eelgrass beds exist in the north and north-central bay at water depths of 0 to 24 feet, it is also noted that "over 90% of the 441 hectares of eelgrass [in San Diego Bay] occurs in the south and south-central bay. The tendency for eelgrass habitat to be in the southern portion of the bay is a critical issue since the proposed mitigation site is at Pier Bravo, which is in the north/north-central part of the bay. The limited amount of eelgrass in the northern half may indicate that this proposed mitigation site is not hospitable for the proposed eelgrass bed. The basis for selecting Pier Bravo, the usefulness of this location with regard to the type of organisms that use such beds and the monitoring and maintenance planned to ensure the site survives are critical areas that need to be clearly presented in this document. Several transects through the proposed mitigation site (at 0-6 feet) did not reveal any eelgrass, although 2,529 square feet were noted on the north side of the pier at depths between 11 and 18 feet MLLW. Is this an area of natural growth, or is this a part of the mitigation site constructed as part of the BRAC CVN project? Survival of the eelgrass in the proposed location is a primary concern.

There is mention of plans for pre and post-construction surveys to assess eelgrass impacts in the construction area as suggested by USFWS and Marine Fisheries Service. It is important that the Navy conduct such follow-up. It appears that this would be done to address coverage/shading issues by the new wharf, but there is little discussion regarding what these surveys would entail. Again, it is the Navy's responsibility not only to predict "no significant impacts," but to monitor and ensure that these predictions are correct. O.12.186

The impacts from increased turbidity of the proposed dredging include reduced light penetration and dissolved oxygen and a possible reduction in survival, growth and biomass. The document notes, however, that these impacts would be localized and temporary. The problem is that the document provides no description of the size of the localized area or over what period of time the dredging would take place, which of course will directly influence the extent of the impacts. A discussion under Socioeconomic Considerations indicates that the dredging and disposal process would occur over 1 year. Certainly, resulting influences on the bay ecosystem may differ if the dredging takes 2 months vs 18 months. Additionally, the impact of this proposed action needs to be considered in conjunction with other dredging activities in the vicinity. The EIS should evaluate whether a series of individual impacts to the ecosystem could result in greater than expected or long-term adverse effects due to the repeated insults incurred.

Results in the Marine Biological Reconnaissance Field Survey Report provided in Section 3.5 of Volume 3 suggest that activities in San Diego Bay may already be having an effect on marine life. The 1997 field survey results from Pier Bravo, the navigation channel and the area near Pier J/K were similar to earlier studies, but "fewer resources were present in 1997." The authors suggest that "some of the reductions in eelgrass and less motile species are suggestive of some disturbance to the area over the last several years."

As indicated in the discussion of suspended solids on page 3.5-11, there is little discussion of actual sampling to verify the projected suspended solids concentrations, resurgence of affected organisms, etc. It is important for the Navy to verify predictions of "less than significant impacts." The BRAC CVN effort would appear to have provided the Navy with an opportunity to obtain such empirical data, yet there is little discussion of such information if it exists.

While it is expected that the suspended solid concentrations would be below levels that would significantly impact the various organisms discussed in this section, the EIS should still consider the benefits of timing the dredging activities for periods where impacts would be least likely. For a species that is either more sensitive than most or one that reproduces during a specific period of the year, it would seem possible to avoid dredging activities during that time, as suggested later for the California least tern. A few examples of reducing the impact on the Brown Pelican and the California least tern are discussed on 3.5-18-19. How were these impacts determined to be significant? Monitoring will be conducted during the dredging portion and efforts will be made not to conduct the dredging during breeding season "to the maximum extent possible." There is no mention, however, of what conditions might cause them to conduct this work during the sensitive time periods. O.12.186

Summary

The assessment of sediment quality in the areas of this proposed action and thus the impact of the dredging activities on marine life is a very weak area of this Environmental Impact Assessment. The 1996 report Chemistry, Toxicity and Benthic Community Conditions of Sediments of the San Diego Bay Region clear indicates that San Diego Bay is an area impacted by chemical contamination. The resuspension of sediments resulting from dredging activities not only increases suspended solids in an area, but also releases contaminants to the water column. A more empirical evaluation of the impacts of this specific activity is needed to adequately assess its impact. Additional analysis is also needed to determine whether the homeporting of the CVNs in this area will increase the frequency of dredging needed in the future to keep the navigational channel and the berth areas open. O.12.187

The relocation of the disturbed eelgrass area to Bravo Pier is also questionable as a mitigation action. It is unclear whether this area will support an eelgrass bed long-term. Monitoring of the success of the eelgrass area established as part of the BRAC CVN action should be conducted to provide support for the selection of this site. O.12.188

Overall, it is obvious that the selection of NASNI as the preferred site for the homeporting of the three CVNs was based on the objectives and requirements of the Navy and not on the degree to which the project would impact the environment. The assessment of all available data and the collection of project specific data are essential for evaluating environmental impacts. San Diego Bay is a valuable national resource that is already showing signs of environmental damage. To further destroy sensitive habitats and add substantially to existing cumulative impacts from ongoing activities would further endanger the delicate balance. The EIS needs to adequately assess how this project might upset this balance during intrusive activities and during regular operations and not just focus on whether NASNI meets strategic and operational needs. O.12.189

O.12

Comments of Dr. David Richardson, Department of Epidemiology, School of Public Health, University of North Carolina, Chapel Hill, NC O.12.190

"The information in the document (Appendix E of the EIS) has potentially little relevance to community concerns about construction of a nuclear port and maintenance facility.

The literature review is almost entirely about health effects of external exposure to penetrating ionizing radiation. Community concern about this facility, I assume, would primarily relate to concern about routine and accidental releases of radionuclides. All nuclear processes involve some routine exposures; and, the relatively short human experience with nuclear technologies includes numerous major and minor accidents that have led to environmental releases of radioactive material. The significance of radionuclide exposures occurs when they are ingested, inhaled, or enter the skin through cuts and abrasions. In a bay area, people may be additionally concerned about bio accumulation of these radionuclides, and in areas where drinking water would be contaminated people might be concerned that fluoridation and chlorination may increase biological uptake of these radionuclides.

The relevant literature on the human health effects of exposure to radionuclides is limited, particularly when one is interested on the effects of exposure to children, the elderly, pregnant women, the effects of bio accumulation and changes in radionuclide absorbtion with dietary changes, and when one is interested in effects other than cancer incidence.

Only two studies in the DEIS pertain to issues of potential community concern about environmental exposures to radionuclides. The first is the 1990 NCI study of cancer in populations near 62 nuclear facilities. There was no exposure assessment in this study (for example, people living upwind versus downwind of facilities were all considered exposed); there was no attempt to establish residential histories (duration of residence of the area was not established). The study had little ability to detect an effect, and consequently found no effect.

The second study related to community concern about environmental releases is Hatch et al.'s study of cancer in the population living within ten miles of Three Mile Island, following the accident. It is significant that the DEIS cites the Hatch study from 1990 which reported 'No associations...' but there is no citation to a more recent analysis of these data reported in the National Institute of Environmental Health Sciences journal, which concluded "Results support the hypothesis that radiation doses are related to increased cancer incidence around TMI." (Wing, S.; Richardson, D.;Armstrong, D.; Crawford-Brown, D. A Reevaluation of Cancer Incidence Near the Three Mile Island Nuclear Plant: The Collision of Evidence and Assumptions. Environ Health Per 105: 52 - 57; 1997.)

The report leaves out reference to other studies which may be particularly relevant to community concerns, and suggest potential adverse health effects from environmental exposure to radionuclides. These include the study of leukemia in the population living in areas believed to be most highly exposed from the Pilgrim nuclear plant (Morris, M.S.; Knorr, R.S.Adult leukemia and proximity-based surrogates for exposure to Pilgrim plant's nuclear emissions. Arch Env Hlth 51: 266-74; 1996.)

The remaining literature cited in the review concerns studies of the effects of external exposure to ionizing radiation. The review of studies of atomic bomb survivors in Hiroshima and Nagasaki includes no references to the extended criticism of this study. In interpreting findings from a study of survivors of a nuclear bomb attack, it should be acknowledged that selective survival was likely. The most vulnerable did not survive the physical effects of the attack, the destruction of almost all medical services, and the lack of infrastructure following the war. The Lifespan study began in 1950, five years after the attack. Dr. Alice Stewart has written extensively about the consequences of selective survival, and communities should question the usefulness of such a study for evaluating the consequences of low level releases of radionuclides into their environment.(Stewart, A.M.; Kneale, G.W. A-bomb radiation and evidence of late effects other than cancer. Health Phys 58: 729-35; 1990. Stewart, A.M.; Kneale, G.W. A-bomb survivors: further evidence of late effects of early deaths. Health Phys 64: 467-72; 1993.) O.12.190

The discussion of low level external exposure to ionizing radiation stresses the need for large numbers of persons in a study and makes the incorrect statement that "cancer induction is random in nature." What is not discussed are issues of bias, and the relatively high quality of exposure information (compared to the studies of atomic bomb survivors), and followup data for many occupational cohorts.
Studies of workers who have received long-term low level exposure to ionizing radiation may have more relevance to community exposures than studies of atomic bomb survivors. The DEIS provides no citations to occupational cohort studies that have reported evidence of positive associations between cancer mortality and low level radiation exposure. It should be stressed again that these are studies of cancer deaths among healthy adults (primarily males). Community concerns about radiation exposure go well beyond these restrictions, to concerns about non-fatal health effects, and potentially vulnerable sub-populations including pregnant women, the elderly, those with pre-existing diseases, and children.

Recent examples of evidence of increased cancer mortality rates among workers with low level radiation exposures include: studies of workers at Oak Ridge National Laboratory (Richardson, D.; Wing, S. Final Report: Time-related factors in radiation-cancer dose response. Cincinnati: National Institute for Occupational Safety and Health; RO3 OH03343; 1997. Wing, S.; Shy, C.M.; Wood, J.L.; Wolf, S.; Cragle, D.L.; Frome, E.L. Mortality among workers at Oak Ridge National Laboratory. Evidence of radiation effects in follow-up through 1984. JAMA 265: 1397-402; 1991); studies of workers at the Santa Susanna Laboratory (Morgenstern, H.; Froines, J.; Ritz, B.; Young, B. Final Report: Epidemiologic study to determine possible adverse effects to Rocketdyne/Atomics International workers from exposure to ionizing radiation. Berkeley, Ca.: Public Health Institute; Contract No. 324A-8701-S0163; 1997); and Stewart and Kneales study of several groups of US nuclear workers (Kneale, G.W.; Stewart, A.M. Factors affecting recognition of cancer risks of nuclear workers. Occup Environ Med 52: 515-23; 1995).

My interpretation of the study results from analyses of the Portsmouth Naval shipyard would be much more cautious than the author's conclusion that 'radiation was in all likelihood not the cause.' Interpretation of the findings should recognize the limitations in the available data, the limited period of follow-up, and the potential to obscure true relationships. After controlling for asbestos and welding exposures, these studies report excess lung cancer and leukemia among those with 1+ rem. The authors focus excessively on tests of statistical significance based on arbitrary decisions about 95% confidence limits. Community members representing potential concerns for workers at a nuclear shipyard might suggest that protection of workers warrants alternative standards for statistical tests about what are acceptable levels of error in evaluating hazards." O.12.190

Camille Sears 415 East Villanova Road, Ojai, CA 93023
Tel (805) 646-2588 Fax (805) 646-6024 e-mail clouds@rain.org

November 10, 1998

Ms Laura Hunter
Director, Clean Bay Program
Environmental Health Coalition
1717 Kettner Blvd., Suite 100
San Diego, California 92101

Subject: *Review and Comments on the Draft Environmental Impact Statement for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet. Prepared by: Department of the Navy, August 1998.*

O.12

Dear Ms. Hunter:

As you requested, I have reviewed the health and safety sections of the Draft Environmental Impact Statement (DEIS) for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U S. Pacific Fleet. My comments on the hazardous constituent and radiation exposure analyses are presented below. In many ways, the health and safety analyses in the DEIS are similar to that presented in the Navy Report. Final Analysis of Airborne Hazardous and Radioactive Constituents from Normal Operations and Accident Scenarios for the Mixed Waste Storage Facility Proposed for Naval Air Station North Island, which I commented on in August 1998. O.12.191

I have BS and MS degrees in atmospheric science and more than 15 years of regulatory and private-sector experience in air quality issues. I have prepared approximately 180 health risk assessments of major air toxics sources in California and have performed consequence analyses for numerous accidental air release situations. I have evaluated all the available accidental release dispersion models and provided selection criteria and recommendations to the California Office of Environmental Health Hazard Assessment in a report titled. "Modeling Exposures of Hazardous Materials Released During Transportation Incidents."

The hazardous constituent analyses should be prepared using levels of concern developed by the State of California.

The State of California has developed acute noncancer acceptable exposure levels for use in hazardous materials consequence analyses. The California values are much lower than the levels of concern used in the DEIS accidental release analyses, and would result in higher acute

noncancer hazard index calculations. In essence, the levels of concern used in the DEIS accidental release analyses are associated with much greater adverse health effects than the California values. The California Office of Environmental Health Hazard Assessment has developed acute levels of concern for use in calculating potential health effects from short-term air toxics exposures [1]. These values should be substituted for the acute levels of concern applied in the DEIS. O.12.191

In addition, several of the DEIS levels of concern for hazardous constituents were based on immediate danger to life and health (IDLH) values divided by 10. This approach is not health protective for the exposed public, even with the "safety factor" of 10 applied. The California Department of Health Services has reviewed the use of IDLH values in accidental release consequence analyses and found them to be inappropriate for most pollutants.[2] Exposures at the IDLH values were found to be in the range of animal median lethal concentrations for 18 pollutants and 45 pollutant IDLH values were comparable to exposures producing severe toxic effects in animals. The use of IDLH values (and permissible exposure limits (PELs) for that matter) are clearly not health protective for the general public.

The DEIS hazardous constituent analysis does not contain adequate dispersion modeling documentation. O.12.192

The DEIS hazardous constituent analysis discusses offsite exposures to hazardous materials, but outside of a reference to the RMP Offsite Consequence Analysis Guidance[3], provides virtually no information as to what model or models were used (DEIR, Appendix J, p. J-6, p. J-15). Detailed documentation on the modeling for evaporation and fire emissions should be included in the DEIS. The preferable dispersion model for fire releases would be ARCHIE, but the DEIS hazardous constituent analysis does not discuss the model details. Similarly, spill modeling can be performed quite readily with ALOHA, DEGADIS, HGSYSTEM, SLAB, or TSCREEN, yet these models were not discussed either. The DEIS risk analysis should present additional documentation and justification for any applied algorithms or dispersion modeling programs. In

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[1] Office of Environmental Health Hazard Assessment ("OEHHA"), Technical Support Document for the Determination of Acute Toxicity Exposure Levels for Airborne Toxicants, SRP Review Draft, October 1998

[2] Alexeeff, George V., Michael J. Lipsett, and Kenneth W. Kizer, Problems Associated with the Use of Immediately Dangerous to Life and Health (IDLH) Values for Estimating the Hazard of Accidental Chemical Releases, American Industrial Hygiene Association Journal, 50(11), pp. 598-605, November 1989

[3] U S. Environmental Protection Agency, RMP Offsite Consequence Analysis Guidance. U S. Environmental Protection Agency, Research Triangle Park, NC., May 24, 1996

addition, all modeling parameters (such as stability class, wind speed, surface roughness, etc.) should be presented in the DEIS. O.12.192

O.12

The DEIS accidental radioactive constituent analyses should include an evaluation of acute noncancer health effects O.12.193

The DEIS accidental radioactive constituent risk analyses calculated total radioactive exposure (in rem) occurring from an accidental fire or liquid spill from radiological support facilities. Using these exposure values, the risk analysis calculates the annual likelihood of fatal cancers. The total exposure, however, would not be spread out over a year or person's lifetime (as is the case in most cancer risk analyses). Due to the nature of an accidental release, the exposures would occur in a very short time-frame, with subsequent acute adverse health effects being a considerable concern.

The DEIS radiation exposure evaluation used the GENII computer program, among other models applied. The DEIS acknowledges that the GENII program "can be used to model both acute and chronic exposures to the atmosphere." The DEIS, however, only used the GENII program to assess chronic exposures from normal operations (DEIS, Appendix F, p. F-10). The radioactive constituent risk analysis should include an evaluation of acute noncancer health effects that are likely to occur from potential short-term exposures to radioactive materials.

Probability should not be included in the DEIS radioactive constituent excess cancer risk analyses. O.12.194

The DEIS radioactive constituent risk analysis estimated the likelihood of fatal cancers to exposed individuals from normal operations and two hypothetical accidental release scenarios (fire and liquid spill). For the accidental release scenarios, the DEIS calculated annual cancer risk by factoring in an estimated probability of the accident occurring.

Including probability in the DEIS risk calculation greatly reduces the calculated risk. Multiplying the calculated risk by the probability of occurrence gives the illusion that there is negligible risk, even when the consequences would be severe should an accidental release occur. Indeed, including probability in risk calculations would make it difficult to believe that any accidental release would be dangerous, with the resultant planning decisions being based on a false sense of security. Factoring in probability draws attention away from the real matter at hand, which is the risk posed *should* an accidental release occur. In addition, the probability value used in the analysis appears to be estimated, thus adding additional uncertainty to the risk calculations.

The DEIS should present lifetime excess cancer risks from potential radiation exposures O.12.195

The DEIS calculates annual risk of latent fatal cancers from radiation exposures and compares these values to an individual's annual risk of dying from all cancers (DEIS Appendix F, p. F-3). This approach is inconsistent with the widely-adopted regulatory approach of evaluating the significance of excess cancer risk from lifetime exposures. The DEIS approach is particularly

inappropriate for radiation exposures from normal operations, which will occur over a time period much greater than one year. O.12.195

The DEIS risk analysis does not provide documentation for the radioactive constituent source terms O.12.196

The DEIS risk analysis presents a summary of the radioactive constituent source terms (emissions in Curies) from normal operations and a fire and spill release scenario (DEIR, Appendix F). The information on how these source terms were calculated, or the actual emission calculations themselves, were not provided. The DEIS risk analysis should provide the basis for the radioactive constituent source terms presented in Appendix F.

The DEIS radiation exposure analysis should include a consequence analysis of accidental release of fissionable material from the onship reactor O.12.197

The accidental radiation release scenarios presented in the DEIS include a fire and liquid spill at a radiological support facility. Of much more concern to the general public is the potential effect of radioactive material release from the onship nuclear reactors. The DEIS should be modified to include an offsite consequence analysis from the much more serious effects associated with a potential nuclear reactor mishap occurring near populated areas. The DEIS should also include monitoring and emergency response planning information for local agencies and concerned citizens to consider prior to the existence of the exposure potential.

Please call me if you have any questions or require additional information.

Very truly yours,

Camille Sears

Camille Sears

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O.12

ATTACHMENTS

O.12

San Diego County Residents Opposed to the Nuclear Megaport and Supporting Testimony of Environmental Health Coalition and Peace Resource Center

O.12.198

San Diego

Ann H. Steinbach
Martha Fort
Marian McGuire
Jim Guerin
Dash Bond
Paul Bond
Lori Judei
Alex Amparan
Amber Eich
Ricky Legaspi
Laurie Stoff
Marcelo Estrada
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Isabel Agulera
Sophia Chavez
Maria Sanchez
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Irving Hosenpad
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O.12.198

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Santee

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Robert Tuck
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Awesa Koritsoglou
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O.12.198

Out of Town - California

A FLEET WEEK APPEAL TO GOVERNOR WILSON AND OUR ELECTED OFFICIALS

Stop the Tidal Wave of Toxic and Radioactive Waste in San Diego!

We, the undersigned 600 residents of San Diego and Coronado, care about the quality of our environment and our quality of life. We want to keep toxic and radioactive waste off our streets and out of our communities. Naval Air Station North Island is seeking state permits that will allow a 600% increase in the transfer and storage of toxic and radioactive waste. To date, the Department of Toxic Substances Control has ignored community concerns and requests for reasonable protection. We are asking you to take action now to protect our health and our children's health by denying these permits.

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Maria
Isabel
Abeica, Lisa Adams,
Jamel O.'Adan, Everardo F.
Aguilar, Maria Aguirre, Timothy
Akins, Maurine Albcaetyb, Miranda
Alexander, Bruce Allen, Jeffrey Altman,
William Alverson, Diane Anderson, Ellen C.
Anderson, Nellie G. Anderson, Theodore T. Anderson,
Amalia Angeles, Stan Arango, Phillip E. Arenas, Robert
Arerda, Janice Armstrong, Jonah Arter, Malcolm E. Ascencio,
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Bach, Scott Baete, Jodi Bailey, Frank Baldassare, Lezl Bellaure, Hugo
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Bartholomew, Peter Basil, Doris Bass, Frances Bassett, Ruby S. Baum, Lauren
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Marvell Bryant, John F. Budd, Raymond Bussiere, Gerry Bustamante, Karen Byrne, Carly Caldroni,
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Karina Canedo, Derek S. Caporizzori, Nicole Capretz, Chris Caramell, M. J. Carpenter, Nathan Carpenter,
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Castillo, Roger H. Cavanaugh, Sonia Cawsey, James C. Celen, Jesus Cervantes, Teresa Chambers, Kyle
Chapman, Scott & Karen Chatfield, Jerry J. Chauvin, Doris B. Childress, Derek Chen, Julie Chris, Annie
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Costa, Patricia Cowan, Mildred A Cox, Henrietta M. Coxsey, James N. Coxsey, Chrystal Cozad, Marilyn Crehore,
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Betty Davis, Jane E. Davis & Family, Susan M. Davis, Emilio De Leon, Francis De Roeder, Julianne De
Saad, Suzanne E. Deal, Lelie Dehghani & Family, Desiree DeJesus, Jeanie Del Casale, Christina C
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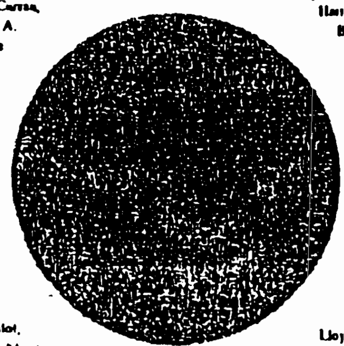

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gomery, Patty Mooney,
... Morales, ...cardo Morga,

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Margaret I.
Morrison, Mike Mosiic,

W.
Gaines, Ruth
M. Gaines, Marijo
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Mills, Marlane Mirtello, Carolyn
Moncrief, Juliette

ENVIRONMENTAL HEALTH COALITION

1717 Kettner Boulevard, Suite 100 • San Diego, CA 92101 • (619) 235-0281 • Fax (619) 232-3670
e-mail: ehcoalition@igc.apc.org • Web address: http://www.environmentalhealth.org

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ENVIRONMENTAL HEALTH COALITION REQUESTS FOR PROTECTIVE MEASURES FOR THE PUBLIC FROM IMPACTS OF NAVY NUCLEAR PROJECTS IN SAN DIEGO

We respectfully request that the Navy undertake the following actions to provide maximum reasonable protection to neighboring community members from the impacts of Nuclear Megaport Project. O.12.199

To protect the neighbors, the Navy must:

1. Prepare a full Environmental Impact Statement/Environmental Impact Report (EIS/EIR) assessing impacts from the **complete** project. The EIS/ EIR must include a complete analysis of the existing burden of toxic exposure in the San Diego region in advance of permitting new sources. This should include a baseline study of environmental and human health in the affected, downwind community and a complete inventory of all toxic emissions.

2. Agree to notify local community and neighbors of <u>all</u> releases of radioactivity of any size and amount. The annual cumulative total of releases that are currently reported long after releases have occurred are not adequate. Downwind neighbors of a nuclear release have the right-to-know as soon as possible that they have been exposed to radiation, regardless of the amount, so that they can take precautions to protect themselves and their families. The 15-day time lag allowed in the draft Mixed Waste Facility permit is unacceptable. It is not the role of the Navy to decide what the public needs to know and when. It is the public's right-to-know. O.12.200

3. Provide additional Emergency Response Preparedness and Planning exercises for the downwind communities. This must include a schedule for participatory exercises that practice evacuation of neighboring residents and schools such as was done this year in Scotland near a Trident Submarine base. O.12.201

4. Implement a perimeter and community monitoring program that can warn residents in the event of radiation releases. Monitoring stations must be located in several areas within the downwind community and all results must be made public. Warning sirens should be installed to alert residents in the event of a release of radiation. For comparison, San Onofre has 51 warning sirens in place throughout the area of impact. O.12.202

5. Provide stores of potassium iodide tablets to be distributed to all businesses, schools, day-care centers, and households with children that are located downwind from the facility. In the event of a nuclear release, children must be treated within minutes to reduce damage to their health. O.12.203

6. Agree to limits on the amount of total radioactive and hazardous waste and the time it is allowed to be stored on site, allowing accumulation for only 90 days instead of the many years that is allowed under current draft permits. No waste should be allowed to be trucked from other Naval operations. O.12.204

7. Agree to an enforceable order requiring a reduction in total overall hazardous and radioactive waste generation and emissions in our region. A schedule of implementation of pollution prevention requirements would go a long way to preventing health and environmental problems in the future. O.12.205

8. Create and staff a community and regulator oversight board to examine on-going operations at Naval bases in San Diego, including Naval nuclear activities. O.12.206

9. Release information regarding the past accident record of the nuclear Navy and information on areas of impact and emergency planning in the event of a worst case reactor accident at the Nuclear Megaport. This information is contained in documents that have been repeatedly denied to the public. O.12.207

The STAR Foundation

Standing for Truth About Radiation,

welcomes you to the

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Symposium on Recent Studies of Low-Level Radiation and Implications for Medicine and the Nuclear Industry.

Sponsored by the Foundation for Better Health Care
In collaboration with Standing for Truth About Radiation and the
New Jersey Medical School, Department of Preventive Medicine.
September 26 & 27, 1998
New York Academy of Medicine

	Introduction, Helen Caldicott, M.D., President Emeritus, Physicians for Social Responsibility.
9:00 a.m. - 9:30 a.m.	Welcome, Moderator, Donald Louria, M.D., Professor and Chair, Department of Preventive Medicine and Community Health, New Jersey Medical School. *"Potential Medical Consequences of Food Irradiation."*
9:30 a.m. - 10:00 a.m.	Alice Stewart, M.D., FRCP, Department of Public Health and Epidemiology, University of Birmingham. *"A-Bomb Survivors: Reassessment of the Radiation Hazard."*
10:00 a.m. - 10:30 a.m.	Hal Morgenstern, Ph.D., Professor of Epidemiology, UCLA School of Public Health. *"Effects of Low-Level Occupational Exposures to Ionizing Radiation on Cancer Mortality at Rocktdyne/Atomics International."*
11:00 a.m. - 11:30 a.m.	Eric Wright, Medical Research Council at Harwell, Oxfordshire *"Low-Dose Radiation and Genetic Damage."*
11:30 a.m. - 12:00 p.m.	Steve Wing, Associate Professor, and David Richardson, Post Doctoral Fellow, Department of Epidemiology, University of North Carolina, Chapel Hill. *"Radiation and Mortality among US Department of Energy Workers, with Particular Relevance to Radiation Protection Standards."*
	Moderator: Donald Louria
1:30 p.m. - 1:45 p.m.	Carrie Clark, Doctoral Candidate in History, SUNY Stony Brook. *"Historical Perspectives on the Nuclear Weapons and Power Industries, with Particular Reference to Radiation Exposures."*
1:45 p.m. - 2:15 p.m.	Otto Raabe, Professor Emeritus, Institute of Toxicology and Environmental Health. *"Three Dimensional Models of Radiation Risk."*
2:15 p.m. - 2:45 p.m.	Greg Wilkinson, Professor of Epidemiology, University at Buffalo. *"Health Effects Associated with Alpha Radiation."*
3:15 p.m. - 3:30 p.m.	William Reid, M.D., Cancer Treatment Associates, Franklin, TN *"Impressions from the Trenches: Patterns of Disease in Oak Ridge Tennessee."*
3:30 p.m. - 3:45 p.m.	Asaf Durakovic, M.D., D.V.M., M.S.C., Ph.D., F.A.C.P., Clinical Professor of Radiology and Nuclear Medicine, Georgetown University. *"The Medical Effect of Internal Contamination with Uranium Actinides."*
3:45 p.m. - 4:15 p.m.	Richard Clapp, Associate Professor, Environmental Health, Boston University, School of Public Health, Environmental Health Division. *"Incidence of Malignancy in Populations Adjacent to the Pilgrim Nuclear Reactor."*
4:15 p.m. - 5:15 p.m.	Myron Pollycove, M.D., Professor Emeritus of Laboratory Medicine and Radiology, University of California School of Medicine, San Francisco, and Visiting Medical Fellow, U.S. Nuclear Regulatory Commission. *"Human Biology, Epidemiology, and Low-Dose Radiation."*
	Tony Mazzochi, Presidential Assistant, Oil, Chemical and Atomic Workers. *"Radiation: A Workers Perspective."*
	Thurman Wenzl, Research Industrial Hygienist, NIOSH. *"Potential Impact of Recent Radiation Research on Adequacy of Standards and Guidelines"*
	Moderator: Donald Louria

9:00 a.m. - 9:10 a.m.	Introduction Moderator, Helen Caldicott, M.D., President Emeritus, Physicians for SocialResponsibility.
9:10 a.m. - 9:30 a.m.	Michio Kaku, Professor of Physics, CUNY. *"Cassini and other NASA Plutonium Launches."*
9:30 a.m. - 10:00 a.m.	Arjun Makhijani, President, Institute for Energy and Environmental Research. *"Environmental Effects of Nuclear Weapons Production and Testing."*
10:00 a.m. - 10:30 a.m.	Bernie Goldstein, Chair, Environmental and Community Medicine, Robert Wood Johnson Medical School. *"CRESP: A Stakeholder Based Approach to Risk Assessment for Radionuclide Contamination at DOE Sites."*
11:00 a.m. - 11:30 a.m.	Marvin Resnikoff, Ph.D., Senior Associate, Radioactive Waste Management Associates. *Mobile Chernobyl, Casks Temperatures, Volatility and Isotopes."*
11:30 a.m. - 12:00: p.m.	Steve Frishman, Geologist, Technical Policy Coordinator, Nevada Agency for Nuclear Projects. *"Safety and Technical Strategies for Yucca Mountain."* Don Hancock, Director Nuclear Waste Safety Program, Southwest Research and Information Center, Albuquerque. *"WIPP and Transuranic Waste."*
12:00 p.m. - 12:45 p.m.	Diane D'Arrigo, Nuclear Information and Resource Service (NIRS). *"Radioactive 'Recycling:' The Deliberate Release of Radioactive Materials Into Consumer Products and the Environment."* Mary Olson, Nuclear Information and Resource Service. *"Dropping the Veil Between the Nuclear Weapons Complex and Commercial Nuclear Power."*
	Moderator: Alice Slater
2:30 p.m. - 3:00 p.m.	William Arkin, Author and Consultant to the Natural Resources Defense Council; Columnist, Bulletin of the Atomic Scientists. *"Post Cold War Nuclear Weapons, Stewardship and Counterproliferation."*
3:00 p.m. - 3:30 p.m.	Jonathan Schell, Author, The Fate Of the Earth *"The Gift of Time: The Case for Abolition of Nuclear Weapons."*
4:00 p.m. - 4:30 p.m.	Admiral Gene Carroll, Deputy Director, Center for Defense Information. *"The Military Route to Abolition of Nuclear Weapons."*
4:30 p.m. - 5:00 p.m.	Helen Caldicott, M.D., President Emeritus, Physicians for Social Responsibility. Summary and Closing.

NOV 0 9 1998

Scoping Letter for Follow-Up Investigations for the Site 1 - Shoreline Sediments Study Area Naval Air Station, North Island San Diego, CA

Prepared for
The Environmental Health Coalition
San Diego, CA

O.12

October 26, 1998

Katherine S Squibb, PhD

Theodore J. Henry, MS

Department of Pathology
University of Maryland, Baltimore
100 N Greene Street, 4th Floor
Baltimore, MD 21201

Review of the *Draft Remedial Investigation RCRA Facility Investigation Report Site 1 - Shoreline Sediments* located at the Naval Air Station, North Island in San Diego, CA revealed a number of critical areas in which additional site characterization is needed to develop an adequate remediation plan for this site As expressed in our previous comments and recommendations on the RI Report, the characterization of the outfalls was a hybrid of the risk assessment and risk management processes, leaving many issues inadequately addressed O.12.208

For example, the extent of the sediment contamination was not delineated vertically within the sediment column, nor with respect to the perimeter of the contaminated sediments (i e distance from outfalls) Additional sampling is required to adequately assess the extent of contamination from past (and possibly current) releases from the Bay Outfalls North Island (NI) needs to collect more sediment samples at a variety of distances to better assess the distribution of the contamination If NI considers excavation alternatives as part of the remediation process, or future dredging operations, then additional subsurface sampling at these Outfalls should also be conducted to better delineate the hazards

The RI report also did not consider source terms and the reality that contamination may continue to emanate from the drainage pipelines beneath this base for some time In addition, data in the RI report raise serious concerns regarding the long-term monitoring and institutional controls that will need to be implemented to contain the contamination that may be left in place This letter addresses these concerns and outlines additional work that needs to be done to provide better guidance in this site remediation project

Area Specific Issues

Ocean Outfalls O.12.209

Outfall 16

Exceedances of both North Island (NI) background levels and ER-L values for metals (Ag, Cd, Cr, Cu, Mo, Pb, Ni, Ti) and organic compounds (PAHs, PCBs, HCB, chlordane and DDT and its metabolites) along Outfall 16 indicate a need for bioassays to better delineate the impact of this contamination on ecological receptors The contamination at this site is greatest at sampling location 16-1 at and below the surface to a depth of 5-6 feet Contamination of surface sediments decreases gradually along the outfall, falling to near background concentrations at location 16-4 The most critical location needing further evaluation for ecological impacts is location 16-1, although 16-2 also represents an area of concern based on Cd and Pb concentrations, which exceeded their respective ER-Ms

Visual inspection of the outfall revealed a significant quantity of standing water in this drainage ditch which would be supportive of an aquatic and benthic community since the golf course watering activities and periodic drainage from the pipe probably keeps water within this culvert year around It would be appropriate to collect a few surface water samples to evaluate the

O.12

extent of contamination reaching the water column To assess impacts within the sediments where the contaminants have been found, benthic community samples from a few different points along this drainage area should also be collected Such a community assessment will indicate what life exists within this system, as well as provide some initial insight into whether impacts are occurring, particularly near the discharge pipe (sample location 16-1) In addition to the community assessment, a few bioassays should be conducted to assess specifically whether any ecological impacts are indicated. If significant impacts are measured at this location (16-1), then additional testing along the outfall should be conducted to determine the geographic extent of these impacts, or it may be more prudent to just excavate the contaminated material instead of doing extensive biomonitoring. O.12.209

There should also be concern regarding the migration of contaminants from this outfall to the ocean with the movement of sediments during storm events This could be monitored by sampling sediments near the mouth of Outfall 16 over time to detect increases in concentrations If the decision is made to remove these contaminated sediments rather than monitor, then care must be taken to remove sediments to the proper depth. At location 16-1, significant contamination occurs to a depth of 5-6 feet At location 16-3, surface sediment contaminant concentrations are lower and approaching background, however data in the RI report indicates that chemical concentrations for Cd, Pb, Mn, Ti, PCBs, HCB, chlordane and DDT increase significantly in subsurface sediment between 2-3 ft at this location. Thus, sediments lying 2-3 ft below the surface should also be removed. As discussed in previous comments, maps should be constructed for this and other outfalls that show the contamination present in relation to distance from each outfall and sample depth Such data evaluation is necessary to accurately identify areas in need of excavation.

The potential human health impacts from chemicals in the surface sediments at Outfall 16 also need to be evaluated and minimized Outfall 16 is readily accessible to Naval dependents and children due to its location within a golf course and its proximity to a beach area without access controls Possible pathways of exposure include inadvertent ingestion, inhalation of dust particles and dermal absorption Being on a golf course, an exposure pathway might well be the retrieval of golf balls from the channel. If this channel is dry during part of the summer season, ecological risks are reduced but human risks would be increased. While the channel contains water, institutional controls and barriers such as screening could be used to prevent direct contact with the sediments/soils, but once the channel becomes dry, controlling exposure becomes more difficult.

Conclusions of the draft RI indicate that Pb and Cd are present at concentrations that pose a non-carcinogenic hazard to humans The overall hazard index for Outfall 16 was 8 0 which was the highest of any outfall characterized in this report However, the report concluded that evaluation of the health risks of these contaminants using residential screening values was not realistic and recommended that further assessments be conducted using industrial standards This needs to be carefully considered based on a good evaluation of the use of this area, at present and in the future Again, assessment procedures for the follow-up evaluation must be selected and agreed upon by all parties prior to the analysis If the area is not remediated, then specific institutional control plans must be developed to insure that this area does not revert at any time to residential or frequent

recreational use without remediation O.12.209

This risk assessment should also be expanded to consider other chemicals present in the sediments at Outfall 16 which were not evaluated in the human health risk assessment, such as the metal titanium (Ti) This metal is present in the surface sediments at Outfall 16 at over 4 to 6 times the NI reference concentration at locations 1 through 4 and is known to irritate and damage the pulmonary system in exposed individuals Ti was probably not included in the human health risk assessment due to the lack of a guidance value for this metal, however it's health effects would be additive to those presented by the Cd and Pb, thus increasing the human health risk further If the land is at anytime returned to residential use, this contamination will need to be remediated in some way

Outfall 1,2 O.12.210

The chemical contamination present along Outfall 1,2 is restricted primarily to the surface sediments (the top 1-2 ft) except for the presence of very high (12 times background) concentrations of titanium between 5-10 ft below the surface sediments/soils Even at the surface, concentrations of Ti are seven times higher than NI background concentrations and thus pose a potential risk to people in the area This risk, however, was not evaluated in the RI. Risk assessments need to be conducted for this metal Other metals in the surface sediments, such as Cd and Cr, also pose a hazard to humans and give rise to a calculated hazard index of 2 9 This hazard was dismissed in the conclusions of the RI report because of current land use, however, it should be taken seriously if land use at Outfall 1,2 changes to residential The carcinogenic hazard present at Outfall 1,2 locations due to high concentrations of arsenic and beryllium also need to recognized and monitored There is apparently a continuing discharge of contaminants through this outfall, as indicated by the higher concentrations in the surface sediments/soils for most compounds Thus, surface sediments need to be sampled at least once a year to monitor for changes in contaminant levels

Ecological impacts are also probable at Outfall 1,2 primarily at locations 1-1 and 1-2 Since bioassays were not conducted at this site, this should be done to further assess the level of impact of the Cd, PCBs and DDT on the ecological receptors in the outfall The two metal contaminants, Cd and Cr, are found at their highest concentrations at the surface Cd concentrations are 4 times the ER-L for Cd and twice background concentrations, while Cr concentrations are approximately 3 times background The major contaminants at this site, besides Ti (which does not have a screening value), however, are DDT metabolite compounds 2,4-DDD is present at 300 times it's ER-L concentration in the subsurface sediments, 4,4 DDD at 1,600 ng/g exceeds it ER-M by more than 50 fold Thus there may well be ecological impacts occurring at this site This needs to be evaluated and possibly remediated depending upon the importance of these impacts At the least, the migration of these contaminants to the ocean should be monitored Further inputs of Cd and Cr to the Outfall sediments should also be monitored since the elevated concentrations of these metals in the surface sediments suggest a continuing source

O.12

An issue that may alter the risks at this site is whether this ditch was altered with a concrete/stone liner, as is believed to be the case based on one prior site visit. Such a liner will effectively immobilize the contamination in the soil/sediment. However, future discharges from this outfall need to be monitored, as the sediment discharged will move more freely toward the ocean endpoint. Equally important is the frequency with which this drainage area becomes dry. In this instance, the migration of contamination through wind dispersion becomes a serious issue because of the lack of soil matrix and vegetation to hold the contaminated sediment in place. It should be noted that an office and guard station are located very close to this drainage ditch, indicating the need for careful evaluation of this site. O.12.210

In-Bay Outfalls O.12.211

Follow up sampling is needed to better characterize the contaminant distribution at the intertidal and subtidal zones of the In-Bay Outfalls (Outfalls 3-8). Data in the Draft RI indicate that there are areas of contamination of concern that need to be better defined before risk management decisions are made.

Near Shore (Intertidal) Areas of Concern

Outfall 3 has the highest PAH contamination of the In-Bay outfalls in sediments lying inside the pier at location 1-2. The cancer hazard calculated for this level of PAH contamination was 4.7 x 10^{-6} which is below EPA's criterion of 10^{-4}. However, concentrations of the EPA16 PAHs exceed the ER-L for this groups of compounds, suggesting that there may be ecological effects on benthic organisms. The factors that need to be considered when establishing a management plan for these sediments are whether there is a high potential for human exposure, and whether the ecological effects are localized or wide spread. Since this area of PAH contamination appears from the RI data to be fairly localized, and concentrations of other contaminants are relatively low, the urgency for removal of these sediments at this time is probably not great. However, if these sediments are removed for other reasons, such as dredging to maintain the pier areas, then they must be treated as contaminated material and handled and disposed of properly.

At Outfalls 7 and 8 there are also hot spots of contamination in the near-shore (intertidal) sediments. In particular, at location 1 at Outfall 8, six metals exceed background concentrations and ER-Ls and the cancer risk assessment for this site indicated a potential human health hazard of 44 x 10^{-6}. The area around this outfall is not as highly secured as that near Outfall 3, thus increasing the likelihood that Navy personnel or other individuals could come into contact with the sediment. Further surface sampling of the intertidal sediments at both Outfalls 7 and 8 should be conducted to determine the lateral distribution of these contaminants and at the least warning signs should be posted to discourage human contact. Core sediment sampling and periodic monitoring of the sediments near the outfall should also be conducted as a source assessment, to determine whether on-going discharge of metals from these outfalls is a problem.

Off shore (Subtidal) Areas of Concern O.12.212

The detection of higher concentrations of contaminants at the greater distances from the Bay Outfalls suggest that NI has not found the perimeter of the sediment contamination, if one exists. Thus, additional sampling is required at greater distances. Generally, the highest concentrations of chemicals in the sediments near the In-Bay Outfalls were present in the sampling locations located the furthest distance from the shore (sampling locations 4 and 5 at 100 to 150 ft). This is true for both metals and organic compounds at Outfalls 4,5,6,7 and 8. It is important to determine whether this continues to hold true as one goes further away from the shore line. Additional sampling should be conducted at 75, 200 and 350 ft off-shore in two forty-five degree angle vectors from each outfall. If concentrations remain steady or increase, then sources other than the outfalls should be examined (assuming a better assessment of the outfalls themselves have shown them not to be current discharge points). If concentrations decrease, then the limits of the discharge area will have been better defined.

These greater distances are important for evaluating the extent of the contamination in the general vicinity of the outfalls, the odd arc sampling locations at closer distances and the lack of sampling between the outfalls limits the Navy's ability to assess the extent of contamination detected thus far. In turn, the Navy should consider two other approaches for delineating the contamination. First, sampling points between the outfalls should be selected to determine if the exceedances present are ubiquitous or present in a fan-shaped or other more localized distribution pattern. Sampling at 75 and 150 meters would seem appropriate for this effort.

Considering the sampling conducted thus far and the proposed sampling within this letter, NI should compile a map of all the sampling points to determine if there are any gaps in sampling for characterizing the outfalls. This would allow the Navy to identify and sample areas missed in the previous evaluation. For instance, follow-up sampling points could be placed at 30 meters from the outfalls where the previous samples were collected from the far left or right of the sampling arc, leaving the area directly in front of the discharge point not characterized. The selection of sampling locations on these concentric circles actually made the assessment of contaminant distribution more difficult; a grid approach to sampling would be more fruitful. Financial limitations that may arise from the additional sampling locations could be addressed by only analyzing subsequent samples for the compounds found to exceed ER-L values in previous sampling efforts.

The ecological impact of the sediments associated with the outfalls should also be determined by *in situ* benthic community analysis. Differences in community structure (diversity of species as well as numbers of organisms) in the areas near the outfalls versus between the outfalls at the same distance from shore will indicate whether there are existing ecological effects. The magnitude and overall importance of these effects to the ecology of the Bay in general can then be discussed, and used to weigh management decisions. While conducting this community analysis at 75 and 150 meters would likely produce the needed information, it may be prudent to conduct this and other additional characterization efforts in a tiered approach, leaving the *in situ* analyses until after the additional chemical analyses have been completed.

A second monitoring program that should be established to determine the importance of the chemicals in the outfall sediments compared to other contamination present in the Bay is a "mussel watch" program. Bioaccumulation of contaminants by a bivalve species, such as the bentnose clam, can be tested by placing caged clams at different locations within the Bay. Variations in contaminant concentrations in these organisms after a 1 to 3 month exposure at different Bay locations will provide very useful information on regional differences, if they exist, and thus the importance of individual sites on the overall impact of chemical contamination in the Bay on aquatic life. O.12.212

General Issues O.12.213

Assessment of Risk

From the RI work reviewed thus far, it does not appear that an adequate risk assessment the Outfalls has been conducted. A risk assessment must be conducted using current EPA guidelines for both human health and ecological impacts. The Interim Ecological Risk Assessment Guidance for Superfund provides a structured format for a more holistic approach to assessing ecological risks, allowing the different parties to agree on the models to be used, discuss where there appear to be data gaps, etc. Human health risk assessment is more straight forward, although it is still important to use the RAB and other interested citizens to obtain community acceptance of the risk assessment approach.

O.12

Before any additional data are collected, North Island, the regulators and the community (RAB) need to work together to re-evaluate the data that have been collected thus far. As raised in previous comments, the use of background levels to assess risk in the work conducted to date was not appropriate for a scientific based risk assessment. A good faith effort must be made to adequately assess risk before moving to risk management decisions. This needs to be done in an open manner that allows citizens to participate in the decision-making, rather than being in the position of arguing about previously made decisions in an already completed process. Critical to this will be an agreed upon assessment process, delineating data analysis methods and comparison criteria prior to the reassessment.

Contamination Sources O.12.214

High contaminant concentrations in surface sediment/soil samples collected closest to some of the outfalls suggest that these discharge points are still sources of contamination, possibly due to heavy rainfall events that mobilize bulk contamination and contaminated soils that have accumulated in the pipelines over the decades. To our knowledge, the RI did not specifically address the sampling of these pipes or other remedial actions conducted to clean-out and backfill potential source areas. This is a serious issue, as contamination could remain constant or even increase as a result. NI should collect sediment samples from within the discharge pipes to evaluate this possibility. Additionally, NI should collect samples from immediately in front of these discharge points after significant rain events. It is important for those involved to make sure that

the appropriate steps are taken to mitigate or control future discharges. For instance, for the Ocean outfalls, possible options include leaving contamination in place with periodic monitoring. In this instance, there will need to be a plan for make sure that areas of high contamination (Outfall 16, sample 1-1) are not migrating toward the beach and the ocean. If a cement/stone liner is considered (as we believe was installed for a portion of Outfall 1,2), NI will have to implement some system to capture contaminants that are discharged in the future. O.12.214

Institutional Controls O.12.215

In hazardous waste remediation programs, institutional controls (ICs) are a growing tool used to manage risks by breaking the completed exposure pathway. However, there are many concerns regarding the effectiveness of these mechanisms, noting that nation level agencies and bodies (i.e. the Defense Environmental Response Task Force) are now focusing on this issue with great concern. Many of the ICs implemented have not been proven to be effective. In turn, any decision document involving ICs will need to contain a schedule for inspection and evaluation, and an objective means to evaluate the success or failure of the approaches implemented. For instance, if a fence-like cover is placed over Outfall 16 to stop golfers from entering the ditch and to stop birds from feeding on fish or organisms from the contaminated site, how often will the cover be inspected? How many breaches over a given time period will be acceptable?

The EPA has begun to recognize the importance of assuring that ICs, including land use controls (LUCs), are implemented effectively. In a memorandum dated April 21, 1998, Jon D. Johnston, Chief of the Federal Facilities Branch in Region IV, addressed the assurance of land use controls at federal facilities. He indicated that facilities using LUCs as part of a CERCLA Record of Decision (ROD) or RCRA Statements of Basis, Notices of Decision and RCRA Permit Modifications will need to implement a Land Use Control Assurance Plan (LUCAP). The LUCAP is "a written installation-wide plan that sets out the procedure to assure LUCs remain effective over the long-term for all areas at the particular installation where they are required". The LUCAP should be mentioned in the base master plan, which will protect against unplanned use of the land containing contamination in the future. On a site-specific basis, it requires a LUC Implementation Plan that identifies the specific land under restriction and the LUC objectives for that area. NI will need to develop such plans for the Ocean Outfalls, if the risk assessment finds potential risks and they decide to leave the contamination in place.

The following was previously received and has been identified as an attachment to comment letter L.4 from the City of Coronado:

- Memo from Joel I. Cehn, CHP, Radiation Safety Consultant to Homer Bludau, City of Coronado RE: Interim report on Radiation Monitoring Study, October 14, 1998.

The following was previously received and has been identified as comment letter O.11:

- Letter from San Diego Audubon Society to Mr. John Coon, November 10, 1998.

This information was resubmitted by the Environmental Health Coalition as part of their attachment.

O.12

EXECUTIVE SUMMARY

This environmental impact statement (EIS) analyzes the potential impacts to the environment that may result from the proposed realignment of four E-2 aircraft squadrons and related support personnel, equipment, and functions from Naval Air Station (NAS) Miramar to one of three alternative naval air stations. This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 as amended, 42 USC § 4321 et seq., the Council on Environmental Quality (CEQ) implementing regulations, 40 CFR §§ 1500-1508 (1997), and the Navy's NEPA implementing regulations (Office of the Chief of Naval Operations Instruction [OPNAVINST] 5090.1B [1994]). The Navy is the lead agency for the decision regarding the selection of the receiving installation.

This EIS also has been prepared in accordance with the Defense Base Closure and Realignment Act of 1990 (DBCRA), Public Law No. 101-510, and the pertinent base closure and realignment decisions of the Defense Base Closure and Realignment Commission approved by the President and accepted by Congress in September 1993 and September 1995. DBCRA established the Defense Base Closure and Realignment Commission (BRAC Commission) for the purpose of ensuring a timely, independent, and fair process for closing and realigning United States (US) military installations.

PURPOSE OF THE PROPOSED ACTION

The purpose of the proposed action is to meet the legal directives of the DBCRA to realign E-2 aircraft and facilities. The proposed action includes siting 16 E-2 aircraft, relocating 988 associated personnel and their family members, and expanding or constructing facilities to support aircraft and personnel, and to provide associated training functions. In addition to the increased staffing and equipment levels, there would be an increase in training and volume of flight operations at the receiving installation with the proposed action. The E-2 aircraft use regular FAA flight tracks and would not use military training routes (MTRs). The three installations considered for the receiving base are Naval Air Weapons Station (NAWS) Point Mugu, NAS Lemoore, and Naval Air Facility (NAF) El Centro, all in California (Section 1.2). The locations of these bases are shown on Figure ES-1.

Since the no action alternative would fail to meet the legal directives of DBCRA to realign E-2 aircraft and facilities, which is the purpose of the proposed action, it is therefore not considered a reasonable alternative and has been eliminated from further analysis in this EIS. This EIS does, however, address alternative methods of accommodating the realignment and transfer of functions (alternative receiving site analysis), an analysis that is not exempt from the NEPA process. (Section 2.3.4)

Site Alternatives Considered but Eliminated

The 1995 BRAC Commission recommended redirection of the E-2 squadrons from NAS Miramar to another naval air station, primarily NAS Oceana (Virginia), NAS North Island (California), and NAS Fallon (Nevada). NAS Oceana and NAS Fallon would not be capable of achieving the operational and logistical criteria listed in Section 2.2. The reasons for their elimination are shown in Table ES-1. While NAS North Island meets the operational requirements, it was eliminated from consideration due to the need to support CAA requirements with regard to the Marine Corps realignment to MCAS Miramar.

Table ES-1
E-2 Site Screening

Site	Field Elevations	Training Ranges	Airfield Tempo of Operations	24-Hour Operations	Dual Runway	FCLP
NAS Oceana	✓	--	✓	✓	✓	✓
NAS Fallon	--	--	✓	✓	✓	✓
NAS Whidbey Island	✓	--	✓	✓	✓	✓

✓ meets criteria
– did not meet operational criteria

ENVIRONMENTAL ANALYSIS

The environmental analysis evaluates the potential environmental consequences associated with the realignment of the E-2 aircraft squadrons. The resource areas analyzed include biological resources, hydrology/surface water quality, land use and airspace, socioeconomics, traffic and circulation, air quality, noise, aesthetics and visual resources, utilities and services, cultural resources, public health and safety, and hazardous materials and wastes.

Affected Environment

Chapter 3, Affected Environment, contains descriptions of the existing environmental and socioeconomic conditions at each of the three proposed receiving bases, which include NAWS Point Mugu, NAS Lemoore, and NAF El Centro. The information serves as baseline data to identify and evaluate any potential impacts that could result from implementation of the proposed action.

O.12

North County Times 9/30/9

Paper: Many near nuclear facilities suffering from mysterious illnesses

NASHVILLE, Tenn. (AP) – Hundreds of people living near or working at federal nuclear weapons plants and research facilities in 11 states are suffering an array of unexplained illnesses, The Tennessean reported Tuesday.

The 410 people interviewed by the newspaper have ailments including tremors, memory loss, fatigue and a variety of breathing, muscular and reproductive problems. Their doctors cannot explain why they are sick.

No direct link has been established between the illnesses and the Department of Energy sites.

The 410 people are not a scientific sampling and represent only a tiny percentage of the overall number of people who live near or work at the plants.

"Four hundred people is a lot of people," said George W. Lucier, director of the environmental toxicology program at the National Institute of Environmental Health Sciences. "It's not just two or three. It is something widespread. At least the wheels should be set in motion in which a team of physicians can go in and look at things more systemically."

O.12

BBC NEWS

Sunday, January 25, 1998 Published at 22:47 GMT

UK

Government admits nuclear sub cancer link

The Ministry of Defence accepts the cancer link but does not accept responsibility

The Ministry of Defence has admitted workers on its nuclear submarine fleet could have contracted cancer through contact with high levels of radiation.

Men who developed serious illnesses after working at Chatham Naval Dockyard in Kent have long campaigned for a recognition of the link - and compensation.

In a BBC Panorama documentary to be broadcast on Monday, the Defence Under Secretary, John Spellar, said the government had conceded a possible connection.

But workers who fitted nuclear submarines at Chatham want more than the medical records and counselling on offer.

"Counselling is cheap, it's all talk," said former Chatham Dockyard worker Kevin Sansom.

Government accepts link

Mr Spellar said: "We do accept that some individuals who worked in nuclear dockyards had levels of radiation that were high and have acquired cancers which could possibly be due to radiation".

The government has previously accepted there may be a connection but does not accept it was negligent.

The Ministry of Defence awarded "no fault"

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Fans queue all week to see Sir Cliff
RAF nuclear bombs to be scrapped

compensation to at least one former worker who developed lymphatic leukaemia. It did not admit responsibility.

The area surrounding the Chatham dockyard

Mr Spellar said he had spent £1m on a database of medical records for workers at the Chatham base.

But, he said, some old records were either lost or destroyed in the past.

"For most of the regular workers we do have well-established records and in some cases there are some gaps," he said.

"What we're doing is putting all of these on a database so that we're completely aware wherever possible of people's records."

Mr Spellar added: "We set up the database, and spent £1m on that, precisely so that we can enable those workers to have access to information about their industrial history and also to get a satisfactory resolution to their claims if they have them.

"There were some of those who came in irregularly and frankly those records disappeared or were destroyed over a period of time - there was actually no legal requirement to keep them. But we're not complacent about that."

A spokesman for the Ministry of Defence said it had adhered to legal regulations and followed the advice of the Radiological Protection Board.

"Our standards have been and still are at least equivalent to, or more restrictive than those required by law," he said.

Workers remain unhappy

Mr Spellar promised the government's efforts would ensure ill workers, some of whom have died, would "get a satisfactory resolution to their claims".

But Mr Sansom told Panorama: "I would like to see something like a proper medical being done, tests being done to convince me that I haven't got it.

"Once I had all that done, then I can have that peace of mind."

RAF nuclear bombs to be scrapped
Labour denies 'cash-for-access' plans
Catholic order apologises publicly for abuse
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Race against time to solve Millennium Bug
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Women's cricket to merge with men's board
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The San Diego Union-Tribune.
(Page A-3)

Cancer risk at Rocketdyne was high, new study says

Michelle DeArmond
ASSOCIATED PRESS

12-Sep-1997 Friday

SIMI VALLEY -- Nearly a third of nuclear workers at a Rocketdyne facility who died after being exposed to doses of radiation deemed safe by the government had cancer, according to a study released yesterday.

The study funded by the Department of Energy found workers exposed to low doses of radiation had a cancer risk of at least six to eight times greater than previous studies had found, researchers said.

The workers were employed at Rocketdyne's Santa Susana Field Laboratory in the hills between the west end of the San Fernando Valley and Simi Valley.

University of California Los Angeles researchers reviewed medical and personnel records for 4,563 employees monitored for radiation between 1950 and 1993. No subjects were examined by the researchers.

0.12

Of workers exposed to external radiation, 875 have died, of which 258 were attributed to cancer. Of those exposed to internal radiation, 441 have died, with 134 due to cancer. External radiation consists of exposures such as X-rays, while internal radiation is the ingestion, inhalation or absorption of substances such as uranium.

"We found that these occupational radiation exposures were more strongly linked to cancer deaths than has been found in several earlier studies, including those that have examined survivors of radiation from atomic bombs," said Beate Ritz, one of the UCLA investigators.

Steve Lafflam, a Rocketdyne official, noted Rocketdyne has never exposed its employees to radiation levels above the national limit. He also said the company was reaching out to the surviving members of the study.

The study was overseen by an advisory panel composed of community members, a union representative, scientists and government officials. The research was prompted by concerns from area residents about the use of radioactive and toxic substances at the facility.

The Energy Department first found radioactive contamination in the soil at the suburban Los Angeles facility in 1989. The Environmental Protection Agency stepped in to clean up the 2,600-acre site, and the $55 million project is continuing.

At the time, there was no evidence of a health threat to the public or to workers. In 1959, radioactive material was released during a meltdown in one of the nuclear test reactors at the Santa Susana Field Laboratory of •

>Subject: Re: No Safe Dose of Radiation
>
>Reuter
>
>LONDON (Oct. 8) - Radiation, even in very small doses, is far more damaging
>to health than previously thought, a leading science magazine said Thursday.
>
>Most scientists now believe radiation below the internationally-accepted
>level of one millisievert per year can damage DNA in a new way that could
>harm the gene pool, wreck future generations and kill, the New Scientist
>said.
>
>''It's a horrifying concept. But we now have early indications that it may be
>happening,'' Eric Wright of Britain's Medical Research Council (MRC) told the
>magazine.
>
>The deadly effects of the atomic bombs dropped on the Japanese cities of
>Hiroshima and Nagasaki, or of the world's worst nuclear accident at Chernobyl
>in Ukraine in 1996, are well documented.
>
>But Wright says radiation can also damage cells in a way that cannot be
>detected until they have divided several times, in what he calls
>radiation-induced genomic instability.
>
>''I regard the phenomenon as established,'' he said. ''There is no doubt that
>genomic instability is a real consequence of radiation exposure.''
>
>The magazine said Wright's studies on mice and in humans, and at least six
>other projects around the world, showed the progeny of cells exposed to
>low-dose radiation had more chromosome aberrations than normal cells.
>
>The research also revealed that some people are more vulnerable to genetic
>instability than others.
>
>Although not yet proven, Wright believes induced genomic instability causes
>cancers like leukemia and may result in small increases in many other
>diseases.
>
>It could also aid the development of brain disorders such as Alzheimer's and
>Parkinson's diseases and increase developmental defects in fetuses.
>
>Dudley Goodhead, also of the MRC, supports the theory and says just a tiny
>particle can damage a cell and boost the risk of disease.
>
>But David Cox of Britain's National Radiological Protection Board, citing the
>medical surveillance of the Hiroshima and Nagasaki victims, told the New
>Scientist there was no evidence to support the theory that genomic
>instability can increase the risk of diseases or kill.
>
>But although irrefutable proof is still lacking, the magazine said the
>genomic instability theory was already causing other scientists working in
>radiation protection to question the existing safeguards.
>
>Reuter 19:54 10-08-97
>
>

A Short History of Naval Nuclear Accidents

O.12.216

According to the Navy, "...there has never been a reactor accident in the history of the U.S. Naval Nuclear Propulsion Program..." (1995 FEIS, p.I-75). However, according to Navy records obtained through Freedom of Information Act Requests (FOIA) and independent research on the subject the following accidents have occurred and resulted in releases of radiation into the environment.

1. Release of Radioactive Steam, 1996 - USS Arkansas

Release of radioactive steam from a nuclear powered vessel at the Puget Sound Naval Shipyard. The Navy waited 15 hours to inform the State and did not inform the public until an informant called the press. (*Bremerton Sun*, 3-5-96)

2. Radiation Contamination of Sailors, 1997-- USS Portsmouth

USS Portsmouth (SSN 707) two SubBase workers were exposed to radiation during radiological work. (*Navy news release issued 04-28-97*)

3. Radiation Contamination of Sailors, 1995--USS California

Three crew members were contaminated with small amounts of radioactivity after 100 gallons of radioactive water spilled from the ship's propulsion system. One sailor was burned with 160-degree water during an accident involving testing of equipment in the cruiser's reactor compartment. (*Union Tribune*, 6/4/95 and *Navy Times*, 06-19-95)

O.12

4. Release of Radioactive Water into San Diego Bay, USS Truxtun, 1979

Thirteen gallons of radioactive "high-purity water" was spilled into San Diego Bay on September 2, 1979. Initial reports stated that the ship spilled as much as 80 to 100 gallons of radioactive water.(Neptune Papers, p57)

5. Release of radioactive water into San Diego Bay, USS Gurnard, 1980

The submarine USS Gurnard spilled 30 gallons of water containing radioactive material into San Diego Bay on July 20, 1980 (Neptune Papers, p.57)

6. Repeated releases of radioactive water released into US Ports, USS Long Beach

The cruiser USS Long Beach reportedly leaked hundreds of gallons of low-level radioactive water in five Navy ports because of a malfunctioning valve, including a total of 159 gallons of primary coolant while moored in San Diego. (*Union Tribune*, 11-27-91) Excerpts from that article by Greg Vistica, are worth repeating:

> "...*Copies of pages from a log on the ship that lists discharges of radioactive liquids were brought to the San Diego Union by concerned sailors who accuse the Navy of sacrificing safety in order to meet scheduled operations...Four of the sailors on the ship, over an undetermined time period, have developed cancer, the crewmen said. Two had brain tumors and two had leukemia...*"

7. Radiation Contamination of Sailors, 1973--USS Guardfish O.12.216

Contamination with radiation of 5 sailors aboard the USS Guardfish in 1973. Documents released under FOIA. What is interesting about this accident is that the Navy has repeatedly refused to release the report of investigation for this 25-year old accident. EHC's appeal of this denial has also been denied by the Navy.

8. Release of radiation, 1977, USS California

Discharge of primary coolant water on two occasions and many reports of sailor misconduct when on duty for nuclear plants on the ship.(11-20-77, *Virginia Pilot*)

9. Release of radiation- USS Enterprise

A radiation accident caused a $6 million clean up when a shipyard worker improperly welded a propulsion system valve contaminating 9 workers and 4 compartments. USS Enterprise, while in dry-dock in early August, 1994, experienced a fire in the reactor room leading to a spill. (Navy Times, 07-31-95)

10. Release of radiation kept secret, USS Guitarro, 1989

This vessel dumped at least 235 gallons of radioactive coolant into the harbor in Guam. This incident was kept from the public for six months. An official from the U.S. Naval Institute stated "*Any spill is potentially dangerous, if it happens with a small amount it can happen with a large amount.*" (*Union Tribune* 6-14-90).

11. Release of radioactive water, USS Nimitz, 1980

Navy admits to a primary coolant leak on 11 May 1979. The accident record of the Nimitz-Class ships as released to Greenpeace in 1991, showed that Nimitz-class ships have been involved in more than 40 incidents over the last two decades, with at least five accidents in California ports. (Neptune Papers p.6)

OTHER ACCIDENTS/INCIDENTS OF CONCERN

1. Dangerous Working Conditions in the Nuclear Navy, 1996--DSU Mystic

Excerpts from the FOIA documents received regarding the mercury spill into San Diego Bay in the NASNI Turning Basin by the Nuclear Navy Submarine personnel aboard the DSU Mystic. The Navy released the court martial transcript to us as well as many other documents demonstrating fatigued personnel, impossible scheduling, and an overworked crew. The Engineer of the Mystic even had a breakdown prior to the incident. One crewman received a court-martial for making false statements and for dereliction in performance of duty. There are 155 documents still denied to EHC regarding this accident even though it did not involve radiation, or even a nuclear vessel, and there is no litigation threatened or pending.

2. Evacuation of a Navy Nuclear Facility, 1998- Naval Reactors Facility.

The Associated Press reports that 200 people were evacuated from the Idaho Naval Reactors facility on May 21, 1998 when elevated radiation was detected.

3. Falsification of Documents, 1995--USS Salt Lake City O.12.216

Navy investigation documents stating that falsification of documents was a common occurrence aboard the USS Salt Lake City and was one of the reasons for the removal of the Commanding Officer. Documents provided under FOIA. Commander was removed from post due to a lapse in regulation resulting in an intoxicated submariner serving watch of a nuclear reactor on a submarine in San Diego Bay (*Union Tribune*, 11-11-95). Naval investigation documents revealed that falsification of records was a common occurrence on this vessel. (Documents released to EHC under FOIA)

4. Alleged Sabotage, 1996-- USS San Juan

News article from regarding potential sabotage aboard a nuclear powered submarine in 1996 in Groton, CT. A sailor was relieved of duty due to suspected sabotage of a nuclear reactor on the USS San Juan, a fast-attack nuclear submarine in Groton, CT. Wires were severed that supply power to retract the reactor's control rods which dampen nuclear reaction. (*Union Tribune* 08-23-96) EHC has requested documentation on this incident.

5 Bomb found on carrier, USS Constellation, 1996

A bomb was discovered aboard carrier U.S. Constellation while it was docked at North Island. (*Union Tribune* 1Dec96)

6. Weapon detonation accident, USS Sargo, 1960

Excerpt from an investigation interview regarding an accident in which a weapon detonated, low order on an in-port nuclear submarine. The Navy released over 600 pages of documents to EHC regarding this accident. A fire (unclassified Navy investigation documents, p. 1074) and a low-order detonation of the warheads that were attached to two conventional torpedoes on the nuclear-powered submarine USS Sargo on June 14, 1960 (Finding 18 of final investigative report of the Judge Advocate General). The Final investigative report of the Judge Advocate General, testimony of the Commanding Officer of the USS Sargo stated that"...*had those torpedoes gone off, high order, rather than low order, probably the entire engine room would have been blown in some form or another, and possibly even the bulkhead to the reactor compartment. **So, there was considerable danger**.* (Emphasis added*)*" This accident, which killed one crewman, was not reported in the media at the time. Some details of the accident are still classified 38 years later.

San Diego Union-Tribune Archive Document http://www.uniontrib.com/utarchives/doc ...ETAL%26RESCUE%26NAVY%26MONDAY%26OFFIC

The San Diego Union-Tribune.

(Page B-2)

AROUND THE REGION

Mercury from sub leaks into bay

04-Jul-1996 Thursday

A Navy rescue sub leaked about a cup of mercury into San Diego Bay this week, but Navy officials say they believe all the toxic metal has been recovered

Globules of mercury leaked from the Mystic, a deep submergence rescue vehicle, Monday morning, the Navy said. The submersible was on the support ship Dolores Chouest, which was tied up at North Island Naval Air Station

Divers spent much of Monday and Tuesday searching the bay bottom and cleaning up the liquid metal.

Navy and state water officials approved the cleanup and said there was no health hazard to the public, said spokesman Lt. Danny Hernandez. Divers picked up the spilled mercury using scoops and an underwater vacuuming system

A video survey of the spill site was made and soil samples are being analyzed, Hernandez said.

The leak apparently occurred when a valve failed in the small sub. An investigation is under way.

Mercury is used in the rescue sub's ballast system, allowing it to change attitude to link up underwater with stricken submarines.

Seven sailors who were working on the Mystic were checked for contact with mercury, but none appeared to have been exposed, Hernandez said

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Encl. 1

DEPARTMENT OF THE NAVY
COMMANDER SUBMARINE DEVELOPMENT GROUP ONE
137 SYLVESTER ROAD
SAN DIEGO, CALIFORNIA 92106-3687

IN REPLY REFER TO:
23 Apr 96

From: Commander Submarine Development Group 1
To: CDR Frank C. Borik, USN,

Subj: LETTER OF INSTRUCTION

1. I am concerned about shortfalls in your leadership and technical ability demonstrated since you were assigned to DSU as Executive Officer in July 1995 and as Commanding Officer of Deep Submergence Unit in February 1996. Specifically,

a. You did not keep yourself apprised of the excessive level of effort expended by DSRV MYSTIC personnel. As a result, the crew worked on most weekends for a several-month period, and routinely worked longer than normal working days. This level of effort eventually led to the physical collapse and hospitalization of the Engineer and to loss of crew morale and effectiveness.

b. You did not adequately monitor the qualification status and progress of MYSTIC personnel. As a result, the crew was not able to operate at-sea without cross-deck support from DSRV AVALON personnel.

c. You failed to instill an effective "root cause" investigative attitude in all your officers. For example, DSRV MYSTIC attempted to operate for three weeks with a debilitating material problem that was not fully investigated and for which no comprehensive plan of action was developed until I directed it.

d. Your failure to adequately assess technical problems and proposed solutions resulted in several significant unresolved problems with DSRV MYSTIC.

e. DSRV MYSTIC's shortcomings in crew morale and effectiveness, qualification and material condition resulted in failure to achieve Rescue standby status on time and delay in DSRV AVALON's Restricted Availability. DSRV AVALON personnel were required to complete tasks which rightly had been assigned to DSRV MYSTIC personnel.

2. I am available to assist you in correcting these shortfalls. As a minimum, complete the following actions:

a. Take immediate action to preclude excessive working hours and weekends by your personnel.

To: LT Bogucki
Fax: ~~[illegible]~~ 61674
Fm: LT Harrigan
38592

Encl. 3

AE VIII.A

b. Establish a process to routinely keep you apprised of the working hours of your personnel and of their physical well-being. Ensure your officers routinely evaluate these conditions and meet their operational commitments without over-working themselves or their personnel. Advise me as soon as this process is in place, but no later than 30 April 1996. Include the results of your assessment in your weekly report to me on personnel readiness.

c. Monitor the status of qualification of your personnel. Advise me in advance of any condition which may require cross-decking and action you are taking to preclude this situation. Inform me of any existing shortfalls in your organization by 30 April 1996.

d. Technically assess solutions to material issues under your cognizance and ensure that your personnel develop adequate solutions to their material problems.

e. Review your performance since you relieved as Commanding Officer and advise me of actions that, had you taken them, would have ensured MYSTIC was ready to assume Standby duties on time and meet it's operational commitments. Provide the results of this review by 30 April 1996.

3. I have every confidence in your ability to succeed in your dynamic and challenging assignment. Inform me immediately of any additional assistance you need to succeed.

J. L. Durham

J. L. DURHAM

O.12

TOTAL P.02

UNITED STATES
vs.

ROBERT ASHLY DYAR
SONAR TECHNICIAN (SUBMARINE)
FIRST CLASS (SS)

UNITED STATES NAVY
DEEP SUBMERGENCE UNIT

No. SW97 0061

15-97

27 MAY 1997
RECEIVED

RECORD OF TRIAL

by

SPECIAL COURT-MARTIAL

appointed by the

COMMANDING OFFICER
BOX 357049
SAN DIEGO, CALIFORNIA 92135-7049

Tried at
SOUTHWEST JUDICIAL CIRCUIT COURTHOUSE
NAVAL STATION, SAN DIEGO, CALIFORNIA 92136

ON

4 October 1996,
16 and 31 January, and
3, 4, 5, 6 and 7 February 1997

Transcribed by:
Ms. T. Warner
Mr. E. Haller

Encl. 2

ENCLOSURE (2)

NLSO-5813/2 (REV. 5-85)

back and forth. Basically, we accomplished very little, except for frustrating the crew. This continued for the next several days. We're now talking about the end of March.

I collapsed in March or April because of the working hours and basically passed out ~~you~~. They brought an ambulance down and took me to Balboa because they thought I was having a heart attack. I was in Balboa for two or three days. The doctor's diagnosis was stress from the work environment. I don't know what my medical record says, but it was stress and fatigue.

From April we continued to work six or seven days a week, averaging 16 hours a day attempting to conduct sea trials, which consisted of a series of dives.

In the weeks immediately preceding 1 July, many of the crew, including myself, Petty Officer Dyar, and Petty Officer Hill, were having family problems brought on by the fact that we were never home. It progressively got worse so that also increased the stress.

We had a debrief on the Thursday prior to 1 July, which was on a Monday. Commander Borik was there along with the entire crew. Senior Chief Domonkos brought it up and I reiterated that the crew was exhausted and fatigued, that we had no break for personal things that needed to be attend to. I told the CO that I had several people pleading for time off to go to the bank to ~~o~~ pay their bills. We felt that we were very fortunate that no one had gotten seriously injured and that we'd had no more material failure or damaged any equipment other than what we had because people were so tired and fatigued that they couldn't think straight sometimes.

Commander Borik's response was that, as supervisors, "It's our job and your job ~~t~~o to show extra care and to slow things down and stop things if you think people are going to make a mistake." That was sound advice, but we explained that's what we were trying to do, but that we felt the schedule was too compressed and the crew just needed a day off just to rest." He said, "I'm sorry we can't support that. We've got to get the vehicle certified. It's going to get a little bit tougher, but there's daylight at the end of the tunnel, guys. You are just going to have to suck it up."

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The court-martial reconvened at 1008 hours, 16 January 1996.

All parties present when the court-martial adjourned were again present. The detailed reporter, Ms. Debra Leebolt, was present and had been previously sworn.

Appellate Exhibits I, II, III, IV, IV-A, V, VI, VII, VIII, IX, and X were received.

The military judge stated that he would first hear the accuser motion.

Senior Chief Boiler Technician Richard Domonkos, United States Navy, was called as a witness by the defense, was duly sworn, and testified substantially as follows:

DIRECT EXAMINATION

Questions by the defense (LT McNair):

My current duty station is the MYSTIC, DSRV-1; I'm the Chief of the Boat. When I reported there in August 1995, I was the LCPO of the MYSTIC. I am still the LCPO and am basically responsible for all of the enlisted personnel, all the watch bills, training qualifications, and day-to-day evolutions.

I am familiar with Petty Officers Dyar and Babington because they work for me.

The work schedules were made up by the Chief Engineer, Lieutenant Atchinson. In May and June of last year, we were working from 12 to 18 hours a day. Except for an occasional day off, we were working seven days a week. During those two months, we may have had one day off, maybe two for a couple of people. The CO was aware of the working hours and conditions because I personally brought it to his attention on more than one occasion. The first time was probably just before Easter, in April, and then again the first part of June.

Each time I brought it up to my chain of command it was always the same thing. I told them that they were working us too hard and I felt that, if they didn't stop, they would kill somebody. I spoke directly to the CO about that on two or three occasions. The first one was just before Easter and there was one time at

I also arranged for AVALON crew members to assist in maintenance, to give people time off. I did this once.

After the incident with Petty Officer Dyar, I attempted to relieve Lieutenant Commander Reid for cause. My superiors, ultimately, disapproved that detachment. I will say that before I went forward with the formal proceedings, I did have their concurrence. I hold Lieutenant Commander Reid partially responsible for the low morale of the crew. I knew morale was low. I knew the men had been fatigued over a period of months.

In April, Lieutenant Atchison, collapsed and spent a couple of days in the hospital. The fatigue of the men got so serious that my superiors became concerned. I received a Letter of Instruction.

The witness was shown Defense Exhibit B for Identification.

This is a copy of the Letter of Instruction I received. It's dated 23 April 1996. My abilities as a commanding officer were called into question. The letter specifically mentions that the crew worked on weekends for seven months. It specifically directed me to preclude the men from working excessive hours and weekends. I was also directed to establish a process to ensure that the men were not over worked. This letter did nothing to my career. It's neutral. It's not punitive and doesn't go into my record. The board would never see it. It's, basically, a communication between my superior and me.

After the incident involving Petty Officer Dyar, a command investigation was held. One of the findings of the investigation was that fatigue was probably a contributing factor to the incident. I don't know if this finding would have any effect on my career. It hasn't done anything to me yet. I did not disapprove the findings of the investigating officer concerning fatigue as a contributing factor to the incident.

I am the convening authority for this court-martial.

In late April, after Lieutenant Atchison collapsed, I did take some action to relieve the working hours of the men. I did ask to be informed if the men were working past 1900, which they did. This happened several times a week, if not every day. I never told the men they couldn't work past 1900. I also gave Senior Chief Domonkos a day off. The work level was still difficult. I

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I know Petty Officer Dyar. He has worked for me.

On the MYSTIC, we were working close to seven days per week, 16 to 18 hours per day. I did not think it was safe to work those kind of hours. For a period of time when you have to do that. There's no way around. The long hours were sustained for a period longer than I felt was safe for my people. I went up the chain of command starting with my OIC, the XO, the CO of DSU, and the Command Master Chief of Submarine Development Group One. In the first meeting with the Commanding Officer, he told me that he was not aware of the hours we were working. I spoke to him on several occasions. We, specifically, had two closed-door sessions. At one point I spoke to him on a Sunday morning, and it was to the point where I was afraid one of my guys was going to get hurt trying to get home to see his family. They were falling asleep on the job. This was right around the April, May time frame. This was also around the time that Lieutenant Commander Atchison collapsed, which I thought was a red flag. The work schedule did not change after this.

During the month of May, we finally got a little bit of time off. We were working five to six days per week then. We had to come off the support ship and go back to DSU to do major work that we couldn't do on the support ship. This also allowed AVALON to go on board to do work-ups preparing for a fly away. May was the only month that we actually had weekends off.

In June, the worked picked up again. We didn't have any days off. The work days on the low side was approximately 12-hours per day. The physical condition of the crew in June from the time I had the closed-door session with Commander Borik, was heading back to the way it was before we hit May and before the Engineer collapsed. I saw, basically, the same people about my concerns and went back up the chain of command. I requested to speak to the Commodore, but was told that was not necessary by the CO and the Command Master Chief of Submarine Development Group. The Command Master Chief told me he was going to do something to try to curb what was going on.

In late June, I told Commander Borik that we were heading down the same road. I told him that I understood he had his bosses too. I wasn't sure where this guidance was coming from to push us to work the hours we were. I told him I felt something was going to happen if we weren't careful.

/////

Members of the court-martial wishing to question the witness submitted the question in written form to the military judge for examination. The document was marked as Appellate Exhibit XXXVII and asked by the military judge as follows:

EXAMINATION BY THE COURT

When I said the men were so tired they were falling asleep on the job, I meant that when we finish a dive we have certain checks we need to do. Then we all get together with the paperwork and do a post-dive brief. When my people were sitting in the conference room for the post-dive brief, they were falling asleep at the table. Then when we got in at 1 or 2 o'clock in the morning, these same people were trying to drive home to their families for a couple of hours and show back up at 7 o'clock.

The first meeting I had with Commander Borik wherein he stated he was not aware of the hours the crew was working was approximately the April time frame. Before that time I was going the OIC and Engineer, they were assuring me they were talking to the chain of command to improve things. Commander Borik blamed the OIC for not communicating to him the what the crew's work schedule was. I'm not aware if the CO was working the same hours as the crew. I'm not aware of his hours.

The witness was warned, excused subject to recall and withdrew from the courtroom.

Electronics Technician Chief Randall W. Baxley, U. S. Navy, was called as a witness for the defense, was sworn and testified as follows:

DIRECT EXAMINATION

By the defense:

I have been assigned to DSU on two duty assignments. The last time was from October 1992 to October 1996. I was qualified as a DSRV pilot. I also had been qualified as co-pilot and pyro technician.

I've been in the Navy for 19 years.

CROSS-EXAMINATION

By the defense:

The only theory that I'm technically familiar with is the one set forth by Mr. Honeycutt.

[REPORTER'S NOTE: Defense counsel elicited from the witness his educational background and duty assignments.]

The month or two immediately preceding the mercury spill, the working conditions were the worse I've ever encountered since I've been in the Navy. The very, very long working hours, very few days off, working under the oppressive shadow of Development Group One and DSU. In retrospect, the working conditions were not safe. I expressed my concerns to Lieutenant Commander Reid. I spoke to Commander Borik after the accident.

After the incident, the command atmosphere improved. Before the incident, things were starting to look up. We were starting to have some operational successes. But the pressure to get the boat out and operating didn't let up. The working hours did decrease at all before the incident.

The week before the 1 July incident, the working conditions were very harried and intense pressure. I commented to my peers that when I arrived at DSU, I realized that things were bad, but I didn't know if my point of view had shifted so much that I could no longer recognize it. I began to become acclimated to the atmosphere at DSU. This atmosphere is not what I thought the Navy was about. The conditions could have been improved. Basically, I think there was a failure in leadership and supervision on board MYSTIC, and perhaps with Development Group's supervision that lead us into that predicament, failure to supervise over two years of overhaul lead us to be in a crunch in the end.

REDIRECT EXAMINATION

By the prosecution:

The Development Group was putting pressure on DSU. The long working hours were necessitated because earlier that year, MYSTIC Detachment had been scheduled to go on deployment to Norway to operate in an exercise. The material condition of the ship and

From: ATHENA COZAKOS
To: 000PO 000JCORB
Date: 7/8/96 9 07am
Subject: Mercury -Reply -Reply

In the words of the Environmental Health Coalition they would say that we have hazardous waste levels of mercury in the bay! We definitely have a problem The fact that the composite sample (grab samples from within the spill site put together for one analyses) is 12 times one of the grab sample from the outside area only makes it worse I was very surprised that NASNI wanted to wait until after the weekend, but it was their call I hope we can still do some good (ie find more to recover) v/r, AMC

>>> CAPT J Corbett 07/08/96 07 34am >>>
Athena,

What do those results mean in layman's terms? Do we have a significant problem?

jtc

CC: 000PO 030FVANH, 000PO 009FBECK, 900DPOHL, 700PO 70...

From: ATHENA COZAKOS
To: 000PO 009FBECK, 000PO 000JCORB, 000PO 030FVANH
Date: 7/5/96 4 42pm
Subject: Mercury

We received tentative results (verbal) from the laboratory for the samples taken in the bay We had taken 2 grab samples and one composite I only have the wet results (they had not finished with the dry-weight calculations yet Dry weight tend to be 2 to 3 times the wet weight) The following are the results

grab 1 0 11 mg/kg
grab 2 0 28 mg/kg
comp 1 0 mg/kg

The equipment detection limit is 0 1 mg/kg I put in a call to Arno Bernardo NASNI's environmental manager I informed him of the results I had the NASNI CDO send a message to CAPT Mello to call me I talked with CAPT Mello and he indicated that he still wanted to wait until Monday, plan out the next step, and then execute Dave Pohlod and I will be at the 1000 meeting at CAPT Mello's office on Monday v/r AMC

CC: 900DPOHL, 700PO 700MWURB

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O.12

From: ATHENA COZAKOS
To: 000PO 009FBECK, 000PO 030FVANH, 000PO 000JCORB
Date: 7/3/96 7 33pm
Subject: Mercury spill

CAPT,
The following is a summary of where we stand on the mercury spill:

- The recovery operation was secured at ~1700 on TUE evening and the aircraft carrier came into port that night. Two grab samples and one composite sample were taken and will be tested for total mercury. The results are due back ~1400 on 5 July

- We recommended to CAPT Mello that we go back down and video tape the area and reassess the site. CAPT Mello directed us to wait until after the weekend. NASNI's staff has the day off on Friday. However, I discussed the matter with the Environmental manager at NASNI, Arno Bernardo, and he gave me his phone number to call him on Friday with the results. I will ensure that NASNI gets the results on Friday and has the opportunity to assess the results and choose whether or not to change their decision.

- We understand that the San Diego Union Tribune has contacted the Navy (SUB PAC Group- sp?). We summarized our efforts to the XO of the ship that spilled the mercury and recommended that they coordinate with CAPT Mello

- CAPT Mello has set-up a meeting for 1000 on Monday for pulling all players together and deciding what to do from here. Dave Pohlod and I will be attendance

If you have any questions, please let me know. v/r, AMC

CC: 700PO 700MWURB, 900DPOHL, 900TSAMO

NAVAL AIR STATION, NORTH ISLAND

LESSONS LEARNED FOR THE MERCURY SPILL AT BERTH OSCAR

During cleanup events the Navy documents lessons learned to prevent future accidents and to pass gained knowledge to the public and other agencies. The cleanup team put together a list of Lessons Learned which details the accomplishments and shortfalls during the cleanup at Berth Oscar.

BACKGROUND

The Navy began an Emergency Removal (ER) on July 1, 1996, after approximately 8 pounds of elemental mercury was unintentionally released into San Diego Bay. Under the Comprehensive Environmental Response, Compensation, and Liability Act, the Navy may initiate Emergency Removals to protect human health and the environment. Between July 2, 1996, and December 4, 1996, three phases of dredging were carried out to remove mercury impacted sediments from the bay floor. Samples collected on December 5th and 6th confirmed a successful removal action, the spill area was restored to prespill mercury concentrations.

LESSONS LEARNED

The Navy consolidated lessons learned into five categories.

Coordination

REDACTED

Health and Safety

REDACTED

Notifications

REDACTED

Regulators

REDACTED

Remediation

REDACTED

ENCLOSURE (2[illegible])

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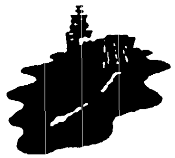

NAVAL AIR STATION, NORTH ISLAND

LESSONS LEARNED FOR THE MERCURY SPILL AT BERTH OSCAR

During cleanup events the Navy documents lessons learned to prevent future accidents and to pass gained knowledge to the public and other agencies. The cleanup team put together a list of Lessons Learned which details the accomplishments and shortfalls during the cleanup at Berth Oscar.

BACKGROUND

The Navy began an Emergency Removal (ER) on July 1, 1996, after approximately 8 pounds of elemental mercury was unintentionally released into San Diego Bay. Under the Comprehensive Environmental Response, Compensation, and Liability Act, the Navy may initiate Emergency Removals to protect human health and the environment. Between July 2, 1996, and December 4, 1996, three phases of dredging were carried out to remove mercury impacted sediments from the bay floor. Samples collected on December 5th and 6th confirmed a successful removal action, the spill area was restored to prespill mercury concentrations.

LESSONS LEARNED

The Navy consolidated lessons learned into five categories.

Coordination

- Having roles and responsibilities outlined helped the Navy commands work effectively together.

- Holding regular project meetings was an effective and worthwhile forum for strategizing future actions.

- Developing and maintaining an up to date Point of Contact (POC) list specifying one POC from each involved organization would improve coordination.

Health and Safety

- There were no spills, accidents or injuries during this cleanup. The selected dredge technologies were safe and provided a workable solution.

- Regular training should be provided to key Navy personnel involved in initial reporting and response.

- A list of specially trained staff should be established and maintained.

Notifications

- Navy personnel from various organizations worked well together and upon notification were effective during the initial response and cleanup.

- Prompt notification of the Restoration Advisory Board was well received.

- Spill Plans should be expanded to include a section which specifically addresses sinking hazardous materials.

Regulators

- The cleanup team included one regulator who consistently participated. This helped throughout the cleanup process.

Remediation

- Hydraulic dredge systems, bottom eductor and air induction, are effective in recovering mercury. These systems introduce minimal sediment disturbance and reduce the waste generated.

- Collecting many samples helped to support decision making and reduce uncertainty.

- For this type of spill, the movement of ships and carriers must be considered. A containment system or cap would be worthwhile to minimize sediment disturbance and contaminant dispersion.

- Criteria for selection of the cleanup technology (e.g. containment vs. dredge system, based on site conditions, accessibility, and schedule) should be selected early.

- Cleanup operations can proceed smoothly if a simple statistical sampling and cleanup scheme are defined early in the process. Avoid the use of more than one grid size.

NAVAL AIR STATION NORTH ISLAND

Leaking "pipe joint" was not cause of spill, human error was.

Sheet No. 10 **August 1997**

Mercury Spill at Berth Oscar at Naval Air Station, North Island

This fact sheet will tell you about...

- Cleanup efforts at Berth Oscar (Mercury Spill Area).
- The role of the U.S. Navy in these efforts.
- How you can obtain more information and become more involved in the cleanup activities at the station.

NOTICE OF PUBLIC COMMENT PERIOD

The Navy requests public comments on the Closeout Report prepared for an environmental cleanup project at Berth Oscar, Naval Air Station (NAS) North Island, San Diego, California. Comments will be accepted during a 30-day period beginning September 1, 1997, and ending October 1, 1997. Mail or fax written comments to:

Mark Bonsavage
Remedial Project Manager
Code 542.MB
Southwest Division, Naval Facilities Engineering Command
South Bay Area Focus Team
2585 Callaghan Highway, BLDG 99
Naval Station San Diego
San Diego, California 92136-5198
Fax: (619) 556-8296

INTRODUCTION

The purpose of this fact sheet is to provide information on the status of cleanup activities at Berth Oscar, NAS North Island.

The Navy began an Emergency Removal (ER) on July 1, 1996, after approximately 8 pounds of elemental mercury was unintentionally released into San Diego Bay. Under the Comprehensive Environmental Response, Compensation, and Liability Act, the Navy may initiate Emergency Removals to protect human health and the environment. Between July 2, 1996, and December 4, 1996, three phases of dredging were carried out to remove mercury impacted sediments from the bay floor. Samples collected on December 5th and 6th confirmed a successful removal action, the spill area was restored to pre-spill mercury concentrations. The entire cleanup event is documented in the Removal Action Closeout Report, Emergency Removal Action for Mercury Spill at Berth Oscar Naval Air Station North Island, San Diego, California, May 1997. The Closeout Report has been submitted to local and state environmental regulatory agencies for review, and is available for public review. The Navy seeks input from the community to help in making this removal action a success.

This removal action is a final measure designed to meet the objective of reducing risk to human health and the environment. The major contaminant of concern is elemental mercury. Bay sediment is the medium being addressed because it poses the greatest potential risk of exposure to humans and the environment.

SITE DESCRIPTION AND HISTORY

Berth Oscar is a large harbor area for aircraft carriers and other naval vessels at North Island. Water depth at the site is approximately 40 feet with sedimentary soil covering the bottom of the bay. Sediments were dredged from a 24,000 square foot area along the quay wall at Berth Oscar. This site does not have a history of pollution generating activities, it is an active berthing area which may experience fugitive petroleum releases.

The source of the release was readily pinpointed to a piping joint which leaked during prelaunch checks aboard the Deep Submergence Escort Ship (DSESS) Dolores Chouest. An estimated 8 pounds of elemental mercury spilled overboard from the docked vessel and sank 40 feet to the bay floor. Elemental mercury is a dense viscous liquid existing in beads or globules. The mercury is thought to have reached the bay floor and spread locally from currents and ship traffic.

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HEALTH and SAFETY

A Health and Safety Plan was prepared to support field operations under this removal action. The plan included procedures for personnel and equipment safety, medical assistance, and general safe work practices. All contractors who worked at the site were trained in proper health and safety procedures including emergency response and first aid. In addition, all workers were trained on recognizing hazards and handling of the contaminated wastes.

COMMUNITY INVOLVEMENT

Community involvement is an integral part of a cleanup action. The Navy aims to inform the community about environmental cleanup projects and to provide opportunities to participate in the decision making processes. This is done primarily through the Restoration Advisory Board (RAB), a community based group that meets monthly with the Navy.

In September 1996, the Commanding Officer of NAS North Island notified local and state officials in writing that the Navy was undertaking this emergency removal. The Navy published an Action Memorandum and addressed public comments. In addition, the Mercury Spill Removal Action was discussed and updated at each of the Restoration Advisory Board Meetings between September 1996 and December 1996.

This fact sheet is a part of the continuing effort to keep the public informed of environmental cleanup activities at NAS North Island. The closure report for this removal action is available for review at the information repositories listed on page 4 of this fact sheet. The Navy welcomes your interest in its environmental program.

LESSONS LEARNED

Part of the Navy's obligation as a Federal Agency is to lead the country to greater awareness of our nations natural resources. The Navy is proud to be a leader in developing cleanup technology and takes measures to pass this knowledge to the public. The cleanup team put together a list of Lessons Learned which details the accomplishments and shortfalls during this cleanup effort. Hopefully the knowledge we gained from this event will help protect our natural resources in the future. The Navy consolidated lessons learned into five categories.

Coordination

- Having roles and responsibilities outlined helped the Navy commands work effectively together.

- Holding regular project meetings was an effective and worthwhile forum for strategizing future actions.

- Developing and maintaining an up to date Point of Contact (POC) list specifying one POC from each involved organization would improve coordination.

Notifications

- Navy personnel from various organizations worked well together and upon notification were effective during the initial response and cleanup.

- Prompt notification of the Restoration Advisory Board was well received.

- Spill Plans should be expanded to include a section which specifically addresses sinking hazardous materials.

Remediation

- Hydraulic dredge systems, bottom eductor and air induction, are effective in recovering mercury. These systems introduce minimal sediment disturbance and reduce the waste generated.

- Collecting many samples helped to support decision making and reduce uncertainty.

- For this type of spill, the movement of ships and carriers must be considered. A containment system or cap would be worthwhile to minimize sediment disturbance and contaminant dispersion.

- Criteria for selection of the cleanup technology (e.g. containment vs. dredge system, based on site conditions, accessibility, and schedule) should be selected early.

- Cleanup operations can proceed smoothly if a simple statistical sampling and cleanup scheme are defined early in the process. Avoid the use of more than one grid size.

Regulators

- The cleanup team included one regulator who consistently participated. This helped throughout the cleanup process.

Health and Safety

- There were no spills, accidents or injuries during this cleanup. The selected dredge technologies were safe and provided a workable solution.

- Regular training should be provided to key Navy personnel involved in initial reporting and response.

- A list of specially trained staff should be established and maintained.

CITY & COUNTY

San Diego

THE SAN DIEGO UNION-TRIBUNE • SATURDAY, SEPTEMBER 12, 1998

Navy admits '96 mercury spill costly

By James W. Crawley
STAFF WRITER

The Navy acknowledged yesterday that a mercury spill into San Diego Bay more than two years ago cost more than $1.7 million to clean up — about 26 times more than the $68,000 price tag reported by a Navy spokeswoman Thursday

And, the cleanup took seven months, not a few days as Navy officials stated in rebuttal to a sleep researcher's conclusions that sleep deprivation and fatigue might cause nuclear accidents here.

About 10 pounds of mercury spilled into the bay July 1, 1996, when a sailor opened a valve on the emergency ballast system of the Mystic, a deep-submergence rescue vehicle located at North Island Naval Air Station. The accident spilled 146 pounds of the toxic liquid element onto the deck of a support ship and 1½ cups of mercury, which weighs about 10 pounds, fell into the water.

Local environmental activists yesterday decried the earlier Navy statement about the cleanup cost,

Mercury

Cost to clean up bay was $1.7 million, not $68,000

Continued from B-1

which was reported in *The San Diego Union-Tribune* as a reaction to a speech by a local sleep researcher who criticized the Navy.

"This is the latest example of the Navy sugarcoating their accident record," said Laura Hunter, director of the Clean Bay Campaign.

The Navy has been criticized for moving the nuclear-powered aircraft carrier Stennis to San Diego last month and for plans to bring two more nuclear carriers here in coming years

Environmentalists argue that locating nuclear carriers here invites a radiation accident.

On Thursday, Dan Kripke, a UCSD sleep researcher who is also a Democratic congressional candidate, said the 1996 mercury spill at North Island Naval Air Station illustrated the dangers caused by overworked and sleep-deprived sailors.

He said the accident cost more than a million dollars to clean up, but a Navy spokeswoman said the cost was just $68,000.

In fact, the cleanup cost the Navy nearly $1.78 million to dredge up and dispose of 575 pounds of bottom sediment and about 1.6 million gallons of water.

Capt. Gregg Hartung, the top Navy spokesman in San Diego, apologized for the incorrect information.

"There was no intent to deceive," Hartung said. "That's not the way the Navy likes to operate."

He explained that the spokeswoman, a Navy lieutenant, failed to fully check out the information before releasing it. The information was publicly available on a Navy Web site.

Hunter complained that the Navy has refused to fully and accurately disclose information about nuclear-powered warships and their basing in San Diego.

"There was no intent to deceive. That's not the way the Navy likes to operate."

Capt. Gregg Hartung, the top Navy spokesman in San Diego

Hunter was particularly angered by the Navy's mercury spill statements because she is on an environmental advisory board at North Island that discussed the spill cleanup in 1996 and 1997

The mercury was extremely difficult to clean up because the element is toxic, very dense and liquid. It has been tied to grotesque birth defects in children of people who have consumed fish tainted by mercury.

"The lesson is accidents do happen, even in the nuclear Navy," Hunter said.

ION UT Doc's

o: Richard L Trimble@Code 200@NAVFAC EFDSWEST
: John W Phillips@Code 030@NAVFAC EFDSWEST
::
om: John W Coon@Code 030@NAVFAC EFDSWEST
Subject:
Date: Tuesday, January 31, 1995 15:32:36 PST
Attach:
Certify: N
Forwarded by:

I just spoke with my NAVSEA POC regarding the availability of the study they did last fall to determine costs to build the Depot Maintenance Facility at LBNSY vice NASNI. He said they will bring a copy with them when they come down tomorrow; I'll receive it from them on Thursday. He stressed that this is an internal NAVSEA document which is soon to be destroyed. He emphasized that he would make it available to me on the condition that I take total responsibility for it and ensure that it is destroyed when we are through with it. He said we are not to make copies of it.

He said that it is NAVSEA's desire that we review their study, question their assumptions, possibily visit the shipyard, make revisions in the analysis as necessary, and generate a document which is our product (i.e. no reference to their work).

ill forward document to you once I receive. Appreciate your assistance n this matter. Sorry there is such urgency behind it.

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Executive Summary

Purpose

The Defense Appropriations Act of 1994 Conference Report directed GAO to study the cost-effectiveness of nuclear-powered aircraft carriers. The aircraft carrier forms the building block of the Navy's forward deployed peacetime presence, crisis response, and war-fighting forces. The nuclear-powered aircraft carrier (CVN) is the most expensive weapon system in the Nation's arsenal. Pursuant to the Conference Report, GAO (1) compared the relative effectiveness of conventionally powered and nuclear-powered aircraft carriers in meeting national security requirements, (2) estimated the total life-cycle costs of conventionally powered and nuclear-powered carriers, and (3) identified implications of an all nuclear carrier force on overseas homeporting in Japan and overseas presence in the Pacific region.

Background

Navy policy, doctrine, and practice have been to operate aircraft carriers as the centerpiece of the carrier battle group. The standard carrier battle group includes the carrier and its air wing, six surface combatants, two attack submarines, and one multipurpose fast combat supply ship. As a major element of a carrier battle group, surface combatants provide the primary defensive capabilities for the group. Navy guidance states that one or more surface combatants are necessary at all times to escort and protect the aircraft carrier. Collectively, the battle group's forces provide the combatant commanders with an adequately balanced force to offensively and defensively deal with a range of threats.

Throughout the 1960s and most of the 1970s, the Navy pursued a goal of creating a fleet of nuclear carrier task forces. The centerpiece of these task forces, the nuclear-powered aircraft carrier, would be escorted by nuclear-powered surface combatants and nuclear-powered submarines. In deciding to build nuclear-powered surface combatants, the Navy believed that the greatest benefit would be achieved when all the combatant ships in the task force were nuclear-powered. The Navy ceased building nuclear-powered surface combatants after 1975 because of the high cost. Recently, most of the remaining nuclear-powered surface combatants have been decommissioned early because they were not cost-effective to operate and maintain.

The 1993 Bottom-Up Review prescribed a force of 12 aircraft carriers. The Quadrennial Defense Review of 1997 reaffirmed the need to retain 12 carriers. At the end of fiscal year 1997, the Navy's force consisted of four conventionally powered carriers and eight nuclear-powered carriers. One of the conventionally powered carriers is homeported in Yokosuka, Japan, and another is in operational reserve status.

The Navy is building two nuclear-powered Nimitz-class carriers, the Harry S. Truman (CVN-75) and the Ronald Reagan (CVN-76), which are scheduled to be delivered in fiscal years 1998 and 2003, respectively. In fiscal year 2001, the Navy will begin to build the last Nimitz-design carrier, CVN-77. These nuclear-powered carriers will replace three of the four conventionally powered carriers now in the force.

The U.S.S. Nimitz (CVN-68) begins a 3-year refueling complex overhaul in fiscal year 1998 at an estimated cost of $2.1 billion (then-year dollars), followed by the U.S.S. Eisenhower (CVN-69) in fiscal year 2001 at an estimated cost of $2.3 billion (then-year dollars). Table 1 shows the changes in the Navy's carrier force through fiscal year 2018 based on planned service lives.

