Navy Conventional Prompt Strike Weapon System Flight Tests

Environmental Assessment/ Overseas Environmental Assessment

Final
Volume 2: Appendices

Department of the Navy

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Cover images: Illeginni Islet, Kristin Miller; Bigeyes in Kwajalein Lagoon, Kristin Miller; Hawksbill turtle in Kwajalein Lagoon, Kristin Miller; Steephead parrotfish in Kwajalein Lagoon, Kristin Miller

Volume 2 – Appendices

Table of Contents

Figure

Tables

Acronyms and Abbreviations

Acronym / Abbreviation	Definition
AUR	All-Up-Round
BOA	Broad Ocean Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
C-HGB	Common Hypersonic Glide Body
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
CPS	Conventional Prompt Strike
dB	Decibel(s)
DoD	Department of Defense
DPS	Distinct Population Segment
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FONSH	Finding of No Significant Harm
FONSI	Finding of No Significant Impact
FR	Federal Register
ft	Foot/Feet
GBSD	Ground Based Strategic Deterrent (now Sentinel)
GHG	Greenhouse Gas
KMISS	Kwajalein Missile Impact Scoring System
mg/kg	Milligrams per Kilogram
MSA	Magnuson-Stevens Fishery Conservation and Management Reauthorization Act
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

Acronym / Abbreviation	Definition
nm	Nautical Mile
NMFS	National Marine Fisheries Service
NOTAM	Notice to Air Mission
NRHP	National Register of Historic Places
NTM	Notice to Mariners
OEA	Overseas Environmental Assessment
OEIS	Overseas Environmental Impact Statement
OPAREA	Operating Area
OPNAV	Chief of Naval Operations
OPNAVINST	Chief of Naval Operations Instruction
PCB	Polychlorinated Biphenyl
pH	Potential of Hydrogen
$PM_{2.5}$	Particulate Matter Less Than or Equal to 2.5 Microns in Diameter
PM_{10}	Particulate Matter Less Than or Equal to 10 Microns in Diameter
re	Referenced to
RMI	Republic of the Marshall Islands
ROI	Region of Influence
RTS	Ronald Reagan Ballistic Missile Defense Test Site
SINKEX	Sinking Exercise
UES	USAKA Environmental Standards
U.S.	United States
USAG-KA	United States Army Garrison – Kwajalein Atoll
USAKA	United States Army Kwajalein Atoll
USASMDC	United States Army Space and Missile Defense Command
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
µPa	Micropascal

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Public and Agency Involvement and Distribution

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Appendix A. Public and Agency Involvement and Distribution

This section includes a summary of agency and public involvement and stakeholder outreach activities conducted by the Department of the Navy (Navy) during the development of the Navy Conventional Prompt Strike (CPS) Weapon System Flight Tests Environmental Assessment / Overseas Environmental Assessment (EA/OEA) and during the public review and comment period for the EA/OEA.

A.1. Agency Involvement and Distribution

A.1.1 Agency Coordination and Consultations

Interagency and intergovernmental coordination is an integral part of EA/OEA preparation. As part of early coordination and consultations, the Navy notified and consulted with relevant agencies on the Proposed Action to identify potential environmental issues and regulatory requirements associated with project implementation. A list of agencies contacted during development of the EA/OEA is included in **Section A.1.2**. Coordination and consultation correspondence with agencies with regards to the EA/OEA and the Proposed Action is included in **Appendix E**. The following discussions summarize the agency coordination and consultations that have been completed.

Consultations on Biological Resources

The Navy has evaluated the potential effects of the Proposed Action on biological resources under requirements of the relevant laws and regulations listed in **Section 5.1** in this EA/OEA. The Navy conducted coordination and consultation with the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and U.S. Army Kwajalein Atoll (USAKA) Environmental Standards (UES) Appropriate Agencies (i.e., Republic of the Marshall Islands [RMI] Environmental Protection Authority, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency [USEPA], NMFS, and USFWS) as described in this section.

U.S. Fish and Wildlife Service Coordination and Consultation. Pursuant to requirements of the Endangered Species Act (ESA), the Navy has evaluated the potential effects of the Proposed Action on ESA listed species, candidate species, and designated critical habitats under the jurisdiction of USFWS. The Navy has concluded that proposed CPS activities have no effects on ESA-listed seabird species in the Broad Ocean Area (BOA) and that no consultation with the USFWS under Section 7 of the ESA is required for these activities. The Navy coordinated with the USFWS regarding these conclusions with submission of the Draft EA/OEA to appropriate USFWS regional offices.

Pursuant to provisions of the Migratory Bird Treaty Act, the Navy has evaluated the effects of the Proposed Action on migratory birds, including birds of conservation concern, in this

EA/OEA. The Navy coordinated with the USFWS on potential effects to migratory birds with submission of the Draft EA/OEA to appropriate USFWS regional offices.

National Marine Fisheries Service Coordination and Consultation. Pursuant to requirements of the ESA, the Navy has evaluated the potential effects of the Proposed Action on ESA listed species, candidate species, and designated critical habitats in a CPS Marine Biological Evaluation (DON and USASMDC 2024). The Navy has concluded that proposed CPS activities may affect ESA-listed species of marine mammals, sea turtles, and fish and may affect designated critical habitat. The Navy consulted with NMFS under Section 7 of the ESA and NMFS concurred with the Navy's conclusion that the Proposed Action may affect but is not likely to adversely affect ESA-listed marine mammals, sea turtles, or fish in the BOA (NMFS 2024b).

Pursuant to provisions of the Marine Mammal Protection Act and the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSA), the Navy evaluated the effects of the Proposed Action on all marine mammals and on Essential Fish Habitat (EFH). The Navy determined that proposed activities would not result in take of marine mammal species and determined that the Proposed Action would not significantly reduce the quality and/or quantity of EFH in the Region of Influence (ROI). The Navy has coordinated with NMFS on the relevant analyses and conclusions with submission of the Draft EA/OEA to appropriate NMFS regional offices and has consulted with the Pacific Islands Regional Office on potential negligible effects to EFH in the Hawaiian Islands EEZ (see **Appendix E**, **Sections E.2.9** through **E.2.12**).

UES Appropriate Agencies Coordination and Consultation. Pursuant to requirements of the UES, the Navy has evaluated the effects of the Proposed Action on species and habitats listed as coordination or consultation resources under the UES. The Navy has concluded that proposed activities at USAKA may affect coordination species and habitats but that those activities would not have significant effects on those resources. The Navy has notified the USFWS, NMFS, and the RMI Environmental Protection Authority, as UES Appropriate Agencies, of the conclusions of their preliminary review under Section 3-4.6.3 of the UES with submission of the Draft EA/OEA (see **Appendix E**, **Sections E.3** and **E.2.2**).

The Navy has evaluated the effects of the Proposed Action on species listed as consultation species under the UES in this EA/OEA in the CPS Biological Assessment for Kwajalein Atoll Activities (DON and USASMDC 2023). The Navy has concluded that proposed activities at USAKA may affect UES consultation species and initiated consultation with USFWS and NMFS under Section 3-4.5.3 of the UES on December 8, 2023 (**Appendix E**). The USFWS issued a letter of concurrence with Navy conclusions on March 5, 2024 (**Appendix E, Section E.2.4**) and NMFS issued a biological opinion in November 2024 (NMFS 2024b).

A.1.2 Agencies Contacted

A list of agencies contacted or consulted during development of the EA/OEA is included in **Table A.1.2-1**.

Table A.1.2-1. Agencies Contacted or Consulted During EA/OEA Development

United States Federal Agencies
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Habitat Conservation, Habitat Protection Division
Office of Protected Resources, Interagency Cooperation Division
Pacific Islands Regional Office, Habitat Conservation Division
Pacific Islands Regional Office, Protected Resources Division
Office of National Marine Sanctuaries
U.S. Army
U.S. Army Corps of Engineers, Honolulu District, Environmental Programs Branch
U.S. Army Garrison – Kwajalein Atoll
Environmental Division
Directorate of Public Works
U.S. Environmental Protection Agency
Office of Enforcement and Compliance Assurance, Office of Federal Activities, NEPA Compliance Division
Region 9, Environmental Review Branch, Tribal, Interagency, and Policy Division
Region 9, Freely Associated States Circuit Rider
Region 10, Policy and Environmental Review Branch
U.S. Fish and Wildlife Service
Ecological Services
Pacific Islands Fish and Wildlife Office
Republic of the Marshall Islands Agencies
Environmental Protection Authority

Acronyms and Abbreviations: NEPA = National Environmental Policy Act, U.S. = United States

A.2. Public Involvement and Distribution

A.2.1 Public Distribution and Repositories

The Notice of Availability for this Draft EA/OEA and Draft Finding of No Significant Impact (FONSI) / Finding of No Significant Harm (FONSH) was published in local and regional newspapers for locations associated with the Proposed Action (see **Table A.2.1-1**) between May 31 and June 3, 2024. An example of the newspaper advertisement is shown in **Figure A.2.1-1**. The Notice of Availability was also distributed to the agencies listed in **Table A.2.1-2** in the form of a letter (see **Appendix E**, **Section E.1.2**).

Copies of the Draft EA/OEA and Draft FONSI/FONSH were placed in local repositories (**Table A.2.1-3**) for public access and also made available over the Internet at https://www.nepa.navy.mil/CPSSea-Based. Those agencies, organizations, and repositories that were directly notified about the Notice of Availability or received a copy of the document are listed in **Table A.2.1-2** and **Table A.2.1-3**.

Table A.2.1-1. Newspaper Publications for the Notice of Availability

Location	Newspaper
Norfolk, Virginia	The Virginia Pilot
Jacksonville, Florida	Florida Times Union
Brevard, Florida	Florida Today
San Diego, California	The San Diego Union-Tribune
Ventura County, California	Ventura County Star
Kitsap, Washington	The Kitsap Sun
Seattle, Washington	The Seattle Times
Anchorage, Alaska	Anchorage Daily News
Honolulu, Hawai'i	Honolulu Star-Advertiser
Kwajalein Atoll, Republic of the Marshall Islands	Kwajalein Hourglass
	The Marshall Islands Journal

The Department of the Navy
INVITES YOU TO PARTICIPATE
in the Public Involvement Process for the
Navy Conventional Prompt Strike Weapon System Flight Tests EA/OEA

The U.S. Department of the Navy (Navy) has prepared a Draft Environmental Assessment/Overseas Environmental Assessment (EA/OEA) to evaluate the potential environmental impacts of conducting missile flight tests in both Atlantic and Pacific Ocean regions. Testing would involve flight tests from sea-based launch locations, vehicle flight over the ocean, splashdown of boosters in the ocean, and payload impact either in broad ocean areas or on land at a U.S. Army test site at Kwajalein Atoll in the Republic of the Marshall Islands.

Public Involvement Opportunity

The Navy welcomes your review and comments on the Draft EA/OEA.
Comments may be submitted online at **https://www.nepa.navy.mil/CPSSea-Based**
or by mail to:

Environmental Program Manager/SP2521
Strategic Systems Programs
1250 10th Street SE, Bldg. 200, Suite 3600
Washington Navy Yard, DC 20374-5127

All comments must be submitted online or postmarked by July 3, 2024.

The Draft EA/OEA is available online at **https://www.nepa.navy.mil/CPSSea-Based** or at the following public libraries: Norfolk's Slover Memorial Main Library, Virginia; Cape Canaveral Public Library, Florida; Jacksonville Public Library, Florida; City of San Diego Central Library, California; Oxnard Downtown Main Library, California; Kitsap Regional Library-Poulsbo, Washington; Seattle Public Central Library, Washington; Anchorage Public Library, Alaska; Hawai'i State Library-Honolulu; Kwajalein Island's Grace Sherwood Library and Roi-Namur Library, Republic of the Marshall Islands.

Figure A.2.1-1. Example Newspaper Announcement of the Notice of Availability of the Draft EA/OEA

Table A.2.1-2. Entities that Received the Draft EA/OEA Notice of Availability Letter

United States Elected Officials
United States Senators
Alaska
California
Connecticut
Georgia
Hawaii
Virginia
Washington
United States Representatives
Alaska
California Districts 52 and 26
Connecticut District 2
Florida Districts 4 and 8
Georgia District 1
Hawaii District 1
Virginia Districts 1 and 3
Washington Districts 1, 6, 7, and 9
United States Federal Agencies
Advisory Council on Historic Preservation
Office of Federal Agency Programs
Council on Environmental Quality
Department of State
Bureau of Oceans and International Environmental and Scientific Affairs
Department of Transportation
Federal Aviation Administration
Marine Mammal Commission
National Marine Protected Areas Center
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Office of Habitat Conservation, Habitat Protection Division
Office of Protected Resources, Interagency Cooperation Division
Pacific Island Regional Office, Habitat Conservation Division
Pacific Islands Regional Office, Protected Resources Division
Office of National Marine Sanctuaries
U.S. Army
U.S. Army Corps of Engineers, Honolulu District, Environmental Programs Branch
U.S. Army Garrison – Kwajalein Atoll
Environmental Division
Directorate of Public Works
U.S. Department of the Interior
Office of Environmental Policy and Compliance, Environmental Coordination Division

United States Federal Agencies (continued)
U.S. Coast Guard
Office of Environmental Management
District 14
U.S. Environmental Protection Agency
Region 1, Office of Environmental Review
Region 2, Environmental Review Section
Region 3, Office of Communities, Tribes, and Environmental Assessment
Region 4, NEPA Program Office
Region 9, Environmental Review Branch, Tribal, Interagency, and Policy Division
Region 9, Freely Associated States Circuit Rider
Region 10, Policy and Environmental Review Branch
U.S. Fish and Wildlife Service
Ecological Services
Pacific Islands Fish and Wildlife Office
Republic of the Marshall Islands Agencies
Environmental Protection Authority
Majuro
Ebeye

Acronyms and Abbreviations: NEPA = National Environmental Policy Act, U.S. = United States

Table A.2.1-3. Repositories that Received Copies of the Draft EA/OEA and Draft FONSI/FONSH

Repository Name	Address
Anchorage Public Library, Z. J. Loussac Library	3600 Denali Street, Anchorage, AK 99503
Cape Canaveral Public Library	201 Polk Avenue, Cape Canaveral, FL 32920
City of San Diego Central Library	330 Park Boulevard, San Diego, CA 92101
Grace Sherwood Library	Kwajalein Island, Republic of the Marshall Islands
Hawaii State Library	478 South King Street, Honolulu, HI 96813
Jacksonville Public Library	303 North Laura Street, Jacksonville, FL 32202
Kitsap Regional Library	700 Northeast Lincoln Road, Poulsbo, WA 98370
Oxnard Downtown Main Library	251 S. A Street, Oxnard, CA 93030
Roi-Namur Library	Roi-Namur, Republic of the Marshall Islands
Seattle Public Library	1000 Fourth Avenue, Seattle, WA 98104
Slover Memorial Main Library	235 East Plume Street, Norfolk, VA 23510

Comments on the Draft EA/OEA and Draft FONSI/FONSH were accepted over the 30-day public review period from June 3 through July 3, 2024, as specified in the Notice of Availability. Written comments could be submitted using either of these two ways: (1) via the Internet at https://www.nepa.navy.mil/CPSSea-Based or (2) mailed to the following address:

Environmental Program Manager/SP2521
Strategic Systems Programs
1250 10th Street SE, Bldg. 200, Suite 3600
Washington Navy Yard, DC 20374-5127

Following the 30-day public review period and consideration of public and agency comments, the Navy decided to finalize the EA/OEA and sign the FONSI/FONSH, which would allow the proposed CPS flight tests to proceed, and that preparation of an Environmental Impact Statement / Overseas Environmental Impact Statement (EIS/OEIS) was not required. The Navy considered all public and agency comments received during development of the Final EA/OEA and FONSI/FONSH. The Final EA/OEA and FONSI/FONSH are accessible via the internet at https://www.nepa.navy.mil/CPSSea-Based.

A.2.2 Comments Received on the Draft EA/OEA and Draft FONSI/FONSH

Public and agency comments received during the public comment period and considered during development of the Final EA/OEA and FONSI/FONSH are listed in **Table A.2.2-1**. Comments were received from the USEPA and from one individual member of the public. Comments from individual members of the public were designated by a code (to protect personally identifiable information) corresponding to the commenter's first and last initial and the comment number from that individual.

The Draft EA/OEA was also distributed to UES Appropriate Agencies (RMI Environmental Protection Authority, NMFS Pacific Islands Regional Office, USFWS Pacific Islands Office, U.S. Army Corps of Engineers Honolulu District, and USEPA Region 9) as part of the Notice of Proposed Activity required under the UES. Environmental comments and recommendations received from agencies during the Notice of Proposed Activity review period (June 3 to September 3, 2024) were also considered during development of the Final EA/OEA and FONSI/FONSH and are listed in **Table A.2.2-2**. The NMFS Pacific Islands Regional Office submitted comments and recommendations during the Notice of Proposed Activity agency review period.

Table A.2.2-1. Comments Received on the Draft EA/OEA during the Public Comment Period

Comment Number	Comment	Navy and USASMDC Responses
United States Federal Agency Comments		
United States Environmental Protection Agency (USEPA), Region 9		
EPA-01	**Streamlining Environmental Review Processes** Since 2019, the EPA has expressed concerns regarding the insufficient and fragmented approach of DoD's impact assessments under NEPA for its missile testing actions that impact Illeginni Islet, lagoon, and offshore waters at the United States Army Kwajalein Atoll's (USAKA) Ronald Reagan Ballistic Missile Defense Test Site. Separate environmental assessments analyzing the individual testing actions have not fully captured the cumulative impacts that DoD agency missile tests have on the shared target site at Illeginni Islet. We have repeatedly recommended a programmatic NEPA document be prepared, in order to remedy this fragmentation. According to the response to comments, the USASMDC is currently planning to evaluate the range of mission flight test activities at USAKA in a programmatic context; however, we recently learned that the programmatic effort would occur not under NEPA, but rather as a Document of Environmental Protection (DEP), pursuant to the Environmental Standards and Procedures for U.S. Army Kwajalein Atoll Activities (UES) in the Republic of the Marshall Islands (RMI). The EPA believes this is a missed opportunity to streamline both the UES and NEPA processes, and we continue to recommend that a programmatic NEPA document be prepared. The Council on Environmental Quality NEPA regulations direct Federal agencies to integrate the requirements of NEPA with other planning "to the fullest extent possible" (40 CFR 1502.24(a)). Nevertheless, we appreciate that a programmatic DEP will be prepared, and continue to be available to assist in early review and input as needed. We would appreciate receiving schedule information for that effort. We note that while not intended for NEPA compliance, the comprehensive information in the programmatic DEP may still inform the cumulative impacts analyses in the multiple individual flight test EAs.	Thank you for expressing your concerns regarding streamlining of the environmental review process for DoD testing actions at USAKA. As one of many DoD programs utilizing USAKA for flight test activities, Navy SSP would not be the proponent agency evaluating Ronald Reagan Ballistic Missile Defense Test Site (RTS) program activities; therefore, this programmatic analysis is not addressed in the Navy CPS EA/OEA. As a cooperating agency, USASMDC responds that USASMDC is currently evaluating the environmental impacts of the full range of RTS mission flight test activities in accordance with requirements of the UES. USASMDC notes the USEPA's comment regarding streamlining of the NEPA process as well. USASMDC will continue to coordinate with the USEPA throughout the RTS mission activities programmatic environmental analysis process.
EPA-02	**Environmental Justice - Fish Contamination** DoD acknowledges that fisheries are an important economic and cultural aspect of the RMI community, and that "cumulative effects on environmental justice resources at Kwajalein Atoll have likely occurred due to past military actions" (p. 41). While the Final Southern U.S. Army Garrison – Kwajalein Atoll Fish Study conducted by the U.S. Army Public Health Center in 20172 revealed that fish were contaminated with several pollutants, tungsten was not tested and the Draft EA response to comments indicates that the potential effects of residual tungsten on biotic communities is largely unknown. Given this information, the EPA recommends an additional fish study to determine whether tungsten or additional pollutants are present in fish whose consumption could be a pathway of exposure for local communities. We also recommend	The Navy appreciates the USEPA's concerns associated with fish contamination at USAKA. The Navy has determined that while Navy CPS activities result in negligible to minor contributions to contaminants at Kwajalein Atoll, these contributions to baseline and cumulative fish contamination levels would be undetectable and insignificant. Therefore, the Navy has determined that no CPS program-specific fish studies would be conducted. USASMDC notes the USEPA's recommendation for additional fish studies to test for the presence of tungsten and other previously untested pollutants in fish tissues.

Comment Number	Comment	Navy and USASMDC Responses
	localized communication methods regarding best practices and safe fish consumption, as described in the next section.	
EPA-03	**Environmental Justice - Community Engagement and Outreach Strategy** Executive Order 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All (April 21, 2023), directs Federal agencies to provide opportunities for early and meaningful involvement in the environmental review process for communities with environmental justice concerns potentially affected by a proposed action (E.O. 14096, Section 3(a)(ix)(C)). Therefore, we highlight the importance of localized public outreach. We recommend conducting focused community engagement, which could include educational efforts with local fishing groups, ensuring public information is translated as necessary, and including information on cooking techniques to reduce exposure to contaminants.	The Navy has provided opportunities for involvement in the Navy CPS environmental review process through Draft EA/OEA notices of availability published in local newspapers and sent to interested stakeholders with details regarding multiple ways to submit comments. The Navy also plans to publish and send notices of availability of the Draft DEP when it is available. All newspaper notices in the RMI are published in both English and Marshallese. Copies of environmental documents are made available online and in local libraries. Based on the potential impacts of the Proposed Navy CPS Action, the Navy has determined that no additional outreach specifically regarding fish contamination at USAKA is warranted for this program. USASMDC notes the USEPA's recommendation for additional community engagement regarding existing fish contamination at USAKA and is willing to discuss this issue further with USEPA, in conjunction with the United States Army Garrison – Kwajalein Atoll (USAG-KA), in the future.
EPA-04	**Stratospheric Ozone Depletion** We appreciate the information in the public DEA highlighting our comment regarding stratospheric ozone depletion. The additional information explains how global rocket emissions cause ozone depletion and deposit particulates in the stratosphere and that these global atmospheric impacts are likely to increase in the future as space traffic is projected to increase, resulting in cumulative effects (p. 4-35). We suggest that future flight test impact assessments discuss these impacts for all aspects of the project, not just under the impacts to broad ocean areas since they occur with all flights regardless of target location, and that the authors consider adding a heading (such as "impacts to stratospheric ozone") that distinguishes this discussion from the discussion of ground-level air quality impacts. While a small number of flight tests are evaluated in each impact assessment, a practice which lends credence to individual less-than-significant impact conclusions, it is important to try to capture the collective impacts from all the flight tests being planned, some of which are identified in Table 4.3.1-1 - Past, Present, and Reasonably Foreseeable Actions. The latest scientific assessment of ozone depletion considers future scenarios of space industry emissions, including the potential for a significant increase in launch rates. Some studies suggest that with a weekly launch frequency, which will be exceeded at Vandenberg Space Force Base alone, rockets could be responsible for stratospheric ozone loss to an extent that researchers have identified as being of concern. We note that the solid fuel propellent used for these missile	The Navy has added additional discussion of the potential stratospheric ozone depletion effects of the Proposed Action in a cumulative context, especially as it relates to proposed activities at Kwajalein Atoll, to the Final EA/OEA. The Navy has considered the latest scientific assessments recommended by the USEPA in preparation of the Final EA/OEA with consideration of the guidance provided by 40 CFR 1502.21 for incomplete or unavailable information.

Comment Number	Comment	Navy and USASMDC Responses
	launches has a much larger impact on stratospheric ozone than rockets used in commercial space launches. We recommend the Final EA discuss stratospheric ozone depletion effects of the proposed action in the cumulative context, utilizing the guidance provided in 40 CFR 1502.21 for incomplete or unavailable information.	
Public Comments from Individuals		
DW-01	Ladies/Gentlemen, Reference is made to the public solicitation for comments on a Draft Environmental Assessment/Overseas Environmental Assessment (DEA/OEA) concerning missile flight tests in both Atlantic and Pacific Ocean regions. Please accept my strong endorsement for continued US Navy flight testing in both regions, consistent with national defense requirements. As a former Commanding Officer, Pacific Missile Range Facility, Barking Sands, Kauai, and former federal agent who routinely visited Kwajalein and other Pacific DoD facilities used in support of Research, Development, Test & Evaluation events, I strongly support continued use of these ranges – there is no substitute. Please understand I have no personal or financial interest in this EIS. That said, given my professional knowledge of the test facilities and operations, I believe these ranges should continue to be used. In my experience, these tests are invaluable, both in the RDT&E sense, and to validate legacy weapon systems, to ensure they are still viable. Events are conducted with strict environmental and safety protocols, and timed to preclude interference with commercial aviation and shipping. Advisories via Notice to Airmen and Notice to Mariners ensure the widest possible alerts are disseminated. In my memory, there have been no instances where flight tests resulted in damage/injury to the general public. However, there have been instances where flight test(s) were cancelled/postponed at a significant cost, because the range was “fouled” by mariners. These tests involve distances so vast they cannot be conducted over land-based ranges. In addition, range support craft are prepositioned to monitor the tests and once completed, return to their home ports. There are no permanent structures affixed to the ocean surface or floor that would subsequently interfere with routine, commercial shipping traffic. While I no longer speak for the US Navy, nor any other federal, state, or local government, I strongly believe and support the use of these ranges for national defense-related testing that cannot be accomplished by any other means. It is noted other nations use open-ocean testing as well, for the same reasons. Strongly recommend continued use of these ranges for the reasons stated.	Thank you for your participation in the National Environmental Policy Act process. The Navy appreciates your support for proposed Navy CPS flight tests in both the Pacific and Atlantic Ocean regions.

Table A.2.2-2. Comments and Recommendations Received during the Notice of Proposed Activity UES Agency Review Period

Comment Number	Comment	USASMDC and Navy Responses
United States Federal Agency Comments		
National Marine Fisheries Service (NMFS) Pacific Islands Regional Office		
NMFS-01	**Comments** This submission includes the Navy CPS Weapon System Flight Tests Draft Environmental Assessment (EA) / Overseas Environmental Assessment (OEA) and the Navy CPS Weapon System Flight Tests Biological Assessment for Activities at Kwajalein Atoll. These EAs include requirements set by the UES. This assessment describes approximately 80 missile test flights. Each test will drop waste in open ocean environments and terminate in the ocean or at Illeginni Islet. Direct environmental impacts of any individual described flight test are expected to be minor, however, minor additive impacts by many cumulative actions over multiple decades have the potential to result in significant environmental degradation and impacts to people through cumulative environmental impacts. These include potential impacts to habitats and humans via contaminated seafoods. Our recent environmental reviews of similar weapons testing activities have expressed these concerns. The ongoing global loss of coral reef ecosystems, including the multitude of protected species that make them up, is a result of cumulative impacts from a variety of direct and indirect human influences. Therefore, the additional physical and chemical disturbances arising from weapons testing at any scale creates direct and indirect impacts that should be mitigated or avoided to the best extent possible. Terminal payload impacts at Illeginni will disperse debris, dust, and volatized contaminants. Debris and ejecta could directly impact biological resources in an area up to a 300 ft radius from the point of impact. Fugitive dust caused by impact would be redistributed to waters adjacent to (most likely westward/downwind of) the site. Contaminants could settle in nearshore ecosystems. Any soil and water contamination on Illeginni could be deposited in the nearshore environment via groundwater seeps, saltwater/groundwater mixing, and erosion, and increasingly so with rising sea levels and climate change. It is unclear how added and redistributed contaminants could impact nearshore environments into the future. It is therefore important to ensure robust sampling and testing procedures are carried out across impact sites and adjacent zones. Sampling wells at Illeginni should be maintained and sampled using scientifically robust procedures. Enhanced environmental monitoring of lagoon and seaward coral reefs, including long term site-specific data collection to monitor changes to coastal benthic habitats around	Thank you for your environmental comments and recommendations. The Navy and USASMDC appreciate the concerns NMFS presented in the submitted comments. USASMDC and the Navy have noted these concerns and responded to specific recommendations made by NMFS in comment items that follow.

Comment Number	Comment	USASMDC and Navy Responses
	Illeginni versus other similar sites, would be advantageous to support understanding of global versus local impacts to reefs there. Terminal payload impacts have the potential to affect species and habitats at Illeginni protected under the UES. Additive toxic effects on subsistence fisheries, even at small scale are, at this point, a cause for concern, given previously documented PCB and heavy metal contamination in such fisheries. Any added toxicity to locally consumed resources could be considered environmental injustice. Cumulation of minor additive environmental impacts can amplify the significance of each minor impact over time. It is important to avoid legal and harmful thresholds and ensure that sufficient monitoring is carried out to accurately track those impacts collectively.	
NMFS-02	**Recommendation 1** The Service recommends additional description of soil and water sampling procedures at Illeginni considering likely heterogeneous mixture of contaminants in soil there. Potential redistribution of legacy contaminants and maintaining sampling wells are points that warrant further description.	The Final EA/OEA includes more specific reference to the USASMDC Illeginni Islet soil and groundwater sampling plans which are in preparation by USASMDC. These sampling plans, including the associated sampling procedures, will be coordinated with NMFS and other UES Appropriate Agencies prior to finalization. Since the detailed sampling procedures are still being finalized, additional details were not added to the Final EA/OEA except by reference to the sampling plans which would contain those procedures.
NMFS-03	**Recommendation 2** The Service recommends developing a plan to continue long-term ecological monitoring (e.g. photogrammetry plots) at fixed sites to better understand nearshore (e.g. coral reef) ecosystems at Illeginni, including comparison to similar nearby environments. The Service can advise and/or continue to carry out photogrammetry monitoring as initiated in 2023 in order to document change over time.	Based on additional communications, USASMDC understands that NMFS has established initial photogrammetry plots at several USAKA islets. USASMDC would like to continue discussion with NMFS regarding the potential for long-term photogrammetry plots for monitoring reefs and for NMFS to continue carrying out this type of monitoring. The Navy has not included a measure for development of a plan to continue long-term ecological monitoring at fixed sites in the Navy CPS Final EA/OEA or DEP as these long-term USAKA-wide monitoring measures (if implemented) would be the responsibility of USASMDC or USAG-KA.
NMFS-04	**Recommendation 3** The Service recommends sampling Illeginni wildlife (e.g. shellfish tissues, fish fats and organs, bird blood, feathers, and/or egg shells) for heavy metals and other relevant contaminants to identify any potential transfer of contaminants to biological organisms.	USASMDC notes the NMFS's recommendation for additional sampling and testing of wildlife tissues for contaminants at USAKA and is willing to discuss this issue further with NMFS, in conjunction with the USAG-KA, in the future. The Navy has not included a measure for wildlife tissue sampling in the Navy CPS Final EA/OEA or DEP as the Navy's review and evaluation of available data indicate that the program's contribution to potential contaminants would be undetectable to minor. Any long-term USAKA-wide sampling or monitoring of legacy contaminants (if implemented) would be the responsibility of USASMDC or USAG-KA.