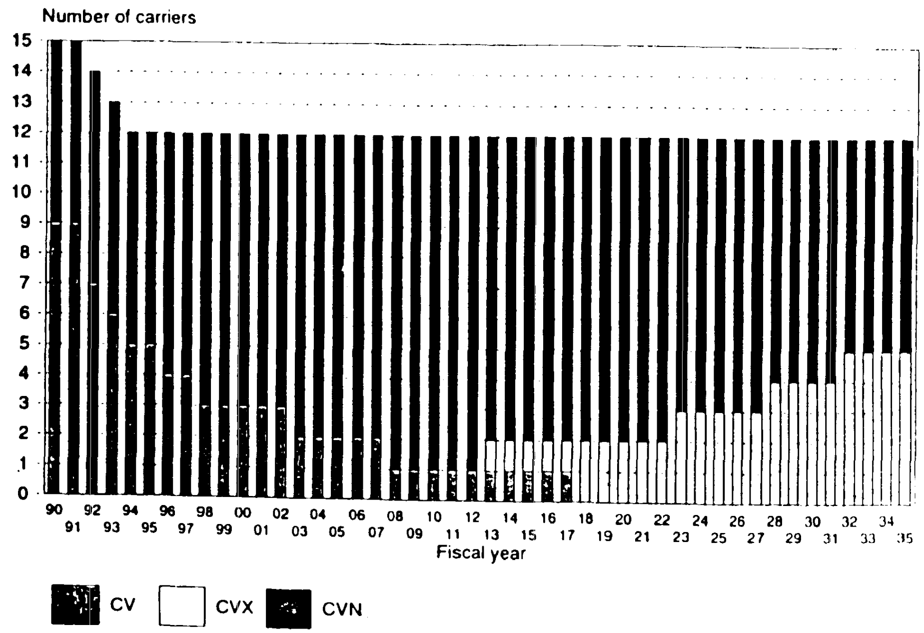
Table 1: Navy's Carrier Force Structure Plan (end of fiscal year)

	1996	1998	2003	2008	2013	2018
CV-Active Conus	2	1	0	0	0	0
CV-Japan	1	1	1	0	0	0
CV-Reserve training	1	1	1	1	1	0
Total conventional	**4**	**3**	**2**	**1**	**1**	**0**
Total nuclear	**8**	**9**	**10**	**11**	**10**	**10**
Planned carrier CVX class	0	0	0	0	1	2
Total	**12**	**12**	**12**	**12**	**12**	**12**

Key: CV=conventionally powered carriers.

The Navy is assessing design concepts for a new class of aircraft carriers, designated the CVX. As a part of this assessment, the Navy will study a number of factors, including various types of propulsion. The formal design process for CVX began in 1996. The project received $45.7 million in fiscal year 1998 and $190.2 million is being requested for fiscal year 1999. One of the principal objectives of the CVX project is to reduce life-cycle costs by 20 percent. The Navy wants to begin building the first CVX-78 class carrier in fiscal year 2006 and commission it in 2013. Notwithstanding the decision on the propulsion type for the CVX, a majority of the Navy's carriers will be nuclear-powered for at least the next 30 years (see fig. 1).

Figure 1: Illustrative Carrier Force Mix with CVX Carriers, 1990-2035



Source: GAO analysis of Navy data.

GAO studied the cost-effectiveness of nuclear-powered aircraft carriers, including analyses of total life-cycle costs and the implications of an all nuclear-powered fleet on overseas homeporting. After consulting with the Joint Staff, Office of the Secretary of Defense, and Navy officials, GAO identified three principal measures of effectiveness to evaluate the relative effectiveness of conventionally and nuclear-powered carriers in meeting national security requirements and objectives: (1) overseas presence, (2) crisis response, and (3) war-fighting. GAO examined the major assumptions and requirements used in developing overseas presence, crisis response, and war-fighting plans and evaluated the recent operational experience of the conventionally and nuclear-powered carrier force. GAO also evaluated several characteristics and capabilities of large, modern conventionally and nuclear-powered carriers. Relying principally on Navy data, GAO examined the historical and projected costs to acquire, operate, support, inactivate, and dispose of conventionally and nuclear-powered carriers such as those now in the force. Unless otherwise noted, GAO used the Kitty Hawk/John F. Kennedy-class and the Nimitz-class aircraft carriers in its conventionally and nuclear-powered carrier cost-effectiveness analysis.

Results in Brief

GAO's analysis shows that conventional and nuclear carriers both have been effective in fulfilling U.S. forward presence, crisis response, and war-fighting requirements and share many characteristics and capabilities. Conventionally and nuclear-powered carriers both have the same standard air wing and train to the same mission requirements. Each type of carrier offers certain advantages. For example, conventionally powered carriers spend less time in extended maintenance, and as a result, they can provide more forward presence coverage. By the same token, nuclear carriers can store larger quantities of aviation fuel and munitions and, as a result, are less dependent upon at-sea replenishment. There was little difference in the operational effectiveness of nuclear and conventional carriers in the Persian Gulf War.

Investment, operating and support, and inactivation and disposal costs are greater for nuclear-powered carriers than conventionally powered carriers. GAO's analysis, based on an analysis of historical and projected costs, shows that life-cycle costs for conventionally powered and nuclear-powered carriers (for a notional 50-year service life) are estimated at $14.1 billion and $22.2 billion (in fiscal year 1997 dollars), respectively.

The United States maintains a continuous presence in the Pacific region by homeporting a conventionally powered carrier in Japan. If the U.S. Navy transitions to an all nuclear carrier force, it would need to homeport a nuclear-powered carrier there to maintain the current level of worldwide overseas presence with a 12-carrier force. The homeporting of a nuclear-powered carrier in Japan could face several difficult challenges,

and be a costly undertaking, because of the need for nuclear-capable maintenance and other support facilities, infrastructure improvements, and additional personnel. The United States would need a larger carrier force if it wanted to maintain a similar level of presence in the Pacific region with nuclear-carriers homeported in the United States.

GAO's Analysis

Operational Effectiveness of Conventionally Powered and Nuclear-Powered Carriers

To evaluate the relative effectiveness of conventionally and nuclear-powered aircraft carriers in meeting national security requirements and objectives, GAO identified three principal measures of effectiveness: (1) overseas presence, (2) crisis response, and (3) war-fighting.

Using the Navy's Force Presence Model and data, GAO's analysis shows that, on a relative basis, a force of 12 conventional carriers, when compared to a force of 12 nuclear carriers, can provide a greater level of overseas presence in the European Command, the Central Command, and the Western Pacific[1] or that a force of 11 conventionally powered carriers can provide an equivalent level of forward presence as a force of 12 nuclear-powered carriers. Because a conventionally powered carrier's maintenance requirements are not as stringent and complex as those of a nuclear-powered aircraft carrier, the conventionally powered carrier spends a smaller proportion of its time in maintenance than does the nuclear aircraft carrier and, thus, is more available for deployment and other fleet operations. Unified Commanders consider the quality of presence of the two types of carriers to be the same.

Navy carriers have been tasked to respond to various crises across the full range of military operations, from humanitarian assistance to major theater wars. Nuclear-powered carriers are known for their abilities to sustain long duration high-speed transits. Although both types of carriers can transit to crisis areas at the same top speed, the conventional carriers take somewhat longer to cover long distances than nuclear carriers due to their need to refuel. For example, GAO's analysis of Navy data indicates that in an 18-day voyage from the U.S. West Coast to the Persian Gulf, a distance of about 12,000 nautical miles, steaming at a sustained speed of

[1]An all conventionally powered carrier force and an all nuclear powered carrier force were used to illustrate the relative ability of the two carrier types to fulfill peacetime overseas deployment requirements. This analysis assumes that a carrier is permanently forward deployed in Japan

28 knots, a conventional carrier would arrive about 6 hours later than a nuclear carrier. On a shorter voyage from the U.S. East Coast to the eastern Mediterranean Sea, a distance of about 4,800 nautical miles, a conventional carrier would arrive about 2 hours later than a nuclear carrier. Neither of these two examples include the time delay caused by refueling the other ships in the battle group, which would have the same refueling requirements, regardless of the carrier's propulsion.

Conventionally powered carriers can be available sooner for large scale crises because it is easier to accelerate or compress their maintenance. Carrier maintenance periods can be shortened by varying degrees, depending on the stage of the maintenance being performed.[2] The degree a depot maintenance period can be shortened—or surged—depends on when the decision is made to deploy the carrier. For both types of carriers, the decision must be made early if the period is to be substantially shortened. Due to the complexity of its maintenance, a nuclear carrier's maintenance period cannot be surged to the same degree as that of a conventional carrier. In addition, the crews for both carrier types train to the same standards, except for the power-plant crew, and spend comparable time in predeployment training.

GAO found little difference in the operational effectiveness of nuclear and conventional carriers in the Persian Gulf War. Although the Navy had opportunities to place more nuclear carriers in the combat zone, it followed previously planned deployment schedules. As a result, five of the six carriers that participated in the air campaign were conventionally powered. GAO found that the Navy operated and supported all six carriers and their battle groups in essentially the same manner during the conflict. Each battle group was assigned its own dedicated support ships, which enabled frequent replenishment of fuel and ordnance. Conventional carriers replenished aviation fuel about every 2.7 to 3.1 days and the nuclear carrier every 3.3 days—after only a fraction of their fuel and supplies were exhausted. The distance to targets and the number and mix of aircraft aboard each carrier, rather than propulsion type, determined the number of air sorties flown. The average number of sorties flown were nearly identical for both types of carriers when based on the number of aircraft assigned to the respective carriers.

[2]An employment cycle typically includes three maintenance periods, three predeployment training periods, and three deployments. For the conventionally powered carrier, two of the maintenance periods last 3 months and the other maintenance period lasts 12 months, and for the nuclear-powered carrier, the first two periods last 6 months and the final period lasts 10-1/2 months.

In comparing their characteristics and capabilities, GAO found that the two types of carriers are similar in many respects. For example, both carriers follow the same operational guidance; have the same standard airwing; and, can surge to conduct additional air operations, if necessary. The most noticeable differences are the nuclear carrier's ability to steam almost indefinitely without needing to replenish its propulsion fuel and its larger aircraft fuel and ordnance storage capacity, thereby further reducing dependence on logistics support ships. The larger storage capacity is primarily due to design decisions that have little to do with propulsion type.[3] Nuclear carriers still need periodic resupply of aviation fuel, ordnance, and other supplies, and as such, remain dependent on logistics support ships to sustain extended operations at sea. Logistics support ships are an integral part of carrier battle groups and accompany the groups during peacetime deployments, in crisis response, and during wartime. Nuclear carriers also can accelerate faster than conventional carriers, enabling them to respond faster if conditions affecting the recovery of landing aircraft suddenly change, but the Navy could not provide any examples where an aircraft was lost because a conventionally powered carrier could not accelerate in sufficient time.

Life-Cycle Costs for Nuclear-Powered Carriers Are Higher Than Conventionally Powered Carriers

Nuclear-powered carriers cost more than conventionally powered carriers to acquire, operate and support, and inactivate. GAO estimates that over a 50-year life, the costs of a nuclear-powered carrier is about $8.1 billion, or about 58 percent, more than a conventionally powered carrier (see table 2). Historically, the acquisition cost for a nuclear-powered carrier has been about double that of a conventionally powered carrier. Midlife modernization[4] for nuclear-powered carriers is estimated to be almost three times as expensive as a conventionally powered carrier—about $2.4 billion versus $866 million (in fiscal year 1997 dollars).[5]

[3]Analyses by the Naval Sea Systems Command and the Center for Naval Analyses show that a Nimitz-class nuclear design with a conventional propulsion system could provide equivalent aviation ordnance and fuel capacities while retaining the same range and speed characteristics of the current Kennedy-class conventional carrier.

[4]The midlife modernization represents the service life extension program for conventional carriers and the nuclear refueling complex overhaul for nuclear carriers. Both investments accomplish the common objectives of extending the operating life of the ship.

[5]The initial nuclear fuel load and its installation are included in the acquisition cost category. The midlife modernization cost category includes removal of the initial fuel load. It also includes the cost of the replacement fuel load and its installation.

Table 2: Life-Cycle Costs for a Conventionally Powered Carrier and a Nuclear-Powered Carrier (based on a 50-year service life)

Fiscal year 1997 dollars in billions

Cost category	Conventionally powered carrier	Nuclear-powered carrier
Investment cost[a]	**$2.916**	**$6.441**
Ship acquisition cost	2.050	4.059
Midlife modernization cost	0.866	2.382
Operating and support cost	**11.125**	**14.882**
Direct operating and support cost	10.436	11.677
Indirect operating and support cost	**0.688**	**3.205**
Inactivation/disposal cost	**0.053**	**0.899**
Inactivation/disposal cost	0.053	0.887
Spent nuclear fuel storage cost	n/a	0.013
Total life-cycle cost	**$14.094**	**$22.222**

Note: Numbers may not add due to rounding.

[a]CVN investment cost includes all nuclear fuel cost. CV fuel is included in operations and support activities.

Source: GAO's analysis.

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GAO estimates that nuclear-powered carriers have cost about 34 percent more than conventionally powered carriers to operate and support because personnel and maintenance costs are higher and nuclear-powered carriers require unique support organizations and activities. Personnel costs for nuclear carriers are greater because more personnel are required for a nuclear-powered carrier, nuclear-qualified personnel receive greater total compensation, and they are required to complete additional training. For example, a nuclear-powered carrier needs about 130 more personnel in its engineering and reactor departments than are needed in the conventionally powered carrier's engineering department. Also, each year, nuclear-qualified officers receive up to $12,000 and nuclear qualified enlisted personnel receive about $1,800 more than personnel do in nonnuclear jobs.

Nuclear-powered carriers are also more costly to maintain because the scope of work is larger and considerably more labor hours are required. Because of the complex procedures required to maintain nuclear power plants, shipyard workers must be specifically trained to maintain nuclear carriers. Additionally, the materials used in nuclear carriers must meet exacting standards and the shipyards must have the facilities needed for the specialized work. Also, these projects cost more because of the unique

industrial base, specialized nuclear suppliers, and the Naval Nuclear Propulsion Program's exacting and stringent environmental, health, an safety standards. Shipbuilders must follow "non-deviation" plans (i.e., i deviation from the approved plans without government approval). An unavoidably high cost overhead structure (engineering, quality assuran and production control) and costly production work are required in the naval nuclear propulsion industry. Based on the Navy's maintenance pl GAO estimates that over a 50-year life, nearly 40 percent more labor hou are needed to maintain a nuclear-powered carrier than are required to maintain a conventionally powered carrier.

The Navy estimates that it will cost between $819 million and $955 mill to inactivate and dispose of the first Nimitz-class nuclear-powered carr This is almost 20 times more costly than the $52.6 million that is estima it will cost to inactivate and dispose of a conventionally powered carrie Most of the costs can be attributed to removing contaminated nuclear equipment and material, including the highly radioactive spent fuel.

Implications of an All Nuclear Carrier Force on Homeporting a Carrier in Japan and Overseas Presence in the Pacific Region

Homeporting Navy ships overseas enables the United States to maintair high level of presence with fewer ships because the need for a rotation base to keep forces deployed is smaller. A conventionally powered carri has been permanently forward deployed in Japan since 1973. Japan currently pays a substantial share of the costs for the permanently forw deployed carrier, including all yen-based labor, berthing and maintenanc facilities improvements, and other support costs such as housing.

The last two conventionally powered carriers, including the carrier now homeported in Japan, will reach the end of their service lives in the 2008 2018 period. The Navy will have to decide if it wishes to change how it maintains forward presence in the Pacific region. That is, the Navy will have to decide whether to continue the current approach to presence in the region and design and acquire a conventionally powered replacemen carrier to homeport in Japan. Alternately, if the Navy wished to provide the same level of presence in the region with nuclear-powered carriers, it would need to (1) establish a nuclear-capable maintenance facility and related infrastructure in Japan to accommodate the nuclear-powered carrier to be homeported there or (2) expand the force to include the additional nuclear-powered carriers that would be necessary, but with ships deployed from the United States.

While it would be several years before the carrier force would undergo a complete transition to nuclear propulsion, it would also take several years to implement any of the strategies that will allow the United States to maintain a long-term continuous naval carrier presence in the Pacific region.

Conclusions

The Navy is assessing design concepts for a new class of aircraft carriers. As part of this assessment, it will evaluate a number of factors, including different propulsion types. GAO's analysis of measures of effectiveness (forward presence, crisis response, and war-fighting) shows that conventionally and nuclear-powered carriers both have effectively met the Nation's national security requirements. The analysis also shows that conventionally powered carriers have lower total life-cycle costs. This report also discusses the implications of a changing carrier force structure on providing overseas presence for the Pacific region.

Agency Comments

The Departments of Defense (DOD), Energy, and State provided comments on a draft of this report. DOD's comments (see app. VII) and GAO's detailed evaluation are included in the report where appropriate.

Overall, DOD partially concurred with the report. Specifically, DOD concurred there is a life-cycle cost premium associated with nuclear power. However, DOD believed GAO's estimate of that premium was overstated by several billion dollars because of what DOD believed are analytic inconsistencies in GAO's analysis. DOD also believed the draft report did not adequately address operational effectiveness features provided by nuclear power.

DOD did not agree with GAO's approach of making cost-per-ton comparisons between the two types of carriers currently in the force, believing the conventionally powered carriers reflect 40-year old technologies. DOD believed a more appropriate cost comparison would include pricing conventionally and nuclear-powered platforms of equivalent capabilities. According to DOD, any analysis of platform effectiveness should include mission, threat, and capabilities desired over the life of the ship. Further, it stated the draft report did not adequately address future requirements but relied on historical data and did not account for platform characteristics unrelated to propulsion type. That is, many of the differences may be explained by platform size, age, and onboard systems than by the type of propulsion.

Congress asked GAO to examine the cost-effectiveness of conventionally and nuclear-powered aircraft carrier propulsion. Such an analysis seeks t find the least costly alternative for achieving a given requirement. In this context, GAO used as the requirement DOD's national military strategy, which is intended to respond to threats against U.S. interests. That strategy encompasses overseas peacetime presence, crises response, and war-fighting capabilities. GAO used those objectives as the baseline of its analysis and selected several measures to compare the effectiveness of conventionally and nuclear-powered carriers. Those measures were discussed with numerous DOD, Joint Staff, and Navy officials at the outset Those measures reflect the relative capabilities of each propulsion type, including the nuclear-powered carrier's greater aviation fuel and munitions capacity and unlimited range. Notwithstanding the enhanced capabilities of nuclear propulsion, GAO found that both types of carriers share many of the same characteristics and capabilities, that they are employed interchangeably, and that each carrier type possesses certain advantages. GAO also found that both types of carriers have demonstrated that each can meet the requirements of the national military strategy. GAO' analysis shows that conventionally powered carriers can meet that strategy at a significantly lower life-cycle cost.

The primary reason that GAO's analysis shows a higher premium for life-cycle costs of a nuclear-powered carrier is because different methodologies were used. The GAO methodology compared the investment, operating and support, and inactivation/disposal costs of operational carriers. This approach allowed GAO to use historical costs to the extent possible. GAO also used a cost-per-ton approach to develop its acquisition cost estimate. This approach is an accepted method for estimating procurement costs and has been used by the Navy.

The GAO methodology showed that the life-cycle cost premium associated with nuclear propulsion was about $8 billion per carrier over a 50-year life versus about $4 billion using the Navy's approach. GAO's and the Navy's estimated life-cycle costs for a nuclear-powered carrier were very similar even though different methodologies were used. However, the life-cycle cost of a conventionally powered carrier using the two methodologies varies significantly—$14 billion versus $19 billion. Several factors account for the variance. For example, a different universe of ships was used to determine the estimated cost for a Service Life Extension Program. In estimating procurement costs, the Navy used actual labor hours for the U.S.S. John F. Kennedy (CV-67), adjusted to reflect current labor, overhead, and material rates for a nuclear shipbuilding facility, Newport

News Shipbuilding. Operating and support costs varied, in part, because DOD used fully burdened fuel delivery costs and a different methodology for estimating personnel costs.

GAO believes its methodology of reviewing a historical perspective covering a wide range of peacetime presence, crises response, and war-fighting scenarios that both types of carriers faced during the past 20 years is sound. A full discussion of GAO's methodology can be found in appendix I. GAO continues to believe that this assessment will be helpful to the Navy as it assesses design concepts for a new class of aircraft carriers.

The Energy Department concurred with DOD's comments addressing estimates of costs associated with nuclear reactor plant support activities and storage of naval spent fuel. These comments and GAO's evaluation of them are discussed in appendix VII. The State Department noted that the entry of nuclear-powered vessels into Japanese ports remains sensitive in Japan and there would have to be careful consultations with the government of Japan should the U.S. government wish to homeport a nuclear-powered carrier in Japan.

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MARKET INTELLIGENCE Accurate

Document created: 5 October 1998

US future carriers will be nuclear-powered

BRYAN BENDER *JDW Bureau Chief*

Washington DC

The US Department of Defense (DoD) has decided that the US Navy's (USN's) next class of aircraft carriers will be nuclear-powered. The decision follows a series of studies to determine the most cost-effective and operationally suitable propulsion system.

The Defense Acquisition Board (DAB), headed by Under Secretary of Defense for Acquisition and Technology Jacques Gansler, on 25 September approved the navy's request that the CVX class carrier be outfitted with a new nuclear propulsion power plant instead of a conventional one.

"The DoD review considered various propulsion alternatives and their associated developmental costs and operational and technical risks, together with the proven merits of nuclear propulsion as articulated by the unified commanders and the Joint Chiefs of Staff," according to a defence official.

"This approach will improve affordability, incorporate needed warfighting improvements and provide for future flexibility, while providing for backfit to Nimitz-class ships."

The DAB, the Pentagon's senior acquisition authority, also approved navy plans to outfit the CVX with a large deck capable of accommodating a 75-strong air wing as well as an electrical power system to run the ship's internal operations.

This will include a new suite of information technologies and possibly new aircraft launch and recovery mechanisms. The USN says the decision illustrates the "evolutionary" rather than "revolutionary" approach it is taking in pursuit of a 21st century carrier to replace its Nimitz-class nuclear carriers, of which it has eight and plans to construct two more.

Due to budget constraints, the service earlier this year scaled back plans for an entirely new CVX design, including a stealthy hull, and instead will make incremental improvements to the current Nimitz class design.

A USN official told *Jane's Defence Weekly* that the first CVX, to begin construction in about 2006 "is probably going to be on a Nimitz-class hull, but it won't be a Nimitz-class boat."

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FOR THE DIRECTOR

NPS-ME-98-003

NAVAL POSTGRADUATE SCHOOL
Monterey, California

A Short Take-Off/Vertical Landing (STOVL) Aircraft Carrier (S-CVX)

by

Faculty Members:
Charles N. Calvano
Robert C. Harney

Student Members:
LT Neil Meister, USCG
LT Steven Debus, USN
LT Eric LoGear, USN
LT Kathryn Christensen, USN
LT Thuy Do, USN
LT James Melvin, USN
Mr. Michael McClatchey, Office of Naval Intelligence

May 1998

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NAVAL POSTGRADUATE SCHOOL
MONTEREY, CA

RADM Robert C. Chaplin
Superintendent

Richard Elster
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This report was prepared by:

CHARLES N. CALVANO
Associate Professor
Mechanical Engineering Department
TSSE Program Chair

ROBERT C. HARNEY
Associate Professor,
Physics Department
TSSE Combat Systems

Reviewed by:

TERRY McNELLEY
Chairman and Profesor
Mechanical Engineering Department

Released by:

DAVID W. NETZER
Associate Provost and
Dean of Research

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13. ABSTRACT (maximum 200 words)
This report documents a systems engineering and design capstone project, directed by the Total Ship Systems Engineering (TSSE) faculty and undertaken by students in the TSSE program at the Naval Postgraduate School and performed over two academic quarters. It takes a fresh look at the basic design and operation of the modern aircraft carrier, assuming availability of short take-off and vertical landing (STOVL) aircraft, employing gas turbine ship propulsion and providing significant capability to support humanitarian operations. In the design study reported here, the authors take a systems engineering approach to a totally new carrier design which may best suit the requirements for the next generation aircraft carrier. The central goal was to provide a ship to meet all of the current mission requirements of the existing *Nimitz* class carriers but in a platform that is significantly lower in life cycle costs. The outcome is a ship based on a concept called "super-island"; a large island structure that can provides drive-through "pit-stops" for aircraft refueling and rearming as well as other major functions. Other areas of major innovation include: weapons handling, information processing and distribution, engineering layout and manning. The report provides an overview of the major ship systems as well as detailed discussions of selected design areas chosen to illustrate those systems that had the most impact on meeting design goals.

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A Short Take-off/Vertical Landing (STOVL) Aircraft Carrier (S-CVX)

This report documents a systems engineering and design capstone project undertaken by students in the Total Ship Systems Engineering (TSSE) program at the United States Naval Postgraduate School and performed over two academic quarters. The project was under the direction of Professors C. N. Calvano and R. Harney. The design team consisted of: LT Neil Meister, USCG; LT Jim Melvin, USN; LT Thuy Do, USN; LT Eric Legear, USN; LT Kathryn Christensen, USN; LT Steve Debus, USN and Mr. Mike McClatchey, Office of Naval Intelligence.

ABSTRACT

In the era since World War II, the aircraft carrier has arguably been the type of naval combatant that has undergone the least innovation. With the end of the Cold War, the shift of focus from blue water engagements to littoral operations and the stark realities of fiscal conservatism, a fresh look at the basic design and operation of the modern aircraft carrier is warranted. In addition, major advances in computers and information systems, short take-off and vertical landing (STOVL) aircraft, automated handling systems and robotics provide new challenges and opportunities to the basic shape and functioning of the aircraft carrier. In the design study reported here, we examine these often conflicting constraints and technologies and by means of a systems engineering approach we offer a totally new carrier design which we feel best suits the requirements we were given for the next generation aircraft carrier. Our central goal in this design was to provide a ship that can meet all of the current mission requirements of the existing *Nimitz* class carriers but in a platform that is significantly cheaper in life cycle costs. The outcome of our effort is a ship based on a concept we call "super-island"; a large island structure that can provides drive-through "pit-stops" for aircraft refueling and rearming as well as other major functions. Other areas where we made major innovations include: weapons handling, information processing and distribution, engineering layout and manning.

Following an introduction, the first part of this document outlines the requirements which constrained our design. These requirements include both the prescribed requirements in our Mission Need Statement (MNS) as well as a list of derived requirements generated through our review of the MNS and other requirements documents. The second part of the report outlines the initial design decisions and trade-off analyses which led to our proposed ship. The final section of the report provides an overview of the major ship systems as well as detailed discussions of selected design areas. The sheer magnitude of an aircraft carrier design and the limited time frame available prohibit us from presenting detailed discussions of all design areas. The selected areas that are presented, however, are an attempt to present those systems that had the most impact on meeting our design goals.

1 Introduction

In the year 2015, the USS Enterprise (CVN-65) is scheduled to retire from service. Unless another carrier is built and ready to enter service on that date, the United States will fall below the nation's stated need of twelve carrier battlegroups. The easiest solution would be to continue building Nimitz-class aircraft carriers. This, however, is rapidly becoming an impractical solution. The Nimitz was designed for blue-water engagements between fleets and long range (potentially nuclear) air strikes. The mission today is much more varied and focused on the littorals. This Nimitz-class is also the most expensive ships in the fleet to procure and operate. The challenge then is to reinvent the aircraft carrier to meet today's mission needs at a much more affordable life-cycle cost. The CVX Program Office is currently tasked with resolving this dilemma. The 1997 student class in the Total Ship System Engineering (TSSE) Program undertook to complete a design for the new carrier as our capstone design project. This document is the product of our efforts. To avoid confusion, throughout this document we refer to our resulting design as the Short Take-off and Vertical Landing (STOVL) CVX or S-CVX. This reflects our use of a STOVL airwing and avoids confusion when referencing the Program Office's ongoing CVX design efforts.

2 Requirements

2.1 Mission Need Statement and Supplemental Guidance

At the start of this design effort the student team was presented with a Mission Need Statement (MNS) and a sheet of Supplemental Faculty Guidance that delineated the requirements of the design effort and provided boundaries for the scope of the task. These two documents are provided below.

The intent was to provide a MNS which was as close as possible to the NAVSEA CVX Mission Need Statement. Indeed, some paragraphs are copied verbatim. However, for reasons given below, some changes had to be made. Many of the modified requirements contained in these documents are neither obvious as to origin nor are they entirely consistent with the current

thoughts of the Navy's CVX program office. The TSSE capstone design project is first and foremost an educational experience for the students. Development of innovative concepts for serious consideration by naval ship designers is desirable but secondary. Design of a ship that will actually be built has never been a goal, although design realism is stressed throughout the project. The faculty leaders of this project strove to create a project that would challenge the students to think out of the box, to generate alternative approaches to problems with accepted conventional solutions, and to address issues which may run contrary to the conventional party line. The design presented herein was forced to address the faculty-provided guidance. Any perceived shortfalls relative to a "practical" design that arise from the imposition of these constraints are the fault of the faculty and not of the students.

Although the primary desire in developing the MNS and supplemental guidance was to create a problem that was interesting & challenging, yet sufficiently bounded for a small design team to tackle in a limited time frame, many of the requirements do have a rationale to them and are not pulled from thin air. In some cases the rationale may simply be to reopen an issue that has been declared settled (any good solution can always stand up favorably to further review). In others, the faculty may feel that changes in technology or threats that have occurred since the initial decisions were made warrant a revisiting of those decisions. In others the faculty may simply disagree with the conventional solution path. In still others there is a desire to quantify through design the implications of selecting an unconventional alternative. In the guidance documents that follow, the faculty have added *annotations in italicized typeface* which document their rationale. This rationale was not initially provided to the students, so as to avoid distraction during the crucial initial steps in the project. However, most of it eventually became apparent as a result of student questioning of various requirements.

In the remainder of this section, the italicized portions are faculty comments added at the time of the printing of this report, which were not in the guidance provided to the students at the beginning of the project.

MISSION NEED STATEMENT FOR A TACTICAL AVIATION SHIP (CVX)

TS4002 7/15/97

1. Mission. The general missions of the Tactical Aviation Ship (CVX) are to:

(a) Perform missions currently assigned to Nimitz class carriers, and be interchangeable with a Nimitz class ship in any battle group.

The CVX class carriers will begin replacing Nimitz class carriers on a one-for-one basis as soon as they are introduced. Since the missions of the Nimitz class carriers are not disappearing, it is essential that the replacement carriers have a minimum capability which is comparable to the Nimitz class.

(b) Be much more adaptable to the littoral warfare environment likely to be encountered in a Major Regional Conflict or in Operations Other than War (OOTW).

Current projections of the threat indicate a much reduced probability of blue water engagements between U. S. carrier battle groups and either enemy surface action groups or enemy carrier battle groups. Much more of the fighting will be conducted near the coastlines of adversary nations. Because of the economic importance of littoral waters, other nations may be more disposed to contesting shared littoral regions. In addition, the reduction in the need to be able to forcibly maintain control of the seas coupled with our desires to have operating forces in the forward areas, places naval forces in the position of being available to perform other missions, such as peacekeeping or humanitarian operations.

(c) Perform all missions independently of forward-based land facilities.

As the defense budget continues to shrink and as other nations feel the presence of U S forces on their territories is not in their best interests, our access to forward bases will continue to decrease. In times of hostilities, countries wishing to maintain a degree of neutrality may close normal airfield and port facilities to our military forces. Any new combatant must not require the existence of forward bases which may not exist when needed.

2. Threat. The CVX battle group will face threats from

(a) nuclear and diesel submarines;

The magnitude of this threat has not changed, although ownership of assets has changed considerably.

(b) long-range land-based aircraft, naval aviation, theater ballistic missiles, sea skimming missiles, high speed high altitude cruise missiles, and mines. (Rockets and missiles are assumed not to carry nuclear weapons, although chemical, biological, radiological warheads and EMP (nuclear or conventional) are a possibility);

Traditional threats have not disappeared. New threats such as ballistic missiles with terminal guidance capable of hitting moving surface combatants are under development (prior to the signing of the Intermediate Nuclear Forces treaty, the U. S. possessed an intrinsic capability to perform this mission in the Pershing 2 weapon system). The proliferation of weapons of mass destruction may result in their use against U. S. forces in times of conflict (especially if the enemy is in possession of a strategic nuclear retaliatory capability). The requirement to address all kinds of advanced warheads (except nuclear) will result in a highly survivable design without attempting to solve the virtually insoluble problem of hardening a ship against nuclear weapons exploded at close range. Addressing radiological and EMP warheads will result in a ship capable of surviving nuclear explosions more than a few kilometers distant.

(c) Surface ships ranging from cruiser-type ships to missile patrol boats and small craft; (Organization of threat craft may vary from a disciplined surface action group, possibly including a STOVL-aircraft-equipped carrier, to organized swarm attacks from smaller vessels to kamikaze-type raids by individual small craft);

For the next few decades the U. S. will undoubtedly face foes pursuing asymmetrical warfare. However, before the first CVX reaches its midlife point, at least one potential adversary may have developed a blue water navy comparable to our own (by 2015 the defense budget of China is expected to exceed that of the United States in real dollars).

(d) Naval special forces.

Special forces become most effective when their capabilities are underestimated and adequate preparations are not made to resist them.

3. Capabilities. The primary function of the CVX is to shelter, transport, launch, recover and maintain multi-mission tactical aircraft. The core capabilities required are:

(a) Strategic mobility - the ability to independently deploy/respond quickly and operate with sufficient tactical flexibility, whenever and wherever required, to enable joint maritime expeditionary force operations. The sustained speed will be 25 kts.

Although the MNS does not explicitly require gas turbine propulsion, the students were strongly encouraged to use this technology in their design. Nuclear propulsion was allowed, but only if gas turbines could be shown to be inadequate. One of the primary advantages of nuclear carriers is their ability to transit any distance at high speed (30+ kts) and immediately engage the enemy. Although no conventionally powered carrier can hope to equal this performance, the sustained speed and range requirements in (b) below will permit the S-CVX to arrive within 4 days of a nuclear carrier's arrival time from any point on the globe with only one en-route refueling. San Diego to the Straits of Hormuz is approx. 11,500 nmi. or 16 days at 30 kts for a nuclear carrier. The same distance for the S-CVX can be covered in less than 20 days at 25 kts even with a half-day stop for refueling. Transit time differences for Norfolk to the Straits of Hormuz via Suez are only 2 days.

(b) Sustainability - it must have the capacity to sustain itself, its aircraft and escort for extended periods without access to shore facilities. The ship will carry sufficient fuel for 16000 nm (at 20 kts) plus twice the air wing fuel carried by a Nimitz class carrier. The ship must be able to refuel (at a limited rate) from any commercial tanker in an emergency (limited to sea state 4 or less). Food and stores endurance will be equal to the Nimitz class, except that emergency rations for 2500 persons for 30 days will be carried in addition. Ordnance storage capacity will be 50% larger than that of the Nimitz class, with one magazine capable of storing nuclear weapons.

One of the major arguments used against conventional (vice nuclear) carriers is that they are incapable of transiting from home ports to operational areas at high speeds and immediately engaging in combat operations without stopping to refuel (see above). This

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can be ameliorated by forcing the design to accommodate an extra fuel load. An added concern is that when operations are contemplated in littoral environments, the enemy may be able to deny the unrestricted movement of resupply ships. For example, if the carrier were operating in the Persian Gulf and a hostile power were to massively mine the Straits of Hormuz, oilers and ammunition ships might be denied to the fleet for the days to weeks it would take to clear the mines. A 2X reserve of bunker fuel, 2X reserve of aviation fuel, and 1.5X reserve of ordnance would allow full combat operations to continue for a number of days even if resupply was cut off. The ordnance and aviation fuel reserves would also reduce the need for almost daily resupply when massive operations are underway (as was often the case during the Vietnam war) and 1.5X reserve of ordnance would allow full combat operations to continue for a number of days even if resupply was cut off. The ordnance and aviation fuel reserves would also reduce the need for frequent resupply when massive operations are underway (as was often the case during the Vietnam war).

(c) Survivability - it must be able to operate aircraft in hostile environments, protect itself from attack by threat weapons, and if hit, degrade gracefully and survive. The ship must be capable of transit through any sea state (including hurricane/typhoon seas) without suffering significant damage and be capable of launching/recovering aircraft under the same conditions as a Nimitz class carrier. The ship will be capable of withstanding at least one mine strike, one torpedo hit or two Harpoon-equivalent missile impacts without sustaining damage which prevents flight operations; the ship will be capable of withstanding hits from double the number of any of these threats (or any appropriately ratioed combination of these hits) without sinking.

The mass of weaponry that can be brought to bear against any combatant operating in littoral environments will almost guarantee some hits. A carrier for littoral warfare must be capable of taking hits from any of the major littoral threats (mines, torpedoes, cruise missiles) and continuing to fight or it will not be allowed to sail in harm's way.

(d) Ability to deliver precise, high-volume firepower - it must be able to operate an air wing of 60 aircraft, consisting of approximately 45 STOVL, 10 tiltrotor and 5 rotary wing. Ordnance will consist of the versions available in 2015 of current programs, including Joint Standoff Weapon (JSOW) with unitary, antiarmor submunition, and

Supplemental Faculty Guidance

MISSION NEED STATEMENT FOR A TACTICAL AVIATION SHIP (CVX)

TS4002 7/15/97

1. The guidance provided herein is intended to supplement or expand on the information in the draft Mission Need Statement of the same date.

2. The MNS specifies an air wing of 60 aircraft, with an approximate breakdown. One of the studies you should do is to determine the optimum mix among these aircraft types. If unmanned air vehicles are used, they may be in addition to the 60, unless they exceed 10 in number or they require significantly more deck space. The tradeoffs involved must be included in the aircraft mix study.

The 45 STOVL/10 tiltrotor/5 rotary wing mix was merely an educated guess on the part of the faculty. The optimum mix in any carrier wing depends on the missions to be performed. Some time after the promulgation of this document, the faculty specified that the air wing mix be determined from a mission analysis of a very stressing mission: support of an amphibious invasion of a fortified coastline using a single carrier without any nearby supporting land bases as one element of a major regional conflict. Bandar y Abbas in Iran was specified as the target and reasonable projections of Iranian force levels were provided.

3. The MNS calls for the CVX to be able to trap and take off any fleet carrier aircraft in an emergency. You should explore options to meet this need which minimize the impact on the design of what will be, essentially, a STOVL carrier.

It is obvious that a conventional flight deck carrier can handle both STOVL and CTOL aircraft. The faculty wanted the students to design a STOVL flight deck carrier that incidentally could handle CTOL emergencies.

4. When examining the required sortie rates assume a sortie consists of a take-off-to-touch-down duration of 2.5 hours.

This is roughly the amount of time required to fly a strike mission on targets at 400 nm range.

5. In examining ways to minimize manpower, explore the concept of "wing-level" maintenance, with all aircraft logistics and maintenance functions organized at the carrier air wing, rather than the squadron, level.

Currently each squadron assigned to an air wing has its own organic maintenance unit. When almost a dozen kinds of aircraft are carried on the carrier, this has merit. However, when the number of aircraft types is reduced to three, it makes less sense. Why have three separate maintenance teams and sh... to service three squadrons of identical JSF aircraft? Manpower and support equipment can be reduced in a wing maintenance concept (if only a few aircraft types exist in the wing).

6. In examining a ship design without an island, you will need to address and develop viable concepts for monitoring flight deck operations, navigation under high traffic conditions, communications and radar/electronic warfare operations.

These are all functions currently requiring elevated locations on the island. They are still required so an alternative means of performing them must be devised.

A Faculty Assessment of Design Innovation appears at the end of this report, on page 109.

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2.2 Analysis and Implications

2.2.1 STOVL / Emergency CTOL Capability

The MNS calls for the basic airwing to be fully STOVL capable while the ship still retains the capability for emergency landing and launching CTOL aircraft from legacy aircraft carriers. This allows us to examine elimination of the catapult and arresting gear systems. The embarked STOVL aircraft should present no problems with eliminating the catapults. The only remaining issue is whether or not the emergency CTOL launch capability can be achieved without catapults. In the Future Aircraft Carrier Study performed by the Naval Air Engineering Center [1] it was shown that the F/A-18 using a 6 degree ramp can take-off at maximum weight with only a 400 foot roll out. Assuming this to be our worst-case-need roll out, it shows that eliminating the catapults is indeed feasible. With regard to the arresting gear, no known alternative exists for trapping multiple CTOL aircraft even on an infrequent basis. Thus the arresting gear will have to be retained.

2.2.2 Aircraft Weapons Load Out

The MNS calls for the S-CVX to be capable of carrying versions available in 2015 of all current aircraft weapons programs and goes on to list many of the weapons this should include. Based on discussions we had with G-3 Division supervisory personnel on board *U.S.S. Nimitz*, we noted that all of the weapons explicitly listed either currently exist as or expected to be "all up rounds." By this we mean that the weapons arrive in a shipping canister fully assembled and fused and require no physical assembly prior to use. Iron bombs, by contrast, require a great deal of assembly prior to use. One of our major initiatives in this study was to examine an automated weapons handing system. To ease our analysis we did not consider standard iron bombs. If iron bombs are still to be used on S-CVX we assume that they would be used much less often (requiring fewer to be stored on ship) and those that are needed could come pre-assembled and in canisters.

2.2.3 Humanitarian Relief Capabilities

Owing to the changing nature of expected operations, the MNS calls for the S-CVX to be capable of accommodating 2500 non-combatants for 30 days and provide emergency rations and

sanitation services for these people. Obviously adding permanent berthing and services for such a large, seldom-encountered, contingent would lead to a very inefficient ship design. Instead we must devise a means to reuse existing parts of the ship temporarily. The challenge is to minimize the impact the loss of this space has on full combat operations. Our requirements state that we must at least maintain "normal" functions during this period. We interpret this to mean at least the ability to maintain a full defensive posture while maintaining as much offensive capability as possible. The main area where we expect to take degradation is in aircraft cycle throughput.

2.2.4 Gas Turbine Propulsion

In order to limit the scope of our study and examine alternatives to the current nuclear propulsion option, the MNS forces us to select gas turbines for our propulsion system. This selection also opens many other possible variations of the standard propulsion layout including electric dive, engine locations, and propulsor type.

2.2.5 Decreased Manning

The MNS levies a requirement that the S-CVX manning (including airwing) must be less than 50% of the current *Nimitz* manning (including airwing). Several of our other requirements assist in meeting this manning goal. First, by not having nuclear power, we can significantly decrease the engineering manning requirements. Secondly, large numbers of flight deck personnel are involved with catapults and arresting gear operations. The requirement for a STOVL airwing gives us the potential to eliminate the catapults entirely and requires operation of the arresting gear only on an emergency basis for landing CTOL aircraft. Since this will be an ad-hoc evolution, we could eliminate dedicated personnel for this effort and rely on cross training of other crew members. More details of our manning analysis are presented in section 4.7.

2.3 Derived Requirements

2.3.1 Airwing Mix

The MNS lists a firm upper bound of 60 aircraft for the airwing size and provides a notional breakout for the mix between JSFs (45), V-22s (10) and SH-60s (5). One of our tasks was to validate or modify this notional airwing mix or to justify changes. To do this we generated what we considered to be a worst-case for S-CVX aircraft utilization. The proposed scenario is one in which an S-CVX carrier battle group must support an expeditionary force amphibious landing in southern Iran. The year is 2020, and Iran has launched a massive invasion of its southern neighbors. The tactical situation is that the defending forces (Arab nations and US forces) have halted the initial Iranian invasion forces. These friendly forces and a CV battle group (in central Arabian Gulf) are busy halting southward flow of Iranian troops and aircraft. The strategic objective is to halt the invasion by Iran and then eliminate its capabilities to repeat such aggression at any point in the succeeding ten years. The tactical objective of the S-CVX battle group is to enable the landing of a brigade-sized expeditionary force in southern Iran. This force must seize and hold a major port facility (Bandar-E-Abbas) to facilitate debarking conventional infantry forces and equipment in preparation for a major land offensive. Friendly and hostile force structure and composition are listed in appendix A-1.

During the scenario, S-CVX aircraft must be capable of performing these minimum operations: anti-submarine warfare (ASW), anti-surface warfare (ASUW), offensive counter-air (OCA), and strike operations. An iterative analysis of the scenario concluded that an air-wing composition of 45 JSFs, 10 V-22s, and 5 SH-60s was sufficient to perform all scenario requirements. Table 2.3-1 describes the sortie rate for each aircraft in the different missions of the scenario. The actual peak sortie rates occur during the OCA operations, requiring 215 sorties. A minimum of 45 JSFs is required to perform the OCA operation. Three V-22s will be configured as AEW platforms and the other 7 V-22s will be multi-role support aircraft, performing ASW, tanker, and COD missions. To perform these disparate functions, we envision the V-22 payload bay being redesigned with different "plug and play" modules. These modules are end loaded in the rear of the aircraft and could even include the rear door/loading ramp on the V-22. The three modules required are:

- an ASW electronics suite including rear ejected sonobouys (ASW torpedoes would be wing mounted or rear ejected)
- an airborne tanking module containing a drogue/probe reel-able tanking system and extra fuel tanks
- a cargo/transport module with extra seats and tie down points.

The SH-60s provide ASW, plane guard and SAR missions and are the aircraft with the highest daily sortie rate of 4.1 per aircraft. The scenario mission analysis and the resulting aircraft sorties required are described in Appendix A-2.

With a sortie defined as 2.5 hours, and assuming 1 hour between sorties, the originally proposed 45 JSFs can perform a theoretical 308 sorties per day. This is 6.9 sortie/JSF/day, which is more than the sortie rate required during the surge operation of an Alpha strike during the OCA operational phase of the scenario.

Combat Air Patrol (CAP) was determined to require 32 sorties per day. This was based on a three hour CAP (two JSF per CAP). Therefore S-CVX will have two CAP (a total of 4 JSF) in the air at all time. The total numbers of CAP were increased to 48 per day once the amphibious force was landed. This was in anticipation of additional rapid response requirements from the Marines (i.e. hostile helicopters or close air support).

A total of 40 sorties per day were required for ASW operations (patrol and prosecution). Seven V22s and 3 SH60s provided these sorties. An aircraft was assumed not to leave its station until a replacement has arrived. Using these parameters, 42 ASW sorties per day will maintain three ASW aircraft on station at all times. This high rate of ASW requirement was necessary during the first seven days of the scenario when hostile submarine neutralization was a high priority. The strategy was to neutralize the submarine threat before the arrival of the amphibious force. A detailed analysis of this peak ASW requirement is given in Appendix A-2. To control the threat from any surviving or new-arrival submarines, an ASW sortie rate of 24/day was maintained after the initial ASW phase. It should be noted that during the first 7 days of the scenario, the multi-role V-22s had few available sorties to support functions other than ASW. This led us to rely upon the buddy tanking capability of the JSF to augment tanker services during this period.

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spaces and just forward of the V-22/SH-60 pit stop. Five fully enclosed JSF pit stops and one V-22/SH-60 pit stop are also housed in the island.

To the port side of the island, three JSF vertical landing zones (60 ft diameter) with JBCs allow direct access to the pit stops and quick access to the elevators servicing both hangars. Port forward of the bridge is a safe parking area for up to 15 aircraft.

The aft flight deck (120 ft x 250 ft) is a VTOL operating area with two 100 ft diameter simultaneous launch and recover circles and direct access to the VTOL pit stop.

Two hangars, one forward and one aft, are segregated in the middle. Each hangar is serviced by two elevators, one from each side of the ship. The space between the hangars houses the weapons service elevator from the magazines.

Design Advantages:

- Fully enclosing pit stops in the island provide significant weather, acoustic, and weapons/jet blast protection during rearm, refuel, flight line repair and pilot change out evolutions. No personnel are required on the flight deck. The enclosure also provides capability to use an overhead gantry crane for refueling and service. Smooth flow of aircraft from landing zone, to rearm/refuel, to launch run is permitted.
- Aligning pit stops along the center line enhances the use of a race track style weapons distribution system on the weapons gallery deck located immediately beneath the pit stops. The weapons will be loaded on to the aircraft from below.
- Enhanced survivability through wide dispersal of prime movers, segregated hangars and multiple elevators servicing each hangar.
- Locating prime movers in the island eliminates long intake and exhaust ducting runs which consume large amounts of internal volume and cause engine performance loss. Exhaust gases and acoustic emissions are directed up and away from aircraft and personnel.
- Enclosing elevators reduces radar signature.
- Simultaneous launch and recovery of aircraft is easily accommodated.
- Clear view of all ship and aircraft control evolutions is afforded, as is large amounts of high up, unencumbered real estate on top of island for antennas and self defense weapons.

Design Drawbacks

- Increased radar signature due to large size of island.
- Reduced survivability of prime movers due to high up and exposed location.
- Additional structure leading to higher initial and life cycle maintenance costs.

3.3.1.2 *Athwartship Super Island Design*

Design Features:

- 850 ft x 250 ft flight deck
- Three elevators (can hold 2 of any aircraft)
- Two 750 ft STOVL take off
- Two 450 ft STOVL take off
- Three Jet Blast Collector JSF landing zones
- Two V-22 landing zones
- Three covered JSF pit stops, four exposed JSF pit stops
- Starboard of island is 850 ft x 100 ft CTOL landing zone
- Two sets of two engines (125 ft apart) are mounted on the island with no ducting requirements
- Flight deck is 50 ft above water line, 12 degree ramp should help with A/C take off

Pit Stops:

- Cylindrical feed design (should be faster than race track design and also should avoid any congestion problems. It would be a parallel flow vice serial flow design)
- Two independent pit stop areas should enhance survivability
- The covered pit stops would allow fueling from above, exposed pit stop would not.
- The center of each circular pit stop area can be a rotating disk that can quickly connect the aircraft to each pit stop. The aircraft can also be moved to each pit stop on its own with the TowBot (described elsewhere). This [illegible] should allow rapid movement of A/C to pit stops and require less landing [illegible]

War-Making

DEPLETED URANIUM:

Legacy of the Persian Gulf War

By Dolly Lymburner

Department of Defense Manpower Data (September 30, 1992) tell us that people of color are only 20% of the total U S population, yet they accounted for nearly 50% of those serving on the front lines during the Gulf War. In the service, as a whole, people of color are 32% of enlisted categories but only 13% of the officer corps

— *Editor*

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The United States has a poor record of how it has treated the men and women who have served to defend their country and have been exposed without knowledge or consent to toxic contamination. Some veterans who served in the Persian Gulf War (PGW) are now suffering from the "Gulf War Syndrome," which can exhibit a variety of symptoms such as headaches, fatigue, recurrent diarrhea, bone or joint problems, muscle weakness, loss of hair, rashes, and kidney problems. There also appears to be a high incidence of both reproductive problems and birth defects in babies born to PGW vets.

In the 1991 Persian Gulf War, U S forces used uranium anti-tank munitions for the first time. Made from "depleted" uranium (DU), these bullets and artillery shells are both radioactive and toxic. DU was also used to armor plate tanks. Uranium weapons are effective because, when alloyed with titanium, they are extremely hard. DU is also pyrophoric, which means that it burns upon impact.

There appears to be a high incidence of both reproductive problems and birth defects in babies born to Pacfic Gulf War vets.

Depleted uranium is a waste product from the enrichment process that extracts U-235 from natural uranium for nuclear weapons and power plants. Disposal and storage of DU waste, about one billion pounds according to the Department of Energy, is a growing problem.

The production, testing, and use of DU pose health risks to anyone who inhales or ingests the substance. Uranium oxide is created when DU weapons burn, corrode, or are machined. When inhaled, small particles can lodge in the lungs exposing the delicate tissue to alpha radiation and often causing lung cancer. DU, like other heavy metals, is also a chemical poison. Food or drinking water contaminated with DU particles can, when ingested, cause irreparable damage to the kidneys.

The Depleted Uranium Citizens' Network of the Military Toxics Project recommends that independent health studies of PGW veterans be conducted to determine the toxic and radiological effects of exposure to DU. An epidemiological study should be done of all service persons who were exposed to DU, and of their families. Additionally, the children conceived and born after the Gulf War should be examined for evidence of radiation-induced genetic damage. Health studies should also include military and civilian personnel at DU manufacturing sites and DU test sites across the United States.

"An Assessment of External Interest in Depleted Uranium Use by the U S Military" is a report contracted by the Army Environmental Policy Institute to identify the issues and concerns that individuals and groups have expressed about the Army's use of depleted uranium. It concludes that the Depleted Uranium Citizens' Network has been effective in raising public awareness in regards to health and safety issues.

In response to the latest form of military radioactive pollution, the mission of the Depleted Uranium Citizens' Network is to provide outreach and unite people affected by the production, testing, and use of DU for military purposes and to demand cleanup, health care, compensation, and the end of DU munitions use worldwide.

Dolly Lymburner is the coordinator of the Depleted Uranium Citizens' Network, P.O. Box 845, Sabattus ME 04280; 207-375-8482

RADIOACTIVE BATTLEFIELDS OF THE 1990s

THE UNITED STATES ARMY'S USE OF DEPLETED URANIUM AND ITS CONSEQUENCES FOR HUMAN HEALTH AND THE ENVIRONMENT

American M1-A1 tank in front of burning T-72s (Iraqi tanks), outside Basra, Iraq, March 1, 1991. M1-A1 tanks are clad with depleted uranium (DU) and fire penetrators made of DU. "Since DU weapons are openly available on the world arms market, DU weapons will be used in future conflicts. The number of DU patients on future battlefields probably will be higher because other countries will use systems containing DU."—from the Army's unreleased report on depleted uranium weaponry

A RESPONSE TO THE ARMY'S PREVIOUSLY UNRELEASED REPORT ON DEPLETED URANIUM WEAPONRY

BY THE MILITARY TOXICS PROJECT'S DEPLETED URANIUM CITIZENS' NETWORK

MAY 1998
(3rd PRINTING)

radioactive than U-235 or plutonium, it remains an extremely harmful substance with the chemically toxic properties of many heavy metals. Huge quantities of DU have accumulated in the course of U.S. energy and weapons programs—the Department of Energy alone holds a billion pounds of DU hexafluoride tails. Usually classed as low-level nuclear waste and viewed as a liability, DU has in recent decades been tried out for civilian and military uses.[5]

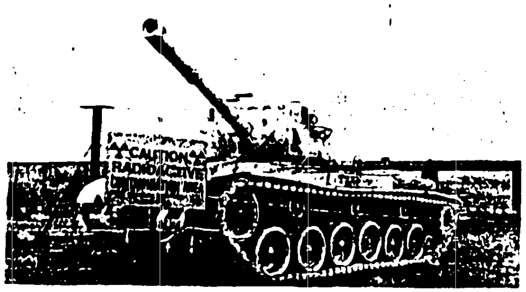
Because of uranium's extreme density, DU can be used to make munitions and armor of great density. The penetrators made with DU have great range and velocity, velocity that gives them an ability to penetrate most kinds of armor (including otherwise virtually impenetrable DU armor, as Gulf War friendly fire casualties demonstrated). But their battlefield effectiveness is undermined by DU's deadly qualities, qualities that cannot be contained.

DU is a highly toxic and radioactive heavy metal with pyrophoric (flammable) properties: it bursts into flames upon impact. The burning uranium then spreads into the atmosphere, creating a small-scale fallout of aerosolized uranium particles which can be inhaled or ingested from the air or by contact with contaminated materials and sites. These particles can travel anywhere that dust goes. Most readers are familiar with the postwar images of blackened, burnt-out Iraqi vehicles: many of these were DU targets (as were the 6 U.S. Abrams tanks and 15 U.S. Bradley Fighting Vehicles hit by friendly fire). A survey shows that four out of five U.S. soldiers entered destroyed Iraqi vehicles, many of them DU-contaminated, but no studies have yet accounted for the degree of exposure or its possible long-term effects.[6]

In April of 1995, French General Gallois remarked, "If we equip these tanks with these sorts of munitions, that means that chemical-nuclear war is morally allowable." Radioactive and chemical weapons are internationally regarded as unacceptable, because their effects cannot be directed or contained and because they cause slow, cruel suffering and death; civilians, descendants, passersby, and allies are all likely to be victims. Although DU is used in conventional weapons systems and classified as a conventional weapon, its pervasive radioactive and chemical effects suggest this classification is inadequate and inaccurate.[7]

DEPLETED URANIUM AND NUCLEAR HISTORY

Since the beginning of the Manhattan Project in 1942, the United States Army and the Department of Energy have been creating problems for which there are no solutions—beginning with the creation of vast quantities of radioactive material for which no adequately safe disposal methods or sites exist; and with weapons systems whose contamination spreads far beyond the intended target. The public history of nuclear weapons and energy is also the private histories of hundreds of thousands of citizens, from the quarter-million troops intentionally exposed to atomic testing between 1946-1963 and the civilians downwind of these tests, to the many citizens exposed to harmful amounts of radiation at all stages of the nuclear cycle, from mining and manufacture to deployment and disposal. High percentages of all these populations have experienced the illnesses, cancers and genetic defects that result from radiation exposure. DU weaponry is the latest, unfinished chapter in this long history of governmental recklessness and personal tragedy. Like radiation and many other toxins, DU disproportionately affects the poor and communities of



Tank contaminated by its own DU penetrators and consigned to the Nevada Test Site as nuclear waste. Photo © James Lerager. All rights reserved.

color at home and in war. Nearly 50% of those on the front lines of the Gulf War were people of color, and DU assembly and testing facilities are mostly located in and near poor communities and communities of color.[8]

The argument that the U.S. should have DU weaponry if others do is a dubious one, because the effects of radioactive and chemical weapons cannot be directed and contained—for example, U.S. veterans of the Gulf War are suffering from their own army's use of DU. Its international proliferation ends the U.S.'s brief advantage as the primary user of DU armaments and armor and suggests that the battlefields of the future may be more horrible than anything yet seen. To go into future battles in which DU is used may mean, for the immediate survivors, an indeterminate life sentence waiting for uranium's dire chemical and radioactive effects to appear. The DU battlefields themselves could be something new: international sacrifice areas too contaminated ever to be put to peaceful use.

Anthony Guarisco (center), founder and director, Atomic Veterans Alliance, leading an antinuclear action at the Nevada Test Site, Veterans Day 1991. Guarisco was 19 when he was exposed to radiation from the U.S.'s Crossroads nuclear explosions in 1946. He became sick four days afterwards and has since been plagued by radiogenic illnesses, including chromosome damage passed on to his children in the form of birth defects. He says, "What's happening to Gulf War veterans is exactly what's happened to atomic and Agent Orange vets—all of these vets found that the goverment turned its back on them." Photo Dana Schuerholz.

THE DU REPORT BY THE AEPI

The AEPI's technical report on DU expands on a June 1994 report commissioned by Congress to determine these four things: "the health and environmental consequences of using DU on the battlefield; remediation technologies to clean up DU contamination; ways to reduce DU toxicity; how best to protect the environment from the long-term consequences of DU use." The more than 200-page-long technical report has not been released to the public, few members of Congress have seen it, and even the Presidential Advisory Committee on Gulf War Veterans' Illnesses has been unable to obtain a copy. It is, however, the document on which many decisions about DU use may be based. For this reason, public and expert appraisal of the report is critical.[9]

The Military Toxics Project's Depleted Uranium Citizens' Network, which was able to obtain a copy of the report, finds it to be severely flawed, because its conclusions are inconsistent with its creditable scientific statements. Perhaps the most basic and crucial statements are these: "No available technology can significantly change the inherent chemical and radiological toxicity of DU. These are intrinsic properties of uranium" [from p. xxii], which answers the third point of the congressional inquiry; and "DU is a low-level radioactive waste and, therefore, must be disposed in a licensed repository" [from p. 154] which addresses the first, second, and fourth points. From these admissions alone, it is clear that DU is a deadly substance from which soldiers, the public and the environment must be protected beforehand, because no technology can afterwards adequately mitigate its effects; and that spreading it across test sites and battlefields conflicts with the disposal recommendation. Yet the report goes on, through many twists and turns of logic and optimistic assertions on military practices, to endorse the continued use of DU by the U.S. military. Finally it somewhat undermines this endorsement with calls for further research and implementation of better safety procedures.

There *is* no safe way to use DU, and a very basic question is why something considered to be hazardous radioactive and chemical waste in all other circumstances is considered safe in battlefield conditions. As the AEPI admits on page 78, "As much as 70 percent of a DU penetrator can be

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aerosolized when it strikes a tank (Fliszar et al., 1989). Aerosols containing DU oxides may contaminate the area downwind. DU fragments may also contaminate the soil around the struck vehicle." DU munitions aerosolize when used, DU tank armor can aerosolize when struck, and there are many paths by which the resulting particles may enter the body—by inhalation, ingestion, or through open wounds. On page 101, the AEPI also concedes, "If DU enters the body, it has the potential to generate significant medical consequences. The risks associated with DU in the body are both chemical and radiological....." Once inside the human body, uranium particles tend to stay, causing illnesses such as lung cancer and kidney disease that often take decades to manifest. According to pioneering radiation biomedical researcher Dr. J. W. Gofman, particles of uranium smaller than 5 micron in diameter can become permanently trapped in the lungs. Leonard A. Dietz, former Knolls Atomic Power Laboratory scientist has estimated that a trapped, single uranium oxide particle of this size can expose the surrounding lung tissue to approximately 1,360 rem per year. This is 8,000 times the annual radiation dosage permitted by federal regulations for whole body exposure to the general public. Particles not trapped in the respiratory system may be ingested and find their way into the kidneys and reproductive organs.[10]

One thing the report does make clear is that the DU exposure of most Gulf War veterans has not been taken seriously, documented, or studied, although the Army's own admissions suggests hundreds of thousands of soldiers and citizens may be at risk from having internalized DU. Only the small minority with actual DU shrapnel in their bodies is currently being studied for DU effects (DU bullets killed 35 U.S. soldiers and wounded 72—22 of whom have embedded DU fragments). However, DU is equally toxic and radioactive when it enters the body by other avenues, such as inhalation and ingestion. Potential risks for medical personnel treating contaminated soldiers, for cleanup crews and for civilian populations who come or return to the DU battlefield regions are completely overlooked, as are risks at other points in the weapons production, use, and disposal cycle. In 1980, workers at a Jonesboro, Tennessee plant, which manufactures DU penetrators, had the highest radiation exposures of any nuclear workers in the nation. One DU manufacturer, National Lead Industries of New York, was forced to shut down in 1980 because their emissions exceeded 150 micro-curies (385 grams) in a given month. Leonard Dietz, in a letter to *The Bulletin of the Atomic Scientists*, asked "If New York State authorities were concerned about the release each month of radiation equivalent to the particles from one or two uranium projectiles, why isn't the U.S. government concerned about the effects of tens of thousands of projectiles being fired in a few days of war?" Citizens Research and Environmental Watch (CREW), a Concord, Massachusetts grassroots organization concerned about local DU munitions manufacturer Nuclear Metals, Inc., had soil samples from six Concord locations analyzed. The tests found uranium levels up to 18 times background levels and as far as nine-tenths of a mile away from the plant. It is urgent that assessment and appropriate medical treatment begin for everyone exposed by any of these avenues.[11]

Charles Sheehan Miles, Gulf War veteran and DU Network member, inside his tank. "I helped pull a crew away from a burning tank, hit by a DU penetrator. I got out of the army as a conscientious objector because of the civilian casualties I had seen. About two years after the war I got a melanoma on my back and it scared me into doing some research. If it hadn't been for the melanoma I would have never found out what I know now about depleted uranium."

ing agencies. The parties are committed to military training activities co-existing with public land resources and land uses. The five areas involve the use of chaff; special status species; Native American traditional cultural and sacred sites; deviation from commitments; and refinement of the agreement. The Air Force will ensure BLM has an opportunity to review its site plans prior to beginning construction.

These commitments reinforce the collaboration between the Air Force and the Bureau of Land Management to ensure military training activities coexist with public land resources and other users in southwest Idaho. The parties may mutually agree to modify these commitments in light of experience gained through monitoring and mitigation actions or as a result of changed military circumstances.

The Record of Decision will be further expanded to include the above commitments to address cooperating agency and public concerns.

Patrick A. Shea
Director
Bureau of Land Management
Date: June 11, 1998

Patrick K. Gamble, Lt Gen, USAF
Deputy Chief of Staff
Air Space and Operations
Date: June 9, 1998

SENATE PASSES DEFENSE BILL, ADDS CHEMICAL WEAPONS, SHIP SCRAPPING MEASURES

The Senate June 25 passed the Defense Authorization bill for fiscal year 1999, approving several environmental amendments to the bill that relate to chemical weapons destruction, ship scrapping and PCB disposal.

During debate on the floor last week, the Senate approved amendments to the bill that would pressure EPA and the Army to expedite permits to destroy DOD's stockpiled chemical weapons and would create a ship-scrapping pilot program to demonstrate environmentally safe scrapping techniques. Other amendments approved by the Senate will authorize the use of funds from the National Defense Stockpile Transaction Fund to be used for environmental activities, and will allow DOD to dispose of foreign-made polychlorinated biphenyls in the United States. This amendment is contrary to House appropriations language passed last week that banned funding for such activities (*see related story*).

In an 88-4 vote, the Senate passed the defense authorization bill June 25 which authorizes $1.24 billion for the Defense Department's environmental cleanup program, still $24 million short of the administration's request for cleanup.

The bill includes an amendment that directs EPA to work with state and local governments to properly budget for regulatory permitting activities that affect the Army's destruction of its stockpiled chemical weapons. The Army has run into permitting delays as it attempts to meet a 2007 deadline, mandated by an international treaty, to destroy these weapons.

"This is a straightforward amendment, but may be on track to save us a lot of time and money with respect to our chemical weapons stockpile demilitarization program," said Sen. Frank Murkowski (R-AK), the amendment's sponsor, on the floor. The amendment requires EPA and the Army to report to Congress on how the two departments can work together to speed the permits needed for the destruction program.

And while most of the permits fall under the Resource Conservation & Recovery Act and are issued by state regulators, Murkowski stressed EPA does have a part in the process. "While the EPA does not have a role issuing permits, it does act in an advisory capacity to the various state governments which review and issue permits."

Another amendment adopted by the Senate June 25 was a modified version creating a pilot program for Navy ship scrapping. The approved version eliminates some of the requirements the earlier amendment placed on the pilot, such as a three-year contract length and the amount of tonnage that must be scrapped. The approved amendment requires the Navy to carry out a vessel-scrapping pilot program between FY99-00. The program's scope will be that which the Navy "determines is sufficient to gather data on the cost of scrapping Government vessels domestically and to demonstrate cost effective technologies and techniques to scrap such vessels in a manner that is protective of worker safety and health and the environment."

The legislation comes in the wake of a self-imposed ship-scrapping investigation by DOD and other federal agencies after news reports of worker safety and environmental violations across the industry. The House did not include similar legislation and the lead proponent on the issue, Rep. Wayne Gilchrest (R-MD), has planned to hold off on any legislation until next year.

The Senate also approved an amendment that allows funds within the National Defense Stockpile Transaction Fund to be used for certain environmental remediation, restoration, waste management and compliance activities.

The Senate also approved a non-binding resolution that directs the Navy to immediately undertake actions to properly train Navy personnel on oil spill prevention to "significantly reduce the risk of vessel oil spills." The Navy should also improve its relationship with local authorities in regard to oil spill prevention and response actions and minimize fuel oil transfers. The sense of the Senate resolution responds to six significant Navy oil spills in Puget Sound, WA, this year.

Ship Scrapping

NAVY LAUNCHES DOMESTIC SHIP-SCRAPPING PILOT PROGRAM

After years of intense scrutiny from environmentalists and Congress, the Navy this week took its first concrete steps to determine whether environmentally sound, worker-safe ship scrapping is financially viable domestically. Ship-scrapping industry officials met with Navy contracting officers Aug. 24 to discuss the parameters of two contracts the Navy will soon award to private companies to begin domestic ship breaking on both coasts.

According to Navy officials, the Navy will award two contracts by January to scrap 25 ships on the east coast and 18 ships on the west coast. Navy contracting officials emphasize that the miliary has not determined whether to scrap any ships domestically after the pilot program is complete.

Navy documents show that the Navy currently maintains 195 ships in their inactive fleet. The documents say 128 of these ships are designated for scrap.

The two contracts will be awarded on a cost-plus basis, Navy officials say.

The meeting comes in response to a pending measure — ~~sponsored by Sen. Barbara Mikulski~~ (D-MD) — in the defense authorization bill that requires DOD to conduct the pilot projects (*Defense Environment Alert*, July 14, p6). The measure is widely expected to be included in a final bill after conference proceedings. Congress did not specify a dollar amount for the program, but allowed the Secretary of Defense to "define the program scope as that which the Secretary determines sufficient for gathering data on the cost of scrapping government vessels and for demonstrating cost effective technologies and techniques to scrap such vessels in a manner that is protective of worker safety and health and the environment."

Litigation

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OREGON ENVIRONMENTAL GROUPS, CITIZENS CHALLENGE INCINERATOR PERMIT

Several Oregon environmental and citizen groups last week filed a motion for summary judgement in state court as part of a case challenging permitting decisions by state agencies to build chemical weapons incinerators at the Umatilla Army Depot. The Sierra Club, Oregon Wildlife Federation, the citizen group known as GASP and 22 Hermiston, OR, residents filed the case earlier this year.

In their petition, the groups charge that the Department of Environmental Quality (DEQ) and the Environmental Quality Commission (EQC) violated state law by failing to determine whether the proposed incinerators would harm public health or the environment and whether it was the best disposal technology.

The groups say that DEQ and EQC did not fulfill their statutory and regulatory obligations by failing to fully consider the effects of emissions of nerve agents, dioxin and other chemicals on sensitive populations such as developing fetuses, infants, persons with serious illnesses and the elderly.

In addition, the groups take issue with the state's review and approval of significant components of the incineration facility. The groups charge that carbon filters that have been promised as an addition to the pollution control system for the incinerator facility have never been tested or proven.

The groups also argue that other essential systems such as nerve agent monitors, a dunnage incinerator, brine reduction equipment and deactivation incinerator do not work or have malfunctioned regularly at the Army's two operating chemical weapons incinerators in the Pacific and Utah.

The groups challenge the procedures employed by DEQ and EQC in deciding to issue the permits, arguing that the groups should have been given a contested case hearing to address the evidence the agencies relied upon.

Finally, the groups note the incineration alternative availible and say that neutralization was rejected by the state without much explanation.

The case is scheduled for a hearing in October.

SUBSCRIPTIONS:
703-416-8500 or
Toll-free 800-424-9068

NEWS OFFICE:
703-416-8562

FAX: 703-416-8543

EMAIL:
iwpdea@yahoo.com

Managing Editor: Suzanne Yohannan
Associate Editor: Lara Beaven
Contributing Editor: Mark Benjamin
Publisher: Paul Singer, David Clarke
Production: Lori Nicholson, Ling Sue Withers, William M. Shipman

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12-18-97

Leaks stop shipments of nuclear waste

Senator blasts energy department as incompetent

Associated Press

LAS VEGAS — The U.S. Department of Energy has halted shipment of low-level radioactive waste from an Ohio nuclear weapons plant after water was found leaking from boxes of debris on trucks in Nevada and Arizona.

The discovery brought an outcry from Nevada officials, who have been fighting DOE plans to store low- and high-level nuclear waste at sites north of Las Vegas. They raised anew questions of transporting such waste across country.

One leak was found on a truck 20 miles east of Kingman, Ariz., the other four on three trucks that arrived Monday and Tuesday at their destination, the Nevada Test Site.

The shipments involve low-level radioactive waste from a nuclear weapons plant being dismantled at Fernald, Ohio.

DOE spokesman Darwin Morgan said the material "does not pose any danger to human health or the environment." He said the debris included "sand used to filter radioactive waste, filter cakes from wastewater treatment operations and construction rubble."

He said it was unclear how water got into the debris.

The leaks are the latest in "an unending stream of incidents," Sen. Harry Reid, D-Nev., said Wednesday.

"This isn't the first incident, it's just the first made public," Reid said. "The DOE doesn't know what it's shipping or how it's shipping it."

Sen. Richard Bryan, D-Nev., called the latest development "alarming," noting the shipments pass through major Las Vegas intersections and across traffic-clogged Hoover Dam.

"The DOE has again shown its inability to handle and transport radioactive materials safely," said Gov. Bob Miller.

When the leak was discovered at a truck stop near Kingman, other shipments were ordered checked by the DOE, according to Morgan.

The truck near Kingman did not contain any contamination and the contamination of the trucks at the Nevada Test Site "was very low," Morgan said.

"We want a full understanding of what happened with those boxes," Morgan said. "Was it a manufacturing problem? Was it a problem at the shipment site? We want Fernald to explain the liquids."

Reid said the material from Fernald is being dumped in unlined trenches at the test site, 65 miles north of Las Vegas, where the nation's nuclear weapons were tested from 1951 until 1992. "It was all supposed to be dry material," Reid said. "Well, dry material doesn't leak out of trucks.

"There are no controls in place," he added. "This is low-level. But even though it's low-level it's still dangerous."

Reid said problems with the Fernald shipment reinforce the argument against storage of high-level nuclear waste at Yucca Mountain, 100 miles north of Las Vegas.

"We're dealing at Yucca Mountain with the most poisonous substance known to man," Reid said. "This (Fernald) is B-League baseball compared to the major leagues. The idea of storing high-level waste at Yucca Mountain is frightening to me, and should be frightening to everyone."

Congress is wrestling with the problem of where to store the high-level nuclear waste, mainly spent fuel rods.

Radioactive shipments are halted

Trucks with nuclear waste found leaking

By Robert Macy
Associated Press

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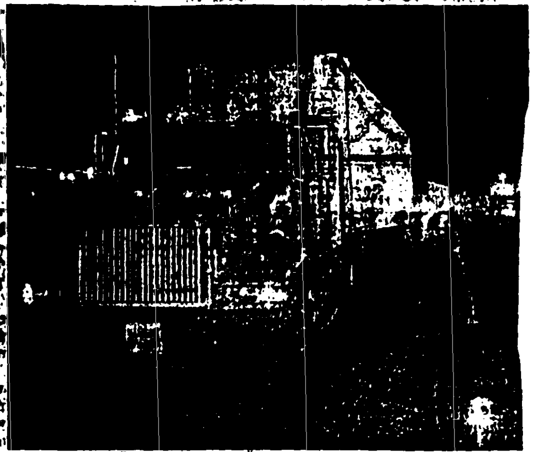

STEVE MARCUS / Las Vegas Sun

Truck stopped: Semi truck sat idle on Interstate 40 near Kingman, Ariz., after the driver noticed a leak coming from the low-level radioactive waste cargo.

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FACT SHEET: WHAT IS LOW-LEVEL RADIOACTIVE WASTE

Definition

"Low-level radioactive waste," according to the Nuclear Regulatory Commission (NRC), is "radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or by-product material (i.e. uranium or thorium mill tailings) . "

"Low-level radioactive waste" includes everything from slightly radioactive trash such as gloves and booties to highly radioactive-activated metals from inside nuclear reactors

"Low-level radioactive waste" includes both short-lived and long-lived radionuclides

Sources of "low-level radioactive waste"

Low-level radioactive waste is generated by most of the facilities licensed by the NRC for commercial handling and use of radioactive materials By far the single largest source is the nuclear power industry, which in 1989 accounted for over 80% of the volume and 95% of the radioactivity of all low-level radioactive waste shipped for disposal Other sources include radio chemical manufacturers, research laboratories, government agencies other than the Department of Energy (DOE), universities, medical schools, and hospitals

All waste generated from the commercial nuclear fuel cycle is classified as low-level radioactive waste, except for uranium mill tailings and spent nuclear fuel The bulk of this waste (about 80% of 1989) is generated by nuclear reactors as leaked fission products from fuel rods and as radioactive-activated products that were originally non-radioactive elements inside the reactors

The cooling water of nuclear reactors, which absorbs leaked fission products from fuel rods, is cleaned of radioactivity by ion exchange resins and demineralizer filtration units The resins and filters themselves are contaminated with radioactivity and are disposed of as low-level radioactive waste The resins and filters can be highly radioactive and are sometimes capable of delivering a lethal dose of radiation (exceeding 1,000 rems per hour)

Non-radioactive components inside a nuclear reactor can become radioactive because of continuous neutron bombardment These items, such as fuel channels and instrumentation placed inside the reactor core, are removed from time to time and disposed of as low-level radioactive waste

Maintenance and clean-up of nuclear reactors generates low-level radioactive waste such as workers' protective clothing, mops, etc

Classifications of waste

Low-level radioactive waste is divided into four classes by the NRC Classes A, B, C, and Greater-than-Class-C Class A is the least radioactive and contaminated by "short-lived" radionuclides Class B may be contaminated by greater amounts of "short-lived' and "short-lived" radionuclides

Operation of nuclear power stations

The operation of a reactor generates long-lived high level used fuel, and short to medium-lived low and medium level operational waste. The most radioactive operational wastes are filter and ion exchange resins from the reactor water purification systems. Used tools, exchanged parts, protective clothes, and scrap are also operational waste. The radioactivity of the operational waste is mainly due to relatively short-lived radionuclides such as cobalt-60 and caesium-137, which decay to safe levels after 200 to 300 years.

The bulk of the operational waste is low level, and only very small amounts of long-lived waste may be included. The intermediate level resins are normally dewatered, and stored or disposed of. They may be immobilised with concrete, cement or bitumen. The low level waste is usually compacted, using high pressure compaction or incineration with subsequent compaction of the ashes.

On to Used fuel management
Back to The Management of Radioactive Waste

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(22-OCT-97)

ARCHIVE SEARCH RESULTS

Nuclear pills plan unveiled

by PATRICK BARRIE

THE first plan has been devised to hand out radiation sickness tablets to thousands of Plymouth people to counter the effects of a nuclear disaster at Devonport dockyard.

The plan will be tested in a dummy run next month. For more than 20 years health and military chiefs have struggled to devise a plan in case of an accident on one of the seven Devonport-based nuclear powered Trafalgar submarines.

Some 30,000 people living within 550 metres of the dockyard are at most risk of radiation poisoning.

Previous suggestions to give the potassium iodate tablets, which counter the danger of thyroid cancer, included supplying the drugs from helicopters or from ambulances, but were rejected as unworkable.

But now the Royal Navy and South West Devon Health Authority have developed detailed plans to limit the house to house distribution to a smaller area, based on estimates of where a radiation cloud would travel.

Under the scheme, once an impending nuclear accident was identified wind speed and direction will be used to calculate the cloud's path.

Fifty sailors would deliver tablets for up to 12,000 people within one hour around the cloud's path.

Peter Hurford, Captain of Base Safety at Devonport, said until now there had been no firm plans to deal with distribution.

He explained the potential level of radiation poisoning was far less than at a nuclear power plant because submarine reactors are 30 times smaller.

City councillors and residents have long called for the tablets to be handed out prior to an incident, but this has been ruled out by health bosses.

Kevin Owen, chairman of Plymouth Nuclear Dump Information Group, said the new scheme was flawed but a step in the right direction.

He said: "It is hopeless and we just hope the scheme is in its infancy and there will be dialogue so it can be developed and they listen to the concerns of local people."

"Predistribution is carried out in France and in Switzland without any trouble or worries, so why not here?"

Ken Tucker, chairman of governors of Barne Barton Primary School criticised the plan.

"This has been like a Whitehall farce. They have a lot of theories but do not have any practical experience. There is no way 60 men working in a strange area, say at night in pitch black, could cover that sort of area in the time they have set themselves."

Mr Tucker added: "If they are willing to drop the tablets through people's doors without asking any questions in an emergency, why can't they do it beforehand?"

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Nuclear Regulatory Commission

Office of Public Affairs

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Telephone: 301/415-8200 -- E-mail: opa@nrc.gov

No. 97-102

July, 1, 1997

NRC REVISES POSITION ON USE OF POTASSIUM IODIDE

IN CASE OF ACCIDENT AT NUCLEAR POWER PLANT

The Nuclear Regulatory Commission has decided to modify its position regarding the use of potassium iodide as a protective measure for the general public in case of a severe nuclear reactor accident. The agency has decided to endorse the Federal Radiological Preparedness Coordinating Committee's (FRPCC) recommended policy to federally fund the purchase of potassium iodide for states at their request, and the NRC will provide the funding.

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The Commission noted that the federal government recently began stockpiling potassium iodide near major metropolitan areas for use in mitigating the consequences of potential terrorist use of nuclear, biological or chemical weapons. The potassium iodide would be available to any state for any type of radiological emergency at any time.

If a state wishes to have its source of potassium iodide close at hand for use in a possible nuclear reactor accident, the federal government would fund the purchase, under the Commission's revised position.

Potassium iodide, if taken in time, blocks the thyroid gland's uptake of radioactive iodine and thus could help reduce thyroid diseases that might otherwise be caused by exposure to airborne radioactive iodine that could be dispersed in a nuclear accident.

Under the NRC's revised position, the federal government would purchase potassium iodide, but interested state and local governments would be responsible for maintenance, distribution and subsequent costs. NRC licensees would, as part of their emergency response planning, discuss this matter with state and local governments who make decisions on protective measures as part of their planning for responses to potential emergencies.

If finalized by the FRPCC, the proposed new policy will be published in the Federal Register. NRC will work with the Federal Emergency Management Agency to prepare the final policy statement and to develop implementation details, including criteria for evaluating a state's request for funding for potassium iodide.

The current federal policy was published in the Federal Register in 1985. It recommends that potassium iodide be stockpiled and distributed to emergency workers and institutionalized persons during radiological emergencies, but does not recommend requiring pre-distribution or stockpiling for the general public.

The best technical information indicates that prompt evacuation and in-place sheltering are the preferred protective actions for the general public. However, the state (or in some cases, the local government) bears ultimately

responsibility for the protection of its citizens. Therefore, the decision for local stockpiling and use of potassium iodide as a protective measure for the general public is left to the discretion of the state or local government.

Currently two states (Tennessee and Alabama) include in their emergency planning the use of potassium iodide as a protective measure for the general public.

In 1995 the White House issued Presidential Decision Directive 39 on "U.S. Policy on Counterterrorism." It directed federal agencies to take a number of measures to reduce vulnerability to the potential use by terrorists of nuclear, biological and chemical weapons.

A report was prepared by a group chaired by the Federal Emergency Management Agency, with representatives from the NRC and other federal agencies. The report recommended that the federal government purchase and stockpile chemical nerve gas antidotes, vaccines for anthrax, antibiotics, potassium iodide and other medicines for use by the general public in the event of a terrorist attack. Currently there are three national stockpiles of medical supplies that include potassium iodide. Additionally, there will be 26 Metropolitan Medical Strike Teams, each with a full set of medical supplies, including potassium iodide. Two of the teams have been established, and the remaining 24 are in the process of being established. Thus the size and number of locations of federal stockpiles of potassium iodide are expected to increase. Potassium iodide from these resources could be used as a protective measure for the general public in the event of a severe nuclear accident.

This report was presented to the President and approved for distribution in May. Thus potassium iodide is already available nationally as part of emergency response preparedness for terrorism involving nuclear, biological and chemical agents.

NRC Home Page | News and Information | E-mail

AMERICAN THYROID ASSOCIATION

KI And Nuclear Accidents

Potassium Iodide (KI) Prophylaxis for Nuclear Reactor Accidents

The American Thyroid Association through its Public Health Committee has strongly recommended the stockpiling of KI for prophylaxis in the event of a nuclear reactor accident Unfortunately, the Nuclear Regulatory Commission has not accepted this recommendation As noted below, the Maine radiation Advisory Committee has accepted the American Thyroid Association position and voted unanimously to recommend stockpiling of KI near their nuclear plant in Wicasset Dr David Becker, Chairman of the Public Health Committee of the American Thyroid is quoted in the article

From "Inside N R C " Vol 18, No 26 - December 23, 1996

MAINE ADVISORY COMMITTEE RECOMMENDS STOCKPILING KI FOR PUBLIC

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The Maine radiation advisory committee has recommended that the state stockpile potassium iodide (KI) near the Maine Yankee nuclear plant site to distribute to the public in the event of a nuclear accident

Maine Gov Angus King (I) has not yet had a chance to study the recommendation, but a spokesman for the governor said the advice of the committee would heavily influence his decision

"He hasn't at this point had a full briefing on the pros and cons of this issue He wants a thorough understanding before he decides,", the governor's spokesperson Dennis Bailey said last week "The fact that this was such a strong vote" will undoubtedly carry great weight in the governor's deliberations, Bailey said

The radiation advisory committee voted unanimously December 6 to recommend the stockpiling of KI near the Maine Yankee plant in Wiscasset, possibly at three reception centers in the emergency planning zone (EPZ) Should King approve the recommendation, Maine would become the third state, after Alabama and Tennessee, to decide to make KI available to the general public near commercial nuclear plants Alabama and Tennessee predistributed KI to the general population in EPZs, Megs Hepler, chairman of the Federal Radiological Preparedness Coordinating Committee (FRPCC), said

Maine's decision comes as both the NRC and the Federal Emergency Management Agency (FEMA) are conducting high-level reviews of federal policy on the use of KI in a potential radiological emergency The substance, which is a benign compound approved by the Food & Drug Administration as an over-the-counter drug, is known to be an effective thyroid-blocking agent

The FRPCC, which is chaired by FEMA and has members from the NRC, the Centers for Disease Control and several other federal agencies, reopened the controversial debate on KI this spring, after the NRC decided once again to reconsider its policy on the compound Peter Crane, an NRC attorney acting as a private citizen, filed petition with the agency in September 1995 seeking to change federal policy on the stockpiling and distribution of KI (INRC, 2 Oct '95, 11)

NRC Chairman Shirley Jackson said on December 11 that the commission is still considering the issue She declined to share her views on the wisdom of stockpiling or distributing the compound to the public

The FRPCC is nearing completion of its own independent review of the issue, and expects to send a report and recommendation to FEMA Director James Lee Witt in early January, Hepler said

"We're still formulating the policy to send up to the director for his review We're preparing a package now which should be completed right after the first of the year," he told Inside N R C December 19 "If we come up with a new policy, we'll publish it in the Federal Register "

Hepler said FEMA has been working very closely with the NRC staff to make sure the two policies are harmonious Current federal policy recommends stockpiling KI for use by nuclear plant workers and emergency workers within the EPZs of nuclear reactor sides But the government does not recommend stockpiling and distribution of KI pills to the general public, leaving that option to the states Most states favor a policy of evacuation for the general population

The high incidence of thyroid cancer among children exposed to radiation following the Chernobyl nuclear plant explosion in 1986 has caused many physicians and public health officials in the U S and other countries should reconsider the urgency of making KI readily available to the public

"There are now 1,000 children with thyroid cancer--which is ordinarily a rare disease--from exposure to radiation who were in the Chernobyl area," said David Becker, a physician at New York Hospital Cornell Medical Center in New York "I would urge that the NRC should arrange to have it manufactured--and that FEMA make it available--so that it will be there if there is an accident and we should need it "

The American Thyroid Association has been interested for decades in ways to protect the thyroid, and "the way to do that is to protect against uptake of radioactive iodine, and the way to do that is by giving potassium iodide in advance of exposure," Becker said

"The NRC has for years recognized that KI was a useful agent, but was not willing to recommend its use in a nuclear accident for the general public This argument has been going on for 15 years NRC has been arguing that evacuation is more efficient and protects against all forms of exposure The problem is evacuation doesn't work when you have any sizable population," said Becker, who is a member of the advisory committee to the New York Commission on Radiation Effects

Becker raised the question of whether New York state should revisit its KI policy during an advisory committee meeting in October

"We brought up the issue and [Becker] suggested we should stockpile but we didn't take it much further than that," said Stephen Gavitt, chief of radioactive materials section, Bureau of Environmental Radiation Protection, in the New York State Health Department

"At this point, nothing has been decided We still have our policy in place recommended KI only for emergency workers and captive populations," Gavitt said "We have no plans right now to take it up further "

Maine Acted Speedily

Given that the federal government has been debating the KI issue for more than 15 years, observers are astounded by the speed with which Maine officials have moved on the issue

Bill Libby, chairman of the Maine Radiological Emergency Preparedness Committee, said the question of reconsidering the state's policy on KI was first raised by a private citizen, Peter Christine, in August, at an annual meeting

"I became aware of Peter Crane and his work on this issue first through an article in Inside N R C ," said Libby "As I learned more, it appeared it was time to reconsider the issue so I called the advisory committee to look into it "

Crane has long had an interest in the issue He contracted thyroid cancer at the age of 26, more than 20 years after having his tonsils irradicated as a child in a Chicago hospital Having battled the disease for years, he urged a FEMA panel in June to protect America's children by stockpiling KI Crane was among the participants who spoke at the December 6 meeting of the Maine radiation advisory committee

Christine, a volunteer firefighter for the town of Alna, Maine, said he became involved in the issue of concerns for his children and other in the Maine Yankee EPZ "My wife and I became concerned after a meeting at which portions of the evacuation plan had been failed," Christine said in an interview

"There are about 5,900 children among the 35,000 permanent resident s in the EPZ," Christine said During the summer tourist season, the population swells to 60,000 "On the two-lane roads on Booth Bay peninsula, it could get jammed up," he added

Christine noted that the bus drivers who would be driving the children out of the EPZ in the event of an accident would be protected by KI "The buses may have to go back and forth, two or three times, so there is a possibility some kids might be waiting for the second or third run," he said During that time they could be exposed to radiation

"I went to my family physician and tried to get KI, but it's not available Carter Wallace only makes the drug in large batches to sell to federal emergency agencies," he said

Maine officials say that if the governor approves the recommendation of his advisory committee, they plan to stockpile KI at three reception centers in the nuclear reactor's EPZ Libby does not foresee predistribution to individual home---although detailed plans have not yet been considered

The issue of who would fund the purchase and stockpiling of the KI has not yet been decided State officials say that's "not a concern at the moment," because the drug is so cheap

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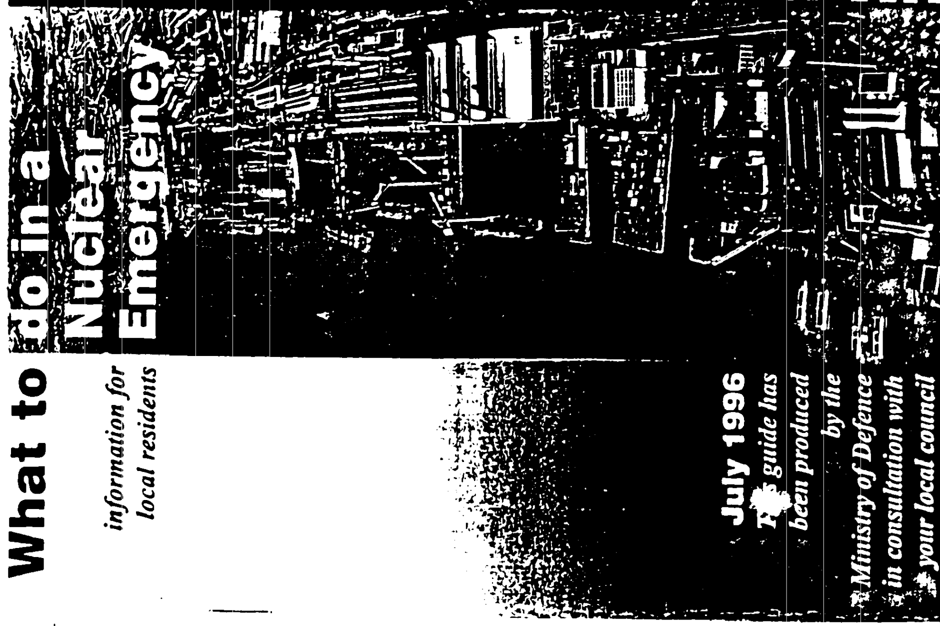
HM Naval Base · DEVONPORT



What to do in a Nuclear Emergency

information for local residents

July 1996

This guide has been produced by the Ministry of Defence in consultation with your local council

Warning of a Nuclear Accident

If there is a nuclear accident on a submarine in the Dockyard the Dockyard siren will give the "emergency" signal by sounding an interrupted wailing note

Broadcast Information

Information on the progress of the accident response and instructions on action to be taken will be given on Local Radio and TV -

TV - BBC 1 and Westcountry TV
Radio - Plymouth Sound .... 97 MHz VHF or 1152 KHz (201m) AM
BBC Radio Devon ... 103.4 MHz VHF or 855 KHz (351m) AM
BBC Radio Cornwall .... 95.2 MHz or 657 KHz (457m) AM

Helplines

In the event of a nuclear emergency you can ask for help/information by telephoning the Public Information Centre

For Plymouth at the
Plymouth Civic Centre
Plymouth 668000

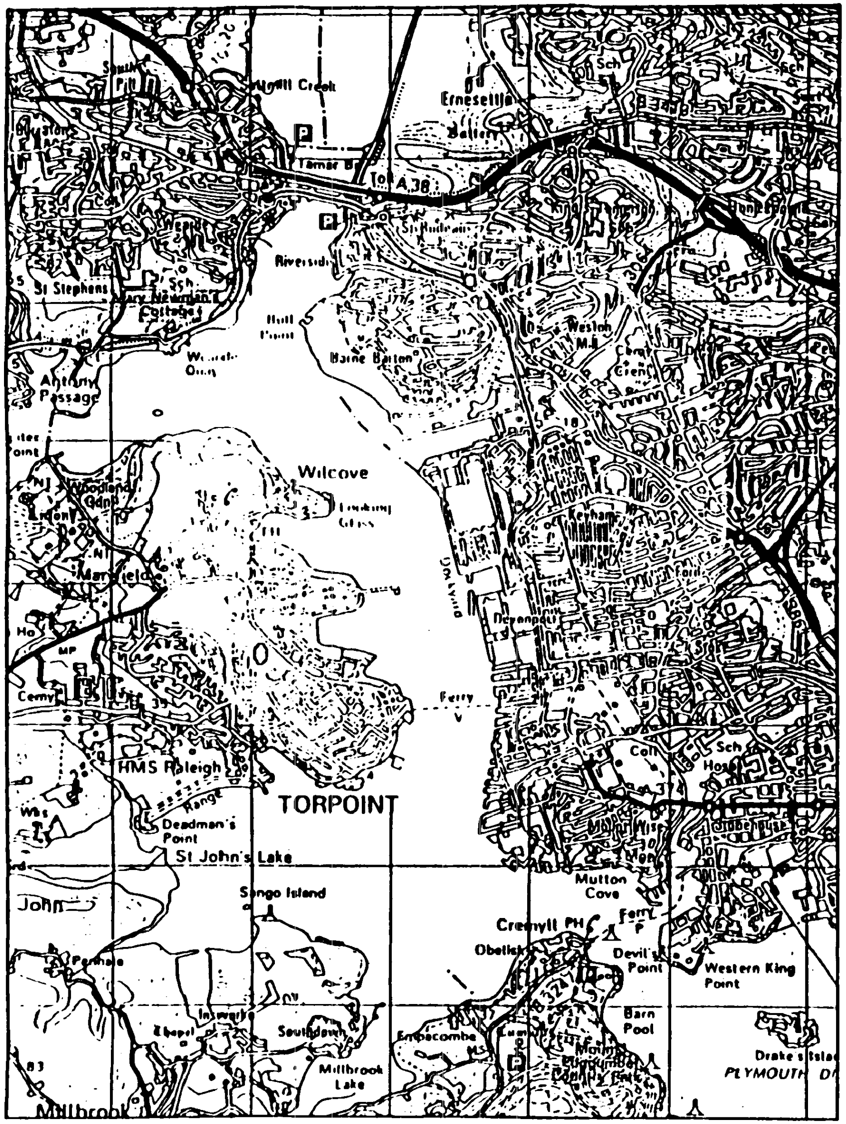
For Caradon at
Luxstowe House, Liskeard
Liskeard 341000

For Information about
DML personnel
Plymouth 605665 or 553740

MoD or RN personnel
Plymouth 553740

Further telephone numbers will be given out when the Police Information Bureau is formed

Please only use these numbers when you have an urgent need for help or information.



This map shows the approximate area of the 2 Km Zone round the Naval Base.

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Introduction

This guide has been prepared in accordance with the Public Information for Radiation Emergencies Regulations 1992 and has been produced by the Ministry of Defence in consultation with Plymouth City Council, Caradon District Council, Cornwall and Devon County Councils and the relevant Health Authorities.

An accident to a submarine nuclear reactor is, by design, extremely unlikely, but it is Ministry of Defence policy that emergency procedures for the protection of the public should be available and exercised.

This guide provides members of the public with information on what actions they may be advised to take in the extremely unlikely event of a nuclear reactor accident in the Devonport Naval Base. You should keep it. You will also find enclosed a card giving a brief guide to the emergency actions and some leaflets from the National Radiological Protection Board which give a general explanation of radiation and its effects and national emergency arrangements

The chance of an accident requiring people to take protective action beyond the Automatic Countermeasures Zone, which extends 550 metres from the submarine berths, is very remote, but in accordance with National Policy, the contingency plan DEVPUBSAFE includes arrangements for the distribution of Potassium Iodate Tablets up to 2 Km from the Submarine Berths This leaflet is being supplied to members of the public whose home or regular place of work lies within or just outside that distance from the Naval Base (as shown in the map opposite).

What Could Happen In a Nuclear Submarine Accident

If there is an accident involving a nuclear submarine reactor, people who are very close to the submarine could be affected by gamma rays which are similar to X-rays. All radioactive material should be contained within the submarine hull but in some circumstances it is possible that it could escape and affect areas close to the submarine and in downwind areas.

Specialist monitoring teams will detect any radiation or radioactive contamination and the police will, if necessary, set in motion measures to protect the public, which might include shelter or evacuation, food and drink restrictions or distribution of Potassium Iodate Tablets.

What should I do now?

Keep this booklet in a safe but readily available place. If you have been given potassium iodate tablets keep them out of the reach of children.

What You May Need To Do

If you are told by the police or media that there is nuclear emergency, or you hear the Dockyard siren sound the alarm, follow this advice promptly without rushing:

1. GO INDOORS AND STAY THERE

- In an emergency the best thing to do is go indoors. Don't go outside, where levels of radiation could be higher, unless you are told to, for example to collect Potassium Iodate Tablets (see 7 on Page 5).
- Don't try to collect children from school. Their teachers will make sure that they are looked after.
- Keep pets indoors, to stop them from bringing possible contamination into the house.

2. CLOSE WINDOWS AND DOORS

- Make sure that all doors and windows are closed to minimise the risk of contamination entering the building

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3. LISTEN TO YOUR LOCAL RADIO OR TELEVISION AND FOLLOW ANY INSTRUCTIONS YOU ARE GIVEN

- During an incident, emergency information and advice will be given out on your local radio and TV. **See Back Cover for details of radio stations and frequencies.**
- Follow any instructions you are given.

4. PUT OUT OR DAMP DOWN FIRES AND BOILERS. SHUT DOWN VENTILATION DEVICES

- Switch off fans, close ventilators, and put out or damp down open fires or other heating appliances which draw air from outside, to stop any possible contamination entering the building.

5. DO NOT USE THE TELEPHONE (unless you need urgent help)

- In an emergency the telephone system may be overloaded. If you must make a call, please keep it short. A list of telephone numbers for you to ring for urgent advice is on the back cover.
- **Please only use these numbers when you have an urgent need for help or information.**

6. DO NOT LEAVE THE AREA UNLESS ADVISED TO DO SO

- You will be much safer indoors. Do not leave the area unless you are told to, in which case you should follow the advice given on page 6 and the Action Card. If you try to leave earlier you may block the roads for emergency services.

7. TAKE POTASSIUM IODATE TABLETS IF TOLD TO DO SO

- At some time during the emergency you may be advised to take potassium iodate tablets.
- These tablets help to protect the body from the effects of radioactive iodine, which may escape during a reactor accident Detailed instructions will be given to you on a leaflet with the tablets.
- The tablets are very unlikely to produce any side effects and will not interfere with any other medicine.
- You should remain in shelter once you have taken the tablets.
- These tablets only help to protect the body from radioactive iodine - Sheltering is the most important form of protection.
- You should only take the tablets if told to do so.

DOSAGE

- Adults: Including pregnant women & women who are breast feeding 2 Tablets
- Children: 3-12 years: 1 tablet
  0-3 years: 1/2 of one tablet crushed and mixed with milk or water
- **The tablets should be swallowed with water.**

SPECIAL ADVICE FOR BABIES AND SMALL CHILDREN

Babies and small children unable to swallow tablets should have their dose crushed up in a teaspoon of jam, honey or yoghurt, or should have their dose dissolved in a small quantity of milk formula or juice. Ignore any traces of undissolved tablet

Potassium iodate tablets should **NOT** be taken by those who have the rare conditions of:
- Hypocomplementaemic Vasculitis
- Dermatitis Herpetiformis,

OR who have life threatening allergic reactions to iodine.

If you have one of these conditions your doctor will have told you but if you are not sure check now with your doctor.

South & West Devon Health AUTHORITY

Potassium Iodate Tablet Distribution in Plymouth

For the attention of Householders and people living within 2 kilometres of the Devonport Dockyard

[illegible] Drink

Food and drink in your house and tap water supplies probably won't be affected. The Government will give you advice on eating food such as freshly grown vegetables. This advice will be given out on your local radio and television. Advice will also be given to farmers, fishermen and other food producers.

[illegible]

In the event of an accident Sheltering Indoors, as described in Section 1 above, is the most important thing to do, unless you are specifically advised to the contrary

It is most unlikely that you will need to leave your home. However, should evacuation become necessary the Police will contact the residents concerned. Evacuees should use their own transport wherever possible, but transport will be arranged where necessary, and you will be told where to go. The dangers from panic evacuation are far greater than the possible radiation hazards.

The Local Authorities will feed and accommodate everyone from the affected area, but you can stay with friends or relatives if you want to. Special arrangements will be made for the aged, sick and disabled. Arrangements will also be made to make sure that families are reunited.

You should take your pets with you.

Entry to any evacuated area during the emergency will be restricted to those having a compelling reason to do so.

As the emergency eases, there may be some changes to these instructions.

When the emergency is over, the public will be told that special precautions are no longer required.

Further Information

This guide is being reissued to replace the leaflet given out in July 1993 as required by the Public Information for Radiation Emergencies Regulations 1992, which requires the guide to be updated at 3 year intervals. It is emphasised that it is being sent out in the interests of greater public information and as required by the regulations and not because of any increased risk from submarine operations.

It is also emphasised that there is no risk of an atomic bomb type explosion from nuclear submarine reactors - the design of the reactor makes this impossible.

A detailed contingency plan for the area round the Devonport Naval Base - the Devonport Public Safety Scheme (DEVPUBSAFE) has been developed in conjunction with your local authorities.