Comment Number	Comment	USASMDC and Navy Responses
NMFS-05	**Recommendation 4** The Service recommends additional reporting on past and ongoing sources of contaminants present in fish species locally harvested from Kwajalein lagoon, potential effects on consumers, and relationships between this and potential impacts (even minor, considering additive/cumulative effects) of the proposed activities in combination with other sources of contaminants. While the documents provided indicate that current available data do not allow for quantitative characterization of cumulative effect on biological or human resources at Kwajalein, tracking the available information is relevant to a thorough qualitative approach.	USASMDC is not aware of additional reports on past or ongoing sources of contaminants in fish species that were not presented in the Navy CPS Draft EA/OEA and NPA (See section 3.2.7 of the EA/OEA). Existing studies have shown that the primary human health risk contaminants in fish at USAKA are lead, pesticide chemicals, and some PCBs (APHC 2017). Studies have indicated that the predominant sources of historical pollution are thought to be sandblast material derived from maintenance operations and pesticides applied to building foundations (APHC 2017). These studies have also revealed that, despite several decades of payload testing at Illeginni Islet, potential contaminants associated with payload testing (i.e., metals) were not higher in fish tissues at Illeginni than at other samples sites in Kwajalein Atoll (APHC 2017). The primary contaminants found in fish tissues which contribute to human health risk at Illeginni are the pesticide chemical Chlordane and the PCBs Aroclors (APHC 2017) which are not used in flight testing. USASMDC and the Navy have included the currently available information relative to potential cumulative effects at Navy CPS activity locations which is summarized in the Navy CPS EA/OEA and NPA and detailed in cited reference documents such as the Final Southern USAG-KA Fish Study Report (APHC 2017).
NMFS-06	**Recommendation 5** The Service recommends additional consideration of any available options for offsetting potential contributions of proposed actions to contaminants found in fished species.	Based on review and evaluation of available data on fish contamination as well as the potential contaminants associated with Navy CPS flight testing, the primary concern for additive fish contamination due to flight testing would be potential increase in metals such as lead. Flight test activities would include clean-up of all visible impact debris. It is the intention to clean up all metal test debris after an Illeginni Islet impact, including onboard batteries. It is expected that very little test debris would remain. Because of test cleanup activities, the contribution of proposed activities to contaminants found in fish species (see APHC 2017) is expected to be none to undetectable. As stated in the response for comment number NMFS-05, the available evidence suggests that fish contamination at USAKA is primarily the result of historic maintenance activities and that metal contaminant levels in fish at Illeginni Islet are not statistically higher than at other USAG-KA utilized islets or at other islets. Navy CPS flight test activities are expected to have no to undetectable contributions to fish contaminants; therefore, the Navy finds that no offsetting options would need to be implemented for this program.

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B

Definition of Resources and Regulatory Setting

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Appendix B. Definition of Resources and Regulatory Setting

This section includes definitions of resource topics analyzed in the EA/OEA as well as detailed information about the regulatory setting for those resource topics. These definitions and requirements outlined in the regulatory setting were utilized for description of the affected environment and evaluation of environmental consequences of the Proposed Action.

B.1. Air Quality

B.1.1 Definition of Resource

Air quality refers to the degree to which the air is suitable or clean enough for humans or the environment. Air quality is defined by the concentration of various pollutants in the atmosphere. Air pollution occurs when one or more pollutants (e.g., dust, fumes, gas, mist, odor, smoke, and vapor) are present in the outdoor atmosphere in quantities large enough to cause harm to the natural environment (i.e., human, plant, and animal life). A region's air quality is influenced by many factors including the type and quantity of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions (e.g., wind and temperature). Most air pollutants originate from human-made sources, including mobile sources (e.g., cars, trucks, buses, ships, aircraft, and trains) and stationary sources (e.g., factories, industrial facilities, oil refineries, power plants, and boilers), as well as indoor sources (e.g., cleaning solvents). Air pollutants are also released from natural sources such as volcanic eruptions, forest fires, and animal biogenic emissions.

The earth's atmosphere consists of five major layers: troposphere, stratosphere, mesosphere, thermosphere, and exosphere. The earth's troposphere extends from the earth's surface to, on average, 8 miles in height. This layer holds all the air that plants need for photosynthesis and animals need to breathe, and also contains about 99% of all water vapors and aerosols. The stratosphere is located approximately 12 to 31 miles above earth's surface and contains the ozone layer. It is also the highest part of the atmosphere that jet planes can reach. Above the stratosphere is the mesosphere, which extends from about 31 to 53 miles above the earth's surface. Together, the stratosphere and mesosphere are considered the middle atmosphere. The thermosphere lies 53 to 375 miles above the earth's surface and is known as the upper atmosphere. The exosphere, which extends from about 375 to 6,200 miles, encompasses the orbits of most satellites. (NOAA 2024, NASA 2019)

B.1.2 Regulatory Setting

B.1.2.1 Broad Ocean Area

Federal Criteria Pollutants and Air Quality Standards

Under the Clean Air Act (42 United States Code [U.S.C.] Chapter 85), the USEPA established six pollutants defining air quality, called "criteria air pollutants." They are carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone, suspended particulate matter that measures less than or equal to 10 microns in diameter (PM_{10}) and particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$), and lead. Carbon monoxide, sulfur oxides, nitrogen oxides, lead, and some particulate matter are emitted directly into the atmosphere from emissions sources. Nitrogen oxides, ozone, and some particulate matter are formed through atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic compounds and nitrogen oxides emissions are precursors of ozone and are used to represent ozone generation.

The Clean Air Act established National Ambient Air Quality Standards (NAAQS) for the criteria air pollutants (40 Code of Federal Regulations [CFR] § 50). The NAAQS protect against adverse health effects under primary standards and welfare effects (e.g., effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, climate, and property) under secondary standards. Each state and U.S. Territory/Commonwealth has the authority to adopt standards stricter than those established by USEPA.

Areas that are and have historically complied with the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that violate NAAQS are designated as nonattainment areas for the criteria air pollutant(s) that violate their standards. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas. Nonattainment and maintenance areas are required to adhere to a State Implementation Plan to reach attainment or ensure continued attainment. The Atlantic BOA and the Pacific BOA are outside of 12 nautical miles (nm) from the U.S. shoreline and are therefore not considered within any U.S. regulated Air Quality Control Region (Florida Fish and Wildlife Conservation Commission 2023, Grymes 2017, NOAA 2023a). Thus, the Atlantic and Pacific BOAs are not subject to the NAAQS.

General Conformity

The USEPA General Conformity Rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds called *de minimis* levels specified at 40 CFR § 93.153. The USEPA defines *de minimis* levels, that is, the minimum threshold at which a conformity determination must be performed for various pollutants in various areas. Exceeding one of these applicable thresholds triggers requirements for a conformity determination. The *de minimis* levels (in tons per year) vary by pollutant and depend on the severity of the nonattainment status for the air quality management area in question. If the results of the applicability analysis indicate that the total emissions would not exceed the *de minimis*

emissions levels, then the conformity process is completed, and a general conformity determination is not required. The General Conformity Rule does not apply to federal actions occurring in attainment or unclassified areas, such as the Atlantic BOA.

Hazardous Air Pollutants / Mobile Sources

The USEPA implements national standards for Hazardous Air Pollutants (42 U.S.C. § 7412). Hazardous Air Pollutants, also known as toxic air pollutants or air toxics, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. The National Emission Standards for Hazardous Air Pollutants regulate emissions of 188 Hazardous Air Pollutants from Stationary Sources (40 CFR § 61). Examples of Hazardous Air Pollutants include benzene, asbestos, and other specific volatile organic compounds/hydrocarbons; heavy metal compounds; and other particulate matter. Hazardous Air Pollutants emitted from mobile sources are called Mobile Source Air Toxics, which are compounds emitted from fuel combustion in vehicles, non-road equipment, vessels, and aircraft. The primary Mobile Source Air Toxics are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. The USEPA Final Rule for Control of Emissions of Hazardous Air Pollutants from Mobile Sources (40 CFR § 80) sets gasoline and vehicle emission standards. Unlike the criteria air pollutants, there are no NAAQS for benzene and other Hazardous Air Pollutants. The primary control methodologies for these pollutants for mobile sources involve reducing their content in fuel and altering the engine operating characteristics to reduce the volume of pollutant generated during combustion.

Stratospheric Ozone Depletion

The stratosphere extends from approximately 12 to approximately 31 miles above the Earth's surface and contains the Earth's ozone layer. This layer is important in absorbing harmful ultraviolet radiation from the sun. Over the last few decades, anthropogenic (human-made) gases released into the atmosphere, mainly chlorine-containing substances, have threatened ozone concentrations in the stratosphere which filter harmful ultraviolet sunlight. Chlorofluorocarbons and halons have been widely used in electronics and refrigeration systems and fire extinguishing agents. Once released, these gases mix in the atmosphere worldwide until they reach the stratosphere, where ultraviolet radiation releases their chlorine, fluorine, and bromine components. Global compliance with the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer and amendments has resulted in significantly reduced worldwide production of chlorofluorocarbons and other ozone-depleting substances, including bans in many countries by specific dates. In 2022 National Oceanic and Atmospheric Administration scientists announced that based on an annual analysis of air samples collected at remote sites around the globe, there is evidence of a continuous decline in the atmospheric concentration of ozone-depleting substances. This decline shows that the threat to the ozone layer is receding below the 2022 significant milestone. In early 2022, the overall concentration of ozone-depleting substances in the mid-latitude stratosphere had fallen over 50% back to levels observed in 1980, before ozone depletion was significant. (NOAA 2022d)

High-temperature afterburning reactions in the exhaust plume of rockets can contribute to overall global chlorine loading, which contributes to ozone depletion. Stratospheric hydrogen chloride can have a half-life of 2.3 years, but hydrogen chloride from rocket emissions could have longer lifetimes because part of the emissions occurs at atmospheric levels above the stratosphere. Aluminum oxide, which is emitted from the rocket exhaust as solid particles, could contribute to ozone depletion via activation of chlorine in the atmosphere. Emissions of nitrogen oxides produced in the exhaust plume of rockets can also contribute to stratospheric ozone depletion (DON and U.S. Army 2022).

Greenhouse Gases

Per Navy policy OPNAV M-5090.1, the action proponent must address the potential effects of a proposed action on regional or global climate. Where possible, the analysis should quantify greenhouse gas (GHG) emissions (DON 2021). The USEPA has identified GHGs as carbon dioxide, methane, nitrogen oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and other fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers. Each GHG is assigned a global warming potential. The global warming potential is the ability of a gas or aerosol to trap heat in the atmosphere; this rating system is standardized to carbon dioxide (DON 2022b).

GHGs are not considered criteria air pollutants and are not specifically called out for regulation in the Clean Air Act, but the USEPA has the authority to regulate GHGs under the Clean Air Act (Massachusetts v. EPA, 549 U.S. 497 [2007]). Navy installations that emit GHGs above established thresholds are required to comply with applicable requirements of the GHG Reporting Program, state rules, and USEPA permitting requirements. The Navy reports its GHG emissions inventory annually to the Office of the Secretary of Defense. (DON 2021)

One indicator of potential significance for GHG emissions is the USEPA's GHG reporting threshold of 25,000 metric tons per year (27,558 short tons per year) within 40 CFR § 98. In practice, this rule only applies to stationary sources (USEPA 2023). The Proposed Action would almost exclusively generate mobile source emissions. The 2023 (9 January) Council on Environmental Quality "Notice of Interim Guidance on GHG Emissions in NEPA" acknowledges the increasing urgency of the climate crisis and advances in climate science and GHG analysis techniques. The guidance makes essentially three recommendations to federal agencies which include the following (CEQ 2023, McCormick and Wortzel 2023):

(1) Encourages federal agencies to quantify the reasonably foreseeable GHG emissions of a proposed action and its alternatives when possible, but the guidance does not generate any particular quantity of GHG emissions as "significantly" disturbing the quality of the human environment. The guidance overall recommends that agencies apply appropriate tools and methodologies to quantify GHG emissions, compare GHG emission quantities across alternative scenarios, and place emissions in relevant context, including how they relate to climate action commitments and goals. If tools or data are not reasonably available to quantify GHG emissions, the reasons for why quantification is not possible should be provided along with seeking to present a reasonable estimated range of emissions. If a reasonable range of potential GHG

emissions cannot be provided, the agency should provide a qualitative analysis and its rationale for determining that a quantitative analysis is not possible.

(2) Agencies should disclose and provide background information for GHG emissions and climate effects to help decision makers and the public comprehend the potential GHG emissions and climate change consequences of the proposed action.

(3) The Interim Guidance discusses how agencies can best use the NEPA scoping process to determine the extent to which a more detailed analysis of climate change and GHG emissions is appropriate.

State, Local, U.S. Territory/Commonwealth Regulatory Setting

Beyond 200 nm from the east coast shore, the Atlantic BOA does not have an air quality regulatory body that has jurisdiction over the region. State jurisdiction over the ocean varies from state to state and extends out to 3 to 12 nm from the shoreline, with federal jurisdiction beyond the state jurisdiction to the 200-nm point. Because the Atlantic study area begins approximately 50 nm from the U.S. East Coast, federal jurisdiction applies to this analysis, but state jurisdiction does not.

As in the Atlantic Ocean, state jurisdiction over the Pacific Ocean varies from state to state and extends out 3 to 12 nm from the shoreline, with federal jurisdiction beyond the state jurisdiction to the 200-nm point (Washington Marine Spatial Planning 2015; California Ocean Protection Council 2007, Hawaii Statewide GIS Program 2020, NOAA 2023a). Because the Pacific study area begins approximately 50 nm from the coast of Southern California and the Hawaiian Islands, federal jurisdiction applies to this analysis, but state jurisdiction does not.

There are U.S. territories in the Pacific BOA (e.g., Midway Islands and Johnston Atoll); however, they are a significant distance from where Proposed Action activities would occur.

B.1.2.2 Kwajalein Atoll

The UES outlines air quality standards and procedures in Sections 1-5.3, 2-8.1.1, and 3-1. UES Section 3-1 details the air quality standards that are applicable to activities of the U.S. Government at USAKA. UES Section 3-1 is derived from applicable sections of 40 CFR 50 through 87, which establish air quality regulations to meet the Clean Air Act. UES Section 2-22 states that all NEPA analyses for USAKA actions shall incorporate appropriate climate change analysis within NEPA documents. Although the UES air quality standards and procedures basically follow the Clean Air Act, they do not incorporate many procedural or mandatory technology-based requirements under the Clean Air Act. The UES air quality standards are designed to maintain the current air quality at USAKA. Ambient air concentrations for criteria pollutants are not allowed to be increased above the level predicted to exist on the effective date of the UES by more than an increment of 25% of the NAAQS for each criteria pollutant. Under no circumstances are ambient air concentrations for a criteria air pollutant allowed to exceed 80% of the NAAQS. In general, the UES standards are addressing effectiveness in terms of ambient air quality effects rather than through application of technology-based controls. All significant stationary sources of criteria pollutants, Hazardous Air Pollutants, and activities

covered by U.S. National Emission Standards for Hazardous Air Pollutants must be governed by a Document of Environmental Protection. A Document of Environmental Protection is subject to review and agreement by U.S. and RMI agencies, including the USEPA, USFWS, NMFS, U.S. Army Corps of Engineers, and RMI Environmental Protection Authority, as well as public review. All current National Emission Standards for Hazardous Air Pollutant rules are adopted by reference in the UES. General provisions are included for maintaining inventories of emission sources, reporting, eliminating, or reducing the use of chemicals associated with Hazardous Air Pollutants, and eliminating or reducing the use of ozone-depleting substances (U.S. Air Force 2020a, USASMDC 2024).

B.2. Cultural Resources

B.2.1 Definition of Resource

Cultural resources are sites, buildings, structures, objects, or districts considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. They include archaeological resources, historic built environment architectural or engineering resources, and traditional cultural resources.

Archaeological resources comprise areas where human activity has measurably altered the earth or where deposits of physical remains are found (e.g., projectile points and bottles), but standing structures do not remain. Built environment resources include standing buildings, bridges, dams, other structures, and designed landscapes of historic or aesthetic significance. Generally, built environment resources must be more than 50 years old to warrant consideration for the U.S. National Register of Historic Places (NRHP). More recent structures might warrant consideration if they are of exceptional importance or if they have the potential to gain significance in the future. Resources of traditional, religious, and cultural importance can include archaeological resources, sacred sites, structures, neighborhoods, prominent topographic features, habitat, plants, animals, or minerals considered essential for the preservation of traditional culture.

The National Historic Preservation Act (NHPA) defines historic properties as buildings, structures, sites, districts, or objects listed in or eligible for listing in the NRHP. Resources found significant under NRHP criteria are considered eligible for listing in the NRHP. Historic properties are generally 50 years of age or older, are historically significant, and retain sufficient integrity to convey their historic significance. Such resources might provide insight into the cultural practices of previous civilizations, or they might retain cultural and religious significance to modern groups. Traditional Cultural Properties, including Traditional Cultural Landscapes, are recognized as geographical areas of cultural or religious significance to a cultural group or one or more Tribes. Typically, Traditional Cultural Properties must meet the NRHP criteria of eligibility, may be considered as a site or district in the NRHP lexicon, and the associated cultural group or groups are recognized as having unique knowledge and understanding of the significance and associations of the geographical area. Cultural resources designated as National Historic Landmarks are historic properties of exceptional national significance.

B.2.2 Regulatory Setting

B.2.2.1 Kwajalein Atoll

Federal laws that pertain to cultural resources management include the NHPA (1966), the Archeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990). Under Section 106 of the NHPA, federal agencies must consider the effects of their undertakings (project) on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. Under this process, the federal agency evaluates the NRHP eligibility of resources within the proposed undertaking's area of potential effects and assesses the possible effects of the proposed undertaking on historic properties in consultation with the State Historic Preservation Office and other consulting or interested parties, including the public. Section 110 of the NHPA requires an additional level of stewardship by federal agencies to minimize harm to a National Historic Landmark when one may be directly and adversely affected by an undertaking.

Cultural resources management and legislation in the RMI closely mirrors the compliance procedures for Section 106 of the NHPA. However, the RMI has its own Historic Preservation Officer and Advisory Council on Historic Preservation, and all consultation, coordination, and communication with these entities and United States Army Garrison–Kwajalein Atoll (USAG-KA) require concurrent notification with the RMI Environmental Protection Authority (USASMDC 2024). The RMI NRHP is also similar to the U.S. NRHP, but includes additional property types (oral traditions, submerged resources, and geographic locations), as well as additional significance criteria that include cultural and social values, interpretive value, and historical ambience. Additionally, properties 40 years or older are expected to be considered for cultural resource evaluations and associated plans (USASMDC 2024).

The UES is the guiding document for planning future activities and compliance at USAKA (USASMDC 2024). These standards are based primarily on federal agency responsibilities codified in U.S. laws, federal and U.S. Army regulations, and Executive Orders (EOs), but also include subsidiary regulations for promoting cultural preservation based on the RMI Historic Preservation Act of 1991. The standards substitute the RMI NRHP and its listing criteria for the corresponding U.S. NRHP listing criteria.

B.3. Biological Resources

B.3.1 Definition of Resource

For the purposes of this EA/OEA, biological resources are defined as native or naturalized vegetation and wildlife and the habitats in which they occur. Plant and plant communities are referred to as vegetation and animal species are referred to as wildlife. Habitat is defined as the biotic and abiotic conditions that support plant or animal species. Within this EA/OEA, biological resources are divided into five major categories: (1) terrestrial vegetation, (2) terrestrial wildlife, (3) marine vegetation, (4) marine wildlife, and (5) environmentally sensitive habitats. Within

each category, descriptions focus on important or special-status species and habitats. Special-status species refers to those species listed by federal or state agencies including those afforded protection under the regulations listed in the Regulatory Setting subsections. Environmentally sensitive habitats are those areas designated by the USFWS or NMFS as critical habitat for ESA listed species, habitats protected by other regulations, or other sensitive habitats such as wetlands, habitats limited in distribution, or important seasonal use areas for wildlife (e.g., breeding areas, feeding areas, or migration routes). Biological resources within the affected environment for the Proposed Action are described with the purpose of evaluating the effects of the Proposed Action and in proportion to the magnitude of potential effects.

B.3.2 Regulatory Setting

B.3.2.1 Broad Ocean Area

Endangered Species Act

The purpose of the ESA is to conserve the ecosystems upon which threatened and endangered species depend and to conserve and recover listed species. Section 7 of the ESA requires action proponents to consult with the USFWS or NMFS to ensure that their actions are not likely to jeopardize the continued existence of federally listed threatened and endangered species or result in the destruction or adverse modification of designated critical habitat (16 U.S.C. §§ 1531-1544). For all ESA listed species, the ESA defines harm as an act which kills or injures wildlife including significant habitat modification or degradation where it kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (16 U.S.C. §§ 1531-1544). The ESA defines harassment as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.

Magnuson-Stevens Fishery Conservation and Management Act

The MSA (16 U.S.C. § 1801 et seq.) provides for the conservation and management of U.S. fisheries. Under the MSA, EFH consists of the waters and substrate needed by fish to spawn, breed, feed, or grow to maturity. An EFH may include U.S. waters within exclusive economic zones (EEZ; from the territorial sea baseline out to a distance of 200 nm) and covers all fish species within a fishery management unit (50 CFR § 600.805). Under the MSA, an adverse effect means any impact that reduces quality and/or quantity of EFH (50 CFR § 600.810). Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH (50 CFR § 600.810). EFH and its geographic boundaries are defined by regional fisheries management councils. Federal agencies must evaluate the effects of an action on EFH and must consult with NMFS on actions that may adversely affect EFH (67 Federal Register [FR] 2343 [January 17, 2002]).

Marine Mammal Protection Act

All marine mammals are protected under the provisions of the Marine Mammal Protection Act (16 U.S.C. § 1361 et seq.). The Marine Mammal Protection Act prohibits any person or vessel from "taking" marine mammals in the United States or the high seas without authorization. As defined by the Marine Mammal Protection Act, Level A harassment of cetaceans is any act that has the potential to injure a marine mammal or marine mammal stock in the wild. Level B harassment is defined as any act that has the potential to disturb a marine mammal or marine mammal stock in the wild by causing behavioral pattern disruptions, including but not limited to migration, breathing, nursing, breeding, feeding, or sheltering. The National Defense Authorization Act of Fiscal Year 2004 (Public Law 108-136) amended the definition of harassment as it applies to military readiness activities or scientific research activities conducted by or on behalf of the Federal Government, consistent with Section 104(c)(3). In this Act, military readiness activities were defined as "all training and operations of the Armed Forces that relate to combat" and "the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use." For military readiness activities Level B harassment is defined as any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering to a point where such behavioral patterns are abandoned or significantly altered [16 U.S.C. 1362 (18)(B)(i) and (ii)]. Section 101(a)(5) of the Marine Mammal Protection Act directs the Secretary of the Department of Commerce to allow, upon request, the incidental (but not intentional) taking of marine mammals if certain findings are made and regulations are issued. Under the Marine Mammal Protection Act, marine mammal stocks can be listed as depleted. The term depleted is defined as any case in which a species or population stock is determined to be below its optimum sustainable population.

Migratory Bird Treaty Act

Migratory and most native-resident bird species are protected under the Migratory Bird Treaty Act (16 U.S.C. §§ 703-712), and their conservation by federal agencies is mandated by EO 13186, Migratory Bird Conservation. Under the Migratory Bird Treaty Act it is unlawful by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, [or] possess migratory birds or their nests or eggs at any time, unless permitted by regulation. Under EO 13186, federal agencies must evaluate the effects of actions on migratory birds with emphasis on species of concern, which were later defined as birds of conservation concern by the USFWS (USFWS 2021a). Birds listed as birds of conservation concern are species with the highest conservation priority which without additional conservation actions are likely to become candidates for listing under the ESA (USFWS 2021a). The 2003 National Defense Authorization Act gave the Secretary of the Interior authority to prescribe regulations to exempt the Armed Forces from the incidental taking of migratory birds during authorized military readiness activities. Congress has defined military readiness activities as all training and operations of the U.S. Armed Forces that relate to combat and the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use (16 U.S.C. § 703 note). As directed by Section 315 of the Authorization Act, the USFWS issued

a final rule authorizing incidental take, with limitations, that result from military readiness activities of the Armed Forces (72 FR 8931 [February 28, 2007]). The final rule authorizing the Department of Defense (DoD) to take migratory birds in such cases includes a requirement that the Armed Forces must confer and cooperate with USFWS to develop and implement appropriate conservation measures to minimize or mitigate adverse effects of the proposed action if the action is likely to result in a significant adverse effect on the sustainability of a population of a migratory bird species (50 CFR § 21.42).

National Marine Sanctuaries Act

Each national marine sanctuary has its own set of regulations within subparts of 15 CFR § 922. Subparts A through E contain regulations that apply to all sanctuaries and subparts F through R each contain the sanctuary-specific regulations for all 14 sanctuaries. While each sanctuary has its own unique set of regulations, there are some regulatory prohibitions that are typical for many sanctuaries including prohibitions on discharging material or other matter into the sanctuary; disturbance of, construction on, or alteration of the seabed; disturbance of cultural resources; and exploring for, developing, or producing oil, gas, or minerals. In addition, some sanctuaries prohibit other activities, such as the disturbance of marine mammals, seabirds and sea turtles, operation of aircraft in certain zones, use of personal watercraft, mineral mining, and anchoring of vessels. If a federal agency finds that a proposed action is likely to injure sanctuary resources, the agency is required to submit a “written statement” to the Office of National Marine Sanctuaries describing the potential effects of the activity on sanctuary resources and must consult with the National Oceanic and Atmospheric Administration on activities that trigger the need to consult.

National Monuments

Marine national monuments are designated by Presidential Proclamation via the Antiquities Act of 1906 (54 U.S.C. § 320301 et seq.). U.S. Marine National Monuments are designated within U.S. EEZs. These areas have prohibitions on injuring, disturbing, or damaging monument resources, including biological resources. There are also prohibitions on placing or abandoning any structure, material, or other matter on the submerged lands. However, activities and exercises of the U.S. Armed Forces are exempt from these national monument prohibitions.

Other Biological Resource-Related Executive Orders

This EA/OEA also evaluates the effects of the action on biological resources as required by EO 13112, Invasive Species; EO 13089, Coral Reef Protection; EO 13158, Marine Protected Areas; EO 12114, Environmental Effects Abroad of Major Federal Actions; and DoD procedures for implementing EO 12114 (32 CFR § 187).

B.3.2.2 Kwajalein Atoll

The Kwajalein Atoll ROI occurs within the RMI. As such, the evaluation of biological resources follows regulatory requirements set forth in EO 12114, Environmental Effects Abroad of Major Federal Actions, as well as those outlined in the UES as described below.

UES

The Compact of Free Association between the RMI and the United States (48 U.S.C. § 1921) requires all U.S. Government activities at USAKA and all DoD and Ronald Reagan Ballistic Missile Defense Test Site (RTS) activities in the RMI to conform to specific compliance requirements, coordination procedures, and environmental standards identified in the UES. As specified in Section 2-2 of the UES, these standards also apply to all activities occurring in the territorial waters of the RMI. Navy CPS test activities would take place at Illeginni Islet and in Kwajalein Atoll waters and must comply with the UES (USASMDC 2024). Under the UES, any action carried out at USAKA must be reviewed to determine if the action may affect UES-protected species or habitats. An action which may affect special-status biological resources at USAKA requires coordination and/or consultation with UES Appropriate Agencies as specified in Section 3-4 of the UES. Under the UES, any species listed, proposed for listing, or candidates for designation under the U.S. ESA are considered consultation species in UES Appendix 3-4A. Therefore, any species newly proposed for listing under the ESA would be subject to consultation requirements of UES Section 3-4.5. Similarly, the RMI may designate critical habitats which would be listed in Appendix 3-4B of the UES, and potential effects on those critical habitats would need to be considered at the time of designation. Under UES Section 2-18.3.1, a Document of Environmental Protection is required for an action or activities for which a biological opinion has been rendered, or that would have a significant effect on wildlife species or habitats or involve migratory bird takings.

B.4. Geology and Soils

B.4.1 Definition of Resource

Coral atolls are composed of coral islands and islets that have accumulated on reefs, or in shallow encircled lagoons that formed on top of ancient volcanoes that have long since submerged below sea level. These large underwater mountains have been capped by mostly limestone since they are constructed by calcium carbonate-secreting organisms such as coral polyps and algae. The overlying coral superstructures may be hundreds or even thousands of feet thick. Emergent portions of the reef and islands tend to be composed of loose, poorly consolidated calcareous materials derived from foraminifera, coral, shells, and marine algae, or their debris resulting from destructive action of the sea, sun, and wind (RGNext 2020). All of the islands that make up Kwajalein Atoll are relatively flat with few natural points exceeding 15 feet (ft) above mean sea level (RGNext 2020).