This plan (which is a public document and available in your local library) gives full details of the measures required to protect you in the extremely unlikely event of a submarine reactor accident happening at HM Naval Base Devonport.

July 1996

South & West Devon Health AUTHORITY

THE LESCAZE OFFICES
SHINNER'S BRIDGE
DARTINGTON TQ9 6JE
TEL: (01803) 866665
FAX: (01803) 867679

Dear Householder,

Devonport Public Safety Plan: distribution of potassium iodate tablets

The Devonport Public Safety Plan (Devpubsafe) is the emergency plan covering all the actions that would be taken in the highly unlikely event of there being a nuclear accident in the dockyard. Advice to the public is described in the booklet ***"What to do in a nuclear emergency"***, produced by the Ministry of Defence.

The plan includes that, in certain circumstances, the public might be advised to take potassium iodate tablets. These tablets help to protect against the effects of radioactive iodine, which is one of the gases that could be released following an accident. Radioactive iodine can cause cancer of the thyroid gland. The tablets do not protect against any other radioactive substances. **In the event of an accident, if radioactive iodine is likely to be released, these tablets would be distributed to all those who require them.**

If you live within 550 metres of the submarine berths, the Navy will soon provide tablets for you to keep at home.

Members of the public who live within 2 km, but outside 550m of the submarine berths may also hold their own stocks of tablets. If you wish to do this, then you should be aware of the following:

1. **These tablets, like all medicines, should be stored safely away from children and animals, where they can be found easily if necessary. Information about the tablets is given in *"What to do in a nuclear emergency"*. The tablets will be supplied with information about the required dose, side effects and contra-indications. They should only be taken in the event of a nuclear accident, in which case clear advice to do so would be given on the radio and television.**

2. **The tablets expire in 3 years time. You will be contacted with details of how they will be replaced nearer the time.**

If you would like to have tablets for your household, please complete the attached form and return in the envelope provided. Your tablets should arrive within 8 weeks. For further information, please phone the Health Authority FREEPHONE information line, telephone 0800 801588.

Yours sincerely

Sarah Harrison

Dr Sarah Harrison
Consultant Public Health Physician

Dr Gina Radford
Director of Public Health

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identifies and schedules treatment facilities for Naval Nuclear Propulsion Program mixed waste which are generated at all Program sites throughout the nation.

If such an incident were to occur in which a mixed waste shipment were rejected, the shipment would be sent back (if it were already on the road) to the MWSF for storage. The draft permit allows the Navy to store up to 5500 gallons of mixed wastes at the MWSF. The Navy conducted a health risk assessment for the storage activity at the MWSF. The findings of the health risk assessment shows that storage of 5500 gallons of mixed wastes would not pose a significant negative risk to human health or the environment. This analysis would not be affected by the amount of time the wastes are held in storage, that is, greater than 5 years but rather by the amount of wastes in storage. The rejected shipment of mixed wastes would not cause the amount of mixed wastes stored at the MWSF to exceed its permitted capacity of 5500 gallons because that quantity of mixed wastes has previously been accounted for in the MWSF inventory.

Speaker: Ms. Joy Williams

Comment #3:

Hi. I'm Joy Williams from the Environmental Health Coalition. I had a couple of comments, one relating to the permit and the other to the Health Risk Assessment.

My comment on the permit also relates to the duration of storage. The permit does contain a mechanism for notification of DTSC if the wastes will be stored longer than a year. However, it does not include an absolute limit to the time a waste may remain. And you talked about five years, but that's not in the permit. There's no limit in there as to how long the waste can actually remain onsite.

So we would like to see an absolute limit included in the permit and also a mechanism for notification of the public if waste is going to be onsite longer for a year. If DTSC is not going to hold the Navy strictly to the one-year limit then it must include these two additions to discourage the Navy from using the storage facility as a permanent storage area, which could easily happen.

Response:

The Navy has conducted an analysis of the risks associated with the storage of up to 5500 gallons of mixed wastes in this storage building. The findings of this analysis would not be affected by the amount of time the wastes are held in storage, that is, greater than 5 years, but rather by the amount of wastes in storage. As stated in Response to Comments #1, the maximum permitted storage capacity at any given time would be 5500 gallons. Therefore, we do not consider a need to place an absolute time limit for the storage of mixed waste at the MWSF.

>>
>>Wednesday, July 8, 1998
>>
>>Nuke-sniffers cost $750,000
>>
>>By CHRIS LAMBIE -- The Daily News
>>
>>
>>The Canadian navy's bill to ensure U.S. nuclear-powered
>>warships don't contaminate our harbors is mushrooming.
>>
>>The navy just spent $594,250 on three dockside
>>nuclear-monitoring systems for Halifax and the B.C. ports of
>>Esquimalt and Nanoose, even though we don't have any
>>nuclear-powered warships.
>>
>>In 1994, National Defence ordered the safeguards be put in
>>place. From 1995 until 1997, the navy leased similar equipment
>>for about $144,000. Before that, the U.S. navy was its own
>>nuclear watchdog, even when tied up in Halifax Harbour.
>>
>>"The submarine does have back-up systems on back-up
>>systems to monitor the reactor and to ensure radiation readings
>>are appropriate," said Canadian navy Lt.-Cmdr. Glen
>>Chamberlain.
>>
>>Since Canada started monitoring U.S. nuclear-powered ships in
>>Halifax, no problems have been discovered, Chamberlain said.
>>
>>Anti-nuclear activist Betty Peterson supports the decision to
>>keep an eye on U.S. warships. But she wishes nuclear-powered
>>vessels weren't sailing into Halifax at all.
>>
>>"We know what's happened in Halifax Harbour back in 1917
>>with the tremendous (Halifax) Explosion," she said. "The same
>>thing could happen again."
>>
>>Nuclear-powered ships are dangerous, Peterson said.
>>

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>>"I still think that the world is hoping, working towards, and
>>calling on governments to stop this foolishness and get rid of
>>nuclear weapons and nuclear power," she said.
>>
>>'A step back'
>>
>>Putting Canadian tax dollars into monitoring U.S.
>>nuclear-powered ships "is a step back," she said. "That seems
>>to mean they're going to be around for a long time."
>>
>>Chamberlain said Canada has been "protected and well-served
>>by the (U.S.) nuclear deterrent for many years. This is part of
>>NATO and allied agreements that we would make our port
>>available for such vessels."
>>
>>A nuclear-powered U.S. submarine docked in Shearwater last
>>month during Operation Unified Spirit, when more than 15,000
>>troops from eight countries spent 17 days conducting war
>>games off the East Coast. A nuclear-powered U.S. aircraft
>>carrier is expected in the fall.
>>
>>Sailors participating in last month's exercise spent $9 million in
>>the city, three times what cruise ships were predicted to bring in
>>over the entire year, Chamberlain said. "The reason that we
>>have nuclear vessels come to Halifax is not for the economic
>>benefit, but that is one element to remember," he said.
>>
>>Greenpeace campaign director Steve Shallhorne said the U.S.
>>sub's 80-person crew would have little impact on the city's
>>merchants.
>>
>>"The consequences of an accident would be catastrophic, and
>>would be economic as well as a health threat," Shallhorne said.
>>
>>Any problem with the reactor on board a nuclear submarine
>>should be contained within the vessel, said Chamberlain.
>>
>>Evacuation plans
>>
>>But if there was a leak of radioactive material - an event he
>>calls "infinitesimally remote" - there are plans in place to direct
>>people to shelter in their basements or even evacuate the city,
>>said Chamberlain.
>>
>>The U.S. navy's clean record in 4,500 reactor years of
>>operation doesn't convince Shallhorne that a nuclear-powered
>>warship will never contaminate a Canadian port.
>>
>>"Just because it hasn't happened yet doesn't mean that it won't
>>happen in the future," he said.
>>

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The following was previously received and has been identified as comment letter I.64:

- Letter from Mr. Grant Kimball to Mr. John Coon, November 11, 1998.

This information was resubmitted by the Environmental Health Coalition as part of their attachment.

SLEEPINESS AND ACCIDENTS

Daniel F. Kripke, M.D.
Professor of Psychiatry, University of California, San Diego
La Jolla, California 92093-0667

Abstract:

Sleepy people make mistakes and cause serious accidents. There are four kinds of problems which must frequently be considered in combination in the marine environment. The first is sleep loss. The old tradition of driving sailors beyond their limits has been handed down from Captain Bligh to the present time. In the modern maritime environment, forcing men to heroic performance produces horrific results. For example, in 1996, a Navy submarine crew was pushed to months of 18-hour days, despite the perception of officers that an accident was in the making. Perhaps as a result, a serious mercury spill poisoned the waters of San Diego Bay. Officers and administrators sometimes fail to recognize that scheduling adequate sleep is the most elementary safety precaution. Shift work is a second problem, both because people perform worse at night and because shift workers rarely get enough sleep, due to a combination of social and physiologic interactions. The Exxon Valdez, Chernobyl, Bhopal, and Three Mile Island are examples of terrible accidents which occurred due to inattention of night shift workers. A third problem is abuse of alcohol and drugs, which can add to the impairments caused by sleep loss. Sleep apnea is pervasive in the population over age 40 years and causes of sleepiness in its extreme forms, however, UCSD research does not suggest that sleep apnea is a frequent cause of motor vehicle accidents, and the risks of apnea are frequently exaggerated. Assuring that personnel get adequate sleep is a key to safe operations.

A tragedy from sleepiness:

On July 1, 1996, the U.S. Navy's Deep Submergence Rescue Vehicle MYSTIC accidentally dumped 3000 pounds of mercury into San Diego Bay. The MYSTIC had carried the mercury to trim the vehicle on rescue dives. The total cost of clean-up and repair was estimated at $221,508.44, but this does not include the incalculable cost of poisoning San Diego Bay. We may never know the impact on sea life, but the Bay fish have been posted as a health hazard in part due to excessive mercury. San Diego Bay may become a source of the hideous birth deformities known as Minamoto disease, named for the mercury poisonings from fish from the Bay of Minamoto.

On February 7, 1997, a United States Navy Sonar Technician (Submarines) was convicted of dereliction of duty, related to this tragic accident. The story of the disaster was recorded in the Record of Trial by Special Court-Martial No. SW97 0061. Our interest is not to review whether the judgements of the Court-Martial were correct, or even to argue the uncertain question of whether this crewman was to blame for the accident, but rather to review the personnel patterns which had created a recognized recipe for tragedy. There was abundant testimony that this was an accident waiting to happen. Had it not been this tragedy, it would have been another. It is fortunate that nobody was killed outright.

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According to testimony in the Court-Martial, for months before the accident, the MYSTIC crewmen had been working 6 and 7 days a week. For more than two months before the accident, the men were working 12 to 18 hours a day, seven days a week, with only a day or two off every month. Some work days went to 20 hours plus the time to drive home. The Chief Boiler Technician told his chain of command that they were working the men to the point where they would "kill somebody." He testified that he warned the CO, a Commander, of danger in the working hours. An accident occurred on March 10 which was attributed to overwork. The Lieutenant who was the Engineer testified that he told the Executive Officer and Commanding Officer that the men were near exhaustion as early as March. Later, in late March, this Engineer himself passed out and had to be taken to the hospital for three days recovery from stress. After this, on April 23, the Commanding Officer received a "Letter of Instruction" from his Commander instructing him to "take immediate action to preclude excessive working hours and weekends by your personnel," but according to testimony, the excessive work demands persisted, and the higher command failed to follow through on effective preventive action. The Engineer testified that a few days before the accident, he specifically requested a day off for the men and was specifically refused. The Officer in Charge also asked the Commanding Officer to give the men more time off. The Officer in Charge of the sister ship told the Commanding Officer that working conditions were unsafe, where something would happen. Nevertheless, the Commanding Officer persisted in demanding an unsafe work schedule, and in this context, the accident foreseen did occur.

It is not surprising that the Commanding Officer testified that he held the Petty Officer responsible for the accident, since otherwise he himself might have been found at fault for creating an unsafe situation. More worrisome, the Commanding Officer testified that the work to which he had subjected his men were routine in the U.S. Navy. He stated, "In my experience, MYSTIC's working hours were not the worst I've ever seen. They were on par with other stressful situations, such as preparation for operational reactor safeguard examinations, crew certifications, nuclear weapon proficiency examinations, and also operations at sea during fleet operations." The Commanding Officer also testified that he sought "plans, which were designed to help get his training qualifications on line without necessarily killing the crew." By his testimony, he was willing to contemplate the possibility of killing his crew, but his testimony failed to acknowledge the risks to the wider community, such as poisoning San Diego Bay with mercury. If the sworn testimony is to be believed, the risks with crew of nuclear reactors and nuclear weapons aboard ship in San Diego Bay are much more severe, and could kill far more than shipboard crew. The sworn testimony was that men handling these doomsday devices are worked even harder than the crew of MYSTIC. Such practices risk grave disaster.

It is not difficult to understand a seafaring culture which has asked risks of men in combat and of men being trained for combat readiness. To take the Commander's sworn testimony as fact, working conditions of this sort are customary in the contemporary U.S. Navy. Perhaps the military Naval tradition sometimes influences the civilian maritime sector also. Our agenda is to control the risks to which crew sleepiness may subject the millions of populace who live near vessels anchored in California Bays. For vessels at port in peacetime, a greater respect for safety is needed. As this example so vividly illustrates, respect for safety requires prevention of excessive sleepiness. This requires a different tradition of personnel management.

Sleepiness causes human failures:

Forty years ago, U.S. Army scientists at Walter Reed Army Medical Center carefully studied effects of sleep loss on human errors. With conclusive scientific documentation, they demonstrated that progressive sleepiness causes increasing errors. Increased error rates can be demonstrated after only a few hours of lost sleep. Moreover, errors become more severe as people get insufficient sleep, day after day. More than thirty years ago, Air Force laboratories confirmed the Army findings. At about the same time, an excellent research group at San Diego's Naval Health Research Center began adding details to these findings and studying interactions with body clocks.1 With U.S. Navy sponsorship, our laboratory had the opportunity to do further studies of sleep loss.2 Under conditions of continuous vigilance demands, a substantial percentage of healthy volunteers began to hallucinate within 48 hours. Heroic motivation was not a substitute for adequate sleep when continuous attention was required. It would be futile to hold a person responsible for errors occurring when they were hallucinating or on the verge of mental breakdown.

The scientific studies of sleep loss have demonstrated important characteristics of sleepiness which require modification of our hallowed traditions. Centuries ago, it was found that despite sleep loss, people could summon up normal performance for a few minutes. Thus, in the days of John Paul Jones, a very sleepy sailor might have been able to pull out his cutlass and repel pirates for the few minutes which the battle lasted. How long did the Japanese attack on Pearl Harbor last? In the Naval battles of World War II, sailors may have been able to man their guns for days, since there were breaks between the air and submarine attacks and chances for a cat nap. The duties on a modern ship are often different. Monitoring a radar or sonar screen sometimes requires total attention without let-up. In a dimly-lit electronics room, late night watches may be more difficult than out in fresh air. It is this type of continuous attention which is most sensitive to lapses after sleep loss. Moreover, the modern ship provides opportunities for accidents which not only endanger the ship, but also the wider community.

An important recent study examined the situation of long distance truck drivers.3 Economic pressures produce work schedules which only allow drivers to average 4.8 hours of sleep during the work week. These men have become accustomed to tolerating sleepiness, perhaps believing that they were unaffected, and their supervisors clearly create work schedules which result in chronic sleepiness. A number of drivers permitted researchers to record their brain waves as they were driving big rigs down the highway. Extraordinary as it seems, it was possible to record drivers physiologically fall asleep at the wheel, even while accidents are somehow avoided. What is remarkable is not that tens of thousands of death occur on the road every year, but that accidents are not even more common with the level of sleepiness which our society permits. If accidents are to be reduced, a change in thinking is needed to assure that personnel have adequate time for sleep.

If safety is to be our priority, supervisors must be indoctrinated that they must not drive personnel beyond the opportunity for adequate sleep. The U.S. military has sponsored much of the best research on the consequences of sleep loss, but it is remarkable how little of this military knowledge has penetrated to the operational setting.

Shift work causes sleepiness:

Since the Garden of Eden, the human body was created to wake during the day and sleep at night. Indeed, all of the birds and beasts are created with natural times to be active in their environment. Even flowers open their petals during the day. Fruit flies have body clocks.

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Recently, exciting research has added important detail to our knowledge of body clocks in both humans and animals. Body rhythms are built into each organism genetically. In humans, the main body clock is in a tiny area of the brain called the suprachiasmatic nucleus. Daylight striking the retina causes nerve impulses to the suprachiasmatic nucleus which adjust its peak activity to daytime. The suprachiasmatic nucleus promotes alertness during the day and normally signals the onset of sleepiness at each person's usual bedtime. The human body clock is quite steady and stubborn in its time keeping, as every jet traveler knows. When people fly across time zones, it may require even a week or two before our body clock adjusts its timing to the new time zone. Meanwhile, sleepiness occurs on the former schedule when the traveler might like to be awake in the new time zone. Alertness may occur when the traveler might like to sleep in the new time zone, adding insomnia and sleep loss to the timing factors promoting excessive sleepiness.

When people are assigned to late shifts such as a graveyard shift from 11 PM to 7 AM, a shift worker's problems begin. Usually, the body clock will not completely readjust its time even after a week on the graveyard shift, first because our clocks are so resistant to readjustment, and second because the lighting in the night-work setting is usually not bright enough to strongly reset the suprachiasmatic nucleus. Unfortunately, since most night shift workers like to be awake in daytime on their days off and sleep at night, their body clocks may never fully adjust to night shift patterns, even after years of assignment to night shift duty. As a consequence, the body clock often promotes sleepiness when night workers are trying to remain alert. Further, few night workers are able to sleep adequately during the day, which adds sleep loss to the unwanted message from the body clock promoting nocturnal sleepiness. Night shift workers are almost universally more sleepy and inattentive during the graveyard shift, as demonstrated by dozens of studies from all parts of the world.

A physician often walks around hospital wards at 3-4 AM. It is quite common to see personnel sleeping on duty. Fortunately, hospital wards are often inactive at 3-4 AM, and personnel inattention may have little consequence. Nevertheless, after a night on call, doctors frequently fall asleep at the wheel.4 This pattern is not unique to medical personnel. Unfortunately, in other types of work, more continuous attention is required, and inattention may pose greater dangers. There is abundant evidence that factory night shift workers have higher error rates. Driving accident rates per mile driven are much higher at night. Researchers in Sweden recorded the brain waves of 11 train drivers (train engineers) who operated inter-city trains on the night shift.5 Of these, 4 reported falling asleep, 2 of whom were recorded drowsing while they missed signals. No such sleepiness was observed on the day shift. In another study, the research group found that 20% of papermill workers fell asleep during night work.6 Indeed, the Swedish researchers even recorded night nuclear plant operators who were falling asleep at the reactor controls.

It is recognized that the impairments of the night shift have been responsible for some of the most dramatic recent accidents resulting from human error.7 The Challenger Space Shuttle disaster resulted from errors made by a sleep-deprived staff working the night shift. The Bhopal disaster occurred at night. The Chernobyl disaster and the Three Mile Island nuclear meltdown occurred on the night shift. The Exxon Valdez accident occurred on the night shift.

Sleep researchers have often worked night shifts themselves and supervise personnel who work night shifts. Considerable effort has been devoted to find solutions for the problems of night shift workers, including studies with U.S. Navy collaboration. Various shift schedules have been studied, but no consistently superior schedules have emerged. There are some intriguing very preliminary experiments using bright light or melatonin to help night shift workers, but none of these methods has yet been shown to work consistently when personnel must work night shifts week after week. Moreover, so far, the safety of such treatments is in doubt. Because night shift work is increasingly demanded throughout our society, more research in this area is needed. At the present time, the best advice is to provide night shift workers with adequate time for off-duty sleep in dark quiet places, to minimize the sleep loss which combines with body clock problems. Special care is needed for the night shift to assure adequate staffing, reduce dangers and critical demands as much as possible, and provide a nocturnal work place which is tolerant of errors. Recognition of the night shift danger is the first step to promoting safety.

Alcohol and drugs:

It is no secret that alcohol impairs performance. The effects of drinking on automobile accidents are thoroughly understood. Alcohol promotes accidents equally in industrial and maritime environments. A short time ago, the military culture sometimes promoted heavy drinking. Today, that culture is changing. It must continue to change as accident prevention becomes key. The same is true in the civilian maritime sector, where the age-old tradition of the drunken sailor must be abolished.

All physicians who have treated chronic alcoholics observe that they sleep poorly, even months after they have remained abstinent. Although it is possible to drink oneself comatose, in the long run, alcohol is an enemy of good sleep.

A more subtle question is the effect of sleeping pills. Shift workers often use sleeping pills to try to combat problems with sleeping which are caused by going to bed at odds with the body clock. Few people realize how little sleeping pills increase sleep. The majority of studies show that sleeping pills only objectively increase sleep about 20 to 30 minutes, which is trivial in the face of sleep loss. Moreover, most sleeping pills remain in the blood sedating the user long after the user has arisen from bed. The great preponderance of studies show that sleeping pills taken at bedtime do not improve subsequent performance: quite the contrary. In most studies, sleeping pills taken at bedtime impair subsequent performance. Out of bed, a sleeping pill makes a person sleepier and impairs alertness, reaction time, intelligence, and performance. Although the short-acting sleeping pills such as triazolam and zolpidem produce less hangover, and have produced mild improvements in performance in a few brief studies, even with these compounds, the majority of studies show impaired performance. There is certainly no evidence that long-term use of sleeping pills improves performance in shift workers or in anybody else.

Sleeping pills are never recommended except for short-term use. For many shift workers, the disturbance of sleep is a chronic problem which continues month after month, year after year. Use of sleeping pills is inappropriate for such chronic problems. Indeed, there is evidence that people who take sleeping pills chronically sleep worse, on average, than people who do not take them. Moreover, there is evidence that when chronic sleeping pill users withdraw from their sleeping pill habit, their sleep actually tends to improve. Thus, the use of sleeping pills often plunges a shift worker into a destructive spiral of worsening sleep and exacerbated intolerance to shift work. Sleeping pills are not part of the solution but rather part of the problem.

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For the ship crew member who might be awakened in an emergency, the use of a sleeping pill will impair the appropriate emergency response.

The deleterious effects of sleeping pills are greatly exaggerated by even low doses of alcohol. The combination is potentially lethal for anybody managing dangerous machinery.

Sleep apnea:

The most common medical cause of excessive daytime sleepiness is sleep apnea. However, the risk of apnea is often greatly exaggerated.

Sleep researchers were tremendously excited in the early 1970's, when they began to perceive the nature of the sleep apnea syndrome. In its severe form, a person with sleep apnea may choke and stop breathing hundreds of times during the night. In the severe form, the result is increased blood pressure, frequent awakenings, and occasionally, profound difficulty staying awake during the day.

In these past 20 years, our UCSD laboratory has spent much effort examining the prevalence of sleep apnea in the San Diego population and the apparent consequences. Our studies have selected volunteers through random selection of telephone numbers, so our samples are as representative of the population as it is possible in the U.S. to obtain. Also, because our most recent study recorded people for 3 nights in their own homes, a more reliable measure of each person's actual at-home sleep was obtained.8 No other U.S. laboratories have used equivalent representative sampling methods for an entire population, but other U.S. studies and studies from other countries confirm that our results are essentially correct. Remarkably, the majority of San Diegans over 40 years of age have at least 5 full or partial apnea events per hour of sleep. By age 65, the average in men reaches 10 breathing interruptions per hour of sleep. These findings were quite a surprise to most of us who had thought that sleep apnea was terribly abnormal. In actual fact, in the U.S., a bit of sleep apnea is as normal as a somewhat expanding waistline or a little gray hair. Evidently sleep apnea is far more common than baldness.

It is surprising that many of my colleagues insist that anybody with 5 breathing interruptions per hour of sleep is abnormal. Some of these experts have a profitable business selling apnea recordings and treatment. In fact, beyond age 40, people with at least 5 breathing interruptions per hour are the ones who are normal, if to be normal is to be in the majority. A more important question is the amount of health impairment which results from sleep apnea.

In our representative studies of the population, sleep apnea has only tiny and barely detectable relationships to sleepiness. People with sleep apnea--even with more than 20 breathing interruptions per hour of sleep--simply do not average much sleepier than people without sleep apnea.8 A few deeply affected patients who have struggled into expensive specialty sleep clinics may be profoundly sleepy, but these are exceptional cases and not representative. The presence of sleep apnea is more closely associated with the complaint of snoring--sometimes it is the complaint of a bed or bunk mate--but again, when it is critically examined, the relationship between snoring and sleep apnea is not very strong.

From age 16 to age 60, the rate of driving accidents steadily decreases while the rate of sleep apnea increases. Our laboratory has examined the relationship of driving accidents and driving violations to sleep apnea in our representative sample.9 There is scarcely any relationship. Data on driving violations and accidents show that to be a young male or to be single were far more important predictors of dangerous driving than sleep apnea. Probably the same is true in the maritime environment. Our data indicate that sleep apnea is not an important source of accidents and should not be a priority focus of accident prevention.

Conclusions:

To summarize, sleepiness poses profound risks of human errors and accidents. Sleepiness was probably the proximate cause of disasters such as Chernobyl, Bhopal, and the Exxon Valdez accident. The most important cause of excessive sleepiness is insufficient sleep, which may result from excessive work assignments or from voluntarily "burning the candle at both ends." Safety consciousness in the maritime environment must start with assuring that personnel get adequate sleep. Shift work assignments are an important detriment to adequate sleep and an independent cause of impaired alertness and performance. When shift work is unavoidable, the best protection is to redouble efforts to provide shift workers with adequate sleep opportunities and to avoid excessive stress on the night shift. Alcohol use must be discouraged, as it combines with sleep loss. Sleeping pills do more harm than good and should be avoided in the work situation.

As new technologies increase the prevalence of night shift work throughout society, more research is needed to develop proven techniques to make the night shift safe. There have been too many disasters.

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Get some sleep -- and that's an order!

GIs need rest to be all that they can be

By Brigid Schulte
KNIGHT RIDDER NEWS SERVICE

March 3, 1998

WASHINGTON -- In a decrepit concrete block Army building on a rundown campus just outside the nation's capital, scientists are diligently researching the next great frontier in national security. Sleep.

In the U.S. military, going without sleep has long been regarded as macho, something that those with the right stuff could endure. Leaders' eating last, going to bed latest and getting up earliest is part of an honorable military tradition. John Wayne would never sack out before his troops.

Studies being done by scientists at the Walter Reed Army Institute of Research sleep lab show that John Wayne had it all wrong, however.

Their studies show that without sleep, the first things to go are critical thinking, the ability to make decisions, to pay attention to detail and, perhaps most importantly on the battlefield, react to new information and change your mind.

In the civilian world, too, fatigue and sleep deprivation have contributed to the Challenger explosion, the Exxon Valdez oil spill, the Three Mile Island nuclear accident, airline crashes and fatal trucking collisions.

A federal commission estimated that not only are about half of all Americans sleep deprived, but that fatigue costs as much as $150 billion a year in lost productivity, lawsuits and fatalities.

Studies show pilots have unintentionally fallen into "microsleeps," even while landing planes. Weary radar operators have become momentarily paralyzed. And doctors making life and death decisions get so tired their eyes blur. They begin to "drone."

Encl. 5

Navy weighs lower recruiting standards

By James W. Crawley
STAFF WRITER

The Navy, desperate to fill its ranks in the face of recruiting and manning shortfalls, may start enlisting men and women who scored in the lowest third on entrance tests.

Generally, the Navy is looking at relaxing its enlistment standards by allowing lower test scores for recruits.

The plan, revealed by a Navy admiral, was met with criticism by current and former ship captains who argued that recruiting less-qualified sailors would be problematic. The move comes a little more than two months after outgoing Navy Secretary John Dalton proclaimed no reductions in the recruiting standards.

The plan has yet to be ratified by top Navy officials.

A similar proposal a year ago was shot down before it reached high-level officers.

The Navy has missed its recruiting target by about 7,000 enlistees this year. Coupled with a shortage of low-ranking sailors, the service is short about 18,000 men and women aboard ships. Navy officials predict it will take at least a year to replenish those ranks.

Admirals have a tentative plan to increase the number of eligible recruits by lowering entrance standards slightly, Rear Adm. John Foley said during a recent interview. He is the Navy's director of personnel plans and policy.

Currently, the Navy has strict requirements for potential recruits. All but 5 percent of enlistees must have high school diplomas. Sixty-five percent must score 50 percent or higher on the Armed Forces

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Recruit

Navy struggling with shortage of personnel

Continued from A-1

Qualification Test. And all recruits must get a grade of 31 percent or higher on the test.

The qualification test is the math and verbal sections of the Armed Services Vocational Aptitude Battery, which every potential recruit takes. The rest of the aptitude tests gauge a recruit's skills and determine what jobs he or she will be offered.

But officials have proposed that the Navy should lower the percentage of recruits scoring in the upper half of test results to 63.5 percent and maybe lower. Federal law sets 60 percent as the lowest level allowed.

And the Navy is considering enlisting so-called Category IV recruits. These men and women score only 25 to 30 percent on the qualification test and have been judged unacceptable, Navy officials said.

These "Cat IV" enlistees would be recruited under a pilot program, he said. Only about 1 percent of recruits would be admitted into the Navy through this proposal, Foley said.

"We probably won't reduce quality very much," Foley said. "What we won't do is completely relax our

"We aren't going to bring a bunch of felons into the Navy."

Rear Adm. John Foley, Navy personnel official

quality standards. What we won't do is completely relax the moral requirements.

"We aren't going to bring a bunch of felons into the Navy."

In late June, Dalton, the Navy's top civilian, said he would never reduce recruiting standards. Instead, he favors raising pay and benefits to attract more sailors.

According to knowledgeable sources, the proposal to lower recruiting standards is coming from uniformed officers, not the Pentagon's civilian staff.

9-16-98

During the early years of the all-volunteer military, Category IV enlistees helped fill the ranks in a military that was described as a "hollow force." The last time Category IV recruits were accepted was in 1990, Navy officials said.

Six percent of today's enlisted sailors entered as Category IV recruits, Foley said. Included in that number are 250 master chief petty officers, which is the highest enlisted rank.

But several present and former commanding officers privately decried the enlistment proposal, saying it would erode the Navy's personnel standards.

Several Navy captains said recruiting Category IV sailors would be more trouble than it is worth because they require more supervision and are more likely to get into trouble.

"How can I get the most out of my men when I'll have to spend more time dealing with them?" said one officer who requested anonymity.

Another called it an additional step down a "slippery slope" to a less intelligent and less productive enlisted force.

However, one former skipper said the recruiting situation has forced the Navy to consider such drastic action and commanding officers will have to cope with lower-quality sailors.

During the past year, the Navy has suffered from a lack of "general detail" sailors who do line handling, painting, flight deck duties, cleaning chores and galley work — largely unskilled, but necessary, jobs.

At the same time, technical positions such as radar operators, technicians and intelligence specialists are unfilled because fewer qualified recruits are coming into the service and experienced sailors are leaving in large numbers. Many are opting for private sector jobs in a hot employment market.

THE SAN DIEGO UNION-TRIBUNE ■ WEDNESDAY, SEPTEMBER 30, 1998 A-7

Military chiefs say cuts erode readiness

Senators question change in testimony

By Otto Kreisher
COPLEY NEWS SERVICE

WASHINGTON — The nation's top military officers sat shoulder to shoulder yesterday and said publicly something most of them have said only in private: Years of declining budgets and forces and increasing demands have cut into the muscle of U.S. combat capability.

"Evidence indicates that our readiness is fraying and that the long-term health of the total force is in jeopardy," Henry Shelton, chairman of the Joint Chiefs of Staff, told the Senate Armed Services Committee.

"Without relief, we will see a continuation of the downward trend in current readiness," added the Army general.

But the phalanx of glittering silver stars and gold braid had to sit like errant school boys as members of the committee chastised them for obediently supporting administration budgets and insisting until now there were no major problems.

Sen. John McCain, R-Ariz., a former Navy captain and prisoner of war in Vietnam, said "the fact is that you . . . were not candid to this member in the problems and challenges that we faced."

Sen. Rick Santorum, R-Pa., told the military chiefs that while the president is their commander in chief, "you have a responsibility, in my view, to represent the soldiers and sailors and airmen that are beneath you."

The chiefs' testimony earlier this year showed "a lack of that zealous representation of the people you represent," Santorum said.

Shelton and the four services chiefs spelled out grim details of growing shortages of skilled personnel, caused by declining pay and benefits; aging equipment that is more difficult and expensive to maintain; deteriorating family housing and barracks; and unprecedented deployment rates that strain people and machines.

In addition to tight budgets, Shelton also said the robust economy has made it hard to recruit and retain military personnel. He added that Congress failed to support additional base closings and other steps that the Pentagon sought to save money, while shifting funds to weapons it did not request.

The committee's senior Democrat, Sen. Carl Levin of Michigan, was more direct. "We've done some things which . . . should not have been done," he said.

Levin noted that of the $23 billion Congress added to the defense budget the last three years, 85 percent went to weapons or construction — which can help lawmakers' districts — while only 10 percent had "direct impact on day-to-day readiness and quality of life of our military forces."

The service chiefs were unified in their concern.

Air Force Chief of Staff Michael Ryan said he was "truly concerned about the downturn in readiness, not only of the equipment but the loss of our people."

"We can't sustain that Navy with the budget that we have," said Adm. Jay Johnson, the chief of naval operations, citing personnel shortages and reductions in training that may have contributed to soaring aircraft accidents this year.

Gen. Dennis Reimer, the Army chief of staff, said his service is not "hollow" today as it was in the post-Vietnam 1970s. "But I must tell you . . . if we don't do something, we run the risk of return to the hollow Army."

But Marine Gen. Charles Krulak took evident pride in noting that "for four calendar years now, I have appeared before this committee and stated unequivocally that the Marine Corps was maintaining its near-term readiness . . . at the expense of our long-term readiness."

The commandant said his top priority was replacing old weapons that his Marines must work extra hours to maintain and that may not be adequate for the next conflict.

Sen. Bob Smith, R-N.H., grumbled that "if we had gotten the candidness we got from Gen. Krulak, we probably wouldn't be here."

Aware of the message the military leaders would give at this hearing, President Clinton last week promised them $1 billion more for personnel and readiness in the fiscal year that begins tomorrow and bigger increases in future years. But Shelton said yesterday that the $1 billion for readiness would have to come out of other defense funds and was not extra money.

The four service leaders said they need a total of $17.5 billion a year in additional funding to stop the erosion of combat readiness. The funding shortages ran from $1.5 billion a year for the Marines to $6 billion for the Navy.

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Pay & Benefits

Sailor shortage hits 18,000

By John Burlage

The Navy's manning and recruiting problems are so bad that the head of nuclear programs says he's facing dangerous personnel shortages.

The Navy is short 18,000 sailors — 5.5 percent of the 328,000 enlisted people it needs — and recruiters haven't met their monthly targets since September 1997. The result: Officials expect to miss 1998 recruiting goals by at least 6,300.

With an overall goal of 55,000 recruits in fiscal 1998, the shortfall represents 11.5 percent of the goal. Most of that will have to be made up next year, officials said.

Of all the military services, only the Navy is missing its recruiting targets.

Until recently, most of the focus on the shortfall has been on general detail sailors — those who do the most basic jobs aboard ship. But now the Navy is failing to meet its requirements for new nuclear-qualified sailors — the highly skilled specialists who maintain nuclear reactors aboard nuclear-powered submarines and aircraft carriers.

Adm. Skip Bowman, director of nuclear reactors, sounded the alarm in an April 13 letter to the chief of naval operations. In the letter, a copy of which was seen by Navy Times, Bowman writes that the problem must be solved soon — before it becomes a crisis.

Otherwise, he said, "we will be facing a 'death spiral' with respect to nuclear manning, heading

Framing an Exercise

At JTFX-98, a pilot climbs out of an F/A-18 Hornet aboard the carrier Abraham Lincoln. The making of an exercise is a very involved task, and the mastermind who writes the plot that slowly unfolds before participants must be able to constantly rewrite to address unexpected moves by the players.

photo by Steve Elfers

for a return to the extended at-sea tours we saw in the late '70s."

Back to the future

In the 1970s, sailors left in droves because of poor working conditions and problems ranging from recruiting to pay.

Navy officials say that Bowman's may be too dire a prediction. But they note today's issues are different. There are more skilled midgrade petty officers in the fleet today than there were in the '70s, for example, and today's manpower shortage is primarily in the most junior ranks. Almost all the 18,000 sailor jobs unfilled are for petty officers second class and below, officials said.

But the shortage of junior sailors means more experienced hands are having to do more of the dirty work — mess cooking, paint chipping and the like — and Bowman and others suggest that could be a factor in holding onto people when their terms are up. Further, today's junior sailors are tomorrow's skilled petty officers.

Bowman, whose last assignment was as the three-star chief of naval personnel, insists a hollow force is a possibility if the Navy can't overcome its recruiting problems.

A precursor of that possibility already has occurred, according to several reports.

In a message sent in February to the commander of the Pacific Fleet naval air force, the nuclear carrier Carl Vinson reported a shortage of key nuclear personnel so serious the ship couldn't meet safety standards for getting under way.

"They called it an appalling condition," said one officer who saw the message.

Though the message was sent, the officer said, it wasn't completely staffed. The ship recanted and asked that the message be cancelled. It was.

Vinson was under way out of San Diego May 1 on local operations. Her overall manning level was said to be about 86 percent, but the Bureau of Naval Personnel wouldn't specify how Vinson's reactor department was manned.

Vinson now is just five months away from a scheduled deployment, and in a priority position to get the crew it needs.

'Crisis Intervention'

Bowman argues in his letter for a "crisis intervention approach" to shore up 1998 recruiting shortfalls.

The Navy's recruiting needs are one of the problems. Back in the 1980s, the Navy was taking in about 90,000 recruits each year. Now the number is down to about 55,000 a year. But more of those recruits must have the skills to handle nuclear power and advanced electronics jobs.

In 1994, for instance, there were 2,900 sailors in the nuclear power program. In 1998, the number of billets is 3,624 — an increase of nearly 25 percent. As steam-powered carriers like Forrestal, Saratoga, Ranger and America have gone away, they've been replaced by nuclear-powered ships like Vinson, Abraham Lincoln, George Washington, John C. Stennis and Harry S. Truman.

Retiring the Navy's nuclear powered cruisers has helped provide some of those needed nuclear-trained sailors, but the service must recruit more now than ever before.

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Some good news

Meanwhile, the Bureau of Naval Personnel reports some improvement in first-term retention. It's only up about two percentage points from the 30.8 percent reported earlier this year, with the goal being nearly 40 percent, but every increase means fewer recruits are needed as replacements. And retention is even higher in the Pacific Fleet, at 38 percent from October 1997 to March 1998.

The Pacific Fleet submarine force also reports first-term retention at 46 percent, another helpful sign.

But is it enough?

Bowman is the best person to answer the question, but his staff is following a longtime history in the nuclear program director's office of rejecting almost all interview requests.

What is known is that, while officials insist the Navy's nuclear-powered ships are operating safely, Bowman warned Johnson that "ultimately, the readiness and safety" of nuclear carriers and submarines "are at stake."

Reproduction clarity limited by quality of comment letter received.

1989 spill from nuclear sub kept secret by Navy

Navy: 1989 spill from nuclear sub in Guam waters kept secret

"The notification of inconsequential events is neither warranted or required nor is the absence of such reporting a cover-up."

Lt. Susan Hang, Navy spokeswoman

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NAVY TIMES

Navy Times
Published: 07-31-95
Category: COVER STORY
Page: 12

... `big E' Exits Newport News

By Jim Starling

NEWPORT NEWS, Va. -- It was the longest, most expensive and most complex nuclear refueling and overhaul in Navy history. The Enterprise, the world's oldest nuclear-powered aircraft carrier, spent more than four years in the shipyard -- so long that sailors could spend an entire sea tour without heading out to sea.

On July 14, she sailed out of Newport News Shipbuilding with newly rebuilt reactors, new inner workings and a new lease on life. The 33-year-old carrier was due to complete its ``fast cruise" checks July 21, the final step in the overhaul. Next, the Enterprise starts workups for its first deployment since the overhaul in May 1996.

It's a triumphant conclusion to an overhaul so problematic there was deep concern whether Enterprise would ever get underway again.

``It was the most challenging job this company has ever taken," said Tom Racz, a Newport News Shipbuilding executive.

``It's very difficult to imagine how hard it was," said Capt. Richard J. Naughton, Big E's commanding officer, who took charge of the overhaul in August 1993. ``When I came here, this cabin I'm sitting in now was a shell filled with asbestos from the 1950s.

``Quite frankly, it was very hard to see the end some days."

The ship entered the yard in October 1990 and was slowly stripped to the frames. It wasn't long before work bogged down: Specifications changed, parts no longer in existence were needed, costs ran over, an arsonist set a fire aboard the ship, radiation leaked and morale plummeted among the crew.

The radiation accident alone, caused when a shipyard worker improperly welded a propulsion-system valve, cost more than $6 million to clean up. It set back the overhaul four months. Naughton took command just months after the accident, which contaminated four compartments in engineering spaces and exposed nine crew members to radiation.

No way this ship will go

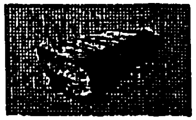
By that time, confidence in the overhaul was low among the crew and Navy leadership, and there was talk of a ``go/no-go" decision. The ``go" came with the installation of the first new reactor core.

From the outset, work was slowed by bottlenecks. Sailors in the ship's technical information center, for example, processed three different permits for each of the ship's repairs. Work had to be closely coordinated, and the system was slow.

Cables, wires and excess materials were everywhere. The attitude of the Enterprise work force slipped because there was no clear consensus on how the overhaul was to proceed.

Evacuation of a Navy Nuclear Facili-

▶ June 9, 1998



news

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Idaho

Incident that led to evacuation under review

Associated Press -

POCATELLO, Idaho _ Workers did not follow established procedures in moving irradiated material at the Idaho National Engineering and Environmental Laboratory, which triggered the evacuation of 200 people, officials say.

And while no disciplinary action was taken against the Westinghouse Electric Co. workers involved at the Naval Reactors Facility, company and Navy officials are reviewing the incident.

"We're very conservative out here," said Craig Hanson, Naval Reactors administrative manager. "We like to find out the problems while they are small, so they don't become bigger."

On May 21, a worker was using a remote-controlled device to lift a piece of irradiated material from a water pool at Naval Reactors' Expended Core Facility.

The pool provides shielding while technicians work on irradiated equipment and spent reactor fuel, which is routinely removed from the Navy's nuclear-powered fleet.

For national security reasons, officials say only that it was "non-fuel, reactor structural material."

As the worker lifted the material, another technician monitoring the movement with a radiation detector momentarily missed that the device was registering an increase in the ambient radiation, officials said.

That is when a back-up monitor alarm sounded -- as designed.

The first technician then lowered the material into the pool to increase the radiation shielding and evacuated the building with the others.

Devices indicated neither of the two workers received any unusual radiation exposure.

Around-the-clock work resumed eight hours later, after recovery teams found no spread of radioactive contamination.

The incident could not have caused a nuclear chain reaction with an unplanned release of radiation, Hanson said.

That is because the worker was not moving nuclear material. He was merely moving a metallic piece that had become irradiated over time by close proximity to nuclear material.

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Reply

Navy's latest "non-accident"

What are your thoughts on *Incident that led to evacuation under review*

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Radioactive steam accidentally released

■ *The radiation leak last Thursday at Puget Sound Naval Shipyard was determined to be "very minor."*

By Christopher Dunagan
Sun Staff

Navy officials confirmed Monday that the Bremerton-based guided-missile cruiser USS Arkansas accidentally released about five gallons of steam, which contained low levels of radioactivity from its reactors, during training last Thursday.

Twin reactors which power the ship, docked at Puget Sound Naval Shipyard, were shut down at the time, according to shipyard spokesman John Gordon.

"The amount of steam involved was approximately equivalent to five gallons of water," he reported in a statement prepared in response to questions from The Sun. "The steam contained a small amount of radioactivity, approximately equal to the amount found in a common household smoke detector."

The "very minor release" is less than what is allowed for commercial reactors under federal regulations, said Gordon.

The shipyard failed to provide The Sun with a numerical estimate of the radioactive release.

See LEAK on C4

LEAK

from Page C1

According to Gordon, two samples of sea growth were scraped from a scope and the side of a small work platform adjacent to the point of discharge. He said testing showed the samples contained very low levels of radioactivity — about 10 percent higher than naturally occurring background radiation.

Samples of sea growth taken further away from the discharge point in Sinclair Inlet revealed no elevated levels of radioactivity. Surveys of the water and sediment surrounding the ship also detected no unusual radioactivity.

No injuries resulted from the spill, which is not expected to have a significant effect on people or the environment, said Gordon.

Terry Strong, a radiation specialist with the Washington Department of Health, said he was informed of the incident 15 to 20 hours after the spill occurred.

Given the timing, the low likelihood of a public health problem and a limited budget, Strong has concluded that his agency will do no sampling at this time.

Navy officials are not required to notify local authorities, and officials with the Kitsap County Department of Emergency Management said they never heard about the incident.

The [illegible]-foot Arkansas, with a crew of [illegible], is based in [illegible]. The ship returned to port in October after deployment along the California coast.

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SUSAN GOLDING
MAYOR

October 13, 1998

Laura Hunter
Environmental Health Coalition
1717 Kettner Boulevard, Suite 100
San Diego, CA 92101

Dear Laura:

Thank you for your letter regarding the proposed homeporting of two additional nuclear aircraft carriers in San Diego Bay.

I have already contacted the PAO at COMNACAIRPAC to request that the Navy extend the EIS review period for an additional 15 days. I would agree that on such a complicated matter, it is important that ample time be allowed for review. I have also requested that the DEIS Executive Summary be made available in Spanish.

Again, thank you for your letter. Your continued interest in this issue is appreciated.

Sincerely,

SUSAN GOLDING
Mayor
City of San Diego

SG:PM/kjc

For Laura Hunter

From [redacted] ntice ail

GUIDANCE FOR INCORPORATING ENVIRONMENTAL JUSTICE CONCERNS IN EPA'S NEPA COMPLIANCE ANALYSES

O.12

April 1998

U.S. Environmental Protection Agency
Office of Federal Activities
401 M Street S.W.
Washington, D.C. 20460

3.2.8 Decisions

The two NEPA decision documents identified in CEQ regulations are: 1) a ROD following an EIS and, 2) a FONSI following an EA. All EPA NEPA decision documents should include a concise summary of all steps undertaken to identify environmental justice concerns and the results of those steps. In cases where environmental justice concerns are identified, the decision documents should fully discuss these concerns, explain all alternatives and mitigation options that were analyzed, and explain how environmental justice concerns factored into the decision. In cases where effects to tribal lands or resources have been identified and the Indian Tribe and EPA disagree as to the preferred alternative or mitigation measures, the Indian Tribe may request that the EPA initiate a dispute resolution process to resolve this conflict. In addition, public participation efforts related to environmental justice concerns should be documented in the decision document. Finally, mitigation measures that are evaluated, disclosed to the public, and chosen in conjunction with the alternative to be implemented should be identified and discussed. If no concerns are identified, this finding should be stated along with the basis of EPA's conclusion.

4.0 PUBLIC PARTICIPATION

Adequate public participation is crucial to incorporating environmental justice considerations into EPA's NEPA actions, both to enhance the quality of the analyses and to ensure that potentially affected parties are not overlooked and excluded from the process. Public participation under NEPA involves two-way communications, with EPA receiving information, comments, and advice, as well as disseminating information on possible approaches, analyses, and decisions. This is particularly important when there are potential environmental justice issues involved. To sufficiently and adequately address potential environmental justice concerns and communicate with potentially affected communities, the EPA NEPA analyst should include one or more persons who are familiar with environmental justice issues and appropriate communications strategies. It is important that EPA take steps to encourage and facilitate more active participation by low-income communities and minority communities in its NEPA process. This goal can be accomplished through careful identification of target audiences and aggressive community outreach beyond the traditional forms.

There are established procedures for public participation in NEPA actions and decision-making processes (as in other federal actions). However, these procedures have not always been successful in informing or gaining participation by minority communities and low-income communities. Although they may be most affected, they may be the least informed, simply because of the means of communications used; this can be for any number of obvious reasons, such as language, culture, educational level or geographic location. In most cases, relatively simple approaches--well within the purview of "standard" public participation techniques--can overcome most barriers to informing and seeking involvement of interested or affected communities. This in turn can ensure that federal decisions are consistent with Executive Order 12898 and enhance the actual and perceived fairness of federal actions.

The first subsection below briefly describes public participation that is required during the NEPA process by CEQ and EPA regulations. The next subsection then identifies a number of the special concerns and unique issues that may arise in addressing environmental justice issues, and identifies several mechanisms that may be used in EPA's NEPA process to address those special concerns and issues.

4.1 PUBLIC PARTICIPATION UNDER NEPA

Public participation is one of the hallmarks of NEPA, and is reflected in CEQ's and EPA's NEPA regulations. According to 40 CFR 6.400(a), "EPA shall make diligent efforts to involve the public in the environmental review process...." There are several clearly defined steps in public participation under NEPA, and these are described below.

Scoping. CEQ regulations require "scoping" following the publication of a notice of intent to prepare an EIS, but before the EIS is prepared. CEQ regulations define scoping as "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). In general, scoping has three broad purposes: identifying public and agency concerns with a proposed action, defining issues and alternatives to be examined in detail, and saving time by ensuring that relevant issues are identified early and drive the analyses (see 40 CFR 1500.4(g), 1500.5(d)). A public meeting is held during scoping, with notice of the meeting made in the *Federal Register*, local newspapers, and utilizing other means of announcing public meetings, depending on case-specific circumstances.

Scoping for EAs is not addressed in either CEQ or EPA regulations. In practice, EA scoping can range from a process more or less identical to that used for EISs, to relatively minimal involvement of outside parties.

CEQ has indicated that the scoping process ends "once the issues and alternatives to be addressed in the EIS have been clearly identified," usually "during the final stages of preparing the draft EIS..." (CEQ "Guidance Regarding NEPA Regulations"). It is emphasized that public participation does not end here, but continues throughout the NEPA process, as described below, and even beyond.

Public review of EISs and EAs. As with scoping, CEQ and EPA NEPA regulations clearly specify the means by which the public is involved in reviewing draft and final EISs. EPA regulations require at least one public meeting on all draft EISs (40 CFR 6.400(c)). The meeting is generally announced in the *Federal Register* and in local newspapers and by other means. Regulations also provide other means of soliciting comments and information. Comments must be solicited from other appropriate federal, tribal, state, and local agencies, and from the public, specifically including a request for comments from "those persons or organizations who may be interested or affected" (40 CFR 1503.1(a)(4)).

EPA then has to consider and address all comments received on the draft EIS in preparing the final EIS, and final EISs must include responses to comments. As with draft EISs, final EISs are noticed in the *Federal Register* and elsewhere. Again, interested parties may submit comments on final EISs prior to EPA's final decisions.

EAs must be made available to the public (40 CFR 1506.6: C.E.Q. 40 Questions, #38). A combination of methods may be used to provide notice of availability; the methods should be tailored to the needs of particular cases. Traditionally there has been limited public involvement before and during EA preparation by EPA unless there is a question of significance (*i.e.*, some question as to whether an EIS is necessary) or some particular public interest.

Public review of RODs and FONSIs. Records of Decision on EISs must be disseminated to all those who commented on the draft or final EIS (40 CFR 6.400(e)). No public review is required prior to or after issuance of the ROD. Findings of No Significant Impact on EAs, in contrast, must be made available for public review before they become effective (40 CFR 6.400(d)), and this involves at least local notice and advertising. The FONSI and "attendant publication" must state that comments disagreeing with the decision may be submitted, and any such comments must be considered by EPA (40 CFR 6.400(d)).

4.2 Mechanisms to Enhance Participation

The public participation provision in Executive Order 12898 and its accompanying memorandum are designed to ensure that there is adequate and effective communication between federal decision makers and affected low-income communities and minority communities. This is consistent with the NEPA mandate to involve the public. The involvement of low-income communities and/or minority communities, however, presents some challenges to what has come to be the "normal" pattern of formal public participation under NEPA. In order to establish trust with all types of stakeholders, interaction with the affected community should:

- Encourage active community participation.
- Recognize community knowledge.
- Utilize cross-cultural formats and exchanges.

In all cases where EPA's initial screening indicates that there is a potential for disproportionately high and adverse effects on low-income and/or minority communities, the Agency should make a concerted effort to identify stakeholders in the affected community and include the following groups and organizations in their outreach efforts:

- Environmental organizations and agencies
- Minority businesses, associations and trade organizations
- Civic associations and public interest groups
- Grassroots/community-based social service organizations
- Federal elected officials and agencies
- Homeowners' or tenants' associations, neighborhood watch groups and resident organizations
- Labor unions and organizations
- State and local elected officials and agencies
- News media, the Internet and other electronic media
- Tribal governments and Tribal organizations
- Religious groups and organizations
- Libraries, vocational and other schools, colleges and universities
- Medical community
- Legal aid providers
- Rural cooperatives

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- Civil rights organizations
- Senior citizen's groups

Other sources of advice are ethnic and cultural-based environmental justice networks (*e.g.*, Indigenous Environmental Network, Southwest Network for Environmental and Economic Justice, Southern Organizing Committee). The *People of Color Environmental Groups Directory*[10] is a valuable major source of information on such local groups and individuals. Similarly, Historically Black Colleges and Universities, Tribal Colleges and Universities or other higher education institutions located in areas with or serving predominantly minority or low-income areas, may be able to assist EPA in designing (and participating in) public participation strategies. Exhibit 5 identifies a number of particular communications challenges and possible approaches to overcoming these challenges in addressing environmental justice issues. These should be supplemented by case-specific advice--on challenges and on solutions--that are solicited from local experts and others familiar with both the proposed action and the affected community.

10 Environmental Justice Resource Center. *People of Color Environmental Groups: 1994 - 95 Directory*. Prepared by Dr. Robert D. Bullard, Clark Atlanta University, Atlanta, Georgia. 1994.

Exhibit 4. Communications Issues of Particular Concern in Low-Income and/or Minority Communities

Challenge	Possible Approaches to Overcoming
Language or Communication barriers	• Provide assistance to hearing or sight impaired individuals • Provide simultaneous translation of meetings • Use local translators where possible • Translate key documents in entirety (notices, summaries, etc.) • Establish "comment line" (*e.g.*, 800 number) for callers to leave recorded comments • Advertise meetings/process in alternative-language medium • Design communication strategy to reach all segments of population • Use facilitated meeting rather than conventional stand-up comments to encourage comments
Distance to meeting or inconvenient access (*e.g.*, rural or cross-town)	• Arrange for "comment line" (*e.g.*, 800 number) to provide remote access to meeting or to allow callers to leave recorded comments • Arrange for telephone tie-in from several locations (*e.g.*, from several schools, religious centers) • Hold series of shorter meetings (down to 1-2 hours each) in multiple locations • Arrange for alternative transportation (possibly through proponent) • Ensure location is accessible to public transportation and identify itinerary in notices • Use local cable-channel broadcast with telephone call-in • Have proponent provide transportation vouchers • Seek advice of local groups/individuals • Arrange for satellite link-up (perhaps funded by proponent)
Unfamiliar surroundings (government buildings, luxury hotel, etc.)	• Use schools or other local facilities including religious centers, churches, temples, mosques • Have several smaller decentralized meetings, including open-air meetings (possibly with tent backup) in season • Seek advice from local groups/individuals • Use local facilitator • Establish "comment line" (*e.g.*, 800 number) for callers to leave recorded comments or to participate from remote locations
Outside normal EPA communications loops (i.e., *Federal Register*, newspapers)	• Use pro-active approach to identify stakeholder (both groups and affected individuals). Consult with local advocates/public interest groups to identify outreach mechanisms and refer to the *People of Color Environmental Groups Directory*. • Disseminate information through alternative media (neighborhood organization newsletters, religious centers, fliers, local cable access channel, local radio broadcasts, etc.). • Co-sponsor public meetings with local community groups to nurture trust and credibility. • Mail announcements to those on the mailing list; make follow-up phone calls to encourage attendance. • Direct consultation with tribal governments and public meetings at tribal facilities or on/near tribal lands
Format of Meetings	• Use town hall type meetings. • Avoid "panel of experts" • Use small focus-group sessions or workshops. • Use community "experts" and comments as part of communication strategy • Seek advice of local groups. • Use a trained facilitator who is sensitive to environmental justice issues.
Schedule conflicts (i.e., conflict with working hours, working days)	• Conduct personal interviews using audio or video recording devices • Hold after-hours and/or weekend meetings or sessions • Hold meetings on consecutive days • Hold multiple shorter meetings at diverse times/days • Establish "comment line" (*e.g.*, 800 number) for callers to leave recorded comments • Arrange for child-care (possibly funded by proponent)
Technically complex issues	• Provide sufficient background explanations beyond the usual means • Use plain language in meetings and printed material • Seek advice of local groups/individuals • Provide hands-on demonstrations/participation (*e.g.*, tours of similar facilities/locations) • Use visual presentations (*e.g.*, pictures, videos) • Provide two-way communication - Q & A • Use background summary reports, fact sheets, and abstracts • Provide technical and/or financial assistance to community, local organization, and/or tribal government to review, evaluate, and comment on the NEPA documents and provide meaningful input throughout the NEPA process.
Trust	• Clearly present goals of NEPA, the proposed action, the public involvement process, and what is expected to be gained from the process • Do not oversell: present uncertainties and limitations • Goals should be written and in clear language • Present experiences and track record, successes and failures

EPA-anticipated impacts and community perceptions of those impacts (and their fairness) can be very different, so both must be considered. When perceptions are the concern, an effort to involve and inform the community can go a long way toward building confidence that EPA's analyses and actions are well-intended and balanced. When actual impacts (i.e., disproportionately high and adverse human health or environmental effects) are the concern, the participation can serve to educate the Agency and help identify the means to identify alternatives and/or mitigate the impacts.

Although EPA and CEQ public participation regulations focus primarily on public meetings, there are other mechanisms that can also facilitate public input. Once community leaders and stakeholders have been identified and a dialogue established, a mailing list should be assembled so that information can be sent tc this group, as well as formal announcements of a public meeting.

Another mechanism for providing information to the public is the establishment of informatior repositories which are accessible to members of the affected community. Locations can include libraries churches, community centers, etc. Technical documents should contain a summary written to the lay publi and translated, if necessary, into the dominant language of the affected community.

Meaningful public participation is based on the proposition that people should have a say in decisior which affect their lives in a significant way. Thus, for the public participation process to be effective, i must:

- Seek out and facilitate the involvement of those potentially affected;
- Contain the implicit commitment by decision makers to seriously consider the input of the public and
- Communicate to participants how their advice was or was not utilized.

Minority communities and low-income communities are no different than any other in that there ar nearly as many opinions as there are people. Thus, it is important not to focus exclusively on o mechanism (or one person or one group) for disseminating or soliciting information. Rather, it is importar to use as many avenues as possible to solicit participation and to disseminate information. For exampl when there are formal or informal representatives that purport to speak for a wider population, it is alway advisable to seek divergent opinions.

Dr. Robert Bullard, Director of the School of Arts and Sciences at Clark Atlanta University, provid a framework for public participation when addressing environmental justice concerns during the NEP process. Dr. Bullard points out that effective public involvement strategies have four commo characteristics: inclusiveness, representation, parity, and communication. Inclusiveness refers to th assurance that all affected communities and stakeholders are represented and involved in the decisio making process. In terms of representation, he points out that it is crucial that the persons who a representing a specific community or stakeholder group truly reflect that community's, stakeholder's, o constituent's views, values, and norms. Parity involves all stakeholder groups having equal opportuni

and capacity to provide input and full participation, as well as an equal voice in the decision-making process. Dr. Bullard further points out that an effective communications strategy accounts for different groups weighing and acting upon government actions and policies differently. An effective communications strategy recognizes, respects, and values cultural diversity of communities and stakeholders that represent a specific race, ethnic group, gender, age, geographic region, and a host of other characteristics.

As mentioned above, a recommended approach to ensure adequate public participation by minority and/or low-income communities when the screening analysis indicates there may be disproportionately high and adverse effects is to include a person familiar with environmental justice public participation issues on the "project review team." CEQ "Guidance Regarding NEPA Regulations" recommends that an interagency project review team be used when appropriate, with the team functioning as a source of information, a coordination mechanism, and an expert review team. When environmental justice issues must be faced, the review team should consult with the local community (including but not limited to organized groups concerned with environmental justice) during and following scoping, and should provide specialized expertise to EIS preparers.

The following are additional mechanisms for enhancing participation in the NEPA process: 1) allow public review of RODs; 2) government-to-government consultation with tribal governments, including formal requests for Indian Tribes to seek participation as cooperating agencies; 3) Community Advisory Boards for the development of NEPA documents; 4) community consultants; and 5) technical assistance to affected communities to enhance understanding of proposed action, technical documents, and full range of potential alternatives and mitigation measures.

In general, the effort expended in actively soliciting community involvement after the initial screening process should reflect the potential significance of the effects. As noted above, however, there should be some effort to communicate with stakeholders in all cases, including EAs, where the screening analysis identifies potential disproportionately high and adverse effects. Although the health or environmental impacts analyzed in EAs may not be "significant," from the NEPA standpoint, they may be perceived as significant by affected parties. Although this concern would not trigger an EIS, it should trigger more EIS-like scoping and public participation prior to and following EA preparation. To the extent practicable and consistent with regulations, an EIS-like public participation process should be undertaken for EAs when social or economic impacts will be or are perceived to be substantial, even when the impacts are not expected to be significant.

5.0 METHODS AND TOOLS FOR IDENTIFYING AND ASSESSING DISPROPORTIONATELY HIGH AND ADVERSE EFFECTS

A fundamental step for incorporating environmental justice concerns into EPA NEPA compliance activities is identifying minority and/or low-income communities that may bear disproportionately high and adverse effects as a result of a proposed action. Once these minority and/or low-income communities are identified and located, the potential for disproportionately high and adverse effects to these communities must be assessed. It is important to understand where such communities are located and how the lives and

O.12

DEPARTMENT OF THE NAVY
PUGET SOUND NAVAL SHIPYARD
1400 FARRAGUT AVENUE
BREMERTON, WASHINGTON 98314-5001

IN REPLY REFER TO:
5090/ELK:elk
Ser 105/283

Mr. Sal Ciriello
California Environmental Protection Agency
Department of Toxic Substance Control, Region 2
700 Heinz Ave., Suite 200
Berkeley, CA 94710-2737

Dear Mr. Ciriello,

Over the past several days my staff has discussed with you, and others within your department, the need to provide a means to respond to questions and concerns raised by members of the public concerning the proposed mixed waste storage facility at Naval Air Station North Island. The purpose of this letter is to assure you that the Navy has mechanisms already in place which are responsive to this concern.

A meeting is held monthly in Coronado between the Navy, local public officials, and interested members of the public specifically for the purpose of discussing issues related to Navy installations near Coronado. This meeting provides an excellent forum for discussion of any issues regarding the mixed waste storage facility. If necessary, the Shipyard will provide appropriate personnel to address any mixed waste storage facility issues that may arise, and will take reasonable steps necessary to address community concerns.

The Shipyard also has a Public Affairs Office which is specifically staffed to take public comments at anytime. The Shipyard will take reasonable steps necessary to resolve public comments in a timely manner.

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Based on the above, the Navy considers appropriate mechanisms for obtaining and responding to public input are already in place, and that creation of a separate panel for this purpose is unnecessary. If you have questions regarding this issue, please contact either myself or Mr. Bob Bolt at (360) 476-2185, extension 500.

Sincerely,

G. A. DREVNIAK
Director of Radiological Control

Copy to:
Ms. Marsha Mingay
California Environmental Protection Agency
Department of Toxic Substance Control, Region 4
5796 Corporate Ave
Cypress, CA 90630

...UNTY'S AWARD-WINNING WEEKLY VOL. 19, NO. 41

...USINESS JOURNAL

OCT 13

GD's Return May Bring Nuke Ship Repairs

Nuclear Expertise Could Grab Carrier, Submarine Contracts for NASSCO

BY ANDREA SIEDSMA
Staff Writer

General Dynamics Corp.'s pending acquisition of San Diego's National Steel and Shipbuilding Co. may bring nuclear ship repair work to local workers.

In a $370 million deal announced last week, General Dynamics entered a definitive agreement to acquire NASSCO Holdings Inc., NASSCO's parent company. Since NASSCO is an employee-owned company, the shipyard's employees will sell their stock to General Dynamics for $225 a share.

The deal comes as the Navy begins to homeport nuclear aircraft carriers in San Diego. In August, the nuclear-powered carrier *USS John C. Stennis* arrived at North Island Naval Air Station. The Navy is studying the possibility of homeporting two additional nuclear carriers here. Meanwhile, Naval Submarine Base on Point Loma has been a longtime home to nuclear subs.

Usually, work performed on the nuclear propulsion systems of Navy ships stationed on the West Coast is performed at the Puget Sound Naval Shipyard in Bremerton, Wash., the only West Coast yard with people qualified for such work.

The Puget Sound naval yard has sent 450 workers to San Diego to perform repair work on the Stennis.

That may change.

NASSCO will now be able to tap into General Dynamics' nuclear expertise; General Dynamics' Electric Boat Division is the Navy's premier designer and builder of nuclear submarines.

"If the Navy chooses to put (nuclear) work in the private sector, with access to General Dynamics' capabilities, it might provide additional work for some NASSCO employees," said Fred Hallett, the shipyard's senior vice president and chief financial officer.

General Dynamics officials declined to comment further, saying it was premature to speculate on future nuclear ship or submarine contracts.

General Dynamics won't be the only nuclear presence in San Diego. Newport News Shipbuilding.

Please turn to NASSCO on Page 33

Off the Charts ...

Fast-Growing Private Companies

90,000

Cruise Ship Bill Blockage

permittee shall require that any hauler, whether shipping or receiving permittee's hazardous waste, shall refrain from using streets and highways stated in condition III.C.e during the hours of 7:15 to 8:30 a.m. and 2 to 3 p.m.

g. The facility shall notify the National City School District and Kimball School immediately in the event of an emergency.

In addition, the facility will also alert the school in cases where there is a threat of a release which may cause an evacuation or shelter in place. This early notification will provide the school with additional lead time in case a real emergency is forthcoming.

h. If a Communication and Informational Panel (Panel) is established by National City council members for purposes of facilitating a dialogue between the community and the facility, then the facility must meet and confer with members of the Panel no less than four (4) times per year, unless the Panel expressly waives the need to meet on any given meeting date. The permittee will provide a copy of any Report of Violation to the Panel within ten (10) days of receipt by the permittee.

The permittee will provide at least two (2) staff members at all meetings unless a smaller number is agreed to by the Panel prior to any given meeting.

The permittee and the Panel may by mutual agreement waive the need for meeting pursuant to this section.

from San Diego Naval Station's
h.w. tx + storage permit

The permittee will document the time, date and members in attendance for all meetings. The permittee will provide this documentation to DTSC inspectors upon their request.

i. The facility may crush only those containers that are empty as defined in Section 66261.7 of 22 CCR. The containers shall be handled in accordance with all provisions of the aforementioned section.

j. No more than 15% of wastes handled at the facility shall be generated from off-site sources.

PERMIT ATTACHMENTS REFERENCED IN SECTION III

Permit Attachment Number	Plan or Document
Figure III-1	Maximum Storage Plan, Hazardous Waste Facility

SAN DIEGO BAY HEALTH RISK STUDY:

AN EVALUATION OF THE POTENTIAL RISK

TO HUMAN HEALTH FROM FISH CAUGHT

AND CONSUMED FROM SAN DIEGO BAY

Prepared for:

The Port of San Diego
P.O. Box 488
San Diego, CA 92112

Prepared by:

San Diego County Department of Health Services
Environmental Health Services
P.O. Box 85261
San Diego, CA 92138-5261

Norman W. Hickey
Chief Administrative Officer

June 12, 1990

NASSCO:

ntinued from Page 1

hich acquired San Diego's Continental Marine Services Inc. last year, is the country's ly other builder of nuclear-powered warips. Newport News officials have also wed to go after nuclear repair work.

Meanwhile, potential nuclear work is not the only reason why General Dynamics purchased NASSCO.

The $5 billion defense contractor also plans to be a contender for the Navy's new class of auxiliary dry cargo ships. Funding for the ships is expected to be approved by Congress next year, with contracts beginning in 2000. The Navy plans to build 14 of the ships, costing about $275 million each.

With NASSCO now part of the family, General Dynamics is more confident about winning such contracts.

"NASSCO will further strengthen our position as a prime contractor for ship design and construction by extending our reach, both geographically and in product mix," said Nicholas Chabraja, General Dynamics' chairman and CEO.

"The country's six major shipyards are national treasures. NASSCO has been a great player historically and we intend for that to continue."

NASSCO's success may grow even stronger with the expertise of its General Dynamics' sister, Bath Iron Works of Maine, the Navy's leading supplier of combatant ships.

"One of our objectives is to become the best shipyard, and we say that knowing that we have a long way to go," Hallett said. "We want to be better than the Japanese. To do that requires significant modernization. By being a member of General Dynamics, we have the financial capability and technical background to help us achieve that goal."

Shipyards in the Far East control about 60 percent of the world's shipbuilding market, largely due to cheaper labor and better cost efficiencies, Hallett said.

During the 1940s and 1950s, U.S. shipyards were the most-efficient yards in the world. That status began to sink because the steel industry did not put money into modernizing their facilities, Hallett said.

Now that the steel industry is up to par, it's time for U.S. shipyards to step up, he said.

"It is time for the shipbuilders to do what's necessary to be the most efficient shipyards in the world. I am a strong believer that American shipbuilding can again be competitive in the world market."

Hallett said NASSCO will also continue to seek contracts for oil tankers, cruise ships, container ships and roll-on, roll-off cargo ships.

NASSCO has been doing pretty well on its own. The shipyard, which has a $1.6 billion backlog of contracts and expects $485 million in revenues for 1998. NASSCO has also maintained a steady work force over the last couple of years. It currently has 4,000 workers.

It is one of three major shipyards in San Diego. The others are Continental Maritime and Southwest Marine Inc.

"NASSCO and the shipbuilding and repair industry have long been an important part of San Diego's economic strength and vitality," said Ben Haddad, president and CEO of the Greater San Diego Chamber of Commerce.

"The combination of General Dynamics and NASSCO is a perfect mix of a San Diego-based company who has grown to become an industry innovator and leader, combined with a seasoned veteran of worldwide shipbuilding markets."

General Dynamics is no stranger to San Diego. At one time, the defense contractor was San Diego's largest employer. That changed with the recession of the early 1990s and with cutbacks in the defense budget.

In the early 1990s, General Dynamics laid off thousands of workers due to drops in defense spending. It sold its Convair Division, which built the Tomahawk cruise missile, to Hughes Aircraft Co., which moved the operation to Arizona.

General Dynamics also sold its space division to Martin Marietta, which moved the operation out of town.

The layoffs and move left a lasting bruise on the local economy.

Is San Diego ready to welcome back General Dynamics with open arms?

Hallett seems to think so.

"General Dynamics remembers that San Diego has an excellent work force," he said. "We look forward to their return."

Late last week, General Dynamics' stock closed at $54, with a low of $53 1/16 and a high of 54 9/16.

SBI Joins With Canadian Firm for Treatment of Disease

Structural Bioinformatics Inc. announced that Montreal-based BioChem Pharma accepted a lead compound for the treatment of a human viral infectious disease in their collaboration.

SBI entered into a collaborative agreement with BioChem in August 1997 to find leads for viral and cancer targets. SBI will receive future fees from additional research including successful completion of clinical trials.

Banks:

community banks stay competitive, she sharpen skills in analyzing loan prospects from those types of loans as well, he sai

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Radionuclides

During Phase I, a screening analysis for total alpha, total beta, and total gamma activity was performed. Gross activity measurements provide a relatively inexpensive, quick, and useful determination to indicate if further analyses for specific radioisotopes is justified. Since gross measurements cannot be used to estimate the radiation dose, human health risks associated with the ingestion of radionuclides are typically addressed by analysis for specific radionuclides. Due to the limited knowledge regarding the type, amount, and distribution of radionuclide activity (both naturally-occurring and man-made) in the Bay, radioisotope-specific analyses of the fish collected in Phase I were not performed. Instead, it was determined to be most cost effective at this time to perform a scan for total alpha, beta, and gamma radiation activity.

The Phase I analytical results for total radionuclide activity are shown in Table G-14 (Appendix G). These results show a fairly consistent level of alpha and beta activity at the locations sampled, with no gamma activity detected. One barred sand bass sample from Harbor Island (SD1-05, 11.3 pCi/g) and one round stingray sample from the Otay River Area (SD1-21, 49.9 pCi/g) contained significantly higher levels of alpha activity when compared to the results of the other samples from the Bay. In addition, sample SD1-21 contained the highest detected level of beta activity (46.9 pCi/g) in the fish analyzed.

As part of a monitoring program for radionuclides in marketplace seafoods, the U.S. EPA analyzed marketable seafood collected around known low level radioactive waste ocean dump sites near Boston, MA, Atlantic City, NJ, and San Francisco, CA (U.S. EPA, 1988). In this study, seafood samples were analyzed for specific radionuclides, as well as for total alpha and beta activity. From this study, EPA concluded that the levels of man-made radionuclides detected in the samples tested were at or below those levels normally found in foods, as well as being below activity levels considered to be of public health significance or concern.

A summary, comparing the EPA results with those from San Diego Bay, are shown in Tables III-I (total alpha activity) and III-J (total beta activity). The total alpha activity ~~in the fish collected during Phase I~~ appear to be consistently elevated above the activity ~~detected in the EPA study~~. ~~Similarly~~, the total beta activity in the barred sand bass from Harbor Island and the round stingray from the South Bay, are higher than the activity detected in the EPA study. The total beta activity detected in the round stingray collected from the Harbor Island Area is similar to that found in the EPA study.

With the limited information available, no conclusions as to the source or potential health risks associated with the levels detected in fish samples from San Diego Bay can be made. Some of the differences between the two data sets may in part be due to the differences between different fish species. Nevertheless, it is recommended that further analyses be performed to identify specific radioisotopes in the fish from the Bay.

TABLE III-I

TOTAL ~~ALPHA~~ ACTIVITY
(pCi/g, wet weight)

Sample Date	Study	High	Low	Mean
Fall 1982[a]	EPA[e]	-0.03	-0.15	-0.057
Spring 1982[b]	EPA	-0.04	-0.10	-0.053
Spring 1982[c]	EPA	-0.04	-0.1	-0.1
Harbor Island - barred sand bass				
Summer 1989[d]	Bay Study	11.3	1.0	4.8
Harbor Island - round stingray				
Summer 1989	Bay Study	8.0	0.4	2.2
South Bay - round stingray				
Summer 1989	Bay Study	49.9	0.4	7.95

[a] Mixed seafood species, Boston Area.

[b] Mixed seafood species, Atlantic City Area.

[c] Mixed seafood species, San Francisco Area.

[d] San Diego Bay Health Risk Study, 1990.

[e] U.S. EPA, 1988.

pico- 10^{-12}
Curies-

TABLE III-J

TOTAL [redacted]ACTIVITY
(pCi/g, wet weight)

Sample Date	Study	High	Low	Mean
Fall 1982[a]	EPA[e]	4.2	3.1	3.8
Spring 1982[b]	EPA	5.3	3.3	4.1
Spring 1982[c]	EPA	4.5	2.2	3.8
Harbor Island barred sand bass				
Summer 1989[d]	Bay Study	36.8	9.0	20.3
Harbor Island round stingray				
Summer 1989	Bay Study	12.9	1.7	5.48
South Bay round stingray				
Summer 1989	Bay Study	46.9	0.8	10.8

0.12

[a] Mixed seafood species, Boston Area.

[b] Mixed seafood species, Atlantic City Area.

[c] Mixed seafood species, San Francisco Area.

[d] San Diego Bay Health Risk Study, 1990.

[e] U.S. EPA, 1988.

CHAPTER III SUMMARY

Phase I - Initial Screening Study

Phase I, a preliminary screening of bay-wide chemical contaminants, utilized round stingray and barred sand bass as indicator species. Indicator species are selected fish species which reflect levels of contamination in their surrounding environment, and thus provide a practical alternative to sampling many species during the screening phase evaluation.

Sampling Locations

Two sampling locations were selected for Phase I analyses. The East Harbor Island Area was selected because it is known to contain elevated contaminant levels within its sediments. The Otay River Influence Area was selected as the second site for the following reasons:

- to provide a spatial comparison of contaminant levels within the Bay, and
- the possibility of elevated contaminant levels resulting from agricultural and industrial runoff, in addition to the lack of California State Mussel Watch data for this area.

Collection of Samples

Samples were collected on July 4-5, 1989. All organisms collected on the first two trawls at both sampling locations were identified to provide data on species diversity. Subsequent trawls identified and collected for analyses only the targeted fish species.

Samples were stored on ice and delivered within 24 hours to Pacific Analytical, Inc., for analysis. The fish samples were composited into five groups of four fish each according to size. Fish were dissected into two fillets, one for immediate analysis, and the second for later use. During Phase I only, liver samples were collected and analyzed.

All Phase I samples were analyzed for:

1. EPA Priority Pollutants
2. Organotin compounds
3. Radionuclides

A limited analysis was performed for;

1. 301(h) organophosphorus pesticides
2. Chlorinated dioxins and furans

Identification of Chemical Contaminants of Concern

Determination of Preliminary Risk Estimates. Preliminary risk estimates were determined using a conservative consumption rate of 165 g/day (6 oz/day). At this consumption rate, a person would be eating more than one serving of fish each day.

Contaminants which had estimates of risk with health hazard indices of ≥1.0 and/or excess lifetime cancer risk estimates of ≥1/100,000, were considered to be potentially significant and were regarded as the contaminants of concern.

Chemical Contaminants of Concern. The following chemical contaminants yielded unacceptable estimates of risk using maximum contaminant levels and a conservative consumption rate and were considered of concern:

- DDTs,
- phthalates,
- mercury, and
- n-nitrosodimethylamine.

These contaminants were included in Phase II analysis to further estimate the potential health risks.

Additional Chemicals included in Phase II Analyses. Three contaminants which did not fit the screening criteria mentioned above, were also included in Phase II analyses. Analytical problems were encountered with the detection of PCBs in muscle tissue. However, since elevated levels were found in all liver samples, they were included. Benzene and pentachlorophenol were also included at the request of the Study Review Panel.

Other Chemicals not Included in Phase II Analyses. Arsenic risk estimates were significant using risk assessment parameters established for inorganic arsenic. However, arsenic was not included in Phase II analyses because there is no Cancer Potency Factor (CPF) currently available to evaluate risks from organic arsenic. Consequently, all preliminary risk estimates were based on a CPF for inorganic arsenic. See Chapter 5 for further discussion.

At the time that preliminary risk estimates were determined, the Reference Dose (RfD) for selenium was 0.01. Using this value, hazard indices were <1.0 for both the round stingray and barred sand bass. Using a recently updated RfD of 0.003, a hazard index of 1.39 for the stingray results. See Chapter 5 for further discussion.

Screening for total alpha, total beta, and total gamma activity was performed in Phase I. No gamma activity was detected. The total alpha activity in the fish collected during Phase I appear to be consistently elevated. Similarly, the total beta activity in the barred sand bass from Harbor Island and the round stingray from the South Bay, are higher than the activity detected in an EPA study.

With the limited information available, no conclusions as to the source or potential health risks associated with the levels detected in fish samples from San Diego Bay can be made. Further analyses should be performed to identify specific radioisotopes in the fish from the Bay.

2/16/93

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TAB 242
Admin Rec

PROPOSED
DRY DOCK FOR NAS NORTH ISLAND

SAN DIEGO'S PROACTIVE STANCE COMMITTEE REPORT
SAN DIEGO SHIPYARD DEMOGRAPHICS

NAS NORTH ISLAND "DRY DOCK" POINT PAPER
CURRENT AND PROPOSED BERTHING / DRY DOCK PLAN

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL	# of pages ▸ 11
To G. MAHAN	From G.D. KIRK
Dept./Agency	Phone # 6-3767
Fax # 6-2435	Fax # 6-0517

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

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February 16, 1993
BOB NORDGREN
PACSHIP
232-8200 X118

OPPORTUNITY:

To maintain and expand the private Shipyard repair capability in San Diego, and expand the available U.S. Navy ship repair work awarded to private sector shipyards in San Diego.

DISCUSSION:

The loss of San Diego jobs, because of DoD cuts and unfair private/public competition, is just the beginning of the total injustice to San Diegans and all U.S. taxpayers. The tax money that funds the excessive and hidden costs of work performed at Naval Shipyards invisibly flows from and through the Navy's own budget accounts. But, the fact remains that the extra money it takes to fund the more expensive Navy shipyards comes directly from the pocket of corporate and individual taxpayers.

Taxpayers are being subjected to $600/mandays at public shipyards (Long Beach Naval Shipyard), while private sector companies are going out of business offering $300/manday work.

San Diego's Water-Front Industry is a fundamental building block of a balanced, stable, and durable society and economy. It must not be allowed to collapse because the jobs of San Diego are given away to the public sector. The San Diego's $ 500 Million PER YEAR "water-front" industry:

* provides SOCIAL / ECONOMIC TRANQUILITY -- good paying jobs for the segment of the population that do not , and may never, posses a high school diploma or college degree. Over $ 270 Million in direct WAGES. See TAB (A).

* provides UPWARD ECONOMIC MOBILITY -- Advancement On-the-jobs is easier or more realistic than going back to school or college to qualify for "high-tech" or professional jobs.

* provides HIGH MINORITY Representation -- in the labor force. See San Diego's Waterfront EEO Percentages TAB (A).

* provides MORE THAN $82,498,000 IN ANNUAL WAGES TO MINORITY FAMILIES.

RECOMMENDATIONS:

* Support the closure of Long Beach Naval Shipyard. It would be in the best

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interest of the Country and the U.S. Navy to close Long Beach NSY and perform in the private sector those repairs presently assigned to Long Beach. This would lead to less expensive repairs of the same quality, saving U.S. Navy budget funds for other use, or reducing the budget requirements as a saving to the nation. In addition, this would stimulate the West Coast ship repair industry, bring jobs back to the private sector, increase capital investment, increase the local tax base, and provide employment in the private sector for those shipyard employees presently working in the public sector at Long Beach NSY.

Develop an aggressive plan to relocate and assimilate Long Beach Naval Shipyard personnel to San Diego and the San Diego "water front" industry.

• Support Congressional action to discontinue the West Coast "experiment" of the general provision of the 1993 DoD Appropriation Act:

Sec. 9042. None of the funds available to the Department of the Navy may be used to enter into any contract for the overhaul, repair or maintenance of any naval vessel homeported on the West Coast of the United States which includes charges for interport differential as an evaluation factor for award. TAB (X).

• Seek Congressional action to support U. S. Navy recommended homeport change for all surface ships in Pearl Harbor to San Diego.

• Support the homeport change of all San Diego based Submarines to Pearl Harbor. Note: Current Navy plans call for two west coast nuclear capable shipyards to remain open. (Puget Sound Naval Shipyard and Pearl Harbor Naval Shipyard.)

• Support an aggressive action to dredge San Diego Harbor to 50 feet up to B "22" to support CVN homeporting and 40 feet south of the Bay Bridge to accommodate the full spectrum of surface ships.

• Strategic Homeporting. Support congressional action to freeze the money expenditures immediately in Everett, Washington and similar efforts on the East Coast. The GAO analysis reflects a decrease in Norfolk based surface ships from 114 to 90 by fiscal 1998, leaving a vast surplus of berthing space and power. The San Diego Naval Station was home port for 74 surface ships and two "L" Class aircraft carriers in FY 1990. Based on 74 surface ships, there is a surplus of 8,082 feet of berthing space and 11,830 amperes of power. By fiscal year 1997, San Diego is expected to decrease the number of ships to 48. Thereby, leaving a vast surplus of improved berthing space and power. It is in fact ludicrous and a total waste of money to build completely new bases while there is a surplus of space at existing bases co-located with the SOCAL operating area.

• Environmental Legislation/Economic Efficiency. The climate of the "political popularity of environmental regulation" must not offset a balance of the beneficial environmental net gain to the economic impact on industry and the resulting harm to traded and commerce. The implementation of new

-13116

environmental legislation should be coordinated with industry regarding development of technology, products, and procedures before such legislation becomes law. Negative economic impacts could be mitigated with planned and timed implementation of the laws and regulations, while still allowing for "technology forcing" legislation to be enacted. In Addition, recent environmental regulations has placed onerous and often redundant record keeping requirements on industry with no resulting benefit to the environment. Much of these resources required to keep such records could be applied elsewhere with greater return to the environment.

* Develop a Private / Public joint effort to build a Dry Dock and Support Facilities to homeport CVN'S at NAS North Island. This proposal would require the Private sector, along with San Diego Port Authority support, to plan, fund, and construct CVN capable Dry Dock and Support Facilities. Under this proposed plan, the U.S. Navy would "Lease to Own" the facilities. (Note: the current plans call for FY 96 funding for the construction of berths for three CVN's.)

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The San Diego Waterfront Industry

Manufacturing industries, such as San Diego's waterfront industries, are a fundamental building block of a balanced, stable, and durable social & economic system.

- Provides SOCIAL / ECONOMIC TRANQUILITY – good paying jobs for the segments of the population that do not, and may never, possess a high school diploma or college degree. For example, at Pacific Ship Repair wage rates are as follows:

Skill Level	Hourly Pay Rate	% of Work Force
Apprentice 3	$ 8.25	3.3
Apprentice 2	$ 8.75	5.3
Apprentice 1	$10.50	10.1
Journeyman	$12.90	60.3
Leadman	$13.75	10.1
Foreman	$14.50	8.1
General Foreman	$15.50	2.8

- Provides UPWARD ECONOMIC MOBILITY – Advancement On-the-Job is easier or more realistic than going back to school or college to qualify for "high-tech" or professional jobs.

- Provides HIGH MINORITY REPRESENTATION in the labor force:

	Hispanic	Black	Asian/AI	Total
PacShip %/Waterfront %	27/[illegible]	15/10	10/10	53/59
Total (#) Minorities	198[illegible]	550	536	3073

San Diego Shipyard Demographics
(Percent / Actual Number)

EEO-1 Category	Total	Male	Female	Minority	White
Apprentice	29/1487	27/1422	1/65	19/959	10/528
JM/LM/FM	71/3695	70/3632	1/63	41/2114	31/1581
TOTAL	100/5182	98/5054	2/128	59/3073	41/2109

Male	Black	Asian	Am. Ind.	Hispanic	White
Apprentice	4/211	2/90	2/11	12/607	10/505
JM/LM/FM	6/321	8/407	3/15	26/1359	30/1530
TOTAL	11/532	10/467	5/26	38/1946	40/2053

Female	Black	Asian	Am. Ind.	Hispanic	White
Apprentice	2/9	1/4	2/8	4/19	3/25
JM/LM/FM	2/9	0/0	.02/1	4/22	.6/31
TOTAL	.3/18	.1/4	2/9	.8/41	1/56

Male/Female	Black	Asian	Am. Ind.	Hispanic	White
Apprentice	4/220	2/94	4/19	12/626	10/528
JM/LM/FM	6/330	8/407	3/16	26/1361	31/1581
TOTAL	11/550	10/501	7/35	38/1987	41/2109

BOB NORDGREN
PACSHIP
619-232-3200 X-135

OPPORTUNITY:

To maintain or increase the number of AIRCRAFT CARRIERS homeported at NAS North Island and improve the facilities to support CVN's, CV's, LHD's, and LHA's.

DISCUSSION:

The U.S. Navy's "White Paper," "From the Sea," Recapitalization plan emphasizes a goal to preserve 12 Aircraft Carriers. This reduction in the number of deployable aircraft carriers together with closure of NAS Alameda and Long Beach Naval Shipyards (sure to be on next years Base Closure List) on the west coast, NAS North Island will emerge as the primary HOMEPORT for Pacific Fleet Carriers.

NAS North Island is currently capable of mooring one CVN and two CV's. The current two phase plan for dredging and construction of a combined Pierhead and Bulkhead Line, is now going through the Environmental Impact Statement development.

When the current plan is completed, NAS North Island will have the capability of berthing three CVN's and two CV's, enclosure (1). This plan will not provide facilities for drydocking "Big Deck Ships."

With the current draw down of Long Beach Naval Shipyard and the likelihood of Long Beach being on the 1995 Base Closure List, a plan must now be developed to increase the organic support for "Big Decks" in San Diego.

In view of the above closures, the current plan must be modified to include organic CVN support in San Diego. This plan must include a CVN dry dock capability. The are few options for the Port of San Diego when developing a plan to build a "Big Deck" capable Dry Dock.

However, under current budgetary and environmental constraints, NAS North Island becomes the single most logical option for construction of a dry dock. The current plan can be modified to include a dry dock. By modifying the current plan to include a dry dock, enclosure (2), the berthing capability is increased from three (3) to four (4) CVN's. Additionally, you gain the capability to dry dock all "big deck" ships in San Diego.

Funding is anticipated for the proposed (no dry dock) plan in FY-95 or 96. However, the addition of a dry dock capability to the current plan may require additional funding.

The San Diego Chamber of Commerce's Proactive Stance Committee, in support of the City and County of San Diego interest to maintain a strong Navy presents, has developed a plan to fund and build a "Big Deck" support facilities at NAS North Island. The plan calls for developing a Private/Public joint effort to plan, fund, and construct a dry dock at NAS North Island.

Under the proposed plan, private industry (special purpose consortium) would fund and construct the dry dock and maintenance support facilities. The consortium would in turn lease the facilities back to the user agency for a predetermined period and cost to user. At the end of this designated period, the U.S. Navy would own the facilities.

During the preparations for the last round of the Base Closure Committee, the San Diego Proactive Stance Committee was able to generate interest from private industry to support the funding and construction of a Dry Dock at NAS North Island.

Recommendations:

* U.S. Navy modify the current NAS North Island Berthing plans to include a "Big Deck" Drydock.
* If funding is not available, work with the San Diego Proactive Committee to develop a Private/Public effort to build a Drydock in the Port of San Diego.

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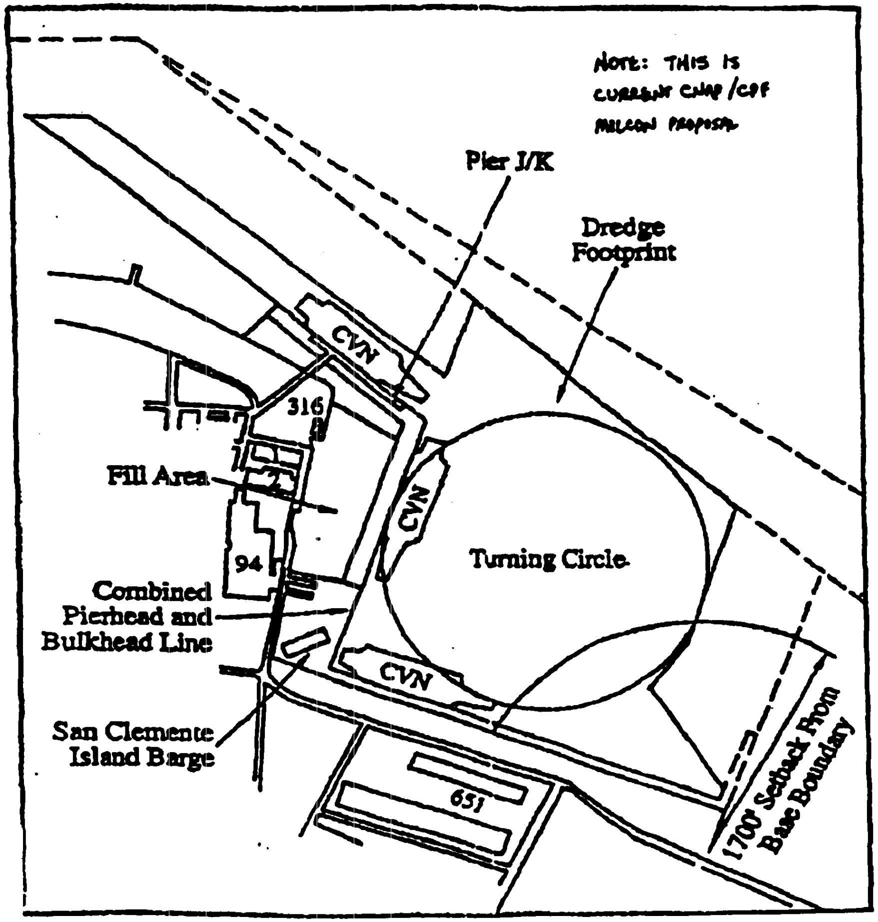

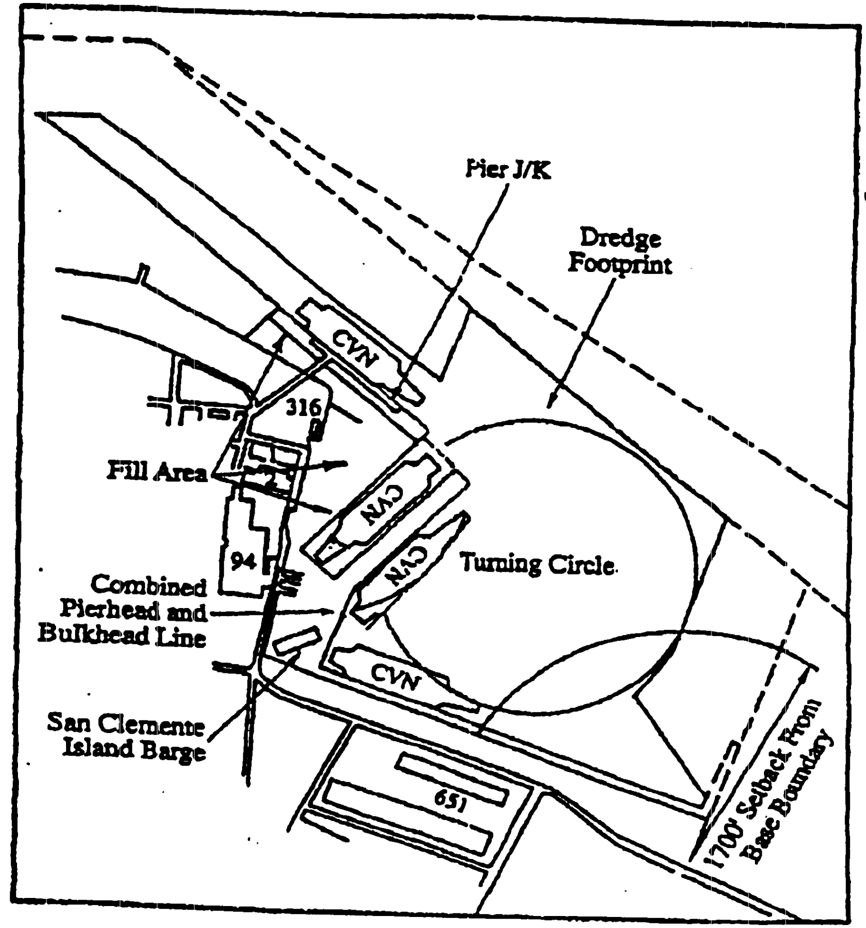

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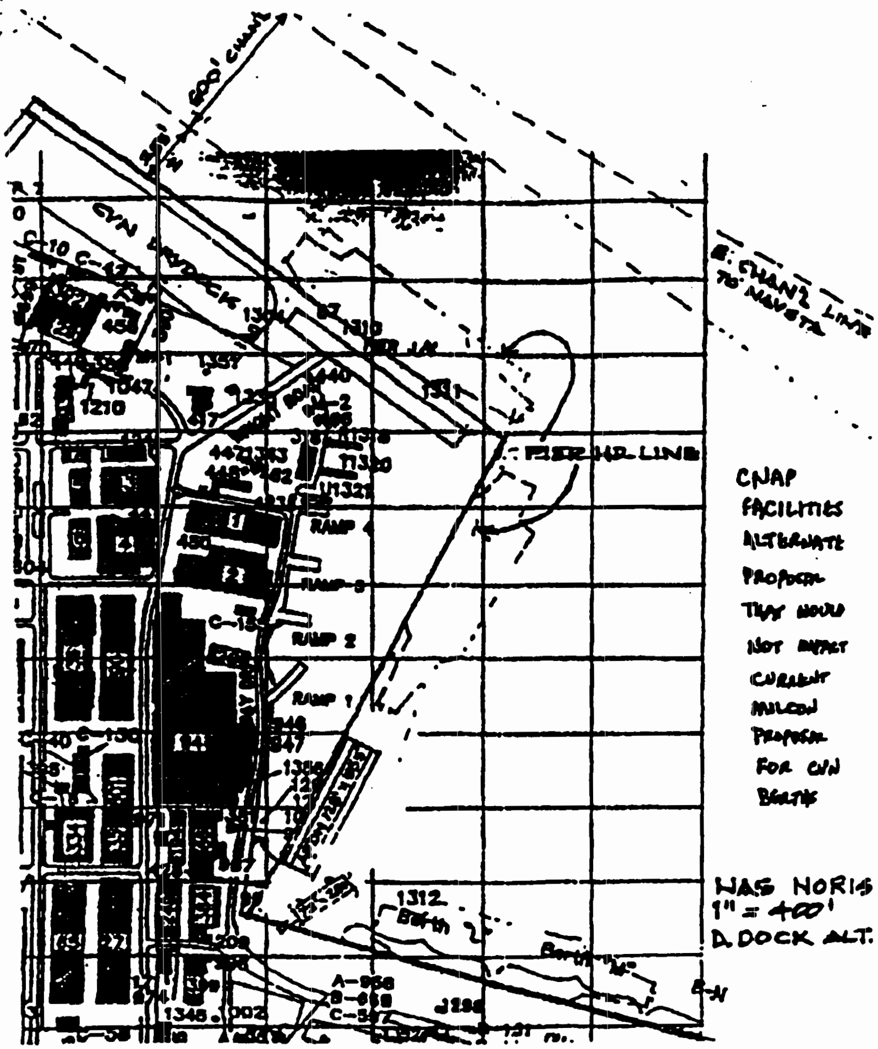

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Climate Change

NATIONAL SECURITY COUNCIL AUTHORIZES CLIMATE CHANGE EXEMPTION FOR MILITARY

The National Security Council (NSC) has issued a policy memo that effectively exempts U.S. military operations and training from any greenhouse gas emissions limits set in the administration's climate change policies. The March 27 memo signals President Clinton's approval of the exemption, says Sherri W. Goodman, the Pentagon's top environment official. *Text of the memo is reprinted below.*

The NSC memo delivers White House guidance on DOD's obligations in implementing the international climate change treaty, agreed to by the United States and other industrial countries last December in Kyoto, Japan. The memo states that as the administration develops its domestic policies on climate change, "it has been determined that measures intended to promote reductions in emissions of greenhouse gases shall not impair or adversely affect military operations and training (including tactical aircraft, ships, weapons systems, combat training and border security) . . ." This means the military now has "an exemption for emissions from domestic military operations and training," said Goodman, who is deputy under secretary for environmental security, in a May 1 interview.

A Senate source says, however, the NSC language falls short of a blanket exemption, adding that "it is vague enough that it will allow the adminstration to do whatever they want."

Emissions from operations and training comprise 58 percent of DOD's total greenhouse gas emissions, with the remainder coming from installation operations and non-tactical vehicles. DOD now will concentrate on reducing its greenhouse gas emissions through its facility operations. DOD is the largest single energy consumer in the federal government; carbon dioxide, a product of energy use, is considered the main greenhouse gas.

The NSC memo mirrors an announcement made by Goodman in congressional testimony in March and answers concerns high-level Pentagon officials have had over the impact greenhouse gas emissions limits might impose on military

continued on page 17

Text: NSC Memo Exempting Military Operations and Training

National Security Council
Washington, D.C. 20504

March 27, 1998

Memorandum For

Ms. Kristie A. Kenney
Executive Secretary
Department of State

Mr. Neal Comstock
Executive Secretary
Department of the Treasury

Col. James N. Mattis
Executive Secretary
Department of Defense

Col. M. Manning, USMC
Secretary, Joint Staff

Mr. Jim Dorskind
Executive Secretary
Executive Secretariat
Department of Commerce

Mr. James N. Solit
Director, Executive Secretariat
Department of Energy

Mr. William A. Nitze
Assistant Administrator for International Activities
Environmental Protection Agency

Subject: Climate Change

President Clinton is committed to reducing greenhouse gases as part of his national security strategy. Last December in Kyoto, the United States led the way in shaping an historic treaty to address the challenge of climate change.

At Kyoto, our negotiators sought and obtained several provisions designed to address the unique circumstances of the U.S. military. First, emissions from multilateral military operations pursuant to the UN Charter (such as Desert Storm, Bosnia and Grenada) are exempt from the agreement reached at Kyoto. Second, emissions from military (and civilian) international air and marine transport are also exempt. Third, the Kyoto agreement authorizes countries to reallocate emissions from military activities if they choose. Department of Defense officials participated prominently in the U.S. delegation at Kyoto.

This memorandum provides White House guidance concerning the obligations of the Department of Defense in implementing the Kyoto agreement. In this regard, the following points are relevant:

First, the President has emphasized that the United States will not assume binding obligations under the Kyoto Protocol until developing countries meaningfully participate in efforts to address climate change. He has also indicated that, in his view, the agreement reached at Kyoto does not provide for the meaningful participation of developing countries.

Second, as we develop our climate change policies, it has been determined that measures intended to promote ~~reductions in emissions of greenhouse gases shall not~~ impair or adversely affect military operations and training (including tactical aircraft, ships, weapons systems, combat training and border security) or the ability to reallocate to the Defense Department emissions resulting from overseas activities and bases pursuant to the agreement at Kyoto. We understand that emissions from military operations and training make up roughly 58 percent of the Defense Department's total greenhouse gas emissions.

The Department of Defense has played an important role in the development of our climate change policies. We are committed to ensuring that the Department continues to play such a role. We look forward to working to address the challenge of climate change while protecting our military readiness.

Glyn T. Davies
Executive Secretary

to proposal status — as a way to give the agency time to evaluate the conflicting comments it received.

The debate also led to heightened concern among industry groups that EPA would be unable to keep its promise to adopt flexible implementation strategies for the new standard.

In an apparent concession to environmental groups, EPA sources now say that the agency is reexamining its revocation proposal to determine whether it may have erred in revoking the standard in some locales, an EPA source says. While EPA is unlikely to backtrack in 90 percent of the areas, this source says, it is reevaluating its decision in the remaining 10 percent according to several factors, including the degree to which those areas have pushed forward with efforts to ensure air quality maintenance.

Contracts

ARMY RE-AWARDS PINE BLUFF INCINERATOR CONTRACT TO RAYTHEON

In a long-awaited decision, the Army announced May 1 that it had re-awarded to Raytheon Demilitarization Co. a $512
million contract for chemical weapons incineration in Pine Bluff, AR. The contract award was suspended last fall, triggered by
a General Accounting Office (GAO) determination that the Army had improperly awarded its initial contract to Raytheon.
"We're excited to learn that [the award of the contract to us] has been upheld," a Raytheon source says.
In a May 1 press release, the Army says it made the new contract decision "based upon a thorough and detailed
review of the issues raised by the GAO." GAO, responding to a contract protest, found last Nov. 13 that the Army had
improperly awarded the Pine Bluff contract to Raytheon and ordered the military to re-evaluate the contract award
process (see Nov. 18, 1997, issue, p3). Details of GAO's decision were not made public because the parties involved
in the dispute could not agree on what information to release. At press time, it was unclear what issues GAO had
raised and how the Army had changed its contract evaluation process.
The systems contract — covering construction, equipment installation, systemization, operation and closure of
the facility — was originally given to Raytheon last July. However, a competitor, EG&G Inc., protested the award,
charging that the Army had disregarded its contracting guidelines. EG&G claimed that because it had higher technical
and management scores and a lower bid, it should have received the contract. The Army, EG&G said, unfairly
compared its performance at the Tooele, UT, chemical weapons incinerator with Raytheon's performance at the
chemical weapons incinerator on Johnston Island in the Pacific. The comparison was for a six-month period rather
than the lifetime of the two plants, EG&G said.
EG&G is "very disappointed" that it didn't win, but it continues to fully support the Army's program, an EG&G
source says. The company is waiting for a May 6 debriefing from the Army to learn how the military could award the
contract to Raytheon in light of GAO's decision, the source says.
Raytheon's contract was awarded with a limited notice to proceed, meaning that the company can plan for
construction activities but must wait until the state issues environmental permits before breaking ground. Next month, the
Arkansas Department of Pollution Control and Ecology expects to release for public comment draft Resource Conservation &
Recovery Act and air permits. The Army anticipates that final permits will be issued by the end of the year.
The contract covers the destruction of all of the Army's chemical weapons stored at Pine Bluff Chemical
Activity. The facility stores 12 percent of the nation's chemical weapons stockpile, including 6.4 million pounds of
mustard agent in ton containers, and 1.25 million pounds of nerve agent in M-55 rockets and land mines.

NSC issues memo on climate change . . . begins on page 6

training. The administration's position also may quiet criticisms key members of Congress have expressed against the adminis-
tration for not securing language in the international climate change treaty that fully protects military readiness.
The memo says that the president "is committed to reducing greenhouse gases as part of his national security
strategy." This reaffirms the priority that Clinton is giving to reducing greenhouse gas emissions, Goodman said. In
some ways, it is stating that "protecting our environment and maintaining military readiness go hand in hand," she
added. The threat of climate change as a national security threat will be elaborated on in the president's upcoming
national security strategy, she said.
The NSC memo also reiterates narrow military-related exemptions that are contained in the climate change
treaty. In particular, it reaffirms that the United States and other countries may agree to reallocate emissions from
military bases located in foreign countries, Goodman said. Without reallocation, the rules of the treaty call for emis-
sions to be assigned to the countries in which they occur.
The NSC directs that DOD will continue to play an "important role" in developing climate change policies.
Along these lines, the military will continue to reduce energy consumption at its facilities, according to Goodman.

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Defense Environment Alert

An Inside Washington Publication

an exclusive biweekly report on defense policies for cleanup, compliance and pollution prevention

Vol. 6, No. 16 — August 11, 1998

Services Reject Plan To Fund Joint Acquisition Pollution Prevention

The Army and Air Force are rejecting a proposal from DOD's environment chief, Sherri W. Goodman, to fully fund inter-service pollution prevention projects aimed at reducing the use of hazardous materials across weapons systems. In recent letters, the services said they have already met earlier pollution prevention targets and reduced their toxic releases. Military sources say that despite the services' "non-concurrence," supporters of Goodman's budgeting proposal continue to negotiate with the services' acquisition offices. *Page 3*

Senate Boosts Funds To Test Alternative Chem Weapons Technology

The Senate late last month approved two amendments to the FY99 defense appropriations bill that together would provide up to $43 million extra for the DOD program exploring incineration alternatives for chemical weapons destruction. The amendments, sponsored by Kentucky Sens. Wendell Ford (D) and Mitch McConnell (R), provide $18 million to begin implementing any proven alternative technologies and allow DOD to transfer up to $25 million of unobligated funds to the alternatives program to test technologies.

Page 5

DOD Misses Acquisition Quotas For Alternative Fueled Vehicles

The Defense Department in FY97 missed by nine percentage points the mark for buying and leasing alternative fueled vehicles required by federal energy law and an executive order, and will also likely fail to meet future goals, according to DOD reports. The quotas, which aim in part to reduce air pollutants, went unmet because of market-related issues, military sources say. To resolve anticipated problems in meeting future years' acquisition goals, the Navy recently mandated the purchase of AFVs for administrative purposes.

Page 6

Army Awards Three Contracts To Test Chem Weapons Incineration Alternatives

Having failed to locate sufficient funding, the Army late last month awarded task orders to only three firms to demonstrate alternatives to incineration for the disposal of chemical weapons, even though the service and DOD had been under intense congressional and public pressure to fund six demonstrations. Military and citizen sources say more money may be found in the next few months, allowing additional demonstrations to begin before the end of the calendar year.

Page 8

News In Brief

EPA has formed a new work group to address community concerns about the treatment, disposal and transportation of high-profile military wastes such as napalm and chemical weapons' decontamination fluid.

Page 11

In an exclusive interview, Col. W. Richard Wright, the retiring chair of DOD's Explosives Safety Board, talked last week about recent environmental munitions rulemaking, praising the open process used for the munitions rule. Wright also discussed challenges still facing the military in the munitions environmental arena.

Page 22

Citizens living near the Rocky Mountain Arsenal in Colorado, last week, sent EPA's national ombudsman a list of five issues they want addressed in the ombudsman's fact-finding mission at the arsenal, one of the Army's most costly cleanup sites.

Page 10

$24 million cut in Senate remains

DOD FEARS PENDING CUTS TO ENVIRONMENTAL RESTORATION ACCOUNTS

Department of Defense environmental officials will closely watch next month as Congress determines how to handle a $35 million and $24 million cut by the House and Senate, respectively, to environmental restoration accounts.

The Senate July 30 passed the fiscal year 1999 defense appropriations bill by a 97 - 2 vote. That bill includes a $24 million cut to DOD's environmental restoration accounts spread among the military services. Congress in September will begin conference proceedings on the spending legislation — the House passed its version in June — that will combine the two bills.

The Senate also adopted a number of sundry environmental amendments, including:

• An amendment pushed by Sen. Daniel Akaka (D-HI) to set aside $12 million for the development of electric vehicles;

• A provision that provides $10 million to the Defense Logistics Agency for environmental restoration at a site in Charleston, South Carolina, pushed by Sen. Ernest Hollings (D-SC), and;

• Funding provisions sought by Sen. Barbara Mikulski (D-MD) to launch a ship-scrapping pilot program to determine the financial viability of domestic ship-scrapping of old naval vessels.

The House version contains its own cut to the environmental restoration account that is managed by the Army. Congress balked this year at the Army's alleged failure to recoup cleanup funds at government-owned contractor-operated (GOCO) facilities. According to report language accompanying the House bill, Congress is "aware that the Army may be able to recover significant costs associated with the environmental restoration of GOCO facilities." The language adds that defense appropriators are "disappointed with the Army's limited efforts to address this opportunity." As a result, the House cut the Army's cleanup account by $35 million.

DOD previously appealed to Senate authorizers to replace the $24 million cut in the authorization bill – the same cut as is in the Senate appropriations bill. One DOD source says the department has made a similar appeal to House appropriators to fully fund the environmental restoration accounts as well. The source says DOD officials will closely watch the upcoming conference proceedings to see how Congress finalizes the environmental restoration accounts.

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Alternative Fueled Vehicles

DOD MISSES MARK ON PURCHASES OF ALTERNATIVE FUELED VEHICLES

The Defense Department is not meeting its alternative fueled vehicle (AFV) acquisition quotas under the 1992 Energy Policy Act (EPACT) and a 1996 executive order, which in part aim to reduce air pollutants by requiring the federal government to increase the percentage of AFVs in its fleets. The department is finalizing an annual report to the Office of Management & Budget (OMB) that reveals just 24 percent of DOD's procured non-exempted vehicles in fiscal year 1997 were alternative-fueled — missing the 33 percent requirement by nine percentage points.

DOD is also reporting that it expects to miss AFV procurement goals this year and in FY99.

While some of the services met or exceeded that requirement, others were far below the standard — with the Army weighing in with the lowest level at 8 percent.

The requirement applies as a percentage of vehicles purchased that year, and is applicable only to non-tactical administrative vehicles. Tactical vehicles are exempt. The percentage of alternative fueled vehicles — such as natural gas, electric or ethanol-powered vehicles — that must be purchased increases each year, reaching 50 percent in FY98 and 75 percent in FY99 and beyond.

DOD expects to fail to meet the FY98 requirements and most of the services project to miss the 75 percent quota in FY99, government sources say. This year, the department expects to acquire about 25 percent of its administrative vehicles as AFVs, and in FY99, nearly 50 percent, according to a report similar to the OMB report that was recently sent to the Senate Armed Services Committee in response to requirements in the FY98 Defense Authorization Act. The Army, Navy and DLA will not meet those requirements because they have failed to budget enough money to cover the incremental costs of AFVs over conventionally-powered vehicles, according to the report to the Senate. Through FY98, the Marine Corps will meet the requirements, and the Air Force, if not achieving the goals, at least will come "very close," the report says.

The reasons for the dismal numbers primarily are the result of market-related issues, according to government sources, who point to an inadequate fueling and maintenance infrastructure for AFVs and the lack of a complete range of offerings in the types of vehicles needed by the military. Another factor that may make the requirement more difficult to attain is congressional language in the pending FY99 defense appropriations bill that zeroes out funding to purchase any type of passenger-carrying vehicles, according to the report to the Senate. "If the action is sustained, the cut funds will make DoD's FY 1999 AFV requirement even more difficult to attain," the report says. This is because manufacturers offer fewer AFV options in the non-passenger vehicle categories, according to a government source. Passenger-carrying vehicles are comprised of minivans, sedans and buses, but do not include light-duty trucks.

Other reasons for missed goals are prohibitions on converting government-leased conventionally-fueled vehicles to alternative fuels and the high incremental costs of AFVs over conventionally-powered vehicles. Also, the limited range of electric vehicles — often less than 60 miles — can make the vehicles unsuitable for many military uses, according to the report to the Senate.

In the upcoming report to OMB, the services vary widely in their FY97 purchases of AFVs as a percentage of non-exempt vehicle purchases. The Marine Corps purchased the highest percentage of AFVs at 53 percent, followed by the Navy at 46 percent, Air Force at 33 percent, Defense Logistics Agency at 10 percent and Army at 8 percent.

According to a government source, overall, DOD purchased about 15,000 administrative vehicles in FY97, approximately 7,500 of which were covered by EPACT. Of the 7,500 vehicles, the military received about 1,800 AFV credits. Because heavy-duty and some other types of AFVs can receive more than one AFV credit under the EPACT accounting method, those credits equaled about 1,650 actual AFVs.

Projections for FY98 indicate similar percentages: DOD will acquire about 7,100 vehicles covered by EPACT, for which it will receive about 1,750 AFV credits, according to the report to the Senate. This includes about 1,700 AFVs, and about 50 additional credits for acquiring medium- and heavy-duty AFVs or vehicles with zero emissions, according to the report.

In anticipation of missing the FY98 goals, at least one service — the Navy — is sending out a message aimed at pressing vehicle procurement activities to purchase alternative fueled vehicles over gasoline-powered vehicles (*see related story*). The Army also is reportedly attempting to develop a policy for its installations to address the purchase rates, according to a military source.

One military source says that the Army is aware of its compliance problem and realizes it needs to make some adjustments. The Army currently is wrestling with the Defense Department comptroller over $2 million that the Army wants released to purchase AFVs this year, according to the source. This source was unclear as to the reason why the comptroller is holding up the funds.

The mandates under EPACT and the 1996 executive order on AFV purchases stem from both an energy security need — to reduce the nation's dependence on oil — and the pursuit of lower air emissions to improve air quality. But one military source says the country as a whole may not have progressed as rapidly as EPACT envisioned in its goal-setting. And another source believes that because the military eventually will be able to meet the AFV requirements, it is not that critical if the military misses the goals in the next couple of years. President Clinton in Executive Order 13031, titled "Federal Alternative Fueled Vehicle Leadership," called on federal agencies to annually submit plans on their compliance with the EPACT yearly purchase quotas. If an agency fails to meet the goals, it must give an explanation and a plan for complying with the law, according to the order. The acquisition requirements apply to both purchased and leased vehicles and give multiple credits to medium- or large-duty vehicles operating on alternative fuels and to "zero-emission" vehicles.

Several different fuels are defined as "alternative fuels," including E85, a mixture of 85 percent ethanol with 15 percent gasoline; M85, a mixture of 85 percent methanol with 15 percent gasoline; electric; compressed natural gas; liquified natural gas; propane; and hydrogen.

NAVY MANDATES AFV PURCHASES TO REDUCE AIR POLLUTANTS

The Navy's top environment official is calling on procurement personnel to purchase alternative fueled administrative vehicles in preference to conventionally-powered vehicles in order to reduce air pollutants and greenhouse gases and to put the Navy on track for meeting alternative fueled vehicle (AFV) purchase requirements under energy law and a presidential executive order.

The directive from Navy Assistant Secretary for Installations & Environment Robert Pirie sends the message that "the decision to buy an AFV is now the rule, rather than the exception," and buying non-AFVs, such as gasoline-powered vehicles, for administrative purposes will require a waiver, says a government source.

According to a July 16 memorandum from Pirie to the chief of naval operations and the commandant of the Marine Corps, "Notwithstanding the minimum requirements of [Executive Order 13031 and the 1992 Energy Policy Act], all vehicles not specifically exempted which are procured (purchased or leased) by the Department of the Navy following issuance of this policy memorandum shall be capable of being powered by alternative fuels." The memo applies to "all vehicle procurement activities, including Navy Working Capital Fund activities," unless the chief of naval operations or the Marine Corps commandant specifically waives the requirements. Working Capital Fund activities acquire the Navy's larger administrative vehicle fleets, according to the government source.

The executive order and Energy Policy Act both establish that a certain percentage of AFVs must be purchased annually as a percentage of the total number of administration vehicles acquired by federal agencies for both energy security and environmental reasons. The AFV acquisition goals "are intended to reduce the Nation's dependence on foreign oil, to improve the Nation's air quality by potentially reducing pollutants and green house gases (GHG) in the atmosphere, and to exercise federal leadership in the acquisition of AFVs," the memo says.

The Navy was driven to issue the policy because it foresaw a failure to meet future AFV acquisition goals. The Navy is about to report to the Office of Management & Budget that it met the FY97 legal mandate to purchase at least 33 percent of its non-tactical, administrative vehicles as alternative-fueled, but expects to miss the 50 percent acquisition requirement in FY98 and more stringent future-year requirements, according to the government source. The 1996 executive order requires that federal agencies not achieving the AFV purchase goals must submit an explanation and strategy for achieving compliance with the requirements.

The directive from Pirie aims to avert missed goals in future years and send the message out to procurement activities before AFV purchase decisions are made for 1999, according to the government source. The intention is to make procurement officers base decisions not to buy or lease an AFV on rational reasons, such as having little infrastructure to support AFVs at an installation, the source says. On AFV purchases, there have been two schools of thought: those who were unaware of the AFV requirements and those that chose to ignore the requirements, the source says. Now, if a gas-powered vehicle is acquired, "you have to justify why you made that decision," the source says.

The policy does not contain any criteria for waiving the mandate. Such decisions are left to the chief of naval operations or the Marine Corps commandant in issuing implementing guidance that follows the memo's direction, according to the source.

The memo concludes: "The Department of Navy is committed to maintaining a leadership position in the environmental arena and transition of our non-exempt vehicle fleets to more environmentally friendly fuels is a significant step in that direction."

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While the Navy fared better than some of the other services in reaching the FY97 goal — with the Navy purchasing 46 percent of its administrative vehicles as alternative-fueled — it appears to be the only service to have recently issued a policy that attempts to maintain compliance. DOD, overall, failed to achieve compliance in FY97, with the Army and Defense Logistics Agency accounting for that failure (*see related story*).

The services list various reasons for missing the goals, such as a lack of infrastructure to refuel and maintain AFVs. AFVs include electric vehicles and vehicles powered by a methanol-gasoline mix, ethanol-gasoline mix, natural gas, propane or hydrogen.

Chemical Weapons

ARMY AWARDS ALTERNATIVE TECHNOLOGY CONTRACTS TO THREE COMPANIES

Late last month the Army awarded task orders to three firms to demonstrate alternatives to incineration for chemical weapons destruction, having failed to locate funding for six demonstrations. The move comes despite intense pressure from environmentalists and Senate defense panels that all eligible companies be allowed to prove their technologies (*Defense Environment Alert*, July 28, p3).

In announcing the contracts July 29, Michael Parker, Assembled Chemical Weapons Assessment (ACWA) program manager, "emphasized additional task orders . . . may be awarded pending the availability of additional [fiscal year 1998] and/or FY99 funds," an Army press release says. The contracts, worth about $16 million, were awarded to Burns and Roe Enterprises, Inc., General Atomics, and Parsons Infrastructure and Technology Group, Inc. The destruction technology demonstrations will take place over the next several months at Dugway Proving Grounds and Tooele Army Depot in Utah and Aberdeen Proving Ground in Maryland.

In December, DOD will report to Congress on the results of the demonstrations, with a follow-up report scheduled for next April. The technologies could eventually be chosen to replace incineration as the method for destroying the Army's stockpiled chemical weapons.

Congressional and military sources say funding three technologies required just a few million dollars more than what had been budgeted for ACWA in FY98, but demonstrating more than three technologies now would require tens

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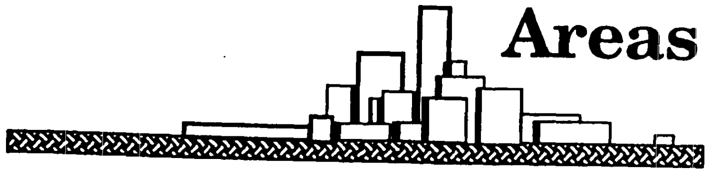
Rating Guide to Environmentally Healthy Metro Areas



Robert S. Weinhold, M.A.

this book ranks 317 cities acc'd to different health + safety rates. 1997

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Aircraft Operations - by rank

1994: Number of Aircraft Operations (Approximate Arrivals and Departures)
Ranked from least (1) to most (317)

Rank	Metropolitan Area	Total Operations	Air Carrier, Air Taxi and Military Operations	General Aviation Operations
1	Altoona, PA	0	0	0
1	Anniston, AL	0	0	0
1	Auburn-Opelika, AL	0	0	0
1	Benton Harbor, MI	0	0	0
1	Boulder-Longmont, CO	0	0	0
1	Bremerton, WA	0	0	0
1	Brunswick, GA	0	0	0
1	Canton-Massillon, OH	0	0	0
1	Clarksville-Hopkinsville, TN-KY	0	0	0
1	Cumberland, MD-WV	0	0	0
1	Danville, VA	0	0	0
1	Davis, CA	0	0	0
1	Decatur, AL	0	0	0
1	Dover, DE	0	0	0
1	Eau Claire, WI	0	0	0
1	Elkhart-Goshen, IN	0	0	0
1	Florence, AL	0	0	0
1	Fort Collins-Loveland, CO	0	0	0
1	Fort Walton Beach, FL	0	0	0
1	Gadsden, AL	0	0	0
1	Galveston-Texas City, TX	0	0	0
1	Glens Falls, NY	0	0	0
1	Greeley, CO	0	0	0
1	Greenville, NC	0	0	0
1	Hamilton-Middletown, OH	0	0	0
1	Hattiesburg, MS	0	0	0
1	Hickory-Morganton-Lenoir, NC	0	0	0
1	Iowa City, IA	0	0	0
1	Jackson, TN	0	0	0
1	Jacksonville, NC	0	0	0
1	Johnstown, PA	0	0	0
1	Kankakee, IL	0	0	0
1	Kenosha, WI	0	0	0
1	Killeen-Temple, TX	0	0	0
1	Kokomo, IN	0	0	0
1	Las Cruces, NM	0	0	0
1	Lawrence, KS	0	0	0
1	Lewiston-Auburn, ME	0	0	0
1	Lima, OH	0	0	0
1	Logan, UT	0	0	0
1	Longview, WA	0	0	0
1	Merced, CA	0	0	0
1	Naples, FL	0	0	0
1	Ocala, FL	0	0	0
1	Orange Co./Newburgh, NY	0	0	0

Rank	Metropolitan Area	Total Operations	Air Carrier, Air Taxi and Military Operations	General Aviation Operations
271	Raleigh-Durham-Chapel Hill, NC	283,713	217,985	65,728
272	Baltimore-Annapolis, MD	286,392	239,182	47,210
273	Oxnard-Ventura-Simi Valley, CA	289,922	25,466	264,456
274	Sacramento, CA	299,326	112,201	187,125
275	Louisville, KY-IN	303,901	141,858	162,043
276	Milwaukee-Waukesha, WI	304,849	150,288	154,561
277	Norfolk-Virginia Beach-Newport News, VA-NC	335,414	140,825	194,589
278	Memphis, TN-AR-MS	345,534	284,161	61,373
279	Columbus, OH	355,632	153,883	201,749
280	Honolulu, HI	357,116	268,185	88,931
281	Oklahoma City, OK	357,823	87,232	270,591
282	New Orleans, LA	360,489	153,465	207,024
283	Nashville, TN	379,209	245,379	133,830
284	Cleveland-Lorain-Elyria, OH	397,314	244,990	152,324
285	Salt Lake City-Ogden, UT	439,091	258,958	180,133
286	Kansas City, MO-KS	455,629	190,355	265,274
287	Cincinnati, OH-KY-IN	456,997	324,631	132,366
288	Charlotte-Gastonia-Rock Hill-Kannapolis, NC-SC	471,128	404,232	66,896
289	Tulsa, OK	494,723	87,971	406,752
290	Anchorage, AK	519,519	205,270	314,249
291	Tampa-St. Petersburg-Clearwater, FL	565,297	255,679	309,618
292	Philadelphia-Camden, PA-NJ	576,948	377,486	199,462
293	Riverside-San Bernardino-Hesperia-Palm Springs, CA	579,335	176,312	403,023
294	Pittsburgh, PA	586,725	429,936	156,789
295	Portland-Vancouver, OR-WA	599,641	234,301	365,340
296	San Jose, CA	675,081	130,181	544,900
297	Las Vegas, NV	677,054	362,264	314,790
298	Orlando, FL	716,649	336,896	379,753
299	Houston-Lake Jackson, TX	767,953	433,395	334,558
300	Fort Lauderdale, FL	825,555	175,302	650,253
301	St. Louis, MO-IL	848,310	435,517	412,793
302	Washington, D.C.-MD-VA	885,550	616,056	269,494
303	Boston-Brockton-Lawrence-Lowell, MA	935,626	461,761	473,865
304	Miami, FL	977,085	499,615	477,470
305	Tacoma, WA	1,008,431	386,646	621,785
306	Minneapolis-St. Paul, MN-WI	1,010,089	410,768	599,321
307	San Diego, CA	1,011,533	232,856	778,677
308	Atlanta, GA	1,026,309	684,349	341,960
309	Seattle-Bellevue-Everett, WA	1,097,066	396,029	701,037
310	Detroit-Port Huron, MI	1,115,429	497,352	618,077
311	Denver, CO	1,116,957	539,353	577,604
312	Phoenix-Mesa, AZ	1,183,458	419,732	763,726
313	Dallas-Fort Worth-Denton-Greenville, TX	1,627,473	950,460	677,013
314	San Francisco-Oakland-Antioch-Pittsburg, CA	1,670,767	588,763	1,082,004
315	Chicago-Waukegan-Gary, IL-IN	1,857,741	1,045,431	812,310
316	New York-Long Island-Northern New Jersey, NY-NJ	2,331,421	1,199,257	1,132,164
317	Los Angeles-Lancaster-Long Beach-Orange Co., CA	3,743,274	916,425	2,826,849

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317

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6

Aircraft Operations: A Flight Risk

Aircraft operations are increasing idly in the United States. As they grow, ir environmental health impacts, largely unstudied until very recently, will increase.

The primary health concerns include toxic emissions from planes and support vehicles, along with water pollutants, noise, and waste from aircraft and airport operations and maintenance.

The impacts have been widely noticed. "Many people living near airports complain of respiratory problems: burning lungs, breathing difficulty, more frequent attacks of asthma and allergies," Renee Skelton reports in the Summer 1996 issue of *The Amicus Journal*, a publication of the Natural Resources Defense Council (NRDC). "They also tell of increased local occurrences of cancer. But while many residents believe that these health problems are related to the airport fumes, their suspicions have not been substantiated because the necessary research simply has not been done."

However, preliminary information about the magnitude of such pollutants is beginning to emerge. For instance, New rk's two major airports, John F. Kennedy International and La Guardia, are among the city's top ten sources of smog, according to *Flying Off Course: Environmental Impacts of America's Airports*, a 1996 report by the Natural Resources Defense Council. In Chicago, O'Hare International Airport was ranked as the fifth largest source of pollutants in that city, and in Washington, D.C., National and Dulles airports were found to be among the metro area's half dozen biggest sources of smog, according to the NRDC.

> **"Many people living near airports complain of respiratory problems: burning lungs, breathing difficulty, more frequent attacks of asthma and allergies."**
> *The Amicus Journal*

The same relationship holds true in Los Angeles, where Los Angeles International Airport is the fourth largest source of smog in the metro area, according to a March 18, 1997, story by the *Los Angeles Times*. This pollution load is expected to increase 50 percent by the year 2010, based on estimates by the South Coast Air Quality Management District (SCAQMD).

On a more detailed level, it's known that the main jet engine pollutants identified to date include particulates, hydrocarbons, carbon monoxide and nitrogen oxides. However, the quantities emitted aren't well understood. Nor are the types and amounts of other unidentified pollutants. However, using several data sources, NRDC estimated that "one Boeing 747-400 generates, during an average 32 minutes of taxiing, takeoff and landing at New York's John F. Kennedy Airport, 63 pounds of carbon monoxide (the equivalent of driving your car 1,400 miles), 5.5 pounds of hydrocarbons (the equivalent of driving your car 970 miles) and 190 pounds of nitrogen oxides (the equivalent of driving your car 53,500 miles)," according to Skelton's 1996 article.

Other organizations, including the National Aeronautics and Space Administration (NASA), have just begun additional testing of emissions, both in-flight and on the ground, so other data may slowly become available.

Such knowledge will become increasingly necessary because the volume of airline traffic is rising rapidly. Worldwide, the number of passengers approximately doubled from 1980 to 1990 and that trend is expected to continue. "There are 10,000 large-size commercial aircraft in operation today," says Randall Friedl, a project scientist at NASA, in a July 6, 1996, issue of *Science News*. "It's expected that this number will double by the year 2020."

That trend is well under way at U.S. airports, especially the larger ones. The number of commercial airline departures went up 27 percent from 1992 to 1995 at large airports (having more than about 70,000 annual departures), 10 percent at medium airports (about 20,000 to 70,000 annual departures) and four percent at small airports (about 4,000 to 20,000 annual departures). Most of the 110 airports that fall within these three categories experienced commercial airline increases of 10 to 50 percent during this three year period, and a few, such as Shreveport, LA, Manchester, NH, Burlington, VT, and Greensboro, NC, went up 87 to 98 percent. On the other hand, a few airports, including Nashville, TN, Green Bay, WI, Raleigh, NC, and Eugene, OR, lost 25 to 30 percent of their traffic.

Along with commercial airline activity, smaller general aviation aircraft also can contribute to urban environmental health problems. While their numbers haven't risen much in the past decade, the 280,000 existing aircraft accounted for about 58 percent of all aircraft operations in 1994, so their cumulative impact can be substantial.

For all aircraft, one of the primary concerns is noise. Mitigation measures taken to reduce engine noise, to buffer those near airports and to change flight paths have lessened problems. But even with these positive steps, many people still are exposed to high levels. By the year 2010, one million people still will be exposed to objectionable aircraft noise, reports General Electric, a manufacturer of aircraft engines, in a 1995 press release.

Airport operations also can contribute significantly to water pollution through releases of de-icing fluids, solvents, degreasers and other hazardous products, according to Skelton. This may be of particular concern because airports "are exempt from some environmental standards that apply to industrial facilities producing equal amounts of pollution," Skelton reports.

In addition to water pollutants, considerable solid waste is generated by airport and aircraft operations. As a result, substantial hazardous waste is sent to landfills, from where it can leach into water supplies or work its way back to the surface.

Mitigation measures in all four areas of concern (emissions, noise, water pollutants and solid waste) have begun but much remains to be done.

Measuring Aircraft Operations

Since specific pollutants emitted by airlines and airports haven't been tracked yet, a general indicator of the scale of these activities is needed to gauge metro area impacts. Data on aircraft operations (generally, arrivals and departures) by commercial airlines, air taxis, military aircraft and general aviation aircraft serve as such an indicator for this study.

The Federal Aviation Administration provides this data annually in its publication *FAA Air Traffic Activity*. Statistics cited

earlier on commercial airline departures are derived from the FAA's annual publication *Airport Activity Statistics of Certificated Route ir Carriers.*

The data reported in *FAA Air Traffic Activity* documents annual aircraft operations at airports having either FAA-operated towers or towers that the FAA has contracted for others to operate. The number of operations generally reflects the total number of aircraft arrivals and departures, although some practice "touch-and-go" landings also are included, especially in the general aviation numbers.

The total number of aircraft operations in 1994 at all airports in a metro area has been used for rating purposes.

As additional information, the number of general aviation operations, and the combined number of commercial airline, air taxi (commuter airline and mail delivery) and military operations, have been provided separately. The latter three categories have been grouped because they tend to require more support activities (for passengers, cargo and military maneuvers), possibly leading to more environmental health impacts. While this additional information can't be used directly to gauge health concerns, it serves as an indication of the types of airports in a metro area.

Incidentally, while some military flights in a metro area are included in the data, many others are not.

A number of metro areas have no reported aircraft activity. Some of these metro areas may have small airports but they don't have FAA-operated towers so their relatively low air traffic hasn't been recorded.

The Results

For 1994, 70 metro areas had no reported aircraft traffic. Fifty of these metro areas are located in the eastern half of the country.

In contrast, the 70 metro areas with the most aircraft traffic are spread evenly around the country, as might be expected with the hub and spoke system of airline service that has developed in recent years.

Perhaps surprisingly, general aviation traffic can occur in high numbers in any part of the country - mild weather isn't a requirement. Anchorage, Seattle, Chicago, and New York City all have high numbers, as do Los Angeles, Kansas City, Dallas and Miami.

A weak correlation exists between a metro area's size and its airline traffic. While most of the 70 metro areas with no reported aircraft traffic have a population of less than 100,000, several exceptions exist, including Provo, UT, Stamford, CT, Canton, OH and about a dozen others. These exceptions tend to be located near other large metro areas. On the other end of the spectrum, the 40 metro areas with the most aircraft traffic have a population of more than 600,000 (except for Anchorage).

However, population alone generally is not a good predictor of aircraft traffic. Many metro areas have a rating that is 100 places, and sometimes even 200 places, more or less than its population rank.

A ratings difference greater than 10 to 20 places in the upper and lower third of the rankings, and 25 to 30 places in the middle third, reflects a difference in arrivals and departures of more than 20 percent, which probably is significant.

Since the impacts of aircraft operations can be long-range, especially for air emissions, it may be useful to track higher-use airports from a statewide perspective. In that regard, the states that have the most metro areas among the 70 with the highest number of aircraft operations are California with 11, Florida with 8 and Texas with 4.

For Additional Information

Statistics for this study were taken from the 1994 publication, *FAA Air Traffic Activity*, assembled by the U.S. Department of Transportation and the Federal Aviation Administration. For additional information, contact your regional government publications library or:

Department of Transportation
Federal Aviation Administration
800 Independence Avenue, SW
Washington, D.C. 20591
(202) 366-4000
web site: http://www.faa.gov

There may be a charge for some publications.

Health Data on Airports

Return-Path: <JMoniot@aol.com> From: JMoniot <JMoniot@aol.com> Date: Tue 31 Mar 1998 04:08:32 EST To: ehcoalition@igc.apc.org Subject: Fwd: bullet info Content-ID: <0_891335312@inet_out.mail.aol.com.1> Content-type: text/plain; charset=US-ASCII Content-ID: <0_891335312@inet_out.mail.aol.com.2> Content-type: message/rfc822 Content-disposition: inline From: JSaporito <JSaporito@aol.com> Return-path: <JSaporito@aol.com> To: JMoniot@aol.com Subject: bullet info Date: Mon 30 Mar 1998 19:50:01 EST Organization: AOL (http://www.aol.com) Mime-Version: 1.0 Content-type: text/plain; charset=US-ASCII X-MIME-Autoconverted: from 8bit to quoted-printable by igc7.igc.org id BAA01753 Would like to share two recent communications and a health sheet that might help with your bullet points: See what you would like to include and then if you would like I would offer some suggestions to narrow it down. I think that you need to rattle the parents' cages too...here is some more information for you to consider. Also noise at the levels that those children are exposed to cause serious health and learning problems...more on this at http://www.news.cornell.edu/releases/March98/noise.stress.ssl.html .... This is a white paper re. the study of O'Hare pollution: March 27 1998 House Speaker Michael J Madigan 300 State House Springfield IL 62706 Dear Speaker Madigan: We are concerned about the health of perhaps three million Illinois residents affected by one of the world s largest sources of hazardous and toxic air pollution. We are extremely disappointed to learn that SB 2932 the O Hare Toxic Air Pollution and Community Right to Know Act which could offer protection to 1/4 of the state s population has been sent to the Executive Committee and is thus effectively blocked. We are puzzled by this action for a potential needed study is long overdue and further delay will prevent possible control of massive amounts of O Hare Airport pollution and increase exposure of the populace to more serious and life threatening diseases. It is of paramount importance to protect public health and begin such a study at the earliest date. Studies of aviation effects at other airports notably one done for the area surrounding King County International Airport (Boeing Field) in Seattle reveal alarming increases of morbidity and mortality apparently due to jet aviation exhaust. This report done by the Seattle-King County Department of Health cites:

(206) 205-6328

296-4603

Epidemiology 296-6817

300,000 operations

- a 57% higher asthma rate
- a 28% higher pneumonia/influenza rate
- a 26% higher respiratory disease rate
- an 83% higher pregnancy complication rate
- a 50% higher infant mortality rate
- a statistically higher genetic disease rate
- a 48% higher mortality rate for all causes of death with a 57% higher heart disease rate

a 37% higher cancer death rate with pneumonia and influenza among the top five leading causes.

- average life expectancy of 70.4 years (the same as in many developing nations) compared to Seattle s of 76.0 years.

This June 1997 study of an area surrounding an airport with only one third of O Hare s 900 000 annual operations begs a question. Why can t we the potential victims in the Chicago metropolitan area be the recipients of a similar study? This should not be a political issue. It is a very basic human rights issue. Flying is a privilege; breathing clean air and drinking clean water is a right. O Hare Airport pollution does not after all stop at the boundary fence. You are the key

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Subj: DRAFT EIS FOR CVN HOMEPORTING ...

1. The revised short form version for review, comment, chop. The language on BRAC is based on interpretation and approval by both CNO (N4) and Office of General Counsel of the Navy.

2. The Navy's position is to homeport 3 CVNS in San Diego, 1 CVN in Everett, 1 CVN in Bremerton. I feel its our responsibility to support that decision/position not try to affect or influence or create Navy policy. We want the input into the draft EIS, however, to be as accurate and factual as possible. That's where I need your help.

3. As you read through and edit this please edit it on the double space form. For corrections/substance changes please include either on the draft or separately justification/ explanation for your change.

4. Apologise for the short fuse. If you could turn this around in a day and FAX back to me comments/corrections it would be greatly appreciated. I travel to Everett Tuesday evening 11 Oct and will be in Everett, Bremerton and Alameda, 12, 13, 14 Oct. Would like to get an agreed upon version to Mr. Peeling of ADM Drennans staff as soon as possible to allow earliest resolution on draft EIS. Appreciate the support.

Don
Dr
w/f

Very respectfully,

T. E. Magee

T. E. MAGEE

Oct. 6 '94 routing list deleted for confidentiality

(2)

9/27/94

TELECOPIER TRANSMITTAL COVER SHEET
NAVAL SEA SYSTEMS COMMAND - CODE 08X

Date: 27 September 1994

From: G. Y. Tanaka (08X)

To: W. A. Schmitt (08P)
P. D. Boyle (08X at NRRO PEARL)
A. G. Forssell (08J)
R. A. Glas (08H)
S. J. Trautman (08B)
J. C. Geisbush (NRR, PUGET)
G. D. Kirk (Code 2300, PUGET)
J. F. Wrzeski (Code 3910N, PUGET)
D. H. Bird (NAVSEA 07I)

Subj: NORTH ISLAND PROJECT - DEPOT MAINTENANCE FACILITY

1. Today, TRAUTMAN and GLAS met with BUBEL (OSD, Analyst), COOPER (NAVCOMPT), and others to discuss berthing of nuclear-powered warships at Naval Air Station North Island.

2. TRAUTMAN and GLAS were able to answer BUBEL's questions/concerns with berthing of nuclear-powered warships at Naval Air Station North Island.

3. BUBEL raised the following additional concerns:

a. CVN Maintenance Plan: BUBEL is not convinced that the CVN maintenance plan is cost effective. BUBEL stated if the old overhaul cycle was maintained then the Navy may not have to build a depot maintenance facility at Naval Air Station North Island.

PMS 312/NAVSEA 08P should have the lead to respond to this item.

b. Three CVN Berths at North Island: BUBEL did not understand why three CVN berths were needed at North Island if only three CVNs will be homeported at North Island. BUBEL questioned how often will all three berths be occupied.

AIRPAC should have the lead to respond to this item.

This item does not appear to be too difficult to answer. In addition to the three CVNs homeported at Naval Air Station North Island one needs to consider the two CVNs homeported in the Pacific Northwest that will utilize the training facilities at Naval Air Station North Island.

c. Why New Facilities? BUBEL was not convinced the Navy had reviewed all possible alternatives for a Depot Maintenance

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Facility. BUBEL questioned why couldn't the Navy utilize existing facilities in the San Diego area. BUBEL questioned why couldn't the Navy upgrade Long Beach Naval Shipyard to perform naval nuclear work. BUBEL stated a cost estimate to upgrade Long Beach Naval Shipyard to perform naval nuclear work was needed to properly evaluate the options.

WRZESKI please prepare a list of facilities in the San Diego area that Puget Sound evaluated and indicate why these facilities were rejected for Naval nuclear work. I remember discussing this issue with you. In particular I believe you informed me that none of facilities were satisfactory for use as a Controlled Industrial Facility (P-701) because of ventilation requirements, sealing cracks and holes in the facility, and ease of decontaminating the facility. I am not sure whether the shipyard had an issue with lifting capability and work space.

Concerning preparing a cost estimate to upgrade Long Beach Naval Shipyard to perform naval nuclear work. This issue should be discussed with RADM PORTER and BOYLE before any action is taken to develop such a cost estimate.

15130

8/15/94

August 15, 1994

From: Capt Terry Magee

To: Capt. Gunn (SouthWest Div) 532-3830
Capt. Jarell (CO NASNI) 545-0182
Cdr. Dalke (NASNI CEC) 545-1101
Mr. Hernandez (NASNI) 545-1101
Mr. Bob Hexom (SouthWest Div) 532-3824
Mr. Gordon Kirk (Puget Sound) 206-476-1517
Mr. Jim Wrzeski (Puget Sound) 206-476-1815
Mr. Jay Progness (Puget Sound) 206-476-1815
Mr. John Coon (SouthWest Div) 532-3789
Mr Rich Guida (Naval Reactors) 703-602-5324
Cdr. John Excell (CINCPACFLT) 808-474-6844

Subj: DRAFT EIS FOR CVN HOMEPORTING AT NASNI

1. Recently the North Island Project Team was advised by Mr. Peeling, CNO N44E1, that evaluation of potential alternative homeporting sites was required to be included in the draft EIS. This was based on recent guidance received from the Office of General Counsel of the Navy.

2. Attached are proposed additions to the draft EIS for your review, comment, correction etc. The first page is a revised title for the EIS per a conference call with Mr. Peeling last week. The second page titled Introduction replaces the first paragraph of the Executive Summary on page ES1. The next pages are complete rewrites of section 2.4.3.1 commencing on page 2-32. Also, the Introduction paragraph would be inserted into section 1 commencing on page 1-1 replacing the first 2 paragraphs under paragraph 1.1 introduction.

3. These were written rather rapidly over the last 2 days. There is no pride of authorship and would appreciate help with grammar, spelling and content. My intent is to get your comments back as rapidly as possible incorporate them and then have it faxed to Mr. Peeling by Southwest Division to discuss with the Navy's General Counsel. Please ensure I'm factually correct, "nit picking / wordsmithing" certainly acceptable but time constraints dictate the focus should be towards content and meeting the criteria to get the process back on track.

4. The bottom line as I see it is you need 5 berths for CVNs. If you eliminate Long Beach, Alameda, and Pearl Harbor that Leaves San Diego, Bremerton and Everett. Theoretically, you could homeport 2 in Everett and 3 in Bremerton but the MILCON required (DMF at Everett, facilities at Everett/Bremerton) would far exceed that programmed now for San Diego, Everett and Bremerton. Additionally, the Quality of Life issues would be devastating and you have transient times, onloads/offloads, training issues to resolve and you would still need at least a transient berth in San Diego - minimum of dredging required.

5. Long Beach - I tried to treat this lightly. Didn't want to get into timing because realistically you could reactivate some of Naval Station facilities dredge and upgrade pier and accommodate NIMITZ or CVN 76 in their arrival time. Also, crime and housing are controversial since housing was available for ships at Long Beach and one could argue crime in San diego and Alameda parallels Long Beach. Tried to eliminate Long Beach as a consideration based on BRAC, conformity, non nuclear capable.

6. PACNORWEST - Tried to be general with minimum emphasis on deficiencies to try and alleviate follow on problems if the Navy attempts in future to revise it's homeporting plan and take Everett out of the picture for CVNs.

7. Appreciate the support and help and quick turn around. For Bob Hexom - Could you please ensure legal counsel for S.W. Div. reviews.

Very Respectfully
T. MAGEE

Phone No: (619) 545-1538 (DSN: 735)
FAX: (619) 545-5570

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[illegible]@smtp.cnap.navy.mil,tchamber@smtp.cnap
rhaas@smtp.cnap.navy.mil
U46121.MHS251A@cpf-emh.cpf.navy.mil
U465.MHS251A@cpf-emh.cpf.navy.mil

cc: anderson_david_w@hq.navsea.navy.mil
o'connor_michael@n4.opnav.navy.mil
U4311.MHS251C@cpf-emh.cpf.navy.mil

bcc:
From: U4641.MHS251A@cpf-emh.cpf.navy.mil (U4641)
Subject: fwd: MEETING WITH TOM PEELING -Forwarded
Date: Friday, June 30, 1995 12:56:00 PDT
Attach: attribs.bnd
Certify: N
Forwarded by:

Form: Forward
Text: (31 lines follow)
Gentlemen,

Here is the latest thinking on PNW CVN scheming. Orig email is the "the sky has fallen" record from John Exell of our meeting with Tom Peeling this Thursday. Next is Don Walton's comments and amplification of certain historical issues. Last is John's epiphany about how we might approach this FUBAR issue and actually have a true (!), reasonably reasonable (!) justification for pursuing what we want without being totally forthright the real reasons (which, of course, would be preferable, but...!).

tell me/John what you think (perhaps if all you AIRPAC people can reply [illegible]ough one person it would be helpful).

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. PNW HP brief to the CINC is now scheduled for 13 July so we have more [illegible]reathing room...but of course the time is still ticking by when we should [illegible]e starting on EISes and EIS mods and notifying LINCOLN crewmembers, etc...

I believe the Pier B issue still needs some thought. If it is a true QOL issue then we are being hypocritical if we do not plan to include it in our [illegible]lans.

[illegible]or Mike and Dave: This is FYI. Dave, if all this is news to you pls give [illegible]e a call Wed a.m. (I will be off on Monday) and I will fill you in. If you [illegible]ave anything to add to the equation, esp regarding Pier B or the AOE EIS (I [illegible]hink someone in your office was going to send me a copy of the AOE6 EIS, [illegible]ut I haven't received it yet?), that would be really helpful!

[illegible]appy 4th!

[illegible]/vr
[illegible]arin
[illegible]riginal text: (215 lines follow)
[illegible]rom U4311 @ MHS251C, on 6/30/95 16:20:
[illegible] [illegible]Blanton @ SMTP (Gerald Blanton) (GBLANTON@smtp.cnap.navy.mil),
[illegible]3A@ SMTP (RBURNA) (RBURNA@smtp.cnap.navy.mil), CNAPN43A@ SMTP
[illegible]FEE) (JMCAFEE@smtp.cnap.navy.mil), DWALTON @ SMTP (DWALTON)
DWALTON@smtp.cnap.navy.mil), U46121@MHS251A, U4641@MHS251A, U4654@MHS251A,
[illegible]MHS251A
[illegible]NSPN43 @ SMTP (n43@cnap-emh.san.arms.navy.mil), U431@MHS251C,

072064

Time to Reduce Hazards

Chemical industry lobbyists in the U.S. are pitting the industry's desire for secrecy against the public's right-to-know how safe we really are. This irresponsible lobbying shifts attention from the industry's obligation to reduce chemical hazards.

In 1990, the U.S. Congress required industrial sites that use extremely hazardous substances to disclose worst-case accident scenarios as part of larger Risk Management Plans (RMP). Starting in 1999, these RMPs will describe potential hazards, plan emergency response, and assure workers and the public that safe design and operations will prevent an "American Bhopal."

Through disclosure, Congress intended to create awareness among officials and the general public to save lives, prevent pollution, and protect property from chemical accidents. As Congress directed, the U.S. Environmental Protection Agency is preparing to collect and disseminate RMP data from an estimated 66,000 facilities. By law, this is public information.

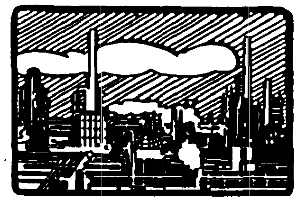
Nonetheless, chemical industry lobbyists are working to have information on potential off-site consequences withheld from a complete, public database. They argue — disingenuously — that publicizing worst-case scenarios will lead terrorists to target their facilities, and that keeping this information off the Internet will keep us safe. But where is industry's pledge, program, or plan of action to reduce actual hazards that its chemicals pose to workers and communities?

The best way to ensure community safety — whether from wrongdoing or "ordinary" accidents – is to reduce the inherent hazards of chemical operations. Inherent safety can include using safer chemicals, storing chemicals at ambient pressure, reducing chemical storage, and requiring fewer hazardous shipments. Industry also has a legal responsibility to safely manage existing hazards. In contrast, disabling the national RMP database would provide no *real* protection to the public.

Day in and day out, companies in the U.S. report some 100 chemical fires, spills, or explosions. At least 1,000 of these incidents each year involve deaths, injuries, or evacuations. At least 17 reported releases may have exceeded in volume and toxicity the world's worst chemical accident at Bhopal, India.

At Bhopal, thousands died in 1984 when some 40 tons of methyl isocyanate leaked from a Union Carbide pesticide factory. The company blamed disgruntled employees, but it is instructive to remember what really happened. Five major safety features were either inadequately designed or at least partially failed: a refrigeration system was not operating; a temperature indicator was not functioning; a vent gas scrubber was inadequately designed; a flare tower was not functioning; and, water curtains could not reach the leaking gas.

The RMP program is intended to identify and remedy such deficiencies *before* an accident happens. The duty to operate safely includes taking responsibility for chemical emissions and the harm that those emissions cause.



In the words of a former managing director of Union Carbide, India, "If you do something that is inherently dangerous and somebody does something foolish with it, still you are responsible for doing what was inherently dangerous." It's a lesson the chemical industry apparently has yet to learn.

Basic hazard information is widely known. The locations of chemical plants are known. The chemicals at these plants are known. The hazards of these plants are well known to industry. Only the public is kept in the dark about the potential consequences of chemical accidents for families and communitie[illegible]

To encourage full disclosure, public interest groups recently published estimated vulnerability zones, including maps, for ten Du Pont facilities on the Internet at www.rtk.net/wcs. This analysis shows some seven million people at risk around just these ten Du Pont facilities. Also listed are the top 50 U.S. facilities for worst-case potential.

Basic information is readily available through direct observation, common sense, and the telephone book. Some companies have already widely publicized worst-case scenarios. Some Local Emergency Planning Committees plan to simply post the RMP information on the Internet. (The RMP program doesn't report tank location on-site, how to cause an accident, classified data, or other security information.) People also increasingly obtain information by means such as electronic databases that quickly search thousands of newspapers for key terms. There is simply no magic curtain that can protect communities or hide hazardous facilities.

Disclosure works to reduce hazards. An existing U.S. disclosure law, the Toxics Release Inventory, has prompted U.S. companies to claim big improvements in routine chemical pollution. Complete and well-organized RMP information will enable citizens, regulators, and emergency planners to: verify reported data; recognize safety achievements; set priorities for hazard reduction; measure progress; target technical assistance; maintain accountability; obtain information quickly; perform cross-cutting analysis; and conduct efficient training, among other worthy applications.

The public has a fundamental right-to-know about toxic chemicals where we work, live, and play. Yet the Chemical Manufacturers Association is once again aggressively lobbying to impede public information. It's time for the chemical industry to stop lobbying for secrecy and accept responsibility for reducing its own hazards.

The Lessons of Bhopal

In 1984, a chemical accident at Union Carbide, Bhopal India, killed over two thousand people and injured tens of thousands. Yet through a disingenuous media and lobbying campaign, the chemical industry today is working against public knowledge of the potential harm that chemical plants pose to communities. At the same time, the industry is silent on the need to reduce its own hazards. Below, a former engineer with Union Carbide India talks about the need for industry to take responsibility for its inherently dangerous activities.

The following excerpt is from *Bhopal: Setting the Record Straight*, a conversation with Edward A. Munoz (EM), former Managing Director of Union Carbide India, by Josh Karliner (JK) of the Transnational Resource and Action Center. Mr. Munoz is a native of Argentina who spent some two decades with Union Carbide.

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JK: *Given everything you knew about the way the plant was built [at Bhopal], how did you react when the accident happened? You had left Carbide by then, you were with another company. What was your reaction?*

EM: Well, I mean, my reaction was that it was an enormous tragedy, it was a shame that it happened, but we all did have a responsibility for, you know, for putting a bomb in the middle of a populated place.

JK: *Yet, Union Carbide says that this unusual event...is a result of sabotage.*

EM: Well, it may be sabotage—sabotage is one of the things that happen. I mean it can happen in Bhopal—it can happen in Charleston. It's possible. I hear they sabotage theory is plausible, you know, I wouldn't write it off. But that doesn't exonerate the guy that built the tank.

JK: *Care to explain that a little more?*

EM: Well, I mean if you, if you do something that it is inherently dangerous and somebody does something foolish with it, still you are responsible for doing what was inherently dangerous. No?

JK: *So now, let's go back to Institute—the plant at Institute. Currently the plant is the only plant in the United States and perhaps the only plant in the world that still stores MIC in bulk. In fact it appears that it has a capacity to store three times as much MIC than the Bhopal plant.*

EM: Oh, yea.

JK: *What do you think of that? That it is still like that?*

EM: Well, I think it's crazy. I think it's crazy. I think if you have an accident like in Bhopal they are going to kill all the people. That's going to make Bhopal pale.

JK: *Why?*

EM: Well, I mean, here is a more populated area and there is only one

thruway to escape. And the thruway will be full of piled up cars with dead drivers pretty soon. You won't be able to go anywhere.

JK: *Do you think what happened in Bhopal could happen in Institute?*

EM: Sure. Sure. It would be an unusual event. But unusual events happen all the time.

JK: *What do you think the lessons of Bhopal are?*

EM: Don't store MIC. Don't store dangerous chemicals. Particularly if you have alternatives.

For the full interview, see www. corpwatch.org/bhopal. The interview is available as a 30 minute video which includes footage of Bhopal. Send $15 ($20 outside the U.S.) to TRAC/Tides; PO Box 29344; San Francisco, CA 94129.

Please send me more information!

☐ EPCRA introductory information packet ($1)
☐ Full list of EPCRA resource packets
☐ *Working Notes* newsletter: $15/year or fee waiver (please explain); Industry/institutions $30/year
☐ $ ____ Enclosed (checks to Right-to-Know/PIRG Ed. Fund; *tax deductible*)

Name: ____________________
Organization: ____________________
Address: ____________________
____
Phone/fax/e-mail: ____________________

Send to: Working Group On Community Right-To-Know
218 D Street, SE • Washington, DC 20003

Resources

A new report, *Out of Sight, Out of Mind?*, analyzes the use of underground injection wells to dispose of toxic waste. The report suggests that companies' use of underground injection is a disincentive for reducing toxic waste at the source through pollution prevention. It further suggests that reliance on underground injection is increasing relative to other waste disposal options. Contact the National Environmental Trust at (202) 887-8800 or www.envirotrust.com.

ENVIRONMENTAL HEALTH COALITION

1717 Kettner Boulevard, Suite 100 • San Diego, CA 92101 • (619) 235-0281 • Fax (619) 232-3670
e-mail: ehcoalition@igc.apc.org • Web address: http://www.environmentalhealth.org

NASNI Hazardous Waste Permit Fact Sheet

Department of Toxic Substance Control (DTSC) granted a hazardous waste permit to NASNI on December 3, 1997. The new permit:

- Increases hazardous waste storage from 765 to 4,384 (55-gallon) drums, representing over a 500% increase;
- Addresses only two of several new hazardous and radioactive waste facilities slated for construction at NASNI;
- Removes all of the corrective actions for waste sites required under the former permit;
- Extends to permit term to 10 years without review or renewal;
- Allows storage and treatment of over 17,000 gallons of PCB wastes;
- Fails to consider the impacts of homeporting up to four nuclear-powered aircraft carriers and related operations at NASNI;
- Fails to include any of the conditions requested by the community for protection of their health, including air monitoring, limits for offsite waste transported onto the base, or additional emergency and evacuation plans;
- Allows 38 facilities, including commercial shipyards, to transport waste through residential streets and over Coronado Bridge to NASNI without limits on waste from as far away as El Centro, Niland and Warner Springs.

The permit should be revoked based on the following information:

- A full environmental analysis was not conducted on the entire project;
- NASNI's non-compliance with their existing permit;
- NASNI's 81 recorded violations of hazardous waste and environmental laws that include:

<u>Illegal handling of hazardous waste:</u>
mislabled hazardous waste containers
improper storage of hazardous waste
prohibited categories of hazardous waste stored at the facility
failed to handle waste containers to prevent leaking
cracks found in hazardous waste containment area
failed to equip storage area with spill control containment

<u>Placing public at risk:</u>
discharge of hazardous waste in groundwater
inadequate training programs for hazardous waste emergency
no public notification regarding hazardous waste release
declined to furnish records and plan upon mandated request
failure to maintain and operate facility to reduce possibility of hazardous waste release

<u>Placing workers at risk:</u>
inadequate personnel training to handle hazardous waste
hazardous waste containers left open during storage
lack of suitable eye wash equipment - in event of contact; could lead to blindness, injury or death

~ Printed on Totally Chlorine Free Paper with soybased ink ~

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Environmental Health Coalition

O.12.1 The commentor is summarizing several comments raised in greater detail later in the comment letter. Since the Navy responds to each of the specific comments, those responses are not repeated here.

O.12.2 Your general comments are acknowledged and specific comments that follow are addressed.

O.12.3 The Navy assumes that the comments regarding CEQA are provided to the California Regional Water Quality Control Board for advisory purposes and not directed to the Navy for responses. CEQA is not applicable to the Navy's decisionmaking process for the proposed action. The specific state or local responsible agency implementing a decision related to the proposed action will determine how it needs to comply with CEQA requirements.

O.12.4 Your general comments are acknowledged and specific comments that follow are addressed.

O.12.5 The Navy, as Lead Agency, complied with all applicable regulations in the preparation of the Draft EIS; therefore, the Navy disagrees that the document is deficient in meeting NEPA requirements. The Navy assumes that the comments regarding CEQA are provided to the California Regional Water Quality Control Board for advisory purposes and not directed to the Navy for responses. While NEPA encourages coordination between state and federal agencies in order to streamline the environmental review process, CEQA is not applicable to the Navy in its decisionmaking process for the proposed action. State or local responsible agencies having decisionmaking authority related to the proposed action are required to comply with their implementation regulations pursuant to CEQA. The Final EIS does include a Growth Inducement section (see the Executive Summary and a new Chapter 10). The Draft and Final EIS documents do include mitigation measures to reduce potentially significant impacts to below a level of significance (see Tables ES-3 and 2-11). The mitigation tables also identify the timing of when the mitigation is to be implemented and indicates that the Navy is responsible for implementing a mitigation measure unless other responsible agencies are identified on the tables. However, the Final EIS does not include a formal Mitigation Monitoring and Reporting Program as required by CEQA. Your other general comments are acknowledged and specific comments that follow are addressed.

O.12.6 Your other general comments are acknowledged and specific comments that follow are addressed.

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O.12.7	The Navy, as Lead Agency, believes they are in compliance with the National Environmental Policy Act (NEPA) of 1969 and the ensuing Council on Environmental Quality Guidelines and Navy procedures. Your general comments are acknowledged and specific comments that follow are addressed.
O.12.8	The Navy assumes the five separate environmental studies EHC refers to are (1) 1995 BRAC CVN EIS, (2) SSF EA, (3) this current CVN EIS, (4) State Of California NASNI MWSF CEQA document, and (5) State of California NASNI PWC RCRA Permit CEQA document. Two of the above documents (4 and 5) were not the responsibility of the Navy to prepare, because they were related to RCRA permitting actions, and were the cognizance of the State of California. One of these actions (NASNI MWSF) was addressed in the 1995 CVN EIS. The other action, NASNI PWC RCRA Permit, while a Navy project, has no relationship to decisions on whether to develop home port facilities for CVNs at NASNI, or to develop support facilities for submarines at SUBASE San Diego. Further, the 1995 BRAC CVN EIS noted the potential for additional CVNs at NASNI and assessed the cumulative impacts of such an action. Federal courts upheld that this action complied with NEPA in direct opposition to EHC's assertions of segmentation. The current EIS considers the cumulative impacts of the Navy's actions contained in the 1995 CVN EIS as well as the SSF EA. Under 40 CFR 1501.7, the action proponent (in this case the Navy) has the responsibility to determine the scope of the proposed action under consideration, and under 40 CFR 1502.20 to determine if a particular action is ripe for decision. The closure of Naval Air Station (NAS) Alameda, California, and the relocation of two CVNs to fleet concentrations in San Diego and the Pacific Northwest were carried out in compliance with the 1993 Defense Base Realignment and Closure Commission (BRAC) recommendations. Consequently, the Department of the Navy constructed homeporting facilities for one CVN at NASNI (DON 1995a) and one at Puget Sound Naval Shipyard (PSNS), Bremerton, Washington (DON 1995b). New facilities were required at NASNI in order to support the homeporting of a CVN, because prior to 1998, there had been no CVNs homeported there. At the time the Navy proposed the construction of facilities at NASNI to support a homeported CVN, the Navy prepared an EIS to present the analysis of potential environmental effects associated with that action. A Final EIS for that project was completed in November 1995. The Navy knew at that time that, consistent with established policy, the two remaining CVs in the Pacific Fleet would eventually be replaced with CVNs. Further, the Navy knew at that time that homeporting those CVNs would require construction of additional facilities somewhere in the Pacific Fleet area of responsibility. Although a need had been identified, the Navy had not formulated an action to satisfy that need. Formulating an action to address that situation would require

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assessing the adequacy of existing facilities, determining the extent of new facility requirements, and identifying possible locations for home ports.

The environmental analysis in an EIS correlates to the level of planning for a particular project. If the planning has evolved such that the agency has formulated a project to meet a particular need, the EIS should reflect analysis of all aspects of that project, and the alternative methods of meeting the identified need should be addressed on a "co-equal" basis. In this case, the Navy had not, at the time of preparation of the 1995 EIS, formulated a proposal for how to meet the need of facilities for two more CVNs in the Pacific Fleet.

However, the Navy did anticipate that in the future, a proposal would be formulated, and that the alternatives could include facilities at NASNI. Therefore, a larger project was not segmented into two smaller projects for the purpose of avoiding more rigorous environmental analysis. Further, although a "proposal" had not been formulated such that it could be analyzed on a "co-equal" basis in the 1995 EIS, it was reasonably foreseeable that a future project could include additional facilities at NASNI. Since it was reasonably foreseeable, the potential effects were included in the analysis of cumulative effects in that document. The 1995 EIS states "This EIS, therefore, considers the potential cumulative impacts of CV replacement and homeporting a total of three CVNs in San Diego." Please see the 1995 EIS Volume 1, Chapter 6 (DON 1995a).

The U.S. District Court for the Southern District of California approved the Navy's implementation of NEPA, and concluded that the Navy had not understated the potential effects of a larger project by preparation of two documents (segmentation). In an Order dated May 12, 1997, the Court stated, "Because the Court finds that no proposal to homeport three CVNs existed prior to the issuance of the Final EIS, the Final EIS's analysis of the possible cumulative impacts of potential additional home ports suffices under NEPA."

Two public hearings on the Draft EIS have been held in the San Diego region and public testimony received, as required under NEPA. The Navy does not currently have plans to have a follow-on community workshop for an informal dialogue. Concerns generated during the public review of the EIS will be considered by Navy personnel responsible for making decisions regarding the proposed action. Navy representatives at the EIS public hearings are directly involved with this decisionmaking process, and provide recommendations to the Secretary of the Navy regarding the preferred alternative to be implemented.

Furthermore, the Navy ensures that the EIS decisionmaker has a complete copy of the public hearing transcripts. The Navy believes that the objective sought by the comment is met by the fact that the transcript of the public hearing is

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	prepared and reviewed as part of the NEPA process leading up to the Record of Decision. The Department of Toxic Substances Control, in an Order Denying Petition For Review of the Environmental Health Coalition, Peace Resource Center of San Diego, and Stephanie Kaupp's challenge to the permitting of the Mixed Waste Storage Facility at NASNI (ID No. CAR 000 019 430; Docket HWCA 98/99 – P012), responded to this issue with the following: > Petitioners are incorrect in their assertion that members of the public have a "right" to speak directly to the decision-maker (i.e., that the Department official that signs the Permit must also be the hearing officer). Nevertheless, the Department ensures that the official who signs the Permit has a complete transcript of the public hearing for review. The Department believes that the objective sought by Petitioners is met by the fact that a transcript of the public hearing is prepared and reviewed as part of the final permit decision-making process. Furthermore, there is not basis to believe that the permit decision or conditions would be altered if the hearing officer for the public hearing also signed the Permit itself.
O.12.9	The Navy, as Lead Agency, believes that it has complied with all applicable regulations in the preparation of the Draft EIS; therefore, the Navy disagrees that the document is deficient in meeting NEPA requirements. Although Draft EIS comments resulted in minor changes in the analysis, no comment has changed the Navy's original assessment of significant impacts in any environmental category. In absence of significantly changing the results reported in the draft EIS, the Navy believes that EHC's request to recirculate the Draft EIS is unwarranted per 40 CFR 1502.9(a). If the Navy determines that significant new circumstances or information emerges that is relevant to environmental concerns that bear on the proposed action or its impacts, then the Navy shall prepare a supplement to the EIS. Responses to public comments on the Draft EIS have been provided in this Final EIS. In response to some comments, additional information has been added to the text. See response to comment O.12.8 for response to the additional request.
O.12.10	The Navy's historical record of safe and responsible operation of nuclear powered warships is discussed in Volume I, section 7 of the EIS. The NNPP pays very close attention to problems and their prevention. The approach taken is to evaluate even the smallest mistake and take appropriate corrective action to preclude recurrence. Working on the small problems helps ensure that larger problems do not occur. Notwithstanding, the Navy does not claim that such a large and complex engineering endeavor has been without problems. Equipment sometimes fails and people do make mistakes, such as those noted

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	by the commentor. The Navy does not deny that problems have occurred. However, the facts are that since the inception of the NNPP almost half a century ago, there has never been a reactor accident associated with the Program, nor has there been any release of radioactivity that has had a significant effect on the public or the environment. The approach taken by the NNPP is to evaluate even the smallest mistake and take appropriate corrective action to preclude recurrence. The vast majority of NNPP problems are such that they would not be considered "reportable events" or "abnormal occurrences" under NRC or DOE reporting systems.
	In addition to the above, NIMITZ-class aircraft carrier nuclear propulsion plant design was independently reviewed by the Nuclear Regulatory Commission (at the time of review it was by the Directorate of Licensing Division of the Atomic Energy Commission) and by the Advisory Committee on Reactor Safeguards. Both reviews concluded that consistent with the military necessity of these ships, NIMITZ-class aircraft carrier reactors could be safely operated.
O.12.11	Please see the response to comment O.12.10 above.
O.12.12	Our publicly-elected U.S. Congress and President of the United States make programmatic decisions regarding Naval ships (e.g., application of nuclear power), and thus comments regarding these decisions are beyond the scope of this EIS.
O.12.13	Your general comments are acknowledged and specific comments that follow are addressed.
O.12.14	Please see the response to comment O.12.8.
	The Navy has addressed a number of separate Navy actions in the San Diego area in separate NEPA documents. This is normal, because the Navy performs literally hundreds of NEPA actions each year. Each action has its own scope. Where appropriate, the Navy addresses cumulative impacts of actions in a particular area, as is done for this EIS. This EIS addresses the cumulative impacts of the 1995 BRAC CVN EIS (which includes the MWSF action) and the SSF EA action. The Navy believes it has addressed EHC's concern in the Cumulative Impacts section of this EIS, as well as incorporating by reference into this EIS: the 1995 BRAC EIS and the 1998 SSF EA.
	The following is quoted from the Declaration of the Honorable Robert B. Pirie, Jr. ASN of the Navy (Installations and Environment (July 16, 1996).
	> Although the CNO approved a long range, conceptual plan for homeporting aircraft carriers in July 1994, the only proposal regarding establishment of a homeport for a nuclear-powered aircraft carrier in

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Southern California that is ripe for decision is the proposal to create a capability to homeport one NIMITZ-class nuclear-powered aircraft carrier in San Diego based upon the direction to do so contained in the 1993 Base Closure and Realignment Commission Report. The Department of the Navy determined in 1994 that it would be inadvisable to finally determine the homeports for any new aircraft carriers that will serve as numeric replacements for the fossil-fueled carriers currently homeported in San Diego and no such final determination has been made.

The process of determining where to locate homeports for aircraft carriers requires long range planning and involves a variety of considerations. The Chief of Naval Operations (CNO) is responsible for developing long range plans for aircraft carrier homeporting. Always a challenging task, recently the development of such plans has been made even more difficult by reductions in the basing infrastructure under the Defense Base Closure and Realignment Act, questions about what force structure is required in the wake of the Cold War, a relatively austere budget picture, the occasional need to immobilize some carriers for periods of months or years or intensive maintenance or nuclear refueling, and international situation that has placed more rather then fewer demands on the Naval forces to protect the national interests of the United States.

Additional modifications to the facilities and infrastructure at North Island (beyond those modifications to facilities and infrastructure already proposed to accommodate one NIMITZ-class carrier) would be necessary to accommodate the homeporting of additional nuclear-powered aircraft carriers. This would in turn require funding that has not even been requested. In November and December of 1994, the Navy undertook a review of the construction of facilities for homeporting of CVNs in San Diego in light of the ongoing base closure process, deployment and maintenance schedules, the other factors that go into establishing a homeport. Based upon that review and the uncertainties extant in many of the considerations, I determined that portions of the 1994 plan dealing with future homeporting carriers on the West Coast were not ripe for final decision. Too many of the basic considerations were subject to change to commit to final approval for projects that may later have to be canceled or modified.

[The Navy has] determined that the only homeporting matter appropriate for final decision was that related to the one NIMITZ-class carrier that was certain to come to San Diego to comply with the direction of the 1993 Base Closure and Realignment Commission. Any proposal for homeports of additional carriers would be studied at a later time

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when such a proposal was ripe for decision. Although assigning more than one nuclear-powered aircraft carrier to San Diego has a number of advantages, additional nuclear-powered aircraft carriers effectively could be homeported in other locations and therefore no final decision on where they will be assigned has been made. The first such action described in the 1994 plan dealing with a second nuclear powered aircraft carrier does not occur until 2001. Accordingly the notice of intent for the EIS was clarified to make clear to the public that the proposal only covered homeporting one CVN. The notice of intent published in the *Federal Register* on December 28, 1994, at page 88943 accurately describes the limits of the action proposed by the Department of the Navy. We did not ignore the potential that up to three nuclear-powered carriers could eventually be homeported in the San Diego area – the analysis of the current proposal includes discussion of the cumulative impacts of two additional nuclear-powered carriers.

Since publication of the notice of intent in December 1994, the Navy has prepared analysis and responded to questions on homeport alternatives from several Congressional sources. The Navy fairly and accurately responds to such questions or requests, even if the questions or requests address hypothetical plans, or alternatives that the Navy does not currently advocate or is not ready to implement. Some of these requests were related to the 1995 Base Closure and Realignment process as communities advocated various positions before the Base Closure and Realignment Commission and Congress. Responding to such questions, however, does not mean that the Department of the Navy has finally decided to propose implementation of any of the alternatives relating to homeporting more than one nuclear-powered carrier in the San Diego area. When the question of where to place homeports for additional carriers is ripe, the Department of the Navy will formally propose the actions necessary to implement the plan and ensure the preparation of appropriate environmental analysis.

Issues related to the BRAC EIS administrative record are beyond the scope the scope of this EIS.

O.12.15 The Navy, as Lead Agency, does not agree with your assertions or conclusions. This EIS, Environmental Impact Statement for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet, incorporates by reference the previous EIS, Final Environmental Impact Statement for the Development of Facilities in San Diego/Coronado to Support the Homeporting of One NIMITZ-Class Aircraft Carrier. The previous EIS used 1993 as a baseline for affected environment. NASNI has historically been home port for three aircraft carriers. A chronology of events resulting in the potential

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replacements for aircraft carriers planned for decommissioning in the San Diego area is provided to help the reader understand how NASNI has historically been home port for three aircraft carriers.

In the 1980s, the Navy reduced the size of its active aircraft carriers from 15 to 12: six in the Atlantic Fleet and six in the Pacific Fleet. Before that time, NASNI had been the homeport for at least three aircraft carriers. In the early 1970s, this included USS TICONDEROGA, USS KITTY HAWK, and USS CONSTELLATION; in the mid-1970s, USS RANGER, KITTY HAWK, and CONSTELLATION; throughout the 1980s, RANGER, KITTY HAWK, and CONSTELLATION; and in the early 1990s, a combination of USS INDEPENDENCE, (while KITTY HAWK and/or CONSTELLATION were undergoing their Service Life Extension effort in Philadelphia, Pennsylvania), KITTY HAWK, CONSTELLATION, and RANGER. All ships listed above are or were conventionally powered carriers, or "CVs."

In 1993, RANGER was decommissioned at the end of its service life and removed from NASNI, temporarily reducing the port-loading to two CVs. The closure of Naval Air Station (NAS) Alameda, California, and the relocation of two CVNs to fleet concentrations in San Diego and the Pacific Northwest were carried out in compliance with the 1993 Defense Base Realignment and Closure Commission (BRAC) recommendations. Because there were no CVN homeport-capable berths at NASNI, the Navy was allowed to shift both NAS Alameda CVNs to the Pacific Northwest, pending completion of construction of suitable homeport facilities at NASNI. Those facilities were the subject of an EIS entitled *Environmental Impact Statement for the Development of Facilities in San Diego to Support the Homeporting of One NIMITZ Class Aircraft Carrier* (DON 1995a). The actual vessel that fulfilled the BRAC mandate and assumed the role of RANGER was USS JOHN C. STENNIS (CVN-74). Arriving in August 1998, STENNIS took over one CVs worth of facility support infrastructure at NASNI. NASNI has had the historical capacity to support three aircraft carriers.

In 1998, INDEPENDENCE (at that time the Navy's "forward deployed" carrier) reached the end of its service life and was decommissioned. KITTY HAWK was designated as its replacement and left NASNI in July 1998, 20 months after the Notice of Intent for this EIS, and relocated to Yokosuka, Japan. This resulted in a reduction of the port loading at NASNI to two homeported aircraft carriers. The USS NIMITZ is currently undergoing an extended maintenance period on the East Coast and will require a homeport berth within the Pacific Fleet area. Long range plans indicate that the most likely arrival date on the West Coast for NIMITZ would be early 2002. *Were the Preferred Alternative selected,* this would bring NASNI back to its historical three carrier port-loading baseline.

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	USS CONSTELLATION is expected to reach the end of its service life in approximately 2003. At that time, NASNI would once again experience a reduction to two homeported carriers *if the Preferred Alternative were selected by the Navy.* The same long range plans addressing NIMITZ also involve replacing CONSTELLATION with the USS RONALD REAGAN. It is anticipated this will happen in 2005. Once again, *if the Preferred Alternative were selected,* it would bring NASNI back to its historical three carrier port-loading baseline. Please also see response to comment O.12.5 in regards to CEQA.
O.12.16	The EIS significance criteria are based on "professional and scientific integrity" as required by NEPA. Existing quantitative standards are used where appropriate, for example, in air quality, and water quality, or regulation such as the National Register of Historic Places eligibility criteria for cultural resources. Where existing numerical or written standards do not exist, appropriate standards have been selected based on the established scientific approach to environmental analysis, for example, aesthetics. The comment does not specifically address the inadequacy of any of the significance standards used in the EIS, nor does it suggest a more scientifically defensible standard. The existing significance criteria are considered reasonable mechanisms to provide a consistent determination of significance throughout the analysis of the four alternative CVN home port locations.
O.12.17	"Home Port Objectives" were used to establish a qualitative as well as quantitative process of narrowing the field of prospective locations to those that could adequately meet the Purpose and Need of the EIS. That is, the objectives were used to develop a reasonable range of alternatives for achieving the agency's goals. Alternatives were developed by assigning varying numbers of carriers to locations that met the screening criteria, up to and including the maximum that each location could support. The whole of the effort resulted in the formulation of reasonable alternatives. Each alternative was then examined from an "impact to the environment" perspective. For more discussion on this process, please refer to section 2.3.1. The statutory requirement that a federal agency contemplating a major federal action prepare an environmental impact statement serves NEPA's "action-forcing" purpose in two important respects: it ensures that the lead agency, in this case the Navy, will make available and will carefully consider detailed information concerning significant environmental impacts in reaching its decision; it also guarantees that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision.

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	Section 2.3.1 discusses the rationale for selecting objectives and requirements associated with the proposed action. This identification of the objectives is consistent with the identification of the purpose and need of the proposed action. The EIS must consider a reasonable range of options that could accomplish the agency's objectives (40 CFR 1502.14). Several of these objectives emphasize avoiding redundancy in existing facilities, thereby minimizing the environmental impact associated with developing homeporting infrastructure. For example: having a CVN home port close to the air wing training ranges would reduce the potential air quality impacts associated with operations and training; existing home port facilities which would require the least amount of work required to achieve sufficient berth depths and pier infrastructure would reduce impacts related to construction; and having as a criteria for consideration existing PIA facilities would also reduce impacts related to construction.
O.12.18	The EIS describes in section 1.2 that the decision to replace two older CVs with two new CVNs in the U.S. Pacific Fleet was made in 1994. Even though the Navy is not required to assess vessel operations, important activities that could have an effect on the environment, including copper discharges and propwash turbulence, are included in this EIS. These operational impacts, including the net increase in crew homeported at a given location, are assessed for every environmental resource. The Purpose and Need of this EIS point to a requirement to analyze potential environmental impacts resulting from constructing and operating facilities needed to support the homeporting for three NIMITZ-class nuclear-powered aircraft carriers. The EIS accomplishes this and also analyzes the impact of those aspects of CVN operation that differ from the activities of the CVs that they are replacing. For example, the crew size of a CVN is slightly larger than that of a CV. Therefore, the impacts accrued to this net increase in personnel are analyzed. Another example can be found in the decrease in pollutants released to the air by virtue of replacing nuclear energy for steam energy derived from the burning of fuel oil. Because nuclear propulsion is a major difference between CVs and CVNs, an entire chapter is devoted to assessing the radiological impacts associated with the proposed action. Thus the Navy has not addressed only facility impacts, but those impacts related to the differences between CVs and CVNs as well. Therefore EHC's claims that the EIS has addressed only facility impacts is incorrect. The Navy disagrees that this EIS has been constructed to justify previously made decisions. In Alternative 5, (Total of One CVN) no additional CVNs would be homeported, and no additional facilities built at NASNI. This alternative, with the same number of CVNs as assessed in the BRAC EIS, demonstrates that the Navy has not assumed the homeporting of additional CVNs at NASNI. This alternative is evaluated against proposed action objectives and was found to be

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	less feasible. The Navy has not previously planned for or begun construction on facility improvements needed to support a second CVN at NASNI. Therefore, the Navy has not committed resources that prejudice the final decision on the proposed action evaluated in the EIS. The No Action Alternative (Alternative Six) would require the homeporting of a second CVN at NASNI without any additional improvements, but clearly differs from Alternative Four, where new facilities must be constructed. The impacts of the second CVN homeported under the No Action Alternative, including those on the City of Coronado, however, is evaluated in the EIS. The No Action Alternative is required under Council on Environmental Quality Regulations, but is not the "Default" alternative. The EIS also states that this alternative would be extremely inefficient and therefore unacceptable in terms of Navy objectives, as it would not provide for critical facilities needed to support the CVN.
O.12.19	The Navy considers that it has adequately analyzed all of the impacts associated with the proposed action. The issues raised in this comment are raised later, and thus are responded to by the Navy in the order that they appear.
O.12.20	The Navy, as Lead Agency, does not agree with your assertions or conclusions. The EIS acknowledges potential significant environmental impacts and mitigation measures with implementation of any of the six alternatives. See Table 2-11 for a summary of the potential significant impacts and mitigation measures along with the respective impact analyses in Chapters 3.0, 4.0, 5.0, and 6.0. See also the following response to your previous comment O.12.8.
O.12.21	Please also see response to comment O.12.5 in regards to CEQA.
O.12.22	The mitigation commitments are identified in Table ES-3, "Summary of Significant Environmental Impacts and Mitigations" in the Final EIS. The EIS assumes that the proposed action will comply with laws and regulations. If the EIS had not assumed compliance with laws and regulations, environmental impacts would have been greater; however, it is unrealistic to assume the proposed action could proceed without compliance to laws and regulations.
O.12.23	With regard to the radiological analyses, the Navy has fully considered the comments provided by the commentor, comments provided in other letters referenced by the commentor, and the Navy responses to those comments. Based on this review, the Navy has determined that it has correctly assessed the radiological health risks associated with the proposed action, and thus no significant changes to the radiological analyses contained in the EIS are deemed necessary. Any minor changes to the EIS as a result of the review of these comments are included with the appropriate comment responses. See responses to comments O.12.174-178, O.12.179-189, O.12.190, and O.12.191-197 for further

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	details for responses to comment provided in the letters referenced by the commentor.
O.12.24	The Navy responses to Mr. Joel Cehn's letter can be found beginning at response L.4.75. The Navy has addressed issues regarding the health risks of exposure to low-level radiation in Appendix E, section 9.0 and further in response O.12.190. Issues regarding federal weapons plants are not related to the proposed action and are beyond the scope of this EIS.
O.12.25	There are a variety of ways the results of the Navy's analysis may be presented. As noted by the commentor, the radiological health impacts are presented in terms of annual risk in this EIS. This approach was chosen to allow the reader to determine risks over any period of interest by multiplying the annual risk by the number of years of interest. For example, the average risk of developing latent fatal cancer for a resident within 50 miles of NASNI due to 20 years of exposures from normal operations is determined by multiplying the annual risk (4.8×10^{-10} from Table F-7) by 20 years, resulting in 9.6×10^{-9} or one chance in approximately 104 million. If an individual were to be exposed over a lifetime, 72 years would be substituted for 20 years in the equation above to determine that person's lifetime risk.
O.12.26	Please see response to comment L.4.34.
O.12.27	The results of the analyses are presented to allow readers of the EIS to calculate other effects, such as non-fatal cancers, if desired. Since all of the analyses present the consequences in terms of radiation exposure (rem), the health effect of interest can be determined by multiplying the radiation exposure by the risk factor of interest from Table F-3. For clarity, the following will be added as a new paragraph in Appendix F, section 2.2: "Since all of the analyses in this Appendix present the consequences in terms of radiation exposure (rem), the health effect of interest can be determined by multiplying the radiation exposure by the risk factor of interest from Table F.3. For example, the number of people in the general population expected to develop a non-fatal cancer as a result of a hypothetical support facility fire at NASNI can be calculated by obtaining the exposure from Table F-9 (1,400 rem) and multiplying it by the risk factor from Table F-3 (1.0×10^{-4}) to get 1.4×10^{-1} or 0.14. Similar calculations can be completed for other accidents or health effects of interest." With regards to whether the Appendix F analysis included acute and chronic effects, section 2.1 of Appendix F discusses the methodology used to calculate the radiation exposures presented in the EIS. Only one of these pathways (external direct radiation exposure due to immersion in the airborne radioactive

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	material) can be considered an acute dose. The remaining exposure pathways result in exposure over a long period of time and can be considered chronic doses. In any case, the total effective dose equivalent (TEDE) reported in the EIS tables are a summation of the chronic and acute doses.
	Typically, acute doses of 50 to 100 rem will result in symptoms of radiation sickness several hours after exposure. Non-cancer health effects from acute radiation exposure can consist of anorexia, nausea, fatigue, vomiting, diarrhea, hemorrhage, and, death, depending upon the dose received. The total doses estimated for the accident scenarios in the EIS are five to six orders of magnitude lower than these doses. Therefore, there are no concerns for acute non-cancer health effects due to doses from the accident scenarios evaluated in the EIS.
O.12.28	Appendix F, section 1.5, provides a frame of reference or comparison for understanding how the risks presented in the EIS compare to other risks encountered in daily life. The information provided allows the public to draw its own conclusions on the significance of the potential risks. The Council on Environmental Quality regulations (40 CFR 1502.8) require NEPA documents to be written in plain language and use appropriate graphics to ensure that decision makers and the public can readily understand the documents. Thus, no change to the EIS is deemed necessary.
O.12.29	Due to the nature of NNPP radioactivity, the Navy focuses on ionizing radiation. Thus, the analysis of worldwide stratospheric ozone depletion and increases in general population radiation exposure due to increased exposure to ultraviolet, lower energy, non-ionizing radiation are beyond the scope of this EIS.
O.12.30	Beyond Design Basis Accidents are defined in Appendix F as "Accidents included in this range typically have a total probability of occurrence in the range of 10^{-6} to 10^{-7} per year. Accidents that are less likely than 10^{-7} per year typically are not discussed since it is expected they do not contribute in any substantial way to the risk."
	The worst case facility accident is covered in Appendix F, and summarized in Chapter 7 of this EIS. The worst case facility accident has been determined to be a fire in the radiological support facility that releases the maximum amount of radioactivity available for release.
	The assumption of no evacuation of the public is conservative in terms of the radiological accident analysis, as the analysis assumes no evacuation is made in order to assess health risks from a facility accident. In other words, if it was assumed in the EIS that evacuation took place, the overall risk would be lower than is currently reported in the EIS analysis.

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O.12.31	Inadvertent ingestion of soil is included in the evaluation of health effects due to normal operations releases of radioactive materials. The GENII computer code includes this exposure pathway along with inadvertent ingestion of water during recreational swimming. The value used for soil ingestion (410 milligrams per day) is based ingestion rates ranging from 100 milligrams per day for those over the age of 5 years up to 10,000 milligrams per day for children between the ages of 1.5 to 3.5 years. The inadvertent water ingestion rate used in the analyses is 0.01 liters per hour. The assumptions concerning exposure time for members of the general public are provided in Appendix F, section 2.8. The analysis results report doses for the general population based on the assumption that all members of the public receive direct radiation exposure by spending 70 percent of their time for one year standing outside of their home. In addition, there is no dilution or reduction in the concentration of radioactive materials deposited on the ground due to rainfall, wind, or other removal mechanisms over the course of the year. These assumptions are considered to be conservative enough to compensate for small doses which could be received as the result of tracking contamination into the home, car, or to work. The computer codes used for the EIS analyses calculate the direct exposure due to radioactive materials deposited on the ground based on the radiation levels at 1 meter above the ground. While children could receive higher doses while crawling on the ground, the doses to most adult members of the public are conservatively estimated with this assumption. However, the assumptions discussed in the above paragraph are considered to be conservative enough to compensate for small doses which small children could receive as the result of crawling on the ground. In addition, since the analyses demonstrate no significant radiological impacts, further analysis to identify disproportionate impacts to children is not required under Executive Order 13045.
O.12.32	The Navy's radiological health risk assessment does account for consumption of locally grown meats (including fish) in Appendix F, section 3.2. These factors are included in the Navy's results summarized in Chapter 7. Please also see response to comment L.4.40.
O.12.33	As described in response O.12.10, the Navy's historical record of safe and responsible operation of nuclear powered warships is clear: there has never been a reactor accident associated with the Program, nor has there been any release of radioactivity that has had a significant effect on the public or the environment. The commentor is correct in that there have been releases of NNPP radioactivity; however, as described below, since the total amount released annually has been

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inconsequential, any individual release was also inconsequential, and was not subject to reporting, immediate or otherwise, by any regulatory requirements.

The Navy reports all releases of radioactivity associated with the NNPP in its annual report entitled Environmental Monitoring and Disposal of Radioactive Wastes from U.S. Naval Nuclear Powered Ships and their Support Facilities. This report is prepared annually, and is provided to Congress and made available to the public. Relevant information from the report has been included and referenced as appropriate in the EIS in accordance with the implementing regulations of NEPA (40 CFR 1502.21). Copies of this and other reports were placed in local public libraries to aid public review during the NEPA process.

As described in the annual report referenced in the EIS, 26 previous versions of that report, and the 1998 update of the report, the total long-lived gamma radioactivity in liquids released annually to all ports and harbors from all Naval nuclear-powered ships and supporting tenders, Naval bases and shipyards is less than 0.002 curies. This annual total includes any accidental releases of radioactivity that occurred during the year. For perspective, the total annual amount is less than the amount of naturally occurring radioactivity present in the seawater displaced by a single submarine, and is environmentally inconsequential. Since the total amount released was inconsequential, any individual release was also inconsequential, and was not subject to reporting, immediate or otherwise, by any regulatory requirements. As such, further information regarding individual releases is not needed to describe the environmental effects of the proposed action, and no change to the EIS is warranted.

As described in section 7.4.4 of the EIS, the Navy performs extensive marine water, sediment, marine life (such as mollusks, crustaceans, and plants), and shoreline surveys for radioactivity associated with Naval nuclear propulsion plants in U.S. harbors frequented by Naval nuclear powered ships. This monitoring also includes comprehensive, air, and land-based radiation sampling. Sampling harbor water and sediment each quarter year is emphasized since these materials would be the most likely to be affected by release of radioactivity. The results of these surveys confirm there has been no build-up (bioaccumulation) of cobalt 60 in marine life and that Naval nuclear propulsion operations have had no significant radiological environmental impacts. Environmental samples from each harbor monitored are independently checked at least annually by a U.S. Department of Energy laboratory to ensure that analytical procedures are correct and standardized. Results of these surveys have been included as the radiological baseline in the discussions for the various resource areas.

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Additionally, the U.S. Environmental Protection Agency has conducted independent surveys in U.S. harbors, including areas encompassed by the San Diego Naval Facilities, Puget Sound Region, and Pearl Harbor Naval Shipyard (specific citations for those reports appear at the end of this response). The results are consistent with Navy monitoring results cited in NNPP 1997a. These surveys have confirmed that U.S. Naval nuclear-powered ships and their support facilities have had no significant impact on the radioactivity of the marine or terrestrial environment.

With regard to the Greenpeace Neptune Papers allegations, several points apply:

- Most of the information cited by Greenpeace came from published reports already in the public domain;
- Many of the incidents involved events on non-U.S. Navy ships, such as Danish, Australian, British, Soviet, and Argentine ships;
- Most of the incidents cited that occurred on U.S. Navy ships occurred on non-nuclear powered ships;
- Most of the incidents cited that involved nuclear-powered ships involved non-propulsion plant matters such as collisions, fires in the ship's galley, and industrial-type events);
- Those few remaining events that occurred on U.S. nuclear-powered ships that were accurate (many were not) and that involved the propulsion plant were generally minor in nature. In any event, any radiological releases that occurred as a result were included in the annual report of radioactivity released for the appropriate time period.

Thus, while reported in a sensational manner, none of the events presented in the Greenpeace reports contradicted the U.S. Navy's claim of an exemplary record of reactor safety and no significant radiological impact on the environment.

References for EPA Reports cited in the comment:

PHS 1966. Radiological Survey of Pearl Harbor, Hawaii, and Vicinity

PHS 1968. Radiological Survey of Major California Nuclear Ports

EPA 1972. Radiological Surveys of Pearl Harbor, Hawaii, and Environs, 1966-68

EPA 1977. Radiological Survey of Puget Naval Shipyard Bremerton, Washington, and Environs

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	EPA 1987. Radiological Survey of Pearl Harbor Naval Shipyard and Environs, Honolulu, Hawaii
	EPA 1989a. Radiological Survey of San Diego Bay
	EPA 1989b. Radiological Survey of Naval Facilities on Puget Sound
	EPA 1998. Radiological Survey at the Puget Sound Naval Shipyard and Naval Submarine Base - Bangor
	EPA 1999. Radiological Survey of Naval Facilities on San Diego Bay
O.12.34	Please see response to comment O.10.39.
O.12.35	Please see response to comment O.12.33.
O.12.36	Please see response to comment O.12.33.
O.12.37	The commentor requests information that is beyond the scope of the EIS. As was indicated by the commentor, information was provided separately under the Freedom of Information Act process. Thus, no change to the EIS is deemed necessary.
O.12.38	Please see response to comment O.12.33.
O.12.39	Please see response to comment O.12.33.
O.12.40	Please see response to comment O.12.33.
O.12.41	Please see response to comment O.12.33.
O.12.42	Please see response to comment O.12.33.
O.12.43	Please see response to comment O.12.33.
O.12.44	USS MYSTIC is not a nuclear powered submarine, nor did the events in this case involve nuclear propulsion systems or procedures. Therefore, it would be incorrect to draw conclusions regarding the safety of nuclear powered aircraft carriers based on this event. The details of the USS MYSTIC accident are not within the scope of this EIS. Please also see response to comments O.12.10 and O.12.86.
O.12.45	None of the incidents cited by the commentor involved nuclear propulsion plants aboard nuclear-powered vessels or resulted in releases of radioactivity having a significant effect on human health or the environment. Thus, the incidents do not contradict the U.S. Navy's claim of an exemplary record of

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	reactor safety and no significant radiological impact on the environment. Please also see response to comment O.12.33.
O.12.46	Please see response to comment O.12.45 above.
O.12.47	Please see response to comment O.12.45 above.
O.12.48	Please see response to comment O.12.44 above.
O.12.49	Nuclear propulsion technology is among the most sensitive military technologies possessed by the United States and Congress has placed stringent limitations on foreign access to it under the Atomic Energy Act of 1954 (amended) and other federal statutes. As such, discussion of issues related to U.S. Naval reactor design and operation, including an analysis of postulated reactor accidents, is contained in a classified appendix. The classified appendix was provided to EPA headquarters for review. This approach is in accordance with the implementing regulations of NEPA (40 CFR 1507.3(c)) which specifically provide for the protection of classified information. EPA received the entire Draft EIS, including the classified appendix, conducted a review, and provided comments based on their review. The Navy has responded to those comments (see F.3 series). EPA had no comments on the classified appendix. Every effort has been made to ensure that environmental impacts associated with homeporting are evaluated and reported in an unclassified fashion in the EIS, and thus all potential environmental impacts or conclusions discussed in the classified appendix are covered in the unclassified sections of the EIS. As such, design and operational characteristics of Naval nuclear-powered ships are discussed in Chapter 7 of the EIS. For example, Chapter 7 discusses that Naval nuclear propulsion plants are designed to withstand battle damage, a feature that increases reactor safety during peacetime operations. Naval nuclear ships and their reactors have been designed to the Navy's exacting and rigorous standards for warship shock design, include redundant systems, and are operated by highly trained crews using rigorously applied procedures. In addition, Naval nuclear propulsion plants are less than one-fifth of the typical commercial power plant rating, and typically operate at low power levels or are shut down when in port or operating close to land. Therefore, Naval reactors have significantly less fission products (less than 1 percent) available for release, which limits the size of the potential area of concern. In addition, there are multiple boundaries to prevent release of fission products to the environment, including the fuel itself, the all-welded primary coolant system, the reactor compartment, and the ship. Thus, Navy ships have a very low potential for major radiological releases, and radiological impacts of any credible accident scenario would likely be localized and not severe.

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	In addition to the above, NIMITZ-class aircraft carrier nuclear propulsion plant design was independently reviewed by the Nuclear Regulatory Commission (at the time of review it was by the Directorate of Licensing Division of the Atomic Energy Commission) and by the Advisory Committee on Reactor Safeguards. Both reviews concluded that consistent with the military necessity of these ships, NIMITZ-class aircraft carrier reactors could be safely operated.
O.12.50	Incidents involving hazardous materials at NASNI are reported to DTSC as required by federal and state regulations, and are a part of the public record. Appendices F and J of this EIS analyze accidents involving radioactive and hazardous materials, respectively. The conclusion of the radiological analysis indicates there would be no significant impact from an accident involving radioactive materials. See response to comment O.12.33 for further information regarding individual releases of radioactivity. The results of the hazardous material analysis indicates that if an accident were to occur without currently established mitigation measures in place, there could be a potential impact to human health. However, considering the Navy's existing mitigation measures, the possibility of a hazardous material accident causing significant health or environmental impact is negligible. Letters submitted to DTSC by EHC are beyond the scope of this EIS. It should be noted that DTSC and EPA have full access to and have inspected Navy facilities, including the DMF at North Island, for compliance pursuant to matters under their regulatory authority. The Navy has no control over the frequency of their inspections.
O.12.51	Since Long Beach Naval Shipyard (LBNSY) has been closed by Base Realignment and Closure actions, it cannot reasonably satisfy the CVN Homeport Objectives and Requirements listed in section 2.3.1 of the EIS. Therefore, use of LBNSY is not a reasonable alternative, and comments regarding the failure to address LBNSY are beyond the scope of this EIS. The administrative record citation EHC quotes relates to a publicly available GAO study of LBNSY's capacity to support a NIMITZ Class Aircraft Carrier. The GAO study concluded LBNSY lacked substantial infrastructure to support a NIMITZ Class Aircraft Carrier as compared to NASNI.
O.12.52	Nuclear propulsion technology is among the most sensitive military technologies possessed by the United States and Congress has placed stringent limitations on foreign access to it under the Atomic Energy Act of 1954 (amended) and other federal statutes. As such, discussion of issues related to U.S. Naval reactor operation, including results of Reactor Safeguard Examinations, cannot be released to the public. However, it is important to note that the NNPP pays very close attention to problems and their prevention. The approach taken is to evaluate even the smallest mistake and take appropriate corrective action to

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	preclude recurrence. Working on the small problems helps ensure that larger problems do not occur. Conducting Reactor Safeguard Evaluations is merely one way the NNPP implements this approach. Reactor Safeguard Evaluations help the NNPP maintain and constantly build on its outstanding record of reactor safety. Based on the above, no change to the EIS is deemed necessary.
O.12.53	Nuclear propulsion technology is among the most sensitive military technologies possessed by the United States and Congress has placed stringent limitations on foreign access to it under the Atomic Energy Act of 1954 (amended) and other federal statutes. As such, discussion of issues related to U.S. Naval reactor design and operation, including an analysis of postulated reactor accidents, is contained in a classified appendix. However, every effort has been made to ensure that environmental impacts associated with CVN homeporting are evaluated and reported in an unclassified fashion in the EIS. For example, Chapter 7 has numerous unclassified paragraphs on reactor design and operation, emergency planning, and risk analyses. With regard to NNPP radiological emergency procedures, these procedures contain sensitive information regarding military technology, which must be protected from uncontrolled release and dissemination. However, the procedures do not outline any actions needed to be taken by the public. In the unlikely event of a problem, the Navy would promptly notify state and local officials, and would communicate with those officials to provide radiological data and recommendations for protective actions, in the event of an accident. Any action needed to protect the public would be handled by the state and local officials using existing plans for emergencies from natural events, such as earthquakes or hurricanes.
O.12.54	The Navy believes its statement is correct in the context in which it is presented. Please see response to comment O.12.190.
O.12.55	The GAO report referred to by the commentor pertains to the government's choice for the next generation of aircraft carrier propulsion plants. As described in the response to O.12.12, the scope of this EIS does not include decisions regarding Naval ships (e.g., application of nuclear power), and thus comments regarding these decisions are beyond the scope of this EIS. However, because of the numerous errors and inaccuracies contained in the GAO report, the Department of Defense objected to the report. Specifically: • The GAO report substantially understated the operational effectiveness of nuclear-powered aircraft carriers, and overstated the life cycle cost premium. The Chairman of the Joint Chiefs of Staff, the CNO, the Unified CINCs, the Fleet Commanders, and the operating fleet of our Navy are unanimous in

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their recognition of the added capability, mobility, sustainability, and flexibility nuclear power gives to the Navy's aircraft carriers. Nuclear power gives carriers unlimited range and endurance at high speed, increases capacity for weapons and aircraft fuel, and eliminates dependence upon the vulnerable logistics train for ship fuel. The result is operational flexibility, independence, and survivability the Navy needs in its carriers.

- The GAO report inappropriately compared the cost of modern nuclear-powered NIMITZ class carriers, such as the newest, USS HARRY S. TRUMAN (CVN-75), to smaller, older, less capable, conventionally-powered carriers, such as USS JOHN F. KENNEDY (CV-67). KENNEDY, which was designed over 40 years ago, does not meet today's Navy standards for ship capability, survivability, or habitability.

- The GAO report did not capture actual deployment practices for CVNs and CVs. In the last two years, 6 CVNs were called to make high speed, long distance (over 4000 nautical miles) transits to respond to national security crises. No conventional carriers made similar high speed, long-distance transits in this period.

O.12.56 This EIS analyzes the proposed action's impact on pollution from many different perspectives: Air Quality, Water Quality, Health and Safety are just a few examples. The conclusions of these analyses indicate there would be no significant pollution impact from the proposed action. In absence of significant impact, inclusion and analysis of the studies referenced in the comment would not affect the final conclusion.

O.12.57 Issues regarding Y2K compliance for Department of Defense (DOD) systems not related to the proposed action are beyond the scope of the EIS. Systems related to the proposed action, including those under NNPP cognizance, are Y2K compliant.

Consistent with DOD policy, all DOD systems are to be Y2K compliant by March 31, 1999. To ensure Y2K-related issues were addressed, the NNPP began an aggressive program in 1996 to assess, remediate, and test systems. All NNPP Y2K-related work was completed within existing budgets and funding for the NNPP.