The detailed geology of Kwajalein Atoll is primarily based on shallow boring log books prepared by the U.S. Army Corps of Engineers and drilling logs prepared during the construction of monitoring wells by the U.S. Geological Survey (RGNext 2020). Soils across the atoll mainly consist of unconsolidated, reef-derived calcium carbonate sand and gravel with minor consolidated layers of coral, sandstone, and conglomerate (RGNext 2020).

B.4.2 Regulatory Setting

B.4.2.1 Kwajalein Atoll

The Compact of Free Association between the RMI and the United States (48 U.S.C. § 1921) requires all U.S. Government activities at USAG-KA and all DoD and RTS activities in the RMI to conform to specific compliance requirements, coordination procedures, and environmental standards identified in the UES. As specified in Section 2-2 of the UES, these standards also apply to all activities occurring in the territorial waters of the RMI. The Proposed Action could impact Illeginni Islet or the deep ocean waters of Kwajalein Missile Impact Scoring System (KMISS) northeast of USAG-KA. Therefore, the Proposed Action must comply with the UES (USASMDC 2024).

Compliance goals for contaminant levels in soils and sediments are set by the UES. According to UES Section 3-6.5.4(c)(5)(i) and (ii), for beryllium, USAG-KA shall use an initial USEPA Regional Screening Level of 160 milligrams per kilogram (mg/kg) for assessing the need for cleanup under UES Section 3-6.5.8 to assess non-cancer risk for unrestricted use. For depleted uranium, USAG-KA shall use a derived screening level for insoluble uranium salts of 47 mg/kg for assessing the need for cleanup under UES Section 3-6.5.8 to assess non-cancer risk for unrestricted use. The UES does not specify a compliance goal for tungsten in soil; therefore, per UES guidance, the USEPA Region 9 Regional Screening Level of 63 mg/kg for residential areas and 930 mg/kg for industrial areas is used as a screening criterion instead (USASMDC 2024, USEPA 2022b, USEPA 2022f). **Table 3.2.4-1** in **Section 3.2.4.3** summarizes the regulatory limits and historical sampling results for beryllium, tungsten, and depleted uranium at Illeginni Islet.

B.5. Water Resources

B.5.1 Definition of Resource

This section summarizes existing information on water resources within the affected environment, specifically those areas potentially subject to pre- and post-flight operations and proposed payload impact at Illeginni Islet as well as the proposed deep ocean impact site at KMISS. Water resources include those aspects of the natural environment related to the availability and characteristics of water.

B.5.2 Regulatory Setting

B.5.2.1 Kwajalein Atoll

The Kwajalein Atoll ROI is within the RMI. As such, the evaluation of water resources follows regulatory requirements set forth in EO 12114, Environmental Effects Abroad of Major Federal Actions, as well as those outlined in the UES as described below.

The UES and its procedures apply to all activities of the U.S. Government that occur on the USAG-KA/RTS controlled islands, the Mid-Atoll Corridor, as well as all USAG-KA/RTS

controlled activities within the RMI, including the territorial waters of the RMI (USASMDC 2024). For UES standards regarding water quality and reef protection see UES Sections 1-5.4 and 3-2. UES compliance goals for contaminant levels in groundwater are as follows. For beryllium, the maximum contaminant level is 4 micrograms per liter (UES Appendix 3-2D, Groundwater Quality). The uranium maximum contaminant level is 30 micrograms per liter (UES Section 3-3.5.6.1(c)). The UES does not specify a uranium maximum contaminant level for groundwater; therefore, the drinking water standards were used. The UES does not specify a compliance goal for tungsten in groundwater; therefore, per UES guidance, the USEPA Region 9 Residential Tap Water Screening Level of 16 micrograms per liter is used instead (USASMDC 2024, USEPA 2022b, USEPA 2022f). **Table 3.2.5-1** in **Section 3.2.5.3** summarizes the regulatory limits and historical groundwater sampling results for beryllium, tungsten, and uranium at Illeginni Islet.

B.6. Hazardous Materials and Waste Management

B.6.1 Definition of Resource

For the purposes of this EA/OEA, hazardous materials and hazardous wastes are substances defined as hazardous in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601). Under CERCLA, hazardous substances are defined with references to the Clean Water Act, Clean Air Act, Resource Conservation and Recovery Act, and Toxic Substance Control Act. In general, hazardous materials and wastes are substances that pose a physical hazard or a health hazard, including toxic, carcinogenic, combustible, flammable, oxidizing, reactive, and unstable substances (29 CFR § 1910).

Ocean pollution is defined as the introduction of non-normal and harmful contaminants into the marine environment. Ocean pollution includes marine debris which is defined as any persistent solid material that is intentionally or unintentionally disposed of or abandoned into the marine environment (NOAA 2023c).

B.6.2 Regulatory Setting

B.6.2.1 Broad Ocean Area

Regulatory requirements for hazardous materials and wastes in the BOAs include requirements under CERCLA (42 U.S.C. § 9601 et seq), the Clean Water Act (42 U.S.C. § 7401 et seq.), the Clean Air Act (33 U.S.C. § 1251 et seq.), the Resource Conservation and Recovery Act (42 U.S.C. § 6901 et seq.), the Toxic Substances Control Act (15 U.S.C. § 2601 et seq.), the Emergency Planning and Community Right-to-Know Act (42 U.S.C. § 116 et seq.), and the Hazardous Materials Transportation Act (49 U.S.C. § 5101 et seq.), among others. Under these laws, the USEPA and the Department of Transportation have the responsibility of defining hazardous materials and waste as well as regulating the use, discharge, storage, transportation, disposal, and cleanup of these substances. Navy operations ashore and afloat must comply with Navy policies and procedures regarding hazardous materials, waste management, pollution prevention, and recycling as specified in OPNAV M-5090.1.

Under CERCLA, the USEPA defines hazardous substances and identifies reportable quantities of these substances (40 CFR § 302.4). Any release (other than federally permitted release) of hazardous substances in excess of the defined reportable quantities requires notification of the USEPA's National Response Center which subsequently notifies all appropriate agencies (42 U.S.C. § 9603.a). The current CERCLA list of hazardous substances and reportable quantities is found within 40 CFR § 302.4.

The Defense Environmental Restoration Program was created in 1986 under CERCLA to facilitate thorough investigation and cleanup of contaminated sites on military installations (active installations, installations subject to Base Realignment and Closure, and formerly used defense sites). The Installation Restoration Program and the Military Munitions Response Program are components of the Defense Environmental Restoration Program. The Installation Restoration Program requires each DoD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The Military Munitions Response Program addresses nonoperational rangelands that are suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituent contamination. The Navy's Environmental Restoration Program is the Navy's initiative to address Defense Environmental Restoration Program requirements.

The Resource Conservation and Recovery Act, as amended, authorizes the USEPA to control hazardous wastes and establishes a framework for solid waste control. Under the Resource Conservation Recovery Act, the USEPA has established regulations for dumping of wastes as well as management of hazardous wastes from generation to final disposal. Regulated hazardous wastes under the Resource Conservation and Recovery Act include any solid, liquid, contained gaseous, or semisolid waste or combination of wastes that exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or is listed as a hazardous waste under 40 CFR § 261.

Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR § 273. Four types of waste are currently covered under the universal waste regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps, such as fluorescent light bulbs.

The USEPA has established regulations applicable to military munitions as solid and hazardous wastes under the Resource Conservation and Recovery Act in 40 CFR § 266 subpart M. A military munition is not defined as a solid waste when it is used for its intended purpose (including training and testing) or is unused but may be defined as a solid waste when a used munition is recovered, collected, and/or transported off range or from the site of use (40 CFR § 266.202). The USEPA has also established a set of criteria and standards applicable to the storage, transportation, treatment, and disposal of any items deemed to be waste military munitions (40 CFR § 266.206).

Under the Hazardous Materials Transportation Act, hazardous materials and wastes are defined by 49 CFR § 171.8 and include hazardous substances, hazardous wastes, and marine pollutants. Transportation of hazardous materials is regulated under the requirements of this act by the U.S. Department of Transportation.

Ocean dumping of materials is defined and regulated by the USEPA under the Marine Protection, Research, and Sanctuaries Act. The purpose of this act is to regulate the transportation of material from the United States (or to the United States by a U.S. vessel or agency) for the purpose of dumping the material into ocean waters. Ocean dumping, as defined by the Act, is prohibited except as authorized by a permit issued by the USEPA. Ocean dumping does not apply to intentional placement of any device in ocean waters or submerged land for a purpose other than disposal when such placement is an authorized federal or state program (33 U.S.C. § 1402). With regards to military expended materials, the U.S. Senate has further clarified that if "material from missiles and debris from gun projectiles and bombs ultimately come to rest in the protected waters. Such activities are not covered by this Act" (Senate Report Number 92-451).

USEPA is given authority to regulate special hazard substances by the Toxic Substances Control Act. Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos containing material, polychlorinated biphenyls (PCBs), and lead-based paint. Asbestos is also regulated by USEPA under the Clean Air Act and CERCLA.

B.6.2.2 Kwajalein Atoll

The regulatory setting for hazardous materials and wastes at Kwajalein Atoll includes requirements set forth under the UES (USASMDC 2024). The requirements within the UES were primarily derived from U.S. regulations pertaining to hazardous materials and wastes and as such the regulatory setting at Kwajalein Atoll includes the regulations described in **Section B.6.2.1**, including relevant definitions.

At USAKA, the UES provides standards for material management to identify, classify, and manage in an environmentally responsible way all materials imported or introduced for use at USAKA to prevent pollution (USASMDC 2024). Related to hazardous materials and wastes, the UES includes standards and requirements related to air quality, water quality, ocean disposal, and material and waste management (USASMDC 2024). The UES prohibits all new PCB or PCB items and asbestos from being imported or used for operations. In compliance with the UES, the U.S. Army was required to prepare a Hazardous Materials Management Plan outlining the management procedures for the storage, use, transportation, and disposal of hazardous materials and petroleum products at USAKA (USASMDC 2024). The U.S. Army is also required to prepare and implement a Kwajalein Environmental Emergency Plan which identifies hazardous materials storage facilities and procedures for responding to releases of hazardous materials (USASMDC 2024).

B.7. Environmental Justice

B.7.1 Definition of Resource

Environmental justice is defined as the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation, or disability, in decision-making and activities that affect human health and the environment (88 FR 25251 [April 26, 2023]). Environmental justice involves the evaluation of potential disproportionate and adverse human health and environmental effects, including cumulative effects. Environmental justice also requires that opportunities be provided for meaningful engagement of people or communities with environmental justice concerns who would potentially be affected by federal activities.

B.7.2 Regulatory Setting

B.7.2.1 Kwajalein Atoll

An environmental justice analysis is included in this document to comply with the intent of EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations; EO 14096, Revitalizing Our Nation's Commitment to Environmental Justice for All; EO 13045 (as amended), Federal Actions to Address Protection of Children from Environmental Health Risks and Safety Risks; EO 12114, Environmental Effects Abroad of Major Federal Actions; and Navy and DoD guidance.

EO 12898 states that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." EO 14096 is intended to ensure that every person has clean air to breathe; clean water to drink; safe and healthy foods to eat; and an environment that is healthy, sustainable, climate-resilient, and free from harmful pollution and chemical exposure. In addition, these EOs require that minority and low-income populations be given access to information and opportunities to provide input to decision-making on federal actions.

The Kwajalein Atoll ROI occurs within the RMI. As such, all proposed activities within Kwajalein Atoll would be subject to the standards and requirements of the UES. The primary purpose of the UES is to provide comprehensive and consolidated procedures to protect public safety and the USAKA environment (USASMDC 2024). Proposed activities within Kwajalein Atoll must comply with standards outlined in the UES which specify procedures for public and agency participation in review of United States actions occurring in the RMI (USASMDC 2024).

B.8. Health and Safety

B.8.1 Definition of Resource

Health and safety includes consideration of any activities, occurrences, or operations that have the potential to affect the well-being, safety, or health of workers (including those in the armed forces) and members of the public. Health and safety issues include potential hazards inherent with operation of Navy and other vessels, missile launch and testing, target operations, and abatement of munitions items that fail to operate as intended. Health and safety also addresses issues of public proximity and access.

In general, a safe environment is one in which the potential for death, serious bodily injury, illness, or property damage is reduced to the maximum extent practicable. Necessary elements for an accident-prone situation or environment include the presence of the hazard and an exposed (and potentially susceptible) population.

B.8.2 Regulatory Setting

B.8.2.1 Broad Ocean Area

Numerous federal and state regulatory requirements have been enacted for the well-being of workers and the general population. DoD and Navy policies are designed to meet the standards issued by the Occupational Safety and Health Administration, which include established laws and regulations to ensure safe working conditions through enforcing standards and training requirements.

The Navy adheres to internal health and safety standards and DoD standards. Specific regulations and procedures for maintaining a safe environment for personnel and the public are found in the following documents:

- DoD Directive 6055.09E, Explosives Safety Management (2019)
- DoD Instruction 4540.01, Use of International Airspace by U.S. Military Aircraft and for Missile and Projectile Firings (2017)
- DoD Instruction 6055.01, DoD Safety and Occupational Health Program (2014)
- DoD Instruction 6055.05, Occupational and Environmental Health (2018)
- DoD Instruction 6055.07, Mishap Notification, Investigation, Reporting, and Record Keeping (2018)
- OPNAVINST 3770.2L, Department of the Navy Airspace Procedures and Planning (2017)
- OPNAVINST 5100.19F, Navy Safety and Occupational Health Program Manual for Forces Afloat (2019)
- OPNAVINST 5100.23H, Safety and Occupational Health Program (2020)

- OPNAV Manual 5100.23, Navy Safety and Occupational Health Manual (2020)
- Secretary of the Navy Instruction 5100.10L, Department of the Navy Safety Program (2021).

Missile launches over open water are also subject to U.S. Coast Guard and International Maritime Organization maritime safety standards and guidance, and Federal Aviation Administration and International Civil Aviation Organization regulations and guidance.

B.8.2.2 Kwajalein Atoll

USAKA, USAG-KA, and RTS are managed and operated by the U.S. Army. The U.S. Army adheres to internal health and safety standards and DoD standards. Specific regulations and procedures for maintaining a safe environment for personnel and the public are found in the following documents:

- DoD Directive 6055.09E, Explosives Safety Management (2019)
- DoD Instruction 4540.01, Use of International Airspace by U.S. Military Aircraft and for Missile and Projectile Firings (2017)
- DoD Instruction 6055.01, DoD Safety and Occupational Health Program (2014)
- DoD Instruction 6055.05, Occupational and Environmental Health (2018)
- DoD Instruction 6055.07, Mishap Notification, Investigation, Reporting, and Record Keeping (2018)
- Army Regulation 385-10, The Army Safety Program (2017)
- Army Regulation 385-63, Range Safety (2012)

Additionally, for the protection of public health and safety and the environment at USAKA, the UES (USASMDC 2024) specifies standards and procedures that apply to all activities of the U.S. Government that occur on USAG-KA/RTS controlled islands and within the Mid-Atoll Corridor, as well as all USAG-KA/RTS controlled activities within the RMI, including the territorial waters of the RMI. Under the UES, there are several Appropriate Agencies or their designated representatives that are given the opportunity to review and comment on the proposed actions at USAKA that relate to public health and safety and protection of the environment. The list of Appropriate Agencies includes USEPA, RMI Environmental Protection Authority, NMFS, USFWS, and the U.S. Army Corps of Engineers.

B.9. Cumulative Effects

B.9.1 Definition of Cumulative Effects

The approach taken in the analysis of cumulative effects follows the objectives of NEPA, Council on Environmental Quality regulations, and Council on Environmental Quality guidance. Cumulative effects are defined in 40 CFR § 1508.1 as, "effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time." Current USEPA guidance states that cumulative effect analyses should "characterize the combined effects from exposures to both chemical and non-chemical stressors over time across the affected population group or community" (USEPA 2022a).

Cumulative effects are most likely to arise when a relationship or synergism exists between a Proposed Action and other actions expected to occur in a similar location or during a similar time period (DON and U.S. Army 2022). Actions overlapping with or in close proximity to the Proposed Action would be expected to have more potential for a relationship—and therefore a higher potential for cumulative effects—than those more geographically separated. Cumulative effects might be purely additive or may be interactive (when effects of an action change in type or magnitude depending on other actions or variables such that the combined effects would be greater than simply adding the effects). To identify cumulative effects, the analysis needs to address the following three questions:

- Does a relationship exist such that affected resource areas of the Proposed Action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the Proposed Action and another action could be expected to interact, would the Proposed Action affect or be affected by impacts of the other action?
- If such a relationship exists, does an assessment reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

B.9.2 Scope of Cumulative Effects Analysis

To determine the scope of environmental effects, agencies consider cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact evaluation document.

The scope of analysis for cumulative effects is limited in time to the 10-year period over which the Navy would conduct up to eight CPS flight tests annually and limited geographically to the Pacific and Atlantic BOAs where at-sea launches would be conducted from several existing naval surface ships and submarines, where other smaller ships and watercraft would be used in support of the CPS flight tests downrange by hosting telemetry and radar to support target

placement and recovery operations, where floating targets would operate, and at designated target sites in established range operational areas; KMISS; and the land-based target site at Illeginni Islet.

Another factor influencing the scope of cumulative effects analysis involves identifying other past, present, and reasonably foreseeable actions to consider the interconnection between people and ecosystems at local, regional, and national levels (USEPA 2022a). Beyond determining that the geographic scope and time frame for the actions interrelate to the Proposed Action, the analysis employs the measure of “reasonably foreseeable” to include or exclude other actions. For the purposes of this analysis, public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions include EISs, EAs, management plans, land use plans, and other planning related studies.

C

Standard Operating Procedures and Mitigation Measures

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Appendix C. Standard Operating Procedures and Mitigation Measures

This section includes a description of standard operating procedures and mitigation measures to be implemented for the Proposed Action. Standard operating procedures are designed to provide direction for the routine performance of safe and consistent operations in accordance with mission objectives for the Proposed Action. Mitigation measures are those tasks completed beyond standard operating procedures that are designed to avoid, minimize, rectify, reduce, or compensate for potential adverse effects to various environmental resources during implementation of the Proposed Action. Standard operating procedures are considered part of the Proposed Action. Since standard operating procedures often provide a benefit to environmental and cultural resources they are included in this appendix. The standard operating procedures and mitigation measures in the following sections are applicable to all locations and environmental resource areas, unless otherwise specified.

C.1. Air Quality

- There are no construction or demolition activities associated with the Proposed Action. Any mitigation requirements associated with flight test activities which would avoid or reduce potential impacts to air quality are listed under **Section C.6**, Hazardous Materials and Waste Management.

C.2. Cultural Resources

C.2.1 Kwajalein Atoll Standard Operating Procedures and Mitigation Measures

- No known cultural resources are located in the project area. Should previously unidentified cultural features be discovered during implementation of the Proposed Action, CPS personnel would follow procedures for the handling of such inadvertent discoveries outlined in the *Environmental Standards and Procedures for U.S. Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands, 17th Edition* (UES; USASMDC 2024).
- Project personnel would avoid activities that would negatively affect the National Register Cold War era properties located on the middle and eastern end of the islet.

C.3. Biological Resources

C.3.1 Broad Ocean Area Standard Operating Procedures and Mitigation Measures

This section includes the standard operating procedures and mitigation measures to be implemented as part of Navy CPS flight tests program activities in the BOAs. Some measures are specific to Navy CPS activities, others have been developed for routine Navy at-sea activities as part of previously evaluated at-sea training and testing programs. Since Navy vessels typically operating as part of these at-sea programs would be utilized for CPS flight

testing, relevant measures which would be implemented for those vessel operations are also included. Relevant to proposed CPS flight test activities are measures detailed in the Atlantic Fleet Training and Testing EIS/OEIS (Chapter 5 of DON 2018a), Hawaii–Southern California Training and Testing EIS/OEIS (Chapter 5 of DON 2018b), and the Mariana Islands Training and Testing Supplemental EIS/OEIS (Chapter 5 in DON 2020a). Navy mitigation measures and standard operating procedures within these Navy operational areas are centralized in the Navy's "Protective Measures Assessment Protocol." Navy policy requires applicable personnel to access the Protective Measures Assessment Protocol during the event planning process.

Because the Navy CPS weapon system is an experimental weapon system with unique characteristics compared to other Navy at-sea testing programs, the relatively small scale of the CPS flight tests program and design of the system allow for increased planning and flexibility in the time and location in which proposed activities can occur. During the testing phase of the CPS weapon system, there is a failure rate associated with testing activities that is not typically associated with routine at-sea training and testing programs. As a result, additional measures will be implemented to the greatest extent practicable to avoid effects to biological resources during launch, booster splashdown, and payload impact as detailed in the following standard operating procedures and mitigation measures.

Mitigations would be implemented as compatible with the purpose and need of the Proposed Action, more specifically if the implementation is safe, sustainable, and allows the Navy to continue meeting its mission requirements.

Standard Operating Procedures

- Vessel operations would not involve any intentional ocean discharges of fuel, toxic wastes, or plastics and other solid wastes that could potentially harm marine life.
- Vessel hulls would be periodically inspected and cleaned to reduce the risk of introduction or spread of invasive species.
- Test launches would be conducted at least 50 nm and up to 200 nm offshore.
- No launches or missile component splashdown would occur within marine national monuments or national marine sanctuaries located in the ocean study areas. No anchoring would occur within marine national monuments or national marine sanctuaries.
- Flight tests would be designed to avoid conducting launch activities and missile component splashdown within designated critical habitat for leatherback sea turtles (*Dermochelys coriacea*) or for Central America and Mexico Distinct Population Segments (DPSs) of humpback whales (*Megaptera novaeangliae*).
- Flight tests would be designed to avoid conducting launch activities and missile component splashdown within the areas identified as biologically important areas for sei whale (*Balaenoptera borealis*) feeding, minke whale (*Balaenoptera acutorostrata*)

feeding, or North Atlantic right whale (*Eubalaena glacialis*) migration in the Atlantic Ocean as identified in **Section 3.1.2.2**.

- CPS missile flight paths would be designed to avoid Bermuda in the Atlantic, Marcus Island in the Pacific, and any other populated islands.
- With the exception of target sites at Kwajalein Atoll, no missile components are expected to splash down or impact within territorial seas or non-U.S. EEZs.
- Stage 1 booster splashdowns would occur in deep ocean waters downrange from launch and as far as 330 nm offshore of any land areas.
- All stage 2 splashdown and payload target sites would be outside of EEZs in international waters.
- For the sea-based target sites in the BOA, support vessels would be present near the target site prior to, during, and after payload impact to observe the test and perform flight test activities.
- Support ship personnel would search for any visible floating test debris after payload impact. Any visible Common Hypersonic Glide Body (C-HGB) or other test debris found floating would be recovered, as much as practicable.
- Personnel aboard support vessels will survey the at-sea payload impact area for 30 minutes after impact to verify no injury to protected species (marine mammals and ESA-listed species). This measure can be done concurrently with debris retrieval.

Vessel Movement and Operations Mitigation Measures

- Surface ship launch platforms and other moving vessels will have a lookout on an observation platform to monitor mitigation zones, including 500 yards around the vessel for whales, 200 yards around the vessel for other marine mammals (except bow-riding dolphins), and within the vicinity for sea turtles. One or more trained lookouts would observe the mitigation zones and report observations to the watch station.
- If marine mammals or sea turtles are sighted in mitigation zones, the Navy would maneuver the vessel to maintain distance, until the animal is deemed to no longer be in the mitigation zone.
- Data would be collected for any marine mammal or ESA-listed species strike or injury due to Navy activities.
- If a marine mammal or ESA-listed species vessel strike occurs, the Navy will follow established incident reporting procedures.
- When within a 350-yard radius of live hard bottom, the Navy would not place anchors or mooring devices on the seafloor.

BOA Target Site Mitigation Measures

- A 2,500-yard mitigation zone around a target location will be established. Lookouts aboard support vessels shall monitor this zone for floating vegetation, marine mammals, and sea turtles to the best extent practical. If a marine mammal or sea turtle is spotted in the zone and communications are available with the launch platform, launch will be delayed by 30 minutes or until the animal is observed to leave the mitigation zone. Detailed commencement/recommencement conditions for Navy activities are detailed in Chapter 5 of DON 2018a, DON 2018b, and DON 2020a.
- Sightings of any marine mammal or ESA-listed species within the mitigation zone around the payload target location shall be reported to USFWS or NMFS.
- Data would be collected for any marine mammal or ESA-listed species strike or injury due to Navy activities.
- If a marine mammal or ESA-listed species strike occurs, the Navy will follow established incident reporting procedures.

C.3.2 Kwajalein Atoll Standard Operating Procedures and Mitigation Measures

Over time and through consultation with NMFS and USFWS for RTS test activities at USAKA, several standard avoidance, minimization, and mitigation measures have been developed to minimize the impacts of flight testing on protected species and their habitats. These measures, which would be implemented as part of the Proposed Action at Kwajalein Atoll, are very similar to those implemented for other recent test programs with payload impacts at Illeginni Islet and KMISS (U.S. Air Force 2021, DON 2019, U.S. Army 2021).

The following avoidance, minimization, and conservation measures would be implemented as part of the Proposed Action at USAKA to minimize the potential effects of the Proposed Action on UES-listed species and habitats:

Marine Mammal and Sea Turtle Monitoring

- During travel to and from payload impact zones, including Illeginni Islet, ship personnel would monitor for marine mammals and sea turtles to avoid potential ship strikes. Vessel operators would adjust speed or raft deployment based on the presence of special-status species and on lighting and turbidity conditions.
- A helicopter or fixed-wing aircraft overflight in the vicinity of the KMISS or Illeginni Islet impact area would be conducted during the week prior to the test and as close to launch as safely practical to survey for marine mammals and sea turtles. Any sightings or the lack of sightings would be recorded and reported according to procedures detailed below.
- Any marine mammals or sea turtle opportunistic sightings collected during ship travel, overflights, and deployment of sensor rafts in the vicinity of the Illeginni Islet or KMISS impact areas would be recorded and reported according to procedures detailed below.

- Pre-flight test monitoring by qualified personnel would be conducted on Illeginni Islet for sea turtles or sea turtle nests. For at least 8 weeks preceding the launch, Illeginni Islet would be surveyed weekly by pre-test personnel for sea turtles, sea turtle nesting activity, and sea turtle nests. If possible, personnel would inspect the area within days of the launch. Sea turtles or sea turtle nest observations near the impact area or the lack of observations would be recorded and reported according to procedures detailed below.
- Post-test overflights of the impact area would be conducted to survey for dead or injured cetaceans and sea turtles.
- Although unlikely, any dead or injured marine mammals or sea turtles sighted by project personnel would be reported immediately to the United States Army Space and Missile Defense Command (USASMDC) and the USAG-KA Environmental Office; USASMDC would as soon as possible, and within 24 hours, inform the RMI Environmental Protection Authority, NMFS, and USFWS. USAG-KA aircraft pilots or vessel operators otherwise operating in the vicinity of the impact and test support areas would also report any opportunistic sightings of dead or injured marine mammals or sea turtles through the procedures detailed below.
- For all surveys and incidental observations, data would be recorded including location, date, time, species, and number of individuals or reports of no sightings when animals are not seen on surveys. Observations would be reported to the USAG-KA Environmental Office, the RTS Range Directorate, the Flight Test Operations Director, and USASMDC. USASMDC and the USAG-KA Environmental Office would maintain records of these observations and USASMDC would distribute survey reports to the RMI Environmental Protection Authority, NMFS, and/or the USFWS within 6 months of completion of each fiscal year.

Hazardous Materials Measures

- Vessel and heavy equipment operators would inspect and clean equipment for fuel or fluid leaks prior to use or transport and would not intentionally discharge fuels or waste materials into terrestrial or marine environments.
- Any accidental spills from support equipment operations would be contained and cleaned up and all waste materials would be transported to Kwajalein Islet for proper disposal.
- Response to releases of oil, fuels, and lubricants into the USAKA environment would be in accordance with the Kwajalein Environmental Emergency Plan (UES § 3-6.5.8).
- All equipment and packages/materials shipped from the United States to RTS would be inspected prior to shipment and washed if necessary to prevent the introduction of animals, plants, and seeds.
- Following a land-impact test, soil and groundwater samples would be collected at various locations around the impact site and samples would be tested for metals (not limited to, but including arsenic, barium, cadmium, chromium, and lead). Testing results

exceeding the UES standards would trigger an immediate investigation of the soil on Illeginni Islet, as detailed in the UES § 3-6.5.8. Coordination would be initiated with the Defense Program, USASMDC, RMI Environmental Protection Authority, and the other UES Appropriate Agencies to determine the scope and methods/procedures to be followed during the investigation and any subsequent soil removal or other remediation activities.

- Following completion of a flight test at KMISS, a vessel or aircraft from USAG-KA would inspect the ocean impact area for any floating debris. Any visible debris found floating would be recovered, as much as practicable.

Reef Protection Measures

- To avoid impacts on coral heads in waters near Illeginni Islet, sensor rafts would be located in waters at least 10 ft deep.
- When feasible, within 1 day after the land impact test at Illeginni Islet, USAKA RTS environmental staff would survey the islet and the near-shore waters for any injured wildlife, damaged coral, or damage to sensitive habitats (i.e., reef habitat). Any impacts to biological resources would be reported to the UES Appropriate Agencies via USASMDC, with USFWS, RMI Environmental Protection Authority, and NMFS offered the opportunity to inspect the impact area to provide guidance on mitigations.
- If an inadvertent impact occurs on the reef, reef flat, or in shallow waters less than 10 ft deep, an inspection by project personnel would occur within 24 hours. Representatives from NMFS, USFWS, and RMI Environmental Protection Authority would be offered the opportunity to inspect the site as soon as practical after the test. The inspectors would assess any damage to coral and other natural and biological resources and, in coordination with RTS representatives, decide on any response measures that may be required.
- If any man-made debris were to enter the marine environment and divers were required to search for payload debris on the adjacent reef flat, they would be briefed prior to operations about coral fragility and provided guidance on how to carefully retrieve the very small pieces of payload debris that they would be looking for.
- In the event of a payload impact that affects the reef at Illeginni Islet, personnel would secure or remove from the water any substrate or coral rubble from the ejecta impact area that may become mobilized by wave action.
    - Ejecta greater than 6 inches in any dimension would be removed from the water or positioned such that it would not become mobilized by expected wave action, including replacement in the payload crater.
    - If possible, coral fragments greater than 6 inches in any dimension would be positioned on the reef such that they would not become mobilized by expected wave action and in a manner that would enhance their survival (i.e., away from fine sediments with the majority of the living tissue [polyps] facing up).

  - UES consultation coral fragments that could not be secured in-place would be relocated to suitable habitat where they are not likely to become mobilized.

- In the event of a payload impact that affects the reef at Illeginni Islet, impacts on top shell snails and clams would be reduced.
  - Any living top shell snails or clams that are buried or trapped by rubble would be rescued and repositioned.
  - Any living top shell snails or clams that are in the path of any heavy equipment that must be used in the marine environment would be relocated to suitable habitat.

General Measures at Illeginni Islet

- Test personnel would be briefed on Best Management Practices and conservation requirements and the requirement to adhere to them during test activities.
- At Illeginni Islet, searches would be conducted for black-naped tern nests and chicks prior to any pre-test equipment mobilization. Any discovered nests in the action area would be flagged with a stake 3 ft from the nest to prevent disturbance. Prior to the test, nests in the impact area may be covered with A-frame structures as per current USFWS guidance.
- To prevent birds from nesting on support equipment after initial setup, the equipment would be appropriately covered with tarps or other materials and “scare” techniques (e.g., scarecrows, mylar ribbons, and/or flags) would be used on or near the equipment.
- When feasible, within 1 day after the land impact test at Illeginni Islet, USAKA RTS environmental staff would survey the islet and the near-shore waters for any injured wildlife or damage to sensitive habitats (i.e., sea turtle nesting habitat). Any impacts to biological resources would be reported to the UES Appropriate Agencies via USASMDC, with USFWS, RMI Environmental Protection Authority, and NMFS offered the opportunity to inspect the impact area to provide guidance on mitigations.
- In the event that any UES consultation species is found injured or killed, the finding would be recorded using digital photography. As practicable, digital photographic records would include (1) photographs of all damaged corals or other UES consultation species observed injured or dead, (2) include a scaling device (such as a ruler) in photographs to aid in the determination of size, and (3) the location of the photograph. Any photographs or records of injured or killed UES consultation species would be reported to USFWS, RMI Environmental Protection Authority, and NMFS via USASMDC within 60 days of completing post-test clean-up operations.
- Debris recovery and site cleanup would be performed for the land impact. To minimize long-term risks to marine life, all visible project-related man-made debris would be recovered during post-flight operations. In all cases, recovery and cleanup would be conducted in a manner to minimize further impacts on biological resources.

- During post-test recovery and cleanup, should personnel observe highly mobile endangered, threatened, or other species requiring consultation moving into the area, work would be delayed until such species are out of harm's way or leave the area of their own volition.
- Within 6 months of completion of each fiscal year, USASMDC would provide a report to NMFS, USFWS, and RMI Environmental Protection Authority. The report would identify: (1) the flight test and date; (2) the target site; (3) the results of the pre- and post-flight surveys; (4) the identity and quantity of affected UES consultation resources (include photographs and videos as applicable); and (5) the disposition of any relocation efforts.

C.4. Geology and Soils

C.4.1 Kwajalein Atoll Standard Operating Procedures and Mitigation Measures

- Prior to flight testing, the Action Proponents would prepare a detailed cleanup plan that satisfies human health and safety requirements and incorporates measures to minimize ocean pollution.
- Personnel would recover any visible floating debris from payload impact after the test and properly dispose of it. This would include the recovery of visible debris in shallow (less than 100 ft deep) ocean waters by range divers.
- Existing, relevant, accepted standard operating procedures and Best Management Practices would be followed.

Illeginni Islet

- Following a land-impact test, soil and groundwater samples at various locations around the impact site would be collected and tested for beryllium, depleted uranium as uranium, and other heavy metals (see UES Table 2-24.1 and Table 3-6B.1).
- Field duplicate (quality assurance/quality control) samples would be taken due to past heterogeneous sample results.
- Any soil testing results exceeding the UES standards would trigger an immediate investigation of the soil on Illeginni Islet, as detailed in the UES § 3-6.5.8. Coordination would be initiated with the Action Proponents, USAG-KA, USASMDC, and the UES Appropriate Agencies (RMI Environmental Protection Authority, USEPA – Region 9, U.S. Army Corps of Engineers, USFWS, NMFS).
- Following the soil investigation (see UES Section 3-6.5.8) required upon exceeding UES standards, USASMDC would transmit the records and reports of exceeded concentrations in soil to the RMI Environmental Protection Authority, NMFS, and USFWS within 2 weeks from the date of receipt of such records from the Action Proponent or analytical laboratory.
- All records associated with laboratory results and soil studies would be maintained for at least 5 years (UES § 2-14.2.4).

- In the event of a reentry vehicle impact that affects the reef, qualified personnel would secure or remove from the water any substrate or coral rubble from the ejecta impact zone that may become mobilized by wave action. Ejecta greater than 6 inches in any dimension would be removed from the water or positioned such that it would not become mobilized by expected wave action, including replacement in the payload crater.
- Any necessary dredge and fill activities would be carried out after consultations with UES Appropriate Agencies and USAG-KA. Best Management Practices include:
    - Authorized dredging and filling-related activities that may result in the temporary or permanent loss of aquatic habitats should be designed to avoid indirect, negative impacts to aquatic habitats beyond the planned project area.
    - Turbidity and siltation from project-related work should be minimized and contained within the project area by silt-containment devices and curtailing work during flooding or adverse tidal and weather conditions. Best Management Practices should be maintained for the life of the construction period until turbidity and siltation within the project area are stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.
    - All project-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment should be inspected for pollutants including, but not limited to grease, oil, and lubricant, etc. and appropriately cleaned to remove pollutants prior to use. Project-related activities should not result in any debris disposal to the affected or adjacent terrestrial or aquatic environments.
    - Project-related materials (fill, rock, etc.) and equipment should not be stockpiled in, or in close proximity to aquatic environments and should be protected from erosion (e.g., with filter fabric, etc.) to prevent materials from being carried into waters by wind, rain, or high surf.
    - All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric, or native or non-invasive vegetation matting, hydroseeding, etc.

C.5. Water Resources

C.5.1 Kwajalein Atoll Standard Operating Procedures and Mitigation Measures

- All materials placed in the water for temporary use would be removed as soon as possible after use or at the end of proposed activities.
- Following the Proposed Action, visible debris on the surface of the water would be recovered and disposed of according to UES standards.

Illeginni Islet

- Prior to returning the test support equipment and materials to the United States, the equipment would be washed, and a certified Pest Control Technician would inspect the equipment again to ensure that it does not contain any insects, animals, plants, or seeds that might have been picked up during fielding. Personnel would be judicious and not overwater, to ensure the freshwater would evaporate in place and not flow into the lagoon. This would prevent possible contamination from entering the marine environment.
- Following a land-impact test, soil and groundwater samples (with field duplicates) at various locations around the impact site would be collected and tested for beryllium, depleted uranium as uranium, and other heavy metals (see UES Table 2-24.1 and Table 3-6B.1).
- Any testing results exceeding the UES standards would trigger an immediate investigation of the media (soil or groundwater) on Illeginni Islet, as detailed in the UES § 3-6.5.8. Coordination would be initiated with the Action Proponents, USAG-KA, USASMDC, and the UES Appropriate Agencies (RMI Environmental Protection Authority, USEPA – Region 9, U.S. Army Corps of Engineers, USFWS, NMFS).
- Following any investigation required upon exceeding UES standards (for soil or groundwater, see UES § 3-6.5.8), USASMDC would transmit the records and reports of exceeded concentrations to the RMI Environmental Protection Authority, NMFS, and USFWS within 2 weeks from the date of receipt of such records from the Action Proponent or analytical laboratory.
- All records associated with laboratory results and studies would be maintained for at least 5 years (UES § 2-14.2.4).

C.6. Hazardous Materials and Waste Management

C.6.1 Kwajalein Atoll Standard Operating Procedures and Mitigation Measures

Illeginni Islet

- Prior to flight test activities, Illeginni Islet would be assessed to ensure all personnel are off-site prior to launch and exclusionary control (keeping personnel out of the impact zone) would be maintained until recovery actions are complete. Additionally, if needed, the Mid-Atoll Corridor would be cleared and monitored for unauthorized access prior to the flight test.
- Prior to debris recovery and cleanup actions on Illeginni Islet, unexploded ordnance personnel would first inspect the impact crater and surrounding area. Test support personnel would conduct an impact assessment and cleanup and recovery operations once the site is clear for safe entry.

- Following assessment of the impact area for safety, personnel would search for any visible debris. Visible C-HGB or other test debris would be recovered as much as practicable on land and if necessary in shallow waters (less than 180 ft deep)
- The impact area would be wetted with freshwater to stabilize the disturbed soil. The impact crater would be excavated using a backhoe or front-end loader transported to the islet, and the excavated material would be screened to recover debris.
- Following debris removal, the crater would be backfilled and, if necessary, repairs made to surrounding structures.
- Accidental spills from support equipment operations would be contained and cleaned up, in accordance with the UES Kwajalein Environmental Emergency Plan (UES § 3-6.4.1). All waste materials would be appropriately stored and returned to Kwajalein Island for proper disposal.

KMISS

- Following assessment of the splashdown area for safety, personnel would search for any visible floating debris. Any visible C-HGB or other test debris found floating would be recovered, as much as practicable.

C.7. Health and Safety

C.7.1 Broad Ocean Area Standard Operating Procedures

- A Notice to Air Missions and a Notice to Mariners are transmitted to appropriate authorities to clear commercial, private, and non-mission military vessel and aircraft traffic from caution areas ahead of any CPS flight test to inform the public of impending missions in which messages describe the time, the area affected, and safe alternate routes.

C.7.2 Kwajalein Atoll Standard Operating Procedures and Mitigation Measures

- A Notice to Air Missions and a Notice to Mariners are transmitted to appropriate authorities to clear commercial, private, and non-mission military vessel and aircraft traffic from caution areas ahead of any CPS flight test to inform the public of impending missions in which messages describe the time, the area affected, and safe alternate routes.
- A limited number of project personnel would access Illeginni Islet before the flight test to place equipment and after the test to recover the equipment and restore the impact site. No personnel would be on-island during the impact and any project personnel would be located offshore on ships or at other islands at the time of impact.

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D

Biological Resources Detailed Impact Analyses

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Appendix D. Biological Resources Detailed Impact Analyses

This section includes a detailed analysis of the environmental consequences of the Proposed Action for biological resources. Environmental consequences of the Proposed Action on biological resources are evaluated based on the best available information about species distributions in **Sections 3.1.2** and **3.2.3** and in the context of the regulatory setting discussed in **Appendix B, Section B.3**.

Determination of the significance of potential impacts to biological resources is based on (1) the importance of the resource (i.e., threatened or endangered species; critical habitats; recreationally, commercially, ecologically, culturally, or scientifically important species); (2) the sensitivity of the resource to proposed activities; (3) the proportion of the resource that would be affected relative to its occurrence in the region; and (4) the duration of ecological ramifications. For example, impacts to terrestrial wildlife would be considered significant if species or habitats of concern were substantially affected over relatively large areas or activities resulted in reductions in the population size or distribution that might limit the ability of a local or regional population to sustain itself. Impacts to environmentally sensitive habitats would be considered significant if these habitats were destroyed or substantially modified.

D.1. Environmental Consequences for Biological Resources – BOA

The Proposed Action has the potential to impact biological resources in the BOA ROI through exposure to elevated sound levels, direct contact from vehicle components, exposure to hazardous materials, and increased vessel activity. The following subsections describe the potential stressors for biological resources in the BOA ROI and the environmental consequences of those stressors on biological resources in the environment described in **Section 3.1.2**.

Because the Proposed Action is a Navy test action occurring primarily within existing Navy training and testing areas, proposed operations in the BOA would implement a number of standard operating procedures and mitigation measures, many of which were established in the Atlantic Fleet Training and Testing EIS/OEIS (Chapter 5 of DON 2018a), Hawaii-Southern California Training and Testing EIS/OEIS (Chapter 5 of DON 2018b), the Mariana Islands Training and Testing EIS/OEIS (Chapter 5 of DON 2020a), and the Point Mugu Sea Range EIS/OEIS (Chapter 5 of DON 2022a). **Appendix C, Section C.3.1** details the standard operating procedures and mitigation measures to be implemented to minimize the potential effects of the Proposed Action on biological resources.

Elevated Sound Levels

The Proposed Action would result in elevated sound levels both in air and in water. Sources of elevated sound levels in the BOA ROI would include the following:

- Launch of the CPS flight test vehicle from a naval vessel with maximum sound pressure of 150 decibels (dB) in air (referenced to [re] 20 micropascals [µPa]) at 50 ft from the launch. At its loudest level, launch noise would last less than a second, and launch noises as low as 95 dB might last up to 15 seconds at the launch site. Launches would occur at least 50 nm and up to 200 nm from land.
- Flight of the CPS vehicle over the ocean would generate a sonic boom with an average sound pressure level of 104 dB in air (re 20 µPa) at the ocean surface (130 dB in water [re 1 µPa] at the surface) and a duration of 0.27 seconds.
- Splashdown of the spent stage 1 boosters into the BOA would generate estimated maximum sound pressure levels of 218 dB in water (re 1 µPa) at the ocean surface. Stage 1 booster splashdown would occur downrange of launch and as far as 330 nm from land.
- Splashdown of the spent stage 2 boosters into the BOA would generate estimated maximum sound pressure levels of 201 dB in water (re 1 µPa) at the ocean surface. Stage 2 booster splashdown would occur outside EEZs in international waters.
- Impact of the payload would generate an estimated maximum sound pressure level of 191 dB in water (re 1 µPa) at the ocean surface. In the BOA, payload impact would occur in deep ocean waters outside EEZs.

An extensive discussion about the potential effects of elevated sound pressure levels on biological resources is included in the Atlantic Fleet Training and Testing EIS/OEIS (DON 2018a) and the Hawaii-Southern California Training and Testing EIS/OEIS (DON 2018b). This remains the best available information on the potential effects of proposed Navy training and testing acoustic stressors, including relevant effect thresholds for wildlife, and is incorporated here by reference.

Potential effects of elevated sound pressures on wildlife can be divided into three main categories: permanent injury (primarily auditory injury or permanent threshold shift but may be non-auditory injury for some groups), temporary hearing loss (temporary threshold shift), and behavioral reactions. To evaluate the potential impacts of elevated sound levels on wildlife, expected in-air and in-water sound pressures were compared to the effect thresholds for various categories of wildlife (i.e., birds, fish, sea turtles, phocid pinnipeds, otariid pinnipeds, and low-, mid-, and high-frequency hearing group cetaceans) (**Table D.1-1**). Where sound pressures would exceed potential effect thresholds, the distances within which thresholds might be exceeded were calculated using a point-source attenuation model (**Table D.1-1**). To evaluate the expected number of wildlife exposures to elevated sound pressures above effect thresholds, the number of animals expected to be within each potential effect area was calculated based on the best available information on species densities in the ROI when available. In the absence of reliable density data for the ROI, a qualitative assessment based on general animal abundance, distribution, and life history was used. A detailed description of the methodology for analyzing potential acoustic impacts can be found in the Navy CPS Weapon System Flight Tests Marine Biological Evaluation (DON and USASMDC 2024).

Based on expected sound pressure levels for launch, in-air sound pressures would only exceed the injury threshold for seabirds (140 A-weighted decibels) within 175 ft of launch. Seabirds, especially special status seabirds, are unlikely to be within this area. Launch noise might cause behavioral disturbance in seabirds near the launch vessel. However, any response to this short duration noise (no more than a few seconds) is expected to be limited to short-term startle reactions. Birds might flush or alter flight direction but would be expected to return to normal behaviors within minutes of launch.

Table D.1-1. Distance to Effect Thresholds in Wildlife for Elevated In-Water Sound Levels Resulting from CPS Component Splashdown or Impact

Functional Hearing Group	Effect Category	Threshold Criterion (re 1 µPa)	Radial Distance to Threshold from			
			Launch	Stage 1 Splashdown	Stage 2 Splashdown	Payload Impact
Low Frequency Cetaceans (*Balaenoptera* and *Megaptera* whales)	PTS (non-lethal injury)	219 dB_{peak}	-	-	-	-
	TTS	213 dB_{peak}	-	6 ft	-	-
Mid Frequency Cetaceans (*Delphinus*, *Grampus*, *Stenella*, and *Tursiops* dolphins; *Feresa*, *Globicephala*, *Mesoplodon*, *Orcinus*, *Peponocephala*, and *Physeter* whales)	PTS (non-lethal injury)	230 dB_{peak}	-	-	-	-
	TTS	224 dB_{peak}	-	-	-	-
High Frequency Cetaceans (*Kogia* whales and porpoises)	PTS (non-lethal injury)	202 dB_{peak}	-	21 ft	-	-
	TTS	196 dB_{peak}	-	41 ft	6 ft	-
Phocid Pinnipeds (monk seals)	PTS (non-lethal injury)	218 dB_{peak}	-	-	-	-
	TTS	212 dB_{peak}	-	7 ft	-	-
Otariid Pinnipeds (fur seals and sea lions)	PTS (non-lethal injury)	232 dB_{peak}	-	-	-	-
	TTS	226 dB_{peak}	-	-	-	-
All Marine Mammals	Behavioral Disturbance	160 dB_{RMS}	300 ft	2,606 ft	368 ft	116 ft
Sea Turtles	PTS (non-lethal injury)	232 dB_{peak}	-	-	-	-
	TTS	226 dB_{peak}	-	-	-	-
	Behavioral Disturbance	175 dB_{RMS}	4 ft	463 ft	65 ft	21 ft
Fish	Physical Injury	206 dB_{peak}	-	21 ft	-	-
	Behavioral Disturbance	150 dB_{RMS}	950 ft	8,241 ft	1,164 ft	367 ft

Sources: DON 2019, NOAA 2018, NMFS 2019, NMFS 2023

Acronyms and Abbreviations: µPa = micropascals, dB = decibels, ft = feet, PTS = Permanent Threshold Shift, RMS = root mean squared, TTS = Temporary Threshold Shift,

"-" = threshold not exceeded

Based on modeled launch noise, in-water sound levels would not exceed the permanent threshold shift thresholds for any marine animal group (**Table D.1-1**). Sound pressures within several hundred feet of the launch vessel might be high enough to cause behavioral disturbance in marine mammals, sea turtles, and fish; however, no harm or harassment of special status marine animals is expected. Based on the best available estimated densities for special status wildlife in the ROI (**Tables D.1-2** and **D.1-3**) and the estimated distances within which effect thresholds might be exceeded (**Table D.1-1**), the number of marine mammal and sea turtle exposures to elevated sound pressures was calculated (**Tables D.1-2** and **D.1-3**) (see DON and USASMDC 2024 for detailed analysis methodology). Less than one animal exposure per year to launch sounds above the behavioral disturbance threshold would be expected for all marine mammals and sea turtle species (**Tables D.1-2** and **D.1-3**). These modeled maximum sound pressures are likely overestimates of sound intensity and likely lead to an overestimate of potential effects as the model does not account for the substantial sound attenuation at the air-water interface. At most, launch noise might cause startle reactions for more common wildlife (such as abundant schooling fish) at the surface near the vessel. As with birds, any reaction would be temporary and animals would be expected to return to normal behaviors within minutes.

Sound pressures generated from spent booster splashdown and payload impact may exceed the permanent and temporary threshold shift effect thresholds for dwarf and pygmy sperm whales (*Kogia* spp.) and porpoises but only within 21 and 41 ft, respectively, of stage 1 booster splashdown (**Table D.1-1**) (see DON and USASMDC 2024 for details). Stage 1 booster splashdown may also exceed the temporary threshold shift effect threshold for baleen whales (**Table D.1-1**) but only within 6 ft of booster splashdown. Based on the density of marine mammal and sea turtle species in the BOA the estimated number of animal exposures to elevated sound pressures above the permanent threshold shift and temporary threshold shift effect thresholds was calculated (**Tables D.1-2** and **D.1-3**). For all marine mammal species, the estimated number of permanent threshold shift and temporary threshold shift exposures would be substantially less than one animal annually and it is very unlikely that any marine mammals would be injured by elevated sound levels from component splashdown or impact in the BOA.

Table D.1-2. Maximum Density and Estimated Number of Animal Exposures to Elevated Sound Pressure Levels above Effect Thresholds for CPS Activities in the Atlantic BOA

Common Name	Scientific Name	Launch Activities BOA		Stage 1 Splashdown BOA				Stage 2 Splashdown/Payload Impact BOA		
		Density[1] (/km²)	Annual Behavioral Disturbance Exposures	Density[1] (/km²)	Annual PTS Exposures	Annual TTS Exposures	Annual Behavioral Disturbance Exposures	Density[1] (/km²)	Annual TTS Exposures	Annual Behavioral Disturbance Exposures
Sea Turtles										
Hard shell turtles	*Chelonia mydas* and *Eretmochelys imbricata*	0.3183	<0.0001	0.3183	-	-	0.1596	0.3183	-	0.0035
Loggerhead turtle	*Caretta caretta*	0.4063	<0.0001	0.4063	-	-	0.2037	0.4063	-	0.0046
Leatherback turtle	*Dermochelys coriacea*	0.6371	<0.0001	0.6371	-	-	0.3195	0.6371	-	0.0070
Kemp's ridleys turtle	*Lepidochelys kempii*	0.0068	<0.0001	0.0068	-	-	0.0034	0.0068	-	0.0001
Cetaceans										
Minke whale	*Balaenoptera acutorostrata*	0.0466	<0.0001	0.0597	-	<0.0001	0.9462	0.0798	-	0.0281
Sei whale	*Balaenoptera borealis*	0.0319	<0.0001	0.0319	-	<0.0001	0.5062	0.0319	-	0.0112
Bryde's whale	*Balaenoptera edeni*	0.0000	<0.0001	0.0029	-	<0.0001	0.0458	0.0087	-	0.0030
Blue whale	*Balaenoptera musculus*	0.0020	<0.0001	0.0020	-	<0.0001	0.0319	0.0020	-	0.0007
Fin whale	*Balaenoptera physalus*	0.0960	0.0001	0.0685	-	<0.0001	1.0859	0.0123	-	0.0043
North Atlantic right whale	*Eubalaena glacialis*	0.1641	0.0002	0.0151	-	<0.0001	0.2389	0.0005	-	0.0002
Humpback whale	*Megaptera novaeangliae*	0.0214	<0.0001	0.0141	-	<0.0001	0.2230	0.0362	-	0.0128
Northern bottlenose whale	*Hyperoodon ampullatus*	0.0240	<0.0001	0.0170	-	-	0.2698	0.0004	-	0.0002
Beaked Whale Guild	Includes *Mesoplodon bidens*, *Mesoplodon densirostris*, *Mesoplodon europaeus*, *Mesoplodon mirus*, and *Ziphius cavirostris*	0	0	0.7183	-	-	11.3894	0.5237	-	0.1843
Short-beaked common dolphin	*Delphinus delphis*	1.2614	0.0013	0.7729	-	-	12.2555	0.8918	-	0.3139
Pygmy killer whale	*Feresa attenuata*	0.1201	0.0001	0.1137	-	-	1.8035	0.1294	-	0.0456
Pilot whales	*Globicephala macrorhynchus* and *Globicephala melas*	1.8820	0.0013	1.3311	-	-	21.1061	1.9152	-	0.6741

Common Name	Scientific Name	Launch Activities BOA		Stage 1 Splashdown BOA				Stage 2 Splashdown/Payload Impact BOA		
		Density[1] (/km²)	Annual Behavioral Disturbance Exposures	Density[1] (/km²)	Annual PTS Exposures	Annual TTS Exposures	Annual Behavioral Disturbance Exposures	Density[1] (/km²)	Annual TTS Exposures	Annual Behavioral Disturbance Exposures
Cetaceans (continued)										
Risso's dolphin	*Grampus griseus*	1.8820	0.0019	1.3853	-	-	21.9656	0.2360	-	0.0831
Fraser's dolphin	*Lagenodelphis hosei*	0.2154	0.0002	0.2314	-	-	3.6695	0.2460	-	0.0866
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	2.0805	0.0021	1.6722	-	-	26.5151	0.6620	-	0.2330
White-beaked dolphin	*Lagenorhynchus albirostris*	0.0014	<0.0001	0.0013	-	-	0.0199	0.0007	-	0.0002
Killer whale	*Orcinus orca*	0.0024	<0.0001	0.0024	-	-	0.0383	0.0024	-	0.0009
Melon-headed whale	*Peponocephala electra*	0.8504	0.0009	0.8009	-	-	12.6997	0.9170	-	0.3228
False killer whale	*Pseudorca crassidens*	0.1666	0.0002	0.1551	-	-	2.4594	0.1795	-	0.0632
Pantropical spotted dolphin	*Stenella attenuata*	6.3104	0.0063	6.0818	-	-	96.4336	2.7485	-	0.9675
Clymene dolphin	*Stenella clymene*	2.0375	0.0020	2.0003	-	-	31.7174	2.1666	-	0.7626
Striped dolphin	*Stenella coeruleoalba*	9.1372	0.0091	10.168	-	-	161.2252	3.6684	-	1.2913
Atlantic spotted dolphin	*Stenella frontalis*	2.1239	0.0021	2.9051	-	-	46.0628	2.6377	-	0.9285
Spinner dolphin	*Stenella longirostris*	1.5883	0.0016	1.4959	-	-	23.7195	1.7043	-	0.5999
Rough toothed dolphin	*Steno bredanensis*	0.3209	0.0003	0.2954	-	-	4.6842	0.3375	-	0.1188
Bottlenose dolphin	*Tursiops truncatus*	3.3984	0.0034	2.4298	-	-	38.5276	1.4938	-	0.5258
Harbor porpoise	*Phocoena phocoena*	0.0710	0.0001	0.0633	0.0001	0.0003	1.0033	0.0286	<0.0001	0.0101
Pygmy and dwarf sperm whales	*Kogia breviceps and Kogia sima*	0.3816	0.0004	0.3400	0.0003	0.0014	5.3906	0.2660	<0.0001	0.0936
Sperm whale	*Physeter macrocephalus*	1.0135	0.0010	0.9559	-	-	15.1560	0.4784	-	0.1684
Pinnipeds										
Seals (primarily gray and harbor)	*Halichoerus grypus and Phoca vitulina*	0.1020	0.0001	0.0622	-	-	0.9868	0.0048	-	0.0017

Acronyms and Abbreviations: BOA = Broad Ocean Area, km² = square kilometers, PTS = Permanent Threshold Shift, TTS = Temporary Threshold Shift, "-" = threshold not exceeded

Note: For Endangered Species Act listed species, density estimates are not specific to listed Distinct Population Segments but rather include animals from both listed and non-listed populations.

[1] Density estimates from the U.S. Navy's Marine Species Density Databases for the Atlantic Fleet Training and Testing Study Area (Roberts et al. 2023, DON 2017c).