O.12.58 The Navy is transitioning from the Close-In Weapons System (CIWS) to the Rolling Airframe Missile system (RAM). Concurrently, the Navy is moving toward the replacement of existing depleted uranium ammunition for its CIWS. Some amount of depleted uranium still exists in the inventory but is used in limited quantities for practice and maintenance firing. The candidate CVNs to use the facilities that are the subject of this EIS will have RAM systems and thus

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	the issue of depleted uranium is not appropriate for them. The USS JOHN C. STENNIS is scheduled to have its CIWS replaced with RAM in the future as part of its routine weapons systems upgrade. Because the STENNIS replaced a CV that also had CIWS and used depleted uranium ammunition, there has been no change to existing conditions.
	According to the Navy's 1998 demographic statistics, just fewer than 34 percent of the active duty force are people of color. There is no reason to believe that the demographics of an aircraft carrier in general or the fire control technicians in particular that are members of the ship's weapons department, should deviate significantly from the all-navy distribution. Consequently, there is no disproportionate impact to people of color and therefore, there is not an environmental justice issue associated with the use of depleted uranium aboard aircraft carriers.
O.12.59	Please refer to the EIS, Volume 1, paragraph 2.3.2.1, which states that no dry-dock facilities exist at NASNI and none are planned. The administrative record citation EHC quotes is an idea proposed by a contractor that was never seriously contemplated as a realistic option by the Navy. The Navy uses the lot adjacent to the DMF for employee parking. As cited in Appendix I, second paragraph, no refuelings/defuelings are planned for NASNI because it does not have the facilities to support such an undertaking.
O.12.60	Domestic ship scrapping operations are beyond the scope of this EIS. There is no guarantee that a private shipbuilding firm in San Diego would be awarded this contract; thus it is too speculative to consider cumulative impacts of such an action.
O.12.61	PERSTEMPO is applicable to all Navy ships including CVs and CVNs. A discussion on PERSTEMPO appears in Appendix G, paragraph 1.4. If by ". . . impact of PERSTEMPO were understated . . .," the EHC means that the Navy did not analyze the impact of increased crew size (102 personnel per CVN multiplied by two CVNs equals 204 personnel increase) being in port more often because of the PERSTEMPO rules, the impact was based on the crews being in port 365 days a year, every year; far in excess of PERSTEMPO requirements.
O.12.62	The EIS already analyzes radioactive, hazardous, and mixed waste at NASNI as a result of the proposed action in sections 3.15 and 7.4.3. Specific hazardous waste streams are publicly available in the permit for the NASNI complex, and mixed waste streams are available in the permit for the NASNI mixed waste storage facility. Additionally, the EIS includes detailed assessments of normal operations and accidents involving radioactive and hazardous materials in Appendix F and J. Based on the above, no further information regarding radioactive, hazardous, and mixed waste is deemed necessary. Also, it is

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	important to note that no disposal of radioactive, hazardous, or mixed waste would occur at NASNI. As is the case today, disposal of waste generated at NASNI occurs at off-site disposal facilities.
O.12.63	Radioactive resin and filter media generated as a result of NNPP operations are categorized as low-level radioactive waste, and thus fall within the scope of the discussions and analyses presented in the EIS regarding low-level radioactive waste. Thus, no change to the Draft EIS is deemed necessary.
O.12.64	Most PCB and asbestos found aboard CVNs comes from materials such as paint and insulation that were manufactured and installed on Navy ships prior to federal limitations on the use of these materials. In accordance with the existing practice throughout the Navy, asbestos has been removed during maintenance of the ship over the years. In addition, PCBs are removed from the ships when components containing PCBs are removed from service for disposal. Consistent with the existing practice for such materials, all aspects of PCB and asbestos management, including on-site operations and off-site disposal, would occur in accordance with applicable federal, state, and local regulations under the proposed action. Therefore, no further measures as a result of the proposed action are deemed necessary.
O.12.65	The Navy's radiological environmental sampling program focuses on detection of cobalt-60 since it is the primary radionuclide of interest for Naval nuclear propulsion plants. However, a range of gamma radioactivity is analyzed. This process identifies other gamma-emitting radionuclides if they are present. The full listing and quantity (source term) of radionuclides applicable to normal NNPP operations can be found in Appendix F in the table contained in section 3.1. The source term for accident scenarios can be found in Appendix F in the table found in section 3.2.1.
O.12.66	The Navy is transitioning from the Close-In Weapons System (CIWS) to the Rolling Airframe Missile System (RAM). Concurrently, the Navy is moving toward the replacement of existing depleted uranium ammunition for its CIWS. Some amount of depleted uranium still exists in the inventory but is used in limited quantities for practice and maintenance firing. The candidate CVNs use the facilities that are the subject of this EIS will have RAM systems and thus the issue of depleted uranium is not appropriate for them. The USS JOHN C. STENNIS is scheduled to have its CIWS replaced with RAM in the future as part of its routine weapons systems upgrade. Because the STENNIS replaced a CV that also had CIWS and used depleted uranium ammunition, there has been no change to existing conditions.

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O.12.67	The impact of transportation of radioactive wastes is covered in sections 3.15 and 7.4.3.4 of the EIS. The conclusion of the EIS is that shipments of radioactive wastes are made in accordance with DOT, DOE and NRC regulations and are safe. These regulations ensure shipments of radioactive materials are controlled to protect the environment and the health and safety of the general public, regardless of the transportation route chosen.
O.12.68	Further research indicates that NASNI is not on the NPL. The text has been changed accordingly.
O.12.69	Issues associated with constructing and operating the NASNI Depot Maintenance Facility, including the Mixed Waste Storage Facility and Controlled Industrial Facility, were analyzed in reference DON 1995, and are beyond the scope of this EIS. However, it is important to note several points. First, storage of hazardous waste on-site for less than ninety days does not require a Part B permit under the Resource Conservation and Recovery Act, which is the type of permit DTSC recently issued for the MWSF. Second, in accordance with that permit, mixed waste will be shipped to off-site treatment and disposal facilities in accordance with a Mixed Waste Treatment Plan, which outlines the Navy's planned treatment and disposal paths for each NASNI mixed waste stream stored in the MWSF. Submittal of the Mixed Waste Treatment Plan is a permit condition enforceable by DTSC as a means to ensure the Navy continues its present practice of aggressively pursing treatment and disposal paths for its mixed waste. This approach is appropriate since some mixed waste streams will have to be stored for more than one year pending the development and operation of treatment and disposal facilities for mixed waste. In addition, low-level radioactive waste is shipped to off-site disposal facilities as soon as practicable, with consideration given to minimizing the number of truck shipments. The Navy does not dispose of it low-level radioactive waste at its facilities. Rather, low-level radioactive waste is disposed of at licensed Department of Energy or commercial disposal facilities. The issue raised in this comment were raised in the commentor's appeal of DTSC's permit decision for the NASNI Mixed Waste Storage Facility. On 30 November 98, DTSC issued an order denying the three petitions on these issues. The following are quotes from that order addressing EHC's issue: "Permit condition V.6, in general, places a one-year time limit on the storage of waste in the MWSF. However, in recognition of the fact that the mixed waste treatment facilities that will ultimately treat approximately 40 percent of the wastes to be stored in the MWSF are not yet in operation, the Permit allows these wastes to be stored in the MWSF for more than one year only under specified and necessary conditions...Petitioner's concern that this flexibility in the allowed

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	storage time will lead to NASNI becoming a nuclear waste dump is not realistic given the conditions imposed by the Permit on storing wastes for more than one year, the limited volume (5,500 gallons) of mixed wastes that may be stored at any given time, and the fact that there are definitive (not merely speculative) plans for bringing these mixed waste treatment facilities on-line...For the reasons stated above, the Department finds that there is no basis....to grant a review of this permit condition." Based on the above considerations, no further environmental analysis for on-site management of low-level radioactive or mixed waste is deemed necessary.
O.12.70	The Navy does monitor and disclose radioactive emissions and discharges to the environment. Please see response to comment O.12.33. Also refer to Appendix F, section 3.1 for a listing of expected emissions from normal NNPP operations at NASNI; Appendix E and response O.12.190 for a discussion of issues regarding the effects of low-level radiation exposure.
O.12.71	Issues associated with constructing and operating the NASNI Depot Maintenance Facility, including the Mixed Waste Storage Facility (MWSF), were analyzed in reference DON 1995, and are beyond the scope of this EIS. With regard to the commentor's statement concerning their outstanding appeal of the MWSF permit, it is important to note that DTSC subsequently denied the commentor's appeal and issued the final permit to construct the MWSF on November 30, 1998. The issues raised in the appeal are also the issues raised in this comment. The following are quotes from that order addressing the commentor's issues: "As discussed above, most of the comments contained in these documents are outside the scope of this permit appeal process because they pertain either to CEQA compliance or to the radioactive aspects of the waste to be stored at the MWSF. With respect to the remainder of the comments contained in these referenced documents, the Department finds that these comments were adequately and appropriately responded to in the RTC documents issued by the Department on September 29, 1998. Furthermore, the Department has determined that the underlying findings and conclusions pertaining to the issues raised in these comments were accurate, and/or that the underlying discretionary decisions and policy decisions were fully considered and correctly decided. Therefore, the Department finds no basis to grant Petitioners' request for further review of these issues." "The Facility's operations plan includes a contingency plan that meets the requirements of the Department's regulations pertaining to contingency plans and emergency response preparedness. There is no regulatory basis for the Department to require additional emergency response preparation measures as a

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	permit condition, unless it were demonstrated that such a condition is necessary to ensure protection of human health and the environment. Petitioners have not established (either in their petitions or the referenced comments on the draft Permit, nor is the Department aware of, any human health or environmental protection basis for requiring additional emergency response preparation measures relative to the hazardous aspects of the MWSF...For the reasons cited above, the Department finds there is no basis...to grant a review of the issue."
O.12.72	The EIS covers radioactive waste disposal issues in sections 3.15 and 7.4.3.2. The Navy, along with other California radioactive waste generators are shipping waste to the Barnwell site in South Carolina. The EIS is not specific on a particular waste site, as compact agreements between states dictate where waste will go. In addition, the commentor has misinterpreted the statement made by Captain Rocklun Deal and quoted in this comment. Captain Deal was speaking to the disposal of spent nuclear fuel, not low-level radioactive waste. As refueling or defueling of CVN reactors are not planned for any of the alternative homeport locations evaluated in this EIS, disposal of spent nuclear fuel is not within the scope of this EIS. The citation of "...until arrangements can be made..." on page 3.15-5 of the Draft EIS applies to mixed waste only. As is explained in response O.12.69, the Navy is aggressively pursuing treatment and disposal paths for mixed waste as treatment and disposal technologies develop. This same statement was made in reference DON 1995, in the MWSF RCRA permit, and in this EIS. Based on the above considerations, no specific mitigation measures with regard to low-level radioactive and mixed waste are deemed necessary.
O.12.73	The commentor requests that seven mitigation measures be added to the EIS. The following are the Navy's responses to each measure identified: 1. In Chapter 7.0, the EIS states that if the ship is in port and not moving, the reactor plant is normally shut down or operated at a small fraction of the ship's rated power. The ultimate status of the propulsion plant is based on several considerations, including the time the ship is expected to be in-port and operational needs of the Navy. Each operational requirement of the NNPP is designed to ensure the safety of the crew as well as the public. From a safety standpoint, there are no significant advantages to further restricting the conditions of the propulsion plant while in-port beyond those already identified in the EIS, and thus no changes to the EIS are deemed necessary.

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2. The NNPP already prohibits intentional discharges of radioactive liquids into harbors and seas within 12 miles of shore, including intentional discharges from tests. The response to O.12.33 describes the Navy's reporting of all releases of NNPP radioactivity. The very small amount of radioactivity released as a result of valve leakage is accounted for in the Navy's annual report, which has consistently demonstrated that the cumulative environmental effect of all releases of NNPP radioactivity is negligible. Nevertheless, design improvements in newer classes of ships, including NIMITZ-Class aircraft carriers, have virtually eliminated radioactive discharges due to valve leakage. Given the above, no changes to the EIS are deemed necessary.

3. As explained in section 7.5 of the EIS, NNPP operations and work performed at Naval bases are such that there is no need for unique emergency preparedness programs outside the base. A community near to where nuclear-powered ships are berthed needs no additional emergency planning actions or response capability beyond that which exists for emergencies from natural events, such as earthquakes or hurricanes. To ensure the Navy is prepared to handle radiological emergencies, emergency planning and emergency response is an integral part of ongoing NNPP operations. For many years, the Navy has coordinated emergency preparedness issues with state emergency organizations in states where nuclear powered ships are homeported. Regularly scheduled exercises are conducted periodically at each site in order to test the site's ability to respond to accidents. As discussed in section 7.5, in the highly unlikely event of an emergency, the Navy would promptly notify state and local officials, and would communicate with those officials to provide radiological data and recommendations for protective actions. Any action needed to protect the public would be handled by state and local officials using existing plans for emergencies from natural events, such as earthquakes or hurricanes. As this information is already present in the EIS, no change to the EIS is deemed necessary.

4. Please see response to comment L.4.36.

5. Please see response to comment O.12.73 (1) above.

6. Please see response to comment O.12.49.

7. As is stated in section 7.1.4 of the EIS, Naval reactors operate at power levels below their rated power, particularly when transiting restricted waters. The status of the individual propulsion plants is based on several considerations, including the operational needs of the Navy. Each

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	operational requirement of the NNPP is designed to ensure the safety of the crew as well as the public. From a safety standpoint, there are no significant advantages to further restricting the conditions of the propulsion plant while transiting beyond those already identified in the EIS, and thus no changes to the EIS are deemed necessary.
O.12.74	Please see response to comment L.4.36.
O.12.75	As has been the case for many years, the Navy has a local Navy Command in San Diego who is in charge of NNPP emergency planning and response for the San Diego area. Please see response to comment O.12.73 for further information regarding emergency planning issues.
O.12.76	Please see responses to comments L.4.36, O.12.73 (3), and O.12.78.
O.12.77	With regard to development of an evacuation plan, the response to comment O.12.73 (3) describes that in the unlikely event of a problem requiring action by the public, the Navy would promptly notify state and local officials, and would communicate with those officials to provide radiological data and recommendations for the appropriate protective actions. Consistent with EPA and NRC policy, such protective actions may include evacuation or sheltering, as appropriate to the conditions of the emergency. Time and radiological characteristics of a release, the area affected, and the appropriate protective actions depend on the particular event and prevailing atmospheric conditions. Thus, the commentor's statement that evacuation is the appropriate protective action for any radiological emergency is not correct.
	With regard to the storage of radioactive waste at NASNI, issues associated with constructing and operating the NASNI Depot Maintenance Facility, including the Mixed Waste Storage Facility and Controlled Industrial Facility, were analyzed in reference DON 1995, and are beyond the scope of this EIS. Please see response to comment O.12.69 for further information regarding storage of low-level radioactive and mixed waste at NASNI.
	With regard to OPNAVINST 3440.16C, the purpose of the instruction is to assist civil authorities in coping with civil emergencies when the situation is so severe that it exceeds the response capability of civil authorities. In such a case, the Navy would be assisting civilian authorities with an emergency that would likely be affecting both the Navy and civilian communities, which is the context in which the statements cited by the commentor are made. With regard to whether such an emergency could be caused by a radiological emergency, Naval nuclear-powered ships and their reactors have been designed to the Navy's exacting and rigorous standards for warship shock design, include redundant systems, and are operated by highly trained crews using rigorously applied

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	procedures. Thus, Navy ships have a low potential for major radiological emergencies, and in the highly unlikely event of a significant release of radioactivity, the effects would be localized and would not be severe. Finally, with regard to the British emergency response plans, the British emergency response plans for their naval nuclear program are developed in response to United Kingdom legislation and are consistent with the approach followed for other British nuclear programs. A consistent, albeit different, course has been followed in this country that relies on the emergency response capability in existence for emergencies from natural events, like earthquakes or hurricanes. Unique local actions are considered unwarranted given the nature and operational experience of U.S. Naval reactors. Beyond local capabilities, the Federal Radiological Emergency Response Plan could be called on to provide resources to assist localities in dealing with a significant radiological event. The fact that countries take different approaches in emergency response is a common situation seen in many areas of technological and industrial/military activities.
O.12.78	The use of potassium iodide as a prophylactic following a significant radiological event has been the subject of much discussion in the U.S. and abroad. There is no consensus on the distribution, use, medical risks or the potential negative response to use of potassium iodide. There is also no clear path forward to achieve consensus. As noted by the commentor, potassium iodide is only effective in reducing exposure to the thyroid from radioactive iodine. It has no effect on external radiation exposure or internal exposure from other radioactive elements that could also be present in the event of a significant release of fission products from a reactor accident. Potassium iodide also has health concerns discussed further below which must be balanced against any benefit. In the very highly unlikely event of fission product release from containment, the effect on surrounding people and areas is highly dependent on the size of any such release. The lower the amount of radioactivity released, the smaller the area of concern. In addition, evacuation of the people or movement of the source would mitigate any potential effects. Evacuation or moving the source away from population, if it is predicted that the public would be affected, protects against exposure from all sources, not just radioactive iodine, and makes use of potassium iodide for members of the public unnecessary. As explained in responses O.12.49 and O.12.80, because of the small size and conservative design of U.S. Naval nuclear propulsion plants (including installed redundant safety systems), it is highly unlikely that a release of fission products from containment would occur. There are multiple boundaries to prevent release of fission products to the environment, including the fuel itself, the all-welded

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primary coolant system, the reactor compartment, and the ship. However, in the highly unlikely event of such a release where public exposure were predicted, sufficient time would be available to implement protective actions. Such actions would include consideration of moving the ship (the source of the fission products) and evacuation of the public from the very limited areas of concern.

For many years, the Navy has coordinated emergency preparedness issues with state emergency organizations in states where nuclear powered ships are homeported. As discussed in section 7.5 of the EIS, in the highly unlikely event of an emergency, the Navy would promptly notify state and local officials, and would communicate with those officials to provide radiological data and recommendations for protective actions. Any action needed to protect the public would be handled by state and local officials using existing plans for emergencies from natural events, such as earthquakes or hurricanes. States have the responsibility and authority to implement the emergency response plans they conclude are necessary to protect the health and safety of the public. To date, based on the very low possibility of a reactor accident resulting in a significant release of fission products, the potential medical risks from administering potassium iodide, and concern that administering potassium iodide may slow evacuation, only three states (Alabama, Arizona, and Tennessee) have chosen to stockpile potassium iodide.

Potassium iodide can have side effects, particularly for people who are allergic to iodine. Side effects can include skin rashes, swelling, fever, joint pain, and shortness of breath. Adverse interactions with other drugs are also possible. The FDA has compared the potential risks of side effects with the benefits of administering potassium iodide in the event of a significant release of fission products, and concluded that distribution of potassium iodide is not warranted unless the predicted thyroid radiation dose is expected to exceed a threshold level of 25 rem. This conclusion is the basis of the EPA's Protective Action Guide, which recommends administration of potassium iodide to the public only if a thyroid dose of 25 rem or higher is predicted.

The Nuclear Regulatory Commission (NRC) and Federal Emergency Management Agency (FEMA) recommend stocking potassium iodide for emergency workers and institutionalized persons (unable to readily evacuate) in areas around large land based commercial nuclear power plants. They do not require stocking potassium iodide for distribution to the public, but do not prohibit States from choosing to do so.

The NRC is currently in the rulemaking process, and in the future may require states to consider stocking potassium iodide as a supplement to evacuation and sheltering as protective measures for the public in areas surrounding commercial nuclear power plants. The NRC's position that evacuation is more effective than

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	administration of potassium iodide remains unchanged. In any event, the Navy would consult with the state if that state chooses to stockpile potassium iodide for areas around Navy bases. Therefore, there is no technical basis for states to stock potassium iodide for the public in areas surrounding U.S. Naval bases or shipyards, and thus no such mitigation measure is needed in the EIS.
O.12.79	Please see response to comment O.12.78.
O.12.80	It is important to note that there are many differences between commercial and Naval reactors which contribute to differences in emergency planning needs. First, commercial nuclear power plants are designed to operate at high power levels for long periods to produce electricity. By contrast, U.S. Naval nuclear propulsion plants are lower in power rating (less than one-fifth of the typical commercial power plant rating) than commercial plants. When in port or operating close to land, U.S. Naval nuclear propulsion plants also typically operate at low power levels or are shut down. Therefore, Naval reactors have significantly less fission products (less than 1 percent) available for release, which limits the size of the potential area of concern. Further, Naval nuclear-powered ships and their reactors have been designed to the Navy's exacting and rigorous standards for warships, include redundant systems, and are operated by highly trained crews using rigorously applied procedures. Naval nuclear fuel, which contains the fission products, can withstand shock loads well in excess of 50 times the force of gravity. In addition, there are multiple boundaries to prevent release of fission products to the environment, including the fuel itself, the all-welded primary coolant system, the reactor compartment, and the ship. In fact, since these ships are designed to fight and win wars, that ruggedness is added margin ensuring safety when these ships are sitting alongside the pier. NNPP radiological emergency procedures contain sensitive information regarding military technology, which must be protected from uncontrolled release and dissemination. Thus, specific details cannot be discussed individually. However, as noted above, due to the small size and conservative design of Naval nuclear propulsion plants, a radiological emergency would cause a limited area of concern that would be much less than that for a commercial reactor. Based on the above, no change to the EIS is deemed necessary.
O.12.81	Releases of radioactivity are required by federal law to be immediately reported to the proper officials if they are above certain thresholds. The thresholds, or

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	reportable quantities, can be found in 40 CFR 302.4, which are EPA regulations implementing portions of the Comprehensive Environmental Response, Compensation and Liability Act. These threshold limits have been established based on the potential effect of such releases on human health and the environment. The Navy is not exempt from reporting requirements and thus complies with these requirements. However, the Navy has never released an amount that would require notification (e.g., the reportable quantity for cobalt 60 is 10 curies). As described in the annual report referenced in the EIS, twenty-six previous versions of that report, and the 1998 update of the report, the total long-lived gamma radioactivity in liquids released annually to all ports and harbors from all Naval nuclear-powered ships and supporting tenders, Naval bases and shipyards is less than 0.002 curies. This annual total includes any accidental releases of radioactivity that occurred during the year. For perspective, the total annual amount is less than the amount of naturally occurring radioactivity present in the seawater displaced by a single submarine, and is environmentally inconsequential. Since the total amount released was inconsequential, any individual release was also inconsequential, and was not subject to reporting, immediate or otherwise, by any regulatory requirements. The commentor requests that six issues be addressed in the EIS. The following are the Navy's responses to each issue identified: 1. Please see response to comment L.4.49. 2. As part of its on-going emergency planning, the Navy coordinates with Naval Medical Center San Diego for emergency hospital support. Please see response to comment L.4.49 as well. 3. Please see response to comment O.12.78. 4. Please see response to comment L.4.36. 5. The Navy has determined that there would be no significant radiological impacts from the proposed action. Thus, commitment of additional resources to respond to releases of radioactivity is not deemed necessary. For toxic issues, please see response to comment O.12.100. 6. Please see response to comment L.4.49 and O.12.53.
O.12.82	The FEMA study referenced in the comment dealt with commercial nuclear power plant emergency planning. Please see response to comment O.12.80.
O.12.83	The definition of a reactor accident in the Department of Defense Directive 5230.16 is the same as the NNPP's definition; thus, no disparity between those definitions exists. Contrary to the commentor's assertion, even under the DOD

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	definition, a spill of radioactive water would not qualify as a reactor accident. The operative words in the definition, as stated by the commentor, are that the accident would result in the release of fission products from the reactor core. The DOD definition is more conservative than the NRC's definition for a reactor accident in 10 CFR Part 50, which requires both a release of radioactive material from its intended place of confinement within the reactor and the danger that that release would travel off-site in amounts that would pose a threat to public health or safety. Please see responses to comments I.64.1-3 for issues pertaining to Mr. Kimball's letter.
O.12.84	A wide range of hypothetical accidents was considered in the development of the analysis presented in the EIS. The hypothetical accidents analyzed indicate risks that are unlikely to be exceeded by other accidents (e.g., airplane crash, earthquake, tsunamis). The results of all the analyses of both normal operations and hypothetical accidents indicate that there would be no significant radiological impacts from homeporting and maintaining NIMITZ-class aircraft carriers and operation of NIMITZ-class aircraft carrier maintenance facilities. Furthermore, the risk associated with more probable but less severe accidents are bounded by the accident analyses contained in the EIS. As discussed in the EIS, examining the kinds of events which could result in release of radioactive material to the environment or an increase in radiation levels shows that they can only occur if the event produces severe conditions. Some types of events, such as procedure violations, spills of small volumes of water containing radioactive particles, or most other types of common human error, may occur more frequently than the more severe accidents analyzed. However, they involve minute amounts of radioactive material and thus are insignificant relative to the accidents evaluated. Stated another way, the very low consequences associated with these events produce smaller risks than those for the accidents analyzed, even when combined with a higher probability of occurrence. Consequently, they have not been evaluated in greater detail in this EIS. As is stated in section 7.4.3.4 of the EIS, shipments of radioactive materials in the NNPP are made in accordance with applicable regulations of the U.S. Department of Transportation, U.S. Department of Energy, and the U.S. Nuclear Regulatory Commission. In addition, the Navy has issued instructions to further control these shipments. These regulations and instructions ensure that shipments of radioactive materials are adequately controlled to protect the environment and the health and safety of the general public, regardless of the transportation route taken, and have proven to be effective. Shipments of

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	radioactive materials associated with Naval nuclear propulsion plants have not resulted in any measurable release of radioactivity to the environment. As is stated in Volume 1, section 3.15 and Appendix J, section 2.2, no increased use of hazardous materials is expected to occur. As such, no change to existing conditions as a result of the proposed action would occur as it relates to hazardous materials. Therefore, there would be no change to the risk associated with managing hazardous materials at NASNI. Please see Appendix J for an analysis of accidents involving hazardous substances. Finally, risks to the maximally-exposed off-site individual are already included in the analyses presented in the EIS. The risks to the maximally-exposed off-site individual bound the risks to any member of the public at any radial distance from NASNI. Please see response to comment O.12.58 for issues pertaining to depleted uranium used in weapons systems.
O.12.85	As is described in the response to L.4.34, there is a systematic approach that is followed when estimating probabilities of events. The methodology described in response L.4.34 does not lend itself to further breaking down the probability by time of day. However, due to the conservative assumptions used in these analyses, the calculated risks are believed to be at least 10 to 100 times larger than what would actually occur. The use of conservative analyses is appropriate since all of the alternatives have been evaluated using the same methods and data, allowing a fair comparison of all of the alternatives on the same basis. Furthermore, even using these conservative analytical methods, the risks for all of the alternatives are small, which greatly reduces the significance of any uncertainty analysis parameters, including any differences in accident probability between night and day operations. Thus, no further refinement of the analyses is deemed necessary.
O.12.86	Since the 1950's, approximately 100,000 officers and enlisted technicians have volunteered for, and been trained to operate, the nuclear propulsion plants aboard U.S. nuclear powered warships. The selection standards for the officers and enlisted operators who enter the Naval Nuclear Propulsion Program are the highest in the U.S. Armed Forces. All personnel receive one to two years of formal and dedicated training in theoretical knowledge and practical experience on operating reactors that are like the reactors used on ships. Even after completing this initial training, before manning a shipboard nuclear propulsion plant watch station, personnel must re-qualify on the ship to which they are assigned. In addition to the extensive training and qualification program, multiple layers of supervision and inspection are employed to ensure a high state of readiness and compliance with safety standards. In addition, junior sailors are always under the supervision of more senior, experienced operators. Thus, there are no unqualified sailors operating the nuclear propulsion plants on Navy ships.

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	Naval nuclear propulsion plant watch stations are manned full-time by fully trained and qualified personnel to support the mission of the ship. While manning levels aboard Navy ships fluctuate, ships are always manned and deployed at levels necessary to support safe supervision, operation, and maintenance of the propulsion plants. The ship sets crew watch schedules based on the number of qualified personnel aboard the ship, with the goal of staggering watches and equally dividing the time personnel stand watch. Further, watch periods and rest periods are established to ensure sufficient rest for watch standers. The reduced manning currently being experienced reduces scheduling flexibility in some ship departments, but does not compromise the ability of the ship to safely perform its mission. Thus, even in the case cited by the commentor in which USS CARL VINSON was manned below her authorized level, neither the safety of the ship nor the safety of the propulsion plant was compromised. Ensuring reactor safety is the responsibility of all personnel who maintain and operate Naval nuclear propulsion plants, and each Program element from training, to design, to construction, and to operation is carried out in a coordinated fashion to achieve the goal of safe performance. As has been the case since the inception of the Naval Nuclear Propulsion Program, the Navy continues to maintain the high standards associated with safe operation of nuclear-powered ships. Evidence of the success of the Naval Nuclear Propulsion Program lies in its outstanding safety record covering half a century: there has never been a reactor accident in the history of the Program, or a release of radioactivity having a significant effect on the environment. Although recruiting and retention of personnel are difficulties that the U.S. Armed Forces are currently facing, the safe operation of U.S. Naval nuclear-powered ships has not been compromised by this difficulty. Nuclear field manning is fully adequate to support the safe operation of the ships. As noted earlier, the reduced manning currently being experienced reduces scheduling flexibility in some ship departments, but does not reduce the ability of the ships to safely perform their mission. Nevertheless, the Navy recently improved recruiting and re-enlistment incentives with nuclear propulsion ratings receiving the highest priority. Current projections show that the manning levels for nuclear-trained enlisted personnel will be restored to 100 percent of the authorized levels during this year.
O.12.87	Please see response to comment O.12.86.
O.12.88	Please see response to comment O.12.86.
O.12.89	The dredge limits established in Appendix H are designed to protect ships condensers from excessive fouling. A condenser would be repaired or replaced

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	before it would be allowed to fail, as it is relatively easy to determine the amount of fouling during operation and periodic maintenance. Condensers are the most susceptible component on board the ship to fouling, therefore, attention is placed on monitoring these components as an indicator of the condition of the rest of the propulsion plant.
	Water depth in the turning basins and inner channel at NASNI were addressed in the 1995 Final Environmental Impact Statement for the Development of Facilities in San Diego/Coronado to Support the Homeporting of One NIMITZ Class Aircraft Carrier. A water depth of -50 feet MLLW was established in the turning basin and berths at NASNI. This allows unrestricted access to these areas by CVNs. The inner channel at NASNI was dredged to -47 feet MLLW. This depth allows CVNs to transit the channel, while fully loaded, during a sufficiently large period of the tidal cycle.
O.12.90	Explosive safety quantity distance (ESQD) provides safe clearance for personnel from fragments and fire in the event an explosive should accidentally detonate. The distance varies depending on the type and amount of explosive. Due to ship construction features and the locations of their ordnance magazines, aircraft carriers berthed at NASNI are not required to maintain an ESQD for stored ordnance. However, if ordnance or explosives are moved about outside an ordnance magazine, personnel access is restricted (see DON 1995a — Vol. 2, page I-51, response I-5.7).
	The Naval Ordnance Center is required to certify a site prior to movement of ordnance at that site. The Navy purposely did not apply for certification for Berth Kilo (the new BRAC CVN berth) nor does it intend to have any berth that might be constructed at NASNI for one of the replacement CVNs certified. If high explosives must be transferred from any source to a carrier at NASNI, it would have to be accomplished at sea.
O.12.91	When a U.S. Pacific Fleet aircraft carrier (CVN or CV) has been designated the "ready carrier," its ordnance load is as close to complete as the current situation allows. The make-up and quantity of that ordnance is classified information and not releasable in this EIS. As a matter of routine, only one carrier is designated as the "ready carrier" at one time. Visiting or "transient ready" carriers would carry the same ordnance load-out as a NASNI-homeported "ready carrier."
	Ordnance procedures are not proposed to be changed as a result of this EIS. CVs and CVNs use the same procedures; therefore no change to the existing conditions would result and the proposed action would have no significant impact.

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O.12.92	Emergency planning and response capability, including required facilities and personnel, is a continuing requirement of all Department of Defense activities. NNPP radiological emergency procedures contain sensitive information regarding military technology, which must be protected from uncontrolled release and dissemination. As such, details regarding the plans, including those requested in the comment, must be protected from uncontrolled release and dissemination, and are not publicly releasable. However, as is stated in section 7.5 of the EIS, regularly scheduled emergency planning exercises include steps to verify the adequacy of interactions with local hospitals and state and local emergency personnel and officials. These exercises have consistently verified that the Navy is adequately prepared to respond to any radiological emergency. Land and buildings contaminated by a radiological accident would be cleaned up by the Navy consistent with the National Contingency Plan (40 CFR 300). Please see responses to comments O.12.81 with regard to reportable quantities of radioactivity.
O.12.93	Please see responses to comments L.4.36, O.12.33, and O.12.73 for information regarding issues raised in the comment.
O.12.94	In accordance with the permit for the Mixed Waste Storage Facility, none of the materials are defined as "extremely hazardous" under California regulations. Only if such materials are present is a risk management prevention plan required. In addition, it is important to note that the Navy informs the public of the hazardous materials it uses pursuant to Executive Order 12856.
O.12.95	The issues raised in this comment concern the design features of the Controlled Industrial Facility (CIF) at NASNI. This project was covered under the 1995 Final Environmental Impact Statement for the Development of Facilities in San Diego/Coronado to Support the Homeporting of One NIMITZ Class Aircraft Carrier, and is not within the scope of this EIS. However, for clarification purposes, the referenced internal Navy memorandum refers to carbon dioxide hose reels, and does not refer to the ability of the building's primary fire protection system to suppress fires. The ability of the fire protection system to perform its function was never in question by the Navy or the author of the memorandum. In fact, the carbon dioxide hose reels redundantly augment the primary fire protection system, namely, the pre-action sprinklers. The carbon dioxide hose reel system is not required by code. The memorandum illustrates the quality reviews conducted by experienced personnel, and illustrates the very deliberative process in which design issues are raised and resolved. Resolution of the Navy reviewer's concerns was achieved later during the design process by further explaining the purpose of the carbon dioxide hose reel system design to the reviewer:

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	1. The primary fire protection system (pre-action sprinklers) provides full and comprehensive fire protection coverage to the facility. The carbon dioxide hose reels merely augment the primary sprinkler system.
	2. The carbon dioxide system is for the exclusive use of trained emergency personnel. The carbon dioxide units are posted as such and contain warnings and instructions for the proper use of the system (oxygen masks).
	3. The fire protection design and operational procedures of the CIF are protective of fire fighters and workers. Protection of the general public is not applicable to the carbon dioxide system, as the facility is not open to the general public.
O.12.96	The hazard list cited at Admin Record Tab 2478 was developed for the maintenance facilities constructed for the 1995 Final Environmental Impact Statement for the Development of Facilities in San Diego/Coronado to Support the Homeporting of One NIMITZ Class Aircraft Carrier, and is not within the scope of this EIS. There are no new maintenance facilities being constructed as a result of this EIS, therefore, a new hazard list for the CIF is not applicable. The hazard list is based on the type of industrial work being conducted at the CIF, and not the frequency or quantity of work or the number of carriers homeported at NASNI.
O.12.97	The issues raised in this comment concern the design features of the CIF at NASNI. This project was covered under the scope of the 1995 Final Environmental Impact Statement for the Development of Facilities in San Diego/Coronado to Support the Homeporting of One NIMITZ Class Aircraft Carrier, and is not within the scope of this EIS.
	The Administrative Record citation Tab 1433 was written very early (1994) in the process of design of the CIF. It shows the deliberative process of design, not actual construction which took place from 1996-1998. The CIF was built and constructed within budget, and no safety or environmental protection features were compromised during construction.

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O.12.98	NASNI voluntarily uses low sodium lights to cut down on the amount of light emanating from the base in order to assist local space observatories. Brighter lights were installed on the new carrier wharf constructed as a result of the 1995 *Final Environmental Impact Statement for the Development of Facilities in San Diego/Coronado to Support the Homeporting of One NIMITZ Class Aircraft Carrier*. These lights were installed to enhance worker and sailor safety while working at night. If constructed, the Navy would put this same lighting system on the new wharf proposed near existing Pier J/K as part of the preferred alternative. These lights are a considerable distance from residential areas in Coronado, and would be for the most part, blocked by a carrier berthed at NASNI. Working at night on carriers is not a new activity for NASNI. Work at night was done on the CVs as well. The Navy expects no additional nighttime noise, traffic, or additional light impacts to the City of Coronado as a result of the proposed action. Please see sections 3.9 and 3.11 of the EIS.
O.12.99	The EIS does include analyses of radiological and hazardous accidents. Those analyses are summarized in Volume 1, and detailed in Appendices F and J. Please also see responses to comments O.12.73 and O.10.31.
O.12.100	The Federal Fire Department maintains state-certified Hazardous Material (Hazmat) Response Teams at both Naval Station San Diego and Naval Air Station, North Island. These teams provide hazardous materials response for metropolitan-area Navy bases. In addition, the Federal Fire Department maintains a mutual aid agreement with the City of San Diego for hazardous materials response and fire protection. If a hazardous substance release threatens a waterway, the Federal Fire Department closely coordinates with Navy Port Operations and the U.S. Coast Guard for response and recovery. The Navy disagrees that there are "serious problems" regarding Navy Hazmat response. When the mercury spill occurred on July 1, 1996, the Navy responded immediately and sent divers into the water to recover the mercury. Initial spill response and recovery actions, and follow-on cleanup actions are thoroughly documented in a report titled, "Emergency Removal Action for Mercury Spill at Berth Oscar, Naval Air Station North Island, California," dated May 1997. This document is available for public review at Southwest Division Naval Facilities Engineering Command Environmental Technical Library, 1220 Pacific Highway San Diego, California.
O.12.101	The conclusion of the radiological analyses in the EIS is that there would be no significant impacts from the proposed action. As such, there cannot be a disproportionate effect on minority or low-income populations. Thus, further evaluation of radiological impacts under Executive Order 12898 to address disproportionate impacts is not deemed necessary. The same conclusion can be

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	reached for hazardous material impacts from the proposed action based on the results presented in Appendix J.
O.12.102	The Navy has evaluated in detail the radiological health effects due to the proposed action, and has determined that there would be no significant radiological impact from the proposed action. Response O.12.81 describes reportable quantities of radioactivity, and the responses to the consultants identified by the commentor appear as responses to comments O.12.174-178, O.12.179-189, O.12.190, and O.12.191-197.
O.12.103	Bioaccumulation and bioconcentration, as well as consumption of contaminated seafood, is already considered in the EIS. As described in response L.4.40, the Navy's analysis included ingestion of contaminated seafood as part of the ingestion pathway. In addition, section 2.5 of Appendix F states that "The pathways considered in this analysis by which radionuclides in the water at a site might reach man are immersion, exposure to surface deposits, boating and equipment exposure, and consumption of drinking water, fish, Crustacea, mollusks, game animals, vegetables and fruits, root crops, milk and eggs, and domestic animals. During the period when the radionuclides have left the water environment and are being transported through the pathways to people they may be subjected to both concentration and removal mechanisms which would further modify their effect on humans." Since there would be no significant radiological impacts from the proposed action to any population, there would not be a disproportionate effects on populations which eat fish taken from waters. In addition, section 7.4.4 of the EIS describes the Navy's radiological environmental monitoring program, which includes sampling of marine life for NNPP radioactivity. Therefore, regular sampling of marine life is already included as part of the Navy's ongoing actions in San Diego. For toxic issues, please see response to comment O.12.105.
O.12.104	An analysis of the health risks from toxic air contaminant (TAC) sources that would require permits from the SDCAPCD (clamshell dredge, hydraulic dredge, and booster pump) was performed for the preferred dredge and disposal option (scenario one) to determine compliance with SDAPCD Rule 1200. The analysis was performed with methods approved by the California Air Pollution Control Officers Association and SDCAPCD. The analysis included the generation of a 70-year maximum cancer risk and maximum acute and chronic health hazard indices. The results of the risk analysis indicated that the cancer risk associated with 70 years of continuous exposure at the maximum impact point in the community of Coronado would be 3.6 in a million of contracting cancer due to a continuous

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	exposure to the permitted source emissions for 70 years. However, the preferred dredge and disposal operations would only last for about 3 months, not 70 years. Therefore, assuming as a worst case that these activities occurred for a period of one year, a more realistic estimate of risk would be 0.05 chances in a million. This value is well below the significance threshold of one chance per million identified in SDCAPCD Rule 1200. The maximum risk from dredge and disposal option 2 would be essentially equivalent to the risk estimated for the preferred option. The risk from option 3 would be somewhat greater then either options 1 or 2, as exclusive use of the more inefficient clamshell dredge would require more time (5 months versus 3 months) and fuel usage and generate more emissions compared to either options 1 or 2. However, the risk of option 3 would still be less than the significance threshold and the impact would be considered less than significant. The maximum acute and chronic hazard indices associated with the preferred dredge and disposal option were estimated to by 0.022 and 0.0013, respectively. These values are much less than the significance threshold of 1.0. As a result, the acute or chronic health impacts associated with the preferred dredge and disposal option would be insignificant. The hazard indices for option 2 would be similar to option 1, while the indices for option 3 would be slightly greater but still far less than the threshold of 1.0. The results of this analysis is included in section 3.10, Volumes 1 and 3 of the Final EIS. It is possible that the staggered maintenance schedules of CVNs homeported at NASNI could occasionally result in more than one PIA in a calendar year. However, the NASNI DMF would limit annual emissions of VOC and PM_{10} to 15 and 3 tons, respectively. As part of the SDCAPCD permit process, TAC emissions from the DMF were evaluated at their maximum annual permitted rate and were determined to produce insignificant health risks to the public. Therefore, compliance with the SDCAPCD permit conditions would ensure that with the addition of two CVNs at NASNI, the health risk to the public from the DMF would remain insignificant. Since the completion of most recent health risk assessment for NASNI in 1993, emissions of HAPs have decreased from the facility, especially in regard to the reduction of hexavalent chromium from painting operations (see Table 3.10-3, section 3.10, Volume 3 for a presentation of the 1997 NASNI HAPs inventory). As a result, the public health risk from NASNI has decreased since 1993.
O.12.105	The EIS has evaluated radiological impacts within a 50 mile radius of North Island, and has determined that the radiological risks would not be significant. A summary of risks is contained in section 7.6 of the EIS. Please also see response to comment O.12.103.

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	The EIS has also evaluated impacts associated with handling hazardous materials associated with the proposed action in Appendix J, and has determined that the impacts would not be significant based on current Navy mitigation measures. Operational issues related to hazardous material management and the proposed actions are discussed in Volume 1, section 3.15.2. Based on the above information, there would be no disproportionate impacts to minority or low-income communities.
O.12.106	The Navy, as Lead Agency, disagrees that the document is deficient. The Navy has complied with the Environmental Justice Executive Order and EPA Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses. In addressing environmental justice in the EIS, the Navy found that there would be no disproportionate impact on minority or low-income populations. The Navy translated the toll-free information telephone message into regarding the project and where it was in the NEPA process. Notices were placed in the following local newspapers, *San Diego Union Tribune, Coronado Eagle/Journal, North County Times, San Diego Voice and View Point, Chula Vista Star News,* and *La Prensa. La Prensa* is a publication that is printed in Spanish. Most importantly, the issues concerning the Spanish-speaking commentors have been responded to in Spanish in this EIS. See responses I.19, I.23, I.24, I.26, I.27, I.32, H.2.79a, H.2.79b, H.2.93
O.12.107	Executive Order 12898 states that federal agencies shall identify "disproportionately high and adverse human health or environmental effects of its programs." The environmental justice section related to San Diego, section 3.17, discusses Coronado as the relevant sub-regional area, since this community is adjacent to, and closest to areas impacted by the proposed action. The community of Coronado is comprised of relatively few minorities and low income households (see Table 3.17-1 of the Final EIS). The Navy also considered communities affected by operations of normal radiological support facility operations within a 50-mile radius of the proposed action (see Appendix F in Volume 2). Based on this analysis, there is no reason to conclude that minorities or low income communities would be affected *disproportionately*. Any impacts from air quality, traffic, security, construction, earthquakes, and personnel loading would primarily affect the residents of Coronado; these impacts would also be less than significant, as discussed in the relevant sections of the Draft EIS. Finally, as indicated in section 3.10, air quality impacts would be below thresholds of significance and would therefore not be expected to increase respiratory or other illnesses. Radiological cumulative impact analysis can be found in Appendix F, section 3.3. The results of this analysis are that there would be no significant cumulative radiological impact from the proposed action. Cumulative impact analyses for other issues listed in the comment are addressed in Volume 1, section 3.18.

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O.12.108	While the comments are noted, the Navy does not agree with your assertions or conclusions. The public hearings were not held on Yom Kippur.
O.12.109	The Navy currently participates in a monthly meeting held in Coronado between the Navy, local public officials, and interested members of the public specifically for the purpose of discussing issues related to Navy operations in the vicinity of Coronado. Therefore, no further actions are deemed necessary. In addition, the issues raised in this comment regarding the NASNI Mixed Waste Storage Facility permitting process have been raised in EHC's appeal of DTSC's permit decision. On 30 November 98, DTSC issued an order denying the three petitions on these issues. The following are quotes from that order addressing EHC's issues: "Petitioners are incorrect in their assertion that members of the public have a 'right' to speak directly to the decision-maker (i.e., that the Department official that signs the Permit must also be the hearing officer). Nevertheless, the Department ensures that the official who signs the Permit has a complete transcript of the public hearing for review....Furthermore, there is no basis to believe that the permit decision or conditions would be altered if the hearing officer for the public hearing also signed the Permit itself." "The meeting referred to by the Petitioners is a monthly meeting held in Coronado between the Navy, local public officials, and interested members of the public specifically for the purpose of discussing issues related to Navy operations, including hazardous waste and mixed waste activities, in the vicinity of Coronado. The Department believes that this already established monthly meeting is an appropriate forum for information exchange between the Navy and the public with respect to any issues concerning the MWSF....Furthermore, there is no regulatory basis for the Department to require an 'information oversight forum' as a permit condition, unless it were demonstrated that such a condition is necessary to ensure protection of human health and the environment. Petitioners have not established (either in their petitions or referenced comments on the draft permit), nor is the Department aware of, any human health or environmental protection basis for requiring an 'information oversight forum' relative to the hazardous waste aspects of the MWSF. For the reasons discussed above, the Department finds that there is no basis...to grant a review of the issue."
O.12.110	Your comments are addressed in comment responses O.12.101 through O.12.109 above.
O.12.111	Your general comments are acknowledged and specific comments that follow are addressed.

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O.12.112	Significance criteria used for the water and sediment quality assessments are generally consistent with the descriptive water quality criteria contained in the Basin Plan. The EIS has evaluated radiological impacts from the proposed action, and has determined that the radiological risks would not be significant. A summary of risks is contained in section 7.6 of the EIS.
O.12.113	Some of the sediment samples collected and analyzed for the BRAC CVN Project were from the dredging footprint of the proposed project. Data from these analyses are considered germane and adequate for NEPA to characterize sediment quality within the proposed action area. Additional (Greenbook) testing of sediments from the proposed project area was performed during January through April, 1999, in order to gather data for Army Corps of Engineers permit applications (should such permits be deemed necessary pursuant to the Record of Decision for the proposed action).
O.12.114	The EIS did not imply that elevated levels of contaminants in sediment or tissue bioaccumulation samples were disregarded. However, all of the testing results, when evaluated by the federal agencies responsible for approval of the proposed dredging project, indicated that the sediments were suitable for ocean disposal according to criteria contained in the testing protocols. The EIS has been revised to reflect this clarification.
O.12.115	Section 3.4 described the ongoing RI/FS at IR Site 1, and indicated that preliminary results and recommendations for no further action at the bay outfall sites were made to the lead regulatory agency. The EIS will be revised to reflect the present status of the report, but the EIS does not need to include all comments critical of the study or its conclusions.
O.12.116	The commentor has misinterpreted these indices. The ER-L and ER-M values for individual sediment contaminants represent concentrations at which effects to organisms are rarely observed (10 percent of the time) and concentrations at which effects are expected to occur (50 percent of the time), respectively. These effects values are probability-based, and are not intended as sediment quality criteria or as thresholds at which a defined percentage of exposed organisms would be impacted.
O.12.117	The USS JOHN C. STENNIS mitigation site was constructed in accordance with permit conditions set forth by the resource agencies. The Pier B mitigation site would also be constructed in accordance with permit conditions, and would mitigate the 1.5 acres lost in the wharf area based on one of two mitigation site designs, intertidal or intertidal/subtidal, to be determined by the agencies

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	during permitting. See responses to O.11.1, F.2.10, and F.2.11 and revisions to Volume 1, section 3.5 for additional details.
O.12.118	Section 3.3 (page 3.3-9, lines 41-42 of the Draft EIS) has been revised to read: "The significance of impacts to water quality from petroleum spills would depend on the volume, frequency, and location of spill events and the type of material spilled." The Navy takes all oil spills very seriously. Oil Spill Prevention Plans are in effect at all Navy ports, and provide measures such as oil booms around ships and spill response teams that are intended to minimize impact to the environment. The proposed action of homeporting CVNs at NASNI would not increase the probability of spill occurrence, because they would simply be replacing CVs. Shipboard operational and management requirements for oil, oily waste, and shipboard oil pollution abatement are described in Chapter 19 of OPNAVINST 5090.1 series Section 19-5. The Naval ships' technical manual (NSTM), Chapter 593, section 3 provides detailed procedural instructions implementing the requirements of Chapter 19. Among the subject matter covered for shipboard operations is (1) Bilge Water and Oily Waste, (2) Wastes/Used Oil, (3) Fuel Transfer, (4) Fuel Tank Stripping, and (5) Personnel Training. All Navy ships and ports are required to comply with the provisions of these instructions which serve to minimize the production of oily wastes and the potential for a spill and emergency response measures in the event of a spill.
O.12.119	During the BRAC CVN homeporting dredging operation, ordnance was discovered within the material deposited on the beach in South Oceanside, California. Subsequent to this discovery, the Navy determined that, due to potential risks to public health and safety, the remaining material would be dredged and disposed at a designated offshore disposal site (LA-5). A geophysical survey for ordnance has been conducted at Pier J/K. This effort included debris and magnetometer survey with diver and a pile survey to identify location and size of possible debris. Also included was a hydrographic survey of the mitigation site near Pier Bravo. Even with the current available technology there can not be a 100 percent certainty of identifying buried ordnance. The presence of ordnance in sediments that would be dredged for the proposed project presently is unknown but would be addressed by a solids debris management plan consistent with Corps of Engineers Permit requirements and EPA Region IX. Please see Volume 1, section 2.3.3.1 for plan details. In response to comments to maximize the beneficial uses of dredged material from the Homeporting project, the Navy is proposing, as the preferred option, to transport dredged material from Pier J/K and mitigation site to be deposited just south of the Naval Amphibious Base for the creation of intertidal/subtidal habitat. Creation of this enhancement habitat in Navy protected waters is

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	consistent with the Coastal Act and supports the "San Diego Bay Integrated Natural Resources Management Plan". This preferred option would minimize public health and safety risks that may result from ordnance contained in the dredged footprint. Because of this risk, near-shore and beach replenishment was not considered an alternative. A site specific explosive safety management plan will be developed in accordance with DOD Directive 6055.9, "DOD Ammunition and Explosive Safety Standards," to minimize the risks if ordnance is discovered. Final disposal would be in accordance with permit specifications and agency requirements. A Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Preliminary Assessment (PA) is being performed for potential Navy munitions in the vicinity of the primary ship channels historically used by Navy vessels in San Diego Bay and area beaches that recently received dredged materials from STENNIS homeporting-related beach replenishment activities. The general scope of a PA is defined in the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300.5), commonly known as the NCP. The PA is a limited-scope investigation designed to identify sites which pose a potential threat to human health and the environment and which therefore require further investigation. A Draft Work Plan dated November 1998 has been provided to the regulatory agencies for review. As mentioned in the response to comment O.12.104, TAC emissions from the proposed dredging and disposal actions at NASNI would produce insignificant health impacts to the public. With regard to the use of an electric dredge, please see the response to comment F.3.12.
O.12.120	The Navy is familiar with the case cited. However, this court case does not pertain to this EIS or the proposed action.
O.12.121	The full text of the EIS section the commentor is referring to reads as follows: "Dredged material may contain trace amounts of radioactivity as a result of past Navy operations. These trace amounts, however, are far below the levels of comparable naturally-occurring radionuclides, and would have no significant effect on the environment during or after the dredging operation or in the disposal of sediment, regardless of the location selected for disposal of the sediment." The conclusion that there would be no significant radiological effect during or after dredging operation is validated by the comprehensive radiological environmental monitoring program conducted by the Navy, as described in section 7.4.4 of the EIS, which includes sediment sampling in the areas near the proposed action areas. It is also important to note that the U.S. Environmental Protection Agency has conducted independent radiological surveys in U.S. harbors, including a survey of San Diego Bay in 1997, which have confirmed that U.S. Naval nuclear-powered ships and their support facilities

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	have had no significant impact on the radioactivity of the marine or terrestrial environment. Contrary to the commentor's assertion, the Navy reports all releases of radioactivity from NNPP operations. Please see response to comment O.12.33 for further information.
O.12.122	EPA surveys of San Diego Bay and other Navy harbors have occurred approximately once each decade. The Navy's radiological environmental monitoring program samples these harbors every quarter year. EPA counts each sample for a very long time and thus achieves a lower level of detection than the Navy achieves in the Navy quarterly surveys. It is not inconsistent that the EPA has detected very low concentrations of Co-60 that would be not be detected by the Navy's quarterly surveys. As noted in the Draft EIS, the Navy's routine sampling is capable of detecting Co-60 at concentrations which are less than 1 percent of the concentration of naturally occurring background concentrations. Thus, the difference in counting times and levels of detection between EPA and the Navy is of no environmental significance. The relevant conclusions from both the EPA and Navy sampling are that there have been no increases in radioactivity causing significant population exposure or contamination of the environment. It should also be noted that EPA recently released a report of its most recent radiological survey of San Diego Bay, which was conducted in 1997. The results from this survey are consistent with past EPA and Navy results.
O.12.123	Any requirements for use of booms and curtains during construction would be specified in the permitting process. Since the existing information indicates that the potential dredged materials do not contain significant contaminant concentrations, and are generally sandy, booms and curtains are not proposed.
O.12.124	The EIS evaluations are consistent with the baseline assumptions specified in Chapter 2 and concludes that the proposed action would not substantially change the number of carrier days in port. Note also that descriptions of alternatives (e.g., "Facilities for No Additional CVN: Capacity for Total of One CVN [Alternative Five]") explicitly account for CV decommissioning.
O.12.125	The National Defense Authorization Act of 1996 amended Section 213 of the Federal Water Pollution Control Act (or Clean Water Act) to require the Secretary of Defense and the Administrator of the U.S. Environmental Protection Agency jointly develop Uniform National Discharge Standards (UNDS) for discharges incidental to the normal operation of vessels of the Armed Forces. The intent of this act is to establish a consistent set of effluent standards that improves environmental protection while enhancing the operational flexibility of Armed Forces vessels that visit various ports as part of their missions. The Navy and EPA are currently working together and in consultation with states

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	and other stakeholders in a three-phase process to (1) determine those discharges that have the potential to cause environmental effects and that can be practically controlled with a marine pollution control device (MCPD); (2) to set performance standards for the MPCDs; and (3) to publish regulations governing the MPCD design, installation, and use. Completion of the UNDS regulatory development process is anticipated in late 2001. All vessels of the Armed Forces, including CVNs at NASNI, PSNS, NAVSTA Everett, and PHNSY, will operate in compliance with the requirements on the effective dates set forth in the final rules.
O.12.126	While CVs and CVNs use different sources of fuel (oil vs. nuclear), both types of ships rely upon steam propulsion plants that require seawater cooling. The seawater cooling requirements are similar and the thermal and marine life impacts from CVs and CVNs are comparable. Section 3.3.2.2 has been revised to include the details provided in this response. Please see response to comment O.12.33 for further information regarding releases of radioactivity.
O.12.127	Please see responses to comments O.12.33, O.12.73, and O.12.121-122. With regard to the San Diego Bay Health Risk Study dated June 12, 1990, it is important to note that the study reported gross activity measurements on marine life from the San Diego Bay. The results showed consistent levels of gross alpha and beta activity, but did not characterize the radionuclides present. Characterization is important since radioactivity is present in seawater, harbor sediments, and marine life from naturally occurring radioisotopes such as potassium 40, radium, uranium, and thorium. In addition, low levels of other radionuclides such as cesium 137 may be detected as a result of world-wide dispersion from nuclear weapons testing. Alphas, betas, and gammas, in some combination, are emitted from these radionuclides. From the report, it is impossible to identify the source of the radioactivity detected based solely on gross alpha and beta activity. The report is useful in that it found "no gamma activity" among the fish samples collected. Since the predominant radionuclide associated with NNPP work is cobalt 60, which emits gamma radioactivity, this conclusion demonstrates the absence of radioactivity associated with U.S. Naval nuclear propulsion sources. Moreover, extensive Navy radiological monitoring in the San Diego Bay area, performed quarterly and publicly reported annually for 30 years, and independent radiological surveys performed by EPA in 1967, 1986, and 1997, discovered no radioactivity associated with nuclear propulsion in any Bay aquatic life. With regard to ionizing radiation streams in ships' wakes, some neutrons pass through the ship's hull and travel into the seawater. These neutrons can induce

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	radioactivity in the seawater under the ship by converting a very small fraction of the sodium and chloride atoms dissolved in the seawater into short half-life radioisotopes of sodium and chlorine. Due to the mixing of seawater in the ships' wake and the short half-life of the induced radioisotopes, the induced radioactivity in the seawater quickly dissipates and decays, and is of no consequence to human health or the environment. For perspective, the amount of short-lived induced radioactivity present at any time from a NIMITZ-Class aircraft carrier is less than 1 percent of the amount of naturally-occurring radioactivity in the seawater displaced by that aircraft carrier. As noted in section 7.4.4 of the EIS, the comprehensive radiological environmental monitoring performed by the Navy as well as the independent monitoring performed by the U.S. Environmental Protection Agency confirms that there is no significant radiological environmental impact from operation or maintenance of U.S. Navy nuclear-powered ships.
	Finally, with regards to moving a nuclear powered ship in an emergency, in the highly unlikely event such movement is necessary, there are numerous ways to move a NIMITZ class aircraft carrier, including the use of the other reactor plant and the use of tugs or other tow craft. As is stated in the EIS, sufficient time exists to support safe movement of the ship in the unlikely event of such an occurrence.
O.12.128	The study sites used by Allen (1996) were in the vicinity of the project area and not directly at the project location. The EIS clearly stated that 72 fish species were collected throughout the bay, with 39 species being collected in the vicinity of the proposed site. Because most of the common fish species found near the project area (and other parts of the bay) are highly mobile and would only be temporarily disturbed, no significant impacts would occur.
	Mitigation ratios are determined by resource agency specifications. A 1:1 ratio is consistent with mitigation of other soft-bottom sites in San Diego Bay. An exception is the 1.2:1 ratio for mitigation of eelgrass in accordance with part of the policy set forth in the Southern California Eelgrass Mitigation Policy (NMFS 1992).
O.12.129	The EIS provides the best available data to adequately characterize biological resources at the proposed action and mitigation sites. Some information is provided for organisms having a distribution extending into the south bay, including eelgrass, commercial mullet fisheries, and green sea turtles. This information is provided to make reasonable comparisons between different areas of the bay and the proposed action and mitigation sites.

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O.12.130	There are no provisions in the plan under development for NASNI dealing with homeporting a cruiser. Consequently, there is no need to include in the cumulative analysis a homeported cruiser at NASNI in the EIS. The historical mission and ship base capacity of NASNI is indicated in the 1991 Base Master plan: three aircraft carriers and one cruiser. In the recent past, USS CORONADO was considered the NASNI cruiser. In 1998, USS CORONADO was moved to SUBASE San Diego, and there are no current plans to replace CORONADO's presence at NASNI with another ship. The 1995 BRAC CVN EIS accounts for USS CORONADO sailors in the base population tables. The current NASNI master plan is undergoing revision. However, it does not contain provisions for a cruiser or any other deep-draft ship being homeported there.
O.12.131	The Navy chose to address economic concerns within the context of the NEPA document which does not require that a detailed economic impact analysis of a project be conducted. The GAO report cited in EHC's comments pertains to the government's choice for the next generation of aircraft carriers' propulsion plants - CVX. The Defense Acquisition Board, chaired by the Under Secretary of Defense for Acquisition, released a decision on 25 September of 1998 endorsing the Navy's position that CVX-1, the first of the next-generation aircraft carriers, would be nuclear powered. The scope of this EIS does not include consideration of CVX; therefore, this comment is beyond the scope of this EIS. Please see the response to comment O.12.55 for further information on the Navy's assessment of this GAO report. As stated in the EIS, there would be only 204 additional personnel assigned to two CVNs that would be homeported as a result of additional facilities provided under the proposed action at NASNI. This constitutes a negligible increase in the regional San Diego population. The portion of the 204 additional personnel that may leave the Navy and stay in the San Diego region is a very small portion of the regional population. The proposed action is not considered to be growth-inducing as the comment suggests.
O.12.132	Radioactive material transportation is discussed in section 3.15.2 of the EIS. For each CVN, approximately 325 cubic feet (9.2 cubic meters) of low-level radioactive waste and approximately 106 cubic feet (3 cubic meters) of mixed waste would be generated. This would result in approximately three to four waste shipments per year per CVN as a result of the proposed action. This amount of truck traffic is not significant. Thus, no change to the EIS is deemed necessary.

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O.12.133	As stated in the EIS, the proposed action's preferred alternative would provide the capacity to homeport two additional CVNs. A chronology of events resulting in the potential replacements for aircraft carriers planned for decommissioning in the San Diego area is provided to help the reader understand how NASNI has customarily been home port for three aircraft carriers.

In the 1980s, the Navy reduced the size of its active aircraft carriers from 15 to 12: six in the Atlantic Fleet and six in the Pacific Fleet. Before that time, NASNI had been the homeport for at least three aircraft carriers, all conventionally powered carriers, or "CVs." In 1993, RANGER was decommissioned at the end of its service life and removed from NASNI, temporarily reducing the port-loading to two CVs.

The closure of Naval Air Station (NAS) Alameda, California, and the relocation of two CVNs to fleet concentrations in San Diego and the Pacific Northwest were carried out in compliance with the 1993 Defense Base Realignment and Closure Commission (BRAC) recommendations. Consequently, the Department of the Navy constructed homeporting facilities for one CVN at NASNI (DON 1995a) and one at Puget Sound Naval Shipyard (PSNS), Bremerton, Washington (DON 1995b). Because there were no CVN homeport-capable berths at NASNI, the Navy was allowed to shift both NAS Alameda CVNs to the Pacific Northwest, pending completion of construction of suitable homeport facilities at NASNI. The actual vessel that fulfilled the BRAC mandate and assumed the role of RANGER was USS JOHN C. STENNIS (CVN-74). Arriving in August 1998, STENNIS took over one CVs worth of facility support infrastructure at NASNI. NASNI has had the historical capacity to support three aircraft carriers.

In 1998, INDEPENDENCE (at that time the Navy's "forward deployed" carrier) reached the end of its service life and was decommissioned. KITTY HAWK was designated as its replacement and left NASNI in July 1998, 20 months after the Notice of Intent for this EIS, and relocated to Yokosuka, Japan. This resulted in a reduction of the port loading at NASNI to two homeported aircraft carriers. The USS NIMITZ is currently undergoing an extended maintenance period on the East Coast and will require a homeport berth within the Pacific Fleet area. Long range plans indicate that the most likely arrival date on the West Coast for NIMITZ would be early 2002. *Were the Preferred Alternative selected,* this would bring NASNI back to its historical three carrier port-loading baseline.

USS CONSTELLATION is expected to reach the end of its service life in approximately 2003. At that time, NASNI would once again experience a reduction to two homeported carriers *if the Preferred Alternative were selected by the Navy.* The same long range plans addressing NIMITZ also involve replacing CONSTELLATION with the USS RONALD REAGAN. It is anticipated this will

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	happen in 2005. Once again, *if the Preferred Alternative were selected,* it would bring NASNI back to its historical three carrier port-loading baseline. For additional detail, please see response to comment L.4.5. The Navy considers that the current traffic control system provides adequate safety for vessel movements in the channel. The Navy cannot address future plans of the Port District, except for those that are reasonably foreseeable and that can be feasibly addressed in the cumulative impacts analysis. Should the Port of San Diego propose to add additional traffic in the channel, their CEQA documentation would be needed to address safe vessel movements, increased vessel movements in the Bay, and appropriate mitigation.
O.12.134	Please see response to comment O.12.15.
O.12.135	The baseline air quality discussion in section 3.10.1 of the Final EIS has been revised to update the O_3 nonattainment compliance issues in the San Diego Air Basin. Table 3.10-1 of Volume 3 identifies the new national ambient air quality standards for O_3 and $PM_{2.5}$. Attainment of the new $PM_{2.5}$ standard will be based on the results of a three-year monitoring period. Regions that do not attain the standard will be required to develop State Implementation Plans that will reduce emissions to a level that will demonstrate attainment of these standards by the years 2005 to 2008, depending upon the severity of the standard violation. Additionally, Volume 2, Appendix A of the Final EIS states that the SDCAPCD will have to develop a SIP that will demonstrate attainment of the new eight-hour national standard for O_3 by July 2003.
O.12.136	As mentioned in the response to comment O.12.104, TAC emissions from the proposed dredging and disposal actions at NASNI would produce insignificant health impacts to the public. NASNI is regulated under the state Air Toxics Hot Spots program, or Assembly Bill 2588. The requirements of this program include generation of a TACs emissions inventory and an analysis of the public health risk associated with these emissions every four years. The analysis performed for TACs emitted from NASNI in 1993 (emissions presented in Volume 3, section 3.10, Table 3.10-3) determined that the facility as a whole would increase the risk of cancer to the public by a maximum of 30 cases per million. Since emissions of TACs have decreased from NASNI since 1993, the health risk from NASNI to the public has decreased to below these levels. Consequently, adding the TACs emissions of the proposed dredging and disposal activities to existing TACs emissions at NASNI would produce a facility-wide cancer risk that would still be less than the 30 cases per million identified for the facility in1993. The impact of TACs to the public from the proposed dredging and disposal activities would therefore be insignificant.

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	The discussion of applicable regulations and standards in Section 3.10-1 of the Final EIS has been revised to include the following: "SDCAPCD Rule 1200, Toxic Air Contaminants - New Source Review, also states that any stationary source that requires an ATC/PTO and emits toxic air contaminants (TACs) must evaluate the potential health risks from these TACs as part of the permit process. Preliminary emission estimates show that the operation of the project dredging equipment would require an ATC/PTO."
O.12.137	Section 3.18.10 of the Draft EIS analyzes the cumulative impact of proposed and future emissions in the region. Since the proposed action of providing capacity for two additional CVNs would reduce emissions of all pollutants except VOCs and CO in the region, this alternative would have an insignificant cumulative impact on criteria pollutant levels. As mentioned in the response to comments O.12.104 and O.12.136, TAC emissions from the proposed dredging and disposal actions at NASNI would produce less than significant health impacts to the public. Table 3.10-2 of Volume 3 provides a criteria pollutant emissions inventory for the existing condition at NASNI. These data have been updated to more clearly show the baseline criteria pollutant emissions associated with each vessel group. Section 3.10, Volume 3 of the Final EIS has been revised and presents an inventory of the TAC emissions that occurred at NASNI in 1997.
O.12.138	Please see the responses to comments L.4.30 and O.12.137.
O.12.139	Vehicle emissions associated with the proposed action were estimated with the use of the ARB EMFAC7G vehicle emissions model. This model incorporates a variety of vehicle emission control strategies proposed by the ARB that results in a reduction of future emission factors (grams of a pollutant per mile) from California registered vehicles. The use of EMFAC7G is an industry standard and is fundamental to any air quality analysis in California that evaluates vehicles, including those performed by regional air agencies for the purpose of attainment planning. The emission reductions associated with proposed action vehicles in future years are not identified as project mitigations in the Draft EIS. Rather, they are the best estimate available of future operating conditions for sources associated with the proposed action. In response to comments H.2.61 and O.10.15, the Final EIS used the EPA MOBILE5 model to estimate emissions from non-California registered vehicles associated with the proposed actions, another industry standard. Emission factors for the year 2003 were used to estimate vehicle emissions for Alternatives Four, Five, or Six, so they would coincide with the completion date of either the proposed alternative or future no-project scenarios. Consistent with this approach, emission factors for the year 2005 were used to estimate vehicle emissions for Alternatives One, Two, or Three. As implementation of state and federal vehicle emission standards would continue to reduce emissions per

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	vehicle mile traveled (VMT) beyond 2003 and 2005, vehicle emissions would be less in future years than what is presented for the proposed actions.
O.12.140	The proposed action includes development of facilities for CVNs and does not address military training operations. With the replacement of one fossil fuel-fired CV with two nuclear-powered CVNs, the proposed action would result in a reduction in greenhouse gas emissions. Therefore, the action would not need to mitigate an impact on global climate change.
O.12.141	In regard to the reduction in future vehicle emissions, please see the response to comment O.12.139. The proposed action would not have any significant impact on air quality. At the present time, no mitigation measures would be needed, including electric vehicle and alternative vehicle acquisition.
O.12.142	During the BRAC CVN homeporting dredging operation, ordnance was discovered within the material deposited on the beach in South Oceanside, California. Subsequent to this discovery, the Navy determined that, due to potential risks to public health and safety, the remaining material would be dredged and disposed at a designated offshore disposal site (LA-5).

A geophysical survey for ordnance has been conducted at Pier J/K. This effort included debris and magnetometer survey with diver and a pile survey to identify location and size of possible debris. Also included was a hydrographic survey of the mitigation site near Pier Bravo. Even with the current available technology there can not be a 100 percent certainty of identifying buried ordnance. Among the items found with magnetometers were sheet metal, scrap metal, possible anchor, steel rod, steel frame, and an unknown structure. Visual inspection observed wire cable, timber piles, steel plate, steel pipe, scrap steel, fishing net, rubber hose, a ring gear, steel bolts, rubber tire, and aluminum ladder.

The presence of ordnance in sediments that would be dredged for the proposed project presently is unknown but would be addressed by a solids debris management plan consistent with Corps of Engineers Permit requirements and EPA Region IX.

A Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Preliminary Assessment (PA) is being performed for potential Navy munitions in the vicinity of the primary ship channels historically used by Navy vessels in San Diego Bay and area beaches that recently received dredged materials from STENNIS homeporting-related beach replenishment activities. The general scope of a PA is defined in the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300.5), commonly known as the NCP. The PA is a limited-scope investigation designed to identify sites

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	which pose a potential threat to human health and the environment and which therefore require further investigation. A Draft Work Plan dated November 1998 has been provided to the regulatory agencies for review.
O.12.143	The comment regarding violations of the Hazardous Waste Facility permit issued to the Navy by DTSC is not part of this proposed action and is out of the scope for this EIS. The EIS significance criteria are based on "professional and scientific integrity" as required by NEPA. Existing quantitative standards are used where appropriate, for example, in air quality, and water quality, or regulation such as the National Register of Historic Places eligibility criteria for cultural resources. Where existing numerical or written standards do not exist, appropriate standards have been selected based on the established scientific approach to environmental analysis, for example, aesthetics. The comment does not specifically address the inadequacy of any of the significance standards used in the EIS, nor does it suggest a more scientifically defensible standard. Therefore, the existing significance criteria are considered reasonable mechanisms to provide a consistent determination of significance throughout the analysis of the four alternative CVN home port locations.
O.12.144	There would be no increase in the amount or frequency of aircraft arriving at or departing from NASNI as a result of providing capacity to homeport two additional CVNs. The air wing on a CVN is the same size and composition as an air wing on a CV. No additional aircraft maintenance would be performed at NASNI as a result. There would be no additional impacts to the affected environment due to training conducted in SOCAL by the CVN air wing. The training a CVN air wing does is exactly the same as the air wing of a CV. There is no proposed net increase in the number of transient aircraft carriers at NASNI as a result of the proposed action because the number of carriers assigned to the Pacific Fleet has not changed since the mid-1980s. The proposed action results in providing the capacity for CVNs rather than CVs, but does not provide capacity for additional vessels. Please refer to the EIS, Volume 1, paragraph 1.1.
O.12.145	The size of the air wing for a CVN is the same as for a CV. The method of loading the air wing support aboard the CVN is the same as for doing it on a CV. There would be no increase in the frequency or the size of the air wing load-aboards compared to what is presently done. The same is true for off-loads. Consequently, there would be no net increase over the historical baseline.

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O.12.146	Please refer to the responses O.12.144 and O.12.145. Please note that to increase air traffic at NASNI, the Navy would need to base more aircraft at NASNI. The Navy is not proposing to do this. The reason an airfield would be needed in Hawaii to support an air wing is due to the comparative vast distance difference between Hawaii and the West Coast-located air wings and the logistical problems involved with such an endeavor (one cannot simply fly helicopters across the Pacific to Hawaii because they will run out of fuel). West Coast aircraft carriers can load their air wings relatively quickly because they are close to the aircraft's home bases. This is not only a positive attribute for national defense but also a major quality of life factor in family separation. Because the aircraft that comprise an air wing join the aircraft carrier at sea, noise factors associated with aircraft operations at sea are not discussed in this EIS. The traffic analysis presented in the Draft EIS is based on the incremental increase in traffic that would occur as a result of the proposed action. The existing condition of two homeported carriers is compared to the effects of related to the homeporting of three carriers (Alternatives One, Two, and Three) and the number of days that carriers would be in port simultaneously (please see response to comment L.4.12 for a detailed discussion of the NASNI historic baseline and existing condition). The project would provide the capacity and infrastructure to homeport two additional CVNs. As the size of the air wing for a CV and a CVN is essentially the same, the proposed action would not result in a substantial increase in trucking activity related to the trucking of supplies, spare parts, etc. for the air wing.
O.12.147	There would be no additional usage of NASNI airfield due to providing capacity to homeport two additional CVNs.

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O.12.148	EHC has misunderstood the quote contained in Administrative Record at Tab 3737. The "significant environmental *implication*" addressed in this letter was made by a person stationed at Everett, Washington unfamiliar with specific NEPA terminology. This statement simply demonstrates the Navy's sensitivity to systems that directly interface with the environment (in this case seawater) and the deliberative process the Navy uses for designing mechanical systems. It also demonstrates how an issue can be considered significant in areas other than NEPA – in this case – system design. There is no significant environmental impact of the salt water system, as it is used to mirror the ships salt water system when it is taken down for repairs. The environment sees no difference whether the ship's system is operating or the shore side system is operating. The primary purpose of the ship's system is to provide fire fighting capability aboard the ship, and to supply cooling water (one pass through the ship) for air conditioning systems and condensers. These systems are found on both CVs and CVNs. Because any action at NASNI would involve the one for one replacement of CVNs for CVs, there would be no impact from salt water systems. The salt water system was addressed in generic terms in the 1995 *Final Environmental Impact Statement for the Development of Facilities in San Diego/Coronado to Support the Homeporting of One NIMITZ Class Aircraft Carrier* on page 2-20. The 1995 EIS states that the MILCON P-700 wharf would provide "...all mechanical and electrical systems required to support a berthed CVN..." Further, in paragraph 2.3.3.1 of this EIS, salt water systems are addressed, "The wharf would provide steam, condensate return, low-pressure compressed air, potable water, pure water, salt water, sanitary sewer...
O.12.149	The purchasing of shipyards in San Diego by out-of-state firms is beyond the scope of this EIS. Please see response to comment O.13.25 for a discussion of nuclear propulsion plan maintenance.
O.12.150	Please see response to comment O.12.60.
O.12.151	The CVN 2-year operational schedule is described in section 2.3.1.3. Under the preferred alternative, PIA operations would occur an average of 6 months every year. (See response to comment L.4.13). This activity is evaluated in the EIS. Outside of this activity, a crew of 19 would remain at the DMF facility. This number is decreased from the crew of 50 estimated in the 1995 BRAC CVN EIS. The decrease is based on actual operations that have been refined since the previous EIS was written. Section 3.9.1 has been revised to include the periodic impacts of traffic resulting from PIA workers. It is also important to note that CVs continue to have major maintenance performed at NASNI. For example, in

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	1995, of the 284 days that the USS KITTY HAWK was in port at NASNI, 90 percent of the time was associated with maintenance, and in 1997, of the 259 days in port at NASNI, 84 percent of the time was associated with maintenance. Please also see comment response L.4.14.
O.12.152	Additional reasonably foreseeable projects at Naval Amphibious Base resulting in in-bay construction have been added to the cumulative impact assessment. Additional projects in Coronado and the vicinity, including the San Diego-Coronado Bridge, Seismic Retrofit Financial Plan, Glorietta Bay Master Plan, Hotel Del Coronado Master Plan, Convention Center Expansion, and Padres Ballpark (Centre City East District Expansion) projects have been added to the analysis. Section 3.18 has been revised to address the cumulative effect of these projects along with the proposed action. The Rohr bayfront property transfer involves a land swap between land currently owned by B.F. Goodrich with land owned by the Port of San Diego. The land that is the subject of this agreement is over 12 miles from the proposed action and would not involve any new activities. For this reason, this project has not been included in the list of reasonably foreseeable projects in section 3.18. To date, no work has been relocated to NASNI from the USS MCKEE. Facilities have been created at the submarine base in which to perform work associated with submarine maintenance. The Ship' Intermediate Maintenance Activity at Naval Station San Diego has formed a detachment to accomplish this work. The Navy desires to retain the option to effect selected submarine component maintenance actions at NASNI. Were this option exercised, it is anticipated that the vehicular activity associated with it would be virtually insignificant; approximately four round trips per month on average. Therefore, this has not been included in the cumulative impact analysis. The Navy has no plans to relocate the Landing Craft Air Cushion from its present site near Oceanside, CA. Therefore, it is not included in the cumulative impact analysis.
O.12.153	Variances to air quality laws issued by the San Diego County Air Pollution Control District referenced in this comment were addressed in the APCD permitting process for the dredging associated with the BRAC CVN action. The variances to air quality laws issued by the San Diego County Air Pollution Control District for the dredging permits were subject to the California Department of Toxic Substances Control (DTSC) and were considered localized, single-event short-term impacts. The DTSC's permitting actions to allow for increased storage of mixed and hazardous waste on NASNI are past actions reflected in the Health and Safety Affected Environment. The proposed action would generate small amounts of mixed waste (less than 3 cubic meters per year from each CVN) would be generated by the Navy and temporarily stored at North Island until it is shipped for treatment and disposal outside the San Diego area. The mixed-waste storage facility would be permitted in accordance with

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	State of California regulations. This maximum increase of 6 cubic meters per year associated with the proposed action would be an insignificant, incremental contribution to cumulative effects on health and safety. Therefore, there is no basis for requiring additional mitigation for these past actions. Existing facilities have demonstrated capacity to easily service the three CVs that have been historically homeported at NASNI. The hazardous waste generated by these vessels have been managed without major incident and the waste generated by a CVN is approximately the same as a CV. The program would provide more than adequate capacity and would not pose a threat to health and safety. The proposed action would generate minimal additional runoff subject to NPDES permitted treatment. The Graving Dock permit at NAVSTA San Diego is a past action that is considered in the cumulative analysis of Water Quality in section 3.18.3. The proposed action would generate minimal additional runoff so it would have an insignificant incremental contribution on cumulative impacts on water quality.
O.12.154	The Navy believes the statement regarding 95 hazardous waste generators at NASNI is incorrect. The cumulative impact Health and Safety discussion in 3.18.15 has been revised to address the continuing presence of these generators at NASNI. The region of influence for cumulative impacts on health and safety resulting from hazardous waste generation does not extend beyond NASNI, since the infrastructure to store and dispose of this resource is managed on base. The proposed action, including the preferred alternative, would not result in any appreciable net increase in the generation of hazardous waste compared to that presently generated by the two CVs that would be replaced. Therefore, the cumulative effect the proposed action with the past and other reasonably foreseeable actions at NASNI on health and safety resulting from hazardous waste generation would be less than significant.
O.12.155	The cumulative impact analysis identifies the NPDES permitting program as a mechanism that requires individual projects to minimize water quality impacts. These past, present, and reasonably foreseeable projects that are subject to the NPDES program are then evaluated in a cumulative sense to determine if their combined effect on bay water quality is significant. The EIS has determined that these projects, due to their spatial and temporal separation, would result in less than significant cumulative impacts on bay water quality. Section 3.18.2 has been revised to address this concern.
O.12.156	Please see section 3.2.2.2 in Volume 1 of the Final EIS. For pollution prevention issues, please see response to comments F.3.11 and F.3.13.
O.12.157	As discussed in section 3.2, runoff during construction and operation phases of the proposed project would be regulated under the existing NPDES permit and SWPP, although these may be amended if necessary. The Navy also plans to

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	implement UNDS, when the requisite rulemaking is established, to ensure Navy compliance with all applicable laws in a consistent manner. The Navy does not plan to develop other, separate pollution prevention programs as a condition of the proposed project. See response to comment O.12.125 for further detail on development of UNDS for Naval vessels.
O.12.158	Cumulative radiological impacts at NASNI are addressed in sections 3.18.15, 4.18.15, 5.18.15, and 6.18.15 of the EIS. The conclusion of this analysis indicates no significant cumulative radiological impact would occur as a result of the proposed action. Sections 3.18.15, 4.18.15, 5.18.15, and 6.18.15 have also been clarified to state the following: "As described in the annual report referenced in the EIS, twenty-six previous versions of that report, and the 1998 update of the report, the total long-lived gamma radioactivity in liquids released annually to all ports and harbors from all Naval nuclear-powered ships and supporting tenders, Naval bases and shipyards is less than 0.002 curies. This annual total includes any accidental releases of radioactivity that occurred during the year. For perspective, the total annual amount is less than the amount of naturally occurring radioactivity present in the seawater displaced by a single submarine, and is environmentally inconsequential. Since the total amount released was inconsequential, any individual release was also inconsequential, and was not subject to reporting, immediate or otherwise, by any regulatory requirements. Thus, there would be no cumulative impacts from releases to any one water body from various NNPP activities in close proximity to that water body." In addition, please see response to comments O.12.126 and O.12.156.
O.12.159	Sediment resuspension due to propeller-induced or natural turbulence does not alter sediment quality. Instead, resuspension allows sediment particles to be transported and settle out in other areas of the bay, resulting in some sediment redistribution. Similar processes occur throughout the bay, and they do not degrade the overall quality of bay sediments. The magnitude and frequency of sediment resuspension related to CVN propeller wash is expected to be similar to that of a CV. Thus, no net change in effect would occur if a CV is replaced by a CVN. The EIS has been revised to include this information.
O.12.160	Section 3.18 of the EIS states that because of decreasing industrial waste inputs and other discharges into the bay which are permit-regulated, conditions for biological resources have generally improved. Additionally, the Regional Water Quality Control Board has issued cleanup and abatement orders for removal of contaminated sediments. All of these factors combined have led to improved bay-wide conditions as compared to historical trends. UNDS is not an attempt by the Navy to circumvent environmental laws, rather it is intended to assure

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	Navy compliance with all applicable laws in a consistent manner at any Navy port. Compliance with UNDS will ensure the environment is adequately protected from cumulative Navy operations.
O.12.161	Please see the response to comment O.12.16 for a discussion of the significance criteria used in the EIS.
O.12.162	The region of influence for each environmental resource was reviewed. No changes were needed.
O.12.163	Providing capacity to homeport two additional CVNs under the proposed action would not result in additional flight activity at NASNI. The total number of aircraft carriers assigned to the West Coast would not increase. The number of times a year a CVN visits NASNI as a "transient" would not increase. The size of the air wings on the aircraft carriers will not increase. There would not be an increase in the number of "helicopter trips" as a result of providing capacity to homeport two additional CVNs. As mentioned in the response to comment O.12.104, TAC emissions from the proposed dredging and disposal actions at NASNI would produce insignificant health impacts to the public. As stated in the response to comment O.12.136, the cumulative impact of toxic emissions from the proposed dredging and disposal activities and existing operations at NASNI would be insignificant. As stated in sections 3.11.2.2, 3.11.2.3, and 3.11.2.4 of the Draft EIS, "CVN homeporting would not result in any increase in the aviation units based at NASNI or any increase in air traffic at NASNI. Therefore, no increased aircraft noise would result." This statement applies to helicopters as well as fixed-wing aircraft. For additional information on aircraft and air traffic at NASNI, please refer to section 2.3.2.1. Air traffic associated with the proposed action would not change from existing conditions. Therefore, air quality impacts from these sources would be insignificant. In regard to the impact of TACs from proposed dredging activities, please see the response to comment O.12.36.
O.12.164	Depending on the alternative selected, views of Coronado may be altered, although impacts would remain below the thresholds of significance identified in section 3.12.2. As stated in section 3.12 under the discussion of operational impacts for each alternative, aircraft carriers have been accepted as part of the NASNI view for decades. It is common for multiple aircraft carriers or other ships to be moored at NASNI (DON 1995a). Therefore, providing capacity to homeport two additional CVNs at NASNI would not substantially change the existing views of Coronado.

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O.12.165	In the context of the statement made on page 3.18-15, line 18 of the Draft EIS, the region of influence is properly defined. The region of influence for other sections may be broader as suggested depending on the specific discussion. For example, the normal operations and hypothetical accidents involving radioactivity discussed in Chapter 7 of the EIS consider a radius of 50 miles around NASNI when reporting results. Thus, the Navy has looked at wider areas of influence where appropriate.
O.12.166	The intent of the environmental justice analysis is to determine the proposed action's potential to generate disproportionately high and adverse human or environmental effects on minority or lower income populations.
O.12.167	The record of decision will become the Navy's position as regards to where to construct and operate facilities and infrastructure in support of the additional two NIMITZ-Class replacement-carriers. The Navy does have a Preferred Alternative, Alternative Two, that is identified in section 2.1. This preference was determined after careful consideration of all aspects, environmental as well as those others found in section 2.3.1. There has been no irreversible or irretrievable commitments of resources, and a decision on the home ports of CVNs has not been made.

"Home Port Objectives" were used to establish a qualitative as well as quantitative process of narrowing the field of prospective locations to those that could adequately meet the Purpose and Need of the EIS. Once a location had been selected, it was assigned varying quantities of CVNs up to and including the maximum that location could support. The whole of the effort resulted in the formulation of reasonable alternatives. Each alternatives was then examined from an "impact to the environment" perspective. For more discussion on this process, please refer to section 2.3.1 and the appropriate chapters dealing with the environment: Chapter 3.0 for NASNI, Chapter 4.0 for PSNS, Chapter 5.0 for NAVSTA Everett, and Chapter 6.0 for PHNSY.

The GAO report referred to by the commentor pertains to the government's choice for the next generation of aircraft carrier propulsion plants. As described in the response to O.12.12, the scope of this EIS does not include decisions regarding Naval ships (e.g. application of nuclear power), and thus comments regarding these decisions are beyond the scope of this EIS. For further detail on this issue, please see the response to comment O.12.55.

Conversion of CVN-76 (USS RONALD REAGAN) from nuclear power to conventional power is outside the scope of this EIS.

The use of Long Beach to home port CVNs was not considered a *reasonable* alternative as it has been closed by a BRAC action and this EIS does not revisit

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	BRAC decisions made by Congress and approved by the President of the United States. Alternative Four analyzes an action where capacity is provided at NASNI to homeport two CVNs as the EHC suggests in Paragraph IX, sub-paragraph 4. This alternative, however, does *not* provide construction of a new wharf at NASNI. Please refer to section 2.3.2.1 for information pertaining to the need for a "transient" CVN berth. Irrespective of providing capacity to homeport one or two additional CVNs, the new wharf must be constructed before committing the transient berth to becoming a home port berth. Construction of the new wharf would result in three CVN-capable berths at NASNI. With that many berths, the need to reserve a berth as the transient berth would disappear as the combination of three berths would avoid ample flexibility for berthing a transient CVN at NASNI. Paragraph 2.3.2.1 also discusses the minimal construction (fencing and lighting) required to convert the existing transient berth to a homeport berth *once* Pier J/K is converted to a CVN berth. In regard to the comment of improper alternative rejection and piece-mealing, please refer to response to comment L.4.5. Additional information on alternatives considered but rejected can be found in section 2.6. Please refer to section 2.4.6 for a discussion of the No Action Alternative. This EIS deals with the *facilities and infrastructure* needed to support the homeporting of three CVNs. It is Navy policy that CVNs will replace aging CVs. The closest the Navy could come to a true "No Action" alternative, was to approach the "no change" provisions of the alternative formulation process as discussed in question 3 of the "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," printed in *Federal Register* Vol. 46, No. 55, 18026-18038, 3/23/81. In this case that means attempting to homeport the CVNs without construction of the *facilities and infrastructure* needed to support them. Clearly this is unsatisfactory from an operational, environmental, or quality of life perspective but the Navy has carried this alternative forward in order to satisfy the spirit of NEPA.
O.12.168	The use of Long Beach to home port CVNs was not considered a *reasonable* alternative because it was closed by BRAC Congressional and Presidential actions. This EIS does not revisit BRAC decisions.
O.12.169	This issue is beyond the scope of this EIS.
O.12.170	The environmental justice section related to San Diego, section 3.17, discusses Coronado as the relevant sub-regional area, since this community is adjacent to the proposed action. Environmental Justice considerations in Mexico, are addressed in section 1.6. The commentor's assumption that the Navy interpreted

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	EHC's scoping letter to mean they were only concerned about Mexico is a false characterization of this EIS. The Navy simply stated that the Presidential executive order does not apply to foreign lands. However, in absence of significant environmental impact except for localized areas around NASNI which are not frequented by these populations, the EIS concluded that there would be no disproportionate effects on these populations. If there is no significant impact to close-in populations such as Coronado, then certainly American citizens living in Mexico have no greater risks than cited in the EIS. Further, the EIS does assess (in Appendix F) radiological impact to Mexican populations within 50 miles of NASNI. Instead of assessing the population distribution of Mexico (which is very difficult at best because of the way they conduct a census), the Navy assumed that the entire Mexican population lived on the border (24 hours per day) at the closest point to NASNI. Even in this conservative scenario, the analyses calculated in the EIS show that there would be no significant radiological impact to the Mexican population.
O.12.171	This sentence explains that one of the needs of the proposed action is to ensure that existing CVN home port locations, such as PSNS at Bremerton, Washington, have adequate infrastructure requirements. New requirements, which specify minimum berthing water depths and pier widths, have been established based on demonstrated operational needs. Projects at PSNS are being considered as connected and similar actions in this EIS in accordance with 40 CFR 1508.25 because of their close relationship to actions considered in this EIS and common timing of the events. The text of the EIS has been revised to clarify this statement.
O.12.172	Section 3.1.2.4 of the Final EIS has been modified to indicate that flexible moorings are a component of standard operation procedures used at CVN berths.
O.12.173	The Navy, does not agree with your assertions or conclusions. This comment summarizes comments that have been responded to in previous responses. See specifically responses to comments O.12.8, O.12.9, O.12.33, O.12.37, and O.12.131.
O.12.174	As is explained in section 3.1 of Appendix F, airborne emissions of radionuclides from Naval Nuclear Propulsion Program activities are conservatively estimated using procedures developed by the Navy and approved by EPA pursuant to 40 CFR 61. These procedures are a result of extensive, multi-year measurement and evaluation by both the Navy and EPA. An unclassified EPA summary of these procedures has been included in the EIS. Section 3.1 also states that the source term for airborne releases is based upon conditions at a large Naval shipyard performing maintenance and nuclear refueling work on a variety of nuclear-powered ships. Since the amount of maintenance expected at a homeport facility

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to support CVN maintenance is less than the amount performed at a large Naval shipyard performing maintenance and nuclear refueling work on a variety of nuclear-powered ships, the normal operations source term is conservative for evaluation of CVN homeporting. As evident from the listing of the normal operations source terms listed in section 3.1 of Appendix F (which includes tritium), all of the radionuclide concentrations, with the exception of carbon-14, are the same for each site. The carbon-14 source term is greater for North Island since North Island is the only location where two additional CVNs would be located under any of the alternatives evaluated. Based on the above, no further justification of the source term is deemed necessary.

The discussion of the pathways analysis is presented in Appendix F, section 2.0, which includes discussions covering the methodologies and assumptions used for receptor locations, exposure pathways, health effects risk estimators, population distribution, meteorology, and computer programs. Release height is specified in the EIS for accident scenarios, but is not specified for the normal operations calculation. The release height for the normal operations evaluation, which used the GENII computer code, was conservatively selected as 1 meter even though the ventilation systems on both the CIF and onboard the carriers discharge air through HEPA filters at distances several meters above ground level. Typically, low release heights result in larger doses than high release heights. For completeness, the following sentence will be added to page F-15: "The release is assumed to occur at 1 meter."

As is explained in section 2.1 of Appendix F, the maximally-exposed offsite individual is defined as a theoretical individual living at the base boundary receiving the maximum exposure. Since that individual receives the maximum exposure, the exposure for the maximally-exposed off-site individual bounds the exposure for an individual in any of the 16 compass directions. The same methodology is used to calculate exposures to the nearest public access individual. For this reason, and to minimize the complexity of the EIS, individual distances for the maximally-exposed off-site individual and nearest public access individual are not needed to be reported in the EIS. For information, the nearest public access individual is located 945 meters from the release point, and the maximally-exposed off-site individual is located 1,189 meters from the release point at North Island. However, as demonstrated by the commentor's conclusion that the distance to the maximally-exposed off-site individual is approximately 1,000 meters, the distances can be reasonably approximated in any compass direction using the information provided in the EIS.

The doses that IEER calculates are comparable to the Draft EIS maximally-exposed off-site individual calculations presented in Appendix F, Table F-7 at about 1,000 meters. The IEER dose results for 1,000 meters (0.37 mrem/yr) can

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be compared to the Navy maximally-exposed off-site individual dose results at 1,189 meters (0.1 mrem/yr). The difference in dose estimates can most likely be attributed to differences in distance from the release point (1,000 versus 1,189 meters) and release height (ground-level versus 1 meter.) When the GENII code is run using assumptions similar to those used by IEER, the maximally-exposed off-site individual dose at 1,000 meters is 0.46 mrem/yr, which is very comparable to the IEER value of 0.37 mrem/yr.

The doses that IEER calculates at 100 meters are not comparable to the Draft EIS doses at that same distance. IEER calculates an exposure of 28 mrem/year at a distance of 100 meters, compared to the 1.3 mrem/year reported in Table F-7 for the theoretical worker. The difference in the Navy and IEER results for close-in doses can be explained by evaluating several assumptions used for the calculations:

- Distance from release point: In Appendix F, section 2.1, the Navy defines the worker as an individual located 100 meters from the radioactive material release point. Since members of the general public cannot be located 100 meters from the release point, no maximally-exposed off-site individual or nearest public access individual calculations were performed at this close distance as was done by the IEER. This is would create a substantial difference in results since the Navy assumes the worker is exposed to the release for a normal workday of 8 hours a day for one year. In contrast, the nearest public access individual and maximally-exposed off-site individual are more conservatively assumed to be exposed to the release for 24 hours a day for one year. IEER assumed the individual at 100 meters was exposed to the release for 24 hours a day, which is unrealistic and inconsistent with the Navy's assumptions for a worker.
- Release height: The Navy assumed the release height for the normal operations evaluation was 1 meter even though the ventilation systems on both the CIF and onboard the carriers discharge air through HEPA filters at distances several meters above ground level. Typically, low release heights result in larger doses than high release heights. IEER assumed a ground level release.

When the GENII code is run using assumptions similar to those used by IEER, the 100 meter dose is 29 mrem/yr which is very comparable to the IEER value of 28 mrem/yr. However, the assumptions used to obtain the higher doses are not consistent with the assumptions used in the EIS, which explains the difference in calculated dose for close-in individuals.

Notwithstanding the above noted differences, the Navy believes that the assumptions used in the EIS analyses are appropriate for the individuals being

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evaluated. IEER's results, which were calculated using a different computer code and using different assumptions, corroborate the Navy's results in that the risk to the members of the public from normal operations outside the base boundary in both cases are well below 1 in 10,000.

The commentor is correct in that the GENII code used for the normal operations analyses does distribute the release evenly over the entire year, and that acute releases can result in larger doses than chronic releases of the same source term. However, the purpose of the normal operations analyses is to estimate the health effects associated with the small chronic releases that could occur due to homeporting maintenance activities. Since the maintenance work would occur over the course of the year, the releases associated with the work would also be chronic in nature. In contrast, the purpose of the accident analyses is to evaluate the health effects associated with an acute release. It should also be noted that the approach used by the Navy to analyze releases due to normal operations is consistent with EPA's approach for evaluating effects from airborne radionuclide releases found at 40 CFR 61, which uses annual release rates and wind rose data.

With regard to uncertainties in the analysis, section 7.6.1 of the Draft EIS states "... due to the conservatism in these analyses, the calculated risks are believed to be at least 10 to 100 times larger than what would actually occur." The use of conservative analyses is appropriate since all of the alternatives have been evaluated using the same methods and data, allowing a fair comparison of all of the alternatives on the same basis. Furthermore, even using these conservative analytical methods, the risks for all of the alternatives are small, which greatly reduces the significance of uncertainties within the analysis. Thus, further quantification of uncertainty is not deemed necessary.

The number and risk of latent cancer fatalities were specifically calculated and presented in the tables of results since these are the most predominant health effects of radiation exposure. This is evidenced in Table F-3, where the risk factors for fatal cancer are greater than the risk factors for both non-fatal cancers and genetic effects. The results of the analyses are presented to allow readers of the EIS to calculate non-fatal cancers and genetic effects, if desired. A change to the EIS outlining the process for calculating these effects is discussed in response O.12.27.

As is stated in section 2.2 of Appendix F, the risk factors used for these analyses are those recommended by the International Commission on Radiation Protection (ICRP). Two sets of risk factors are presented: one set for workers and one set for members of the general population. The risk factors for the general population are higher than those for workers since there is a greater number of children in the general population. The ICRP risk factors are applicable to any

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	individual in the population, regardless of the demographic (e.g., age, race, or gender) in which they are included. Therefore, factors such as age and gender are already built into the risk factors used for the analyses in this EIS.
	The Navy has fully considered the comments provided by the commentor and the Navy responses to those comments. Based on this review, the Navy has determined that it has correctly assessed the radiological health risks associated with the proposed action, and thus no significant changes to the radiological analyses contained in the EIS are deemed necessary. A minor change to the EIS as a result of the review of this comment is included above.
O.12.175	The Draft EIS does address reactor accidents and other events involving the release of radioactive materials onboard ship. Section 7.6.1.2, Hypothetical Accidents, presents a discussion of the accident selection and scope for the EIS analyses. This discussion states that "All accidents (natural and human initiated) were considered but only those accidents expected to contribute substantially to risk (defined as the product of the probability of occurrence of the accident multiplied by the consequence of the accident) were included for detailed analysis." In addition, this section states that "Although the probability of occurrence is small, a wide range of postulated reactor accidents have been analyzed and are discussed in Appendix D."
	The EIS has fully analyzed the impacts associated with homeporting NIMITZ class aircraft carriers, including reactor safety. Because nuclear propulsion technology is among the most sensitive military technologies possessed by the United States, discussion of the U.S. Naval reactor design information and analysis of postulated propulsion plant accidents are contained in a classified appendix. The classified appendix was provided to EPA headquarters for review. This approach is in accordance with the implementing regulations of NEPA (40 CFR 1507.3(c)) which specifically provide for the protection of classified information. EPA received the entire Draft EIS, including the classified appendix, conducted a review, and provided comments based on their review. The Navy has responded to those comments (see F.3 series). EPA had no comments on the classified appendix.
	Every effort has been made to ensure that environmental impacts associated with homeporting are evaluated and reported in an unclassified fashion in the EIS, and thus all potential environmental impacts or conclusions discussed in the classified appendix are covered in the unclassified sections of the EIS. In addition, consistent with past practice, NIMITZ-class aircraft carrier nuclear propulsion plant design was independently reviewed by the Nuclear Regulatory Commission (at the time of review it was by the Directorate of Licensing Division of the Atomic Energy Commission) and by the Advisory Committee on Reactor Safeguards. Both reviews concluded that consistent with the military

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necessity of these ships, NIMITZ class aircraft carrier reactors could be operated without undue risk to the health and safety of the public.

As described in response O.12.10, the Navy's historical record of safe and responsible operation of nuclear powered warships is clear: there has never been a reactor accident associated with the Program, nor has there been any release of radioactivity that has had a significant effect on the public or the environment. The commentor is correct in that there have been releases of NNPP radioactivity; however, as described below, since the total amount released annually has been inconsequential, any individual release was also inconsequential, and was not subject to reporting, immediate or otherwise, by any regulatory requirements.

The Navy reports all releases of radioactivity associated with the NNPP in its annual report entitled Environmental Monitoring and Disposal of Radioactive Wastes from U.S. Naval Nuclear Powered Ships and their Support Facilities. This report is prepared annually, and is provided to Congress and made available to the public. Relevant information from the report has been included and referenced as appropriate in the EIS in accordance with the implementing regulations of NEPA (40 CFR 1502.21). Copies of this and other reports were placed in local public libraries to aid public review during the EIS process.

As described in the annual report referenced in the EIS, twenty-six previous versions of that report, and the 1998 update of the report, the total long-lived gamma radioactivity in liquids released annually to all ports and harbors from all Naval nuclear-powered ships and supporting tenders, Naval bases and shipyards is less than 0.002 curies. This annual total includes any accidental releases of radioactivity that occurred during that year. For perspective, the total annual amount is less than the amount of naturally occurring radioactivity present in the seawater displaced by a single submarine, and is environmentally inconsequential. Since the total amount released was inconsequential, any individual release was also inconsequential, and was not subject to reporting, immediate or otherwise, by any regulatory requirements. As such, those releases are insignificant relative to the more severe accidents evaluated, and further information regarding individual releases is not needed to describe the environmental effects of the proposed action, and no change to the EIS is warranted.

The discussion of the pathways analysis is presented in Appendix F, section 2.0, which includes discussions covering the methodologies and assumptions used for receptor locations, exposure pathways, health effects risk estimators, population distribution, meteorology, and computer programs. A detailed explanation of the meteorological analysis performed for the accident analyses is provided in this same appendix, section 2.4. Assumptions used for the RSAC-5

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computer code are presented in Appendix F, section 3.2, as are the specific source terms used for the accident analyses.

As is explained in section 2.1 of Appendix F, the maximally-exposed offsite individual is defined as a theoretical individual living at the base boundary receiving the maximum exposure. Since that individual receives the maximum exposure, the exposure for the maximally-exposed off-site individual bounds the exposure for an individual in any of the 16 compass directions. The same methodology is used to calculate exposures to the nearest public access individual. For this reason, and to minimize the complexity of the EIS, individual distances for the maximally-exposed off-site individual and nearest public access individual are not needed to be reported in the EIS. For information, for North Island, the nearest public access individual is located 152 meters from the release point, and the maximally-exposed off-site individual is located 1,189 meters from the release point. However, as demonstrated by the fact that commentor concluded the distance to the maximally-exposed off-site individual is approximately 1000 meters, the distances can be reasonably approximated in any compass direction using the information provided in the EIS.