Table D.1-3. Maximum Density and Estimated Number of Animal Exposures to Elevated Sound Pressure Levels above Effect Thresholds for CPS Activities in the Pacific BOA

Common Name	Scientific Name	Launch Activities BOA		Splashdown/Payload Impact BOA				Splashdown/Payload Impact BOA		
		Density[1] (/km^2)	Annual Behavioral Disturbance Exposures	Density[1] (/km^2)	Annual PTS Exposures	Annual TTS Exposures	Annual Behavioral Disturbance Exposures	Density[1] (/km^2)	Annual TTS Exposures	Annual Behavioral Disturbance Exposures
Sea Turtles										
Loggerhead turtle	*Caretta caretta*	0.2400	<0.0001	0.2400	-	-	0.1204	0.0018	-	<0.0001
Green turtle	*Chelonia mydas*	0.0003	<0.0001	0.0003	-	-	0.0001	0.0004	-	<0.0001
Leatherback turtle	*Dermochelys coriacea*	0.0020	<0.0001	0.0020	-	-	0.0010	0.0012	-	<0.0001
Hawksbill turtle	*Eretmochelys imbricata*	0.0001	<0.0001	0.0001	-	-	<0.0001	0.0001	-	<0.0001
Olive ridley turtle	*Lepidochelys olivacea*	0.0018	<0.0001	0.0018	-	-	0.0009	0.0018	-	<0.0001
Cetaceans										
Minke whale	*Balaenoptera acutorostrata*	0.0028	<0.0001	0.0028	-	<0.0001	0.0450	0.0028	-	0.0010
Sei whale	*Balaenoptera borealis*	0.0003	<0.0001	0.0003	-	<0.0001	0.0048	0.0003	-	0.0001
Bryde's whale	*Balaenoptera edeni*	0.0003	<0.0001	0.0003	-	<0.0001	0.0047	0.00059	-	0.0002
Blue whale	*Balaenoptera musculus*	0.0063	<0.0001	0.0063	-	<0.0001	0.0997	0.0014	-	0.0005
Omura's whale	*Balaenoptera omurai*	0	-	0	-	0	0	0.00004	-	<0.0001
Fin whale	*Balaenoptera physalus*	0.0821	0.0001	0.0821	-	<0.0001	1.3023	0.01600	-	0.0056
Gray whale	*Eschrichtius robustus*	0.00001	<0.0001	0.00001	-	<0.0001	0.0002	0.00001	-	<0.0001
North Pacific right whale	*Eubalaena japonica*	0.00001	<0.0001	0.00001	-	<0.0001	0.0002	0.00001	-	<0.0001
Humpback whale	*Megaptera novaeangliae*	0.0203	<0.0001	0.0203	-	<0.0001	0.3218	0.0080	-	0.0028
Baird's beaked whale	*Berardius bairdii*	0.0385	<0.0001	0.0385	-	-	0.6105	0.0005	-	0.0002
Longman's beaked whale	*Indopacetus pacificus*	0.0010	<0.0001	0.0010	-	-	0.0165	0.0031	-	0.0011
Beaked whale guild	Includes *Mesoplodon densirostris, Mesoplodon ginkgodens*, and *Mesoplodon stejnegeri*	0.0103	<0.0001	0.0103	-	-	0.1630	0.0067	-	0.0024
Cuvier's beaked whale	*Ziphius cavirostris*	0.0088	<0.0001	0.0088			0.1396	0.0088	-	0.0031

Common Name	Scientific Name	Launch Activities BOA		Splashdown/Payload Impact BOA				Splashdown/Payload Impact BOA		
		Density[1] (/km²)	Annual Behavioral Disturbance Exposures	Density[1] (/km²)	Annual PTS Exposures	Annual TTS Exposures	Annual Behavioral Disturbance Exposures	Density[1] (/km²)	Annual TTS Exposures	Annual Behavioral Disturbance Exposures
Cetaceans (continued)										
Long-beaked common dolphin	*Delphinus capensis*	0.1267	0.0001	0.1267	-	-	2.0084	0.1267	-	0.0446
Short-beaked common dolphin	*Delphinus delphis*	1.7350	0.0017	1.7350	-	-	27.5102	1.7350	-	0.6107
Pygmy killer whale	*Feresa attenuata*	0.0042	<0.0001	0.0042	-	-	0.0666	0.0042	-	0.0015
Short-finned pilot whale	*Globicephala macrorhynchus*	0.0626	0.0001	0.0626	-	-	0.9919	0.0136	-	0.0048
Risso's dolphin	*Grampus griseus*	0.0399	<0.0001	0.0399	-	-	0.6322	0.0147	-	0.0052
Fraser's dolphin	*Lagenodelphis hosei*	0.0167	<0.0001	0.0167	-	-	0.2653	0.0210	-	0.0074
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	0.0756	0.0001	0.0756	-	-	1.1991	0.0249	-	0.0087
Northern right whale dolphin	*Lissodelphis borealis*	0.1565	0.0002	0.1565	-	-	2.4808	0.0447	-	0.0157
Killer whale	*Orcinus orca*	0.0050	<0.0001	0.0050	-	-	0.0793	0.0050	-	0.0018
Melon-headed whale	*Peponocephala electra*	0.0166	<0.0001	0.0166	-	-	0.2634	0.0166	-	0.0058
False killer whale	*Pseudorca crassidens*	0.0024	<0.0001	0.0024	-	-	0.0384	0.0024	-	0.0009
Main Hawaiian Islands Insular DPS		0.0006	<0.0001	0.0006			0.0090	0	-	0
Pantropical spotted dolphin	*Stenella attenuata*	0.0862	0.0001	0.0862	-	-	1.3671	0.0862	-	0.0303
Striped dolphin	*Stenella coeruleoalba*	0.1879	0.0002	0.1879	-	-	2.9801	0.1879	-	0.0662
Spinner dolphin	*Stenella longirostris*	0.0050	<0.0001	0.0050	-	-	0.0792	0.0050	-	0.0018
Rough-toothed dolphin	*Steno bredanensis*	0.2541	0.0003	0.2541	-	-	4.0288	0.0576	-	0.0203
Bottlenose dolphin	*Tursiops truncatus*	0.3612	0.0004	0.3612	-	-	5.7272	0.3612	-	0.1271
Dall's porpoise	*Phocoenoides dalli*	0.0981	0.0001	0.0981	<0.0001	0.0004	1.5550	0.0480	<0.0001	0.0169
Pygmy sperm whale	*Kogia breviceps*	0.0172	<0.0001	0.0172	<0.0001	0.0001	0.2726	0.0172	<0.0001	0.0061
Dwarf sperm whale	*Kogia sima*	0.0153	<0.0001	0.0153	<0.0001	0.0001	0.2426	0.0153	<0.0001	0.0054
Sperm whale	*Physeter macrocephalus*	0.0044	<0.0001	0.0150	-	-	0.2382	0.0150	-	0.0053

Common Name	Scientific Name	Launch Activities BOA		Splashdown/Payload Impact BOA				Splashdown/Payload Impact BOA		
		Density[1] (/km²)	Annual Behavioral Disturbance Exposures	Density[1] (/km²)	Annual PTS Exposures	Annual TTS Exposures	Annual Behavioral Disturbance Exposures	Density[1] (/km²)	Annual TTS Exposures	Annual Behavioral Disturbance Exposures
Pinnipeds										
Guadalupe fur seal	*Arctocephalus townsendi*	0.0628	0.0001	0.0628	-	-	0.9962	0.0628	-	0.0221
Northern fur seal	*Callorhinus ursinus*	0.2392	0.0002	0.2392	-	-	3.7928	0.1071	-	0.0377
Steller sea lion	*Eumetopias jubatus*	0.0098	<0.0001	0.0098	-	-	0.1554	0.0098	-	0.0034
Northern elephant seal	*Mirounga angustirostris*	0.1477	0.0001	0.1615	-	-	2.5607	0.1615	-	0.0568
Hawaiian monk seal	*Neomonachus schauinslandi*	0.00001	<0.0001	0.00003	-	-	0.0005	0	-	0
Harbor seal	*Phoca vitulina*	0.00001	<0.0001	0.00001			0.0002	0.00001	-	<0.0001
California sea lion	*Zalophus californianus*	1.6958	0.0017	1.6958	-	-	26.8886	0.00001	-	<0.0001

Acronyms and Abbreviations: BOA = Broad Ocean Area, km² = square kilometers, PTS = Permanent Threshold Shift, TTS = Temporary Threshold Shift, "-" = threshold not exceeded

Note: For Endangered Species Act listed species, density estimates are not specific to listed Distinct Population Segments but rather include animals from both listed and non-listed populations.

[1] Density estimates from the U.S. Navy Marine Species Density Database for the Hawaii-California Training and Testing Area (DON 2024), the U.S. Navy Marine Species Density Database for the Mariana Islands Training and Testing Area (DON 2018c), and data collected for the Gulf of Alaska Training and Testing Area (DON 2014, Rone et al. 2017).

For pilot whales, baleen whales, and harbor porpoises in the Atlantic BOA ROI the estimated number of animal exposures to sound pressures high enough to induce permanent threshold shift or temporary threshold shift would be substantially less than one (estimated number of exposures = 0.0019 individuals) per year for all species combined and for all test components. For all potential test events in a year, there would be a maximum one in 526 chance that an individual of any species might be exposed to sound pressures high enough to cause permanent or temporary threshold shift.

Based on estimated maximum densities for marine mammals in the Pacific ROI (**Table D.1-3**), the estimated number of animal exposures to sound pressures high enough to induce permanent threshold shift or temporary threshold shift would be substantially less than one (estimated number of exposures = 0.0006 individuals) per year for all species combined and for all test components. For all potential CPS test events in a year, there would be a maximum one in 1,570 chance that an individual of any species might be exposed to sound pressures high enough to cause permanent or temporary threshold shift.

Booster splashdown and payload impact would create sounds above the behavioral disturbance thresholds for many wildlife species (**Table D.1-1**). Marine mammals, sea turtles, and fish within several hundred feet might react briefly to splashdown noise. For marine mammals and sea turtles with reliable density data in the ROI, there is a chance that individual animals might be exposed to sounds above the behavioral disturbance effect threshold during a flight test (**Tables D.1-2** and **D.1-3**). However, it is important to note that even if animals are exposed to sounds above the behavioral disturbance threshold, only a fraction would have the potential to respond to the sound (see DON and USASMDC 2024 and DON 2018a). Based on other studies, the probability of response to received sounds at 160 dB would be approximately 20% for baleen whales and 50% for toothed whales (DON 2018a). The probability of behavioral response would increase as sound intensity increased (DON 2018a) closer to the point of splashdown/impact. Some individual animals may respond to component splashdown and payload impact noise with behavioral modification. However, similar to other recent flight test programs, behavioral reactions are expected to be limited to short-term startle reactions and animals would return to normal behaviors within minutes of this short-duration (on the order of seconds) sound (NMFS 2019, NMFS 2021, DON and USASMDC 2024).

In summary, proposed flight test noise has limited potential to affect the behavior and hearing sensitivity of wildlife. Some of the louder sounds generated by proposed activities have the potential to physically injure or cause temporary auditory injury in some of the most common and widely distributed marine wildlife such as abundant species of pelagic fish. However, given the limited number of tests per year (maximum eight per year over 10 years) and the limited potential of flight test noise to affect wildlife, elevated sound pressures would not change the relative population size or distribution of any wildlife species. For special-status species (including marine mammals and sea turtles), which generally have low densities in the ROI (see **Tables D.1-2** and **D.1-3**), the chances of animals being exposed to sound pressures high enough to cause physical injury are extremely low. Elevated sound levels might cause wildlife to quickly react, briefly altering their normal behavior, but wildlife are expected to return to normal

behaviors within minutes of the short duration sounds (NMFS 2019). No long-term behavioral effects or meaningful health effects are expected for any special-status species. The impacts of elevated flight test noise levels on wildlife, including special-status species, would be negligible to moderate.

Direct Contact

Biological resources in the BOA ROI may be affected by direct contact from test components entering marine habitats in the BOA including:

- The spent stage 1 boosters which would splash down in deep ocean waters of the Atlantic or Pacific BOA downrange of launch and as far as 330 nm from land.
- The spent stage 2 boosters which would splash down in deep ocean waters of the Atlantic or Pacific BOA outside EEZs in international waters.
- Impact of the CPS payload in the Atlantic or Pacific BOA. In the BOA, the payload would impact only in deep ocean waters outside EEZs.
- In the event of a flight test failure (see **Table 2.1.5-1**), the entire CPS AUR vehicle might splash down in deep ocean waters of the Atlantic or Pacific BOA at least 50 nm from land.

These falling components would enter marine habitats and have the potential to injure marine organisms. Direct contact from flight test components is not expected to have a discernable or measurable impact on benthic or planktonic invertebrates or vegetation because of their abundance and wide distribution. The potential exists, however, for impacts to larger vertebrates in the open ocean area, particularly those that must come to the surface to breathe (e.g., marine mammals and sea turtles) or that feed at the surface (e.g., seabirds).

Based on the expected dimensions of CPS vehicle components and the best available information on species density in the BOA, the number of expected marine mammal and sea turtle exposures to direct contact from falling vehicle components was calculated (**Tables D.1-4** and **D.1-5**). The estimated number of exposures to direct contact was based on methodology for other test programs (DON and U.S. Army 2022, U.S. Army 2021, DON 2019, DON 2015a) where the probability of contact is calculated for four impact scenarios and averaged across scenarios. Detailed methodology for estimation of direct contact is available in the Flight Experiment-1 EA/OEA (DON 2017a) and the CPS Marine Biological Evaluation (DON and USASMDC 2024) and is incorporated by reference.

Species density data for the Atlantic ROI was obtained primarily from the Navy marine species density models for the Atlantic Fleet Training and Testing Area (Roberts et al. 2023, DON 2017c). Where spatial models were available, density data were averaged across the portion of the proposed CPS activity areas which overlapped the Atlantic Fleet training and testing area. Species density data for the Pacific BOA was obtained primarily from the Navy marine species density models for the Hawaii- California Training and Testing Area (DON 2024, DON 2017b), the U.S. Navy Marine Species Density Database for the Mariana Islands Training and Testing

Area (DON 2018c), and data collected for the Gulf of Alaska Training and Testing Area (DON 2014, Rone et al. 2017). Where Navy training and testing area models were available and overlapped proposed CPS activity areas, the maximum modeled density was determined for each area of overlap. The maximum density for a species in any portion of the ROI was then used to represent the density for the entire Atlantic or Pacific BOA. As a conservative approach, the maximum density across seasons was used which likely resulted in an overestimation of actual animal density in the ROI.

For all species with available density data in the Atlantic BOA, the estimated number of animal exposures to direct contact during a single test is substantially less than one for even the most common species (maximum is 0.0026 exposures for striped dolphins in the Atlantic BOA) (**Table D.1-4**). The chances of an individual of any marine mammal species being subject to direct contact during a single test in the Atlantic BOA is less than one in 480 and is less than 1 in 2,890 for sea turtle species. Even when summed across eight potential tests per year over 10 years, the estimated number of animal exposures is less than 0.17 for each marine mammal and sea turtle species. The estimated chances of a marine mammal being exposed to direct contact are extremely low and the impacts of direct contact on these species would be minor to non-existent.

For all species with available density data in the Pacific BOA, the estimated number of animal exposures to direct contact during a single flight test is substantially less than one for even the most common species (maximum is 0.0005 exposures for short-beaked common dolphins) (**Table D.1-5**). The chances of an individual of any marine mammal species being subject to direct contact during a single test in the Pacific BOA is less than one in 2,000. For sea turtles, the estimated number of animal exposures per test is 0.00003 for all species combined. This corresponds to a one in 33,000 chance of contacting a sea turtle during a flight test event. Even when summed across eight potential tests per year over 10 years, the estimated number of animal exposures is less than 0.04 for each marine mammal and sea turtle species. The estimated chances of a marine mammal or sea turtle being exposed to direct contact are extremely low and the impacts of direct contact on these species would be minor to nonexistent.

Reliable density estimates are not available for special status fish or seabird species in the BOA. However, if it is assumed that densities of special-status fish and seabird species in the ROI are similar to densities of marine mammals, it is very unlikely that special status fish or seabirds would be exposed to direct contact. Some more common and abundant pelagic fish species may have individuals which would be exposed to direct contact; however, direct contact would not change the regional population size or distribution of these common species due to their relatively large population sizes and wide-ranging distributions in the BOA. Overall, direct contact would have minor to no impact on marine wildlife in the ROI.

Table D.1-4. Maximum Density and Estimated Number of Animal Exposures to Direct Contact from CPS Components in the Atlantic BOA

Common Name	Scientific Name	Maximum Density (/km²)[1]		Estimated Number of Exposures to Direct Contact	
		Stage 1 BOA	Stage 2/ Target Site BOA	Per Test	Per Year (8 Tests)
Sea Turtles					
Hard shell turtles	*Chelonia mydas* and *Eretmochelys imbricata*	0.3183	0.3183	7.34E-05	5.87E-04
Loggerhead turtle	*Caretta caretta*	0.4063	0.4063	9.21E-04	7.37E-03
Leatherback turtle	*Dermochelys coriacea*	0.6371	0.6371	1.79E-04	1.43E-03
Kemp's ridleys turtle	*Lepidochelys kempii*	0.0068	0.0068	1.34E-06	1.07E-05
Cetaceans					
Minke whale	*Balaenoptera acutorostrata*	0.0597	0.0798	4.42E-05	3.53E-04
Sei whale	*Balaenoptera borealis*	0.0319	0.0319	3.63E-05	2.90E-04
Bryde's whale	*Balaenoptera edeni*	0.0029	0.0087	5.40E-06	4.32E-05
Blue whale	*Balaenoptera musculus*	0.0020	0.0020	3.55E-06	2.84E-05
Fin whale	*Balaenoptera physalus*	0.0685	0.0123	5.14E-05	4.11E-04
North Atlantic right whale	*Eubalaena glacialis*	0.0151	0.0005	7.09E-06	5.67E-05
Humpback whale	*Megaptera novaeangliae*	0.0141	0.0362	2.56E-05	2.04E-04
Northern bottlenose whale	*Hyperoodon ampullatus*	0.0170	0.0004	5.04E-06	4.03E-05
Beaked Whale Guild	Includes *Mesoplodon bidens*, *Mesoplodon densirostris*, *Mesoplodon europaeus*, *Mesoplodon mirus*, and *Ziphius cavirostris*	0.7183	0.5237	2.54E-04	2.03E-03
Short-beaked common dolphin	*Delphinus delphis*	0.7729	0.8918	2.44E-04	1.95E-03
Pygmy killer whale	*Feresa attenuata*	0.1137	0.1294	3.52E-05	2.81E-04
Pilot whales	*Globicephala macrorhynchus* and *Globicephala melas*	1.3311	1.9152	6.57E-04	5.25E-03
Risso's dolphin	*Grampus griseus*	1.3853	0.2360	2.84E-04	2.28E-03
Fraser's dolphin	*Lagenodelphis hosei*	0.2314	0.2460	7.02E-05	5.61E-04
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	1.6722	0.6620	3.51E-04	2.81E-03
White-beaked dolphin	*Lagenorhynchus albirostris*	0.0013	0.0007	3.01E-07	2.41E-06
Killer whale	*Orcinus orca*	0.0024	0.0024	1.32E-06	1.06E-05
Melon-headed whale	*Peponocephala electra*	0.8009	0.9170	2.55E-04	2.04E-03
False killer whale	*Pseudorca crassidens*	0.1551	0.1795	6.90E-05	5.52E-04
Pantropical spotted dolphin	*Stenella attenuata*	6.0818	2.7485	1.31E-03	1.05E-02
Clymene dolphin	*Stenella clymene*	2.0003	2.1666	5.54E-04	4.44E-03
Striped dolphin	*Stenella coeruleoalba*	10.1681	3.6684	2.08E-03	1.66E-02

Common Name	Scientific Name	Maximum Density (/km²)[1]		Estimated Number of Exposures to Direct Contact	
		Stage 1 BOA	Stage 2/ Target Site BOA	Per Test	Per Year (8 Tests)
Cetaceans (Continued)					
Atlantic spotted dolphin	*Stenella frontalis*	2.9051	2.6377	7.81E-04	6.24E-03
Spinner dolphin	*Stenella longirostris*	1.4959	1.7043	4.44E-04	3.55E-03
Rough toothed dolphin	*Steno bredanensis*	0.2954	0.3375	9.28E-05	7.42E-04
Bottlenose dolphin	*Tursiops truncatus*	2.4298	1.4938	6.73E-04	5.38E-03
Harbor porpoise	*Phocoena phocoena*	0.0633	0.0286	1.21E-05	9.69E-05
Pygmy and dwarf sperm whales	*Kogia breviceps and Kogia sima*	0.3400	0.2660	9.54E-05	7.63E-04
Sperm whale	*Physeter macrocephalus*	0.9559	0.4784	6.06E-04	4.85E-03
Pinnipeds					
Seals (primarily gray and harbor)	*Halichoerus grypus and Phoca vitulina*	0.0622	0.0048	9.99E-06	7.99E-05

Note: For Endangered Species Act listed species, density estimates are not specific to listed Distinct Population Segments but rather include animals from both listed and non-listed populations.

[1] Density estimates from the U.S. Navy's Marine Species Density Databases for the Atlantic Fleet Training and Testing Study Area (Roberts et al. 2023, DON 2017c).

Table D.1-5. Maximum Density and Estimated Number of Animal Exposures to Direct Contact from CPS Components in the Pacific BOA

Common Name	Scientific Name	Maximum Density (/km²)[1]		Estimated Number of Exposures to Direct Contact	
		Stage 1 BOA	Stage 2/ Target Site BOA	Per Test	Per Year (8 Tests)
Sea Turtles					
Loggerhead turtle	*Caretta caretta*	0.2400	0.0018	2.91E-05	2.32E-04
Green turtle	*Chelonia mydas*	0.0003	0.0004	7.65E-08	6.12E-07
Leatherback turtle	*Dermochelys coriacea*	0.0020	0.0012	4.47E-07	3.57E-06
Hawksbill turtle	*Eretmochelys imbricata*	0.0001	0.0001	1.13E-08	9.07E-08
Olive ridley turtle	*Lepidochelys olivacea*	0.0018	0.0018	3.64E-07	2.91E-06
Cetaceans					
Minke whale	*Balaenoptera acutorostrata*	0.0028	0.0028	1.79E-06	1.43E-05
Sei whale	*Balaenoptera borealis*	0.0003	0.0003	3.41E-07	2.73E-06
Bryde's whale	*Balaenoptera edeni*	0.0003	0.00059	4.11E-07	3.29E-06
Blue whale	*Balaenoptera musculus*	0.0063	0.0014	6.32E-06	5.06E-05
Omura's whale	*Balaenoptera omurai*	0	0.00004	1.34E-08	1.07E-07
Fin whale	*Balaenoptera physalus*	0.0821	0.01600	6.26E-05	5.01E-04
Gray whale	*Eschrichtius robustus*	0.00001	0.00001	1.23E-08	9.84E-08
North Pacific right whale	*Eubalaena japonica*	0.00001	0.00001	8.78E-09	7.03E-08
Humpback whale	*Megaptera novaeangliae*	0.0203	0.0080	1.37E-05	1.09E-04
Baird’s beaked whale	*Berardius bairdii*	0.0385	0.0005	1.40E-05	1.12E-04
Longman's beaked whale	*Indopacetus pacificus*	0.0010	0.0031	1.19E-06	9.53E-06
Beaked whale guild	Includes *Mesoplodon densirostris, Mesoplodon ginkgodens, and Mesoplodon stejnegeri*	0.0103	0.0067	3.50E-06	2.80E-05
Cuvier’s beaked whale	*Ziphius cavirostris*	0.0088	0.0088	4.22E-06	3.38E-05
Long-beaked common dolphin	*Delphinus capensis*	0.1267	0.1267	3.71E-05	2.96E-04
Short-beaked common dolphin	*Delphinus delphis*	1.7350	1.7350	5.11E-04	4.09E-03
Pygmy killer whale	*Feresa attenuata*	0.0042	0.0042	1.22E-06	9.76E-06
Short-finned pilot whale	*Globicephala macrorhynchus*	0.0626	0.0136	1.55E-05	1.24E-04
Risso's dolphin	*Grampus griseus*	0.0399	0.0147	9.46E-06	7.57E-05
Fraser's dolphin	*Lagenodelphis hosei*	0.0167	0.0210	5.52E-06	4.42E-05
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	0.0756	0.0249	1.49E-05	1.19E-04
Northern right whale dolphin	*Lissodelphis borealis*	0.1565	0.0447	3.09E-05	2.47E-04
Killer whale	*Orcinus orca*	0.0050	0.0050	2.73E-06	2.18E-05
Melon-headed whale	*Peponocephala electra*	0.0166	0.0166	4.96E-06	3.97E-05

Common Name	Scientific Name	Maximum Density (/km²)[1]		Estimated Number of Exposures to Direct Contact	
		Stage 1 BOA	Stage 2/ Target Site BOA	Per Test	Per Year (8 Tests)
Cetaceans (continued)					
False killer whale	*Pseudorca crassidens*	0.0024	0.0024	9.99E-07	8.00E-06
Main Hawaiian Islands Insular DPS		0.0006	0	1.21E-07	9.66E-07
Pantropical spotted dolphin	*Stenella attenuata*	0.0862	0.0862	2.49E-05	1.99E-04
Striped dolphin	*Stenella coeruleoalba*	0.1879	0.1879	5.46E-05	4.37E-04
Spinner dolphin	*Stenella longirostris*	0.0050	0.0050	1.39E-06	1.11E-05
Rough-toothed dolphin	*Steno bredanensis*	0.2541	0.0576	4.78E-05	3.83E-04
Bottlenose dolphin	*Tursiops truncatus*	0.3612	0.3612	1.22E-04	9.80E-04
Dall's porpoise	*Phocoenoides dalli*	0.0981	0.0480	2.09E-05	1.67E-04
Pygmy sperm whale	*Kogia breviceps*	0.0172	0.0172	5.37E-06	4.30E-05
Dwarf sperm whale	*Kogia sima*	0.0153	0.0153	4.78E-06	3.83E-05
Sperm whale	*Physeter macrocephalus*	0.0150	0.0150	1.29E-05	1.03E-04
Pinnipeds					
Guadalupe fur seal	*Arctocephalus townsendi*	0.0628	0.0628	1.70E-05	1.36E-04
Northern fur seal	*Callorhinus ursinus*	0.2392	0.1071	4.67E-05	3.73E-04
Steller sea lion	*Eumetopias jubatus*	0.0098	0.0098	3.10E-06	2.48E-05
Northern elephant seal	*Mirounga angustirostris*	0.1615	0.1615	5.34E-05	4.28E-04
Hawaiian monk seal	*Neomonachus schauinslandi*	0.00003	0	4.41E-09	3.53E-08
Harbor seal	*Phoca vitulina*	0.00001	0.00001	2.61E-09	2.09E-08
California sea lion	*Zalophus californianus*	1.6958	0.00001	2.52E-04	2.02E-03

Acronyms and Abbreviations: BOA = Broad Ocean Area, DPS = Distinct Population Segment, km² = square kilometers

Note: For Endangered Species Act listed species, density estimates are not specific to listed Distinct Population Segments but rather include animals from both listed and non-listed populations.

[1] Density estimates from the U.S. Navy Marine Species Density Database for the Hawaii-Southern California Training and Testing Area (DON 2017b), the U.S. Navy Marine Species Density Database for the Mariana Islands Training and Testing Area (DON 2018c), and data collected for the Gulf of Alaska Training and Testing Area (DON 2014, Rone et al. 2017).

Hazardous Materials

Biological resources in the BOA ROI may be affected by exposure to hazardous materials entering marine habitats or by ingestion of debris from proposed activities in the BOA including:

- Exposure to materials of which the spent stage 1 and stage 2 boosters are composed or are contained within the boosters (see **Table 2.1.1-1**). The propellant would be consumed during the flight tests; therefore, only a minimal residual amount of propellant would enter the ocean. All durable materials of which the boosters are composed or that are contained within the boosters are expected to sink to the ocean bottom. Booster splashdown would occur within deep ocean waters downrange from launch and as far as 330 nm from any land area.
- Exposure to materials of which the spent CPS payload is composed or are contained within the payload (see **Table 2.1.1-2**). All durable materials of which the payloads are composed or that are contained within the payload are expected to sink to the ocean bottom. Payload impact would occur within deep ocean waters outside EEZs in international waters. Support ships would retrieve instrumentation rafts and search for any floating debris at the payload impact site. Any visible debris found floating would be recovered, as much as practicable.
- For tests using a floating target raft, the raft is expected to remain relatively intact and floating. Little to no floating debris would be expected and any visible debris found floating would be collected for disposal as much as practicable. It is not planned or expected that the target raft would be sunk during Navy CPS flight test activities.

Hazardous material release in the BOA is not likely to adversely impact marine biological resources. Any hazardous material introduced into the BOA is not expected to have a discernable or measurable impact on benthic or planktonic invertebrates or vegetation because of their abundance, their wide distribution, and the protective influence of the mass of the ocean around them. The potential exists, however, for larger vertebrates in the open ocean area to be exposed, particularly those that must come to the surface to breathe (e.g., marine mammals and sea turtles) or that feed at the surface (e.g., seabirds).

Some of the chemicals contained in the spent boosters and payload are potentially harmful to marine wildlife at higher concentrations; however, rapid dilution of these chemicals would occur and toxic or harmful concentrations of these chemicals are unlikely to be encountered by larger vertebrates, including special-status species. The area affected by the dissolution of chemicals would be relatively small because of the size of the launch vehicle components and the minimal amount of residual materials they contain (see also **Section 4.2.1.3**). Any chemicals introduced to the water column would be quickly diluted and dispersed and components would sink to the ocean bottom. Most wildlife, including special-status wildlife are not likely to come into contact with test components or with chemicals at concentrations that could harm them. Any delayed release of chemicals from test components would occur in deep ocean waters and would be quickly diluted to low concentrations which would not cause harm to marine wildlife. Wildlife are unlikely to ingest or become entangled in components because they are expected to sink to the deep ocean floor where most species and their prey are not likely to occur. Due to the low

density and patchy distribution of special-status species in the BOA, the likelihood of an animal coming into contact with hazardous materials or chemicals in concentrations high enough to cause harm would be extremely low.

Hazardous materials would have negligible to minor impacts on biological resources in the Atlantic BOA ROI.

Vessel Movement

The Proposed Action would involve vessel movement in the BOA for approximately up to 4 weeks for each flight test including:

- Operation of surface ships and submarines as sea-based launch platforms.
- Operation of two to three support ships for downrange sensor coverage.
- Operation of one support ship and smaller watercraft for downrange target placement, clean-up activities, and recovery operations.
- Deployment and operation of up to 12 self-stationing instrumented sensor rafts around the targeted site for sensor coverage and data collection. No anchoring systems would be used for self-stationing rafts and rafts would remain on-station for several hours.
- For flight tests involving a floating target raft, the raft would be deployed from a support ship prior to the flight test and would remain on-station for several hours using small electric motors. No anchoring system would be used for target rafts.

All vessels used as part of proposed activities would operate in accordance with a number of standard operating procedures and vessel movement mitigation measures (see **Appendix C**, **Section C.3.1**). These standard operating procedures and mitigation measures include lookouts for marine mammals and sea turtles within defined mitigation zones and response measures to avoid potential vessel strikes. No vessel equipment is expected to pose an entanglement risk for wildlife.

Proposed vessel movement has the potential to increase strike risk for marine wildlife, especially wildlife which must surface to breathe (i.e., sea turtles and marine mammals). This risk is greatest for relatively slow-moving species and has the greatest potential for adverse impacts to special status species such as large marine mammals and sea turtles. Because Proposed Action vessel operation would only occur over a short period of time (up to 4 weeks) for each test and because these vessels are routinely used in the BOA as part of other DoD programs, the use of these vessels would not meaningfully increase vessel traffic in the BOA. The self-stationing rafts and target rafts would be slow moving and powered by small battery-powered trolling motors; therefore, the rafts would pose very little strike risk for wildlife. With implementation of standard operating procedures and mitigation measures for vessel movement, special-status marine wildlife are unlikely to be struck by vessels operating for the Proposed Action. Vessel movement as a result of the Proposed Action would have minor to no impacts on marine biological resources in the BOA.

Consequences for Special Status Wildlife

Threatened and Endangered Species. Pursuant to the ESA, the Navy has evaluated the potential effects of the Proposed Action on ESA listed species, candidate species, and designated critical habitats in a CPS Marine Biological Evaluation (DON and USASMDC 2024). The Navy has concluded that proposed activities in the BOA would have *no effect* on ESA-listed birds and *may affect but are not likely to adversely affect* ESA-listed species of marine mammals, sea turtles, and fish in the Atlantic and Pacific BOAs (see **Table 3.1.2-1**). The Navy consulted with NMFS on the potential effects of the Proposed Action under Section 7 of the ESA and NMFS concurred that proposed activities were not likely to adversely affect ESA-listed species in the BOA (NMFS 2024b).

Marine Mammal Protection Act. The Navy has concluded that proposed activities, including noise, would not result in take of marine mammal species in the ROI. The chances of any marine mammal being harmed by elevated sound levels, direct contact, hazardous materials, or vessel strike are extremely low. If any effects of proposed flight test noise on marine mammals were realized, they would be expected to be limited to short-duration startle response with no lasting or physiologically meaningful effects. Proposed activities are not expected to cause any disturbance to marine mammals which would result in abandonment or significant alteration of behavioral patterns. Therefore, there would be no harassment of marine mammals. The chances of direct contact from test components are extremely low (**Tables D.1-4** and **D.1-5**) and no animals are expected to be injured from direct contact, hazardous materials, or vessel strike.

Migratory Bird Treaty Act. The Navy has concluded that proposed activities would not result in any incidental take that might result in a significant adverse effect on the sustainability of a population of a migratory bird species protected under the Migratory Bird Treaty Act in the Atlantic or Pacific BOA ROI.

Consequences for Environmentally Sensitive Habitats

The primary ways that the Proposed Action might impact environmentally sensitive habitats is through introduction of hazardous materials or by direct contact from test components or target debris. Almost all of the environmentally sensitive habitats in the BOAs are in coastal, shelf, or slope areas where almost no proposed activities would occur. Proposed activities would include implementation of a number of standard operating procedures and mitigation measures to minimize effects to biological resources(**Appendix C, Section C.3**). Vessels may transit some biologically important areas in the BOA but would not change the quality or quantity of those habitats for marine species. Some submarine canyons and seamounts occur in the BOAs; however, test activities are not likely to impact the quality or quantity of these habitats in the ROI. The following discussions focus on environmentally sensitive habitats which have regulatory protections.

Critical Habitat. The Proposed Action *may affect but is not likely to adversely affect* designated *Sargassum* critical habitat for loggerhead turtles, proposed *Sargassum* critical habitat for green turtles, designated critical habitat for the Central America DPS and Mexico DPS of humpback whales, and leatherback sea turtle critical habitat (DON and USASMDC 2024). With the

exception of designated or proposed *Sargassum* critical habitat, critical habitats would not be subject to any launch activities, booster splashdown, or payload impact. While vehicle launch and spent stage 1 booster splashdown may occur within designated or proposed *Sargassum* critical habitat, hazardous materials and debris would not change the features necessary for sea turtle conservation and is not likely to adversely affect these critical habitats. Vessel activity might also occur within critical habitat areas. All vessel operations would be conducted with standard operating procedures and mitigation measures in place (**Appendix C**, **Section C.3.1**), many of which are similar to those developed for routine Navy at-sea training and testing activities (DON 2018a, DON 2018b, DON 2020a). The Navy consulted with NMFS on the potential effects of the Proposed Action on critical habitats under Section 7 of the ESA as described for threatened and endangered species above.

Essential Fish Habitat. Only vehicle launch from launch-platform vessels and stage 1 booster splashdown might occur within EFH and designated habitat areas of particular concern. All vessel operations related to the Proposed Action would be conducted with standard operating procedures and mitigation measures in place (**Appendix C**, **Section C.3.1**) similar to those used for routine Navy at-sea training and testing (DON 2018a, DON 2018b, DON 2020a), including prohibitions on anchoring within a 350-yard radius of live hard bottom. Navy CPS at-sea launch activities would not introduce any materials into the ocean or otherwise affect marine habitats. Stage 1 booster splashdown may occur within EFH but would not significantly reduce the quality and/or quantity of EFH. The Proposed Action may have negligible impacts on EFH in the Hawaiian Islands EEZ. The Navy consulted with NMFS Pacific Islands Regional Office on the potential effects of the Proposed Action on EFH in the Hawaiian Islands EEZ (see **Appendix E**, **Sections E.2.9** through **E.2.12**).

Marine National Monuments and Sanctuaries. The marine national monuments and national marine sanctuaries in the study area all occur within the U.S. EEZ. During flight test planning, marine national monuments and sanctuaries would be considered and no booster splashdown or payload impact would occur there. Only vessel operations might occur within the monuments but even then, no launch activities or anchoring are planned to occur within the monuments. The Proposed Action would not result in destruction or disturbance of any sanctuary or monument resources and no materials would be abandoned in these areas. The Proposed Action would have no effect on marine national monuments or national marine sanctuaries.

D.2. Environmental Consequences for Biological Resources – Kwajalein Atoll

The Proposed Action has the potential to impact biological resources in the Kwajalein Atoll ROI through exposure to elevated sound levels, direct contact from payload impact and ejecta, exposure to hazardous materials, and increased human activity and equipment operation. The following subsections describe the potential stressors for biological resources in the Kwajalein Atoll ROI and the environmental consequences of those stressors on biological resources in the environment described in **Section 3.2.3**.

Over time and through consultation with NMFS and USFWS for RTS test activities at USAKA, several standard operating procedures and mitigation measures have been developed to minimize the impacts of flight testing on protected species and their habitats. The measures which would be implemented as part of the Proposed Action at Kwajalein Atoll (listed in **Appendix C, Section C.3.2**) are very similar to those implemented for other recent test programs with payload impacts at Illeginni Islet and KMISS (U.S. Air Force 2021, DON 2019, U.S. Army 2021). **Appendix C, Section C.3.2** summarizes the relevant and important standard operating procedures and mitigation measures to be implemented to minimize the potential effects of the Proposed Action on biological resources.

Elevated Sound Levels

The Proposed Action would result in elevated sound levels in air and in water at Kwajalein Atoll. Sources of elevated sound levels in the ROI would include:

- Payload impact on land at Illeginni Islet or the deep ocean waters of KMISS with a maximum sound pressure of 165 dB in air (re 20 µPa) at the impact site or 191 dB in water (re 1 µPa) at the ocean surface. Duration of impact noise would be on the order of seconds. Payload impact within KMISS would take place only within deep ocean waters. Up to one test per year might involve land impact at Illeginni Islet.
- Flight of the payload would generate a sonic boom with estimated maximum sound pressure levels of 149 dB in air (re 20 µPa) at the surface near payload impact. The duration of elevated noise levels would be 0.27 seconds.

The potential effects of elevated sound levels on wildlife, effect thresholds, and analysis methods are discussed in **Section D.1** and in detail in the CPS Biological Assessment (DON and USASMDC 2023). Expected in-air sound pressures were compared to the in-air effect thresholds for wildlife at payload impact sites and the area where sounds would exceed a threshold were calculated using a point-source attenuation model (**Table D.2-1** and **Table D.1-1**).

For birds, the current threshold standard for permanent threshold shift is 140 A-weighted decibels for impulsive sounds (CALTRANS 2016). There are no data available on temporary threshold shift thresholds in birds (CALTRANS 2016). Any elevated sound pressure levels, especially above ambient noise levels, have the potential to cause behavioral and/or physiological effects in birds (CALTRANS 2016). Behavioral responses to elevated sound pressure levels in birds include behaviors such as alert behavior, startle response, avoidance behavior, and changes in vocalization (CALTRANS 2016). However, there is some evidence that certain birds may acclimate or become habituated to noises after frequent exposure and cease to respond behaviorally (CALTRANS 2016). A 93 A-weighted decibels threshold for masking effects from continuous noise sources has been suggested as a conservative estimate of behavioral effects in birds (CALTRANS 2016).

Table D.2-1. Distance to Effect Thresholds in Wildlife for Elevated In-Air Sound Levels Resulting from CPS Payload Impact on Land

Functional Hearing Group	Permanent Threshold Shift		Temporary Threshold Shift		Behavioral Disruption	
	Threshold (dB SPL_{peak})	Radial Distance to Threshold from Payload Impact in feet	Threshold (dB SPL_{peak})	Radial Distance to Threshold from Payload Impact in feet	Threshold (dB SEL)	Radial Distance to Threshold from Payload Impact in feet
Birds	140 dBA	58	Unknown	Unknown	93 dB	13,061

Sources: DON and USASMDC 2023, DARPA 2020, CALTRANS 2016
Acronyms and Abbreviations: dB = decibels, dBA = A-weighted decibels, SEL = Sound Exposure Level, SPL = Sound Pressure Level, "-" = threshold not exceeded
Note: All sound pressures in this table are in dB SPL_{peak} referenced to 20 micropascals (re 20 µPa) unless indicated.

Based on expected sound pressure levels for payload impact, sound pressures may exceed the physical injury threshold for birds up to 58 ft from payload impact and the temporary threshold shift threshold for fish up to 6 ft. Payload impact noise levels would exceed the behavioral disturbance threshold for birds and marine wildlife up to several thousand feet from payload impact.

Deep Offshore Waters. Marine mammals, sea turtles, and fish in Illeginni Islet offshore waters and the deep waters of KMISS might be exposed to elevated noise levels resulting from sonic booms and payload impact. The expected sound pressures would not exceed the permanent or temporary threshold shift thresholds for marine mammals or sea turtles. Sound pressure levels would exceed the injury threshold in fish but only within 6 ft of impact. Some marine mammals, sea turtles, and fish may be exposed to Proposed Action noise levels loud enough to cause behavioral disturbance; however, animal densities are likely to be very low in the ROI and the noise would be a very short duration (less than a second) single event. Any effects on marine mammals, sea turtles, or fish would likely be limited to short-term startle reactions, and animals would be expected to return to normal behaviors within minutes. No harm or harassment of special-status species, including marine mammals, is expected due to proposed elevated sound pressure levels. The impacts of elevated flight test noise levels on marine wildlife would be negligible to minor.

Illeginni Islet. Elevated noise levels from sonic booms and payload impact have the potential to cause short-term behavioral response such as temporary startle reactions in birds on Illeginni Islet. Birds roosting, foraging, or nesting in the area near the impact zone may be exposed to flight test noise above the behavioral disturbance threshold for birds. While birds may be more sensitive to elevated sound pressure level disturbance during certain nesting stages (DON 2015a), previous observations of birds on Illeginni Islet after a payload impact test indicate that even birds close to the impact site (213 to 328 ft) return to normal behaviors soon after a test (Foster and Work 2011, DON 2019). Even during the nesting season, short-duration elevated noise levels at Illeginni Islet are not expected to cause birds to abandon nests (DON 2019). Flight test noise levels have the potential to exceed the physical injury threshold in birds but only over a very small area (58 ft from the point of impact) centered on the disturbed habitats of the payload impact site. Mitigation measures will be implemented for the Proposed Action to deter

birds from nesting and roosting in the impact site (see **Appendix C, Section C.3.2**); therefore, it is unlikely that birds would be injured from elevated flight test noise levels (DON 2019). Elevated noise levels as a result of the Proposed Action would have negligible to minor impacts on birds (including UES coordination species) at and near Illeginni Islet.

Suitable sea turtle haulout and nesting habitat exists on the northwestern and eastern beaches of Illeginni Islet (see **Figure 3.2.3-1**). However, the last known sea turtle nest pits on Illeginni Islet were recorded in 1996 on the northern tip of the islet (DON 2019). No sea turtle nests or nesting activity have been observed on Illeginni Islet in over 25 years (DON 2019). While green and hawksbill turtles are known to use the nearshore waters of Illeginni Islet, it is considered very unlikely that sea turtles will haul out or nest on Illeginni Islet. Even though sea turtles are not likely to occur on Illeginni Islet, mitigation measures would be employed to further decrease the chances of there being effects on sea turtles or sea turtle nests including pre-test surveys for sea turtles, sea turtle nesting activity, and sea turtle nests (see **Appendix C, Section C.3.2**). Because sea turtles are unlikely to occur in terrestrial habitats on Illeginni Islet and because protective mitigation measures would be in place, sea turtles on land and sea turtle nests would not be impacted by the Proposed Action on Illeginni Islet.

In summary, proposed flight test noise has limited potential to affect the behavior and hearing sensitivity of wildlife. Some of the louder sounds generated by proposed activities have the potential to physically injure or cause temporary auditory injury in some of the most common and widely distributed marine wildlife. However, given the limited number of tests per year (maximum eight per year terminating at USAKA) and the limited potential of flight test noise to affect wildlife, elevated sound pressures would not change the relative population size or distribution of wildlife. For special-status species, the chances of animals being exposed to sound pressures high enough to cause physical injury are extremely low given the distribution and abundance of these species. Elevated sound levels might cause wildlife to quickly react, briefly altering their normal behavior, but wildlife are expected to return to normal behaviors within minutes of the short duration sounds. No long-term behavioral effects or meaningful health effects are expected. The impacts of elevated flight test noise levels on wildlife, including special-status species would be negligible to moderate.

Direct Contact

Biological resources in the Kwajalein Atoll ROI may be affected by direct contact from test components or impact ejecta. Sources or direct contact risks at USAKA include:

- Impact of the CPS payload in the deep ocean waters of KMISS. There would be a maximum of eight payload impacts per year at KMISS.
- Payload impact on land on Illeginni Islet. Based on payload impacts from previous test programs, payload impact would likely form a crater approximately 20 to 30 ft in diameter and 7 to 10 ft deep. The Navy anticipates a maximum of one payload impact per year on Illeginni Islet.

- Payload impact on land at Illeginni Islet would cause debris and soil to be ejected from the point of impact. Debris and ejecta might cover an area extending 200 to 300 ft from the point of impact. The density of debris and ejecta would be expected to decrease with increasing distance from the point of impact.

- Payload impact on land at Illeginni Islet may generate ground borne shockwaves which might be strong enough to damage corals out as far as 123 ft from the point of impact.

Deep Offshore Waters. In the KMISS area, the payload would impact in deep ocean waters. As for other test programs with a similar payload (U.S. Army 2021, DON 2019), a direct contact area of 300 ft was used as a conservative (largest possible) contact area to account for any fragmentation of the payload upon impact. Direct contact from payload debris is not expected to affect marine wildlife in the deepwater impact zone at KMISS. For marine mammals and sea turtles with the potential to occur in the deep ocean waters near Kwajalein Atoll the number of exposures to direct contact was calculated based on the best available estimates of species density in the region (DON 2019). The estimated number of exposures would be substantially less than one (maximum 0.0005 exposures for spinner dolphins) for all species (see Table 4-7 in DON 2019). While density information for special status fish and for seabird species is not available for the ROI, most species are expected to have very low densities in the deep offshore waters of Kwajalein Atoll and direct contact from payload debris is considered very unlikely (DON 2019). While individuals of some more common species of fish and invertebrates may be contacted by payload fragments, loss of these individuals would not meaningfully change the population size or distribution of these species at Kwajalein Atoll. Direct contact from payload impact or debris would have negligible impacts on marine wildlife in deep waters of the ROI.

Illeginni Islet. At Illeginni Islet, the payload as well as impact debris and ejecta have the potential to injure terrestrial organisms within the designated impact site (see **Figure 3.2.3-1**). While no nearshore or reef payload impact is planned or expected, analysis of the potential effects of payload impacts at Illeginni Islet in this section considers a worst-case scenario of a shoreline strike when evaluating the potential impacts to marine biological resources. Detailed analyses of the methodology used to estimate the effects of direct contact can be found in the Marine Biological Assessment for Navy CPS Flight Tests (DON and USASMDC 2024).

Because the land impact site is regularly used for DoD testing and vegetation around the helipad areas is managed, vegetation at the impact site is highly disturbed and unlikely to be negatively impacted by proposed activities. No protected vegetation species occurs within the land impact site. Some bird nesting habitat occurs within the impact site; however, this suitable bird nesting habitat is in managed vegetation. The land impact site has been regularly used for training and testing activities for decades and the habitat continues to be suitable for bird nesting. Similarly, proposed activities are not expected to destroy or alter beach habitats suitable for sea turtle nesting. Proposed activities would not change the conditions that have shaped baseline habitat conditions at the site. Direct contact would have minor to moderate impacts on terrestrial vegetation and wildlife habitats.

Birds in and near the payload impact site have the potential to be affected by direct contact. Some black-naped terns have the potential to nest in the impact site (DON 2019). In 2019, the USFWS estimated that no more than 12 black-naped terns (4 adults and 8 eggs or chicks) would be expected to be in the impact site during daylight hours (Appendix A of DON 2019). A maximum of 16 black-naped terns could be in the area when both adults are roosting at or near the nests (DON 2019). Several standard operating procedures and minimization measures would be implemented as part of the Proposed Action (see **Appendix C, Section C.3.2**) based on recommendations from the USFWS for past tests (DON 2019). Visual deterrents (e.g., scarecrows, Mylar flags, helium-filled balloons, or strobe lights) would be employed to deter birds from nesting and roosting in the impact zone and the area would be searched for nests, including eggs and chicks, prior to pre-flight activities and prior to test flights. If black-naped tern nests are found in the payload impact site, nests may be covered with an A-frame structure to protect eggs, chicks, and adults from debris and to serve as a warning to project personnel to avoid the nest area. With these mitigation measures in place, the impacts to black-naped terns and other birds from direct contact on Illeginni Islet would be minor to moderate.

As described above in the Elevated Sound Levels subsection, sea turtles are unlikely to haul out or nest on Illeginni Islet beaches. Because sea turtles are unlikely to occur in terrestrial habitats on Illeginni Islet and because protective mitigation measures would be in place, there would be no impact of direct contact on sea turtles on land or sea turtle nests.

A shoreline payload impact is not planned or expected and is considered unlikely. However, there is a chance that marine wildlife in nearshore reef habitats may be impacted by direct contact from natural debris ejected during crater formation. Several reef-associated fish species are known to occur in the nearshore waters of Illeginni Islet (see **Section 3.2.3.3**) and have the potential to be injured by ejecta entering reef habitats. These fish species occur on reefs throughout Kwajalein Atoll, and the number of fish species near Illeginni Islet is likely a small fraction of the populations of these fish in Kwajalein Atoll (DON 2019). Two UES consultation fish species have the potential to occur near Illeginni Islet and have the potential to be injured if exposed to direct contact from debris. While several factors make it unlikely that humphead wrasse would be contacted by ejecta (see DON 2019), analyses for past flight testing at Illeginni Islet have utilized worst-case scenario assumptions for direct contact based on the presence of up to 8 adult and 100 juvenile humphead wrasse in habitats offshore of the target site (NMFS 2021). Based on expected debris and ejecta quantity and distribution for a shoreline impact as well as the distribution of reef habitats offshore of the target site, the Navy estimates that up to 1 adult or 15 juvenile humphead wrasse might be injured or killed in the event of a shoreline payload impact. Bumphead parrotfish have been observed in reef surveys at other USAKA islets close to Illeginni Islet and it is possible that this species would occur in Illeginni reef habitats. Based on reported densities for this species throughout their range (densities in the Marshall Islands are estimated to be less than the range average of 0.7 individuals per 1,195 square yards), up to 1.2 bumphead parrotfish might be exposed to payload debris or ejecta in the event of either an ocean-side or lagoon-side shoreline payload impact. Even if the maximum of one test per year were assumed, CPS activities would not result in appreciable reduction of

these species (NMFS 2021) at Illeginni Islet or Kwajalein Atoll. Debris is expected to have negligible to minor effects on UES-listed fish in the Action Area.

Several coral and mollusk species occur in reefs adjacent to the payload impact zone at Illeginni Islet (see **Table 3.2.3-3**). Based on NMFS surveys of habitats with the potential to be subject to direct contact and shockwave effects (described in **Section 3.2.3.3**) and the estimated maximum area that may be affected by direct contact, the numbers of consultation coral colonies and individual mollusks that may exposed were estimated (detailed in DON and USASMDC 2023) and are summarized in **Table D.2-2**. Based on the worst-case scenario of a shoreline payload impact, up to 1,521 UES-consultation coral colonies and 14 individual mollusks might be adversely affected by direct contact and shock waves for a single test. Not all corals exposed to debris or shock waves would be damaged but the most likely realized effects from contact would be cracks in the colony or broken branches or plates (U.S. Army 2021). Coral have the potential to regrow after damage, but damage and stress could still have a negative impact on growth rate, reproduction, or disease susceptibility (NMFS 2019). As detailed by NMFS (2019), since these corals are colonial organisms with hundreds to thousands of genetically identical interconnected polyps, affecting some polyps of a colony does not necessarily constitute harm to the individual (defined as a colony) as the colony can continue to exist even if the colony is damaged. Based on surveys of USAKA islets, harbors, and the mid-atoll corridor conducted between 2010 and 2016, the consultation coral and mollusk species with the potential to be affected as adults have all been observed at multiple Kwajalein Atoll islets (see **Table 3.2.3-3**). With the exception of *Acropora polystoma* (found at only 8% of sites) these consultation species appear to be common throughout Kwajalein Atoll. Density estimates are not available for non-consultation corals or mollusks; however, all of these species are present on islets throughout Kwajalein Atoll as well (see **Table 3.2.3-3**). The entire reef area with the potential for direct contact effects is small in comparison to the total comparable reef area surrounding and connected to Illeginni Islet and is considered extremely small compared to the comparable reef areas in the USAKA area and in Kwajalein Atoll (DON 2019). Direct contact would have negligible to moderate impacts on marine wildlife in nearshore waters at Illeginni Islet.

In summary, direct contact from the payload, debris, and ejecta would not change the relative population size or distribution of any terrestrial or marine species at Kwajalein Atoll. The impacts of direct contact on biological resources at Kwajalein Atoll would be negligible to moderate.

Table D.2-2. Estimated Maximum Number of UES Consultation Species Adversely Affected by Proposed CPS Activities

Common Name	Scientific Name	Estimated Maximum Number of Colonies or Individuals that May be Adversely Affected per Test (per year)
Corals		
	Acropora microclados	6
	Acropora polystoma	6
	Cyphastrea agassizi	4
	Heliopora coerulea	1,497
	Pavona venosa	4
	Turbinaria reniformis	4
Mollusks		
Giant clam	*Hippopus hippopus*	9
Top shell snail	*Rochia nilotica* (*Trochus niloticus*)	1
Giant clam	*Tridacna maxima*	2
Giant clam	*Tridacna squamosa*	2
Fishes		
Bumphead parrotfish	*Bolbometopon muricatum*	1
Humphead wrasse	*Cheilinus undulatus*	16

Source: DON and USASMDC 2023

Hazardous Materials

Biological resources in the ROI may be affected by exposure to hazardous materials entering terrestrial and marine habitats including:

- Exposure to materials of which the CPS payload is composed or are contained within the payload (see **Table 2.1.1-2**). Materials include heavy metals, plastics, batteries, and radio transmitters.
- Exposure to hazardous materials from operation of support vessels and equipment.

Mitigation measures and standard operating procedures would be employed to reduce potential impacts from hazardous materials as discussed in **Section 4.2.2.6** (Hazardous Materials and Waste Management) and summarized in **Appendix C, Section C.3.2**. All visible test debris, equipment, and project-associated waste would be cleaned-up and removed, as practicable. While every attempt would be made to clean up all visible metal and other fragments, it is possible and likely that some fragments would be too small to be recovered and a small amount of these heavy metals or other substances may remain in the terrestrial or marine environments at Illeginni Islet. Only trace amounts of hazardous materials are expected to remain in terrestrial areas. Operation of support equipment would not involve any intentional discharge of hazardous materials and spill prevention and response measures would be in place for operations.

Hazardous materials are not likely to adversely impact terrestrial or marine biological resources. Any hazardous material introduced into the land impact site is not expected to have a discernable or measurable impact on wildlife or vegetation because measures would be in place to clean up debris and contain any accidental spills or discharges from equipment. While some concern has been raised about the environmental effects due to the deposition and dissolution of tungsten from test activities at Illeginni Islet, no significant impacts are expected (see DON and USASMDC 2023 for a detailed description and analysis of the potential consequences of tungsten). Impact of hazardous materials on terrestrial vegetation and wildlife would be minor to nonexistent. Because measures would be in place to prevent or clean up hazardous materials, no hazardous materials would be introduced into nearshore marine habitats at Illeginni Islet. In deep offshore waters, hazardous materials would be quickly diluted by ocean waters and debris fragments are expected to sink to the ocean bottom. Marine vertebrates, including special-status species, are unlikely to encounter chemicals at harmful concentrations. Because there would only be up to eight flight tests, introduction of hazardous chemicals into the water is not expected to alter water quality in a way that would cause secondary harm to marine biological resources. Overall, there would be negligible impact to biological resources at Kwajalein Atoll from hazardous materials.

Human Activity and Equipment Operation

The Proposed Action would involve human activity and equipment operation on Illeginni Islet and other Kwajalein Atoll locations for up to 8 weeks for each flight test including:

- Aircraft and vessels would be used to transport equipment and personnel and to deploy and retrieve self-stationing sensor rafts. There would be several pre-test and post-test vessel round-trips to and from Illeginni Islet.
- Operation of self-stationing rafts in ocean and lagoon waters for sensor coverage. Self-stationing sensor rafts may include hydrophones and would be placed in waters at least 10 ft deep to avoid contact with coral colonies.
- Personnel on Illeginni Islet to place test support equipment and for clean-up operations.
- Heavy equipment and truck operation to transport equipment, excavate the crater, screen debris, and backfill the crater with substrate ejected from the crater.

Wildlife in and near the payload impact zone have the potential to be impacted by human disturbance and equipment operation. A number of mitigation measures would be in place for operations at USAKA to reduce potential impacts to biological resources (**Appendix C, Section C.3.2**). At Illeginni Islet, equipment would be used either within the land impact site or on designated access points at Illeginni Islet. Pre- and post-test activities would be conducted during daylight hours, as practicable and within mission requirements.

Deep Offshore Waters. Pre-test preparation and post-test cleanup and recovery operations would result in increased vessel traffic to and from the offshore impact site. Vessel traffic would likely include several vessel round-trips to and from the offshore impact site. Marine wildlife in the offshore payload impact site are not expected to be impacted by human activity and vessel

operations (DON 2019). Only a small number of vessel trips would be required in this area to position the self-stationing sensor rafts, and to clean up floating debris post-test. While cetaceans and sea turtles must surface to breathe and are known to bask at the ocean surface, these are highly mobile animals capable of avoiding vessels, and measures will be in place during vessel operation to detect and avoid marine wildlife. Given the low densities of rare or special status marine wildlife in the ROI, the chances of an animal being impacted by human disturbance or being struck by a vessel are considered to be very low. Impacts to marine wildlife from human disturbance or vessel operation would be negligible to minor.

Illeginni Islet. Birds in and near the payload impact site on Illeginni Islet may be disturbed by human activity and equipment operation. However, mitigation measures would be in place to reduce the potential for impacts to nesting birds. Some birds may leave the area during the period of human activity and equipment operation, but no physical injury or nest abandonment is expected. Hauled-out or nesting sea turtles are unlikely to occur on Illeginni Islet and no proposed activities would occur in beach habitats. The impacts of human activity and equipment operation on terrestrial wildlife would be negligible to minor.

Planned human activity and equipment operation in marine areas would only involve vessel movement to and from Illeginni Islet and use of sensor rafts. No anchoring would occur in nearshore habitats and all equipment and personnel arriving via vessel would load and offload at Illeginni Harbor. No debris recovery or other cleanup activities are expected to be required in shallow nearshore waters. In the event that debris entered the nearshore marine environment, several measures would be in place to protect reef habitats and UES-consultation species. During planned test activities, nearshore reef-associated species including corals and mollusks would not be impacted by human activity and equipment operation.

Consequences for Special Status Wildlife

UES Coordination and Consultation Species. The Navy has evaluated the potential effects of the Proposed Action on UES listed species and coordination habitats. The Navy has concluded that proposed activities at USAKA may affect coordination species and habitats but that those activities would not have significant effects on those resources. The Navy completed a review of potential effects of the Proposed Action on coordination resources (pursuant to Section 3-4.6.3[a] of the UES) in this section and submitted the Draft EA/OEA to the UES Appropriate Agencies as a preliminary review in compliance with Section 3-4.6.3(b) of the UES (USASMDC 2024).

The Navy has also concluded that the Proposed Action may affect but is not likely to adversely affect UES consultation cetaceans, sea turtles, and most fish, but that the Action may affect and is likely to adversely affect several UES consultation corals, mollusks, and humphead wrasse. The Navy has prepared a Biological Assessment (DON and USASMDC 2023) to support consultation with NMFS and USFWS as required under Section 3-4.5.3 of the UES (USASMDC 2024) and initiated consultation on December 8, 2023. The USFWS issued a letter of concurrence with the Navy conclusion that sea turtles were not likely to be adversely affected by the Proposed Action (**Appendix E**, **Section E.2.4**). NMFS issued a biological opinion

concluding that proposed activities were either not likely to adversely affect or were not likely to jeopardize the continued existence of UES consultation species (NMFS 2024b). Because a biological opinion was rendered by NMFS, the Navy and USASMDC prepared a Notice of Proposed Activity to meet requirements of the UES and plan to prepare a Document of Environmental Protection as required under UES Section 2-18.3.

Consequences for Environmentally Sensitive Habitats

UES Coordination Habitats. The Navy has evaluated the potential effects of the Proposed Action on UES listed species and coordination habitats. The Navy has concluded that proposed activities at USAKA may affect coordination habitats at Illeginni Islet including bird nesting habitat and nearshore marine habitats but that those activities would not have significant effects on those habitats. While temporary disturbance of some habitats may occur, DoD testing has been occurring on Illeginni Islet for decades and CPS testing would not alter tempo of that testing or the baseline condition of coordination habitats in the ROI. The Navy completed a review of potential effects of the Proposed Action on coordination resources (pursuant to Section 3-4.6.3[a] of the UES) in this section and submitted the Draft EA/OEA to the UES Appropriate Agencies as a preliminary review in compliance with Section 3-4.6.3(b) of the UES (USASMDC 2024).