The development of the hypothetical accident source terms is presented in section 7.1.6.2 and Appendix F, section 3.2. The conservative assumptions related to the release of these large quantities of radioactive materials into the environment are also presented, including meteorological data. The Navy agrees with IEER that the dispersion coefficient, deposition velocity, and length of exposure after initial deposition are crucial parameters in determining the dose. In Appendix F, section 3.2, the assumptions for these parameters are presented. The dispersion coefficient is calculated by the RSAC-5 computer code based on site specific meteorological data. For the NASNI analysis, a dispersion coefficient value of 5.2×10^{-4} was used. This value is over a factor of 5 larger than the value used in the IEER analysis, resulting in more conservative or larger doses.

The dry deposition velocities used for the EIS analyses are the default values listed in the RSAC-5 and GENII computer codes and are listed in the appendix for solids (0.001 m/s), halogens (0.01 m/s), noble gases (0.0), cesium (0.001 m/s), and ruthenium (0.001 m/s). The default values in RSAC-5 were selected based on the references "Particle and Gas Dry Deposition: A Review," Atmosphere Environment, 14:983-1011, George A. Sehmel, 1980 and "Deposition and Resuspension," Atmospheric Science and Power Production, DOE/TIC-27601, Chapter 12, U.S. Department of Energy, George A. Sehmel, 1984. These values are factors of 10 to 100 less than the deposition velocity of 0.1 m/s used by the IEER analysis for all radioactive materials released into the environment, resulting in lower maximally-exposed off-site individual doses. However, a

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review of the above references also shows that the dry deposition velocity of 0.1 m/s used by IEER is much larger than the upper limits of the range of deposition velocities reported in those references. In addition, while IEER states that rainfall at the time of the accident could result in such large deposition velocities, it appears that the IEER analysis is unnecessarily conservative since it was performed without adjusting the dispersion coefficient due to the higher wind speeds and highly unstable atmospheric conditions that could exist during a rainfall.

Both the GENII and RSAC computer codes have been subjected to extensive independent verification and validation for use in performing safety-related dose calculations to support safety analysis reports, environmental impact statements, and environmental assessments. Documentation of independent verification and qualification work can be found in the user's manuals for both of these computer programs.

The duration of ground surface exposure for the general public used for the EIS analyses is listed in Appendix F as one year. This value is a factor of 20 less than the value used by the IEER analysis, resulting in lower doses. As stated in Appendix F, section 2.8, the analyses assume that no action is taken to prevent the public from continuing their normal day-to-day routine for a year. One year is expected to be a very conservative amount of time to assume that no mitigative action would be taken in response to a radiological accident.

The accident analyses performed for this EIS make many conservative assumptions, including the amount of radioactive material released into the environment, meteorological conditions at the time of the accident, location of the maximally exposed member of the public, consideration to exposures from all possible pathways, and no mitigative measures or emergency response for a period of one year. It is important to note that the probability of such an accident is not affected by these assumptions, as only the initiating event is considered in the calculation of accident probability.

As demonstrated above, IEER uses assumptions that are much more conservative than the conservative assumptions used by the Navy in the EIS, which results in doses that are 10 to 100 times greater than the Navy's doses. However, as stated in section 7.6.1, even with the conservative assumptions used by the Navy, the Navy's calculated risks are believed to be at least 10 to 100 times larger than what would actually occur. Notwithstanding, the Navy deems that it has used appropriate assumptions in its analysis as described above. The use of conservative analyses is appropriate since all of the alternatives have been evaluated using the same methods and data, allowing a fair comparison of all of the alternatives on the same basis. Furthermore, even using these conservative

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	analytical methods, the risks for all of the alternatives are small, which greatly reduces the significance of any uncertainties in the analyses.
	The Navy has fully considered the comments provided by the commentor and the Navy responses to those comments. Based on this review, the Navy has determined that it has correctly assessed the radiological health risks associated with the proposed action. No changes to the radiological analyses contained in the EIS are deemed necessary as a result of this comment.
O.12.176	The EIS addresses radiation exposure to the workers directly involved in operations associated with radiological materials in several locations. Each chapter contains a section on Health and Safety (3.15, 4.15, 5.15, and 6.15) which discusses occupational radiation exposure for trained personnel directly involved in work shipboard on the reactor plant, and in areas of the DMF that would handle radioactive material. In addition, section 7.4.3.1 presents additional information on Naval Nuclear Propulsion Program occupational exposures, including the results of a review performed by the National Council on Radiation Protection and Measures which concluded that "These small values (of occupational exposure) reflect the success of the Navy's efforts to keep doses as low as reasonably achievable (ALARA)."
	The pathways analysis described in Appendix F, section 2.0, defines the individual receptors evaluated for both normal operations and hypothetical accident scenario releases. In section 2.1, Calculation of Radiation Exposures, the "Worker" is defined as an individual located 100 meters from the radioactive material release point. This theoretical individual is selected to be representative of a site worker not directly involved in working with radioactive materials. This individual is located at 100 meters from the release point because the Gaussian plume models do not calculate effects closer than that distance. However, for the hypothetical accident scenarios, a qualitative evaluation of the impact on close-in workers was performed. This evaluation is presented in section 7.6.2.1 of the EIS. The close-in workers are those in the facility or very near the release point when the accident occurs (i.e. within 100 meters of the release point).
	In addition, as described in reference NNPP 1997b, the Navy monitors internal radioactivity as part of its occupational radiation exposure monitoring program. The measures outlined in section 7.4.2, Control of Radioactivity, are integral measures in limiting the exposure to NNPP radioactivity from all pathways to as low as reasonably achievable.
O.12.177	As is stated in Chapter 1.0 of the EIS, the EIS evaluates the environmental effects associated with providing support facilities and infrastructure for homeporting three CVNs in the Pacific Fleet. As such, the EIS appropriately includes impacts

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	associated with operating the CVNs at the various homeporting locations. Environmental impacts associated with other aspects of the CVN lifecycle are appropriately handled when those federal actions are proposed, and are specific to the location where the actions take place. The relevant cumulative impacts associated with the proposed action are already included in the EIS, and thus no change to the EIS is deemed necessary.
	With regard to occupational radiation exposure, section 7.4.3.1 of the EIS states that the NNPP's policy is to reduce to as low as reasonably achievable (ALARA) the exposure to personnel from ionizing radiation associated with the NNPP. The effectiveness of the Navy's ALARA program can be seen in the data provided in the Draft EIS. Specifically, the average annual radiation exposure to fleet personnel monitored for radiation exposure is 0.050 rem, or one-hundredth of the federal annual occupational limit of 5 rem. The Draft EIS also states that the average annual radiation exposure for shipyard personnel is 0.13 rem, which is approximately one-fortieth of the federal annual limit of 5 rem and is less than one-half of the average annual exposure that each person living in the United States would receive from natural background radiation.
	There are many standards that can be cited to compare radiation exposures. Considered in the development of those standards are many factors, including exposure pathway and individual receiving the dose. For example, the EPA standard in 40 CFR 61 Subpart I for exposure to the general public from airborne radionuclides is 10 millirem per year. The Nuclear Regulatory Commission standard in 10 CFR 20 Subpart D for exposure to the general public from nuclear power plant operation is 100 millirem per year above background. Also, the average U.S. citizen receives about 300 millirem of exposure from background sources per year. In comparison, the Navy results from exposures to a member of the public due to normal operations are very low.
	The commentor specifically cites EPA drinking water regulations found in 40 CFR 141.16, which state that the average annual concentration of beta particle and photon radioactivity from man-made radionuclides in community drinking water systems shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem per year. However, the Navy does not discharge radioactivity into drinking water systems. Notwithstanding, the Navy exposures from normal operations due to all pathways do not exceed even this limit.
O.12.178	Please see responses to comments to comments O.12.174-177 above.
O.12.179	Your comments are noted and are included in the Final EIS.

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O.12.180	Section 3.15 evaluates the impacts on Health and Safety associated with dredging and construction of the mitigation site, construction of facility improvements, and operations for all six CVN home port alternatives, including the No Action Alternative. Responses to specific concerns follow.
O.12.181	Construction and operation of the Controlled Industrial Facility at North Island was evaluated in the Final EIS for the Development of Facilities in San Diego/Coronado to Support the Homeporting of One NIMITZ Class Aircraft Carrier (DON 1995). In section 4.1.1.1.6 of DON 1995, measures are presented to mitigate structural impacts due to seismic ground motion and ground rupture to below a level of significance. For example, the Navy incorporated state-of-the-art measures during the design and construction of the homeporting facilities, including up-to-date site-specific seismic risk analysis to determine the design-level earthquake and design and construction of the building structures to withstand ground motion associated with the design-level earthquake. No buildings were constructed within 50 feet of the known fault zone. In addition, an effective earthquake preparedness plan is in place including computer-based command and control networked throughout the state and approved by the California Office of Emergency Services and the California Department of Health. Implementation of these design measures ensures that building structures will survive ground motion and rupture associated with the design seismic event, without collapse.

In addition, homeporting of a NIMITZ-class aircraft carrier would involve repair and maintenance of the ship's systems and their components. A detailed discussion of typical repair and maintenance work performed onboard ship and within a Controlled Industrial Facility is presented in the EIS in Appendix I, Maintenance in Home Port.

Potential impacts to proposed action facilities associated with earthquake hazards and associated mitigation measures incorporated into the proposed action design, are discussed in detail in section 3.1.2.2 of the EIS. The text remains unchanged.

With regard to the second portion of the comment, according to 40 CFR 1502.15 Affected Environment, "Data and analysis in a statement (EIS) shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced." As indicated in the comment and addressed in the text, tsunamis are extremely rare, are unlikely to occur during the lifetime of the proposed action, and are considered an unavoidable, acceptable risk. Therefore, the level of detail provided in the Affected Environment section supports the impact analysis. With respect to radiological and hazardous material issues, the EIS has evaluated more probable accident scenarios that result in the release of these materials. The results of the analyses

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	bound the risks that could result from rarer occurrences such as tsunamis or seiches. The text remains unchanged.
O.12.182	As described in response O.10.34, there are two classes of events that are typically evaluated in risk analyses: those that have occurred (historical events) and those that have not occurred (new events). Historical events have occurred often enough for sufficient data to have been accumulated. The probability of a fire used in the EIS (one chance in 200 per year, or 5×10^{-3}) is based on the historical data regarding major structurally-damaging fires at large industrial facilities such as a general maintenance shops or petroleum storage facilities. It should be noted that there has never been such a fire at a NNPP radiological support facility in the history of the Program. The probability of occurrence is based on historical data listed in reference Ganti and Krasner, 1984. In contrast, since data does not exist for new events, the event is broken down into a sequence of events, each of which may be analyzed separately by theory, by analogy with historical events, or by engineering judgment considering experience to date and the detailed analysis of other similar systems or processes. These parts are then used to reconstruct the event, arriving at an estimated probability of occurrence. In order to assess the probability of a fire resulting from an earthquake, as suggested by the commentor, the event would have to be modeled as a new event by breaking the event down into a sequence of events and reconstructing the overall event. Using this methodology, the probability of a major, structurally damaging earthquake is determined first. Due to seismic considerations, the CIF is designed to accommodate an earthquake with a 10 percent probability of exceedance in 50 years (one chance in 500 per year or 2×10^{-3}). Next, a determination is made regarding the probability that a fire would be caused by that earthquake. Given the robust design of the CIF and built-in fire suppression systems, this second probability would likely be much less than one. However, even if the probability were conservatively defined such an earthquake exceeding the design standard were assumed to cause a fire every time, the resulting probability of an earthquake exceeding the design standard leading to a fire would be less than 1 in 500 per year (2×10^{-3} per year). This probability is lower than the probability (1 in 200 per year) used in the EIS (5×10^{-3} per year). Thus, the probability of a fire already used in the EIS, which is based on historical data, is considered to bound the probability of a fire caused by a structurally-damaging earthquake and other conceivable initiating events.
O.12.183	With regard to the first part of the comment, specific steps have been outlined on pages 3.2-4 and 3.2-5 addressing potentially contaminated soil and groundwater that may be encountered if construction should proceed. Implementation of these steps would adequately address this issue. Most of these components of

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	the proposed action design are required by law; therefore, they are not considered to be mitigation. These were the same controls that were in effect for the construction associated with the BRAC CVN project that proved successful, as the comment indicates. The text remains unchanged.
	The EIS text quoted from the Terrestrial Hydrology and Water Quality section in this comment was in error, and has been changed to be consistent with correct statements made in section 3.15 – Health and Safety. As correctly indicated on page 3.15-3 of the Draft EIS, "hazardous waste generated by a CVN are approximately equal to those generated by a CV (DON 1994a)." Regardless of whether or not the amount of chemicals handled increases or decreases, the impact analysis remains unchanged due to the other reasons stated in the same paragraph. The types and quantities of materials to be managed in association with the proposed action are addressed in sections 3.15 and 3.16, and accident analyses associated with these materials are included in Appendix J. The types and quantities of hazardous materials are also included in Appendix J. In addition, as indicated on page 3.15, no additional (net) impact regarding hazardous materials/waste would occur as a result of this alternative because the number of aircraft carriers would not increase over the historical limit of three. Sections 3.2.2.2, 3.2.2.3, and 3.2.2.4 of the Final EIS has been changed to reflect this fact.
O.12.184	The location of Glorietta Bay is shown in Figure 3-3. Section 3.3 has been revised to explain that the Silver Gate Power Plant is located on the eastern shoreline of the bay across from the entrance to Glorietta Bay. Water quality conditions at the proposed project and mitigation sites are expected to be sufficiently similar to those in other, adjacent areas of the bay for which water quality measurements have been made, that the existing information can be extrapolated and considered adequate for characterizing present conditions. See response to comment O.12.126 regarding thermal pollution.
O.12.185	The statement that no numerical sediment quality criteria exist was not meant to imply that the magnitude of contaminant concentrations cannot be evaluated relative to potentials for biological effects or thresholds. Rather, the original statement means that numerical limits, representing maximum allowable contaminant concentrations in sediments, have not been defined by federal, state, or local agencies despite the considerable effort that has been performed over recent years to address this issue.
	The EIS uses existing bulk chemistry data to characterize sediment quality within the proposed dredging, mitigation, and disposal areas. Details regarding specific methods and analytical detection limits associated with these data are available in the referenced source documents. Additional sediment testing has been conducted within the proposed dredging and mitigation areas. Sediment

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	chemistry data for these areas have been added to the Volume 3, Table 3.4. Other chemical and toxicity testing of sediments from the dredging area is ongoing, but the results are not presently available to include in the EIS. Specific details regarding the RCRA studies of Outfalls 9-15 are beyond the scope of this EIS.
O.12.186	Mitigation for eelgrass impacted as part of new wharf construction and the mitigation site would be credited from the Navy's Eelgrass Mitigation Bank agreement, which established an eelgrass credit of approximately 9 acres from construction and planting of eelgrass at the USS JOHN C. STENNIS mitigation site. Eelgrass has been documented historically in both Pier B and STENNIS mitigation sites (DON 1995; personal communication R. Hoffman National Marine Fisheries Service). A pre-construction and post-construction survey would be conducted to assess eelgrass densities at the project and mitigation sites to determine actual amounts requiring mitigation in accordance with the Southern California Eelgrass Mitigation Policy. The size of the fill area is 1.5 acres. The anticipated duration for dredging is 5-6 months. It is not expected that other dredging projects would occur simultaneously in this region of the bay. Therefore, no cumulative impacts from dredging projects are expected (see section 3.18 for additional discussion). The field surveys conducted for the present EIS found some reductions of eelgrass and motile species in the project area as compared with previous studies. The eelgrass on the north side of the pier is natural, indicating this habitat is appropriate for this species. The field survey report (Volume 3, section 3.5) also stated that these differences in abundance were likely influenced by seasonal differences, as well as sampling techniques. Therefore, it is likely that the observed differences were due to natural seasonal variability combined with the most recent (1997-1998) El Niño effects. This can lead to reduced numbers of many organisms, particularly fish, as well as reduced eelgrass abundance.
O.12.187	Sediment resuspension due to propeller-induced or natural turbulence does not alter sediment quality. Instead, resuspension allows sediment particles to be transported and settle out in other areas of the bay, resulting in some sediment redistribution. Similar processes occur throughout the bay, and they do not degrade the overall quality of bay sediments. The magnitude and frequency of sediment resuspension related to CVN propeller wash is expected to be similar to that of a CV. Thus, no net change in effects would occur if a CV was replaced by a CVN. The EIS has been revised to include this information
O.12.188	See response to comment for O.12.186.

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O.12.189	40 CFR 1505.2(b) requires that the ROD address the environmentally preferred alternative, but there is no NEPA requirement for a federal agency to select or implement this alternative. The reason for this is stated in 40 CFR 1500.1(b) in that "NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." Public officials are required to be informed of the environmental implications of their decisions, but are not required to select the environmentally preferred alternative under NEPA. In the case of this EIS, the environmentally preferred alternative is the No Action Alternative. The commentor is correct that the Navy has chosen a Preferred Alternative that is not the environmentally preferred alternative. However, the Navy must weigh factors other than environmental considerations (such as sailor quality of life) in making its final decision. These factors are discussed in Appendix G. The ROD will address the Navy's ultimate decision on this EIS, and environmental considerations will be one of the factors discussed in the decision. The Navy believes it has provided and assessed the appropriate level of data in this EIS to make an informed choice among alternatives.
O.12.190	As stated in section 1.0 of Appendix E, control of radiation exposure in the Navy has always been based on the assumption that any exposure, no matter how small, involves some risk. The Navy's radiation exposure standards and the methods used for estimating risk to workers and the general public are consistent with guidance issued by the cognizant federal health and regulatory agencies. These agencies include the Environmental Protection Agency, the National Institute for Occupational Safety and Health, the National Cancer Institute, and the Nuclear Regulatory Commission. Federal guidance is derived from risk estimates and recommendations issued by nationally and internationally renowned organizations such as the National Academy of Sciences, National Council on Radiation Protection and Measurement, International Commission on Radiological Protection, and the United Nations Scientific Committee on the Effects of Atomic Radiation. These risk estimates and recommendations are obtained through consensus among scientists that specialize in the study of health effects of radiation exposure. Inherent in the process of estimating radiation risk is consideration of all available credible scientific studies conducted throughout the world of populations exposed to ionizing radiation. The populations studied have included atomic bomb survivors, and populations that surround various nuclear facilities. Inclusion of radiation workers in the populations that have been studied is appropriate as this is a population group that would be expected to first show signs of any adverse effects because of their higher radiation exposures relative to that of the general public. The information on radiation risk provided in Appendix E of the EIS is intended to highlight the basis upon

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	which radiation exposure standards have been set by regulatory agencies. The Navy meets its obligation to protect its personnel and members of the general public by ensuring its operations will comply with the safety and health regulations issued by other governing regulatory agencies. None of the information cited by the commentor has been considered by the expert scientific and regulatory organizations to be convincing enough to alter their recommendations on exposure risk and exposure limits that are used by the Navy in this EIS. Some commentors expressed as a concern that some of the studies cited in the EIS focused on population groups that had been exposed only to external radiation. From a radiation health standpoint, the exposure limits derived by scientific and regulatory bodies consider that exposure can be received from both internal and external sources. The method of assigning a dose from internally-deposited sources is well defined by the scientific and regulatory community. Some population groups that have been studied and included in scientific reviews by the organizations discussed above were exposed to internal radioactivity. The Navy has fully considered the comments provided by the commentor and the Navy responses to those comments. Based on this review, the Navy has determined that it has correctly assessed the radiological health risks associated with the proposed action, and therefore no changes to the information contained in Appendix E are deemed necessary.
O.12.191	The Draft EIS Appendix J analysis (the analysis) of a hypothetical airborne release of hazardous substances was completed in February 1998. The California guideline (the guideline) the commentor is referencing, *California Draft Guidance Document: The Determination of Acute Reference Exposure Levels for Airborne Toxicants*, was issued in a draft form in October 1998, thus was not available for consideration by personnel conducting the Draft EIS analysis. Note that enclosure A of the analysis identifies California Office of Emergency Services regulations that were considered. The guideline states at the top of each page, *"Scientific Review Panel Draft - Do not cite or quote."* Therefore, at the current time, it is premature to consider the recommended levels of concern (LOCs) in the guideline as alternatives to those used in the Draft EIS. Page J-7 of the Draft EIS identifies the following sources for derivation of LOCs for the analysis: a. For substances regulated by 40 CFR 68, the analysis utilized the LOCs specified in Appendix A of 40 CFR 68, per the endpoint requirements of 40 CFR 68.22. Most of these values are ERPG-2 values (Emergency Response Planning Guidelines recommended by the American Industrial Hygiene Association).

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b. For substances not regulated by 40 CFR 68, the analysis utilized values recommended by the EPA in the June 20, 1996 *Federal Register* (i.e., one tenth the Immediately Dangerous to Life and Health (IDLH) value). Where the IDLH value was greater than the Permissible Exposure Limit (PEL), the Navy opted to use the PEL. Note that the California Office of Emergency Services regulations do not specify or recommend any source for derivation of LOCs.

After reviewing the guideline and comparing its "Reference Exposure Levels (REL's)" with LOCs used in the analysis, the Navy concurs with the commentor that the values vary. This is due to the fact that the REL is a more conservative value than the LOCs identified above. The difference can be observed by understanding the definition of the REL compared to the ERPG-2 values utilized as the basis for 40 CFR 68 LOCs:

a. REL: *the concentration level at or below which no adverse health effects are anticipated. REL's are designed to protect the most sensitive individuals... by the inclusion of margins of safety... exceeding the REL does not automatically indicate an adverse health effect."*

b. ERPG-2: *"maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action."*

The sources for LOCs used by the Navy are considered the best currently available for analysis of hypothetical accidental releases, as they are specified or recommended by the United States Environmental Protection Agency (EPA) through rules or rulemaking discussions after significant scientific and public comment. The EPA is working on new guidelines called Acute Exposure Guideline Limits, which, once adopted, will likely be used in place of ERPG-2 values in future analyses. The guideline on the other hand is written for "hazardous substances routinely released into the environment as a result of predictable continuous or short-term emissions from facilities and predictable process upsets or leaks". Thus even when the guideline is issued as a final document, it is unlikely that the Navy would use this guideline as the basis for LOCs for future hypothetical accidental release analyses, as the REL is inconsistent with the methodology used by EPA to derive LOCs.

However, even if the Navy were to use the draft California guidance as suggested by the commentor, the Navy's conclusion that there would be the potential to impact human health if an accidental release of hazardous substances were to occur at any of the homeporting locations without mitigating measures in place would not change. Thus no changes to the EIS hazardous substance analysis is deemed necessary.

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The Navy used 40 CFR 68.25(d)(3)(f) and 40 CFR 68.28(c) for guidance on the appropriate model to use in the Draft EIS accident analysis. These regulations state *"The owner or operator may use either the methodology provided in the RMP Offsite Consequence Analysis Guidance* (U.S. EPA, May 1996) *or any* commercially *or publicly available air dispersion modeling techniques, provided the techniques account for the specified modeling conditions and are recognized by industry as applicable as part of current practices."* As stated on Page J-6 of the Draft EIS analysis, the mathematical release rate and dispersion models used in the toxic substance analysis are specified in the *RMP Offsite Consequence Analysis Guidance* and in the *Technical Guidance for Hazards Analysis, U.S. EPA, Federal Emergency Management Agency, U.S. Department of Transportation, December, 1987.* As stated on Page J-7 of the Draft EIS analysis, the modeling technique for the flammable substance analysis is located in the *RMP Offsite Consequence Analysis Guidance.* A description of and justification for the use of other modeling parameters such as stability class, wind speed, and surface roughness are identified in Section 4.1.3 of Appendix J. The following formulas, extracted from the above-stated documents, were used for the Appendix J analysis:

1. AIRBORNE RELEASE EQUATIONS

Equation 1, from reference 8.2, is used to calculate the release rate of liquids due to evaporation at the boiling point.

$$(1)\quad QR = QS \times u^{0.78} \times \frac{(0.284 \times MW^{2/3} \times VP)}{(82.05 \times (T_B + 273))} \times \frac{1}{(d \times 0.033)}$$

QR	- Quantity per minute released, lb/min
QS	- Quantity of liquid spilled, lb
u	- Wind speed, m/s
MW	- Molecular weight, g/mole
VP	- Vapor pressure at boiling temperature, mm Hg
T_B	- Boiling temperature, C
d	- Density, lb/ft^3

The Navy has included a detailed discussion of spill related impacts in Appendix J, Section 4.4.2, Non-airborne pathways.

2. CONCENTRATION OF HAZARDOUS CONSTITUENT EQUATIONS

The concentration of the hazardous constituents downwind of the release point is calculated using equations (2) through (6) from reference 8.1.

$$(2)\quad C = \quad QR$$

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(3.14 x Dy x Dz x u)

For rural landscape conditions:

(3) $Dy = 0.04 \times d \times (1 + 0.0001 \times d)^{-1/2}$

(4) $Dz = 0.016 \times d \times (1 + 0.0003 \times d)^{-1}$

For urban landscape conditions:

(5) $Dy = 0.11 \times d \times (1 + 0.0004 \times d)^{-1/2}$

(6) $Dz = 0.08 \times d \times (1 + 0.00015 \times d)^{-1/2}$

C - Airborne concentration, g/m^3
QR* - Quantity of material released, g/s
Dy - Horizontal dispersion deviation, m
Dz - Vertical dispersion deviation, m
u - Wind speed, m/s
d** - Downwind distance, m

* Units are different than formula (1).
** The formula restraint is 100 - 10,000 meter distance from the release point.

3. EQUATION FOR ESTIMATION OF DISTANCE TO 1 PSI OVERPRESSURE FOR VAPOR CLOUD EXPLOSIONS

Equation 7, from reference 8.2, is used to determine the "consequence distance" to an overpressure of 1 psi.

(7) D = 17 x (0.1 x Wf x HCf /HC TNT)1/3

D - Distance to overpressure of 1 psi (meters)
W_f - Weight of flammable substance (kilograms or pounds/2.2)
HC_f - Heat of combustion of flammable substance (kilojoules per kilogram)
HC_{TNT} - Heat of combustion of trinitrotoluene (TNT) (4,680 kilojoules per kilogram).

Reference 8.2 identifies that the factor 17 is a constant for damages associated with 1.0 psi overpressures and the factor 0.1 represents an explosion efficiency of 10 percent. Heat of combustion values are listed in appendix C of reference 8.2 for numerous substances.

O.12.193 Please see response to comment O.12.27.

O.12.194 Please see response to comment L.4.34.

O.12.195 Please see response to comment O.12.25.

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O.12.196	Please see response to comment L.4.37. In addition, with regard to the fire scenario, as is described in the response to L.4.39, the derivation of the source term is presented in Appendix F, section 2.0. With regard to the spill scenario, the derivation of the source term is presented in Appendix F, section 2.0 as well.
O.12.197	See responses to comments to L.4.36, O.12.49, and O.12.53.
O.12.198	Your comments are noted and are included in the Final EIS.
O.12.199	Current levels of TAC emissions from NASNI and their impact to the public are evaluated through the AB2588 process. Since the completion of most recent health risk assessment for NASNI in 1993, emissions of HAPs have decreased from the facility, especially in regard to the reduction of hexavalent chromium from painting operations. As a result, the public health risk from NASNI has decreased since 1993. A summary of the 1997 TAC emissions from NASNI has been included in Section 3.10, Volume 3 of the Final EIS. As mentioned in the response to comment O.12.104, TAC emissions from the proposed dredging and disposal actions at NASNI would produce insignificant health impacts to the public. As stated in the response to comment O.12.136, the cumulative impact of toxic emissions from the proposed dredging and disposal activities and existing operations at NASNI would be insignificant.
O.12.200	Please see responses to comments O.12.33 and O.12.81. In addition, issues pertaining to DTSC approval of the NASNI MWSF permit are beyond the scope of this EIS. However the full text of the permit condition is quoted as follows: "Within 24 hours of a hazardous substance release, the DMF Radiological Control Office will call DTSC and notify them of the incident. A written follow-up report, which contains the information recorded at the time of the initial notification by the Emergency Coordinator, as well as information required under 22 CCR 66264.56(j), will be forwarded to DTSC by the DMF Radiological Control Office within 15 days." Thus the notification is made to DTSC within 24 hours and paperwork is submitted within 15 days.
O.12.201	Please see response to comment O.12.73.
O.12.202	As described in response L.4.36, further emergency planning and emergency response actions beyond those already implemented by the Navy, including perimeter monitoring or siren warning systems, are not technically necessary for NNPP operations. As such, they are not included as projects to support the proposed action.
O.12.203	Please see response to comment O.12.78.

Comment Number	Response
O.12.204	See responses to comments O.10.28 and O.12.69.
O.12.205	As a response to EPA's comments (F.3.13, F.3.15-16) on this draft EIS, the Navy has added statements in sections 3.15, 4.15, 5.15, and 6.15 of the EIS that delineate Navy programs that are designed to reduce the amount of hazardous materials and waste used and generated by the Navy. In addition, since radiological impacts from the proposed action would not be significant, no further actions regarding minimizing the amount of radioactive materials used are deemed necessary.
O.12.206	Please see response to comment O.12.109.
O.12.207	Please see responses to comments O.12.33 and O.12.73.
O.12.208	The California Department of Toxic Substances Control agreed with the Site 1 Shoreline Sediments Remedial Investigation findings and the Navy's conclusion that no additional sampling is necessary at Outfalls 3-8. Outfall 8 is located closest to the proposed dredge footprint for the P-700A Berthing Wharf. The outer edge of the outfall 8 study area is approximately 1000 feet away from the dredge footprint. The planned dredging will be outside the Site 1 Shoreline Sediment area.
O.12.209	Outfall 16 is located 1.5 miles away, on the Pacific Ocean side of North Island, and is not significant to this proposed action.
O.12.210	Please see the response to comment O.12.208.
O.12.211	Please see the response to comment O.12.208.
O.12.212	Please see the response to comment O.12.208.
O.12.213	Please see the response to comment O.12.208.
O.12.214	Please see the response to comment O.12.208.
O.12.215	Please see the response to comment O.12.208.
O.12.216	Please see responses to comments O.12.33 through O.12.47.

THE PEACE RESOURCE CENTER OF SAN DIEGO

...working for peace, social justice and the environment since 1980

November 12, 1998

Mr. John Coon, Project Manager
Southwest Division, Naval Facilities Engineering Command
Code 05AL-JC
1220 Pacific Highway
San Diego, CA 92132

Re: Draft Environmental Impact Statement (DEIS) for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet

Dear Mr. Coon,

O.13

The Peace Resource Center of San Diego (PRC) wishes to go on record stating that in reference to the above cited DEIS, we fully endorse and are in agreement with the comment letter submitted to you on this issue by the Environmental Health Coalition and request that you fully respond to all questions and issues put forward by them. We likewise refer you to the letter on this issue from the City Of Coronado and request that you fully address all issues and questions raised by them. O.13.1

We also enter into record that we find this document to be not only be deficient in meeting NEPA requirements, but to be even more deficient in meeting CEQA requirements, particularly in that it does not include growth inducing impacts and does not include required mitigation. O.13.2

We additionally state for the record that in spite of repeated letters and public testimony, the Navy has failed to address the cumulative impacts of the entire project. Segmentation of the project and partial analysis has produced an inadequate and seriously flawed DEIS that should be declared null and void. O.13.3

We also wish to point out that the legitimacy of the DEIS is called into question by the ways in which the Navy has undermined the public participation process. O.13.4

Because we are adding our comments to those of EHC, we will not go into full detail here about all the flaws we found in the DEIS, but refer you to their letter. We do, however, wish to add the following comments on issues of particular concern to us so that these issues may be addressed in the Final EIS.

5717 Lindo Paseo, San Diego, California 92115
Phone: (619) 265-0730 Fax: (619) 265-0791
e-mail: prcsandiego@igc.apc.org

I. <u>PUBLIC PARTICIPATION PROCESS HAS BEEN INADEQUATE AND UNDERMINED</u>

a. PRE-DETERMINED DECISION MADE A FARCE OF PUBLIC PARTICIPATION O.13.5

The decision to place three CVN's in San Diego was made long before the EIS process was undertaken. An article in the <u>San Diego Union Tribune</u>, as early as January 7, 1990, states that "The navy plans to convert its piers at North Island to accommodate nuclear-powered aircraft carriers, in a move to keep carriers based in San Diego well into the next century." The article further states that "Through not finalized by Navy Secretary H. Lawrence Garrett, a plan outlining the North Island pier conversion has already been put into action."

While we don't know what happened to that initiative, documents obtained as part of the Administrative Record for Civil Case #96-0947-BTM(CM)(Admin Rec.) make it quite clear that in 1994 a decision to homeport a total of three nuclear carriers and build related facilities in San Diego was again on the table. Document #047026 from Cdrs. R.T. Evans and D.K. Lynn outlines the CNO's intention to home port three CVNs in San Diego and goes on to outline a discussion of strategies to deal with the EIS process. The document states that "...At issue was the requirement to address all feasible alternative sites for home porting of the ships, despite CNO's already-made decision of where they would go. A study involving all 'feasible' sites . . . promised to be time intensive and its completion would have likely delayed the EIS to the point where it would impact the critical path of home porting projects which lead up to arrival of STENNIS in Aug. 98."

In light of these concerns, the Navy then decided to retract a previous NOI for up to three carriers and to issue a new NOI modifying the wording in the EIS to state that San Diego was being studied pursuant to the 1993 BRAC decision to re-locate two CVNs to fleet concentrations in San Diego and the Pacific Northwest.

I reiterate this history to demonstrate that **a decision was <u>purposefully</u> made to segment the project and that an expensive, time-consuming and ultimately inadequate process was undertaken for what was a pre-determined decision.** Putting the public through the dog and pony show of an EIS process for a pre determined decision makes a travesty of public participation, wastes taxpayer money, undermines the Navy's credibility and calls into question the legitimacy of the EIS process for CVN homeporting.

Please state in the FEIS why the project was segmented and how the Navy intends to address this inadequacy. Please explain what impact the public participation process and EIS process can have on a decision that has been pre-determined.

b. REGIONAL PARTICIPATION WAS NOT SUPPORTED EARLIER IN PUBLIC INPUT PROCESS. The issue of homeporting nuclear carriers in San O.13.6

Diego harbor has implications for the region, not just for Coronado. The failure of the Navy to hold public hearings in San Diego before October 1998 calls into question the legitimacy of the public input process to date. We believe the Navy has purposely portrayed the homeporting issue as a "Coronado-issue" and has minimized, or simply avoided, any analysis of regional impacts. By "localizing" the issue, the Navy has limited public participation and thus undermined the public input process as guaranteed by law. O.13.6

c. ADEQUATE TIME FOR DEIS COMMENT SHOULD BE PROVIDED FROM THE BEGINNING OF THE PROCESS. While we appreciate the Navy's extension of the comment period on this DEIS, we must point out that not allowing for adequate comment time on such a massive document **from the beginning** adversely affected public participation by forcing some people to drop out of the process because they did not believe they could attend the first set of public hearings nor adequately comment in writing by the deadline. When they later learned that the dates had been changed and the comment period extended, valuable time that they could have spent analyzing the document had been lost. O.13.7

Please state how much it cost to produce and distribute the DEIS, including the costs incurred with extending the comment time and rescheduling the public hearings. Please state the cost of producing and distributing the FEIS.

Please ensure that an adequate time for responding to the FEIS is established from the beginning.

O.13

d. PUBLIC HEARING DATE CHANGES CREATED PUBLIC CONFUSION. Changing the dates of the public hearings created confusion, particularly as some people scheduled their time to attend the first publicized dates, then later found out that the date had been moved to a time they could not make. Please note that our organization supported the date change, particularly since the initial hearing fell on a religious holiday. We believe, however, that this situation could have been avoided ahead of time with a little forethought. O.13.8

e. DIFFICULTIES EXPERIENCED IN OBTAINING COPIES OF DEIS REDUCED TIME FOR PUBLIC TO REVIEW THE DOCUMENT. As I stated in a letter to you on September 10, 1998: "...it has been reported to me that there have been difficulties experienced by both individual citizens and organizations in obtaining copies of the DEIS in a timely manner. A <u>single</u> copy for my organization, for example, was sent to the Environmental Health Coalition office, an action which required me to make a twenty-mile round-trip to pick it up. This was in spite of a phone conversation with your office earlier this year in which I requested two copies for my organization and was assured that I would receive them <u>and</u> a follow-up letter to your office (on my organizational letterhead with our address) restating my understanding that the Peace Resource Center would receive two copies. Distribution problems add to the burden of analyzing the document within the current deadline and put the O.13.9

entire public review process in jeopardy by undermining the public's ability to comment." I should not have had to "run down" my organization's copy and my experience causes me to ask how many others encountered similar problems. O.13.9

Additionally, I am aware of at least one physician who had to convince the Navy to provide her with a copy, after initially being told to read it at the library. The Navy must take into account that busy professionals are not always in a position to spend hours in a library reading such a large document. At the same time, I am aware that a copy was readily received via Express Mail by an interested party in Japan. There seemed to be no unified criteria for receiving copies of the DEIS. The public should not have to waste this kind of time obtaining copies of public documents, particularly if the Navy is sincere about wanting meaningful, thoughtful public comment.

The FEIS should be in peoples' hands the day the comment period starts.

f. SAN DIEGO PUBLIC HEARING LOCATION WAS INADEQUATE. While it is admittedly difficult to predict attendance at events, the fact that the Navy did not have a backup plan for what to do in case of a crowd larger than the room provided was a deterrent to public participation. The room was filled to overflow and some people were accommodated in the balcony. However, many people were stuck out in the hall and unable to hear either the testimony or their names when called. How many people left because of their frustration over the hearing logistics? I asked one Navy representative how people who had handed in speaker request slips would be able to approach the microphone if they had to sit in the balcony and was told that they would have to be "in the room to speak," something that was clearly not possible for all. I have attended many Board of Supervisors meetings and there has always been an "overflow room" with television and sound provided directly across the hall. (I should note also having people sit on the floor and block the aisles would never be allowed at a County Board of Supervisors meeting due to the fire hazard.) O.13.10

I was also shocked to arrive at the hearing location and discover that only one set of outside doors is kept open at night. This was not publicized ahead of time and people may have left or become discouraged after trying various locked doors. We were told by the security guard at the County Building that he would open that ONE door for people WHEN he was able to be there and that people would have to just wait. We ended up sending our own volunteers down to explain the situation and open the locked doors for people.

If the Navy is serious about public participation, then making public participation "user-friendly" is a necessity; in the case of obtaining this DEIS and attending the public hearing, the public had to be quite persistent in order to participate.

g. **INFORMATION NOT PROVIDED IN SPANISH**. It is unconscionable that the DEIS was not translated into Spanish, nor was Spanish translation made available at the public hearing. San Diego is home to a large Spanish-speaking population; cutting them out of the public participation process undermines the credibility of the entire process. O.13.11

h. **INFORMATION PRESENTED AT PUBLIC HEARINGS WAS PROPAGANDA, NOT FACTS**. The presentation by the NPP representative was disingenuous and insulting to the public's intelligence. The Navy continues to present generalizations about its safety record and the strategic necessity of CVNs. These kinds of presentations undermine the Navy's credibility with the public. O.13.12

Our disagreement with the Navy regarding its accident record is outlined in EHC's DEIS comment letter. It is misleading for the Navy to continue to cite its years of safe reactor operations and to deny that there has ever been an accident. We ask that the FEIS define what constitutes a "significant" accident and that it provide full information about each of the "accidents" or "incidents" cited by Environmental Health Coalition and state why each was not considered to be an accident by the Navy. Since the Navy does not consider these to be accidents, please also include information as to what the Navy calls each of these incidents and what criteria it uses in classifying them.

O.13

The beginning and conclusion of the slide show presented at the public hearing are quite indicative of the problem. We will credit the opening slide, which stated "90,000 tons of diplomacy: anytime, anywhere" with being honest about the purpose of CVNs. However, this type of presentation of the issue is an attempt to solicit support via an emotional appeal to patriotism. Opposing the homeporting of CVNs is not a question of support one way or another for one's country, but rather a question of finding the best way to protect community health and the environment. We also question attempts to portray military force or the threat of force and diplomacy as the same thing. Diplomacy is more than big guns, but rather a skillful conducting of relations among nations.

The concluding slide, showing cute fuzzy seals sunbathing on a submarine hull, is clearly designed to show us how innocuous nuclear-powered vessels are. This kind of portrayal minimizes justifiable public concerns and does nothing to address the very real problems related to nuclear-propulsion.

i. **DECISIONMAKERS HAVE NOT MADE THEMSELVES AVAILABLE TO HEAR PUBLIC TESTIMONY AND ANSWER QUESTIONS** O.13.13

Navy representatives at public hearings on this issue have not been people with decisionmaking powers over the project. We believe that democracy and public participation, particularly in the case of a project of this magnitude and impact, requires that the public have the opportunity to deal directly with the actual decisionmakers. We request that the Secretary of the Navy and

other relevant decisionmakers meet with the community about this project. O.13.13

II. CUMULATIVE IMPACTS NOT ADDRESSED O.13.14

We have consistently pointed out at hearings and in letters that the Navy has not addressed the issue of cumulative impacts from the full project. This pattern is repeated in this DEIS.

The Navy has consistently stated that these carriers are replacements for the CV's previously homeported in San Diego. In this case, not only must the **cumulative** impacts of CVN's be evaluated, but also the cumulative impacts of CV's. The FEIS should document and analyze the environmental impacts of CV's on San Diego Bay and compare these impacts with those of CVN's so that a true picture is given of the cumulative toxic burden of past operations and projected future cumulative environmental impacts.

III. ALTERNATIVE OF NO NUCLEAR CARRIERS NOT CONSIDERED O.13.15

Communities are being asked to accept CVNs without adequate analysis about whether CVNs are the best options available for national security needs. The assumption that CVNs are the only option available prejudices the final decision. The real question should be are they worth the risks to the community, not where will we put them.

The DEIS cites the Navy's rationale for "Nuclear Propulsion for Navy Ships" (7.1.2). However, a General Accounting Office (GAO) report released August 27, 1998 documented that nuclear-powered carriers offer no overwhelming military advantages when compared to conventionally powered carriers.

The chief criticism of nuclear carriers cited by the GAO report is that they are too expensive. The report states that: "Nuclear powered carriers cost more than conventionally powered carriers to acquire, operate and support, and inactivate. GAO estimates that over a 50-year life, the cost of a nuclear-powered carrier is about $8.1 billion, or about 57 percent more than a conventionally powered carrier. Historically, the acquisition cost for a nuclear-powered carrier has been double that of a conventionally powered carrier. Midlife modernization for nuclear-powered carriers is estimated to be almost three times as expensive as a conventionally powered carrier--about $2.5 billion versus $866 million (in fiscal 1997 dollars)." Note that these costs do not include the cost of storing for thousands of years the nuclear carrier's spent nuclear fuel after it has been refueled or decommissioned.

As to the Navy's support of CVNs because of their ability to steam almost indefinitely without needing to replenish propulsion fuels and their larger aircraft fuel and ordnance storage capacity, the report points out that the nuclear carrier is still tied to its battle group, which is made up of conventionally powered surface vessels and one or two nuclear-powered fast attack submarines. Because of the CVN's need for periodic supply of aviation fuel, ordnance and other supplies, it remains dependent on its battle group which cannot travel as fast at the CVN. The CVN also relies on its support group for tactical battle protection and thus needs to remain within proximity of the battle group. O.13.15

As to the claim that CVNs can get to crisis areas faster, the GAO report points out that a nuclear carrier only saves two hours on a trip to the Mediterranean from the East Coast of the U.S. and six hours from the Pacific to the Persian Gulf. While it is true that a CVNs ability to accelerate faster could enable it to respond quickly if conditions affecting the recovery of landing aircraft suddenly change, the Navy could not provide any example where an aircraft was lost because a conventionally powered carrier could not accelerate in sufficient time.

The Navy originally pursued a strategy of an all nuclear battle group, but stopped building all other nuclear-powered surface vessels after 1975 because of the high cost and length of maintenance periods. Additionally, in recent years most of the remaining nuclear-powered surface vessels have been decommissioned early because they were not cost-effective to operate and maintain.

O.13

The report states that "...GAO found that both types of carriers share many of the same characteristics and capabilities, that they are employed interchangeably, and that each carrier type possesses certain advantages. GAO also found that both types of carriers have demonstrated that each can meet the requirements of the national military strategy. GAO's analysis shows that conventionally powered carriers can meet that strategy at a significantly lower life-cycle cost."

Not analyzed in the GAO's critique, but certainly germane to CVN homeporting are the costs to public health and the environment from putting communities at risk of both a nuclear accident and from on-going nuclear operations.

The GAO analysis is an important piece of information for communities faced with nuclear homeporting. Since the DEIS states the Navy's point of view of the efficacy of CVNs, the alternative analysis offered by the GAO report should be included and considered in the FEIS. Additionally, since national security needs can clearly be met with CVs, a return to an all conventionally powered carrier force should be analyzed as one of the mitigations for CVN impacts.

IV. RADIOLOGICAL IMPACTS INADEQUATELY ASSESSED O.13.16

Appendix E, Information on Radiation Exposure and Risk, continues the Navy's pattern of presenting partial, misleading information.

I refer you to the remarks made in comment letters from the

Institute for Energy and Environmental Research and from Dr. David Richardson from the Department of Epidemiology at the University of North Carolina which are appended to this letter and request that you respond to their analysis in the FEIS. O.13.16

I would like to specifically call attention to Dr. Richardson's comment that the literature review cited in Appendix E of the DEIS is almost entirely about health effects of external exposure to penetrating ionizing radiation. He points out that "The significance of radionuclide exposures occurs when they are ingested, inhaled, or enter the skin through cuts and abrasions."

Please analyze these types of exposures, their likelihood, and effects in the FEIS.

Dr. Richardson cites a number of studies not listed in the DEIS. Were these studies considered and dismissed? If this was the case, please state the reasons for not incorporating the information into the DEIS analysis. If these studies were not reviewed for the DEIS, please include a review and analysis in the FEIS.

We take particular exception to the handling of the issue of Low Level Radiation in Section 9.0, Low-Level Radiation Controversy. O.13.17

The document states that "In low-level radiation, as in other areas, a very effective way to frighten people is to claim that no one knows what the effects are. This has been repeated so often that is has almost become an article of faith that no one knows the effects of low-level radiation on humans. The critics are able to make this statement because, as discussed above, human studies of low-level radiation exposure are unable to be conclusive as to whether or not an effect exists in the exposed groups, because of the extremely low incidence of an effect. Therefore, assumptions are needed regarding extrapolation from high-dose groups. The reason low dose studies are not able to be conclusive is because the risk, if it exists at these low levels, is too small to be seen in the presence of all the other risks of life. The fact that a controversy exists is evidence that the radiation risk if very small."

This is a trivialization of a very important scientific issue. The fact that all the effects of LLR are not known is not evidence that they do not exist, but rather points to the need for further study and analysis. For example, in a discussion about the controversy over low-dose ionizing radiation in <u>Dead Reckoning: A Critical Review of the Department of Energy's Epidemiologic Research</u> by the Physicians for Social Responsibility it is noted in reference to the linear relationships to excess cancer risk demonstrated in the Hiroshima and Nagasaki Survivors that: "Whether this same linear dose-response relationship applies to low doses of radiation (less than 10 rem) accumulating over time--the most common pattern among exposed nuclear plant workers--is a matter of intense scientific controversy, one that has been argued for several decades. Resolving this controversy definitively through empirical study will require further observations on very large exposed populations over long periods of time." O.13.17

It is further noted that: "This controversy is anything but remote, academic and of interest only to small groups of scientists. At stake are the decisions taken by all the official national and international groups charged with the responsibility for the determination of acceptable worker and general populations exposure levels--the U.S. National Council on Radiation Protection and Measurements, the United Nations Scientific Committee on the Effects of Atomic Radiation, the International Council on Radiation Protection, the International Association for Research on Cancer, and the Committee on the Biological Effects of Ionizing Radiation (BEIR V) of the National Academy of Sciences." O.13.18

And, "Any decision on dose-response relationships that raised the officially designated risk of low-dose exposures might require immediate change in permissible exposure levels for workers and the general public. That would have potentially enormous consequences in the costs of containment, personal protection and environmental constraints, for the nuclear weapons production industry, the nuclear power industry, the defense establishments of nuclear powers, and related commercial interests-groups that are, in the words of one involved scientist, 'the seat of immense economic and political power.'" We would add that this evaluation likewise applies to the Navy's Nuclear Propulsion Program. O.13.19

O.13

This document demonstrates that raising the issue of LLR effects by groups like mine is not a technique to "frighten people," but an attempt to bring forward information that is of vital concern. It also demonstrates that there is a powerful, vested interest on the part of some involved parties in minimizing LLR impacts. O.13.20

For further documentation on this issue I call your attention additionally to two books by Jay M. Gould, The Enemy Within: The High Cost of Living Near Nuclear Reactors--Breast Cancer, AIDS, Low Birthweights, and other Radiation-Induced Immune Deficiency Effects and Deadly Deceit: Low Level Radiation High Level Cover-Up, which provide an important discussion of LLR effects. O.13.21

Please include an analysis of all the above cited references in the FEIS and revise the FEIS to include a full discussion of the low level radiation controversy.

Furthermore, uncertainty or controversy over the interpretation of data is not cause for dismissal of risks. One of the reasons for scientific uncertainty in this case is because not enough observations have been made to provide a more definitive answer. In fact, studies not considered in the DEIS strongly suggest that the studies to date have not considered a large enough population. O.13.22

Statements in the DEIS's statement such as, "The fact that a controversy exists is evidence that the radiation risk is very small" demonstrate poor logical analysis and a shoddy handling of scientific data. The question that one could ask in response is, of course, "Please cite the scientific, statistical **evidence** linking controversy to reduced health effect risks from LLR"--a question that obviously has no answer. O.13.23

It is our belief that in the face of this controversy, which has serious implications for health and safety, the policy of prudency, that is, not risking radiation exposures until a more reasoned judgment can be made, should be the policy in effect.

Additional questions and concerns:

1. The health risk analysis is for yearly exposures. Please explain why they were analyzed in this way when evidence shows that exposures over time may pose health consequences. Please analyze the health risks for lifetime risk.

2. Radiation disproportionately affects children, the elderly and the ill. Most radiation studies have reflected healthy populations of adults. As researcher after researcher pointed out at a September symposium on low level radiation held at the New York Academy of Medicine, worker cohorts may self-select for healthy workers and atomic bomb survivors may be more genetically healthy and not necessarily reflective of the entire exposed population. Please analysis the health risks over lifetime for children, the elderly, and those with existing health problems. O.13.24

3. Now that local shipyards have been purchased by companies certified for nuclear repair work, how much local shipyard nuclear repair work associated with CVN homeporting and visiting CVNs can be expected? What are the health risks associated with this activity? O.13.25

4. The DEIS continues to focus on cancer deaths. Please analyze other non-fatal health effects document in the above cited studies and books and their lifetime risk probability. O.13.26

5. The DEIS states in regard to a nuclear accident that "Sufficient time exists to support safe movement in the unlikely event of such an occurrence." (DEIS 7.1.4, page 7-5, lines 1 and 2). Please state the time needed to move a CVN, taking into account types of accidents and their effect on carrier mobility. Please indicate if the carrier can be moved at any time or what special conditions, such as tide, availability of sufficient crew, etc. might affect the time needed. O.13.27

6. The DEIS states that there is a minimal risk of accidents, particularly when in port. Two justifications are given: (1) that a CVN reactor is rated at only a fraction of the power of a commercial nuclear power plant and (2) reactors are normally shut down or operating at very low power levels when moored in port. (DEIS 7.2.1, page 7-6, lines 14-20.) The FEIS should state what O.13.28

these "fractions" are. The word "fractions" implies something very small, when in fact, operating at 20% (per reactor) of a commercial nuclear power plant rating is not an inconsiderable level. Please state how often and at what specific power levels CVNs operate when in port. O.13.28

Civilian reactors operate under stringent regulations concerning distance from homes and must have community emergency plans which have been made available to the public. Please state why military reactors should be exempt from these regulations.

O.13.29 7. The DEIS compares CVN radiation to background radiation. (DEIS 7.2, page 7-6, lines 10-11). Comparing risk from naval nuclear operations with "background" radiation is mixing apples and oranges. Normal background radiation has always been a human health risk. The dangers of low level radioactivity from manufactured fission products are relatively new. Risks that unavoidable are quite different from those imposed on a population as the result of what is essentially a policy decision. Please provide information about background radiation, levels and sources for comparisons cited in the DEIS.

O.13.30 8. The attached paper by Dr. Daniel Kripke outlines problems associated with sleep deprivation and the impact that this had on the 1996 mercury accident aboard the Navy's deep submergence rescue vehicle Mystic. Please provide information in the FEIS about nuclear propulsion workers' duty schedules and analyze those schedules in light of Dr. Kripke's comments and the possibility of an accident with a naval reactor.

O.13

O.13.31 9. The referenced letter from Ms. Camille Sears and submitted with Environmental Health Coalition's DEIS comment letter outlines problems with the DEIS Health and safety assessments. Please respond to Ms. Sears comments and reassess the project analysis and include the studies cited by her.

O.13.32

V. PUBLIC NOT PROTECTED BY LACK OF EMERGENCY PLANNING

We refer you to EHC's letter which outlines in detail our concerns over the lack of emergency planning, particularly as it relates to the public in surrounding communities.

We reiterate the request we have made in other documents and at public hearings to provide the community with an emergency plan that will be used in the event of a nuclear accident. Please release the Local Instruction for Nuclear Reactor and Radiological Accident Procedures for Naval Nuclear Propulsion Plants so that the public can assess the plans and decide whether they are adequate.

It was learned this August by a Channel 10 reporter that potassium iodide (KI) is stored on board the Stennis for use in the event of an accident. Is KI routinely stored on all nuclear ships? Is it stored on naval bases for navy personnel, civilian workers, and navy families? Under what circumstances would the

KI be distributed on board or at the base? O.13.32

KI is routinely provided for civilian populations near naval nuclear bases and shipyards in Great Britain. Why is this not the case in the United States?

O.13.33

CONCLUSION

Our basic position is that the DEIS has so many flaws, inconsistencies, inaccuracies and logical faults that trying to correct it with a FEIS is an effort in futility. The nuclear homeporting project will change the face of San Diego for years to come. The community deserves a document that will provide it with the information it needs to make an informed decision about the entire project. To achieve this, the Navy should be required to issue a new DEIS.

Sincerely,

Carol Jahnkow
Executive Director
Peace Resource Center of San Diego

Attachments:

October 7, 1998 letter to Laura Hunter from Dr. David Richardson, Department of Epidemiology, School of Public Health, University of North Carolina, Chapel Hill, NC

November 10, 1998 letter to Laura Hunter from Bernd Franke and Arjun Makhijani, Ph.D., Institute for Energy and Environmental Research

November 10, 1998 letter to Laura Hunter from Camille Sears, independent consultant

San Diego Union-Tribune, "Plans made for berthing N-carriers; Navy to begin changeover at North Island Piers" January 7, 1990.

"Sleepiness and Accidents," presentation by Daniel F. Kripke, M.D. to September 10, 1998 harbor Safety meeting of the State Lands Commission

Referenced:

City of Coronado DEIS comment letter,

Environmental Health Coalition DEIS comment letter, November 12, 1998

Deadly Deceit: Low Level Radiation High Level Cover-Up, J.M. Gould and Goldman, B.A., Four Walls Eight Windows Press, New York, 1991.

Dead Reckoning: A Critical Review of the Department of Energy's Epidemiologic Research, Physicians for Social Responsibility, Physicians Task Force on the Health Risks of Nuclear Weapons Production, Washington, DC, 1992.

The Enemy Within: The High Cost of Living Near Nuclear Reactors, Breast Cancer, AIDS, Low Birthweights, and other Radiation-Induced Immune Deficiency Effects, Jay M. Gould, Four Walls Eight Windows Press, New York, 1996.

Navy Aircraft Carriers: Cost-Effectiveness of Conventionally and Nuclear Powered Carriers, GAO/NSIAD 98-1, August 1998, General Accounting Office.

O.13

The following was previously received and has been identified as an attachment to comment letter O.12 from Environmental Health Coalition:

- Comments of Dr. David Richardson, Department of Epidemiology, School of Public Health, University of North Carolina, Chapel Hill, NC.
- Letter by Camille Sears to Ms. Laura Hunter, Environmental Health Coalition, November 10, 1998.
- "Sleepiness and Accidents," presentation by Daniel F. Kripke, M.D. to Harbor Safety Meeting of the State Lands Commission, September 10, 1998.

This information was resubmitted by the Peace Resource Center as part of their attachment.

ieer

INSTITUTE FOR ENERGY AND ENVIRONMENTAL RESEARCH

Washington, D.C. office
6935 Laurel Avenue
Takoma Park, MD 20912
Phone (301) 270-6500
FAX: (301) 270-3029
e-mail: ieer@ieer.org
http://www.ieer.org

DRAFT via fax 619-232-3670 (5 pages)

November 10, 1998

Ms. Laura Hunter
O.13 Environmental Health Coalition
1717 Kettner Blvd., Suite 100
San Diego, CA 92101

Draft Environmental Impact Statement for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers In Support of the U.S. Pacific Fleet by the Department of the Navy

Dear Laura:

We have reviewed the radiological impacts of the operations described in the above Draft EIS. The focus of our review was: O.13.34
Chapter 7 (Radiological Aspects of Nimitz-Class Aircraft Carrier Homeporting)
Appendix E (Information on Radiation Exposure and Risk)
Appendix F (Detailed Analyses of Normal Operations and Accident Conditions for radiological Support Facilities)

We are have organized our review into five sections:
general comments
normal operations
hypothetical accidents
other comments
conclusions and recommendations

Normal Operations O.13.34

Source term

The Draft EIS presents an estimate of radionuclide emissions from routine operations. The source term for the release is summarized on page F-15 which no supporting documentation given. It is therefore not possible to verify its accuracy. We were only able to review the internal consistency of the data.

Predicted doses and risks

Table F-7 contains the results of the dose calculations for three scenarios: (a) a worker located 100 m from the release point (Worker), (b) the maximum exposed off-site individual (MOI), and (c) the nearest public access individual (NPA).

For the NANSI, the EDE doses are reported as follows:

Worker:	1.3 mrem
NPA:	0.19 mrem
MOI:	0.1 mrem

The annual risk of latent fatal cancer to the MOI is calculated to be 1 in 19 million (5.1×10^{-8}) which, at 70 years of exposure, translates into a lifetime risk of 3.5×10^{-6}.

The Draft EIS does not provide the information to allow us to verify the calculations, since crucial input data such as the release height, and the geographic location of the NPA and MOI are not provided. Using the source term data on page F-15 and the San Diego Lindbergh Field meteorological data, IEER used CAP88PC to determine the doses from a ground-level release as a function of distance. The highest exposures were calculated for wind direction to the South, towards the City of Coronado. The calculated doses are listed in the table below. The individual lifetime risk exceeds 1 in 10,000 for distances of 200 m or less and thus two orders of magnitude larger than the risk calculated in the Draft EIS.

Distance	EDE, mrem/yr 100% local food	Individual Lifetime Risk (deaths)
100 m	28	6.9E-4
200 m	7.7	1.9E-4
300 m	3.6	8.8E-5
500 m	1.4	3.4E-5
1,000 m	0.37	9.2E-6

It is evident that the distance between the release point and the receptor is crucial in determining the total dose. Since aircraft carriers are moving sources, it is not conservative to assume that the releases occur only at the CVN berthing sites. The distance between the point of the releases and the closest resident can therefore be closer than the ~1000 m which may be implied from Figure 2-2 on page 2-7. In addition, the calculations imply that the annual source term is evenly distributed over the entire year. The Draft EIS does not contain any information as to the distribution of the source term over time. If a substantial portion of the annual release occurs over a short time period, radiation doses to individuals in the downwind direction would be much larger compared to the same release distributed evenly over the year.

In light of these uncertainties, it is therefore conceivable that the individual lifetime cancer risk from

normal operations could exceed 1 in 10,000. A detailed evaluation of uncertainties is warranted. This evaluation should focus on O.13.34
uncertainties in the magnitude of the radionuclide source term,
distribution of source term over time,
uncertainties in the geographic location of the releases,
uncertainties in meteorological models,
uncertainties in pathway and dosimetric models, and
uncertainties in the dose-risk relationship.
Unless such a detailed analysis is performed and supported by credible data, the claim that the additional individual risk of a latent fatal cancer is very low is not adequately supported. This aspect of the Draft EIS is therefore seriously deficient from the scientific point of view.

Another serious problem is that the Draft EIS does not mention non-cancer risks. The source term on page F-15 lists a routine emission of one curie of tritium per year. Tritium in the form of tritiated water crosses the placenta, and hence can affected developing fetuses. The risks of birth defects and miscarriages as a result of fetal exposures due to routine releases of tritium in the form of tritiated water vapor should be evaluated.

Hypothetical Accidents

The evaluation of the consequences of hypothetical accidents is limited to accidents at support facilities. Only two types of accidents are considered:
a fire in a radiological support facility, and
a spill into surrounding waters of radioactive liquid from a collection facility.

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The non-classified Draft EIS does not address some of the accidents that may occur while the aircraft carriers are in the homeport. A list of credible accidents would include
reactor accidents onboard the Nimitz class carriers,
other accidents involving the release of radioactive materials onboard of the ship,

On page 7-19, the Draft EIS refers to Appendix D for a discussion of reactor accidents. However, Appendix D is classified in its entirety. It is therefore not possible for us to make an evaluation of its contents. However, we note that the Draft EIS's own description of its conclusions is puzzling. It says that the analysis shows "that NIMITZ-class aircraft carriers can be operated safely" (page 7-19). A lot of things *can* be done safely. That is not the issue. The issue is the probability and consequences of various possible accidents.

At a time when the total amount of plutonium stored at various sites around the United States is unclassified, surely the EIS could reveal the estimated probabilities of various accidents, the basis for the calculation of those probabilities, and the maximum postulated accident consequences. While the Navy has acquired 4,900 years of reactor operating experience, this does not mean that a major reactor accident is impossible. The pressurized water reactor used in naval vessels can suffer a loss of coolant accident as well as other mishaps. It s only the probability of such an accident that is at issue. The accumulation of 4,900 years of reactor operating experience without a loss of coolant accident cannot allow the Navy to conclude that the accident probability if less than 1 in 10 million, the level of probability below which the navy did not evaluate accidents. The Draft EIS should have provided an analysis or at least the data on which its decision to exclude reactor accidents was based.

While the U.S. Navy acknowledges the risk of nuclear accidents other than the scenario described in the Draft EIS, there is no mention of severe accidents are in the document. As a matter of fact, a variety of accidents have occurred in nuclear submarines and ships where the accident consequences are likely to be much greater than for the two scenarios considered in the Draft EIS. An Internet search we conducted yielded a list of accidents that are not discussed in the Draft EIS. [1] We do not reproduce the list here because the limited resources available for this review did not permit a careful verification of the items listed there. The Final EIS should provide a complete list of such accidents and explain which ones are being used as the basis for the calculations in the EIS, which ones are being omitted, and why. If the information provided at http://www.nitehawk.com/alleycat/nukes.html is incorrect, the Final EIS should set the record straight and provide the appropriate data and explanations (or if official reports already exist, references to these reports). O.13.34

In contrast to the potential range of conceivable accident scenarios, the Draft EIS selectively limits the analysis to a relatively minor release of radionuclides in case of a fire or spill. The largest consequences were calculated for the fire scenario. Even this limited analysis is inadequate.

For the NANSI, the EDE doses for the fire scenario are reported as follows:

Worker:	0.6 rem
NPA:	0.9 rem
MOI:	0.2 rem

More than 95% of the calculated dose is due to cobalt-60 which deposits on the ground and results in external exposures due to gamma radiation. The Draft EIS claims that the meteorological data represents 95 percent condition which is defined as that condition that is not exceeded more than 5 percent of the time.

As is the case in the assessment of normal operations, the Draft EIS does not contain the essential data that is necessary to verify such a claim. The Draft EIS does not indicate the geographic location of the NPA and MOI as well as the meteorological analysis that was apparently performed.

In the case of a 1 Ci release of Co-60, the crucial parameters in determining dose are:
the dispersion coefficient,
the deposition velocity, and
the length of exposure after initial deposition.

If an unfavorable dispersion situation occurs during a 1 Ci release, the dispersion coefficient χ/Q can be expected to be of $\sim 1 \cdot 10^{-4}$ s/m^3. Another unfavorable situation would be a high deposition velocity due to rainfall at the time of the accident resulting in a deposition velocity of 0.1 m/s. Under such circumstances, the cumulative dose would be ~2 rem during the first year and ~16 rem over 20 years following the accident. Thus, even for the scenario selected in the Draft EIS, doses could be one or two magnitudes larger than the one calculated in the Draft EIS for the MOI. The discrepancy in the dose estimates indicates the need to conduct a through uncertainty assessment be performed for accidental releases as well. This evaluation should focus on
the range of potential accidents on board of the aircraft carriers as well as in support facilities,
the uncertainties in the magnitude of the radionuclide source term in case of accidents,

[1] See the Internet site:
http://www.nitehawk.com/alleycat/nukes.html

uncertainties in the geographic location of the releases,
uncertainties in meteorological models,
uncertainties in pathway and dosimetric models, and
uncertainties in the dose-risk relationship.

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Radiation Doses to Workers

O.13.34

The Draft EIS does not address radiation exposures to workers less than 100 m of the point of the release. This is an arbitrary assumption since it is likely that workers are located closer than 100 m. The Draft EIS is thus incomplete because the impact of the operations on workers is not adequately addressed.

The Draft EIS provides some data on worker exposure in the NNPP. However, it appears that this is external exposure data only. Doses from internal burdens of radionuclides seem to have been excluded. If internal doses have been included, the Final EIS should so state, and discuss how the measurements were done and records maintained. If internal doses were not included, then the Final EIS should so state. It should discuss why these doses have been omitted and analyze the basis for its claims regarding compliance with dose limits.

Other comments

The discussion in the Draft EIS about the naval reactor program is misleading as to its overall environmental impact. While many aspects of the program do not directly impact homeporting, the Draft EIS makes mention of some of them selectively, while omitting others. Specifically, impacts related to uranium mining, processing, enrichment, reprocessing of irradiated reactor fuel (which creates highly radioactive liquid wastes, some of which are still stored in liquid form Idaho, "low-level" radioactive solid and liquid wastes, and gaseous radioactivity emissions), and reactor decommissioning wastes. These impacts are cumulatively considerable. The EIS should either state that it is not considering impacts associated with naval reactors that occur at locations other than the proposed homeports, or it should provide a more complete picture of the most important aspects of such impacts.

Conclusions and recommendations

The Draft EIS lacks a comprehensive evaluation of radioactive emissions in normal operations and accidents. Crucial information necessary for a validation of the results is not provided. A proper analysis of the uncertainties associated with radiation exposures from routine operations is lacking. Potentially severe accidents on board of the aircraft carriers are not considered at all. The impact of releases of radioactive materials in routine operation and accidents on workers is incompletely addressed. Relevant non-cancer risks from releases of tritiated water vapor have note been discussed.

A preliminary check of some of the calculations using a standard EPA-approved dispersion model indicates that the Draft EIS may be seriously underestimating at least some of the doses. The Draft EIS therefore does not provide an adequate evaluation of the risks associated with the development of home port facilities for three NIMITZ-Class aircraft carriers. It contains serious scientific deficiencies that at the very least should e fully corrected in the Final EIS. A better alternative would be to provide a second Draft EIS for public comment with the appropriate data and more transparent calculations so that an independent check on the results can be performed.

Please feel free to contact us if you have any questions or comments.

Sincerely,

Bernd Franke

Arjun Makhijani, Ph.D.
President

DataCenter Information Services
464 19th Street, Oakland, CA 94612
tele:510/835-4692 fax:510/835-3017

The San Diego Union-Tribune

January 7, 1990, Sunday

SECTION: NEWS; Ed. 1,2, Pg. A-1

LENGTH: 1667 words

HEADLINE: Plans made for berthing N-carriers;
Navy to begin changeover at North Island piers

BYLINE: Burgess

BODY:

The Navy plans to convert its piers at North Island to accommodate nuclear-powered aircraft carriers, in a move to keep carriers based in San Diego well into the next century.

Only conventionally powered aircraft carriers can be berthed at the air station now.

Sources in the Pentagon and the U.S. Pacific Fleet have said San Diego stands to lose its carrier presence altogether unless the Navy refurbishes the North Island piers to service nuclear-powered carriers and develops a local source of skilled workers to maintain them.

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The change could mean millions of dollars in additional work for San Diego ship repair companies capable of working on nuclear reactors and the retention for San Diego's economy of millions of dollars in military salaries and contracts.

"We are concerned about the loss of the conventional carriers and recognize the need for nuclear-power capability at North Island," said Peter Litrenta, a vice president of the Greater San Diego Chamber of Commerce.

The conventional carriers based here are among the oldest in the Navy, including the Constellation, which is 29 years old; the Independence, 31; and the Ranger, 33. Two of the ships are scheduled to leave San Diego this year and the third could be eliminated by federal budget cuts, sources said.

Though not finalized by Navy Secretary H. Lawrence Garrett, a plan outlining the North Island pier conversion has already been put into action.

Navy civil engineering officials in San Diego will advertise for bids in May on the electrical portion of the project, estimated to cost $6.5 million, said Capt. David Schlesinger, commander of the southwest division of the Navy Facilities Engineering Command.

Cost estimates for the rest of the work were not available.

"We're concerned about losing some military construction projects next year, but not the North Island project. It's too far along now," Schlesinger said Friday. The Navy submits its budget proposal for 1991 in three weeks.

Word of the conversion has spurred speculation among ship repair executives that San Diego could become home to a nuclear-powered carrier within two years, possibly the Abraham Lincoln, which was commissioned in Norfolk, Va., recently. The carrier is due to be based at Alameda in the San Francisco Bay Area.

"We've been hearing that drumbeat for weeks now," said Art Wardwell, vice president of Continental Maritime, which in 1987 became the first shipyard here to achieve Navy certification to work on part of a carrier's reactor systems.

Garrett, who is vacationing in Hawaii, did not return calls for comment last week. Vice Adm. Jack Fetterman, commander of the Pacific Fleet's Naval Air Forces, would not comment for this story.

The pier conversion will almost certainly be challenged by environmental groups.

At the Greenpeace office in San Francisco, spokeswoman Karen Topakian warned against expanding the harbor's capacity for nuclear-powered vessels. Seventeen nuclear-powered submarines are based at Point Loma and two nuclear-powered cruisers are assigned to the San Diego Naval Station. Seventy-nine conventionally powered Navy ships call San Diego their home port.

"Up until now, we have fought primarily against nuclear weapons. But we already had planned to refocus our efforts in 1990 against nuclear-powered vessels or cities that accommodate these ships," said Topakian, who is the organization's spokeswoman on arms control and naval nuclear force reduction.

"We will fight this action by the Navy in San Diego," she said. "If you accommodate more nuclear-powered ships, you will build more nuclear-powered ships."

Greenpeace last year publicized seven spills of radioactive cooling water by Navy ships in three West Coast ports. Two incidents were in San Diego Bay, a 1979 spill of 13 gallons from the nuclear-powered cruiser Truxton and a 1980 spill of 30 gallons by the nuclear-powered submarine Gurnard.

Topakian conceded that the Navy's nuclear safety record would not be her group's primary target in fighting the Navy's San Diego plan.

"It's not just safety. It's the waste stream you create when you mine the uranium, build the reactor, operate it and then try to find some burial ground for the spent nuclear cores, which invariably are unwelcome everywhere."

For ship repair workers in San Diego, the Navy plan could not be more opportune.

The Constellation will be sent to the East Coast next month for a 28-month overhaul. And the Independence will depart within a year for Yokosuka, Japan, as the permanent replacement for the Midway in the Navy's 7th Fleet, Navy sources have confirmed. The Midway is to be decommissioned next January.

That will leave San Diego with just the Ranger, and it, too, could disappear from the North Island waterfront if budget pressures cause the Navy to reduce its carrier force to 12.

"We're looking at trying to work on more destroyers and cruisers," said David Bain, president of Pacific Ship Repair and Fabrication Inc., one of two yards here that work primarily on conventional carriers.

If the carrier force is cut this year or next, said a senior fleet official in Hawaii, the first two carriers to be retired certainly could be the Constellation and the Ranger, the only conventionally powered carriers on the West Coast that will not have completed a Service Life Extension overhaul, a Navy ship repair official said. The overhaul adds 15 years of service life a conventional carrier.

The Navy has six nuclear-powered and nine conventionally powered carriers in commission, with no conventional carriers in the pipeline.

"Nuclear carriers are much cheaper to operate," said a Pacific Fleet officer. "Even when you factor in the cost of refueling the radioactive cores every 10 years, it's half the cost to operate, compared to the fossil fuel-burners."

The economic impact of losing the Constellation and the Independence has city business leaders worried. With a crew of 3,017 sailors and 2,480 airmen, the Constellation injects $110 million into the area economy in salaries alone. The salary impact of the Independence, which carries 224 fewer sailors is, $105.5 million annually, according to Navy and San Diego Chamber of Commerce estimates.

Currently, when a nuclear-powered carrier visits San Diego, its captain must obtain a special waiver from the Naval Reactors directorate in Washington, D.C., to operate the reactors at normal power because of insufficient shore power at North Island.

North Island has one jetty-type pier, known as Juliet pier, that is equipped to berth nuclear-powered cruisers, but not carriers.

The proposed pier conversion would affect North Island's long seawall, which includes three carrier berths.

This area would be upgraded, including the addition of a mineral-free water source for the reactors and increased shore power generators, which are used when reactors on ships are cooled down while in port.

Schlesinger had no estimates on the cost of providing a purified water source needed for a carrier's nuclear reactors, but said the water could be trucked to the waterfront until purifiers are installed.

He said the project includes ripping out all of the electrical lines along the three carrier berths and replacing them with higher surge and capacity lines.

North Island could be able to accommodate a nuclear-powered carrier by the end of this year since work is due to start in September.

The electrical improvements will allow conventional carriers berthed at North Island to shut down their engines if they plan to be in port for long periods. Without the added surge capacity in the new lines, the older carriers have problems starting up their generators quickly.

"Any new ship arrival is good news, but I wonder how much work it will mean for us," said Arthur Engel, president of Southwest Marine Inc. , the second-largest ship repair yard in San Diego.

Engel said that for years his firm tried to achieve Navy certification to work on nuclear-powered ships and even sent the Navy unsolicited proposals. In 1987, his company received the certification and worked on the reactor system of the guided missile cruiser Long Beach, but has since received no additional nuclear work.

Unlike the East Coast, where the Navy allows two civilian shipyards to work on its ships' nuclear systems, on the West Coast "the Navy only wants its government shipyard workers from Vallejo and Puget Sound to work on the nuclear systems," said Engel.

"We know we can do the work. We just have to keep our foot in the door," he said.

The plan to berth nuclear-powered carriers here may provide Engel and at least two other interested San Diego companies with their opportunity.

The Navy now brings workers from the government shipyards in the San Francisco Bay Area and Puget Sound to work on the two nuclear-powered cruisers and 17 submarines based here. In addition to the workers' salaries and travel expenses, the Navy pays living allowances of $101 per day while they are away from home.

Engel said the Navy could "open the door" for San Diego civilian shipyards by letting them work first on the reactors' secondary systems, the steam and water lines that carry heat from a ship's sealed reactor vessel.

If the Navy is satisfied, the local yards could take on the reactors' primary systems, which are highly radioactive lines and valves that carry demineralized water heated directly by the uranium isotope core inside the reactor vessel.

The imminent loss of two conventional carriers here will likely hurt two companies: Wardwell's Continental Maritime Inc. and Pacific Ship Repair and Fabrication Inc.

"We are trying to shift over to the surface ship (non-carrier) work. We'll feel quite a loss this year no matter what happens," said David Bain of Pacific Ship Repair. "If we go to nuclear carriers, we could recapture some of the loss by work topside" and in the non-nuclear areas.

GRAPHIC: 1 PHOTO The Navy reportedly is planning to upgrade its piers at North Island so they can handle nuclear-powered aircraft carriers. (A-2)

LOAD-DATE: January 15, 1996

O.13

Comment Number	Response

The Peace Resource Center of San Diego

O.13.1	The comment letters referred to in PRC's letter are addressed in response letters L.4 (City of Coronado) and O.12 (Environmental Health Coalition).
O.13.2	The Navy assumes that the comments regarding CEQA are provided to the California Regional Water Quality Control Board for advisory purposes and not directed to the Navy for responses. While NEPA encourages coordination between state and federal agencies in order to streamline the environmental review process, CEQA is not applicable to the Navy in its decisionmaking process for the proposed action. State or local responsible agencies having decisionmaking authority related to the proposed action are required to comply with their implementation regulations pursuant to CEQA. The EIS does include a Growth Inducement section (see the Executive Summary and a revised Chapter 10). The Draft and Final EIS documents do include mitigation measures to reduce potentially significant impacts to below a level of significance (see Tables ES-3 and 2-11). The mitigation tables also identify the timing of when the mitigation is to be implemented and indicates that the Navy is responsible for implementing a mitigation measure unless other responsible agencies are identified on the tables.
O.13.3	The closure of Naval Air Station (NAS) Alameda, California, and the relocation of two CVNs to fleet concentrations in San Diego and the Pacific Northwest were carried out in compliance with the 1993 Defense Base Realignment and Closure Commission (BRAC) recommendations. New facilities were required at NASNI in order to support the homeporting of a CVN, since prior to 1998, there had been no CVNs homeported there. At the time the Navy proposed the construction of facilities at NASNI to support a homeported CVN, the Navy prepared an EIS to present the analysis of potential environmental effects associated with that action. A Final EIS for that project was completed in 1995. The 1995 EIS states, "This EIS, therefore, considers the potential cumulative impacts of CV replacement and homeporting a total of three CVNs in San Diego." Please see the 1995 EIS Volume 1, Chapter 6 (DON 1995a). The 1995 Final EIS was challenged and the United States District upheld that document as adequate in May, 1997. The United States District Court was presented the Notice of Intent (NOI) which initiated this EIS was published in December 1996 before it rendered its decision in May, 1997. The NOI for this EIS stated that the purpose of the proposed action is to provide support facilities and infrastructure for the selected home port locations for the three CVNs (two new, and one currently at NAVSTA Everett) in the U.S. Pacific Fleet.

Comment Number	Response
	The U.S. District Court for the Southern District of California concurred with the Navy's implementation of NEPA, and concluded that the Navy had not understated the potential effects of a larger project by preparation of two documents (segmentation). In an Order dated May 12, 1997, the Court stated, "Because the Court finds that no proposal to homeport three CVNs existed prior to the issuance of the Final EIS, the Final EIS's analysis of the possible cumulative impacts of potential additional home ports suffices under NEPA."
O.13.4	Your general comments are acknowledged and specific comments that follow are addressed.
O.13.5	A previous EIS was prepared in 1995, the "Final EIS for the Development of Facilities in San Diego/Coronado to Support the Homeporting of One NIMITZ-Class Aircraft Carrier," and public hearings were held in Coronado for that project on August 17, 1993 and June 7, 1995. No decision regarding adding more CVNs to San Diego/Coronado has been made. This decision will be made no sooner than 30 days after the Final EIS is published. Regarding your comment about segmentation or piece-mealing, please see response to your comment O.13.3 above.
O.13.6	The EIS process included providing information about the proposed action to all the public in the region. The Navy published the EIS Notice of Intent and Notice of Availability in the following local newspapers: *San Diego Union Tribune, Coronado Eagle/Journal, North County Times, San Diego Voice and View Point, Chula Vista Star News,* and *La Prensa. La Prensa* is a Hispanic publications. The Navy initiated a toll-free CVN information line in August 1998 that is accessible to everyone in the United States. The message is regularly updated; any questions recorded on the information line are addressed by the Navy. Additionally, when asked by interested parties, the Navy agreed to hold Draft EIS public hearings in San Diego on the proposed action. As evidenced by the Navy's public notices printed in areas outside of Coronado, there is no validity to PRC's claim that the Navy is willfully trying to "localize" the issue to Coronado.
O.13.7	The public was provided 75 days to provide comment on the Draft EIS. This included a 30-day extension from the NEPA minimum requirement of 45 days. The question regarding the cost of the EIS preparation does not address the adequacy of the environmental document. As required by CEQ regulations, a minimum of 30 days will be provided to the public for commenting on the Final EIS before any decision is made.
O.13.8	The public hearing dates were changed to accommodate an extended public review period. The Navy regrets any confusion that might have occurred as a

Comment Number	Response
	result of this decision, however, the Navy did try to reach all interested parties as soon as possible after the decision was made. A Navy representative was present at the appointed locations on the previously advertised dates for the public hearings to let the public know of the change if they did not receive an individual contact or notice the change in the local newspapers.
O.13.9	The Navy provided a copy of the Draft EIS to all individuals that requested the document. A total of 331 copies of the Draft EIS were distributed during the public review period. For a mailing of this size, the Navy believes distribution went quite well. The Navy also extended the comment period 30 days, which helped reduce any inconveniences in receiving copies of the document. Your initial copy of the Draft EIS was sent to an address that was previously used for correspondence with your organization. It is regrettable that you had to make a 20-mile trip to pick it up, and the Navy has taken steps to ensure your mailing address has been updated. The Navy is sincere about assuring that the public had adequate access to the Draft EIS for their review.
O.13.10	Notification of the meeting location was in compliance with NEPA requirements and the inclusion of a second meeting and the ultimate location selected was in direct response to a request from the community. In addition, the location for the meeting was set in response to a specific request from a local organization. The meeting was conducted in accordance with NEPA requirements and all participants who wanted to speak were provided an opportunity to make comments. Had the Navy been expecting more people, or informed by the environmental community to expect more, the Navy would have chosen a larger site. The amount of time scheduled for each person to comment was adjusted to accommodate the size of the audience.
O.13.11	The Navy has identified several ways in which to ensure public participation to low-income, minority populations in the San Diego area. All responses to public comments generated during the public comment period provided in Spanish are translated into Spanish. The comments are annotated to ensure that the reader has sufficient understanding of the EIS materials without needing to read the EIS itself. The Notice of Availability (NOA), is translated in Spanish, and a telephone 888 support hot line is available in Spanish as well. The Navy considers that these efforts address the CEQ guidance memorandum on compliance with E.O. 12898.
O.13.12	Please see response to comment O.12.33.
O.13.13	Two public hearings on the Draft EIS have been held in the San Diego region and public testimony received, as required under NEPA. The Navy does not currently have plans to have a follow-on community workshop for an informal dialogue. Concerns generated during the public review of the EIS will be

Comment Number	Response
	considered by Navy personnel responsible for making decisions regarding the proposed action. Navy representatives at the EIS public hearings are directly involved with this decision-making process, and provide recommendations to the Secretary of the Navy regarding the preferred alternative to be implemented. Furthermore, the Navy ensures that the EIS decisionmaker has a complete copy of the public hearing transcripts. The Navy believes that the objective sought by the comment is met by the fact that the transcript of the public hearing is prepared and reviewed as part of the NEPA process leading up to the Record of Decision.
O.13.14	The cumulative analysis considers the past actions affecting San Diego Bay. For example, the marine water quality of the bay is described since the early 1900s. The presence of the CVs and their effects on the bay are considered part of the affected environment. Therefore, the cumulative impact of the proposed action, providing the capacity to homeport two additional CVNs, is evaluated by analyzing the difference in impacts between the CVNs and CVs. This increment is then evaluated along with other reasonably foreseeable projects to determine the cumulative effect on the bay. Section 3.18 has been revised to make this analysis more specific in terms of the relationship of the proposed action and these reasonably foreseeable projects in time and space. Section 3.18 also addresses cumulative impacts of actions such as the BRAC CVN project and the Submarine Support Facility at SUBASE San Diego.
O.13.15	Please see response to comment O.12.55.
O.13.16	Please see responses to comments O.12.174-177 and O.12.190.
O.13.17	Please see responses to comments O.12.174-177 and O.12.190.
O.13.18	Please see responses to comments O.12.174-177 and O.12.190.
O.13.19	Please see responses to comments O.12.174-177 and O.12.190.
O.13.20	Please see responses to comments O.12.174-177 and O.12.190.
O.13.21	Please see responses to comments O.12.174-177 and O.12.190.
O.13.22	Please see responses to comments O.12.174-177 and O.12.190.
O.13.23	Please see response to comment O.12.25.
O.13.24	Since the analyses demonstrate no significant radiological impacts to any population, there would be no disproportionate impacts to children, the elderly, or the ill. Thus, no change to the EIS is deemed necessary. Please see response

Comment Number	Response
	to comment O.12.190 for information regarding other studies on the effects of low-level radiation exposure, and response O.10.36 for information regarding the risk factors used in the analysis.
O.13.25	A summary of the health effects on personnel who work on Naval nuclear powered ships is covered in Appendix F, Tables F-7, F-9, and F-11. This analysis is germane to public or private shipyard workers. There are four public Naval shipyards and two private shipyards that are qualified to perform nuclear propulsion plant and/or radiological work. Only three of those currently perform work on nuclear powered aircraft carriers: Puget Sound Naval Shipyard, Norfolk Naval Shipyard (both public shipyards), and Newport News Shipbuilding Company (private). Any one of these organizations could send qualified nuclear workers to San Diego to do CVN work. How much CVN work each one of these organizations performs is dependent upon decisions beyond the scope of this EIS, since the analyses in the EIS do not depend on the specific organization conducting the work. Consistent with the points above, the fact that a private shipyard capable of performing work on Naval nuclear propulsion plants has purchased a shipyard in San Diego does not imply that the San Diego shipyard is now capable of performing work on Naval nuclear propulsion plants. The shipyard operations in San Diego, including personnel, would need to be qualified to perform that type of work in accordance with the rigid standards established by the Naval Nuclear Propulsion Program.
O.13.26	Please see response to comment O.12.27 and O.12.25.
O.13.27	NNPP radiological emergency procedures contain sensitive information regarding military technology, which must be protected from uncontrolled release and dissemination. Thus, specific details regarding those plans must be protected from uncontrolled release and dissemination. However, in the highly unlikely event movement of the ship is necessary, there are numerous ways to move a NIMITZ class aircraft carrier, including the use of the other reactor plant and the use of tugs or other tow craft. As is stated in the EIS, sufficient time exists to support safe movement of the ship in the unlikely event of such an occurrence.
O.13.28	Naval nuclear propulsion plants are lower in power rating (less than one-fifth of the typical commercial power plant rating) than commercial plants. In Chapter 7.0, the EIS states that if the ship is in port and not moving, the reactor plant is normally shut down or operated at a small fraction of the ship's rated power. Therefore, Naval reactors have significantly less fission products (less than 1 percent) available for release, which limits the size of the potential area of

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concern. The ultimate status of the propulsion plant is based on several considerations, including the time the ship is expected to be in-port and operational need of the CVN. Each operational requirement of the NNPP is designed to ensure the safety of the crew as well as the public. From a safety standpoint, there are no significant advantages to further restricting the conditions of the propulsion plant while in-port beyond those already identified in the EIS.

Commercial nuclear power plants must plan for radiological emergencies in accordance with Nuclear Regulatory Commission requirements. Navy radiological emergency planning is based on the consideration of the following factors:

- Naval nuclear-powered ships and their reactors have been designed to the Navy's exacting and rigorous standards for warship shock design, include redundant systems, and are operated by highly trained crews using rigorously applied procedures. Thus, Navy ships have a low potential for major radiological accidents.

- Naval ships have specific design features to prevent and mitigate the release of radioactivity despite the occurrence of severe casualties to the ship. For example, Naval nuclear fuel can withstand shock loads that are well in excess of 50 times the force of gravity.

- Naval ships are designed to very stringent military shock requirements, making the likelihood of any failure very small. A collision of a nuclear powered ship with any other ship or structure while transiting to or from its homeport would not cause the release of radioactivity from the nuclear fuel.

- Extensive federal emergency response resources, as outlined in the Federal Radiological Emergency Response Plan (FRERP) (*Federal Register*, Vol. 50, No. 217, P. 46542 of November 8, 1985), would be activated as needed in such an emergency to support State or local response.

- All U.S. nuclear-powered ships use pressurized water reactors designed to Navy standards for warship shock design. The radioactive fission products are contained within high-integrity fuel modules such that U.S. Naval reactors do not operate with fission products released to the primary coolant, as is often the case with some commercial designs. Only limited radioactivity is found in the pure water used in the all-welded primary coolant system. In addition, There are multiple boundaries to prevent release of fission products to the environment, including the fuel itself, the all-welded primary coolant system, the reactor compartment, and the ship.

Comment Number	Response
	• Naval reactors have a source of unlimited seawater that can be used for emergency cooling and shielding, and are mobile. In the event of a serious problem, the ship can be rigged and towed away from populated areas, which of course, in not the case for a fixed, land-based reactor. In the unlikely event of a reactor accident, sufficient time would exist to support ship movement away from populated areas.
	Given the above factors, the Navy's radiological emergency planning is comparable to that required by NRC.
O.13.29	Three references concerning natural background radiation are contained in the Navy's annual report titled Environmental Monitoring and Disposal of Radioactive Wastes from U.S. Naval Nuclear Powered Ships and Their Support Facilities:
	1. National Academy of Sciences - National Research Council, Radioactivity in the Marine Environment, March 1971.
	2. National Council on Radiation Protection and Measurements, Report No. 62, Tritium in the Environment, March 1979.
	3. National Council on Radiation Protection and Measurements, Report No. 94, Exposure of the Population in the United States and Canada from Natural Background Radiation, December 1987.
O.13.30	Please see response to comment O.12.86.
O.13.31	Please see responses to comments O.12.191-197.
O.13.32	Please see responses to comments O.12.73, O.12.77, and O.12.78.
O.13.33	The Navy, as Lead Agency, complied with all applicable regulations in the preparation of the Draft EIS; therefore, the Navy disagrees that the document is deficient in meeting NEPA requirements. Responses to public comments on the Draft EIS have been provided in this Final EIS.
O.13.34	This letter is a draft version of a letter submitted to the Environmental Health Coalition. See the responses to the final version of this letter (comments O.12.174 through O.12.178).

O.14

THE LANDING

A Beautiful Point of View

November 27, 1998

Department of the Navy
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190

Re: The Navy's Draft Environmental Impact Statement (DEIS), Developing Homeport Facilities for Three Nimitz-Class Aircraft Carriers in Support of the U.S. Fleet

Gentlemen,

O.14.1

The Landing Homeowners Association represents the 92 residential units at The Landing and the approximately 180 residents thereof. We have for many years objected to the traffic generated on First Street in the City of Coronado because of the First Street Gate at NASNI and the designation of First Street as a truck route. Because of our concern, we have read the DEIS, but, of course, do not have the factual data to question many of the statements, charts, and conclusions mentioned in the DEIS concerning traffic, noise, air quality, health and safety and cumulative impacts.

However, we do have the following comments on the DEIS:

1. It is fundamentally and fatally flawed in that the information contained in the DEIS does not speak as of the date of its' issuance and the basic facts relied upon do not exist today.

Throughout the DEIS it refers to the "current situation" as being two CV's homeported at NASNI and throughout gives credit to the removal of 2 CV's. This simply is not the case as the only major ships homeported at NASNI are one CV (the Constellation) and one CVN (the recently arrived Stennis). For references to removal of 2 CV's see pp. ES-8, ES-9, ES-17, ES-19, 2-44, 2-49 and "the Status Quo" described on p. 2-44

It is also stated that "Beginning in 1998, 3 aircraft carriers will be homeported at NASNI again" 2-8&9. This is not true, has not been true, and will not be true.

There is no way a reasonable person could analyze the volumes of information by simply subtracting one CV.

O.14.2

The DEIS says that the population of NASNI is 20,500 and has ranged from 17,700 to 21,300 2-9. A check with the Air Station Public Affairs Office produced the information that the population of the Air Station and the Amphibious Base is currently 11,000 with the Amphibious Base population being between 3,000 and 5,000. These figures do not include personnel on board the carriers.

O.14.3

The DEIS states: "The Navy is currently in the process of redesigning the Main Gate so that the entrance would be aligned with 3rd Street at Alameda Boulevard and the exit aligned with 4th Street." 3.9-4 and 3.18-11. The implication is that the gate will be realigned and that this will mitigate the traffic problems. This, however, doe not comport with the recent statement of Coronado's Mayor Smisek that due to the cost of the realignment and SANDAG's lack of funding the realignment "is dead."

O.14.4

2. So many of the facts and figures used in the DEIS are outdated and should be updated to the current situation (downsizing, one CV and one CVN, current terrorist threats evidenced by the increased security at NASNI, etc.) Traffic trips rates based on a mid-1980's study at Mayport Naval Station in Florida would be laughable if they were not in a serious DEIS. 3.9-5. "Daily traffic volumes "were collected from Cal Trans, the City of Coronado and the Navy in 1995" 3.9-3. There must be information that is less that 3 years old and reflects the different population and ship mix at the Air Station at the present time. We also now have experience with the delays in traffic caused by a threat alert condition and suicides and accidents on the bridge that completely snarl up the access to our island.

O.14.5

3. Unfortunately, by trying to justify a conclusion, there are, what we believe to be, substantial omissions of two vital mitigation measures. There is no mention of the realignment of the Main Gate as a mitigation measure (although the DEIS seems to erroneously assume that it will happen) and there is no mention of the proposed bored tunnel although it is on our municipal ballot next week.

4. We have neither the capability nor the resources to analyze the many, many other facets of the DEIS but have urged the City of Coronado to do so or to employ those who can do so.

O.14.6

5. Last, but not least, we believe there must be discussion (probably under Health & Safety) of the increased threat of terrorist activity or strategic targeting by foreign powers caused by the accumulating of three (and four if the transient dock is used) of the worlds largest warships in a confined space. This must have an impact on the desirability of gaining maximum results from an illegal act. This really needs to be treated in the DEIS if it is to "evaluate potential impacts" from the proposed homeporting of three nuclear carrier with a transient dock for a fourth visiting nuclear carrier.

O.14.7

6. Because of the faulty factual foundation of the DEIS, it does not fulfill its purpose of evaluating "environmental effects from constructing and operating facilities and infrastructure needed to support 3 Nimitz-class carriers" and the requirement of informing "of reasonable alternatives to avoid or minimize adverse impacts." It is interesting to note that the DEIS "acknowledges that NASNI can't support 3 additional CVN's for a total of 4." 2-69.

[illegible] FIRST STREET
CORONADO, CA [illegible]
[illegible]

We respectfully request that the DEIS be rewritten in the present factual situation using current information and providing data on mitigation measures. This is one of the most important matters facing the City of Coronado. Unfortunately, although the law requires the Navy to prepare a supplemental EA or EIS "should new information relevant to environmental concerns bearing on the impacts of the proposed action become available" (2-3), the Navy should really go back to the drafting boards and prepare a new DEIS to avoid the confusion that would entail if it merely issued a supplement to the current draft. O.14.8

Sincerely yours,
The Landing Homeowners Association

by E. Miles Harvey
Chairman, Public Affairs Committee

cc: Board of Directors

O.14

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The Landing

O.14.1 A discussion of the historic carrier baseline and existing condition has been added to the EIS in section 3.0. Please see response to comment L.4.12 for an explanation of the way this information is applied to the proposed action impact analysis. In the 1980s, the Navy reduced the size of its active aircraft carriers from 15 to 12: six in the Atlantic Fleet and six in the Pacific Fleet. Before that time, NASNI had been the homeport for at least three aircraft carriers. In the early 1970s, this included USS TICONDEROGA, USS KITTY HAWK, and USS CONSTELLATION; in the mid-1970s, USS RANGER, KITTY HAWK, and CONSTELLATION; throughout the 1980s, RANGER, KITTY HAWK, and CONSTELLATION; and in the early 1990s, a combination of USS INDEPENDENCE, (while KITTY HAWK and/or CONSTELLATION were undergoing their Service Life Extension effort in Philadelphia, Pennsylvania), KITTY HAWK, CONSTELLATION, and RANGER. All ships listed above are or were conventionally powered carriers, or "CVs." In 1993, RANGER was decommissioned at the end of its service life and removed from NASNI, temporarily reducing the port-loading to two CVs.

The closure of Naval Air Station (NAS) Alameda, California, and the relocation of two CVNs to fleet concentrations in San Diego and the Pacific Northwest were carried out in compliance with the 1993 Defense Base Realignment and Closure Commission (BRAC) recommendations. Consequently, the Department of the Navy constructed homeporting facilities for one CVN at NASNI (DON 1995a) and one at Puget Sound Naval Shipyard (PSNS), Bremerton, Washington (DON 1995b). Because there were no CVN homeport-capable berths at NASNI, the Navy was allowed to shift both NAS Alameda CVNs to the Pacific Northwest, pending completion of construction of suitable homeport facilities at NASNI. Those facilities were the subject of an EIS entitled *Environmental Impact Statement for the Development of Facilities in San Diego to Support the Homeporting of One NIMITZ Class Aircraft Carrier* (DON 1995a). The actual vessel that fulfilled the BRAC mandate and assumed the role of RANGER was USS JOHN C. STENNIS (CVN-74). Arriving in August of 1998, STENNIS took over one CV's worth of facility support infrastructure at NASNI.

In 1998, INDEPENDENCE (at that time the Navy's "forward deployed" carrier) reached the end of its service life and was decommissioned. KITTY HAWK was designated as its replacement and left NASNI in July 1998, 20 months after the Notice of Intent for this EIS, and relocated to Yokosuka, Japan. This resulted in a reduction of the port loading at NASNI to two homeported aircraft carriers. The USS NIMITZ is currently undergoing an extended maintenance period on the East Coast and will require a homeport berth within the Pacific Fleet area. Long range plans indicate that the most likely arrival date on the West Coast for

Comment Number	Response

NIMITZ would be early 2002. *Were the Preferred Alternative selected,* this would bring NASNI back to its historical three carrier port-loading baseline.

USS CONSTELLATION is expected to reach the end of its service life in approximately 2003. At that time, NASNI would once again experience a reduction to two homeported carriers *if the Preferred Alternative were selected by the Navy.* The same long range plans addressing NIMITZ also involve replacing CONSTELLATION with the USS RONALD REAGAN. It is anticipated this will happen in 2005. Once again, *if the Preferred Alternative were selected,* it would bring NASNI back to its historical three carrier port-loading baseline.

The closure of Naval Air Station (NAS) Alameda, California, and the relocation of two CVNs to fleet concentrations in San Diego and the Pacific Northwest were carried out in compliance with the 1993 Defense Base Realignment and Closure Commission (BRAC) recommendations. New facilities were required at NASNI in order to support the homeporting of a CVN, since prior to 1998, there had been no CVNs homeported there. At the time the Navy proposed the construction of facilities at NASNI to support a homeported CVN, the Navy prepared an EIS to present the analysis of potential environmental effects associated with that action. A Final EIS for that project was completed in November 1995. The Navy knew at that time that, consistent with established policy, the two remaining CVs in the Pacific Fleet would eventually be replaced with CVNs. Further, the Navy knew at that time that homeporting those CVNs would require construction of additional facilities somewhere in the Pacific Fleet area of responsibility. Although a need had been identified, the Navy had not formulated an action to satisfy that need. Formulating an action to address that situation would require assessing the adequacy of existing facilities, determining the extent of new facility requirements, and identifying possible locations for home ports.

The environmental analysis in an EIS correlates to the level of planning for a particular project. If the planning has evolved such that the agency has formulated a project to meet a particular need, the EIS should reflect analysis of all aspects of that project, and the alternative methods of meeting the identified need should be addressed on a "co-equal" basis. In this case, the Navy had not, at the time of preparation of the 1995 EIS, formulated a proposal for how to meet the need of facilities for two more CVNs in the Pacific Fleet.