E

Agency Correspondence

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Appendix E. Agency Correspondence

Appendix E contains correspondence sent between USASMDC, the Navy, and United States Government and RMI agencies with respect to participation in development of the EA/OEA, ESA compliance, and UES compliance.

E.1. Agency Participation in EA/OEA Development Correspondence

E.1.1 Coordinating Draft Request for Participation Letter

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

REPLY TO
ATTENTION OF

Environmental Division

December 22, 2023

Re: Navy Conventional Prompt Strike Weapon System Flight Tests Environmental Assessment/Overseas Environmental Assessment Participation and Review Request

Dear Agency Representative,

The United States Army Space and Missile Defense Command (USASMDC) is assisting the Department of the Navy Strategic Systems Programs, the Action Proponent, in environmental compliance for the proposed Navy Conventional Prompt Strike (CPS) Weapon System Flight Tests program. The Department of the Navy, with the assistance of USASMDC, has prepared a Coordinating Draft Environmental Assessment (EA) / Overseas Environmental Assessment (OEA) to evaluate the potential environmental impacts of the Proposed Action to meet requirements of the U.S. National Environmental Policy Act (NEPA). As an agency with potential regulatory oversight of, interest in, or expertise related to this project, USASMDC and the Navy invite you to participate in the NEPA process by providing comments on the enclosed Coordinating Draft EA/OEA.

As described in the enclosed Coordinating Draft EA/OEA, the Proposed Action consists of conducting Navy CPS weapon system (missile) flight tests in both Atlantic and Pacific Ocean regions. Testing would involve up to eight flight test launches per year from various sea-based launch locations conducted over a 10-year period. All flight tests would be at-sea missile tests launched from existing naval vessels operating in Pacific and Atlantic broad ocean areas. After launch, flight test activities would include vehicle flight over the Pacific and/or Atlantic Oceans and would involve splashdown of spent boosters and fairings in Pacific and Atlantic broad ocean areas. Navy CPS flight test payloads would impact at target sites in the broad ocean area and at U.S. Army test sites at Kwajalein Atoll within the Republic of the Marshall Islands.

Your organization is among several regulatory and resource management agencies invited to participate in this coordinating draft review. If you have comments or recommendations based on your review of the EA/OEA, we request you submit written comments to Mr. David Fuller at david.g.fuller6.civ@army.mil by January 25, 2024, using the provided blank comment form. After the coordination period concludes, the Navy and USASMDC will prepare a Draft EA/OEA with consideration of provided comments and recommendations. We will then publish the Draft EA/OEA and a Draft Finding of No Significant Impact (if appropriate) for public review and comment.

If you have questions regarding this request or the proposed project, please contact Mr. David Fuller in my office, USASMDC Environmental Division, at (256) 955-5585, or david.g.fuller6.civ@army.mil.

Sincerely,

HASLEY.DAVID.C.1230984308 Digitally signed by HASLEY.DAVID.C.1230984308 Date: 2023.12.20 11:16:04 -06'00'

Weldon H. Hill, Jr.
Deputy Chief of Staff, Engineer
U.S. Army Space and Missile Defense Command

Enclosures (2):
(1) Navy CPS Weapon System Flight Tests Coordinating Draft Environmental Assessment/Overseas Environmental Assessment
(2) Blank Comment Form

2

E.1.2 Notice of Availability of the Draft EA/OEA Letter

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

REPLY TO
ATTENTION OF

Environmental Division

May 30, 2024

Subject: Notice of Availability of the Navy Conventional Prompt Strike Weapon System Flight Tests Draft Environmental Assessment / Overseas Environmental Assessment

Dear Interested Party,

The United States Army Space and Missile Defense Command (USASMDC) is assisting the Department of the Navy Strategic Systems Programs, the Action Proponent, in environmental compliance for the proposed Navy Conventional Prompt Strike (CPS) Weapon System Flight Tests program. The Department of the Navy, with the support of USASMDC, has prepared a Draft Environmental Assessment (EA) / Overseas Environmental Assessment (OEA) to evaluate the potential environmental impacts of the Proposed Action to meet requirements of the U.S. National Environmental Policy Act (NEPA). USASMDC and the Navy announce the availability of the Draft EA/OEA and Draft Finding of No Significant Impact (FONSI) / Finding of No Significant Harm (FONSH) and welcome your review and substantive comments on the Draft EA/OEA.

As described in the Draft EA/OEA, the Proposed Action consists of conducting Navy CPS weapon system (missile) flight tests in both Atlantic and Pacific Ocean regions. Testing would involve up to eight flight test launches per year from various sea-based launch locations conducted over a 10-year period. All flight tests would be at-sea missile tests launched from existing naval vessels operating in Pacific and Atlantic broad ocean areas. After launch, flight test activities would include vehicle flight over the Pacific and/or Atlantic Oceans and would involve splashdown of spent boosters and fairings in Pacific and Atlantic broad ocean areas. Navy CPS flight test payloads would impact at target sites in the broad ocean area and at U.S. Army test sites at Kwajalein Atoll within the Republic of the Marshall Islands.

The Draft EA/OEA evaluates the potential impacts to the human and natural environment from implementing the proposed CPS weapon system flight tests program. The No Action Alternative is also evaluated as a requirement of NEPA to serve as a baseline from which to analyze the effects of not implementing the test program. Supported by the information and environmental analysis presented in this document, the Navy will decide whether to conduct up to eight CPS flight tests annually over a 10-year period or to select the No Action Alternative. The Draft EA/OEA evaluates several environmental/resource categories within the affected environment that potentially could be impacted to provide Navy decision makers with sufficient information to plan and make informed decisions on the proposed CPS flight tests program. The Navy has determined that the activities associated with the Proposed Action would not result in significant impacts to the human and natural environment and has also drafted a FONSI/FONSH.

To review the Draft EA/OEA and Draft FONSI/FONSH and for additional information pertaining to the proposed Navy CPS Weapon System Flight Tests, please visit the Current Projects page of the Navy's NEPA Projects website at **https://www.nepa.navy.mil/CPSSea-Based**. The Draft EA/OEA is also available at the following public libraries:

Anchorage Public Library
3600 Denali Street
Anchorage, AK 99503

Cape Canaveral Public Library
201 Polk Avenue
Cape Canaveral, FL 32920

City of San Diego Central Library
330 Park Boulevard
San Diego, CA 92101

Grace Sherwood Library
Kwajalein Island
Republic of the Marshall Islands

Hawai'i State Library
478 South King Street
Honolulu, HI 96813

Jacksonville Public Library
303 North Laura Street
Jacksonville, FL 32202

Kitsap Regional Library
700 Northeast Lincoln Road
Poulsbo, WA 98370

Oxnard Downtown Main Library
251 South A Street
Oxnard, CA 93030

Roi-Namur Library
Roi Namur
Republic of the Marshall Islands

Slover Memorial Main Library
235 East Plume Street
Norfolk, VA 23510

Seattle Public Library
1000 Fourth Avenue
Seattle, WA 98104

The 30-day public comment period will begin June 3, 2024 and end July 3, 2024. Comments may be submitted either online on the project website at **https://www.nepa.navy.mil/CPSSea-Based** or by mail to:

Environmental Program Manager/SP2521
Strategic Systems Programs
1250 10th Street SE, Bldg. 200, Suite 3600
Washington Navy Yard, DC 20374-5127

Comments must be submitted or postmarked by July 3, 2024. All comments submitted during the 30-day public comment period will be part of the public record and substantive comments will be addressed in the Final EA/OEA.

If you have questions regarding the public comment period for the Draft EA/OEA or the proposed project, please contact Mr. David Fuller in my office, USASMDC Environmental Division, at (256) 955-5585, or david.g.fuller6.civ@army.mil.

Sincerely,

HILL.WELDON.H.JR.1216862682 Digitally signed by HILL.WELDON.H.JR.1216862682
Date: 2024.05.22 11:49:01 -05'00'

Weldon H. Hill, Jr.
Deputy Chief of Staff, Engineer
U.S. Army Space and Missile Defense Command

2

E.2. Biological Resources Coordination and Consultation Correspondence

E.2.1 Request for UES Section 3-4.5 Consultation with USFWS

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

REPLY TO
ATTENTION OF

December 8, 2023

Dan A. Polhemus, PhD
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard
Honolulu, HI 96850

Re: Request for Initiation of Informal Consultation under Section 3-4.5 of the UES for Navy Conventional Prompt Strike Weapon System Flight Tests Activities at Kwajalein Atoll

Dear Dr. Polhemus,

The United States Army Space and Missile Defense Command (USASMDC) is assisting the Department of the Navy Strategic Systems Programs, the Action Proponent, in evaluating the effects of proposed Navy Conventional Prompt Strike (CPS) Weapon System Flight Tests activities. The Action Proponent has determined that proposed activities at Kwajalein Atoll may affect but are not likely to adversely affect species listed as consultation species under the *Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands (UES)* and request informal consultation with your office under Section 3-4.5 of the UES.

The Proposed Action consists of conducting Navy CPS weapon system (missile) flight tests in both Atlantic and Pacific Ocean regions. Testing would involve up to eight flight test launches per year from various sea-based launch locations conducted over a 10-year period. All flight tests would be at-sea missile tests launched from existing naval vessels operating in Pacific and Atlantic broad ocean areas (BOAs). After launch, flight test activities would include vehicle flight over the Pacific and/or Atlantic Oceans and would involve splashdown of spent boosters and fairings in Pacific and Atlantic BOAs. Navy CPS flight test payloads would impact at target sites in the BOA and in the Republic of the Marshall Islands (RMI). Within the RMI, payload target sites include the deep-water Kwajalein Missile Impact Scoring System test range and a land site on Illeginni Islet at the Ronald Reagan Ballistic Missile Defense Test Site.

USASMDC and the Navy have prepared a Biological Assessment to evaluate the effects of the Proposed Action on species listed as consultation species under Section 3-4 of the UES. As described in the enclosed Navy CPS Weapon System Flight Tests Biological Assessment for Activities at Kwajalein Atoll, a number of UES protected species occur or have the potential to occur in the Action Area and we have evaluated the effects of the Proposed Action on these species and their habitats.

Based on analyses of all of the potential stressors resulting from the Proposed Action, the Action Proponent has determined that the Proposed Action "may affect but is not likely to adversely

affect" nesting or hauled-out sea turtles protected under Section 3-4 of the UES, specifically green turtles (*Chelonia mydas*) and hawksbill turtles (*Eretmochelys imbricata*). Based on the analysis in the enclosed Biological Assessment, the effects of the Proposed Action on these species would be insignificant or discountable as no sea turtle nests or nesting activity has been observed on Illeginni Islet in over 25 years. Our supporting analysis is provided in the enclosed Biological Assessment.

On behalf of the Navy, USASMDC requests initiation of informal consultation with the U.S. Fish and Wildlife Service under Section 3-4.5 of the UES and requests your written concurrence if you agree with our determinations. We would greatly appreciate acknowledgement in writing (electronic mail will be sufficient) that all necessary information has been received and that the consultation has been initiated.

I am also providing copies of this letter and the Biological Assessment to Ms. Moriana Phillip, Republic of the Marshall Islands Environmental Protection Authority – Majuro; Mr. Michael Desilets, U.S. Army Corps of Engineers – Honolulu; Ms. Angela Sandoval, U.S. Environmental Protection Agency – Region 9; and Dr. Steve Kolinski, National Marine Fisheries Service, Pacific Islands Regional Office.

Please contact David Fuller in my office, USASMDC Environmental Division, regarding this consultation request at 256-955-5585 or david.g.fuller6.civ@army.mil.

Sincerely,

HILL.WELDON.H.JR.1216862682 Digitally signed by HILL.WELDON.H.JR.1216862682
Date: 2023.12.06 10:49:12 -06'00'

Weldon H. Hill, Jr.
Deputy Chief of Staff, Engineer
U.S. Army Space and Missile Defense Command

Enclosure: Navy CPS Weapon System Flight Tests Biological Assessment for Activities at Kwajalein Atoll

2

E.2.2 USFWS UES Section 3-4.6 Coordination Response

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850

February 20, 2024

David C. Hasley
Chief, Environmental Division
Deputy Chief of Staff, Dngineer/DSCENG
U.S. Army Space and Missile Defense Command

Subject: Re: UES Section 3-4.5 consultation request for the Navy's Conventional Prompt Strike Flight Tests Program - 2023-12-08T20:00:20.803Z

Dear Mr. Hasley:

The U.S. Fish and Wildlife Service (Service) received your request for Consultation on the proposed Navy Conventional Prompt Strike (CPS) Weapon System Flight Tests program Biological Assessment for Activities at Kwajalein Atoll, Deceonmber 8, 2023. Please find our enclosed comments in accordance with the U.S. National Environmental Policy Act (NEPA) and the Environmental Standards and Procedures for U.S. Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands (UES section 3-4.6.3).

Summary

The proposed action includes a series of up to 80 missile test flights over a period of 10 years beginning in fiscal year 2025. Testing aims to verify CPS at-sea capabilities to enhance U.S. response to time-sensitive threats. Test flights would originate from Navy vessels operating in the Pacific and Atlantic Oceans. Payloads would terminate at open ocean floating raft targets and at Illeginni Islet, Kwajalein Atoll, Republic of the Marshall Islands. Each test would also include splashdown of spent boosters and fairings across broad ocean areas. Approximately one test per year is expected to terminate on land at Illeginni Islet.

Reentry vehicles (RVs) that impact Illeginni are expected to be primarily composed of aluminum, steel, titanium, magnesium and other alloys, copper, fiberglass, chromate coated hardware, tungsten (up to 1000 lbs. per test), plastic, Teflon, quartz, silicone, and batteries. Payloads have potential to include explosives and RV components are likely to be distributed in the area of and surrounding the 7.6 acre target ate the west end of Illeginni. Soil containing residual concentrations of beryllium, depleted uranium, and tungsten originating from prior

INTERIOR REGION 9
COLUMBIA–PACIFIC NORTHWEST
IDAHO, MONTANA*, OREGON*, WASHINGTON
*PARTIAL

INTERIOR REGION 12
PACIFIC ISLANDS
AMERICAN SAMOA, GUAM, HAWAII, NORTHERN MARIANA ISLANDS

weapons testing in the area may also be redistributed throughout the and the area, most extensively westward or downwind. This area likely includes protected species and environmentally sensitive habitats.

Comments

Marine turtles are the primary USFWS UES Consultation species that are most like to be impacted by this project. The Service will provide comments specifically related to marine turtle and turtle habitat separately. Comments herein are provided for additional consideration.

This assessment describes approximately 80 missile test flights. Each test will drop waste in open ocean environments in the Pacific and/or Atlantic and terminate at Illegenni Islet. Direct environmental impacts of the described flight tests alone are expected to be minor, however, minor additive impacts by many cumulative actions over multiple decades can result in significant environmental degradation. These tests will potentially increase cumulative environmental impacts caused by decades of past and ongoing weapons testing at Illeginni.

The Service remains concerned about cumulative impacts of weapons testing at Illeginni. Our recent environmental reviews of similar weapons testing activities have expressed this concern. EPA has repeatedly recommended a programmatic approach for weapons testing across DoD, along with enhanced sampling and testing of soils and groundwaters for contaminants. While soil and water tests have indicated low concentrations of contaminants on Illeginni, a discrepancy has been noted in test results (EA/OEA Section 3.2.4.3). More affective sampling should be considered.

EPA provided expert advice on data collection and analysis including composite samples taken after all DoD flight tests (see EPA comments on the Navy Conventional Prompt Strike Weapon System Flight Tests Coordinating Draft Environmental Assessment (CDEA) January 25, 2024) and requested more detailed and transparent sharing of sampling methods, locations, and times relative to flight tests. The Service agrees with the EPA's position on the need for robust monitoring and reporting on contaminant cumulation considering all DoD weapons testing at Illeginni. The service further recommends enhanced environmental monitoring of lagoon and seaward coral reefs and other habitats, including long term site-specific data collection to monitor potential impacts of seepage or dust distribution of contaminants to coastal benthic habitats around Illeginni.

Global loss of coral reef ecosystems, including the multitude of protected species that make them up, is a result of cumulative impacts of a variety of direct and indirect human influences. Introducing physical and chemical disturbance through weapons testing at any scale includes direct and indirect impacts that can be mitigated and avoided.

Terminal payload impacts at Illeginni will disperse debris, dust, and volatized contaminants. Debris and ejecta could directly impact biological resources in an area up to a 300 ft radius from the point of impact (EA/OEA Section 4.2.2.3). Fugitive dust caused by impact would be redistributed to waters adjacent to (most likely westward/downwind of) the site (EA/OEA Section 4.2.2.1). Contaminants could settle in nearshore ecosystems. Any soil and water contamination on Illeginni could be deposited in the nearshore environment via groundwater

seeps, saltwater/groundwater mixing, and erosion, and increasingly so with rising sea levels and climate change.

Terminal payload impact has the potential to affect species and habitats protected under the UES.

Cumulation of minor additive environmental impacts can amplify significance/harm of each minor impact over time. It is important to avoid legal and harmful thresholds and ensure that sufficient monitoring is carried out to accurately track those impacts collectively.

Recommendations

1. The Service recommends attention to marine turtle and turtle habitat comments and recommendations that will be provided separately.
2. The Service recommends that procedures for sampling, testing, and tracking of soil and water contaminants at Illeginni continue to be reviewed and developed to enhance understanding of potential cumulative impacts across projects in addition to project by project assessments.
3. The Service recommends plans to continue developing ecological monitoring of reef habitats adjacent to Illeginni, along with reference sites at Kwajalein Atoll, to better track conditions of coastal benthic habitats over time. This may help to support indications that impacts of weapons testing projects at Illeginni may be minor.
4. The Service recommends Navy provide an incident response plan in the case one or more RVs miss the intended target and directly impact coastal habitats and species.

Conclusion

The Service recommends continuing this project according to schedule with consideration of the above recommendations.

We appreciate the opportunity to provide input on this correspondence. If you have questions regarding our comments, please contact Aquatic Ecosystem Conservation Program Biologist Jeremy Raynal (jeremy_raynal@fws.gov), or Program Manager Dan Polhemus (dan_polhemus@fws.gov).

Sincerely,
ANTHONY MONTGOMERY
Digitally signed by ANTHONY MONTGOMERY
Date: 2024.02.20 11:30:27 -10'00'
Anthony Montgomery
Acting Aquatic Ecosystem Conservation Team Manager

E.2.3 Response to USFWS Recommendations

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

REPLY TO
ATTENTION OF

March 7, 2023

Dan Polhemus, PhD
U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard
Honolulu, HI 96850

Re: UES Section 3-4.5 consultation for Navy Conventional Prompt Strike Weapon System Flight Tests Activities at Kwajalein Atoll USFWS Reference Number 2023-12-08T20:00:20.803Z

Dear Dr. Polhemus,

The United States Army Space and Missile Defense Command (USASMDC) received the United States Fish and Wildlife Service's (USFWS or Service) comments related to the Department of the Navy (Navy) Conventional Prompt Strike (CPS) Weapon System Flight Tests activities in accordance with the U.S. National Environmental Policy Act (NEPA) and the Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands (UES) Section 3-4.6.3. We appreciate your comments and recommendations. Please find enclosed our response to the recommendations the Service provided in the letter dated 20 February 2024.

Regarding recommendation number 1: "The Service recommends attention to marine turtle and turtle habitat comments and recommendations that will be provided separately."

Response: USASMDC and the Navy will consider any comments and recommendations which are provided by the Service.

Regarding recommendation number 2: "The Service recommends that procedures for sampling, testing, and tracking of soil and water contaminants at Illeginni continue to be reviewed and developed to enhance understanding of potential cumulative impacts across projects in addition to project by project assessments."

Response: USASMDC is currently drafting standardized soil and water sampling, testing, and reporting procedures for flight test activities at Illeginni Islet to support our planned programmatic evaluation and Document of Environmental Protection for USASMDC mission flight test activities. Once drafted in coordination with the United States Army Garrison – Kwajalein Atoll (USAG-KA), USASMDC plans to coordinate these procedures with the Service and other UES Appropriate Agencies. Once finalized, these sampling and testing procedures will be implemented for all flight test programs terminating at Illeginni Islet, including the Navy CPS Weapons System Flight Tests program.

Regarding recommendation number 3: "The Service recommends plans to continue developing ecological monitoring of reef habitats adjacent to Illeginni, along with reference sites at Kwajalein Atoll, to better track conditions of coastal benthic habitats over time. This may help to support indications that impacts of weapons testing projects at Illeginni may be minor."

Response: USASMDC fully supports the Service's efforts, in conjunction with the National Marine Fisheries Service (NMFS) and USAG-KA, to conduct biannual inventories of reef habitats at Illeginni and throughout USAKA as required under UES Section 3-4.9.2. USASMDC would be happy to discuss survey priorities with the Service and NMFS as well as ways we can support those survey efforts.

Regarding recommendation number 4: "The Service recommends Navy provide an incident response plan in the case one or more RVs miss the intended target and directly impact coastal habitats and species."

Response: Navy CPS Weapons System Flight Test activities would follow the standard management practices and mitigation measures for flight test activities terminating at Illeginni Islet. These measures include the requirement that:

> *"When feasible, within 1 day after the land impact test at Illeginni Islet, USAKA RTS environmental staff would survey the islet and the near-shore waters for any injured wildlife or damage to sensitive habitats (i.e., sea turtle nesting habitat). Any impacts to special-status biological resources would be reported to the UES Appropriate Agencies via USASMDC, with USFWS, RMI Environmental Protection Authority, and NMFS offered the opportunity to inspect the impact area to provide guidance on mitigations."*

USASMDC does not plan to prepare a response plan for Navy CPS or other flight test activities terminating at Illeginni Islet because measures are in place to coordinate an appropriate response with the subject matter experts at the Service and NMFS should a payload directly impact coastal habitats and species.

We acknowledge that the Service recommends continuing Navy CPS Weapons System Flight Tests activities with consideration of the Service provided recommendations. USASMDC has considered the Service's recommendations as described above and plans to proceed with assisting the Navy with environmental compliance requirements for this proposed project under NEPA and the UES.

Please contact David Fuller in my office, USASMDC Environmental Division, regarding this letter or the proposed Navy CPS Weapons System Flight Tests at 256-955-5585 or david.g.fuller6.civ@army.mil.

Sincerely,

HILL.WELDON.H.JR.1216862682 Digitally signed by HILL.WELDON.H.JR.1216862682
Date: 2024.03.11 11:25:43 -05'00'

Weldon H. Hill, Jr.
Deputy Chief of Staff, Engineer
U.S. Army Space and Missile Defense Command

2

E.2.4 USFWS Section 3-4.5 Consultation Response – Letter of Concurrence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islets Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

In Reply Refer To:
2024-0050167-S7-001

March 5, 2024

Mr. Weldon H. Hill Jr.
c/o Mr. David Fuller
U.S. Army Space and Missile Defense Command
P.O. Box 11500
Huntsville, Alabama 35807-3801

Subject: Informal Consultation for the Proposed Navy Conventional Prompt Strike Weapon System Flight Tests, Kwajalein Atoll

Dear Mr. Hill:

The U.S. Fish and Wildlife Service (Service) received your email on December 8, 2023. We understand that you, the U.S. Army Space and Missile Defence Command (USASMDC), are assisting the Navy Strategic Systems Programs, the action proponent, in evaluating the effects of the proposed Navy Conventional Prompt Strike (CPS) Weapon System Flight Tests activities. You have requested our concurrence with your determination that the proposed activities at the U.S. Army Garrison Kwajalein Atoll (USAG-KA), Republic of Marshall Islets (RMI), may affect, but is not likely to adversely affect the federally endangered Central West Pacific Distinct Population Segment (DPS) of the green sea turtle (*Chelonia mydas*) and endangered hawskbill sea turtle (*Eretmochelys imbricata*) (hereafter referred to as sea turtles).

The findings and recommendations in this consultation are based on the following: 1) your informal consultation request dated December 8, 2023; 2) December 2023 Biological Assessment; 3) email correspondence provided on February 29, 2024; and 4) other information available to us. The Service consults on sea turtles and their use of terrestrial habitats (beaches where nesting and/or basking is known to occur), whereas the National Oceanic and Atmospheric Administration Fisheries (NMFS) consults on sea turtles in aquatic habitats. Therefore, this consultation only addresses the effects to sea turtles in their terrestrial habitats. Our response is in accordance with Section 7 of the Endangered Species Act of 1973 as amended (16 U.S.C. 1531 *et seq.*).

PACIFIC REGION 1

IDAHO, OREGON*, WASHINGTON,
AMERICAN SĀMOA, GUAM, HAWAI'I, NORTHERN MARIANA ISLETS

*PARTIAL

Project Description
The Navy CPS weapon system (missile) flight tests are proposed to be conducted in the Pacific Ocean region with deepwater and terrestrial impact sites. Testing would involve up to eight flight test launches per year from various sea-based launch locations conducted over a 10-year period. All flight tests would be at-sea missile tests launched from existing naval vessels operating in the Pacific broad ocean areas (BOA). After launch, flight test activities would include vehicle flight over the Pacific Ocean and would involve splashdown of spent boosters and fairings in the Pacific BOA. Navy CPS flight test payloads would impact at target sites in the BOA and in USAG-KA. Within USAG-KA, payload target sites include deep-water Kwajalein Missile Impact Scoring Systems test range just east of Gagan Islet and Ronald Regan Ballistic Missile Defense Test Site (RTS) on Illeginni Islet. Impact on Illeginni Islet would occur once a year over the 10-year period. No activities are proposed to occur on Gagan Islet or its shorelines.

Activities occurring on Illeginni Islet include pre-flight preparations, flight test impact, and post-test operations. These activities may occur at anytime during the year. Pre-flight activities include transporting personnel and equipment to Illeginni Islet using helicopters or surface vessel and will likely result in increased human activity prior to flight test. It is anticipated that all pre-flight activities would occur during daylight hours. Heavy equipment may be used to prepare target area and other monitoring equipment around the target site.

Re-entry vehicles (RVs) will target a location on Illeginni Islet in a 7.6 acre area on the non-forested western end of the Islet that includes the helipad (Figure 1). RVs that impact Illeginni Islet are expected to be primarily composed of aluminum, steel, titanium, magnesium and other alloys, copper, fiberglass, chromate coated hardware, tungsten (up to 1000 lbs. per test), plastic, Teflon, quartz, silicone, and batteries. Payloads have the potential to include explosives. Impacts may occur at anytime during a 24-hour period.

When test-missile payloads impact the land, soil, rubble, and test-missile payload fragments are ejected outward from the impact site over a wide area. The following assumptions on cratering are based on recent hypersonic flight tests. Craters created by the impact may be 6 to 9 meters (m) (20 to 30 feet (ft)) in diameter and 2 to 3 m (7 to 10 ft) deep. Most of the test missile debris and displaced earth would remain close to the edge of the crater and the density of the ejecta would decrease with distance away from the crater; however, crater formation may eject materials 60 to 91 m (200 to 300 ft) from the crater.

Test-missile impact on the shoreline or in nearshore waters is not expected. However, the exact impact location and distribution of ejecta is unknown. Utilizing data from previous hypersonic flight tests, most of the ejecta would fall on land. In a worst-case scenario, impact near the shoreline could result in ejecta dispersing onto the shoreline and into nearshore waters occurring in a 13,008 m^2 (15,557 $yard^2$) area (Figure 1). Test-missile impact in shallow water (depths 3 meters or less) of the reef could create a crater 3 to 4.6 m wide and 0.6 to 1.2 m deep. Prior testing shows that craters are not formed in water deeper than 3 m.

Post-test activities will increase human activity on Illeginni Islet for the duration of clean-up and completion of repairs. It is anticipated that all post-test activities would occur during daylight

hours. Assessment of target site on Illeginni Islet will be conducted prior to initiating equipment recovery and cleanup on land, in shallow and reef flats. Personnel will be transported to Illeginni by surface vessel. Activities associated with clean-up will include wetting down the area to stabilize disturbed soil, recover payload debris as much as possible, backfill impact crater and repair Islet structures as appropriate. Heavy equipment maybe used to assist with cleanup and repair. Backhoes and graders excavate material from craters, where the excavated materials are screened for debris and then the crater is backfilled with the surrounding ejected material. On land, visible debris are collected by hand, including hazardous materials. All recovered debris are backed and shipped back to Kwajalein Islet.