However, the Navy did anticipate that in the future, a proposal would be formulated, and that the alternatives could include facilities at NASNI. Therefore, a larger project was not segmented into two smaller projects for the purpose of avoiding more rigorous environmental analysis. Further, although a "proposal" had not been formulated such that it could be analyzed on a "co-equal" basis in the 1995 EIS, it was reasonably foreseeable that a future project

Comment Number	Response
	could include additional facilities at NASNI. Since it was reasonably foreseeable, the potential effects were included in the analysis of cumulative effects in that document. The 1995 EIS states, "This EIS, therefore, considers the potential cumulative impacts of CV replacement and homeporting a total of three CVNs in San Diego." See the 1995 EIS, Volume One, Chapter 6 (DON 1995a).
O.14.2	The current information provided from NASNI Public Affairs Office is that approximately 13,166 military and 6,385 civilians work at NASNI. When an aircraft carrier is in port, there are approximately 20,500 people. The Naval Amphibious base employs approximately 5,085 military and 620 civilian personnel.
O.14.3	Redesign of the Main Gate so that the entrance would align with Third Street and so that autos as well as trucks could use this main entrance is under consideration by the Navy. This redesign would provide a direct link to NASNI from the Coronado Bay Bridge along Third Street and would reduce the use of First Street as the primary truck access route. Relocation of the Third Street gate is a multi-faceted effort that required first the relocation of the NASNI commissary and Navy exchange. Once construction of the new commissary and exchange construction were completed, the old commissary and exchange could be razed, and the Third Street gate could be moved. Until funding was secured to relocate the commissary and exchange, only limited activity associated with the Third Street gate relocation could occur. Funding for relocation of the NASNI commissary and Navy exchange is now available and design for the new commissary/exchange is nearly completed, with construction scheduled to begin in summer or fall of 1999. Steps have been taken to initiate the Third Street gate relocation as an official navy project. Parametric costs have been collected and preliminary design considerations have been formulated. The Navy is committed to continue to seek these funds. Therefore, planning associated with the project continues, but will be subject to congressional approval as a naval budget item. In any event, relocation of the gate could not have proceeded until preliminary activities of commissary and exchange redesign had been completed. The realignment of the Main Gate is not needed to mitigate the impacts of the CVN homeporting because the additional traffic generated by the proposed action would not have a significant impact.
O.14.4	The transportation analysis has been revised to incorporate more recent traffic data that were not available to the EIS preparer when the Draft EIS was initially prepared (i.e., the traffic volumes documented in the October 1998 SANDAG report). For example, Table 3.9-1 is revised to show a average annual volume of 71,000 vehicles per day on the Coronado Bay Bridge. The trip generation rate used in the Draft EIS has been revised to reflect calculations based on 1996

Comment Number	Response
	personnel counts (see Table 2-1, Volume 3) and actual gate counts taken during that same year (see Table 3.9-7, Volume 3). With regard to existing conditions traffic data, the analysis was based on traffic data taken during times of heavy travel demand as opposed to average conditions. The August 1996 traffic counts that were used to represent the existing conditions scenario reflect traffic conditions during the peak summer tourist/recreational season when there were two aircraft carriers in port. Follow-up counts taken in the fall of 1998 resulted in traffic volumes that were lower than the August 1996 volumes. It was determined, therefore, that it would be appropriate to use the August 1996 data to represent the existing traffic conditions. This conclusion is consistent with the findings of the October 1998 draft report prepared by SANDAG titled "San Diego-Coronado Bridge Toll Removal Impact Study," which also used the August 1996 data to represent existing conditions. With regard to the use of 1995 traffic data to represent existing conditions, that was considered current for average daily traffic volume information when the EIS traffic analysis was initiated in 1997. The data shown in Table 3.9-1 has now been revised to represent the highest traffic 1996 and 1997 volumes cited for each roadway in the various source documents. To represent possible traffic increases to the analysis year, traffic forecasts from the SANDAG bridge toll removal report were used to represent future conditions without the project. Although these traffic projections represent forecasts for the year 2015 and are most likely higher than would be expected for the target year of 2005 when the third proposed CVN would be homeported at NASNI, they were used to ensure that the impact analysis would be sufficiently conservative. Unique circumstances such as threats, suicides, and bridge accidents certainly have an effect on traffic conditions on the day of the incident; however, it would not be appropriate to model or analyze such unique circumstances in conjunction with the EIS traffic study.
O.14.5	The EIS is not trying to justify a conclusion, but documenting the finding that the level of additional traffic that would be generated by the proposed action providing capacity to homeport two additional CVNs, would not result in a significant traffic impact and would not require any traffic-related mitigation measures. Independent of the EIS, the Navy is considering funding of a redesigned Main Gate so that the entrance would align with Third Street and so that autos as well as trucks could use this main entrance. This redesign would provide a direct link to NASNI from the Coronado Bay Bridge along Third Street and would reduce the use of First Street as the primary truck access route. Relocation of the Third Street gate is a multi-faceted effort that required first the relocation of the NASNI commissary and Navy exchange. Once construction of the new commissary and exchange construction were completed, the old commissary and exchange could be razed, and the Third Street gate could be

Comment Number	Response
	moved. Until funding was secured to relocate the commissary and exchange, only limited activity associated with the Third Street gate relocation could occur. Funding for relocation of the NASNI commissary and Navy exchange is now available and design for the new commissary/exchange is nearly completed, with construction scheduled to begin in summer or fall of 1999. Steps have been taken to initiate the Third Street gate relocation as an official navy project. Parametric costs have been collected and preliminary design considerations have been formulated. The Navy is committed to continue to seek these funds. Therefore, planning associated with the project continues, but will be subject to congressional approval as a naval budget item. In any event, relocation of the gate could not have proceeded until preliminary activities of commissary and exchange redesign had been completed. The realignment of the Main Gate is not needed to mitigate the less than significant impacts of the proposed action because the additional traffic generated by the project would not have a significant impact. The possibility of constructing a tunnel from the end of the Bay Bridge to the NASNI Main Gate has been considered by public agencies so that NASNI-generated traffic can avoid using the Coronado streets. Such a project is not needed as a mitigation measure for CVN homeporting as the analysis indicates that the incremental impact of the proposed action is not significant relative to traffic.
O.14.6	None of the alternatives in this EIS increase the number of aircraft carriers at NASNI beyond the historical baseline of three. If three CVNs are homeported at NASNI, there physically is not a fourth CVN-capable berth available. Therefore, it would not be possible to have four CVNs berthed at NASNI at one time. The Navy does not perceive that having three CVNs at NASNI increases the threat from terrorists beyond the potential that has existed for the past several decades. In addition, the robustness of a naval vessel designed to withstand combat damage lessens the potential impact that such an act might incur. The very nature of a military asset diminishes its attractiveness as a target for terrorist. Not only is there a constant posture of security maintained through tightly controlled access and roving patrols, but the ability of the trained "targeted personnel" to react with deadly force increases the risk to the terrorist.
O.14.7	The EIS is based on information generated in previously scrutinized and approved NEPA documents, and is supplemented by data prepared by expert environmental analysts. Extensive supporting data are provided in Volumes 2, 3, 4, 5, and 6. Analysis of impacts is consistent with NEPA, in which the net change in activity between the affected environment and the proposed action is evaluated. The proposed action and alternatives propose facility and infrastructure improvements necessary to support up to two additional CVNs at

Comment Number	Response
	NASNI, or three total CVNs. None of the alternatives in this EIS increase the number of aircraft carriers at NASNI beyond the historical baseline of three. If three CVNs are homeported at NASNI, there is not a fourth CVN-capable berth available. Therefore, it would not be possible to have four CVNs berthed at NASNI at one time.
O.14.8	The comment is noted. In addition, this Final EIS discusses those "responsible opposing views that were not adequately discussed in the draft statement" and "indicates[s] the Navy's responses to the issues raised" as required by 40 CFR 1502.9(b). Comments on the Draft EIS have not changed the assessment of impacts substantially to support re-issuance of the Draft EIS. To re-issue the Draft EIS, substantial evidence must be presented that the Navy did not assess or inappropriately assessed a certain area and that the re-assessment of that area yields substantial change to the analysis contained therein.

DEVELOPING HOME PORT FACILITIES FOR
THREE NIMITZ-CLASS AIRCRAFT CARRIERS
IN SUPPORT OF THE U.S. PACIFIC FLEET

DRAFT ENVIRONMENTAL IMPACT STATEMENT

DRAFT EIS COMMENTS

Name: ALBERT LEWIS, HEMPY'S, INC.

Address: 303 MARKET ST. # 735 SD CA 92101

COMMENTS:

O.15.1

I ATTENDED THE RECENT HEARING IN DOWNTOWN SAN DIEGO. BASED UPON THE TESTIMONY I HEARD FROM BOTH SIDES OF THE ISSUE, I REMAIN STRONGLY OPPOSED TO HOMEPORTING THE CARRIERS. THE EIS SEEMS INCOMPLETE AND BIASED. I OWN A DOWNTOWN BUSINESS WITH 5 EMPLOYEES AND WE'RE ALL AGAINST THE HOMEPORTING PROJECT.

x [signature]
x [signature]
x [signature]
x Diane Wariner
x [signature]

Signature [signature]

Date 11-10-98

Note: This form is supplied for your convenience. You are not required to use this form. Comments of any length may be submitted to the address on the reverse side of this form. Your comments should be postmarked on or before November 12, 1998.

Comment Number	Response

Hempy's, Inc. Albert Lewis

O.15.1	Your comments are noted and are included in the Final EIS.

O.16

EXPLORING PARADIGM SHIFTS
"Making Sense of our Times"
(A Dialogue Workshop)

Earl J. Johnson, PhD
3633 Camino del Rio So., #202
San Diego, CA 92108-4013
(619) 283-9893 Fax: 280-1992
Email: earljohn@aol.com

November 11, 1998

Mr John Coon
Southwest Division (Code 05AL JC)
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190

REFERENCE: DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR DEVELOPING HOME PORT FACILITIES FOR THREE NIMITZ-CLASS AIRCRAFT CARRIERS IN SUPPORT OF THE U S PACIFIC FLEET

Dear Mr Coon

This is a formal and more detailed statement of my oral testimony given at the Public Hearing on October 28, 1998, at the San Diego County Administration Building While my comments do not specifically address "facilities," they do address one of the 11 environmental issues which were addressed in the Draft EIS the issue of safety

O.16.1

Many concerned citizens who have spoken and written about the safety issue in the Draft EIS have concentrated on the dangers of radioactive and toxic waste The Navy's responses which I have heard and read have been reassurances that these concerns have been considered and tested, and there is no need to worry (Some of these reassurances have sounded apodictical, "there's NO chance of an incident", others have included percentages or ratios, e g "one chance out of a million that there could be an incident " These seem to arise more out of defensive hyperbole that out of credible scientific data)

O.16.2

My safety concern arises not out of the evident dangers of nuclear and toxic wastes, but out of concern for the more hidden dangers within the U S nuclear propulsion plant design and technology itself A handout at the hearing describes the "5000 years of combined reactor operation" and "115 million miles without any significant radiological effect on the environment " I laud "this success (which) is based on strong central technical leadership through training and conservatism of design and operating practices " I am also impressed that "additionally, the Government Accounting Office (GAO) performed a detailed 14-month audit of nuclear propulsion matters The GAO reported the results of their findings in an August 1991 report and concluded that, there were 'no significant deficiencies' with respect to environmental protections, occupational safety and health, and reactor safety " (I wonder about the range of meaning "significant" has for the Navy in the context of the two usages in the above quotes)

O.16.3

That GAO report was issued in August 1991 Since then, the scene has changed we have become painfully aware of the **Year 2000 (Y2K) Problem**, with its embedded systems My concern rests on various documents, most solidly on a more recent, and devastating GAO report **GAO Report to the Secretary of the Navy, Defense Computers, Year 2000 Computer Problems Put Navy Operations at Risk** (Document GAO/AIMD-98-150) This report was performed "as part of our review of the Department of Defense's (DOD) Year 2000 computer systems effort for the Chairman, Senate Committee on Governmental Affairs, the Chairman and Ranking Minority Member of the Subcommittee on Government Management, Information and Technology, House Committee on Government Reform and Oversight, and the Honorable Thomas M Davis, III, House of Representatives During the review, we assessed (1) the status of the Navy's efforts to oversee its Year 2000 program and (2) the appropriateness of the Navy's strategy and actions for ensuring that the problem will be successfully addressed This letter summarizes our concerns and provides recommendations for addressing them "

The GAO's report was addressed on **June 28, 1998**, to The Honorable John H Dalton, The Secretary of the Navy, it was signed by Jack L Brock, Jr , Director, Governmentwide and Defense Information Systems

O.16.3

An abstract of the report follows (bold face inserted for emphasis)

"The Navy relies on computer systems for virtually all of its operations, from strategic airlift and fleet mobilizations to such routine business functions as personnel and contract management Failure to address the Year 2000 problem in time could severely degrade or disrupt the Navy's day-to-day and, more importantly, mission-critical operations Although the Navy has tried to increase awareness, promote information sharing, and encourage its components to make Year 2000 remediation efforts a high priority, it is **behind schedule in remediating systems.** Moreover, the Navy **lacks key management and oversight controls to enforce good management practices, direct resources and establish a complete picture of its progress in remediating systems.** The upshot is that the Navy **lacks complete and reliable information on its systems** and on the status and the cost of its remediation efforts It has also increased the risk that (1) Year 2000 errors will be propagated from one organization's systems to another's **(2) all systems, interfaces, and equipment important to Navy operations will not be thoroughly and carefully tested; and (3) the Navy will be unprepared if systems are not corrected or replaced by the Year 2000 deadline."**

This report is the foundation on which my **SAFETY** concern rests I am concerned about the safety of the nuclear propulsion plants themselves, and the consequent risk to public safety and health

Based on this GAO report, I have five urgent questions

1) Has the Navy begun the *assessment* of mission-critical systems **specifically within the naval nuclear reactor propulsion plants**? If yes, when was it begun, is it completed? If not, when will it be?

2) Has the Navy begun *remediation* of these systems for compliance? If yes, when was it begun, and when is it scheduled for completion?

3) Has the Navy begun *testing* its remediation efforts for *integrated* compliance? If yes, when was it begun, and when is it scheduled for completion?

4) If the Navy has not yet begun testing, when is it scheduled to begin and when does it expect to be certified as compliant, ready for the computer clocks to roll SAFELY from 12/31/99 to 01/01/2000.

5) If the Navy will not be fully compliant by 12/31/99, **does the Navy plan to develop contingency plans to mitigate the risk and severity of possible incidents? Does the Navy plan to engage us citizens, and our elected representatives, in an active role to develop these plans?**

I trust that these questions are clear and direct enough to enable the Navy to respond with clear and direct answers without boiler plate and circularity

I respect the awesome responsibility which is carried by the Navy chain of command along the path which these public comments on the DRAFT EIS must pass I hope the process of this exercise between the Navy and citizenry, factoring the **URGENCY OF THE Y2K ISSUE** into our decision making, will become a model for other governmental and business entities Elected officials and governmental staff, together with the business community have still **TO ENGAGE US CITIZENS, AND ONE ANOTHER, TO ANTICIPATE THE TRANSITION FROM 12/31/99 TO 01/01/2000, THAT IT BE AS SMOOTH AND CREATIVE AS WE ALL TOGETHERCAN MAKE IT.**

Respectfully,

Earl J. Johnson

Earl J Johnson, Ph D
Exploring Paradigm Shifts
3633 Camino del Rio South, #202
San Diego, CA 92108-4013
Phone 619 283 9893 Fax 619 280 1992
Email earljohn@aol com

cc
Senator Barbara Boxer
Senator Diane Feinstein
Congressman Bob Filner
Congressman Brian Bilbray
Congressman Duncan Hunter
Congressman Duke Cunningham
State Senator Dede Alpert
State Senator Steve Peace
Assemblywoman Susan Davis
Assembywoman Denise Ducheny
Assemblyman Howard Wayne
Assemblyman Steve Baldwin
San Diego City Manager
San Diego City Mayor and Council Members
County Chief Administrative Officer
County Board of Supervisors
Councils of Bay Cities Chula Vista, Coronado, Imperial Beach, and National City
Mayor of Tijuana
EPA, Border Liaison Office, San Diego
United Nations Association - San Diego, Transborder Environmental Committee
SANDAG
Editors and News Directors of County Print, Radio and Television Media
Presidents of San Diego Business Improvement Districts
Chambers of Commerce
Peace Resource Center
Environmental Health Coalition
San Diego County Department of Education
Ecumenical Council of San Diego County
League of Women Voters - San Diego
Sierra Club - San Diego
Ecological Life Systems Institute Inc
San Diego Natural History Museum, Community Sustainability Programs
San Diego Economic Conversion Council
WE-CAN (World Eco-Community Action Network)
SCAN (Sustainable Community Action Network)
First Unitarian Universalist Church, Social Responsibility Committee

Note The GAO Report, GAO/AIMD-98-150, can be downloaded from the following website
· http //www gao gov/AIndexFY98/abstracts/ai98150 htm ·

O.16

Comment Number	Response

Exploring Paradigm Shifts

O.16.1 Since the commentor does not raise specific issues in the comments, specific responses cannot be provided by the Navy.

O.16.2 The Navy cannot define what the GAO would consider to be significant. However, based on the Navy's review of the GAO report and Congressional testimony following that review, it is unlikely that GAO would have minimized any real problem as being under the threshold of "significance." Similarly, the Navy's radiological environmental monitoring program demonstrates the meaning of "significance" with regard to radiological environmental impact. As described in response O.12.33, the Navy's conclusions on the lack of significance regarding NNPP radioactivity in the environment has been verified by many independent EPA surveys.

O.16.3 See response to comment O.12.57.

COMMITTEE TO BRIDGE THE GAP
1637 BUTLER AVENUE, SUITE 203
LOS ANGELES, CALIFORNIA 90025
(310) 478-0829

12 November 1998

Mr. John Coon
Southwest Division (Code 05AL.JC)
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

Re: Comments on Draft Environmental Impact Statement for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet

Dear Mr. Coon:

O.17

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for Developing Home Port Facilities for Three NIMITZ-Class Aircraft Carriers in Support of the U.S. Pacific Fleet.

Having reviewed the DEIS, we oppose the approval of anything other than the no action alternative because the DEIS lacks an adequate description of the proposed project and its potential environmental impacts by omitting any public assessment of the consequences of a reactor accident or an accident involving the nuclear weapons stored aboard NIMITZ-class aircraft carriers. The DEIS states that the consequences of a reactor accident have been assessed, but that the entire assessment and the results of that assessment remain classified. (DEIS pp. 7-1, 7-5, 7-19, and Appendix D) We find no acknowledgment of the presence of nuclear weapons aboard NIMITZ-class aircraft carriers nor any assessment of the potential environmental impacts of an accident involving those weapons. If the U.S. Department of the Navy insists on neither confirming nor denying the presence of nuclear weapons aboard these vessels, it should at least identify in the DEIS whether any assessment of the environmental impact of these and other weapons has been conducted. O.17.1

From the little information we do have about the proposed project, we conclude that the consequences of reactor or nuclear weapons accidents aboard a NIMITZ-class aircraft carrier represent an unacceptable risk to public health and safety and an unmitigable significant environmental impact. The Navy should make public a detailed analysis of the potential environmental impacts of reactor and nuclear weapons accidents resulting from the proposed project. The Navy should carefully review its assertion that national security interests require that its analyses of various reactor accident scenarios be kept from the public. Many aspects of these analyses have no apparent bearing upon national security interests. For example, the assumptions made about the fraction of the radioisotopes released as a result of an accident (*i.e.*, the "release fractions") could be publicly released without any adverse effect on national security. Likewise, the results of these analyses could be made public without compromising national security. How could anyone gain any knowledge of naval nuclear propulsion systems given only the results of reactor accident analyses and not knowing the means by which the Navy reached these conclusions? O.17.2

Should the Navy decide to keep secret all of the reactor accident analyses found in the DEIS Appendix D, it should provide detailed analyses based upon information already in the public record. The best example of such analyses can be found in the enclosed reports by O.17.3

Professor Jackson Davis ("Meltdown of a Naval Propulsion Nuclear Reactor: A Site-Specific Analysis for the San Francisco Bay Region" and "Nuclear Accidents on Military Vessels in Australian Ports: Site-Specific Analyses for Sydney and Fremantle/Perth"). We request that the Navy review these studies and provide a detailed response to the issues raised and conclusions reached by Professor Davis as they apply to the homeporting alternatives considered for the proposed project. O.17.3

We request that the Navy answer these fundamental questions: O.17.4

- Does the reactor core inventory described by Professor Davis accurately reflect the quantities of radioisotopes in NIMITZ-class aircraft carriers? If not, what is the range of the inventory of radioisotopes associated with these reactors?
- How far from a reactor accident would the public have to be in order to avoid exposure to radioisotopes in quantities above U.S. Environmental Protection Agency (EPA) and U.S. Nuclear Regulatory Commission (NRC) limits? The analysis by Professor Davis suggests that, for iodine-131, this distance would be, at minimum, approximately 11 kilometers (6.8 miles). O.17.5
- Did the Navy consider the effects of reactor core melting resulting from a loss of coolant accident? O.17.6
- Did the Navy assess the risk of a destructive power excursion resulting from a reactor accident given the uranium fuel enrichment levels associated with naval nuclear propulsion reactors? O.17.7
- Did the reviews by the U.S. NRC and Advisory Commission on Reactor Safeguards (ACRS) cited on DEIS, p. 7-3, include full access to classified documents? Did these reviews specifically assess the consequences of reactor and nuclear weapons accidents aboard NIMITZ-class aircraft carriers? Did these reviews specifically assess compliance with National Environmental Policy Act (NEPA) requirements for the proposed project? O.17.8

Based on our assumption that the Navy will not answer all of these questions, we have conducted our own analysis of the consequences of a reactor accident aboard a NIMITZ-class aircraft carrier. Our analysis establishes that the environmental and public health impacts would be "significant" as set forth in NEPA. We based our assessment on the statement in the DEIS that "the amount of radioactivity potentially available for release typically is less than one hundredth of that for a commercial reactor." (DEIS, p. 7-4) A typical commercial reactor is 1,000 MW_e and 3,000 MW_{th}. Since the amount of radioactivity in a reactor is proportional to the size of the reactor, we conclude that the NIMITZ-class aircraft carrier reactors are approximately 30 MW_{th}. [Note that the citation of Stirling (1986) by Professor Davis on pp. 55 of "Nuclear Accidents on Military Vessels . . ." suggests that this is a very low estimate.] Given the availability of one hundredth the radioactivity of a commercial reactor, we conclude that the consequences of an accident to be comparable to about one hundredth of the effects of an accident at a commercial reactor accident. O.17.9

O.17

We have calculated the dose to members of the public within certain distances from the reactor. We have relied upon information presented in the DEIS about the radioactivity inventory and upon U.S. NRC Regulatory Guide 1.145 as the basis for our calculations. We provide the results of our calculations in the attached graph. These results show that the proposed project does not comply with U.S. NRC thyroid dose standards at distances much greater than 75 kilometers (46.6 miles) in the event of a reactor accident. It should be noted that the violation of U.S. NRC thyroid dose standards would remain given analyses assuming a much smaller reactor and assuming a much smaller release fraction. It should also be noted that the approximate number of people within this distance of the various home ports being considered ranges from about 800,000 at Pearl Harbor, Hawaii, to 2.9 million at Puget Sound, Washington. (DEIS, Table F-4) O.17.10

The DEIS does not include an honest and straightforward description of past problems with naval-based nuclear weapons and reactors. The Navy claims that there has never been a reactor accident (DEIS, p. 7-3) but admits that two of its nuclear-powered vessels sank (DEIS, p. 7-4). This "no accident" claim is disingenuous at best. If an earthquake caused the commercial nuclear power reactors in San Onofre, California, to sink to the bottom of the ocean, you can bet everyone would consider that an "accident." To set the record straight, we have enclosed a variety of documents on naval accidents involving nuclear weapons and reactors. O.17.11

As demonstrated by our comments, the DEIS lacks specific information about reactor and nuclear weapons accidents necessary to judge accurately the impact of this proposed agency action. Thus, the Navy has not complied with NEPA by fully and accurately describing the proposed agency action in the DEIS. Because the Navy failed to provide information about reactor and nuclear weapons accidents in the DEIS, the public cannot submit meaningful comments and the Navy cannot make a fully informed decision on the proposed alternatives. The DEIS should be reasonably informative as a stand alone document. It is not. The Navy has not demonstrated compliance with U.S. EPA and U.S. NRC regulatory limits given an accident involving nuclear reactors or nuclear weapons. O.17.12

In closing, we request that the Navy provide a clear, understandable, and responsive point-by-point assessment of our comments and the information presented in the attachments to our comments. We also request timely provision of any Response to Comments, Final EIS, or Supplemental EIS related to this project and timely notice of any proposed agency action and all agency decisions related to the proposal to develop home port facilities for NIMITZ-class aircraft carriers. We incorporate by reference into our comments all of the enclosures included with this letter and ask that our comments and our attachments be considered part of the administrative record for this project. O.17.13

Sincerely,

Joseph K. Lyou, Ph.D.
Executive Director

Enclosures:

"Thyroid Doses to Members of the Public at Various Distances Downwind From a Reactor Incident Involving a NIMITZ-Class Aircraft Carrier Naval Nuclear Propulsion Reactor (Estimated 30 MW_{th}) Given a 25% Release Fraction for Radioiodine"

"Meltdown of a Naval Propulsion Nuclear Reactor: A Site-Specific Analysis for the San Francisco Bay Region"

"Nuclear Accidents on Military Vessels in Australian Ports: Site-Specific Analyses for Sydney and Fremantle/Perth"

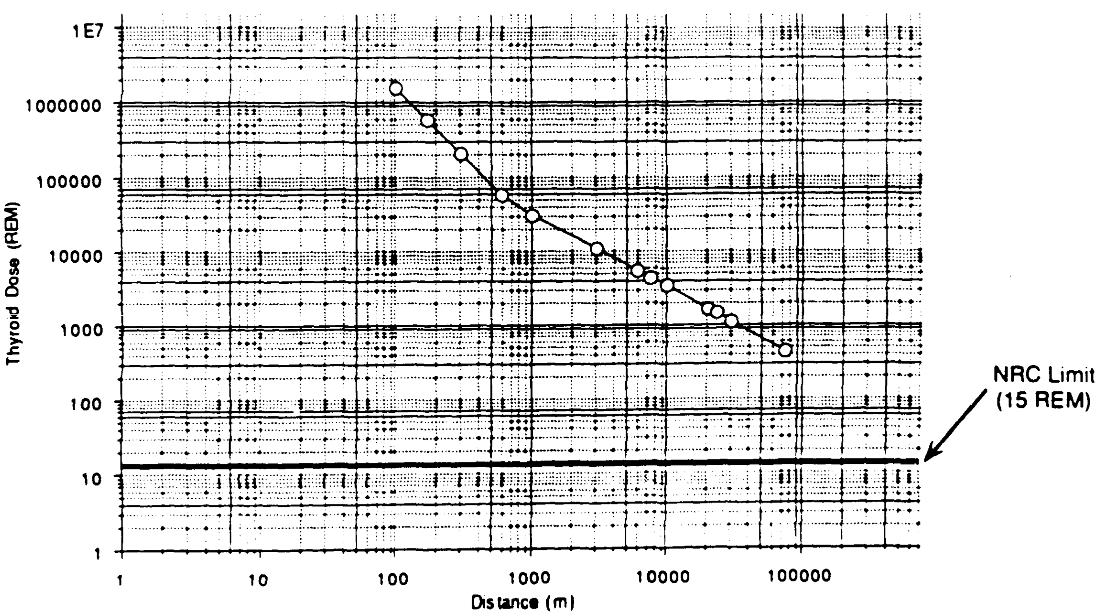
"U.S. Nuclear Weapons Accidents: Danger in Our Midst"

"Secret Documents Disclose 381 Navy Nuclear Weapon Accidents"

"Naval Accidents, 1945-1988"

"Aircraft Carriers - CV, CVN"

Thyroid Dose to Members of the Public at Various Distances Downwind From a Reactor Incident Involving a NIMITZ-Class Aircraft Carrier Naval Nuclear Propulsion Reactor (Estimated 30 MW_{th}) Given a 25% Release Fraction for Radioiodine



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MELTDOWN OF A NAVAL PROPULSION NUCLEAR REACTOR: A SITE-SPECIFIC ANALYSIS FOR THE SAN FRANCISCO BAY REGION

by

W. JACKSON DAVIS, Ph.D.
Professor of Biology
Fellow, Stevenson Nuclear Policy Program
University of California at Santa Cruz
Santa Cruz, California 95064
U. S. A.

7 February 1987

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I. EXECUTIVE SUMMARY

The proposal to homeport the U. S. S. Missouri in San Francisco Bay implies an increase in traffic from nuclear propelled military vessels, and a corresponding increase in the probability of an accident involving the meltdown of a naval propulsion nuclear reactor. This report uses established methodology of the U. S. Nuclear Regulatory Commission (NRC) and conservative assumptions (i. e., ones that understate the impact of the accident) to analyze quantitatively the consequences of such an accident to the city of San Francisco.

In this analysis it is assumed that a nuclear-propelled naval vessel propelled by a 100 megawatt (thermal) PWR nuclear reactor stationed at Hunter's Point (corresponding the alternative # 5 of the Navy's homeporting proposal for the San Francisco Bay Area) suffers a reactor accident involving breach of containment and consequent escape of radioactivity into the environment. The most probable winter wind pattern (Figure 2) would carry the resulting radioactive cloud in a north-northwest direction from Hunter's Point, directly through the heart of San Francisco's financial district (Figure 5). The total inventory of radionuclides available for release was calculated using the ORIGEN computer code (Table 1). Release fractions consistent with existing accident histories and radionuclide properties were assumed, and consequent releases to the atmosphere calculated for 15 radionuclides comprising more than 90% of the projected health detriment (Table 2) for three exposure pathways (cloudshine, inhalation exposure and groundshine).

Calculated air concentrations of individual radionuclides in locations downwind from the accident exceed federal U. S. (NRC) limits by up to two thousand times (iodine-131; Figure 6). Calculated surface deposition of specific radionuclides ("fallout") exceeds NRC limits by up to one million times (cesium-137; Figure 7) near the reactor site, and remains more than 100 times the NRC limit at the furthest location (11 km) from the accident within the city. Calculated radiation exposure from the passing cloud ("cloudshine") exceeds federal exposure limits by up to 100 times for individual radionuclides (e. g., lanthanum-140; Figure 8), and exceeds background radiation exposure by up to ten thousand times. Cloudshine exposure from all radionuclides exceeds the NRC limit by up to 500 times, and exceeds background by up to thirty thousand times (Figure 9). Inhalation exposure from the cloud for individual radionuclides exceeds NRC exposure levels by up to one thousand times (cesium-137; Figure 10), and exceeds background by up to two hundred thousand times. Aggregate inhalation exposure from the 15 radionuclides analyzed exceeds NRC exposure limits by up to eight thousand times and exceeds background by up to two million times (Figure 11). Inhalation exposure remains well above the NRC limit throughout the entire city. Radiation exposure for nuclides deposited on the ground ("groundshine") for one day exceeds NRC limits by up to five thousand times for individual radionuclides (e. g., tellurium-132; Figure 12). Aggregate groundshine exposure from the 15 radionuclides analyzed exceeds NRC exposure limits by up to ten thousand times (Figure 13).

Based on the above radiation exposures, casualties from fatal cancers were computed. Short-term casualties (one day) range from 5 to 1,068 (Figure 16), depending on the atmospheric conditions and risk factor used. Medium-term casualties (one week of groundshine alone) under the most stable atmospheric conditions range from 174 to 1,778 (Figure 17). Long-term casualties (one year of groundshine alone) under the most stable atmospheric conditions range from 225 to 2,051 (Figure 18). Additional yearly casualties would range from 61 to 659, declining to about half this number in 30 years.

Even under highly conservative assumptions, therefore, the meltdown of a naval nuclear reactor at Hunter's Point would cause up to thousands of casualties in San Francisco unless the city were immediately evacuated and decontaminated prior to rehabitation. Evacuation would have to be rapid (1 - 2 hrs.) to be effective. Decontamination costs are difficult to estimate, since

experience in decontaminating large urban areas is lacking. U. S. government studies suggest that decontamination costs could reach tens of billions of dollars. Until the city of San Francisco were decontaminated, the economy of the city would remain at a standstill. There is no legal precedent for assessing liability and indemnity for the costs of cleaning up after a military accident, and hence it is not clear how these costs would be paid.

The risk to the people of San Francisco from this accident is defined as the product of the consequences described above, and the probability that the accident scenario analyzed will occur. Although the consequences can be established with precision, computing the probability of a naval propulsion reactor accident requires information that the military has been unwilling to release, such as the accident history and operating characteristics of naval propulsion reactors. In the absence of this information, the risk of the accident modeled here cannot be calculated.

These findings provide a technical basis for seven policy recommendations. These are: 1) data necessary to calculate the probability of a naval propulsion nuclear reactor accident should be made available prior to a decision on homeporting; 2) emergency evacuation plans appropriate to nuclear accidents should be developed by Bay Area cities; 3) the ecological impact of nuclear accidents on San Francisco Bay and the Pacific ocean should be assessed; 4) decontamination plans should be drawn up for the city of San Francisco and other localities that could be impacted by a nuclear accident; 5) legal liability for a nuclear accident should be established in advance with the cooperation of the military; 6) contingency plans for economic recovery following a nuclear accident should be considered in advance; and 7), cost-benefit analysis of homeporting should be undertaken, with the aim of identifying viable alternatives.

II. INTRODUCTION

The United States Navy has proposed to homeport a reactivated, nuclear-capable battleship, the *U. S. S. Missouri*, and its support fleet, in San Francisco Bay. As a prelude to a decision on this matter, the Navy is obligated under national legislation (the National Environmental Protection Act, or NEPA) to prepare an Environmental Impact Statement. The Navy acknowledges that in the past decade, it has recorded a total of 630 "incidents" and 2 nuclear "accidents" during routine operations. It is therefore appropriate and prudent that an Environmental Impact Statement prepared under NEPA legislation address prospective accidents associated with stationing the U. S. S. Missouri and its Surface Action Group in the San Francisco Bay Area.

A wide range of prospective nuclear accidents can be identified. These range from dropping a nuclear warhead overboard (as has occurred in the past) to unintended launching or detonation of a nuclear warhead. The two most credible accident scenarios, however, may be accidental incineration of a nuclear warhead during a ship fire, and an accident involving a meltdown of a naval propulsion reactor.

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With respect to nuclear weapons accidents, the *Missouri* is capable of carrying up to 400 TOMAHAWK Sea Launched Cruise Missiles (SCLMs), each armed with a single nuclear warhead (Cochran et al., 1984). A single nuclear warhead in turn contains an estimated 5 Kg of plutonium-239. Plutonium is highly pyrogenic, combusting readily in air at temperatures below those of a typical hydrocarbon shipboard fire (1,500 to 2,400°F; Dennis et al., 1978). Accidental release of even a fraction of the plutonium contained in a typical nuclear weapon from an accident on a ship berthed at Hunter's point could envelop the city of San Francisco in a radioactive cloud. A previous analysis of such an accident in San Francisco (Davis, 1986 a) has documented that the casualties from such a nuclear weapon accident could range into the thousands, and the city would have to be decontaminated before it could be reinhabited.

With respect to a naval propulsion reactor accident, the *Missouri* is conventionally powered and would not itself present a nuclear reactor hazard. Ships that are part of the *Missouri*'s Surface Action Group (SAG), however, include one nuclear-capable guided missile cruiser, three nuclear-capable guided missile destroyers, one ammunition ship and one oiler (based on the composition of a SAG as depicted in Cochran et al., 1984). These ships may be nuclear propelled. The Navy's proposed expansion of the facilities at Hunter's point to include the *Missouri* and its SAG would almost certainly imply an increase in traffic from nuclear powered vessels. Nuclear powered vessels in fact already frequent Hunter's Point Naval Station; at this writing the *U. S. S. Enterprise*, which is powered by eight large (230 megawatt) and antiquated (26 years old) naval propulsion reactors, is stationed at Hunter's Point.

It is therefore important to assess the possible consequences of a nuclear reactor accident on a naval vessel stationed at Hunter's Point. Such an analysis is undertaken in the present report using the established quantitative methodology promulgated by the U. S. Nuclear Regulatory Commission for regulating the U. S. civilian nuclear industry. This analysis shows that even a small accidental release of the core inventory of a 100 megawatt naval propulsion reactor would have disastrous consequences for the city of San Francisco.

III. NAVAL NUCLEAR PROPULSION REACTORS

In order to assess the impact of an accident involving a naval propulsion reactor, it is first necessary to establish the inventory of radionuclides in a typical reactor. It is this inventory represents the source of radionuclides subject to release and dispersion in the event of an accident. The purpose of the present section is to review briefly the naval nuclear propulsion program, with the aim of establishing the likely inventory of radionuclides in a typical naval propulsion reactor.

A. History of the U. S. Naval Nuclear Propulsion Program

There have been as many as 161 operating nuclear-propelled vessels in the U. S. Navy, powered by a total of 182 naval propulsion reactors. The figures as of March 1986 were 149 nuclear powered vessels driven by 169 reactors (Cochran, Arkin, Norris and Hoenig, 1987). The corresponding figures for all nations are 371 vessels powered by 396 reactors. The primary U. S. ports where refueling and refitting of these vessels takes place include Portsmouth, Virginia, on the eastern seaboard, and Bremerton, Washington and Mare Island, in the San Francisco Bay near the city of Vallejo, on the western seaboard.

Information regarding the naval nuclear propulsion program is difficult to obtain, inasmuch as most details are classified. Several comprehensive histories of the program and technical treatises have been published, however (e. g., Bureau of Naval Personnel, 1970; Hewlett and Duncan, 1974; Hogerton, 1963; Polmar and Allen, 1984; Polmar, 1976), and these contain technical data sufficient to informed judgements about the nature and contents of naval propulsion reactors. In addition, the open literature contains data regarding fuel production for the program, as well as refueling schedules (e. g., Cochran et al., 1984). This information collectively enables reasonable inferences about the core inventory of the "typical" naval propulsion reactor, as described below.

Early in the history of the Naval Propulsion Program, a choice was made between liquid sodium cooled reactors, which powered the *Sea Wolf*, and pressurized water reactors (PWRs), which powered the *Nautilus* (Bureau of Naval Personnel, 1970; Hewlett and Duncan, 1974). The many technical problems with the *Sea Wolf* led to its early abandonment and the disposal of its reactor vessel on the sea floor off the Eastern Seaboard of the U. S. The success of the *Nautilus*, in contrast, established the pattern for the subsequent development of the U. S. nuclear navy.

The *Nautilus* -- and all subsequent nuclear powered vessels in the U. S. Navy -- was driven by a PWR using highly-enriched uranium (HEU, enriched to 97.3%) as its fuel. PWR designs in early textbooks of naval nuclear engineering show a conventional four-loop PWR much like those that form the backbone of the commercial civilian nuclear industry in the U. S. The HEU fuel was clad originally in stainless steel and later, as the technology developed, zirconium (zircaloy-2). The early designs show a central core of "seed" fuel, surrounded by arrays of fuel rods containing uranium-238, termed "blanket" fuel. The nuclear fission in the former produced neutrons that converted the latter to plutonium-239, and hence these early PWRs were a form of breeder reactor.

It seems likely that later versions of naval propulsion reactors would have eliminated the "blanket" fuel, since the function of absorbing neutrons could be performed by other means, and the plutonium produced in the blanket arrays could be produced more efficiently, economically and safely in land-based production reactors (such as Hanford's N-reactor). From their common roots, commercial and naval propulsion reactors probably evolved along somewhat divergent lines, since the specialized requirements of propulsion reactors would select for different technological criteria. In particular, the military mission of naval reactors would favor a core geometry conducive to uniform irradiation of the fuel and consequent efficient fuel use during the long intervals between refueling.

B. Core Inventory of A Naval Propulsion Reactor

The primary concern of the present study, however, is the inventory of radionuclides within the core of a naval propulsion reactor, since this inventory represents the radioactive material that is subject to release in the event of an accident. With respect to the inventory of radionuclides present in a naval reactor core, the most relevant parameter is the integrated energy output of the core, which is proportional to the number of fissions and hence to the total inventory of radioactivity. Modern naval propulsion reactors range in power from 15 - 230 megawatts (Stirling, 1986). A power rating of 100 megawatts approximates the middle of this range, although reactors up to 230 megawatts are present at Hunter's Point Naval Shipyard. Indeed, eight such reactors propel the *U. S. S. Enterprise*, currently in drydock at Hunter's Point. The present analysis conservatively assumes a power rating of 100 megawatts (thermal).

Although information about the design and operating characteristics of naval propulsion reactors is not available in the open literature, it is known that there were a total of 283 re-fuelings of all nuclear powered ships in the U. S. nuclear navy up to December of 1985. From 5 May 1969 to 25 February 1974, there were 58 refuelings (approximately 10 per year); between 25 February 1974 and 24 April 1979 there were 42 refuelings (approximately 8 per year); and between 1979 and 1982 there were 20 refuelings (5 per year) (Cochran et al., 1987). Therefore, historically there have been approximately 10 refuelings per year in a fleet consisting currently of 169 naval propulsion reactors. Refueling the entire fleet, therefore, would take 16.9 years, and the interval between refuelings for a single vessel would also be 16.9 years. Given a re-fueling interval of 16.9 years under a steady state assumption, the average naval reactor will contain fuel irradiated for half this time, or approximately 8 years.

These data imply that the entire core of a naval propulsion reactor is replaced at the same time, rather than replacing one-third of the core in each re-fueling, as occurs in commercial reactors. It is reported further in the open literature (Cochran, et al., 1987) that the entire Nuclear Naval Reactor Program utilizes 5 metric tons of HEU per year, corresponding to an average charge of 0.5 metric tons of fuel per loading. These data are probably incomplete, but they nonetheless suggest that naval propulsion reactors contain a relatively small amount of highly enriched uranium fuel in the core which is replaced infrequently -- characteristics that are clearly consistent with the military mission of naval reactors.

On the basis of the above inferences, it is assumed that the fuel in the 100 megawatt naval propulsion reactor that is the subject of the present analysis has been irradiated for an average of 8 years. It is also assumed that the capacity factor of a naval propulsion reactor is 25%, i. e., the reactor is operated to its full capacity an average of 25%% of its lifetime. These assumptions were confirmed as reasonable by Captain Bush, Associate Director of the Center for Defense Information in Washington D. C. and a former commander of a Poseidon submarine, who stated that the mean burn time for a nuclear submarine reactor is about 12 years, the full core is changed with each refueling, and a capacity factor of 25% is normally assumed.

Given the above inferred characteristics of naval propulsion reactors, the total inventory of radionuclides in the core of a reactor at the time of a hypothetical accident can be determined. This was achieved by extrapolating from the nuclide inventory of a 1 megawatt research reactor fueled with 93% enriched uranium and operated at full power for one year, as calculated using the ORIGEN computer code developed by the Oak Ridge National Laboratory. To make the extrapolation, the inventory of short-lived nuclides (half-live less than one year) was assumed to reach equilibrium in a few weeks, while the inventory of long-lived nuclides (half-life more than one year) was assumed to grow linearly with time. The inventory of short-lived radionuclides at the end of one year of irradiation in the 1 megawatt research reactor was therefore assumed to be the inventory at the end of 8 years as well. This value was multiplied by 100 to obtain the corresponding inventory of short-lived nuclides in a 100 megawatt naval propulsion reactor. The inventory of long-lived radionuclides at the end of one year's operation of the research reactor was multiplied by 8 (corresponding to an eight-year burn) and then 100 (to scale up to the assumed power of the naval propulsion reactor) to obtain the inventory of a propulsion reactor.

These values were then both multiplied by 0.25 to account for the 25% capacity factor. This latter operation will likely understate the inventory of shorter-lived nuclides, since these will attain their 100% equilibrium value during operation immediately prior to cold shutdown in berth. The resultant radionuclide inventories extrapolated for the 100 megawatt naval propulsion reactor analyzed here are shown in Table 1.

TABLE 1: CORE INVENTORY OF A 100 MEGAWATT NAVAL PROPULSION REACTOR ASSUMING 25 % CAPACITY FACTOR

RADIONUCLIDE	HALF-LIFE (DAYS)	CORE INVENTORY (CURIES)
Krypton-85	3,950	6.96E+04
Krypton-85m	0.183	2.62E+05
Krypton-87	0.0528	5.24E+05
Krypton-88	0.117	7.52E+05
Rubidium-86	18.7	8.58E+00
Strontium-89	52.1	1.01E+06
Strontium-90	11,030.0	1.42E+05
Strontium-91	0.403	1.22E+06
Yttrium-90	2.67	4.73E+05
Yttrium-91	59.0	1.22E+06
Zirconium-95	65 2	1.31E+06
Zirconium-97	0.71	1.31E+06
Niobium-95	35.0	1.31E+06
Molybdenum-99	2.8	1.28E+06
Technetium-99m	0.25	1.11E+06
Ruthenium-103	39.5	6.32E+05
Ruthenium-105	0.185	1.90E+05
Ruthenium-106	366	2.40E+04
Rhodium-105	1.50	1.90E+05
Tellurium-127	0.391	2.73E+04
Tellurium-127m	109.0	6.02E+03
Tellurium-129	0.048	2.45E+05
Tellurium-129m	0.340	3.37E+04
Tellurium-131m	1.25	9.26E+04
Tellurium-132	3.25	8.93E+05
Antimony-127	3.88	2.74E+04
Antimony-129	0.179	2.11E+05
Iodine-131	8.05	6.17E+05
Iodine-132	0.0958	9.22E+05
Iodine-133	0.875	1.39E+06
Iodine-134	0.0366	1.64E+06
Iodine-135	0.280	1.28E+06
Xenon-133	5.28	3.34E+04
Xenon-135	0.384	1.35E+06
Cesium-134	750.0	8.16E+02
Cesium-136	13.0	2.01E+03
Cesium-137	11,000	1.44E+05
Barium-140	12.8	1.34E+06
Lanthanum-140	1.67	1.34E+06
Cerium-141	32.3	1.35E+06
Cerium-143	1.38	3.90E+05
Cerium-144	284	1.18E+06
Praseodymium-143	13.7	1.21E+06
Neodymium-147	11.1	4.97E+05
Neptunium-239	2.35	2.79E+04
Plutonium-238	32,500	1.99E-01
Plutonium-239	8.9E+06	4.68E+00
Plutonium-240	2.4E+06	4.98E-02
Plutonium-241	5,350	7.29E-02
Americium-241	1.5E+05	6.03E-04
Curium-242	163	7.49E-04
Curium-244	6,630	1.41E-10
CORE INVENTORY AT COLD SHUTDOWN		2.92E+07

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TABLE 1: CORE INVENTORY OF A 100 MEGAWATT NAVAL PROPULSION REACTOR ASSUMING 25 % CAPACITY FACTOR

In order to simplify the analysis of an accident further, all radionuclides with half-lives less than one day have been eliminated from consideration. This is equivalent to assuming that the reactor remains shut down for at least several days prior to the hypothetical accident. This assumption eliminates most of the highly toxic iodines from consideration, and results in a probable understatement of the consequences of an accident. This reduced inventory forms the basis of the accident analysis presented in subsequent sections.

IV. CONSEQUENCES OF A NAVAL PROPULSION NUCLEAR REACTOR ACCIDENT IN THE PORT OF SAN FRANCISCO

In the event of a nuclear reactor accident aboard a military vessel, the first event would be escape of fission products from the core into the reactor vessel (containment); and the second step would be the release of radionuclides from the reactor vessel to the atmosphere. It is assumed that the latter process would be slow in comparison with the former; a ground level release of 4 hours duration is assumed for the present analysis.

A. Methodology

In order to analyze the consequences of such an accident, it is necessary to calculate the distribution of released radionuclides and their consequent health impacts. The U. S. Nuclear Regulatory Commission (NRC) has published methodology for these purposes, in the document known variously as *The Reactor Safety Study*, the Rasmussen Report, or Document WASH-1400 (NRC, 1975). This methodology remains the official basis for regulating the U. S. civilian nuclear industry.

The details of this methodology are presented in Appendix I of the present report. Briefly, the initial inventory of radioactive material subject to accidental dispersion is first established. The dispersion of the released radioactivity in the atmosphere is then calculated under specific release assumptions, utilizing well-established and empirically tested mathematical equations for turbulent diffusion in the atmosphere. These equations imply a Gaussian distribution of radionuclides in the horizontal and vertical directions within the radioactive smoke plume. The dimensions of the plume are computed for different atmospheric stability conditions (Pasquill categories A - F), for increasing incremental distances from the scene of the accident. Plume width is taken as three standard deviations of crosswind radionuclide concentration, in accord with the recommendation of WASH-1400. The downwind concentration of radionuclides in the

air is determined for specific release assumptions. The deposition of radioactivity on exposed surfaces is then computed. The air and ground concentrations of dispersed radionuclides at different distances from the source may then be compared with U. S. federal standards for maximum permissible concentrations and limits, in order to assess the need for possible evacuation and decontamination.

Following the above calculations of the dispersion of radionuclides, the medical significance of the resultant radiation doses to people is evaluated for five pathways: exposure to gamma radiation in the passing radioactive cloud ("cloudshine"), inhalation of the radionuclides dispersed in the air, exposure to radioactivity deposited on surfaces ("groundshine"), exposure to radionuclides that were deposited in the initial accident and subsequently resuspended in the atmosphere ("resuspension"), and ingestion of radionuclides deposited on food and in water supplies ("ingestion"). Radiation exposure is calculated using specific radiation dose conversion factors, and casualties are then calculated using risk factors from the scientific literature. In the present analysis, low and high risk factors are used to calculate casualties from latent cancer fatalities. The low risk factor is taken as one cancer fatality per 10,000 person-rem, in accord with BEIR III (NAS, 1980). The high risk factor is taken as one cancer fatality per 235 person-rem (Gofman, 1981). This extension of WASH-1400 methodology ensures that the projected casualties will lie within the range expected from current medical knowledge. In the present study, the population at risk is assumed to be the residential population in the path of the radioactive cloud, and all exposed inhabitants are assumed to be adults. These assumptions collectively understate the actual impact of the accident modeled, because the workforce population is greater than the residential population, and adults are less susceptible than children and infants to the effects of radiation.

Inasmuch as the methodology used here is in essence identical to that used to regulate the U. S. commercial nuclear industry, there is no question regarding its relevance or acceptability in the present application. Full details of the methodology are presented in the Appendix to this report.

B. Assumed Location and Source Term

In order to apply the above methodology, it is first necessary to define explicitly the assumptions of the accident modeled. For purposes of the present study, it is assumed that a nuclear powered naval vessel is berthed at Hunter's Point Naval Shipyard at the site of the proposed Surface Action Group Naval Base (Figure 1). This basing assumption corresponds to alternative # 5 under consideration by the U. S. Navy for the San Francisco Bay Area homeporting proposal. It is assumed further that the vessel is powered by a naval propulsion reactor with a power rating of 100 megawatts (thermal), the approximate mid-range of existing naval propulsion reactors (approximately 25 to 230 megawatts thermal). A core meltdown is assumed to occur in this reactor, resulting in the release of a fraction of the core inventory to the environment at Hunter's Point.

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To analyze this accident scenario, it is first necessary to establish the assumed release fraction for each radionuclide. This was carried out as indicated in Appendix I. That is, 100% release was assumed for the noble gases; 10% release for the volatile oxides (rutheniums) and the comparatively volatile telluriums, iodines and cesiums; and a 1% release was assumed for all other radionuclides. As described in Appendix I, these release fractions are conservative in comparison with actual releases from Chernobyl. These release fractions were multiplied by the inventories present in a 100 megawatt naval propulsion reactor as shown in Table 1 to obtain the source term for each radionuclide considered in this study.

C. Selection of Radionuclides According to Projected Health Impacts

The next step in the analysis was to determine which radionuclides contributed most significantly to health impacts. Toward this end, only three of the five possible exposure

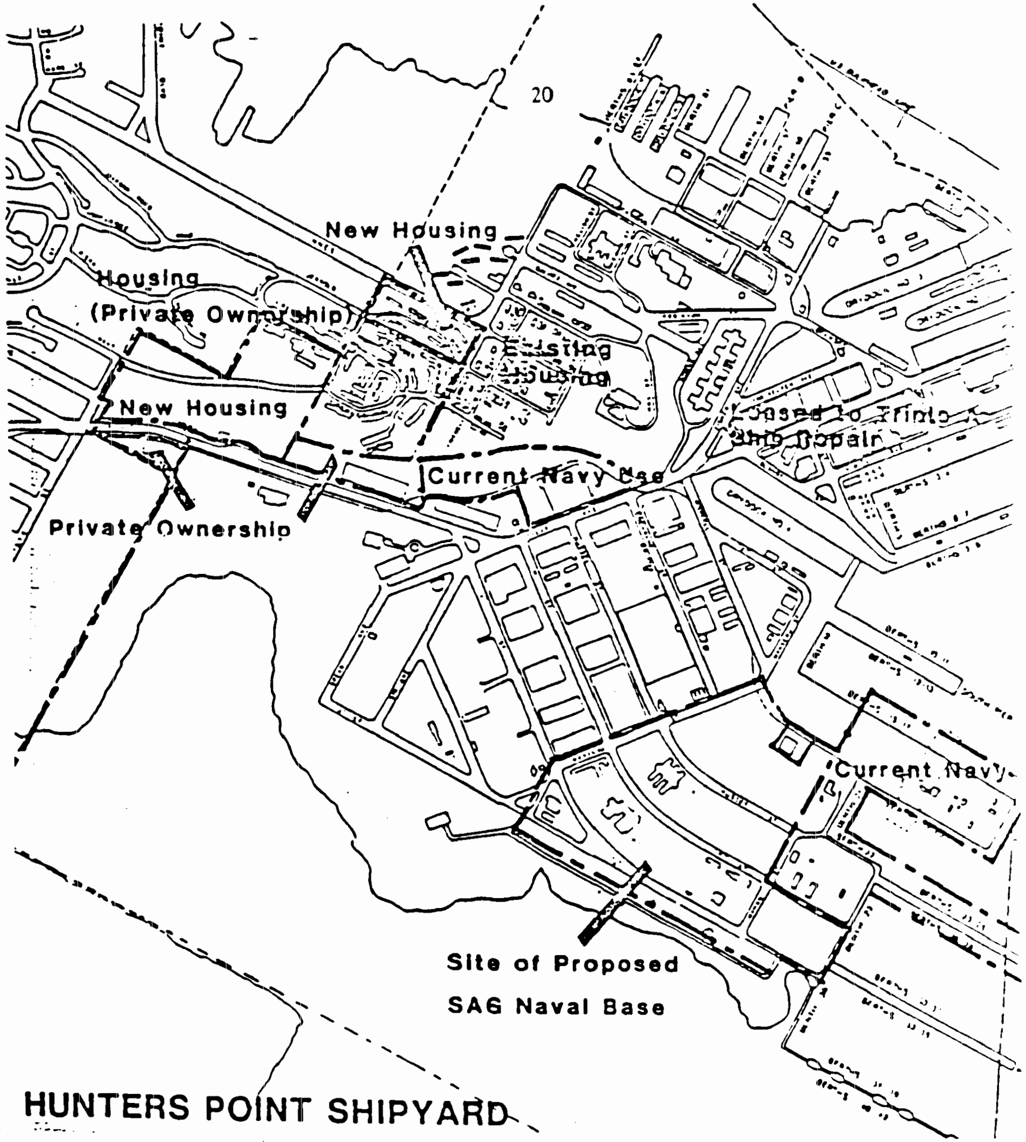

FIGURE 1

Map of the Hunter's Point Naval Shipyard showing the site of the Navy's proposed Surface Action Group (SAG) Naval Base. The present study assumes that the battleship *U. S. S. Missouri* and its support ships are stationed here, in accord with alternative # 5 under consideration by the U. S. Navy.

pathways were considered, namely, cloudshine, inhalation, and groundshine. Resuspension and ingestion were omitted, under the assumption that evacuation and quarantine would be rapid and effective. This assumption results in an understatement of the likely consequences of the reactor accident. Contributions of each radionuclide to each of these three exposure pathways were estimated *a priori* by the following procedure. First, the product of the corresponding dose conversion factor for each exposure pathway and the source term was determined and summed across all radionuclides for each of the three pathways considered in the analysis. Second, the percent contribution represented by each radionuclide to this sum was calculated.

Using this procedure, it was found that 13 radionuclides contribute 94.59% of the radiation dose from cloudshine. These are zirconium-95, niobium-95, ruthenium-103, ruthenium-106, tellurium-131m, tellurium 132, iodine-131, cesium-134, cesium-136, cesium-137, barium-140, lanthanum-140 and cerium-144. The same nuclides contribute 98.07% of the groundshine exposure. These same nuclides and two additional ones (strontium-89 and strontium-90) contribute 94.21 % of the inhalation exposure. Consequently, the present analysis was focussed on these 15 radionuclides. The contribution of each nuclide to the projected health detriment is summarized in Table 2.

TABLE 2: PERCENT CONTRIBUTION TO HEALTH DETRIMENT OF INDIVIDUAL RADIONUCLIDES IN THE CORE OF A NAVAL PROPULSION REACTOR

RADIONUCLIDE	CLOUDSHINE	INHALATION	GROUNDSHINE
Strontium-89	0.0	2.09	0.0
Strontium-90	0.0	17.23	0.0
Zirconium-95	5.88	3.71	4.29
Niobium-95	6.05	1.26	3.96
Ruthenium-103	19.48	6.06	13.50
Ruthenium-106	0.29	7.53	0.20
Tellurium-131m	8.08	0.26	0.02
Tellurium-132	11.77	6.77	50.65
Iodine-131	14.93	1.87	8.05
Cesium-134	0.08	0.19	0.06
Cesium-136	0.27	0.06	0.15
Cesium-137	4.88	26.17	3.48
Barium-140	1.65	1.29	9.01
Lanthanum-140	21.09	0.62	4.44
Cerium-144	0.14	19.10	0.26
TOTAL CONTRIBUTION	94.59%	94.21%	98.07%

D. Atmospheric Transport of the Radioactive Cloud

Radionuclides released by the reactor accident will escape containment in the form of gasses (in the case of the noble gasses and elemental iodine) and aerosols 20 μm and less in diameter. The gasses and aerosols will be carried by mass transport in the direction of the winds prevailing at the time of the accident, in the form of a radioactive plume. For purposes of the present analysis it is assumed that the release occurs at ground level (no thermal lofting) on a dry day in the winter, and that the radionuclides released are dispersed continuously and at a constant rate for a period of 4 hours. The width of the resultant radioactive plume is initialized at 10 m, the presumed size of the release aperture aboard the naval vessel. The results of this analysis are highly insensitive to this latter assumption (i. e., doubling or halving the initial plume width affects the projected casualties by only a fraction of a percent).

The direction of transport of the radioactive plume is set by the pattern of prevailing winds. The typical winter pattern as measured at the San Francisco International Airport (11 kilometers from Hunter's Point) is shown in Figure 2. The most frequently observed wind direction is from SSE to NNW. The most frequent wind speed (53% of observations) is 4-12 mph, while the next most frequent wind speed is 0-3 mph (25% of observations). These data form the basis for assuming a wind speed of 1 m/sec (2.24 mph) in the present study. Wet deposition of radionuclides from the plume is ignored (under the assumption of lack of precipitation), and a dry deposition velocity of 1 cm/sec is assumed (the "average" value recommended in WASH-1400).

Assumptions about atmospheric stability are avoided by performing all calculations for the most stable atmosphere (Pasquill category F) and the least stable atmosphere (Pasquill category A). These conditions are associated with the largest and smallest radiological impact, respectively (Slade, 1968; Turner, 1969), and hence calculations employing them bracket the conditions likely to obtain in any real accident. This bracketing procedure represents an extension of WASH-1400 methodology.

Geographical parameters of the radioactive plume are shown in Figures 3 and 4. In this and subsequent graphs, data are shown for up to 11 km from the source, which is the distance from Hunter's Point to the Pacific Ocean in the direction of most likely transport of the radioactive plume (see below, Figure 4). Plume width is computed as three standard deviations of crosswind radionuclide concentration, in accord with WASH-1400. The width of the plume increases steadily with distance from the damaged reactor, since the cloud expands continuously as it is transported. Similarly, the ground area subtended by the plume increases steadily with distance from the source (Figure 4).

Under the above assumptions (winter wind patterns), the most likely direction of transport for a radioactive plume emanating from a damaged naval reactor at Hunter's Point is toward the

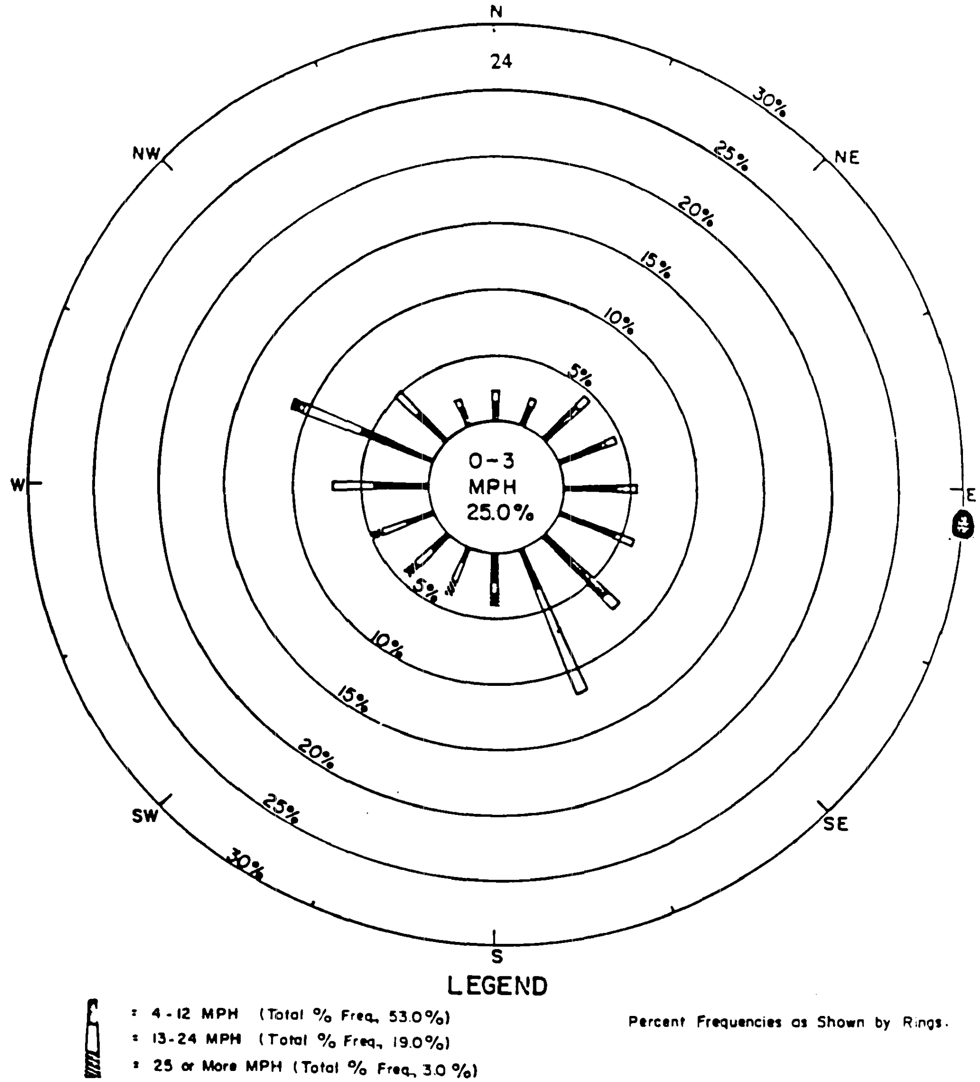

FIGURE 2

Wind rose showing the frequencies and directions from which the winds blow during the winter months at the San Francisco International Airport, approximately 11 km to the south of Hunter's Point Naval Shipyard. From U. S. Department of Commerce, 1968.

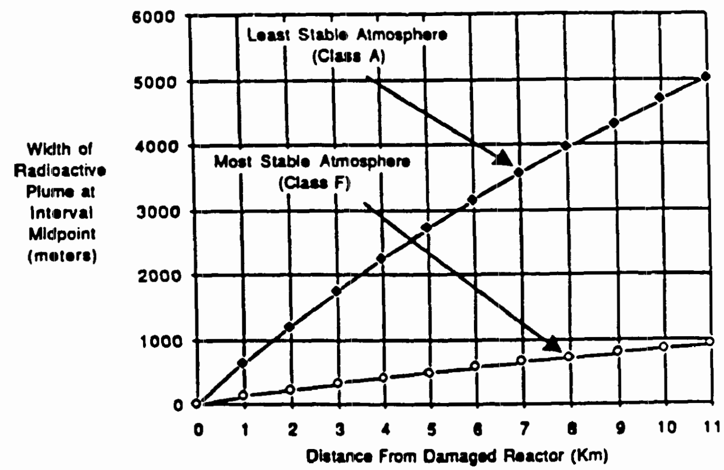

FIGURE 3

Graph showing the calculated width of a radioactive plume emanating from a damaged naval propulsion nuclear reactor on a military vessel at Hunter's Point Naval Shipyard *versus* distance from the damaged reactor. The two curves correspond to the two extremes in the Pasquill atmospheric stability series; all other stability categories lie between the two shown, which therefore serve as outer boundaries for plume width in the accident modeled.

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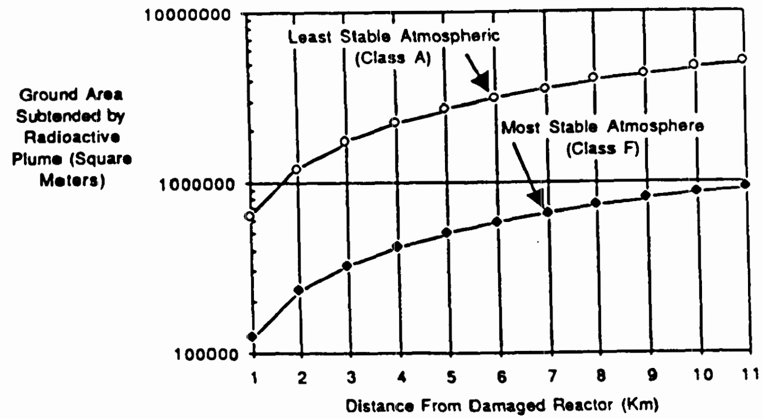

FIGURE 4

Graph showing the calculated ground area subtended by a radioactive plume emanating from a damaged naval propulsion reactor on a military vessel at Hunter's Point Naval Shipyard *versus* distance from the damaged reactor.

north-northwest, i. e., directly over the city of San Francisco (Figure 5). The calculated geographical parameters of the moving plume (Figures 3 and 4) are combined with the most likely direction of transport (Figure 2) to indicate which areas of San Francisco would be most directly impacted by the accident modeled (Figure 5). The dashed line in Figure 5 shows the centerline of the plume. The two wedges correspond respectively to the plume dimensions under the assumption of the most stable atmospheric conditions (inner wedge) and the least stable atmospheric conditions (outer wedge).

As shown in Figure 5, prevailing winter winds would carry the radioactive plume emanating from a damaged naval reactor at Hunter's Point through the adjacent neighborhoods, across Highways 280 and 101, and directly through the heart of downtown San Francisco. The plume centerline would pass through the Potrero District, within a few blocks of San Francisco General Hospital, two blocks from the Civic Center, across Market Street and through the Financial District within one block of Union Square, through Nob Hill and Russian Hill and directly through Aquatic Park, a few blocks from Fisherman's Wharf. Depending upon the stability of the atmosphere, the plume would expand laterally from the centerline to encompass the Embarcadero and the entire waterfront including Fisherman's Wharf east of the midline, and San Francisco General Hospital, the Civic Center, Japantown, the Western Addition and the Presidio to the west of the plume centerline.

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E. Downwind Air Concentrations of Released Radionuclides

Downwind air concentrations were calculated for each of the radionuclides shown in Table 2. These calculations are illustrated for iodine-131 in Figure 6. As shown there, the concentration is highest nearest the damaged reactor, and declines exponentially with distance from the source. As expected, the largest air concentration occurs with the most stable atmospheric conditions, and the smallest concentration with the least stable atmosphere. Air

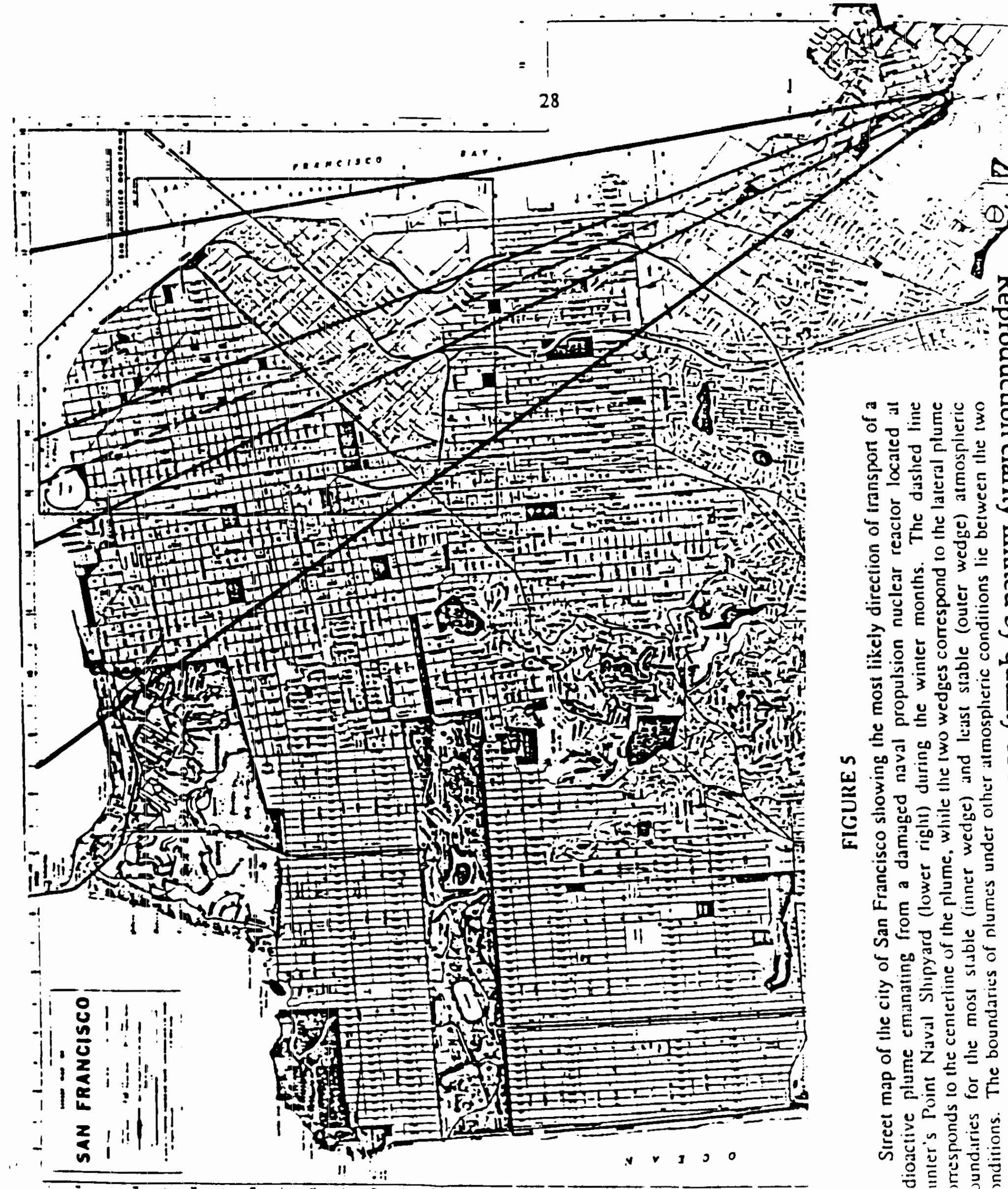

FIGURE 5

Street map of the city of San Francisco showing the most likely direction of transport of a radioactive plume emanating from a damaged naval propulsion nuclear reactor located at Hunter's Point Naval Shipyard (lower right) during the winter months. The dashed line corresponds to the centerline of the plume, while the two wedges correspond to the lateral plume boundaries for the most stable (inner wedge) and least stable (outer wedge) atmospheric conditions. The boundaries of plumes under other atmospheric conditions lie between the two shown.

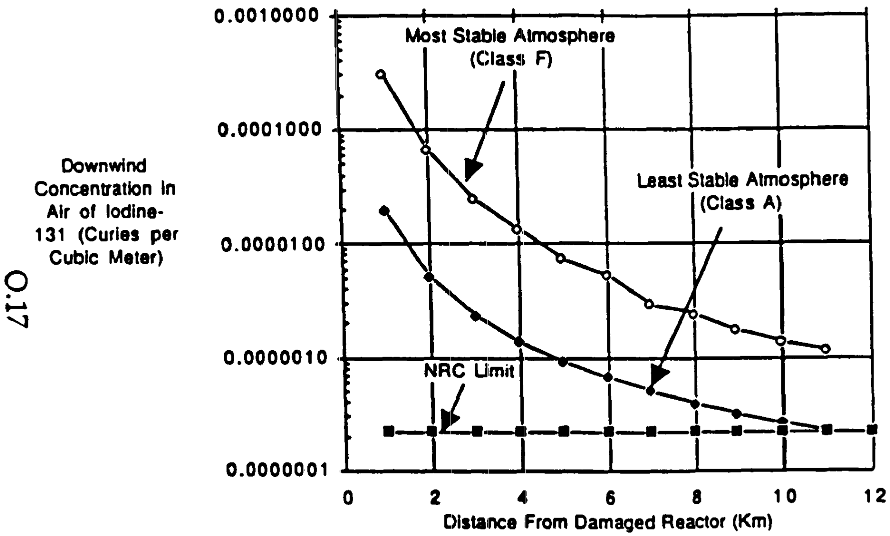

FIGURE 6

Graph showing the calculated air concentration of a single radionuclide, iodine-131, downwind from a damaged naval propulsion nuclear reactor stationed at Hunter's Point Naval Shipyard *versus* distance from the damaged reactor. The two curves correspond to the most stable and least stable atmospheric conditions; curves for other atmospheric conditions lie between the ones shown. Included for comparison is the U. S. Nuclear Regulatory Commission (NRC) limit for air concentration for iodine-131.

concentrations for all other atmospheric conditions (Pasquill categories B-E) lie between these two extremes.

Shown also in Figure 6 is the concentration limit in air for iodine-131 as promulgated by the U. S. Nuclear Regulatory Commission. Air concentrations following the hypothetical accident exceed this limit for all atmospheric stability classes throughout the full extent of the city. The U. S. federal limit is exceeded by up to approximately 2,000 times (class F). Although iodine-131 is considered especially radiotoxic owing in part to its ready uptake by the thyroid gland, it is but one of 15 radionuclides that together comprise the total health detriment. It is the aggregate exposure from all radionuclides that is most directly relevant to health considerations (see below). Calculations for the remaining radionuclides are not shown, but in all cases the federal concentration limit for the individual nuclides is exceeded throughout part or all of San Francisco.

F. Ground Deposition of Released Radionuclides

Surface deposition of each of the 15 radionuclides shown in Table 2 was calculated using WASH-1400 methodology (Appendix I). These calculations are illustrated for cesium-137 in Figure 7. In the case of the least stable atmosphere (class A in Figure 7), ground deposition occurs only in the first kilometer downwind from the damaged reactor, because the large volume of moving air associated with an unstable atmosphere would quickly waft the remainder of the cloud over the city and out to sea, where it would eventually settle to the ocean. The ecological impact of such a large-scale introduction of radionuclides into the ocean has not been addressed here. In the case of the most stable atmosphere, in contrast, substantial ground deposition would occur throughout San Francisco (Figure 7, class F). As expected, the calculated fallout is greatest nearest the source for this ground level release, and declines approximately exponentially with distance from the source.

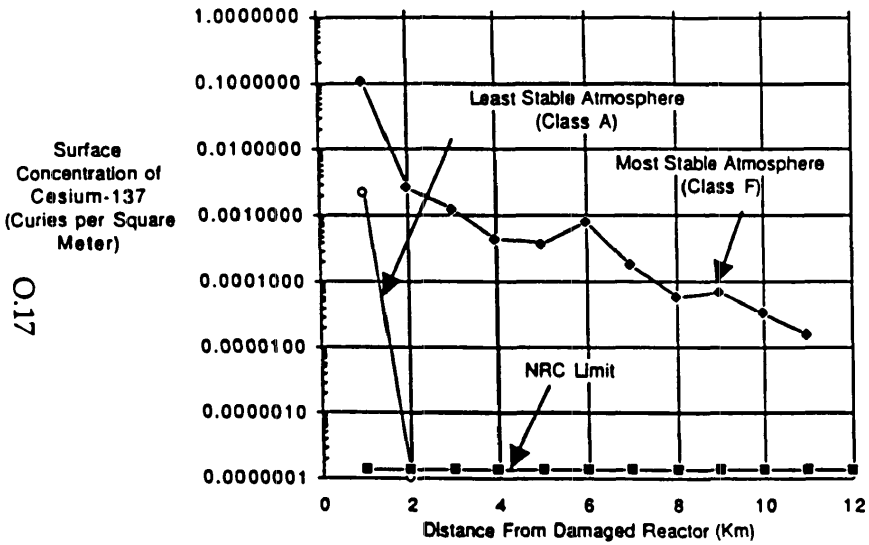

FIGURE 7

Graph showing the surface concentration from fallout of a single radionuclide, cesium-137, downwind from a damaged naval propulsion nuclear reactor stationed at Hunter's Point Naval Shipyard *versus* distance from the damaged reactor. The two curves correspond to the most stable and least stable atmospheric conditions; curves for other atmospheric conditions lie between the ones shown. Included for comparison is the U. S. Nuclear Regulatory Commission (NRC) limit for surface concentration for cesium-137.

The NRC limit for surface contamination by cesium-137 is shown in Figure 7 for comparison with the calculated values. This U. S. federal limit is exceeded by up to nearly one million times. Ground concentration of this single radionuclide remains at least 100 times above the federal limit even at the farthest reach of the plume, 11 km from the reactor. These findings are especially significant because cesium-137 is relatively long-lived (half-life, 30.14 years), and hence the ground deposition of this radionuclide represents a significant long-term detriment. It is largely the persistence of cesium-137 at levels far in excess of existing federal limits for such long time periods that would require decontamination of affected regions of San Francisco, as discussed in a later section.

G. Radiation Exposure from the Passing Radioactive Cloud (Cloudshine)

Gamma exposure from the radioactive cloud as it is transported downwind (cloudshine) was calculated for each of the contributing radionuclides shown in Table 2. These calculations are illustrated for lanthanum-140 in Figure 8. Shown also is the U. S. federal limit for radiation exposure to members of the general public, and also background radiation from natural sources and fallout from atmospheric weapon testing.

As expected from the air concentrations (e. g., Figure 6), cloudshine is greatest nearest the source of the reactor accident, and declines approximately exponentially with increasing distance from the source. Also as expected, cloudshine is greatest for the most stable atmospheric conditions (upper curve in Figure 8), and smallest for the least stable atmospheric conditions (lower curve in Figure 8). Cloudshine exceeds the federal limit by up to approximately eight (class A) to 100 (class F) times in the first downwind kilometer from the accident, and exceeds background radiation exposure by up to approximately one thousand (class A) to ten thousand (class F) times.

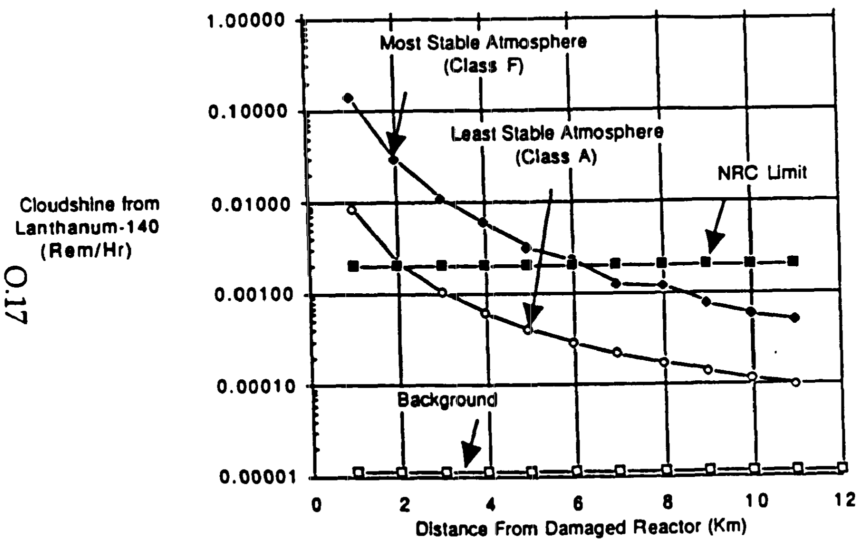

FIGURE 8

Graph showing calculated radiation exposure from cloudshine caused by a single radionuclide, lanthanum-140, downwind from a damaged naval propulsion nuclear reactor stationed at Hunter's Point Naval Shipyard *versus* distance from the damaged reactor. The two curves correspond to the most stable and least stable atmospheric conditions; curves for other atmospheric conditions lie between the ones shown. Included for comparison is the U. S. Nuclear Regulatory Commission (NRC) limit for radiation exposure for members of the general public. Also shown is the level of background radiation from natural sources and nuclear weapon testing.

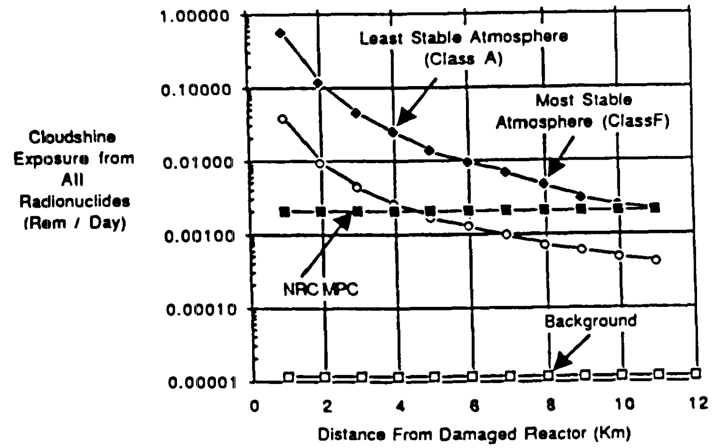

FIGURE 9

Graph showing calculated radiation exposure from cloudshine caused by all radionuclides dispersed downwind from a damaged naval propulsion nuclear reactor stationed at Hunter's Point Naval Shipyard *versus* distance from the damaged reactor. The two curves correspond to the most stable and least stable atmospheric conditions; curves for other atmospheric conditions lie between the ones shown. Included for comparison is the U. S. Nuclear Regulatory Commission (NRC) limit for radiation exposure for members of the general public. Also shown is the level of background radiation from natural sources and nuclear weapon testing.

Cloudshine summed across all 15 of the radionuclides shown in Table 2 is graphed in Figure 9. As shown, cloudshine exceeds federal exposure limits by up to approximately 500 times, and exceeds background radiation levels by up to approximately three thousand to thirty thousand times. Cloudshine is generally acknowledged to be the least serious source of exposure for a radiation accident. The finding that cloudshine is so far above federal limits for radiation exposure is an indication of the severity of a naval reactor accident for the city of San Francisco.

H. Inhalation Exposures from Released Radionuclides

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The exposure from inhalation was calculated for each of the radionuclides shown in Table 2. These calculations are illustrated for cesium-137 in Figure 10. U. S. federal limits are exceeded by up to approximately one hundred (class A) to one thousand (class F) times in the first downwind kilometer. Background levels are exceeded by up to approximately twenty thousand (class A) to two hundred thousand (class F) times. Inhalation exposures for this radionuclide remain above the federal limit for all affected regions of San Francisco.

Again, however, it is the aggregate inhalation exposure from all radionuclides that is most directly relevant to health considerations. This is shown in Figure 11. The U. S. federal limit for radiation exposure to members of the general public is exceeded in this aggregate exposure by up to approximately five hundred (class A) to eight thousand (class F) times, and background is exceeded by up to approximately sixty thousand (class A) to two million (class F) times. Aggregate inhalation exposure remains well above the NRC limit throughout the full extent of the city, i. e., out to 11 km from the damaged reactor.

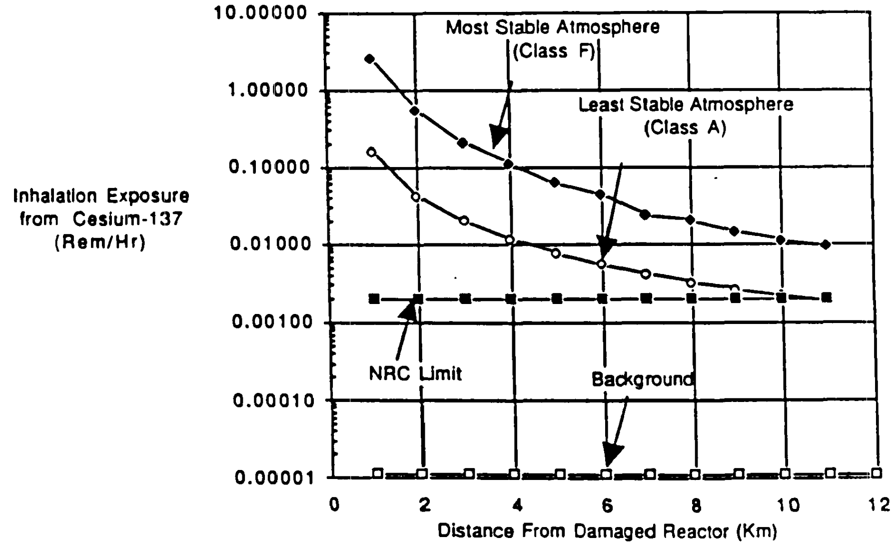

FIGURE 10

Graph showing calculated radiation exposure from inhalation of cesium-137 downwind from a damaged naval propulsion nuclear reactor stationed at Hunter's Point Naval Shipyard *versus* distance from the damaged reactor. The two curves correspond to the most stable and least stable atmospheric conditions; curves for other atmospheric conditions lie between the ones shown. Included for comparison is the U. S. Nuclear Regulatory Commission (NRC) limit for radiation exposure for members of the general public. Also shown is the level of background radiation from natural sources and nuclear weapon testing.

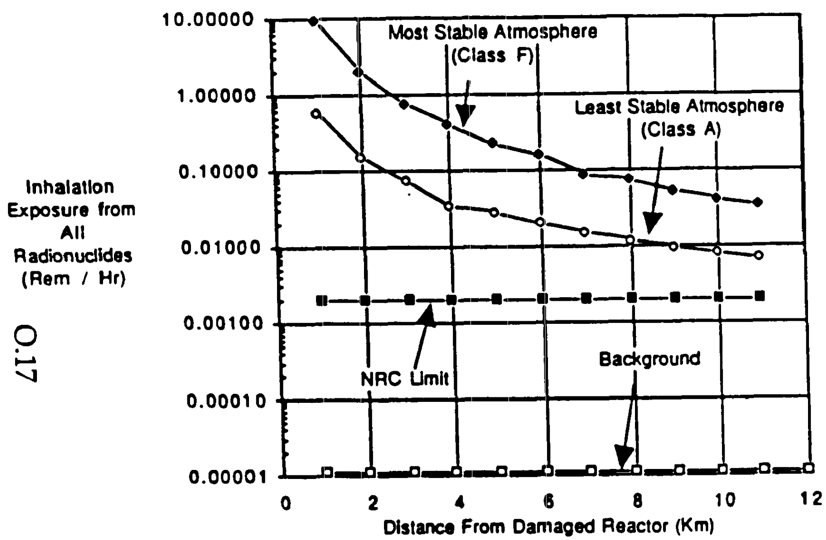

FIGURE 11

Graph showing calculated radiation exposure from inhalation of all radionuclides dispersed downwind from a damaged naval propulsion nuclear reactor stationed at Hunter's Point Naval Shipyard *versus* distance from the damaged reactor. The two curves correspond to the most stable and least stable atmospheric conditions; curves for other atmospheric conditions lie between the ones shown. Included for comparison is the U. S. Nuclear Regulatory Commission (NRC) limit for radiation exposure for members of the general public. Also shown is the level of background radiation from natural sources and nuclear weapon testing.

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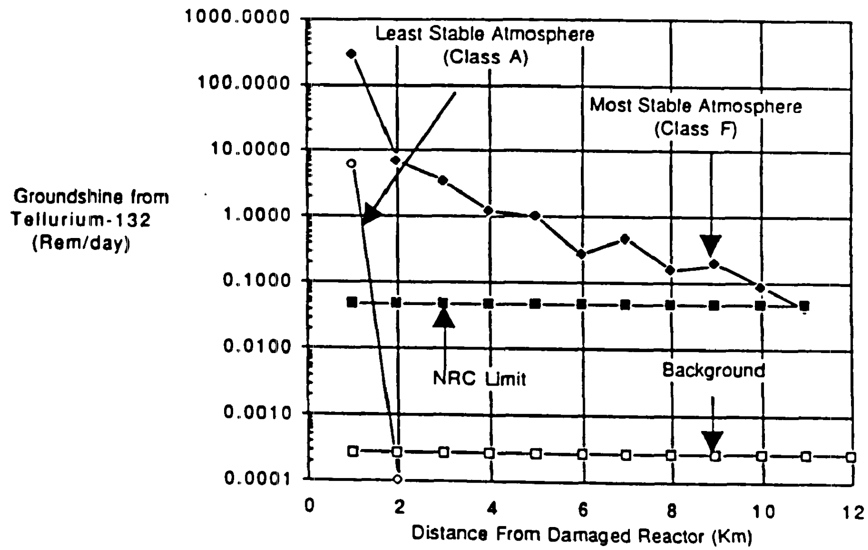

FIGURE 12

Graph showing calculated radiation exposure from a single radionuclide, tellurium-132, deposited on the ground downwind from a damaged naval propulsion nuclear reactor stationed at Hunter's Point Naval Shipyard *versus* distance from the damaged reactor. The two curves correspond to the most stable and least stable atmospheric conditions; curves for other atmospheric conditions lie between the ones shown. Included for comparison is the U. S. Nuclear Regulatory Commission (NRC) limit for radiation exposure for members of the general public. Also shown is the level of background radiation from natural sources and nuclear weapon testing.

I. Radiation Exposure from Ground Deposition (Groundshine)

Gamma exposure from radionuclides deposited on the ground by "fallout" was calculated for each of the contributing radionuclides shown in Table 2. These calculations are illustrated for tellurium-132 in Figure 12. The U. S. federal public exposure limit is exceeded for this single radionuclide by up to approximately one hundred (class A) to five thousand (class F) times, while background is exceeded by up to approximately one million times (class F).

Aggregate groundshine from the major contributing radionuclides (Table 2) is shown in Figure 13. The U. S. federal exposure limit is exceeded by up to approximately five hundred (class A) to ten thousand (class F) times, while the background level is exceeded by up to approximately eighty thousand (class A) to four million (class F) times.

J. Total Radiation Exposure from All Pathways

Summed exposure from all three pathways considered -- cloudshine, inhalation and groundshine -- is shown in Figure 14. The cloudshine and inhalation exposures for the four hour duration of the accident are here summed with the groundshine exposure commencing immediately at the end of the 4 hr. release period, and terminating 24 hours later. This graph therefore shows the total incurred exposure assuming that people remain in the city during the accident and for one day beyond. This exposure level is compared in Figure 14 with the U. S. federal limit for exposure for a period of one day. This comparison is conservative, inasmuch as two of the three exposures occur in a period of four hours rather than one day. This one-day exposure limit is nonetheless exceeded by up to approximately six hundred (class A) to thirty thousand (class F) times, while background is exceeded by up to approximately eighty thousand (class A) to five million (class F) times. These levels of exposure are interpreted in terms of medical impacts in a subsequent section.

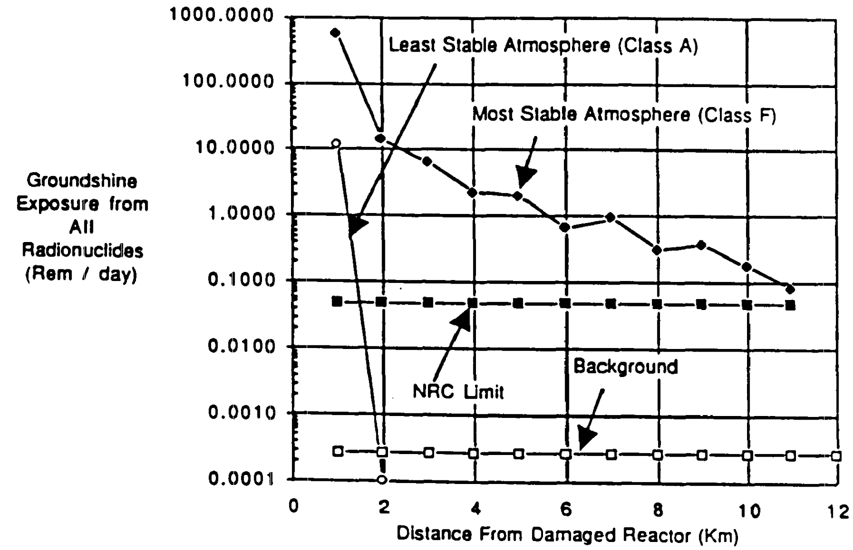

FIGURE 13

Graph showing calculated radiation exposure from all radionuclides deposited on the ground downwind from a damaged naval propulsion nuclear reactor stationed at Hunter's Point Naval Shipyard *versus* distance from the damaged reactor. The two curves correspond to the most stable and least stable atmospheric conditions; curves for other atmospheric conditions lie between the ones shown. Included for comparison is the U. S. Nuclear Regulatory Commission (NRC) limit for radiation exposure for members of the general public. Also shown is the level of background radiation from natural sources and nuclear weapon testing.

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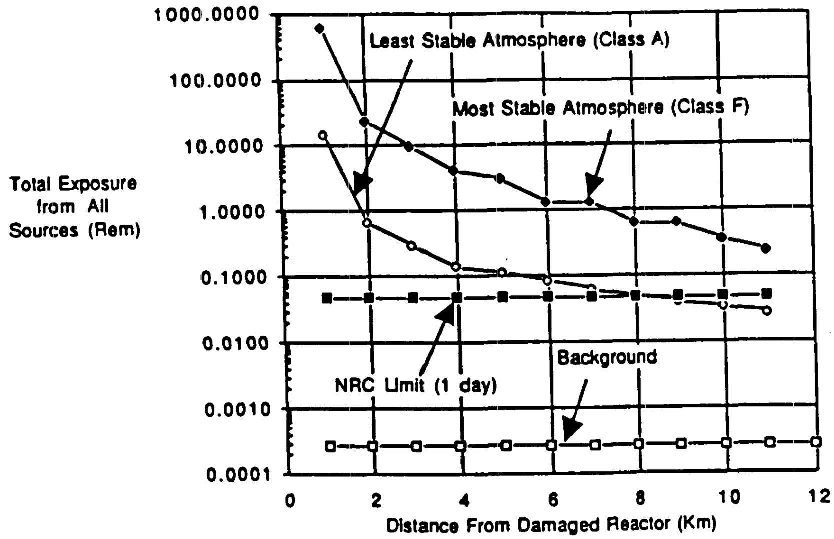

FIGURE 14

Graph showing calculated radiation exposure from all sources (4 hr. cloudshine, 4 hr. inhalation, and 1 day groundshine) downwind from a damaged naval propulsion nuclear reactor stationed at Hunter's Point Naval Shipyard *versus* distance from the damaged reactor. The two curves correspond to the most stable and least stable atmospheric conditions; curves for other atmospheric conditions lie between the ones shown. Included for comparison is the U. S. Nuclear Regulatory Commission (NRC) limit for radiation exposure for members of the general public. Also shown is the level of background radiation for one day from natural sources and nuclear weapon testing.

K. Population at Risk

In order to determine the medical consequences of the radiation exposures calculated in preceding sections, it is necessary to know the number of persons at risk, i. e., the population of the area impacted by the accident. Population density in the city of San Francisco is one of the highest of any urban region in the United States. Census data for the 1970s indicate a population density of 14,767 persons per square mile of the city (equivalent to 5,702 persons per square kilometer).

To determine the persons at risk from the modeled accident, the number of persons in the path of the radioactive cloud is calculated from this mean population density and from the ground area subtended by the plume (Figure 4). The resulting number of persons at risk in each downwind spatial interval is shown in Figure 15. These data do not include any population fluctuations associated with daily migration of the workforce. In the event that such a reactor accident occurred during working hours, the population at risk could be substantially greater, assuming daily immigration from outlying suburban regions that do not lie in the direct path of the radioactive cloud. Neither do these data take into account the age structure of the population. Infants and children are more susceptible to the effects of radiation exposure, and hence the casualty analysis based on the population projections of Figure 15 is inherently conservative (in the sense that it understates the impact of the accident modeled).

L. Short-Term Casualties

On the basis of the total population at risk (Figure 15) and the total short-term radiation exposures from all sources (Figure 14), total short-term cancer casualties were calculated. Casualties were expressed as a range, corresponding to the low and high risk factors (see Methodology), and hence this range is expected to encompass the actual casualties that would result from the accident modeled.

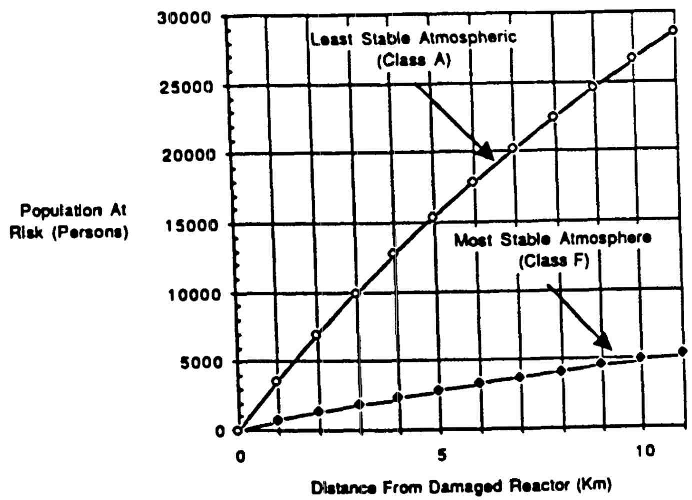

FIGURE 15

Graph showning the persons subject to radiation exposure from a radioactive plume emanating from a damaged naval propulsion nuclear reactor *versus* distance from the damaged reactor.

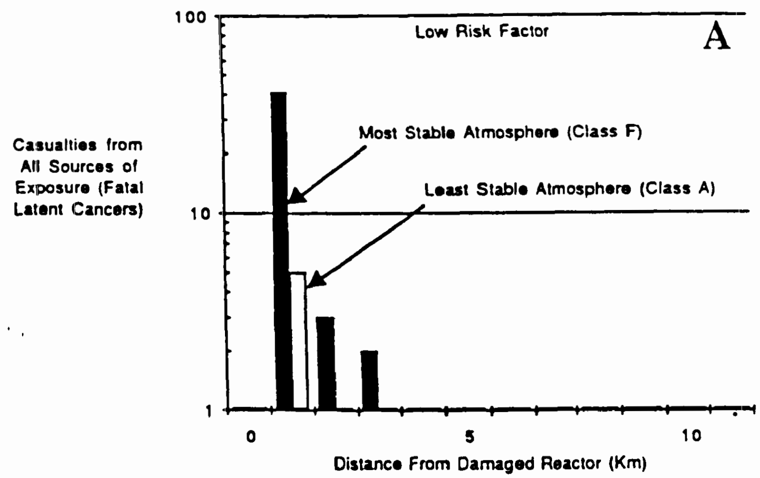

FIGURE 16

Histograms showning calculated short-term casualties (number of fatal latent cancers) induced by a naval nuclear propulsion reactor accident *versus* distance from the damaged reactor. Short-term casualties are those that would be incurred from the initial exposure to cloudshine and inhalation, plus one day of groundshine. Filled and open bars correspond respectively to most and least stable atmospheric conditions. Casualties from other atmospheric conditions would lie within these boundaries. A, low risk factor (1 casualty per 10,000 person-rem); B, high risk factor (1 casualty per 235 person-rem).

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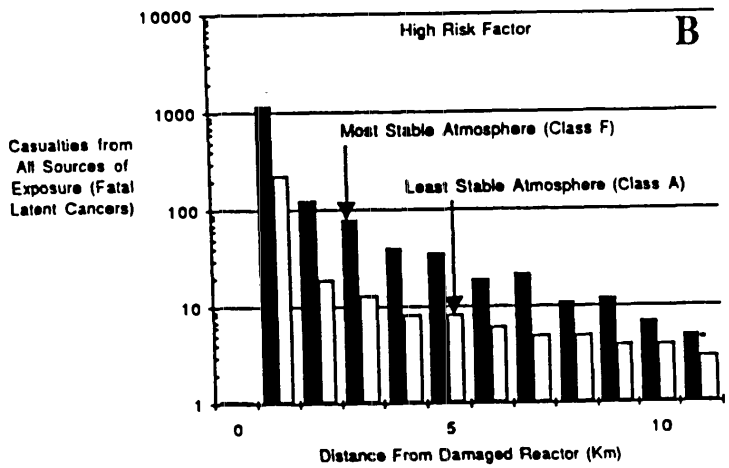
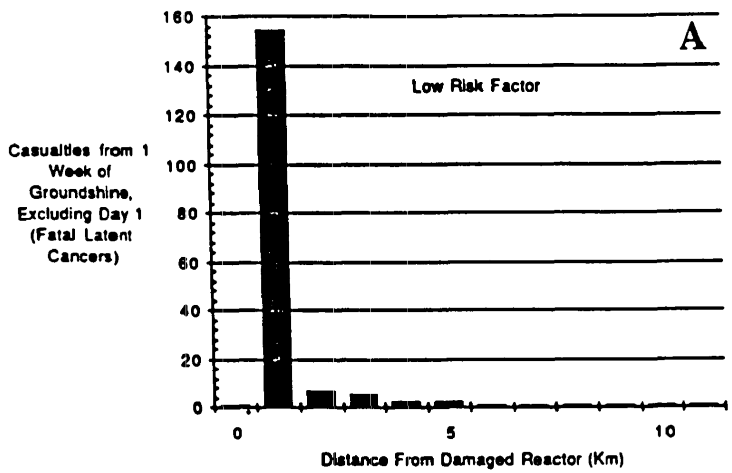


As expected, casualties are concentrated closest to the source of the accident (Figure 16), although for the most stable atmospheric conditions, significant short-term casualties occur to the edge of the city, 11 km from the damaged reactor (Figure 16 B). Assuming that people remain in the city for one day following the accident, short-term casualties from the accident would range from 5 (highly unstable atmosphere, low risk factor; Figure 16A) to 1,068 (highly stable atmosphere, high risk factor; Figure 16 B). These casualties are calculated for the condition of no thermal lofting of the radioactive cloud as it is released from the damaged reactor. In the event of thermal lofting, casualties near the damaged reactor would be less, but casualties a few kilometers from the reactor would be substantially greater. The overall impact of a thermal loft of 50 m would be to approximately double the total casualties (Davis, 1986 b). In addition, these casualties ignore resuspension and ingestion; and they are based on a number of assumptions that collectively would tend to understate the radiation detriment. Actual casualties could range significantly higher than those estimated from the present calculations.

M. Medium-Term Casualties

Additional casualties that would be incurred if the city of San Francisco were not evacuated at the end of the first day would result only from groundshine, since the radioactive cloud would have passed and therefore cloudshine and inhalation doses would not continue under the accident conditions modeled here. Casualties from one week of groundshine following the first day are shown in Figure 17. These casualties were calculated taking into account radioactive decay of the shorter-lived nuclides (tellurium 131m, tellurium 132 and lanthanum-140). Casualties for atmospheric stability class A are not shown because ground deposition would occur only in the first spatial interval (see Figure 7). Casualties from one additional week of groundshine would range from 174 concentrated in the first 1 km from the accident (low risk factor, Figure 17 A), to 1,778, concentrated maily in the first five km from the scene of the



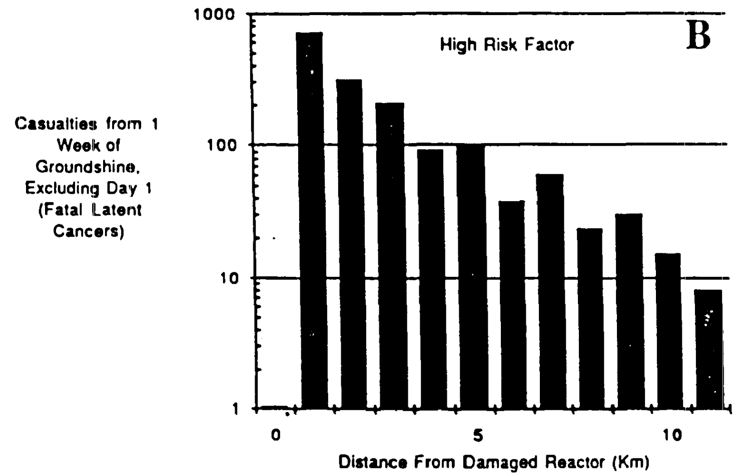


FIGURE 17

Histograms showning calculated medium-term casualties (number of fatal latent cancers) induced by a naval nuclear propulsion reactor accident *versus* distance from the damaged reactor. Medium-term casualties are those that would result from groundshine alone for the one week period following the first day. Casualties are shown only for the most stable atmospheric conditions. Casualties for less stable conditions would be progressively smaller. A, low risk factor (1 casualty per 10,000 person-rem); B, high risk factor (1 casualty per 235 person-rem).

accident (high risk factor, Figure 17 B). Under the assumption of an initial 50 m thermal lofting of the radioactive cloud, casualties would be approximately twice these numbers, concentrated in the downtown region of the city. These casualties represent the cost in human lives of continuing to inhabit San Francisco for one week without evacuation and decontamination of the area.

N. Long-Term Casualties

Comparable calculations were performed also for the one year period following the first day and the first week after the accident (Figure 18). These calculations likewise take into account radioactive decay, and in fact represent the effects of only cesium-134 (half life, 2.05 yr), cesium-137 (half life, 30.14 yr) and cerium-144 (half life, 0.78 yr). These long-term casualties are again concentrated near the damaged reactor, within 5 km of the accident site. O.17 The long-term casualties range from 265 (class F, low risk factor; Figure 18 A) to 2,051 (class F, high risk factor; Figure 18 B). Additional yearly casualties, considering the effect only of cesium-137, range from 61 (low risk factor) to 659 (high risk factor). These additional annual casualties are associated with cesium-137 with a half life of 30.14 years, and they would decline to half the above values in 30.14 yr (assuming no decrease in concentration from the original deposition, a simplification). These casualties represent the minimum projected human cost of failing to evacuate and decontaminate the city of San Francisco following a naval propulsion nuclear reactor accident of the kind modeled here.

V. IMPACT OF A NAVAL PROPULSION REACTOR ACCIDENT ON OTHER BAY CITIES

The analysis presented above deals with an accident occurring during the winter months, when prevailing winds blow primarily from the south southeast (Figure 2). In the fall, spring

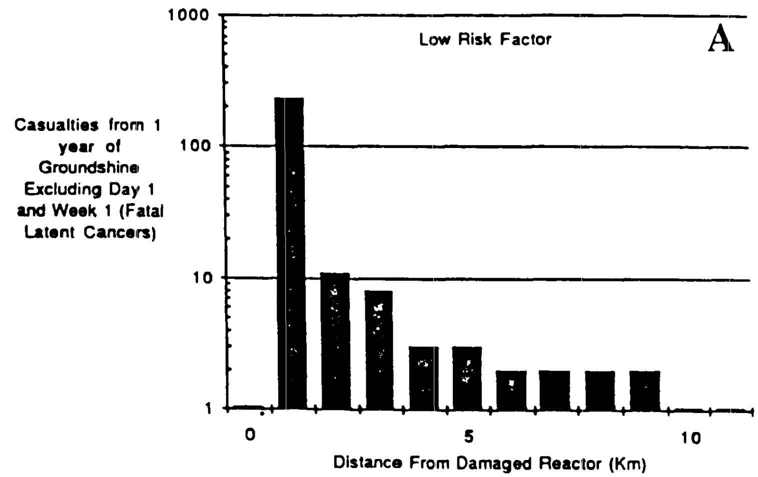


FIGURE 18

Histograms showning calculated long-term casualties (number of fatal latent cancers induced by a naval nuclear propulsion reactor accident *versus* distance from the damaged reactor. Long-term casualties are those that would result from groundshine alone for the one year period following the first day and the immediately following week. Casualties are shown only for the most stable atmospheric conditions. Casualties for less stable conditions would be progressively smaller. A, low risk factor (1 casualty per 10,000 person-rem); B, high risk factor (1 casualty per 235 person-rem).

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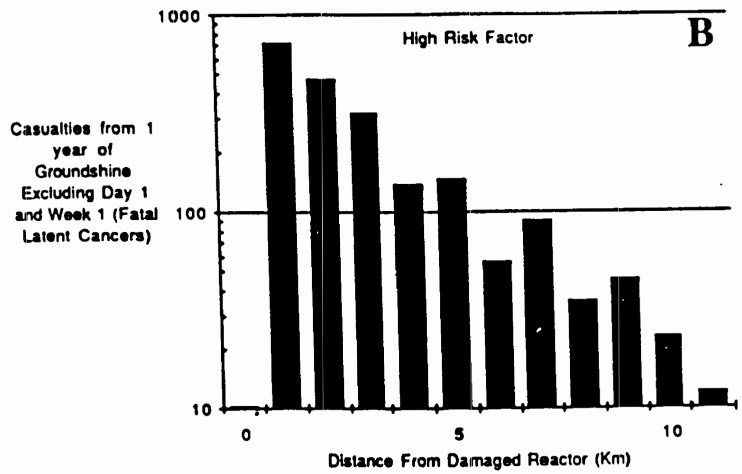


scenarios, and the means by which the Navy will marshall the necessary resources to meet its liabilities, if any, in the event that harm occurs.

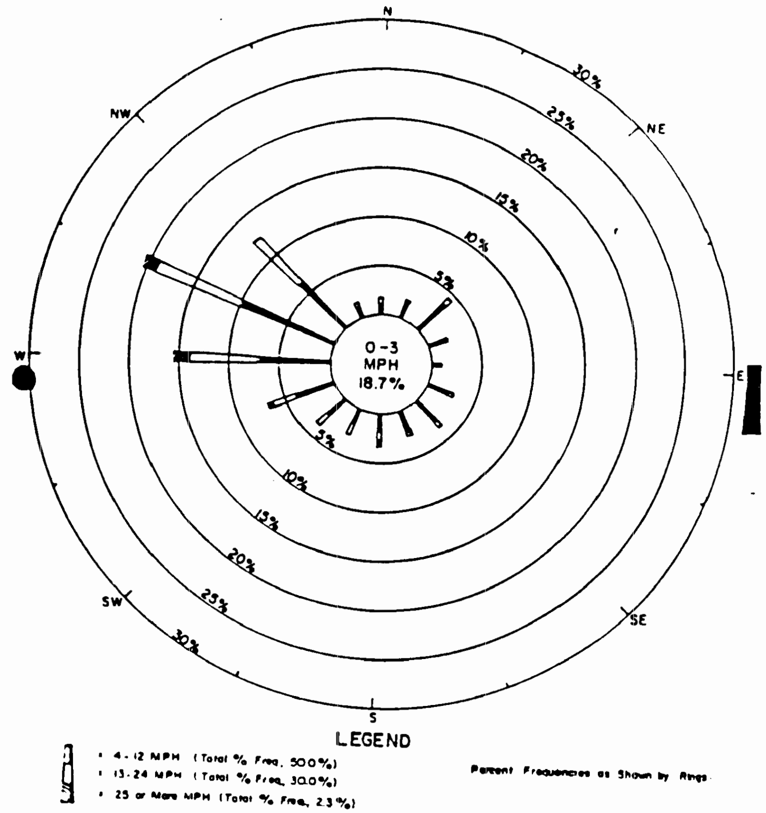
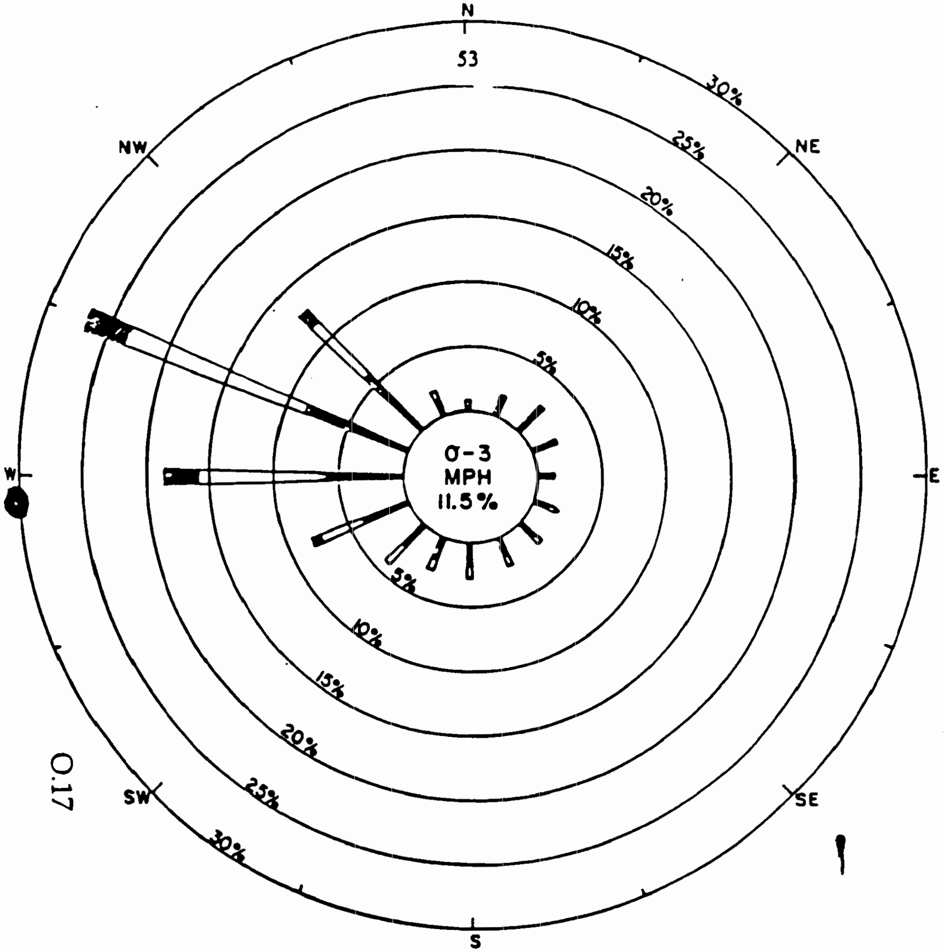


FIGURE 19

Wind rose showing the frequencies and directions from which the winds blow during the fall months at the San Francisco International Airport, approximately 11 km to the south of Hunter's Point Naval Shipyard. From U. S. Department of Commerce, 1968.



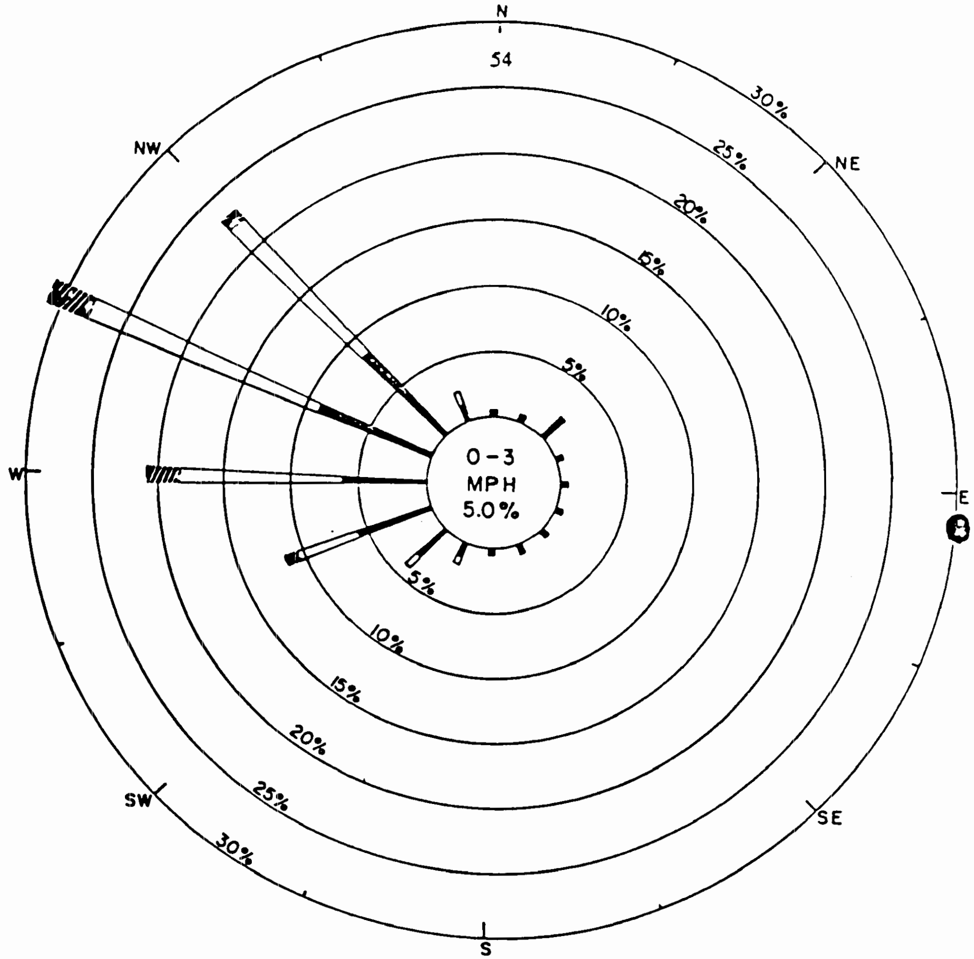
LEGEND

: 4-12 MPH (Total % Freq., 43.0%)
: 13-24 MPH (Total % Freq., 40.0%)
: 25 or More MPH (Total % Freq., 6.0%)

Percent Frequencies as Shown by Rings.

FIGURE 20

Wind rose showing the frequencies and directions from which the winds blow during the spring months at the San Francisco International Airport, approximately 11 km to the south of Hunter's Point Naval Shipyard. From U. S. Department of Commerce, 1968.



LEGEND

: 4-12 MPH (Total % Freq., 40.0%)
: 13-24 MPH (Total % Freq., 50.0%)
: 25 or More MPH (Total % Freq., 6.0%)

Percent Frequencies as Shown by Rings.

FIGURE 21

Wind rose showing the frequencies and directions from which the winds blow during the summer months at the San Francisco International Airport, approximately 11 km to the south of Hunter's Point Naval Shipyard. From U. S. Department of Commerce, 1968.

FIGURE 22

Map of the San Francisco Bay Area showing the most likely direction of transport of radioactive plumes emanating from a damaged naval propulsion nuclear reactor located at Hunter's Point Naval Shipyard (lower plumes), Treasure Island Naval Facilities (middle plumes) or Mare Island Naval Shipyard (upper plumes), during the fall, spring and summer months. The dashed lines correspond to the centerlines of the plumes, while the two wedges in each case correspond to the lateral plume boundaries for the most stable (inner wedge) and least stable (outer wedge) atmospheric conditions. The boundaries of plumes under other atmospheric conditions lie between the two shown.

and summer, however, prevailing winds blow mainly from the west northwest toward the east-southeast (Figures 19 - 21). In nine months out of the year, therefore, prevailing winds would carry the radioactive cloud away from San Francisco and toward cities in the East Bay. Depending on the wind direction, cities impacted by the radioactive cloud could include, Berkeley, Oakland, Alameda, Hayward, and cities as far south as San Jose (Figure 22).

The geography of east bay cities is especially unfavorable should such an accident occur. Most cities on the east bay lie at relatively low elevations (< 100 m above sea level), backed by a range of hills. Especially in the event of thermal lofting of the initial radioactive cloud, fallout would be relatively minor as the plume crossed the water, but increase dramatically on landfall, and especially in the higher elevations, where the plume would come into direct contact with the ground. The result could be levels of radioactive contamination significantly greater than those calculated here for the city of San Francisco, although quantitative corroboration of this possibility has not been undertaken here.

VI. PROBABILITY OF A NAVAL PROPULSION REACTOR ACCIDENT

As noted above and in the Appendix, the probability of an naval propulsion reactor accident such as the one modeled here is difficult to calculate from information available only in the public record. Recourse to the commercial nuclear industry, while unsatisfactory for many reasons, is also unavoidable. The probability of a severe commercial reactor accident is calculated empirically from actual accident histories as 0.0003 per reactor year of operation. With one hundred commercial reactors in operation, therefore, the chance of a severe accident in any given year is three in one hundred. The chance of a severe civilian nuclear reactor accident is therefore 1.0 (certainty) in 33 years.

Whether military reactors have a better or worse safety record is classified information. Unless the military is willing to make its records on reactor operation available to public inspection, the probability of a naval propulsion reactor accident cannot be calculated. Therefore, acceptance of port visits by nuclear powered vessels is equivalent to acceptance of an incalculable risk to the public.

VII. CONCLUSIONS

The present analysis raise a number of considerations relevant to the issue of homeporting the *U. S. S. Missouri* in the San Francisco Bay Region. These considerations are summarized in this section, followed by the policy recommendations that arise from them.

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A. *Levels of Radioactive Contamination Resulting from A Naval Propulsion Nuclear Reactor Accident*

Application of conventional NRC methodology demonstrates that air and ground concentrations of radioactive contaminants would exceed U. S. federal standards by up to million of times for single radionuclides. Because the radioactive contamination is directly proportional to the quantity of radioactivity dispersed, an accident entailing even one percent of the release assumed in the present study would cause contamination up to ten thousand times the U. S. federal limits. Consequent exposure of individuals to radiation would exceed NRC limits by up to two million times. In the case of an accident involving 1% the release assumed here, radiation exposures would still exceed U. S. limits by up to twenty thousand times.

B. *Casualties from a Naval Nuclear Propulsion Reactor Accident*

As a consequence of the radiation exposures calculated here, a significant number of latent cancers would be induced in the exposed population. The exact number of such fatalities depends on a variety of factors, including weather conditions at the time of the accident and the specific dose conversion factor utilized. The full range of such casualties under the conservative assumptions of the present study is 5 - 4,897 for the first year following the accident, with significant casualties every year thereafter for decades. It is to be emphasized that these figures are based on highly conservative assumptions, and moreover omit possible prompt casualties as well as casualties from genetic defects and other sources, as well as non-fatal cancers. Actual casualties could be several times the above numbers.

C. *Emergency Evacuation Following a Naval Nuclear Propulsion Reactor Accident*

Such casualties would, by most standards, be judged unacceptable. Even in the event of a comparatively small accident, therefore, rapid evacuation of the impacted region could be required. As demonstrated by the present analysis, the impacted area would extend up to several kilometers from the accident site, and would include the central region of San Francisco, including the area from the Civic Center, the Financial District and the Fisherman's Wharf area.

These findings highlight the need for a detailed, effective evacuation plan for San Francisco, and also for other East Bay cities that could be impacted by the accident analyzed. Such emergency preparedness plans exist for military facilities and surrounding urban areas in England (Clyde Area monitoring Organization, 1968), Australia (WASES, 1986) and in the United States, including Pearl Harbor (U. S. Navy, 1981), Puget Sound Naval Shipyard (USN, 1977), and Mare Island Naval Shipyard (City of Vallejo, 1978). The Pearl Harbor emergency plan entails evacuation of as many as 350,000 persons (not all at the same time). The City of Vallejo anticipates evacuation of areas up to 5 miles from the site, and planning for the most extreme emergencies extends to 50 miles from the site.

As shown by the present analysis, radioactive contamination of downtown San Francisco would begin within minutes of an accident at the Hunter's Point Naval Station, and would incur significant casualties within a few hours. Therefore, an effective evacuation plan must be capable of clearing the downtown region of San Francisco within 1-2 hrs. Because such an accident could occur during working hours, any evacuation plan would have to address the maximum workforce population, which would be substantially larger than the residential population included in the present study. In view of the potential impact on other Bay cities, an effective, rapid means of emergency communication between affected governmental jurisdictions is also essential.

According the the U. S. federal government, the mere existence of an evacuation plan is insufficient; the plan must also be tested periodically in order to be useful in times of emergency. A comprehensive report to the U. S. Congress by the U. S. Government Accounting Office (GAO, 1979) on the subject of emergency evacuation plans in the vicinity of nuclear facilities concluded that "Problems found with plans that were tested indicate that an untested plan would probably be ineffective in an emergency situation". The GAO report recommends that "local emergency preparedness should be periodically tested in concert with the nearby nuclear facility" (p. 27), in this case the military authorities in command of the nuclear-powered vessel.

D. Decontamination Following a Naval Propulsion Nuclear Reactor Accident

The half-life of plutonium-239, a major radionuclide that would be distributed in the event of a nuclear reactor accident, is 24,500 years. The half life of cesium-137, the most significant long-lived radionuclide that would be distributed by a nuclear reactor accident, is 30.14 years. Therefore, before rehabitation of the contaminated area is permitted following a nuclear warhead or reactor accident, decontamination would be required. An issue in need of careful

consideration, therefore, is the practicality, time required, cost and liability for decontamination.

Procedures for decontaminating a large urban area have not been developed. They would have to be pioneered. Brief reflection on the nature of the accident emphasizes the difficulties that would be faced. Every ventilated structure, including office buildings, high-rise buildings, hospitals and schools, would draw contaminated air through the ventilation systems. Conventional filters could not remove the tiny (less than 20 μm) radioactive particles, which would therefore be distributed throughout the ventilation ducts and internally within each ventilated structure. Every ventilated building would have to be decontaminated, inside and out. Streets, automobiles, all external surfaces, would have to be cleaned and monitored with radiation-detecting equipment. Such procedures would have to be applied to urban areas extending to tens of square kilometers.

The cost of such decontamination procedures is completely unknown, since no country has had experience decontaminating a densely-populated urban environment. Decontamination expenses at Three Mile Island, where radioactivity released by the accident was largely confined to the containment structure, are now projected to reach several billion U. S. dollars. The U. S. NRC estimates that even a relatively minor accident could cost $1.7 billion to clean up (NRC, 1980). A recent U. S. GAO report (1986) indicates that the cost of cleaning up after a catastrophic nuclear power reactor accident would range from 0.3 to 15 billion dollars. The report notes that the actual costs of decontamination under worst-case conditions could range to ten times this amount, i. e., to 150 billion U. S. dollars, approximately one sixth the annual U. S. federal budget. These estimates excluded the costs of investigating, settling and defending claims. Nor did the GAO estimates address on-site costs and "indirect economic losses". Such losses are defined as those resulting from the impairment of the local economy, as would occur until the contaminated portion of the city were cleaned up and reinhabited.

Inasmuch as the accidents depicted here would render the downtown area of San Francisco uninhabitable pending effective decontamination, the economy of the city would come to a standstill until cleanup were completed. The duration of the decontamination effort therefore becomes paramount for estimates of the daily indirect losses. Limiting these indirect losses would require clear division of responsibilities for cleanup in advance of any accident, including allocation of costs.

The magnitude of the potential decontamination costs raises the issue of who would pay. In the U. S., the government's liability for any nuclear accident is not clear. Indeed, the U. S. government does not assume responsibility for many types of nuclear accidents (e. g., those entailing transportation of spent nuclear fuel) unless it agrees in advance in writing to assume such responsibility (Peach, 1984). It would be surprising if a different standard were applied in the case of military accidents of the kind analyzed here. Especially in the absence of a sound local emergency plan, the federal government might argue that it has no liability.

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VIII. RECOMMENDATIONS BASED ON THE PRESENT STUDY

A. Probability of a Nuclear Accident

In view of the consequences of even a minor naval propulsion nuclear reactor accident for the city of San Francisco, it is important to establish the probability of such an accident as precisely as possible. In the present instance, this means that the U. S. Navy would have to make public the accident history of nuclear propulsion reactors, and any and all details of the construction and operation of these reactors that would enable civilian emergency planning authorities arrive at reliable estimates of the probability of such an accident.

In the absence of this critical information, it is impossible to accurately evaluate the risk of homeporting nuclear powered ships in the San Francisco Bay Area or anywhere else. Consequently, the intent of NEPA (National Environmental Protection Act) legislation in mandating an Environmental Impact Assessment of the homeporting plan would be impossible to fulfill. And in the absence of this information, homeporting any nuclear propelled vessel in the Bay Area is equivalent to exposing the public in San Francisco and the Bay Area to a risk that is for all practical purposes incalculable. These considerations prompt the following specific recommendation:

RECOMMENDATION # 1: The U. S. Navy should furnish, and city authorities should actively seek, any and all information necessary to an independent assessment of the probability of a naval propulsion reactor accident. These data should be made available to civilian authorities charged with public health and safety in the affected governmental jurisdictions.

B. Emergency Preparedness for a Nuclear Accident

An accident involving a naval propulsion nuclear reactor in the San Francisco Bay could envelop the entire downtown area of San Francisco in a radioactive cloud. The contamination levels would far exceed the limits for radiation exposure promulgated by the U. S. Nuclear Regulatory Commission, and cause hundreds to thousands of casualties, depending upon circumstances of the accident. In the event of even a "minor" accident, contamination levels in downtown San Francisco could exceed federal limits by thousands of times. These quantitative findings underscore the need for a detailed emergency evacuation plan in the city. Inasmuch as nuclear-powered vessels presently berth at Hunter's Point, there is an immediate need to put such a plan in place.

As developed above, any effective plan must be capable of emptying the city of inhabitants within a few hours even during peak working hours. Because East Bay cities could also be impacted by a nuclear accident, they too need an evacuation plan. And because such an accident could simultaneously affect several governmental jurisdictions, a high degree of coordination and communication between adjacent cities would be required to put such a plan into action. These considerations lead to the second recommendation of this study:

RECOMMENDATION # 2: City officials in San Francisco, in cooperation with military authorities, should develop, coordinate and periodically rehearse emergency evacuation plans to cope with nuclear accidents aboard military vessels in San Francisco Bay. These efforts should be coordinated with East Bay cities, including Berkeley, Alameda, Oakland, Hayward, and South Bay cities including San Jose.

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C. Ecological Impacts of a Nuclear Accident

The present analysis concentrates on the effects of a nuclear accident on the urban environment. As noted, however, dispersion of radioactive materials into the marine environment would also accompany such an accident. Moreover, decontamination of the city could take some time, during which runoff of radioactive contamination into the Bay and Pacific Ocean could occur. The introduction of radioactive materials into the ocean could contaminate ocean food chains on which people depend. In addition, ocean currents such as the Humboldt Current, which moves south along the coast of California, could distribute the radioactive materials far from the scene of the original accident. Radioactive releases from the Hanford Nuclear Reservation in Washington, for example, have caused measurable contamination in ocean waters as far south as San Diego. Experience at Windscale (now Sellafield) in the U. K. has shown that radioactive materials dispersed in sea water can be remobilized and suspended in respirable sea mist, providing a significant exposure pathway for coastal residents.

RECOMMENDATION # 3: The impact of radioactive contamination of the Bay and Pacific Ocean, including the possible effects on fisheries, health, tourism, recreation, and amenities should be subjected to detailed ecological analysis as part of consideration of homeporting.

D. Decontamination Following a Nuclear Accident

The Federal Emergency Management Agency (FEMA) assigns responsibility for reacting initially to a nuclear emergency, and responsibility for cleanup following such an emergency, to city, county and state authorities. It would therefore be prudent for these authorities, together with the appropriate military officials, to establish the respective responsibilities for decontamination in advance of a homeporting decision. Included in these discussions should be the respective roles of military and civilian agencies and jurisdictions in decontamination and the respective financial responsibilities.

RECOMMENDATION # 4: Prior to a homeporting decision all aspects of decontamination for various accident scenarios should be examined in detail. Included should be methods of decontamination, prospective timetables, methods of handling the recovered radioactive contamination, criteria for reinhabiting the city, and the allocation of financial responsibilities for decontamination.

E. Liability and Indemnity Following a Nuclear Accident

As demonstrated by the present analysis, a nuclear accident in the San Francisco Bay Region could kill and injure hundreds to thousands of persons and cause enormous property damage. The legal liability for such injuries and damage remains to be established clearly. In particular, the respective legal liabilities of various civilian governmental jurisdictions and the military is undefined.

As also noted here, a nuclear accident at Hunter's Point in San Francisco could effect East Bay cities such as Berkeley and Oakland, as well as south bay cities such as San Jose. In these cases, cities other than San Francisco could suffer harm for an accident within the boundaries of San Francisco. Intra-jurisdictional legal liability therefore also needs to be addressed.

RECOMMENDATION # 5: As part of a homeporting decision, the legal liability of the participating jurisdictions and agencies, including the city of San Francisco and the U. S. Navy, should be established. Included in any such analysis should be the possible financial magnitudes of such liability under different accident scenarios and methods of settling private, public and inter-jurisdictional claims.

F. Economic Recovery Assistance Following a Nuclear Accident

Inasmuch as the nuclear reactor accident depicted here would render the downtown area of
O.17 San Francisco uninhabitable pending effective decontamination, the economy of the city would come to a standstill until cleanup was completed. The duration of the decontamination effort therefore becomes paramount. It is doubtful whether any city could alone recover from a lengthy economic shutdown without the infusion of external resources. It would therefore be in the interest of the city of San Francisco (and all other potentially affected cities) to explore in advance possible economic recovery assistance.

RECOMMENDATION # 6: The U. S. Navy and the City of San Francisco should together explore mechanisms and funds available to assist the city in its economic recovery following a nuclear accident that interferes with the normal economic activity of the city.

G. Alternatives to Homeporting

Prior to any homeporting decision it would be desirable to weigh both the costs and the benefits of the action. Among the prospective costs is the possibility of accidents such as the one modeled here. Another cost, not addressed here, is the increased risk to the populace of the San Francisco Bay Area as a target of nuclear attack in the event of warfare owing to the stationing of military warships in the bay. To analyze all such costs will require detailed quantitative analysis of various accident scenarios, including nuclear weapons accidents, nuclear reactor accidents, sabotage, etc. It is also necessary to deal explicitly with the perceived benefits of the proposed homeporting, and to devise a means of quantifying both the costs and benefits so that they can be compared rationally.

It is also incumbent upon civilian and military authorities to consider in detail alternative plans of action that would lessen the costs or risks, while retaining corresponding or comparable benefits of the proposed actions. In the present case this would imply development of alternatives to homeporting in the San Francisco Bay region. In particular, options that would not entail stationing of nuclear weapons and nuclear reactors in the midst of densely populated urban regions should be entertained.

RECOMMENDATION # 7: Cost-benefit analysis of the homeporting option should be undertaken, with the aims of comparing options and identifying low-cost, high-benefit options.

IX. ACKNOWLEDGEMENTS AND DISCLAIMERS

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APPENDIX I: METHODOLOGY

GENERAL APPROACH

The consequences of an accidental release of radioactivity from any anthropogenic source can be ascertained using established methodology of the U.S. Nuclear Regulatory Commission (NRC), as published in document WASH-1400 (the "Rasmussen Report"; NRC, 1975). WASH-1400 has been criticized as understating the actual impacts of any such accident (e.g., Wilson et al., 1985), and the criticisms receive support from the recent history of the nuclear industry (e.g., Three Mile Island, Cherbonyl). The WASH-1400 methodology nonetheless represents the official U.S. government basis for undertaking nuclear accident analyses.

The general steps used to determine the consequences of any hypothetical nuclear accident, based on WASH-1400 methodology, are as follows. First, determine the total inventory of radionuclides available for release. Second, define and justify assumptions about the fraction of this inventory released (the "source term") under the specific accident scenario considered. Third, establish the meteorological conditions at the site of the hypothetical accident. Fourth, calculate the dispersion of radionuclides in the atmosphere downwind from the accident site. Fifth, calculate the deposition of released radionuclides on the ground downwind from the accident. Sixth, obtain population data for the site of the hypothetical accident. Seventh, calculate the radiation doses to people delivered by the calculated releases and associated health impacts. Eighth, calculate the costs of decontaminating the regions in which radioactivity has been deposited. And ninth, assess the probability of the accident scenario modeled. Details of each of these nine steps that are relevant to this study are described next, followed by sample calculations from the present study.

DETAILS OF THE METHODOLOGY

Inventory of Radionuclides Available for Release

The inventory of radionuclides available for release depends entirely on the type of accident modeled. Possible scenarios include, in approximate order of decreasing severity, nuclear war, a nuclear power reactor meltdown, a naval propulsion reactor accident, a mishap involving a production reactor or a reprocessing plant, a non-explosive nuclear weapons accident, a research reactor accident, and an accident involving spent nuclear fuel.

The first step in each case is to determine the inventory of radionuclides present in the initial source. In the case of nuclear war, the task is to determine the inventory of radionuclides resulting from the detonation of the assumed inventory of nuclear weapons. For nuclear reactors, the inventory can be computed using the ORIGEN computer code (developed by the Oak Ridge National Laboratory, Tennessee), which calculates the mix and quantity of fission products available in the core of a nuclear reactor under different fuel, loading and operating conditions. An inventory for a 3,200 megawatt PWR power reactor, calculated with the computer code ORIGEN, is presented in WASH-1400. For a reprocessing plant, establishing the source term requires technical knowledge of the process and the type and total quantity of radionuclides present. For nuclear weapons accidents, the most significant source term is plutonium-239 (62.3 Curies per kilogram). The exact quantity of plutonium used in any particular weapon is classified information, but may be assumed to range between 1 and 10 kg, with 5 kg as a "typical" value. For an accident involving a military reactor or spent nuclear fuel, the inventory term is again calculated using ORIGEN or based on published accounts of the radionuclide inventory in one or more spent fuel assemblies, combined as appropriate with knowledge of spent nuclear fuel transportation cask capacities.

Fraction of Inventory Available for Release (Source Term)

One of the key assumptions of any analysis is the fraction of the total inventory that is plausibly available for release and dispersion, or the "source term." The source term is defined as the product of the inventory and the release fraction. For a nuclear reactor accident, release of radionuclides occurs in three steps. In the first step, heat up and melting of the reactor core releases radionuclides from the fuel elements to the interior of the reactor vessel. In a severe accident it is generally assumed that in this step more than 80% of the most volatile elements are released (xenon, krypton, cesium, rubidium, Iodine, bromide, antimony, tellurium and silver) (Wilson et al., 1985). The moderately volatile elements are assumed to be partially released, including barium, strontium, ruthenium and molybdenum (*ibid.*).

In the second step of a severe reactor accident, these materials are released from the reactor vessel to the containment structure. A significant fraction of the volatiles will "stick" to the surfaces of the reactor vessel and never reach the containment structure ("plate out"); and an additional fraction will plate out within the containment structure.

In the third step, radionuclides are released from the containment structure into the environment. This step depends strongly on the nature of containment and on the integrity of the containment structure. Realistic values for release fractions cannot be calculated from models based on first principles, and hence reliance must be made on experimental measurements and analysis of actual accident sequences. The data for many relevant nuclides are scarce or absent (Wilson et al., 1985). Qualitative estimates become unavoidable.

Release fractions to the environment for a severe reaction accident (type PWR-1) are estimated in WASH-1400 (NRC, 1975) as follows: noble gasses (xenon, krypton), 90%; iodines, 70%; cesiums and rubidiums, 40%; telluriums and antimony, 40%; barium and strontium, 5%; volatile oxides (cobalt, molybdenum, rutheniums), 40%; and non-volatile oxides (lanthanum, cerium, zirconium, transuranics), 0.3%.

Even with the best technical information available, therefore, the assumption of source term is subject to wide uncertainty and is somewhat arbitrary. One response to this uncertainty is to perform a "sensitivity analysis" on release fraction, i.e., to explore the impact of several different assumed release fractions. This approach is generally simple to apply, since impact is linearly proportional to release fraction. Therefore, once the consequence of releasing a particular fraction of the source term is calculated, the impact of other release fractions can be readily scaled accordingly. A second approach to the uncertainty regarding source term is to assume a 100% release fraction for the noble gasses, a 10% release for the volatile oxides, iodines, cesiums and telluriums (which are relatively volatile), and a 1% release for all other nuclides. A combination of these two approaches is used in the present study.

Actual release fractions from the Chernobyl accident, as reported by the U.S.S.R (SCVAE/USSR, 1986) and the IAEA (1986), are as follows: noble gasses, 100%; iodine, 20%; cesiums, 10-13%; telluriums, 15%; strontium, 4%; whole core, 3%.

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For other (non-reactor) nuclear accidents, the release fraction is subject to several influences, including the physical form of the nuclear material, the physical setting in which the material is contained, its proximity to forms of potential dispersive energy, the probability of disruptive events capable of inducing release, etc. Spent commercial nuclear fuel, for example, generally takes the form of uranium dioxide, which is not readily oxidized further, although volatile fission products are subject to easier release.. Spent research reactor fuel sometimes is in the form of relatively combustible uranium metal, however, which makes it more dispersible and hence increases plausible release fractions. Knowledge of the physical properties of the source term and its containment is clearly essential in arriving at an informed judgement of plausible source terms.

Meteorological Conditions at the Accident Site

Weather conditions at the site of the hypothesized accident determine the dispersion pattern of the released radionuclides. Critical meteorological parameters include the wind direction and velocity, as deduced from "wind roses," atmospheric stability, as deduced from "stability wind roses," atmospheric inversion altitude and frequency, and precipitation patterns.

These data are generally readily obtainable from climatic records, published in numerous sources. Once the existing data are collected, there are at least five alternative conventions for their use. By the first convention, the "typical" weather pattern (i.e., the most frequently obtained) is employed. By the second, "95% meteorology" is assumed, i.e., weather conditions resulting in consequences that would be exceeded only 5% of the time. This approach is recommended by the NRC. By the third convention, boundary conditions are used to estimate a range of possible impacts (e.g., the best and worse case conditions). By the fourth convention, the worst case conditions are assumed. The fifth convention is probabilistic; it integrates the consequences of all weather conditions and assigns weighted probabilities to each. This last convention would be the most satisfying, but it is not well developed methodologically.

In practice some combination of the first (typical conditions) and second (95% meteorological conditions) generally represents a practical and satisfactory compromise. With respect to wind direction, this entails choosing either the most frequent (convention 1) or the most damaging (convention 2) wind direction. The third convention (boundary conditions) is perhaps the most satisfactory mix of completeness and practicality.

With respect to atmospheric stability, meteorologists recognize six categories, ranging from "extremely unstable" (Pasquill category A) to "extremely stable" (Pasquill category F). It is generally accepted that the greatest radiological detriment is associated with the most stable atmospheric conditions, since dilution by incoming wind is least under these conditions, resulting in the highest local air concentration of radionuclides and the greatest ground deposition. It may be difficult, however, to obtain data on atmospheric stability for some locations. One solution to this problem is to establish boundary conditions for the accident modeled (the equivalent of the third convention discussed above). The way in which atmospheric stability is incorporated into the analysis is described in the next section.

Inversion layers are important because they can entrap air (and radionuclides suspended within air) in one location, resulting in prolonged exposure rather than dilution and dispersion. Precipitation is likewise important because it increases the quantity of radionuclides deposited on the ground, although it also accelerates subsequent "weathering" and run off of the radionuclides. The ways in which inversions and precipitation are incorporated into dispersion analyses are also treated in the next section. Vertical wind patterns would be important to include but they are seldom known and only poorly understood.

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Equations for Atmospheric Dispersion of Released Radionuclides

Radionuclides that are released accidentally into the atmosphere will be transported in the form of a radioactive cloud in the horizontal direction of the prevailing wind. The next step is the analysis is to combine the assumptions about source term with local, site-specific meteorological conditions to determine the dispersion of the radionuclides in the atmosphere, using equations for turbulent diffusion as developed in WASH-1400. This aspect of the WASH-1400 document may be the soundest from a scientific viewpoint, inasmuch as the quantitative methodology for turbulent diffusion in the atmosphere has evolved over several decades from the literature on dispersion of non-radioactive materials (fossil fuel pollutants) and has a reasonably sound theoretical and empirical basis (see for example Slade, 1968). A helpful practical guide to this methodology is Turner's *Workbook of Atmospheric Dispersion Estimates* (see Bibliography), which includes numerous sample problems and their solutions. Also included in this volume are several mathematical tables specifically crafted for the kinds of

applications encountered in this type of analysis.

The basic model utilized to calculate the downwind concentration of a specific radionuclide from a source of known magnitude is a Gaussian diffusion model. According to this model, radionuclides released from a point source diffuse in three dimensions, termed x, y and z. In the event of a prevailing wind, mass transport in the downwind direction far exceeds simple diffusion. This condition may be assumed when release is continuous or when the duration of release is equal to or greater than the travel time from the source to the downwind location of interest. In this case diffusion expands the radioactive plume only in the horizontal or crosswind direction (y) and in the vertical direction (z). To calculate the resultant concentration in air (χ, in Curies per cubic meter) of any specific radionuclide, equation 1 that follows is used.

Equation 1

$$\chi_{(x,y,z;H)} = \left\{ \frac{Q}{2\pi\sigma_y\sigma_z u} \right\} \left\{ e^{[-\frac{1}{2}(\frac{y}{\sigma_y})^2]} \right\} \left\{ e^{[-\frac{1}{2}(\frac{z-H}{\sigma_z})^2]} + e^{[-\frac{1}{2}(\frac{z+H}{\sigma_z})^2]} \right\}$$

where π = approximately 3.1416 (dimensionless); Q = the rate of release at the point source in Curies per second (i.e., the source term divided by the release duration); σ_y and σ_z are the horizontal and vertical diffusion parameters (meters), calculated as described below according to the atmospheric stability category as functions of downwind distance; u = the wind velocity (meters per second); e = the base of the natural logarithm, approximately 2.7283 (dimensionless); y = the crosswind distance from the plume centerline (meters); z = the vertical distance from the plume centerline (meters); and H = the height of the point source above the ground (meters). For the majority of applications, one or more of several simplifying assumptions can be made to reduce the complexity of the calculations. First, it is frequently appropriate to assume that the "receptor" of the radionuclides (i.e., an exposed person) is located at ground level. In this case z = 0, and equation 1 above reduces to equation 2 below.

Equation 2

$$\chi_{(x,y,0;H)} = \left\{ \frac{Q}{\pi \sigma_y \sigma_z u} \right\} \left\{ e^{[-\frac{1}{2}(\frac{y}{\sigma_y})^2]} \right\} \left\{ e^{[-\frac{1}{2}(\frac{H}{\sigma_z})^2]} \right\}$$

A second useful simplification can be realized by assuming that the receptor is located at the centerline of the plume. In this case $y = 0$, and equation 2 above reduces to equation 3 below.

Equation 3

$$\chi_{(x,0,0;H)} = \left\{ \frac{Q}{\pi \sigma_y \sigma_z u} \right\} \left\{ e^{[-\frac{1}{2}(\frac{H}{\sigma_z})^2]} \right\}$$

A third simplification can be realized by assuming that the radionuclides are released from a ground level source with no effective plume rise. This assumption may be valid, for example, for a sea level release near an urban area that is significantly elevated above sea level. Suppose that the mean elevation of a city is 50 m. A sea level release followed by a 50 m plume rise from thermal lofting will then result in an effective source elevation of 0. Assuming that the assumption of $H = 0$ is justifiable, equation 3 above reduces to equation 4 below.

Equation 4

$$\chi_{(x,0,0;0)} = \frac{Q}{\pi \sigma_y \sigma_z u}$$

More exact means for correcting the concentrations for plume rise exist, but their application is fairly difficult. The approach entails modifying the equation used to calculate downwind concentration (χ) for plume rise generated by thermal lofting, using one of two equations. For unstable or neutral atmospheric stability conditions (see above, Meteorological Conditions at the Accident Site, and below, this section, for a discussion of atmospheric stability), the following equation is recommended by WASH-1400:

Equation 5

$$\Delta H = \frac{1.6 F^{1/3} x^{2/3}}{U}$$

where ΔH = the plume centerline height (meters above initial emission height); F = buoyancy flux = 3.7×10^{-5}; Q_H = thermal energy release (calories/sec); x = downwind distance (m); U = windspeed (m/s).

For stable atmospheric conditions, WASH-1400 recommends the following equation for correcting plume rise:

Equation 6

$$\Delta H = 2.9(F/US)^{1/3}$$

where ΔH, F, and U are as in equation 5; $S = (g/T)(2\theta/\partial_z)$ (units of sec^{-2}); $g = 9.81$ (m/sec^2); T = temperature (degrees Kelvin); θ is the potential temperature (degrees Kelvin); z = height (meters).

An acceptable approximation is to estimate total plume rise at the source, and assume that diffusion begins at the peak of the estimated plume rise. This assumption has the effect of wafting the initial plume over the heads of nearby receptors, reducing calculated detriment near the source of the release. The assumption is vulnerable, however, to inaccuracies in estimation of initial thermal lofting.

A fourth and final simplification in the equation for downwind concentration of radionuclides in air can be realized by assuming that the distribution of radionuclides in the crosswind (y) direction is rectangular rather than Gaussian. The rectangular pattern, termed the "top-hat" distribution in WASH-1400, is recommended by the NRC. The magnitude ("amplitude") of the rectangular distribution is set at 80% of the centerline magnitude under the Gaussian assumption. This results in the same total quantity of radionuclides in the air, but their crosswind dispersion in the cloud is taken as uniform rather than Gaussian, which simplifies subsequent calculation of ground deposition and dosimetry, as detailed in subsequent sections. The "top hat" distribution is achieved by modifying equation 4 above to the form of equation 7 below.

Equation 7

$$\chi_{(x,y,0;0)} = \frac{0.8(Q)}{\pi \sigma_y \sigma_z u}$$

Once the appropriate equation for calculating downwind air concentration of radionuclides is selected from the five possibilities described above—usually equation 7 or equation 7 modified for thermal lofting as in equation 3—the parameters of the equation must be identified or computed. The equation is then solved iteratively for increasing incremental distances from the source, usually taken as downwind intervals of 1 km (or 1 mile) progressively farther from the source. In accord with WASH-1400, the calculations are performed for downwind distances corresponding to the midpoints of incremental spatial intervals, and the corresponding concentration values computed for the interval midpoint are assumed to apply for the entire spatial interval for which they are calculated. The alternative of integrating air concentration over the entire interval is more satisfying conceptually, but does not provide a sufficient increase in precision to justify the extra computational effort, unless the user is mathematically sophisticated and has access to a computer.

Important note: The above equations do NOT take into account the depletion of the radioactive cloud by "fallout" (deposition), which is essential. The means for accomplishing this are given in equation 10 below.

The parameters required for equation 7 are four: Q, σ_z, σ_y, and U. Q is determined by dividing the source term (Ci) by the assumed duration of release (sec). The downwind distance, x, is incorporated into the calculations by means of the distribution parameters, σ_y and σ_z. These parameters are in turn determined separately for each atmospheric stability class.

Atmospheric stability refers to the capacity of the atmosphere to dilute any material released from a point source, and is determined largely by the rate of solar isolation and consequent "lapse rate," i.e., decline in temperature with increasing altitude. Pasquill (1942) devised a simple series of calculations by which atmospheric stability could be classified and calculated from a minimal number of easily measured parameters. His classification scheme was subsequently modified by Briggs (1973), who devised simple interpolation equations that closely approximate the Pasquill functions out to a distance of 10 km from the source. Beyond 10 km the correspondence is good but not exact.

A qualitative guide to the six Pasquill atmospheric stability categories (class A, extremely unstable, through class F, extremely stable) is offered by Turner (1969, p. 6), as follows (Table 3):

TABLE 3
QUALITATIVE GUIDE TO PASQUILL ATMOSPHERIC STABILITY CLASSES

Wind velocity (10 m above ground, m/sec)	DAYTIME Solar Radiation			NIGHTTIME	
	strong	moderate	slight	thin overcast or ≥ 50% low cloud cover	≤ 38% cloud cover
<2	A	A-B	B	--	--
2-3	A-B	B	C	E	F
3-5	B	B-C	C	D	E
5-6	C	C-D	D	D	D
>6	C	D	D	D	D

The Briggs equations for approximating the Pasquill functions, as presented in in WASH-1400, are given in Table 4 (where x = the downwind distance). It should be noted that these equations pertain to open-country conditions. Their application to urban areas, where turbulence in the wake of buildings is induced, is less exact, but quantitative means to deal with such turbulence have not yet been developed by the NRC.

TABLE 4
BRIGGS EXTRAPOLATION FORMULAE FOR APPROXIMATING PASQUILL FUNCTIONS

Pasquill Stability Category	σ_y	σ_z
A (extremely unstable)	$0.22\,x\,(1{+}0.0001x\,)^{-1/2}$	$0.20x$
B (unstable)	$0.16\,x\,(1{+}0.0001x\,)^{-1/2}$	$0.12x$
C (slightly stable)	$0.11\,x\,(1{+}0.0001x\,)^{-1/2}$	$0.08\,x\,(1{+}0.0002x)^{-1/2}$
D (neutral)	$0.08\,x\,(1{+}0.0001x\,)^{-1/2}$	$0.06\,x\,(1{+}0.0015x\,)^{-1/2}$
E (slightly stable)	$0.06\,x\,(1{+}0.0001x\,)^{-1/2}$	$0.03\,x\,(1{+}0.0003x\,)^{-1/2}$
F (very stable)	$0.04\,x\,(1{+}0.0001x\,)^{-1/2}$	$0.016\,x\,(1{+}0.0003x\,)^{-1}$

Plume Depletion: Radioactive Decay and Deposition

The radioactivity in the moving plume declines during its transport by two means: radioactive decay, and deposition of particles on the ground. Radioactive decay becomes significant only for short half-lived isotopes such as iodine-131 (half-life 8.05 days). If one is dealing only with short term (hours) consequences the cloud, such decay can be ignored with little sacrifice in accuracy; and decay need not be considered for very long-lived nuclides such as plutonium-239.

The dispersion of radionuclides in the atmosphere can be affected strongly by vertical wind components and by atmospheric inversions. Vertical winds are known to occur, and the resultant mass transport would far exceed diffusion in the vertical (Z) direction. This could result in greater dilution of the radioactive cloud (upward-directed winds), but also complex and unpredictable "touch-down" of the radioactive cloud (downward-directed winds) in downwind directions, as in fact occurred following the Cherbonyl accident. Vertical wind components are not well-understood and are not taken into account in calculating radionuclide dispersion.

Radioactive decay can be incorporated into the equation for downwind concentration, by adding an exponential decay function. Equation 7, for example, becomes:

Equation 8

$$\chi(x\,,y\,,0;0) = \frac{0.8Q}{\pi\sigma_y\,\sigma_z\,u}\;e^{[-\frac{x}{L_r}]}$$

where all terms but the exponent are defined as in equation 7; and L_r (the relaxation length) = $u_x/\lambda = [u_x t_{1/2}]/ln\,2$; where λ = the radioactive decay constant and $t_{1/2}$ is the half-life of the radionuclide in question.

As the cloud of radioactivity is transported downwind by prevailing winds, the radioactive particles contained in it are deposited onto the ground by two mechanisms, wet deposition and dry deposition. Wet deposition entails formation of water droplets around the radioactive particles, which thus serve as condensation nuclei, and subsequent settling of the particles to the ground. Dry deposition entails gravity sedimentation of particles to earth, as well as impact adherence of the charged radioactive particles to surfaces, including buildings, automobiles, vegetation and the earth. Neither process is well understood.

Wet deposition is assumed in WASH-1400 to be about one order of magnitude less than dry deposition. Moreover, wet deposition occurs only under conditions of fog or precipitation, in which case wash-out (short-term weathering) would at least partially eliminate ground deposition. Wet deposition can generally be ignored, in which case the calculation of ground contamination is probably conservative.

Dry deposition can be calculated in one of three ways. First, the deposition in each downwind spatial interval can be incorporated into the equation for downwind concentration. Equation 7, for example, then becomes Equation 9, below:

Equation 9

$$\chi_{(x,y,0;0)} = \frac{0.8Q}{\pi \sigma_y \sigma_z u} e^{\left(\frac{-x}{L_d}\right)}$$

where $L_d = u\bar{z}/V_d$; L_d = the attenuation length; u = windspeed (m/sec); $\bar{z}$ = the mean height of the cloud (m); and V_d = the deposition velocity (m/sec).

Alternatively, dry deposition can be calculated from relatively complex equations such as those presented in Slade (1968, p. 204). Numerical solutions to these equations are available, however, in graphical form (Figure 23). A practical third alternative is to utilize these curves to estimate numerically the depletion of the cloud within each downwind spatial interval, and to then correct the source term for the next interval by subtraction of the portion deposited in all preceding intervals. This procedure is carried out as follows. The source depletion curves (Figure 23) show the ratio of the depleted source term (Q_x') to the original source term (Q_0'), as a function of downwind distance. To determine the source depletion fraction from these curves, find the distance on the abscissa corresponding to the midpoint of the downwind spatial interval under consideration. Then read on the ordinate the corresponding ratio of the new to the original source term corresponding to that downwind distance. The original source term (Q) used in the equation to calculate downwind air concentration is then simply multiplied by this ratio prior tc using it in the equation for downwind air concentration. That is, the new source term is equal tc the original source term times the source depletion factor, which is obtained from the appropriate curve in Figure 23. The source depletion ratios measured from these curves are presented ir Tables 5 and 6 for H = 0 and H = 50 m, respectively.

To incorporate cloud depletion into the calculation of downwind air concentration, the corresponding source depletion factor is simply multiplied times Q in the equations giver earlier. To illustrate, Equation 7 above becomes:

Equation 10

$$\chi_{(x,y,0;0)} = \frac{0.8Q\,(Q_x'/Q_0')}{\pi \sigma_y \sigma_z u}$$

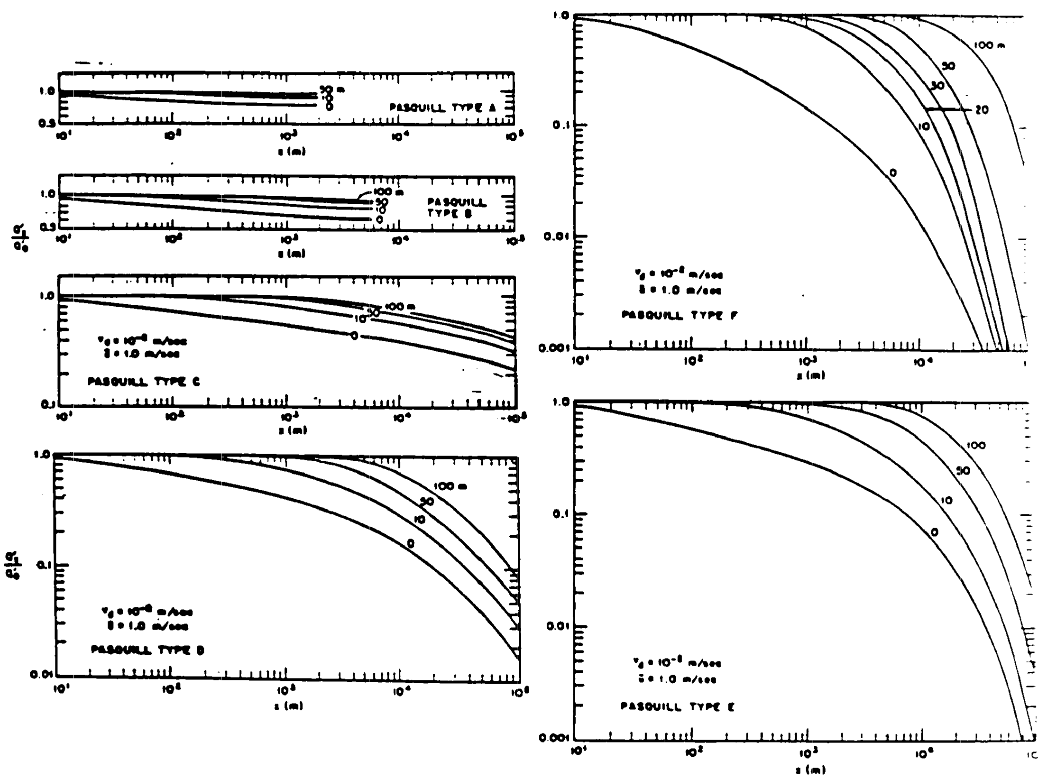

Figure 23: Source-depletion fraction, Q_x'/Q_0', for a wind speed, $\bar{U}$, of 1.0 m/sec, a deposition velocity, v_d, of 10^{-2} m/sec, for source heights from 0 to 100 m above the ground and for various stability categories.

TABLE 5

DEPLETION FACTORS (Q_x/Q_0) for H = 0 m (from Fig. 23)

spatial interval	effective source distance (km)	stability class A	stability class B	stability class C	stability class D	stability class E	stability class F
0	0	1.0	1.0	1.0	1.0	1.0	1.0
1	1	0.75	0.64	0.57	0.420	0.41	0.13
2	2	0.75	0.62	0.50	0.340	0.30	0.089
3	3	0.75	0.61	0.47	0.300	0.19	0.061
4	4	0.75	0.60	0.458	0.270	0.16	0.048
5	5	0.75	0.60	0.444	0.240	0.14	0.035
6	6	0.75	0.60	0.430	0.220	0.12	0.031
7	7	0.75	0.60	0.420	0.210	0.220	0.023
8	8	0.75	0.60	0.410	0.190	0.10	0.020
9	9	0.75	0.60	0.408	0.180	0.088	0.016
10	10	0.75	0.60	0.406	0.170	0.080	0.014
11	11	0.75	0.60	0.404	0.165	0.069	0.013
12	12	0.75	0.60	0.402	0.160	0.065	0.012
13	13	0.75	0.60	0.400	0.155	0.061	0.011
14	14	0.75	0.60	0.398	0.150	0.057	0.010
15	15	0.75	0.60	0.395	0.145	0.054	0.009
16	16	0.75	0.60	0.392	0.140	0.051	0.008
17	17	0.75	0.60	0.389	0.133	0.048	0.007
18	18	0.75	0.60	0.386	0.126	0.045	0.006
19	19	0.75	0.60	0.383	0.119	0.042	0.005
20	20	0.75	0.60	0.380	0.110	0.038	0.004
21	22.5	0.75	0.60	0.340	0.090	0.025	0.002
22	27.5	0.75	0.60	0.320	0.080	0.018	0.0018
23	35	0.75	0.60	0.300	0.058	0.010	0.0001
24	45	0.75	0.60	0.280	0.046	0.0061	0
25	55	0.75	0.60	0.270	0.037	0.0035	0

TABLE 6

DEPLETION FACTORS (Q_x/Q_0) for H = 50 m (from Fig. 23)

spatial interval	effective source distance (km)	stability class A	stability class B	stability class C	stability class D	stability class E	stability class F
0	0	1.00	1.00	1.00	1.00	1.00	1.00
1	1	0.90	0.90	1.0	1.0	1.0	1.0
2	2	0.90	0.87	0.90	0.88	0.99	1.0
3	3	0.90	0.85	0.83	0.80	0.92	1.0
4	4	0.90	0.83	0.75	0.73	0.89	0.91
5	5	0.90	0.83	0.72	0.69	0.81	0.88
6	6	0.90	0.83	0.71	0.61	0.76	0.83
7	7	0.90	0.83	0.70	0.59	0.70	0.71
8	8	0.90	0.83	0.70	0.53	0.62	0.63
9	9	0.90	0.83	0.70	0.51	0.60	0.58
10	10	0.90	0.83	0.70	0.48	0.56	0.56
11	11	0.90	0.83	0.64	0.41	0.47	0.43
12	12	0.90	0.83	0.63	0.40	0.44	0.40
13	13	0.90	0.83	0.61	0.38	0.41	0.33
14	14	0.90	0.83	0.60	0.37	0.40	0.31
15	15	0.90	0.83	0.60	0.33	0.34	0.29
16	16	0.90	0.83	0.60	0.32	0.31	0.27
17	17	0.90	0.83	0.60	0.31	0.29	0.25
18	18	0.90	0.83	0.60	0.30	0.24	0.22
19	19	0.90	0.83	0.60	0.30	0.23	0.21
20	20	0.90	0.83	0.60	0.29	0.21	0.20
21	22.5	0.90	0.83	0.58	0.25	0.17	0.13
22	27.5	0.90	0.83	0.56	0.21	0.12	0.11
23	35	0.90	0.83	0.51	0.15	0.089	0.062
24	45	0.90	0.83	0.50	0.12	0.050	0.022
25	55	0.90	0.83	0.38	0.10	0.033	0.014

The curves expressed in Figure 23, and the measured values in Tables 5 and 6, correspond to a deposition velocity of 10^{-2} m/sec, which is a reasonable "average" value to use for particle sizes likely to result from a nuclear accident (aerosols 20 micrometers and lower in diameter). Smaller particles, however (less than one micrometer in diameter), probably deposit mainly through impact adherence. The curves in Figure 23 also assume a windspeed of 1 m/sec, however, which is not always suitable for a particular location. The source depletion ratio read from the curves of Figure 23 can be adjusted for different windspeeds using the following equation (from WASH-1400):

Equation 11

$$\left(\frac{Q_x}{Q_0}\right)_2 = \left(\frac{Q_x}{Q_0}\right)_1^{\bar{U}_1 V_{d2}/\bar{U}_2 V_{d1}}$$

where subscript 1 refers to values found in Figure 23, subscript 2 refers to the desired value, $\bar{U}$ refers to the mean windspeed, and V_d is the deposition velocity. In practice it is simplest to assume a windspeed of 1 m/sec, which is generally justifiable under the convention of 95% meteorological conditions as described above. This eliminates the need to calculate a new source depletion curve for each downwind spatial interval for a windspeed other than 1 m/sec.

Once the appropriate source depletion rations have been determined from the curves in Figure 23 (or taken from Tables 5 and 6), the deposition of radionuclides onto the ground in spatial interval j can be determined as follows. Recalling that the source depletion fraction describes the fraction *remaining* in the cloud, the fraction *deposited* is

O.17

$$1 - \frac{Q_x'}{Q_0'}$$

This fraction represents everything that has been deposited *up to and including* the interval under consideration. To obtain the amount deposited in the interval under consideration, it is necessary to subtract from the above fraction that fraction that has been deposited *prior to* the interval under consideration. That is, the fraction deposited in spatial interval j, F_j, is given by:

Equation 12

$$F_j = \left[1 - \left(\frac{Q_x'}{Q_0'}\right)_j\right] - \left[1 - \left(\frac{Q_x'}{Q_0'}\right)_i\right]$$

$$= \left[\frac{Q_x'}{Q_0'}\right]_i - \left[\frac{Q_x'}{Q_0'}\right]_j$$

To obtain the quantity of radionuclides deposited, I_d, F_j is multiplied by the original source term for the radionuclide in question.

Equation 13

$$I_d = (F_j)(ST)$$

To obtain the surface concentration (in Curies per square kilometer), the quantity deposited is divided by the surface area of the spatial interval. The entire equation for surface deposition (SD) in interval j is therefore as follows:

Equation 14

$$SD_j = \frac{\left[\left(\frac{Q_x'}{Q_0'}\right)_i - \left(\frac{Q_x'}{Q_0'}\right)_j\right](ST)}{A_j}$$

where SD_j is the surface deposition in spatial interval j (Curies/m^2), $(Q_x'/Q_0')_j$ is the source depletion factor for interval j (from Figure 23 or Table 5 or 6), $(Q_x'/Q_0')_i$ is the source depletion factor for the preceding spatial interval i, ST is the source term (Curies) for the radionuclide in question, and A_j is the surface area (square meters) beneath the plume for interval j, determined as described next.

In order to determine the surface area beneath the plume for each spatial interval, the geographical parameters of the plume are computed. The projected width on the ground of the plume at the midpoint of each spatial interval is taken as $3\sigma_y$ (WASH-1400). On this basis the ground area subtended by the plume can be superimposed onto maps of the affected region. The surface area represented by each spatial interval can be approximated as the width of the interval at its midpoint times the downwind length of the interval (typically 1,000 m). This yields A for interval j, for use in the above equation 14.

Population Data

Population parameters required to determine health effects include the population density in the affected region, and the age structure of the population. Health impacts are greater for younger people, and hence a conservative simplifying assumption (one that understates the health impacts) is that all persons in the exposed region are adult.

Once the population densities in the affected regions are known, the number of persons at risk is determined by the following equation:

Equation 15

$$P = DA$$

where P = the number of exposed persons, D = the population density (persons per square kilometer) and A = the area beneath the plume in the corresponding spatial interval (square kilometers). The area may be approximated as the width of the spatial interval at its midpoint times the length of the interval (1 km). In the event that the spatial interval includes uninhabited regions (e.g., bodies of water), a corresponding reduction in the area is necessary prior to determining the populations.

Casualties from Radiation Doses

Exposure of individuals to radionuclides following an accidental release can occur *via* one or more of five pathways: gamma irradiation from the moving cloud (*cloudshine*), inhalation of radionuclides caused by breathing the radioactive cloud (*inhalation exposure*), gamma irradiation from radionuclides deposited on the ground (*groundshine*), exposure to radionuclides resuspended in the air following deposition on the ground (*resuspension*), and ingestion of radionuclides in food and water (*ingestion*).

Resuspension is probably small compared with the other pathways (except in the case of long-lived radionuclides such as plutonium-239). This pathway can be ignored, resulting in a conservative analysis. Ingestion can be ignored for many accident scenarios by presumed quarantine of the food and water supplies in a contaminated region, which adds to the conservativeness of the calculation. In cases where ignoring ingestion is not justified, such as large-scale contamination of farmlands (as at Chernobyl), methods for dealing with the ingestion pathway are given in WASH-1400.

Cloudshine and inhalation exposures are calculated directly from the downwind air concentrations as determined above, in combination with published "dose conversion factors" (DCFs). DCFs are subject to tremendous uncertainty, but those published by the American Physical Society (Wilson et al., 1985) are considered most up-to-date and reliable (Tables 7-9). These represent conversion factors from concentration in the air to radiation exposure in units of Rem/sec per Curie/m^3 in the case of cloudshine, or Rem/Curie inhaled in the case of inhalation exposure. In the latter case an adult human respiration rate of 1 m^3/hour is assumed. For groundshine the units are Rem/week per Curie/m^2 of surface contamination. Exposure of a single individual in rems is obtained by multiplying the DCF times the calculated concentration (cloudshine, groundshine) or amount inhaled (inhalation exposure).

TABLE 7
CLOUDSHINE DOSE CONVERSION FACTORS FOR SELECT RADIONUCLIDES
(from Wilson et al., 1985)

Radionuclide	APS Whole-Body Dose Conversion Factor $\frac{\text{Rem/second}}{\text{Ci/m}^3}$	APS Whole-Body Dose Conversion Factor $\frac{\text{Rem/hour}}{\text{Ci/m}^3}$
^{95}Zr	0.162E0	5.83E2
^{95}Nb	0.166E0	5.98E2
^{103}Ru	0.111E0	4.00E2
^{106}Ru	0.431E-1	1.55E2
^{131m}Te	0.314E0	1.13E3
^{132}Te	0.475E-1	6.30E1
^{131}I	0.872E-1	3.14E2
^{134}Cs	0.350E0	1.26E3
^{136}Cs	0.478E0	1.72E3
^{137}Cs	0.122E0	4.39E2
^{140}Ba	0.444E-1	1.60E2
^{140}La	0.567E0	2.04E3
^{144}Ce	0.431E-2	1.55E1
^{239}Pu	0.230E-4	8.28E-2

TABLE 8
INHALATION DOSE CONVERSION FACTORS FOR SELECT RADIONUCLIDES
(from Wilson et al., 1985)

Radionuclide	APS Whole-Body Dose Conversion Factor (0-50 years) Rem/Ci inhaled
^{89}Sr	0.410E4
^{90}Sr	0.240E6
^{95}Zr	0.560E4
^{95}Nb	0.190E4
^{103}Ru	0.190E4
^{106}Ru	0.620E5
^{131m}Te	0.550E3
^{132}Te	0.150E4
^{131}I	0.600E3
^{134}Cs	0.470E5
^{136}Cs	0.590E4
^{137}Cs	0.360E5
^{140}Ba	0.190E4
^{140}La	0.920E3
^{144}Ce	0.320E5
^{239}Pu	0.820E8

TABLE 9
GROUNDSHINE DOSE CONVERSION FACTORS FOR SELECT RADIONUCLIDES
(from Wilson et al., 1985)

Radionuclide	APS Whole-Body Dose Conversion Factor for 1 week of exposure	APS Whole-Body Dose Conversion Factor for 1 day	APS Whole-Body Dose Conversion Factor for 1 hour
^{95}Zr	0.177E4	2.53E2	1.05E1
^{95}Nb	0.164E4	2.39E2	1.05E1
^{103}Ru	0.116E4	1.66E1	6.90E0
^{106}Ru	0.456E3	6.51E1	2.71E0
^{131m}Te	0.960E3	1.37E2	5.71E0
^{132}Te	0.308E4	4.40E2	1.83E1
^{131}I	0.708E3	1.01E2	4.21E0
^{134}Cs	0.369E4	5.27E2	2.20E1
^{136}Cs	0.410E4	5.86E2	2.44E1
^{137}Cs	0.131E4	1.87E2	7.80E0
^{140}Ba	0.365E4	5.21E2	2.17E1
^{140}La	0.180E4	2.57E2	1.07E1
^{144}Ce	0.120E3	1.71E1	7.14E-1
^{239}Pu	0.263E1	3.76E-1	1.57E-2

It is generally believed that an exposure of 500 Rem will kill all exposed persons. The short-term dose that will cause 50% mortality within 60 days (LD-50/60) is generally considered to be 350 REM. Prompt fatalities are generally not expected at doses below 150 Rem (Wilson, 1985). Protective action guidelines of the U.S. Environmental Protection Agency are set at 1-5 Rem.

For lower doses of radiation, the health effects are subject to tremendous uncertainty. All estimates are based on backward extrapolation from higher doses (~100 rem), and hence the particular model used to relate dose to effect critically determines the health effects estimated for low doses. The BEIR III report (NAS, 1980) estimates that a population of 100,000 persons exposed uniformly to a dose of 1 rem (equivalent to 100,000 person-rem) will experience 15-50 casualties from latent cancers. An equal number of severe genetic defects is usually assumed. This corresponds to fatality from latent cancer per 2,000-6,666 person-rem. On the other hand,

Gofman (1981) argues the correct cose factor is 1 latent cancer fatality per 235 person-rem.

Owing to the tremendous variation in estimates, which reflects genuine scientific uncertainty and controversy, it is necessary to express casualties associated with low radiation doses as a range which probably encompasses the actual casualties. The extremes of this range are here set at 1 latent cancer death per 10,000 person-rems (low risk factor) and 1 latent cancer death per 235 person rems (high risk factor).

To obtain the person-rems for each spatial interval, the number of persons at risk (calculated from Equation 15 above) is multiplied by the sum of calculated exposure for all pathways, according to the following equation:

Equation 16

$$PR_i = (E_c + E_I + E_G)_i P_i$$

where PR_i = person-rem in spatial interval i, E_c = the total exposure (rem) from cloudshine in spatial interval i, E_I = the inhalation exposure (rem) in spatial interval i; E_G = the groundshine exposure in spatial interval i (rem), and P_i = the number of persons at risk in spatial interval i, as determined from Equation 15 above. Equation 16 omits both the resuspension pathway and the ingestion pathway, under the conservative assumption that both will be mitigated by emergency evacuation and quarantine procedures. Once the person-rem is calculated, the range of casualties is determined by dividing the person-rem by 10,000 (low risk factor) and 235 (high risk factor).

Evacuation and Decontamination

A severe accident will require evacuation and decontamination of the affected region in order to avoid "unacceptable" casualties. The level of unacceptable casualities is a socio-political-economic decision that is reflected by publically-sanctioned exposure "limits," beyond which casualties are, by definition, "unacceptable." These limits are in turn established for total exposure to any individual, and also for different radionuclides and different exposure pathways.

In the U.S., the individual exposure limit set by the NRC for individual members of the general public is 2 mrem/hour. Concentration limits for individual radionuclides are likewise established, both for air-concentration and for ground contamination. Limits set by the NRC for unrestricted use by the public are shown in Tables 10 and 11. Levels of contamination in excess of these limits render an area unfit for unrestricted public use and, by implication, trigger evacuation and decontamination of the area.

TABLE 10: NRC Limits for Air and Water Contamination for Select Radionuclides

Radionuclide*	Air Concentration NRC limit, Ci/m³ (over 1 year)	Air Concentration NRC limit, Ci/m³ (scaled to 1 hr)	Air Concentration NRC limit, Ci/m³ (scaled to 3 hr)	Air Concentration NRC limit, Ci/m³ (scaled to 4 hr)	Water Concentration NRC limit Ci/m³ (over 1 year)
^{89}Sr	3E-10	2.63E-6	8.76E-7	6.57E-7	3E-6
^{90}Sr	3E-11	2.63E-7	8.76E-8	6.57E-8	3E-7
^{91}Y	1E-9	8.76E-6	2.92E-6	2.19E-6	3E-5
^{95}Zr	4E-9	3.50E-5	1.17E-5	8.76E-6	6E-5
^{95}Nb	2E-8	1.75E-4	5.84E-5	4.38E-5	1E-4
^{103}Ru	2E-8	1.75E-4	5.84E-5	4.38E-5	8E-5
^{106}Ru	3E-9	2.63E-5	8.76E-6	6.57E-6	1E-5
^{131m}Te	1E-8	8.76E-5	2.92E-5	2.19E-5	6E-5
^{132}Te	7E-9	6.13E-5	2.04E-5	1.53E-5	3E-5
^{131}I	1E-10	8.76E-7	2.92E-7	2.19E-7	3E-7
^{134}Cs	1E-9	8.76E-6	2.92E-6	2.19E-6	9E-6
^{136}Cs	1E-8	8.76E-5	2.92E-5	2.19E-5	9E-5
^{137}Cs	2E-9	1.75E-5	5.84E-6	4.38E-6	2E-5
^{140}Ba	4E-9	3.50E-5	1.17E-5	8.76E-6	3E-5
^{140}La	5E-9	4.38E-5	1.46E-5	1.10E-5	2E-5
^{144}Ce	3E-10	2.63E-6	8.76E-7	6.57E-7	1E-5
^{239}Pu	6E-14	5.26E-10	1.75E-10	1.31E-10	5E-6
^{241}Pu	3E-12	2.63E-7	8.76E-9	6.57E-9	2E-4
^{241}Am	2E-13	1.75E-9	5.84E-10	4.38E-10	4E-6

*Limits shown for soluble forms, from 10CFR20, Appendix B, Table 11 (NRC, 1981).

TABLE 11: NRC Limits for Ground Surface Contamination

Radionuclides	Mean Surface Contamination Limited for an area not to exceed one m² (disintegrations/min)	Mean Surface Contamination Limit (Curies/m²)
natural U, ^{238}U, ^{234}U, and associated decay products	5,000	1.35E-7
transuranics ^{226}Ra, ^{228}Ra, ^{230}Th, ^{228}Th, ^{231}Pa, ^{227}Ac, ^{239}Pu, ^{241}Pu, ^{125}I, ^{129}I	100	2.70E-9
Thorium (natural) ^{232}Th, ^{90}Sr, ^{223}Ra, ^{224}Ra, ^{232}U, ^{126}I, ^{131}I, ^{133}I	1,000	2.70E-8
β/γ nuclides with decay modes other than alpha except for above nuclides) (^{137}Cs, ^{134}Cs, ^{106}Ru, ^{91}Y, ^{144}Ce	5,000	1.35E-7

In the event these limits are exceeded, emergency evacuation procedures are a statutory federal requirement in the U.S.. Decontamination to levels below these limits is likewise a statutory requirement before rehabitation is legally permissible. Therefore, determination of the need for evacuation and decontamination is reduced to determining whether these limits are exceeded.

In the event evacuation is indicated, an evacuation plan is necessary. The U.S. General Accounting Office has concluded (1979) that such plans cannot work unless they are not only in place, but actually practiced.

In the event that decontamination is indicated prior to rehabitation, the main considerations are the time required to achieve the decontamination, and the corresponding expense. A significant fraction of the expense is the "indirect" effect of lost economic activity pending decontamination and rehabitation.

WASH-1400 gives methodology for calculating decontamination costs, but this represents the most uncertain facet of the document. In the absence of experience decontaminating an area, the costs are impossible to estimate accurately. A recent study by the U.S. General Accounting Office (1986) indicates that the cost of cleaning up a "severe" reactor accident in a semi-rural area would range from 1-15 billion dollars U.S., and could reach 150 billion in extreme circumstances. It is safe to guess that a "severe" accident in a densely-populated urban area—i.e., one that significantly exceeds established limits—would take weeks to months to clean up and would cost tens of billions of dollars.

In the U.S. the Price-Anderson act limits industry liability to a fraction of these costs. Who would pay the balance, and how, is simply not discussed. In some cases it seems possible that decontamination of a severely contaminated urban area would be financially implausible, i.e., the cost of decontamination would exceed the amortized real market value of the contaminated property. The practical alternative would be abandonment of the contaminated area—an option that is likewise not openly discussed.

Probability of the Modeled Accidents

This is the area of greatest uncertainty and most controversy. The official approach to probability analysis, as adopted by the NRC and promulgated in WASH-1400 for nuclear reactor accidents, is to fractionate accident scenarios into their sequential components, calculate the independent probabilities of these components, and then multiply the fractional probabilities together to obtain the probability of the accident. With this approach probabilities on the order of 10^5–10^6 per reactor year have been calculated (i.e., 1/100,000-1/1,000,000). This approach appears logical from a physical engineering viewpoint, but herein lies its weakness as well.

What it neglects is first, the interdependence of a complex physical system; and second and related, the human factor.

With regard to interdependence, the probabilities of failure of specific components (e.g., a valve, a heat exchanger, etc.) are typically computed separately, as if they were independent events. But in fact they are components of a *system*, and their probabilities of failure are not unrelated. Failure of a heat exchanger, for example, may alter the conditional probability of a valve failure, and under extreme circumstances even increase it to certainty (1.0). In this case the probability of the entire accident is much higher than the product of fractional probabilities.

With regard to the human factor, intervention by a human operator has the effect of strengthening conditional probability linkages of the kind discussed above. Human intervention also adds a highly variable unpredictable element to probability calculations—one that is invariably (and inevitably) omitted from engineering calculations. The two most important nuclear accidents, TMI and Chernobyl, were both caused largely (TMI) or entirely (Chernobyl) by unforeseeable human error.

For these reasons, accident probabilities computed from physical and engineering principles are highly suspect. A much more reliable indicator is empirical, based on actual accident history. The most recent probability figure for a severe nuclear power reactor accident is 3×10^{-4} per reactor year of operation (3/10,000), significantly higher than calculated probabilities. As the nuclear industry matures, this probability may decline (with better safety standards) or increase (with aging components).

Probabilities become especially difficult to estimate in the absence of an accident history. An example is spent nuclear fuel transportation, which is still infrequent but projected to rise exponentially through the coming decades to a much higher plateau. There is little choice but to attempt probability estimates for each individual case considered, in the knowledge that these will certainly be wrong, perhaps by orders of magnitude.

Probabilities become impossible to calculate in the case of military accidents, because the accident history is classified and so also is information on which the probability of component failure could be based. Unless this information is made available to the public by the military, accident probability cannot be assessed, and hence the risk to the public (probability × consequences) is incalculable.

Comment Number	Response

Committee to Bridge the Gap

O.17.1 It is the Department of Defense policy to neither confirm nor deny the presence of nuclear weapons at any site. For additional information on reactor accidents, please see response to comment O.12.49.

O.17.2 Please see response to comment O.12.49.

O.17.3 Please see response to comment O.12.49. In addition, it is important to note that the Davis study included with the commentor's letter refers to the Nuclear Regulatory Commission and the standards they have established for commercial reactors. While not required, but consistent with past NNPP practice, the NIMITZ-class aircraft carrier nuclear propulsion plant design was independently reviewed by the Nuclear Regulatory Commission (at the time of review it was by the Directorate of Licensing Division of the Atomic Energy Commission) and by the Advisory Committee on Reactor Safeguards. Both reviews concluded that consistent with the military necessity of these ships, NIMITZ-class aircraft carrier reactors could be safely operated. Since the NRC and ACRS have the technical knowledge and had access to all relevant classified and unclassified information regarding Naval reactor designs, the Navy considers the conclusions reached by these organizations to be sufficient and appropriate evidence to support the Navy's conclusion that there would be no significant radiological impacts from the proposed action. Differences between Naval reactor and commercial reactor design and operation are discussed in sections 7.1 and 7.2 of the EIS.

However, it is important to note several points regarding the Davis study. As stated in section IV.A (Methodology) of the Davis study, the methodology used to evaluate consequences of a Naval reactor accident was taken from Nuclear Regulatory Commission document WASH-1400, otherwise known as the "The Rasmussen report." The Rasmussen report examined severe accident scenarios for a commercial nuclear power station. Many pieces of this report have been shown to be overly conservative. In addition, as described in responses such as O.12.49 and O.12.80, there are many differences between the reactor plants in U.S. nuclear-powered warships and commercial power reactors. For example, since Naval reactors are built for combat they are able to withstand severe shock loads associated with a ship in battle. Naval reactors also are small, relatively low powered, simple to operate and maintain, and mobile. If the ship is moving slowly in confined waters or at the pier, there is little power required for propulsion leading to the reactors being operated at low power or, if at the pier, normally being shut down.

Therefore, while commercial nuclear power plants and U.S. Naval reactors are cooled and moderated by light water, the aforementioned differences in design

Comment Number	Response
	and operational requirements make comparisons of reactor operation, accidents, and accident consequences of no value. Given this, the consequences found in the Davis report are orders of magnitude higher than what would actually occur in the highly unlikely event such an accident occurred. This is supported by the actual Navy operating experience, wherein there has never been a reactor accident or any significant radiological effect on the environment in the 45 years since the first U.S. Naval reactor began operation, a record comprising over 5,000 reactor years of operation. Specific comments addressed in your letter have been addressed in the responses included in this volume. No decisions will be made in regard to this EIS until at least 30 days after the Final EIS is published. Public comments can be provided to the Navy on the Final EIS during that review period.
O.17.4	Please see response to comment O.17.3.
O.17.5	Please see response to comment O.17.3.
O.17.6	Please see response to comment O.12.49.
O.17.7	Please see response to comment O.12.49.
O.17.8	The NRC and ACRS reviews had full, unrestricted access to classified information. These technical reviews focused on the detailed design and operation of the plants, and not on NEPA-related aspects. The results of the NRC and ACRS reviews are included in the EIS to support the conclusions reached in the NEPA analysis regarding the proposed action.
O.17.9	Please see responses to comments O.12.49 and O.17.3.
O.17.10	Please see responses to comments O.12.49 and O.17.3.
O.17.11	Please see responses to comments O.12.33 and O.12.10. In addition, in section 7.1.4 of the EIS it is stated that "Two nuclear-powered submarines (USS THRESHER and USS SCORPION) sank during operations at sea in the 1960s. Neither was lost due to a reactor accident . . ." Thus, the commentor's assertion that these incidents were related to a failure of a nuclear-related system is not correct.
O.17.12	Please see responses to comments O.12.49 and O.17.3.
O.17.13	Responses to your specific comments addressed in your letter have been provided. No decisions will be made in regard to this EIS until at least 30 days after the Final EIS is published. Public comments can be provided to the Navy on the Final EIS during that review period.

MAINSTREET LTD
CORONADO

Coronado MainStreet Ltd.
1224 Tenth Street, #103
Coronado, CA 92118
(619) 437-0254 • Fax: (619) 522-6577
e-mail: main_st@pacbell.net
www.coronado.ca.us

November 12, 1998

Mr. John Coon
Southwest Division (Code 05AL.JC)
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190

Dear Mr. Coon:

Coronado MainStreet Ltd., a non-profit organization which is part of the National Trust for Historic Preservation, was founded in 1988 by the City of Coronado with the mission to revitalize Coronado's downtown through preservation, beautification and restoration for the benefit of the entire community.

We request that you respond to the City's request for consideration of the cumulative impacts on the community and quality of life for its residents of homeporting up to three nuclear carriers at North Island. We additionally request that you verify the statistical information with the City of Coronado. O.18.1

Coronado is a residential community which has been severely impacted by having freeway/bridge traffic dumped onto residential streets. The majority of this traffic is North Island bound and the service on these streets is already at level F. O.18.2

When the San Diego region talks about the economic benefit of homeporting carriers in San Diego, they do not realize that while the region benefits, the City of Coronado gets the noise, traffic and air pollution and few of the benefits. In your report, it appears that there is more consideration of mitigation for the eel grass than there is for city residents. O.18.3

We request that you take the City's comments for action and remediation. O.18.4

For the Board of Directors, I am

Sincerely,

Toni Gaylord

Toni Gaylord
Executive Director

Comment Number	Response

Main Street Ltd.

O.18.1 Please see response to the City of Coronado's comments L.4.9 through L.4.14.

O.18.2 The additional traffic that would be generated by the proposed action would increase the traffic volumes on the Coronado streets that provide access to the site. Currently, NASNI has the capacity to support two conventional aircraft carriers (CVs) and one nuclear carrier (CVN) for a total of three homeported carriers, while Alternatives One, Two, and Three would have three CVNs. The proposed action would not result in two additional aircraft carriers, but would provide the capacity to homeport two additional CVNs (for three total CVNs). As the number of personnel on a CVN is slightly greater than that on a CV, the proposed action resulting in the capacity to homeport two additional CVNs would generate approximately 27 additional vehicle trips during the peak hours and 150 trips throughout an average day, as outlined in the EIS. The analysis indicates that a traffic increase of this magnitude would not be significant. Refer to the response to comments L.4.5 and L.4.12 for a more detailed discussion of the homeporting baseline at NASNI.

Although specific traffic-related mitigation measures are not needed to mitigate less than significant impacts of the proposed action, the Navy does have an ongoing series of strategies designed to reduce the level of traffic generated by NASNI, such as a ferry system, carpool/vanpool programs, installation of bicycle racks, a guaranteed ride home program (for rideshare users with a mid-day emergency), and an educational program to promote these strategies. In addition, the Navy is considering a redesign of the Main Gate so that the entrance would align with Third Street and thereby provide a more direct connection into and out of the base.

O.18.3 Your comments are noted and are included in the Final EIS.

O.18.4 Responses have been provided to all comments in the City of Coronado's letters. Please see responses to comments to the City of Coronado's comments contained in letters L.2, L.3, and L.4.

O.19

11/10/98

Mr John Coon
Southwest Division (Code 05AL.JC)
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190

Dear Mr. Coon;

The undersigned are members of the Coronado Blue Ribbon Committee on Traffic, and wish to submit the enclosed analysis as a response to the August 1998 Draft EIS regarding the Homeporting of Three CVNs at NASNI.

The purpose of the analysis is to call attention to the following facts:

1 The 1993 Baseline used by the Navy in the EIS needs to be updated as it greatly understates the current traffic picture in Coronado under a <u>two carrier scenario</u>. O.19.1

2 When updated, the current picture under a <u>two carrier scenario</u> shows that there is a "significant" impact from the standpoint of traffic congestion and related noise as it exists <u>today</u>. O.19.2

3 The Analysis points out that the impact of a 3 CVN scenario will be far greater than the 55 vehicle additional peak hour load set forth in the DEIS. O.19.3

4 Mitigation is in order, and the only feasible form of mitigation is the proposed tunnel from the Bridge toll plaza to NASNI, which was overwhelmingly endorsed by the voters of Coronado in the 11/3/98 election. O.19.4

Initial studies indicate that the proposed tunnel will provide sufficient mitigation from the standpoint of traffic congestion, noise, and pollution to bring these elements of the EIS into compliance with City, State, and Federal standards.

It is our expectation that the Navy will join with the City of Coronado in seeking Federal funds to pay for the proposed tunnel in mitigation for the homeporting of the CVNs at NASNI.

Sincerely,

Rankine Van Anda
1044 Olive Ave
Coronado, CA 92118

Sut Clark
344 A Avenue
Coronado, CA 92118

<u>ANALYSIS OF THE TRANSPORTATION ELEMENT OF THE DRAFT EIS ON CVN HOME PORTING AT NASNI, AUGUST 1998</u>

Traffic congestion is generally regarded as the most pressing problem impacting the quality of life of Coronado residents. Bridge traffic to and from Coronado has more than doubled over the last 20 years with weekday volumes now at 80,000 vehicles. Traffic to NASNI constitutes over 55% of this weekday volume and, more importantly, contributes to peak traffic volumes on Route 282 that reach capacity for 1 hour in the morning and 3 hours in the afternoon. The Coronado Blue Ribbon Committee on Traffic concluded, after a year of study, that a tunnel from the Bridge toll plaza to NASNI, was the only effective means to deal with the traffic congestion <u>as it exists today</u>. This condition exists when two, <u>not three</u>, carriers are home ported at NASNI. The proposed tunnel should provide sufficient capacity to handle the traffic generated by the three CVNs.

Volume 1, Section 3.9 of the EIS deals with the impact of future additional traffic that would be generated by 3 CVNs being home ported at NASNI. This section devotes just 9 pages to the traffic issue and the report uses data as far back as 1993. The conclusion of this abbreviated analysis is that "None of the home port (Coronado) area roadways and intersections would be significantly impacted because the changes in traffic volumes and Levels of Service are below the significant criteria thresholds."

The DEIS arrives at this erroneous conclusion through the following analysis. Prior to the decommissioning of the USS Ranger in 1993, NASNI supported 3 CVs. Therefore the only personnel increment to that 1993 baseline would be the crew size of a CVN relative to a CV. The Navy puts this number at 102 personnel, and calculates the net traffic impact of the 3 CVNs to be +430 ADT, and an increase in peak hour traffic of just 55 vehicles. Additionally, the Navy addresses the issue of "up to 1300" additional personnel required for the six months Industrial Availability, by saying that reductions in force elsewhere at NASNI will offset this personnel increase. No detailed delineation of this reduction in force is given.

Contrast this abbreviated analysis of the traffic impact on Coronado with the 38 page detailed study done for Pearl Harbor- with a more current date of October, 1997. Considerably more effort went into a traffic analysis of a facility the Navy has no intention of using to homeport a CVN. As the study notes, no carriers have been home ported at Pearl Harbor since World War II, and major changes to the infrastructure would be required. Furthermore, there is no air base in Hawaii to take the Carrier Air Wing, and work ups would have to take place in SOCAL, which takes 6 days to reach from Pearl Harbor. It is clear that a traffic analysis of homeporting 3 CVNs at NASNI comparable to that done for Pearl Harbor would show a <u>significant</u> impact on the traffic congestion of Coronado, with a requirement for mitigation, and such an analysis should be done.

An updated analysis would use a more current baseline (1997) instead of 1993. This analysis can be done by calculating the number of "Carrier Days in Port" to determine the net change from the 1997 baseline when 2 CVs were home ported at NASNI, and 2005 when 3 CVNs will be home ported at NASNI.

Using the EIS and other sources, the "Days in Port" for the CVNs can be calculated as follows

<u>CARRIER 24 MONTH CYCLE</u>

	MONTHS IN <u>HOME PORT</u>	MONTHS AT SEA/ <u>NOT AT HOMEPORT</u>
DEPLOYMENT		6
STAND DOWN	1	
INDUSTRIAL AVAILABILITY	6	
WORK UP CYCLE	6	4
PRE-DEPLOYMENT	1	
TOTAL EQUIVALENT MONTHS	14	10
PERCENT IN PORT (14/24)	58.3%	

Calculation 58 3% of 365 days = 213 average days in port per year X 3 carriers = 639 carrier days in port per year by year 2005

By checking the daily shipping activity log of the Port Officer, it was determined that in 1997 the Constellation was in port 150 days and the Kitty Hawk 265 days (9 months of an 11 month extensive overhaul occurred in 1997), for a total of 415 "Carrier Days in Port"

Thus it can be seen that by 2005 the roads of Coronado will be carrying an increment of traffic generated by an additional 224 "Carrier Days in Port", which represents an increase of 54% in carrier generated traffic.

A calculation of the traffic generated by the crew of a carrier in port can be derived from the data worked up for the impact of a single CVN at Pearl Harbor, as set forth in the EIS That study puts the peak hour number of trips to the carrier in the morning at 1199, with a like number in the afternoon. Preliminary data developed by Katz, Okitsu & Associates (who are working on a traffic impact analysis of a free Bridge for SANDAG) indicates a CVN in port at NASNI generates 4,256 daily trips, with the peak hours volume, (which extends beyond one hour) in the morning and afternoon of 1,702.

The EIS enumerates only one intersection in Coronado at Level of Service "F", which is Orange and Fourth That intersection has a capacity of 2450 vehicles per hour (As determined by Linscott, Law, and Greenspan, and verified by the Coronado Blue Ribbon Committee on Traffic) That intersection is at, or close to, capacity for 3 hours each weekday afternoon There is no way that additional vehicles can be accommodated in the peak hours without extending those hours or, more likely, spreading the Navy commuter traffic onto other residential streets of Coronado That this has already happened can be demonstrated by First Street, where traffic in the past 3 years has doubled during the afternoon peak hours.

The EIS fails to note that many unsignalized intersections along the Rt. 282 commuter road to NASNI are also at LOS "F" The Linnscott report on the Third Street Gate sets forth these additional intersections at LOS "F" during peak hours:

3rd&B, 3rd&C, 3rd&H, 4th&H, 4th&C, 4th&B, 4th&A, 4th&Pomona, 4th&Glorietta, Alameda&1st, and Alameda&3rd.

O.19

There is no mention of safety concerns along Rt. 282- particularly that segment south of Orange Avenue. Caltrans has expressed concerns about an inordinate accident rate- a situation which will be exacerbated by the increased traffic generated by the third carrier.

More extensive shipboard maintenance will be done on the home ported CVNs at NASNI than was done with the conventional carriers Up to 1300 outside contract personnel (including personnel from Puget Sound Naval Shipyard) will come to work during the 6 month period of Industrial Availability. With 3 CVNs in the cycle, this will occur 270 days out of the year Again, a measurement of the impact can be made by reference to the Pearl Harbor Traffic Study, which put the additional peak hour traffic load of this activity at 477 trips in each direction in the peak hours.

Finally, there are other factors which will increase traffic, but are difficult to quantify.

a) Additional truck traffic associated with the Industrial Availability activity not previously performed at NASNI.

b) Additional home port days resulting from Navy personnel retention concerns.

c) Additional "visiting ships" due to the increase in the number of deep water berths from 3 to 5

d) Cadre staff at the maintenance facility when no PIA is in process

Paragraph 3 9 1 2 of the EIS states

"The project's impacts to the ground transportation system would be considered significant if one of the following impacts occur Additional traffic generated by the homeporting activities would result in an increase of 0 02 or greater in the volume/capacity ratio of an intersection that is projected to operate at LOS E or F" This will clearly be the case at intersections already classified as LOS F along Route 282. For example, the intersection of Fourth and Orange is currently at capacity (1 0) with 2,450 vehicles per hour. An increase of 02, or just 49 vehicles, is required to make the impact "significant" The additional carrier will add 1,199 trips and the Industrial Availability will add 477 trips for a total of 1676 peak trips resulting in a volume/capacity ratio of 1 68 Even averaging the peak by using the incremental carrier-days-in-port, the volume/capacity ratio would still be 1 41

Finally, the noise generated by traffic on Third and Fourth Streets exceeds City, State, and Federal standards under the existing two carrier scenario The City of Coronado noise Study conducted by Recon in 1998, found that Leq noise measurements along Third and Fourth Streets exceeds 70db, and are well above the 1993 figures set forth in the DEIS These levels above 70db, exist today with two carriers homeported at NASNI, and exceed the threshold of "Clearly Unacceptable noise levels for residential land use" as defined in the City of Coronado General Plan

CONCLUSION

The homeporting of 2 or 3 CVNs at NASNI will have a significant (using the EIS definition of the word) impact on traffic conditions in Coronado ***An updated and more thorough traffic analysis***, similar to what was done for Pearl Harbor, is warranted If the Navy finalizes the homeporting of 2 or 3 CVNs at NASNI, then mitigation is in order, and that mitigation should consist primarily of financial support for the proposed tunnel to NASNI from the Bridge toll plaza Over the past 5 years alternative forms of mitigation such as van pools, bus and ferry subsidies, at a cost of over $3,000,000 per year, have been tried with minimal impact (2-3% range) on Bridge traffic The tunnel will remove approximately 50% of the weekday bridge traffic (including most trucks) from the streets of Coronado In addition to relieving congestion, the tunnel will bring noise and pollution figures into compliance with City, State, and Federal standards

11/10/98

Comment Number	Response

Coronado Blue Ribbon Committee on Traffic

O.19.1 The traffic impact analysis, which was based primarily on the peak hour levels of service at the critical study area intersections, used traffic counts that were taken August of 1996 to represent existing conditions. The August 1996 traffic counts that were used to represent the existing conditions scenario reflect traffic conditions during the peak summer tourist/recreational season when there were two aircraft carriers in port. These data were current when the EIS traffic analysis was initiated in 1997. Follow-up counts taken in the fall of 1998 resulted in traffic volumes that were lower than the August 1996 volumes. It was determined, therefore, that it would be appropriate to use the August 1996 data to represent the existing traffic conditions. This conclusion is consistent with the findings of the October 1998 draft report prepared by SANDAG titled "San Diego-Coronado Bridge Toll Removal Impact Study," which also used the August 1996 data to represent existing conditions. With regard to the use of 1995 traffic data to represent existing conditions, that was considered current for average daily traffic volume information when the EIS traffic analysis was initiated in 1997. The data shown in Table 3.9-1 has now been revised to represent the highest traffic 1996 and 1997 volumes cited for each roadway in the various source documents.

O.19.2 The traffic analysis presented in the Draft EIS is based on the incremental increase in traffic that would occur as a result of the proposed action. Currently, NASNI has the capacity to support two conventional aircraft carriers (CVs) and one nuclear carrier (CVN) for a total of three homeported carriers, while Alternatives One, Two, and Three would have three CVNs. The proposed action would not result in two additional aircraft carriers, but would provide the capacity to homeport two CVNs as a replacement for two CVs. As the number of personnel on the CVNs is slightly greater than that on the CVs, the proposed action would generate approximately 27 additional vehicle trips during the peak hours and 150 trips throughout an average day, as outlined in the EIS. The analysis indicates that a traffic increase of this magnitude would not be significant. Refer to the response to comments L.4.5 and L.4.12 for a more detailed discussion of the homeporting baseline at NASNI.

O.19.3 An average of 450 maintenance workers would be needed to support DMF maintenance activities for six month CVN PIAs at NASNI. Each CVN homeported at NASNI would require two six-month PIAs every six years. Thus, if three CVNs were homeported at NASNI, six PIAs would be conducted every six years, averaging one PIA per year.

In addition to PIAs, CVNs must undergo drydocking PIAs (DPIA) once every six years. These maintenance availabilities would be done outside of the San Diego area, and would last for approximately 11 months.

Comment Number	Response

The BRAC EIS (DON 1995a) evaluated the traffic impact of DMF workers based on a one PIA in one year concept. The EIS determined that there would be no impact because of overall decreases in base population at NASNI. For example, NASNI has already experienced a decrease of about 2,500 personnel since the BRAC EIS was prepared over 4 years ago (see Volume 3, Table 2-1). While the BRAC EIS analyzed a lesser frequency of PIAs (two every six years), it did analyze what the impact of one PIA in one year would be, thus bounding the condition of this EIS where an average of one PIA each year would be conducted. Thus, the conclusion of no impact stated the BRAC EIS is still valid for this EIS.

Please also note that the 1995 BRAC EIS had several conservative aspects built into the analysis. (1) The 1995 BRAC EIS estimated the average DMF workforce at 750 personnel and assessed the impacts at this level. The Navy overestimated this workforce because there had been no actual experience in conducting a CVN PIA. Now that the Navy has conducted several PIAs, the average workforce number at NASNI has been lowered to 450 personnel. (2) The analysis in the 1995 BRAC EIS did not account for the fact that DMF workers average 2.5 persons per vehicle. The 1995 BRAC EIS assessed these workers as all single vehicle operators. Therefore the 1995 BRAC EIS conservatively assessed the number of DMF workers and bounded the impacts of one PIA per year in its analysis.

It should also be pointed out that the PIA is a maintenance activity for the CVNs that would essentially replace for maintenance overhaul activities that are currently performed on the CVs. The CV maintenance activities are conducted periodically by the Navy and contract personnel that must commute to NASNI during the maintenance periods. The amount of work for CVs and CVNs are similar in size; therefore, it is not expected that CVN PIA activities at NASNI would vary greatly from past CV maintenance activities at NASNI or result in traffic increases in Coronado.

Please note that the total amount of work between the old overhaul system and the new PIA maintenance system has not appreciably changed. While a PIA is 6 months in length, it is done once every 2 years. Under the old overhaul system it was not uncommon to perform multiple 3+ month SRAs during the same time period. The main advantage of the PIA system is that it affords the Navy a more even tempo of operations than the old overhaul system. Please also note that some recent NASNI CV SRAs have been nearly a year in duration as noted elsewhere in the City's comments. Because the total amount of work has not appreciably changed between the old overhaul system and the new PIA system, the Navy does not consider further analysis on this issue necessary.

Comment Number	Response
O.19.4	As the proposed action under the maximum development scenario is essentially the replacement of one existing conventional aircraft carrier (CV) with two nuclear carriers (CVNs), the incremental traffic impacts would not be significant and no traffic-related mitigation measures would be needed. The Navy does, however, have an ongoing series of strategies designed to reduce the level of traffic generated by NASNI, such as a ferry system, carpool/vanpool programs, installation of bicycle racks, a guaranteed ride home program (for rideshare users with a mid-day emergency), and an educational program to promote these strategies. In addition, the Navy is considering a redesign of the Main Gate so that the entrance would align with Third Street and thereby provide a more direct connection into and out of the base.