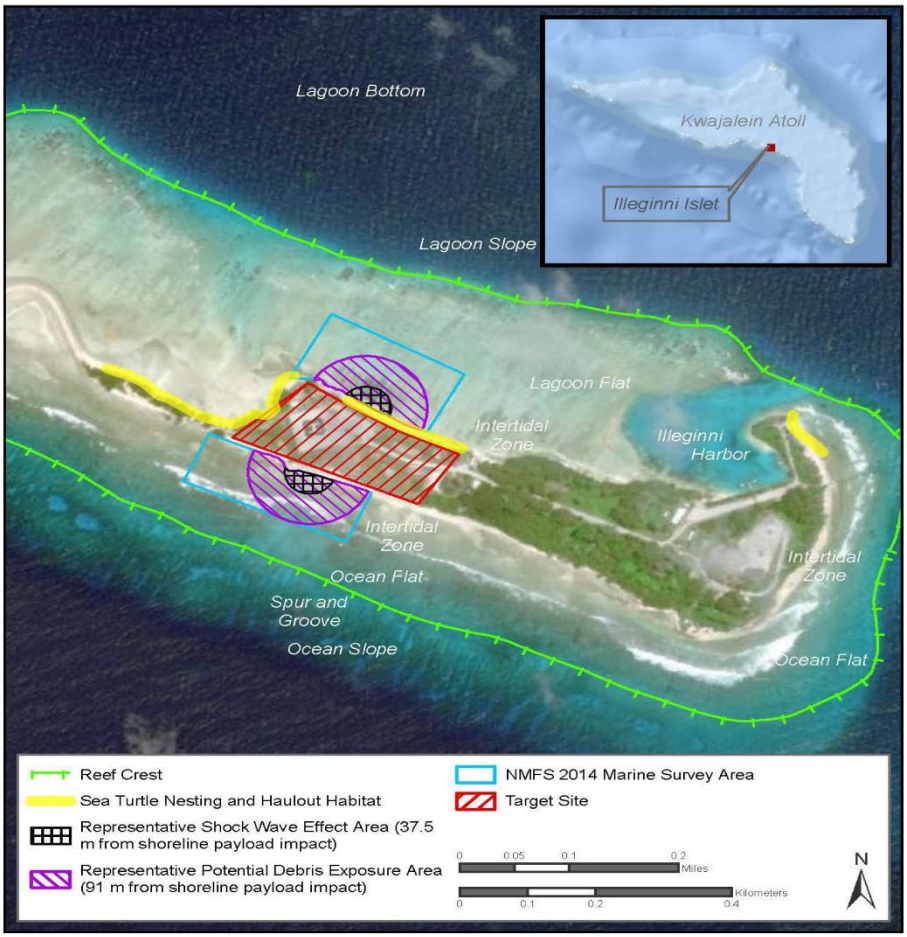

Figure 1. Estimated Maximum Direct Contact and Shockwave Areas at Illeginni Islet

Conservation Measures
To avoid and minimize potential project impacts on sea turtles, the following measures identified in your Biological Assessment will be implemented:

Sea Turtles

- For at least eight weeks preceding launch, pre-flight test monitoring by personnel familiar with sea turtles basking and nesting behavior will survey weekly for sea turtles, sea turtle nesting activity, and sea turtle nests on Illeginni Islet. If possible, personnel will inspect the area within days of the launch.
- Sea turtle opportunistic sightings will be collected, recorded, and reported during ship travel, overflights, and deployment of sensor rafts in the vicinity of the Illeginni Islet target site. Pre-project surveys and incidental observation data will include, but is not limited to, information such as location, date, time, species, and number of individuals. Reports of no sightings will also be documented when animals are not seen on surveys. Observations will be reported to the USAG-KA Environmental Office, the RTS Range Directorate, the Flight Test Operations Director, and USASMDC. USASMDC and USAG-KA Environmental Office will maintain records of these observations and USASMDC will distribute survey reports to the RMI Environmental Protection Authority, NMFS, and the Service within 6 months of completion of each fiscal year.
- A helicopter survey or fixed-wing aircraft overflight in the vicinity of Illeginni Islet target site will be conducted during the week prior to tests and as close to launch as safely practical to survey for sea turtles.
- If a sea turtle nest or nesting activity is observed or reported before a flight test, the USAG-KA Environmental Engineer or USASMDC will coordinate with the Service and NMFS on appropriate conservation measures to implement prior to the flight test launch.
- If a basking sea turtle is observed during pre-test surveys or activities, the animal will be observed to determine if it leaves the area on it own before the test flight. If basking sea turtles do not leave the terminal impact area immediately prior to launch, USAG-KA Environmental Office or USASMDC will coordinate with the Service and NMFS on appropriate measures to protect basking sea turtles.
- During pre-flight set-up, post-test recovery and cleanup, should personnel observe highly mobile endangered, threatened, or other protected species in the area, work will be delayed until such species leave the area of their own volition.
- Test personnel will be briefed on all the measures and conservation requirements listed in Section 2.2 of the Biological Assessment and the requirement to adhere to them during test activities.

Analysis of Effects
Consequences of the Proposed Action on Sea Turtles
Green sea turtles may haul out and nest on any sandy beach area in the Pacific Islands. Hawksbill sea turtles exhibit a wide tolerance for nesting substrate (ranging from sandy beach to crushed coral). Green sea turtles and hawksbill sea turtles typically place nests under or near vegetation. Both species exhibit strong nest site fidelity. Nesting occurs on beaches from May through

November, peaking in June to September. Basking, a behavior commonly observed in green sea turtles in the Hawaiian Archipelago (Central North Pacific DPS), is not known to occur but may occur in other areas in the Pacific. Threats to sea turtles include disturbance of basking (green sea turtles only) and nesting activity; crushing of adults, eggs, and hatchlings as a result of human activity and from heavy equipment; entrapment of adults and hatchlings that may be prevented from accessing nesting areas or their oceanic habitats; disorientation of hatchlings; and destruction of nests.

Suitable nesting habitats on Illeginni Islet occur in sandy areas that are mostly submerged during daily high tides; however, may be present during lower tides. Sea turtle presence (i.e., green sea turtles basking, tracks, or nest pits) has not been observed on Illeginni Islet in over 27 years based on survey data from 1998 to 2010. The most recent observations of nest pits were documented in 1996, from an unknown sea turtle species.

Daily hightide information indicates that suitable sea turtle nesting areas are mostly submerged one to two times a day on Illeginni Islet. In addition, because green and hawksbill sea turtle activity on the islet have not been documented in over 27 years, it is highly unlikely for the species to be present or attempt to nest within the proposed project area. Lastly, implementation of the above described conservation measures and identified in the Biological Assessment, includes measures that will prevent disorientation of nesting sea turtles females from increased human activity at night during nesting season; crushing of adults, eggs, and hatchlings; entrapment of sea turtles; and nest destruction from impact of payload at target site. Therefore, we expect that impacts to sea turtles as a result of project activities to be highly unlikely to occur; and thus, project impacts to be discountable.

Summary
Based on your project description and proposed implementation of your conservation measures effects from the action are considered discountable. Because project impacts are discountable, we concur with your determination that the proposed project may affect, but is not likely to adversely affect the CWP DPS of the green sea turtle and hawksbill sea turtle.

Reinitiation of this consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the proposed action has been retained or is authorized by law and:

1) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
2) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this written concurrence; or
3) If a new species is listed or critical habitat designated that may be affected by the identified action.

We appreciate your efforts to conserve endangered species. If you have questions regarding this response, please contact Joy Browning, Fish and Wildlife Biologist (phone: 808-210-6137,

email: joy_browning@fws.gov). When referring to this project, please include this reference number: 2024-0050167-S7-001.

Sincerely,

JINY KIM Digitally signed by JINY KIM Date: 2024.03.05 17:43:09 -10'00'

Island Team Manager
O‘ahu, Kaua‘i, Northwest Hawaiian Islands and American Samoa

cc: U.S. Army Garrison Kwajalein Atoll

E.2.5 Request for UES Section 3-4.5 Consultation with NMFS

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

REPLY TO
ATTENTION OF

December 8, 2023

Steve Kolinski, PhD
National Marine Fisheries Service
Pacific Islands Regional Office
1845 Wasp Boulevard, Building 176
Honolulu, HI 96818

Re: Request for Initiation of Consultation under Section 3-4.5 of the UES for Navy Conventional Prompt Strike Weapon System Flight Tests Activities at Kwajalein Atoll

Dear Dr. Kolinski,

The United States Army Space and Missile Defense Command (USASMDC) is assisting the Department of the Navy Strategic Systems Programs, the Action Proponent, in evaluating the effects of proposed Navy Conventional Prompt Strike (CPS) Weapon System Flight Tests activities. The Action Proponent has determined that proposed activities at Kwajalein Atoll may affect and are likely to adversely affect species listed as consultation species under the *Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands (UES)* and requests consultation with your office under Section 3-4.5 of the UES.

The Proposed Action consists of conducting Navy CPS weapon system (missile) flight tests in both Atlantic and Pacific Ocean regions. Testing would involve up to eight flight test launches per year from various sea-based launch locations conducted over a 10-year period. All flight tests would be at-sea missile tests launched from existing naval vessels operating in Pacific and Atlantic broad ocean areas (BOAs). After launch, flight test activities would include vehicle flight over the Pacific and/or Atlantic Oceans and would involve splashdown of spent boosters and fairings in Pacific and Atlantic BOAs. Navy CPS flight test payloads would impact at target sites in the BOA and in the Republic of the Marshall Islands (RMI). Within the RMI, payload target sites include the deep-water Kwajalein Missile Impact Scoring System test range and a land site on Illeginni Islet at the Ronald Reagan Ballistic Missile Defense Test Site.

USASMDC and the Navy have prepared a Biological Assessment to evaluate the effects of the Proposed Action on species listed as consultation species under Section 3-4 of the UES. As described in the enclosed Navy CPS Weapon System Flight Tests Biological Assessment for Activities at Kwajalein Atoll, a number of UES protected species occur or have the potential to occur in the Action Area and we have evaluated the effects of the Proposed Action on these species and their habitats. The enclosed Biological Assessment addresses only the portions of the Proposed Action in and over RMI territory, including territorial waters. The Action Proponent plans to prepare a separate biological evaluation where necessary to comply with requirements under Section 7 of the Endangered Species Act for the portions of the Proposed Action that

would take place in and over U.S. territory or within international waters. Since proposed activities within U.S. territorial and international waters would occur in both the Pacific and Atlantic regions, the Action Proponent plans to consult with the National Marine Fisheries Service, National Office of Protected Resources, Interagency Cooperation Division for those activities.

Based on analyses of all of the potential stressors resulting from the Proposed Action, the Navy has determined that the Proposed Action would have "no effect" on 15 coral species (*Acanthastrea brevis*, *Acropora aculeus*, *A. aspera*, *A. dendrum*, *A. listeri*, *A. speciosa*, *A. tenella*, *A. vaughani*, *Alveopora verrilliana*, *Leptoseris incrustans*, *Montipora caliculata*, *Pavona cactus*, *P. decussata*, *Turbinaria mesenterina*, and *T. stellulata*) and two mollusk species (*Pinctada margaritifera* and *Tridacna gigas*) listed as consultation species under the UES. These species are not known to occur in the portion of the Action Area where they might be exposed to stressors resulting from the Proposed Action.

The Navy has determined that the Proposed Action "may affect but is not likely to adversely affect" 16 cetacean species, two sea turtle species, and six fish species listed as consultation species under the UES in the Action Area. The species that may be but are not likely to be adversely affected by the Proposed Action include the cetaceans *Balaenoptera musculus*, *B. physalus*, *Delphinus delphis*, *Feresa attenuata*, *Globicephala macrorhynchus*, *Grampus griseus*, *Kogia breviceps*, the Western North Pacific Distinct Population Segment (DPS) of *Megaptera novaeangliae*, *Mesoplodon densirostris*, *Orcinus orca*, *Peponocephala electra*, *Physeter macrocephalus*, *Stenella attenuata*, *S. coeruleoalba*, *S. longirostris*, and *Tursiops truncatus*; the Central West Pacific DPS of green turtle (*Chelonia mydas*); the hawksbill turtle (*Eretmochelys imbricata*); and the fish *Alopias superciliosus*, *Carcharhinus longimanus*, *Mobula alfredi*, *M. birostris*, *Sphyrna lewini*, and *Thunnus orientalis*. Based on the analysis in the enclosed Biological Assessment, all effects of the Proposed Action on these species would be insignificant or discountable.

The Navy has determined that the Proposed Action "may affect and is likely to adversely affect" six coral species, three mollusk species, and one fish species listed as consultation species under the UES. The species likely to be adversely affected by the Proposed Action are the corals *Acropora microclados*, *A. polystoma*, *Cyphastrea agassizi*, *Heliopora coerulea*, *Pavona cactus*, and *Turbinaria reniformis*; the mollusks *Hippopus hippopus*, *Rochia nilotica*, and *Tridacna squamosa*; and the fish *Cheilinus undulatus*. Based on the analysis presented in the enclosed Biological Assessment, the Proposed Action may adversely affect up to 15,156 coral colonies, 120 individual mollusks, and 10 adult and 150 juvenile humphead wrasse.

Because of the potential for adverse effects to UES protected species, the USASMDC, on behalf of the Navy, requests initiation of formal consultation with the National Marine Fisheries Service under Section 3-4.5 of the UES for potential effects of the Proposed Action on species listed as consultation species under the UES. We would greatly appreciate acknowledgement in writing

(electronic mail will be sufficient) that all necessary information has been received and that the consultation has been initiated.

I am also providing copies of this letter and the Biological Assessment to Ms. Moriana Phillip, Republic of the Marshall Islands Environmental Protection Authority – Majuro; Mr. Michael Desilets, U.S. Army Corps of Engineers - Honolulu; Ms. Angela Sandoval, U.S. Environmental Protection Agency – Region 9; and Dr. Dan Polhemus, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office.

Please contact David Fuller in my office, USASMDC Environmental Division, regarding this consultation request at 256-955-5585 or david.g.fuller6.civ@army.mil.

Sincerely,

HILL.WELDON.H.JR.1216862682 Digitally signed by HILL.WELDON.H.JR.1216862682
Date: 2023.12.06 10:50:33 -06'00'

Weldon H. Hill, Jr.
Deputy Chief of Staff, Engineer
U.S. Army Space and Missile Defense Command

Enclosure: Navy CPS Weapon System Flight Tests Biological Assessment for Activities at Kwajalein Atoll

3

E.2.6 Request for ESA Section 7 Consultation with NMFS

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

REPLY TO
ATTENTION OF

January 29, 2024

Tanya Dobrzynski
Chief, Interagency Cooperation Division
Office of Protected Resources
NOAA's National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

Re: Request for Initiation of Consultation under section 7 of the Endangered Species Act for Navy Conventional Prompt Strike Weapon System Flight Tests Activities

Dear Tanya Dobrzynski:

The United States Army Space and Missile Defense Command (USASMDC) is assisting the Department of the Navy Strategic Systems Programs, the Action Proponent, in evaluating the environmental effects of proposed Navy Conventional Prompt Strike (CPS) Weapon System Flight Tests activities. The Action Proponent has determined that proposed activities in the Atlantic and Pacific Oceans may affect but are not likely to adversely affect species listed under the Endangered Species Act (ESA) and requests consultation with your office under section 7 of the ESA.

The Proposed Action consists of conducting Navy CPS weapon system (missile) flight tests in both Atlantic and Pacific Ocean regions. Testing would involve up to eight flight test launches per year from various sea-based launch locations conducted over a 10-year period. All flight tests would be at-sea missile tests launched from existing naval vessels operating in Pacific and Atlantic broad ocean areas (BOAs). After launch, flight test activities would include vehicle flight over the Pacific and/or Atlantic Oceans and would involve splashdown of spent boosters and fairings in Pacific and Atlantic BOAs. Navy CPS flight test payloads would impact at target sites in the BOA and in the Republic of the Marshall Islands (RMI).

USASMDC and the Navy have prepared a Biological Evaluation to evaluate the effects of the Proposed Action on marine species listed as endangered or threatened under the ESA and on designated critical habitat in the Action Area. As described in the enclosed Navy CPS Weapon System Flight Tests Marine Biological Evaluation, a number of ESA-listed species and designated critical habitats occur or have the potential to occur in the Action Area, and we have evaluated the effects of the Proposed Action on these species and their habitats. The enclosed Biological Evaluation addresses only the portions of the Proposed Action in the Atlantic and Pacific BOAs. The Action Proponent has prepared a separate biological assessment as necessary

to comply with requirements under the *Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands (UES)* for the portions of the Proposed Action that would take place in and over RMI territory, including RMI territorial waters. Since The National Marine Fisheries Service (NMFS), Pacific Islands Regional Office (PIRO) is a designated UES Appropriate Agency, the Action Proponent is consulting separately with the NMFS PIRO Protected Resources Division for those proposed activities within the RMI that might affect UES-listed consultation species, which include all ESA-listed species in the RMI.

As described in the enclosed Biological Evaluation, a number of ESA-listed species under the jurisdiction of NMFS occur or have the potential to occur in the BOA Action Area. Based on analyses of all the potential stressors resulting from the Proposed Action, the Action Proponents have determined that the Proposed Action may affect but is not likely to adversely affect the ESA-listed species considered in the Biological Evaluation. Listed populations of 29 marine species may be, but are not likely to be adversely affected by the Proposed Action: sei whales (*Balaenoptera borealis*), blue whales (*Balaenoptera musculus*), fin whales (*Balaenoptera physalus*), gray whales (*Eschrichtius robustus*), North Atlantic right whales (*Eubalaena glacialis*), North Pacific right whales (*Eubalaena japonica*), humpback whales (*Megaptera novaeangliae*), sperm whales (*Physeter macrocephalus*), false killer whales (*Pseudorca crassidens*), Guadalupe fur seals (*Arctocephalus townsendi*), Steller sea lions (*Eumetopias jubatus*), Hawaiian monk seals (*Neomonachus schauinslandi*), loggerhead sea turtles (*Caretta caretta*), green sea turtles (*Chelonia mydas*), leatherback sea turtles (*Dermochelys coriacea*), hawksbill sea turtles (*Eretmochelys imbricata*), Kemp's ridley sea turtles (*Lepidochelys kempii*), olive ridley sea turtles (*Lepidochelys olivacea*), Atlantic sturgeon (*Acipenser oxyrinchus oxyrinxhus*), oceanic whitetip sharks (*Carcharhinus longimanus*), giant manta rays (*Mobula birostris*), chum salmon (*Oncorhynchus keta*), coho salmon (*Oncorhynchus kisutch*), steelhead trout (*Oncorhynchus mykiss*), sockeye salmon (*Oncorhynchus nerka*), chinook salmon (*Oncorhynchus tshawytscha*), smalltooth sawfish (*Pristis pectinata*), Atlantic salmon (*Salmo salar*), and scalloped hammerhead sharks (*Sphyrna lewini*).

The Action Proponents have also determined that the Proposed Action would have no effect on designated critical habitat for the Central America distinct population segment (DPS) and Mexico DPS of humpback whales, designated *Sargassum* habitat for loggerhead turtles, proposed critical habitat for the North Atlantic DPS of green turtles, and designated critical habitat for leatherback turtles.

Our supporting analysis is provided in the enclosed Biological Evaluation. We request initiation of informal consultation under section 7 of the ESA and request your written concurrence if you agree with our determinations. We would greatly appreciate acknowledgement in writing (electronic mail will be sufficient) that all necessary information has been received and that the consultation has been initiated.

Please contact David Fuller in my office, USASMDC Environmental Division, regarding this consultation request at 256-955-5585 or david.g.fuller6.civ@army.mil.

Sincerely,

HILL.WELDON.H.JR.1216862682 Digitally signed by HILL.WELDON.H.JR.1216862682
Date: 2024.01.30 11:16:51 -06'00'

Weldon H. Hill, Jr.
Deputy Chief of Staff, Engineer
U.S. Army Space and Missile Defense Command

Enclosure: Marine Biological Evaluation for Navy Conventional Prompt Strike Weapon System Flight Tests

3

E.2.7 NMFS UES Section 3-4.5 and ESA Section 7 Consultation Initiation Letter

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Regional Office
1845 Wasp Blvd., Bldg 176
Honolulu, Hawai'i 96818
(808) 725-5000 • Fax: (808) 725-5215

July 3, 2024

Weldon H. Hill, Jr.
U.S. Army Space and Missile Defense Command
Post Office Box 1500
Huntsville, AL 35807-3801

Re: Initiation of formal consultation under 7(a)(2) of the Endangered Species Act and the Environmental Standards and Procedures for U.S. Army Kwajalein Atoll Activities for the Navy Conventional Prompt Strike Weapon System Flight Tests Activities

Dear Mr. Hill:

Thank you for your December 8, 2023, letter requesting initiation of formal consultation with NOAA's National Marine Fisheries Service (NMFS) Pacific Island Regional Office's Protected Resources Division (PRD) pursuant to section 3-4 of Environmental Standards and Procedures for U.S. Army Kwajalein Atoll (USAKA) activities in the Republic of Marshall Islands (UES, 17th Edition) for the Navy CPS Weapon System Flight Tests Activities. On December 20, 2023, we requested a meeting to discuss the species list and technical information related to the project. All parties met on January 11, 2024, where it was agreed that a supplement to the BA was needed.

On January 29, 2024, a consultation request pursuant to section 7(a)(2) of the Endangered Species Act was received by NMFS's Office of Protected Resources (OPR). On February 6, 2024, NMFS OPR sent a request for a meeting to discuss technical information and provide technical assistance related to the ESA portion of the project. On February 13, 2024, USASMDC, Navy, and NMFS OPR met resulting in the need for an updated BA.

On March 11, 2024, OPR and PRD met to discuss the consultation requirements under the ESA and UES. On April 5, 2024, all parties met and it was decided that only one ESA-UES consultation would be conducted due to the CPS test activities being a single project, with NMFS PRD leading the consultation. An addendum to the USAKA BA was received on April 5, 2024. On May 30, 2024 we received the updated ESA BA. On June 11, 2024 NMFS responded with additional technical questions related to vessel transit and two additional species. On July 3, 2024 we received the necessary information to evaluate the proposed action and, per your request, acknowledge the initiation of formal consultation as of July 3, 2024.

Section 161 of the Compact of Free Association requires that the U.S. apply standards that are substantially similar to the ESA. Section 7 of the ESA allows the Services up to 90 calendar days to conclude consultation; by regulation, we have an additional 45 calendar days to prepare our Biological Opinion (unless we mutually agree to an extension). Similarly, section 3-4.5.3 (e) of the UES allows the Services 135 to conclude consultation. Therefore, we expect to provide our

biological opinion to you no later than November 15, 2024 (135 days from initiation of consultation).

While not specified in the UES, the ESA requires that after initiation of formal consultation, the Action Agency may not make any irreversible or irretrievable commitment of resources that would preclude the formulation or implementation of any reasonable and prudent alternatives that would avoid violating section 7(a)(2) (50 CFR 402.09). This prohibition is in force during the consultation process and continues until the requirements of sections 3-4 are met.

If you have any questions or concerns about this letter, please contact Kristina Dauterman, at 808-725-5136 or kristina.dauterman@noaa.gov.

Sincerely,

Ron Dean Digitally signed by Ron Dean
Date: 2024.07.03 10:17:29 -10'00'

Ron Dean
Chief, Interagency Cooperation Branch
Protected Resources Division

Cc: S. Kolinski (NMFS)
R. Driskell (NMFS)
D. Fuller (USASMDC)
D. Hasley (USASMDC)
NMFS File No.: PIRO-2023-03074
PIRO Reference No.: I-PI-23-2255-DG

E.2.8 NMFS UES Section 3-4.5 and ESA Section 7 Consultation Conclusion Correspondence

From:	Ron Dean - NOAA Federal
To:	Fuller, David G CIV USARMY SMDC (USA); Hasley, David C CIV USARMY SMDC (USA); jamiyo.mack@ssp.navy.mil; Chauvey, Patrick Robert CIV USARMY IMCOM AEC (USA); Karen Hoksbergen - KFS
Cc:	Steve Kolinski - NOAA Federal; Dan Polhemus; rmiepaues@gmail.com; Moriana Phillip; Sandoval.Angela@epa.gov; Michael.E.Desilets@usace.army.mi; Kristina Dauterman - NOAA Federal; Dawn Golden - NOAA Federal; Joshua Rudolph - NOAA Federal; Stefanie Gutierrez - NOAA Federal
Subject:	Final Biological Opinion regarding proposed U.S. Space Missile Defense Command's Navy weapon flight testing activities in the Marshall Islands
Date:	Tuesday, November 5, 2024 2:29:01 PM
Attachments:	PIRO-2023-03074_508.pdf

Dear Team,

NOAA Fisheries has signed a no-jeopardy biological opinion regarding proposed Conventional Prompt Strike Weapon System Flight Tests Activities in the Republic of the Marshall Islands.

In the biological opinion, we determined the authorization of the Conventional Prompt Strike Weapon System Flight Tests Activities as currently managed may cause "take" in the form of harm that results from direct contact, to these species.

After careful evaluation, NOAA Fisheries has determined that the effects of the flight test activities may adversely affect 12 corals, fish, and invertebrate species that are protected under the U.S. Army Kwajalein Atoll Environmental Standards (UES). However, the effects of the proposed action do not appreciably contribute to the extinction risk of these species nor impede their recovery.

The species include: the UES-listed *Acropora microclados*, *Acropora polystoma*, C*yphastrea agassizi*, *Cyphastrea agassizi*, *Pavona venosa*, *Turbinaria reniformis*, humphead wrasse, bumphead parrotfish, top shell snail, UES and proposed Endangered Species Act (ESA) threatened *Hippopus hippopus*, UES and proposed ESA threatened *Tridacna squamosa* and *Tridacna maxima*. Both *T. squamosa* and *T. maxima* are listed solely based on appearance under ESA section 4(e) and were added to the UES of consultation species effective July 25, 2024.

NOAA Fisheries developed and is implementing one reasonable and prudent measure to minimize incidental take of these species associated with the test flight program. This measure ensures that the U.S. Army Space and Missile Defense Command and the Department of the Navy Strategic Systems Programs have a monitoring and reporting program sufficient to confirm that extent of take is not exceeded, and that the terms and conditions in this incidental take statement are effective in minimizing incidental take.

It is our opinion that these reasonable and prudent measures, and the terms and conditions that implement them, will allow NOAA Fisheries to protect these species while continuing to play an important role in the region's national security.

Should you have any questions, please feel free to contact me.

Respectfully,

-Ron Dean

--

Ron Dean
Chief, Interagency Cooperation Branch
Protected Resources Division
NOAA Fisheries | U.S. Department of Commerce
1845 Wasp Blvd., Bldg 176, Room 2884
Honolulu, HI 96818
Office: (808) 725-5140
www.fisheries.noaa.gov

E.2.9 Request for EFH Consultation with NMFS

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

REPLY TO
ATTENTION OF

Environmental Division July 30, 2024

Alexandria Barkman, PhD
EFH Consulting Biologist
National Marine Fisheries Service
Pacific Islands Regional Office Habitat Conservation Division
1845 Wasp Boulevard, Building 176
Honolulu, HI 96818

Re: Request for Initiation of Abbreviated Essential Fish Habitat Consultation under Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act for Navy Conventional Prompt Strike Weapon System Flight Tests Activities

Dear Dr. Barkman,

The United States Army Space and Missile Defense Command (USASMDC) is assisting the Department of the Navy Strategic Systems Programs, the Action Proponent, in evaluating the environmental effects of proposed Navy Conventional Prompt Strike (CPS) Weapon System Flight Tests. The Action Proponent has determined that CPS flight test activities, specifically flight tests with at-sea launches within the Hawaiian U.S. exclusive economic zone (EEZ), have the potential to affect Essential Fish Habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Because the Proposed Action may affect EFH in the Hawaiian U.S. EEZ, we request abbreviated consultation with your office under Section 305(b)(2) of the MSA on behalf of the Action Proponent.

The Proposed Action consists of conducting Navy CPS weapon system (missile) flight tests in both Atlantic and Pacific Ocean regions. Testing would involve up to eight flight test launches per year from various sea-based launch locations conducted over a 10-year period. All flight tests would be at-sea missile tests launched from existing naval vessels operating in Pacific and Atlantic broad ocean areas (BOAs). After launch, flight test activities would include vehicle flight over the Pacific and/or Atlantic Oceans and would involve splashdown of spent boosters and fairings in Pacific and Atlantic BOAs. Navy CPS flight test payloads would impact at target sites in the BOA and in the Republic of the Marshall Islands. Within the Hawaiian EEZ (out to 370 kilometers [200 nautical miles] from the territorial sea baseline), Navy CPS flight test activities would potentially include vessel operations, at-sea weapon system launch, vehicle overflight, and stage 1 booster splashdown.

The Navy has prepared an EFH Assessment to evaluate the effects of the Proposed Action on designated EFH within the Hawaiian U.S. EEZ. As described in the enclosed Navy CPS Weapon System Flight Tests EFH Assessment, both water column and benthic EFH for several Management Unit Species (MUS) occur within the Action Area and we have evaluated the effects of the Proposed Action on these the EFH components for these MUS. The enclosed EFH

Assessment addresses only the portions of the Proposed Action in and over the Hawaiian Islands U.S. EEZ (the Action Area).

Based on analyses of all the potential stressors resulting from the Proposed Action, the Action Proponents have determined that the Proposed Action would have no more than minimal adverse effects on EFH and would not result in adverse effects which would reduce the quantity or quality of EFH in the Action Area. All potential adverse effects of the Proposed Action on designated EFH would be undetectable, unmeasurable, or extremely unlikely to occur.

Because of the potential for adverse effects to EFH in the Hawaiian Islands U.S. EEZ, USASMDC, on behalf of the Action Proponent, requests initiation of abbreviated consultation with the National Marine Fisheries Service Pacific Islands Regional Office Habitat Conservation Division under Section 305(b)(2) of the MSA and 50 CFR 600.920. We request your concurrence that the Proposed Action would have no more than minimal adverse effects to EFH. We would greatly appreciate acknowledgement in writing (electronic mail will be sufficient) that all necessary information has been received and that the consultation has been initiated.

Please contact David Fuller in my office, USASMDC Environmental Division, regarding this consultation request at 256-955-5585 or david.g.fuller6.civ@army.mil.

Sincerely,

HILL.WELDON.H.JR.1216862682 Digitally signed by HILL.WELDON.H.JR.1216862682
Date: 2024.07.30 11:23:51 -05'00'

Weldon H. Hill, Jr.
Deputy Chief of Staff, Engineer
U.S. Army Space and Missile Defense Command

Enclosure: Navy Conventional Prompt Strike Weapon System Flight Tests Essential Fish Habitat Assessment

2

E.2.10 NMFS EFH Consultation Recommendations

From: "Alexandria Barkman - NOAA Federal" <alexandria.barkman@noaa.gov>
Date: Tuesday, August 27, 2024 at 6:02:17 PM
To: "Fuller, David G CIV USARMY SMDC (USA)" <david.g.fuller6.civ@army.mil>
Subject: Re: EFH consultation request for Navy Conventional Prompt Strike Weapon System Flight Tests

Aloha Mr. David Fuller,

The National Marine Fisheries Service, Pacific Islands Regional Office Habitat Conservation Division (NMFS) received a request from the U.S. Army Space & Missile Defense Command (USASMDC) for an abbreviated Essential Fish Habitat (EFH) consultation for the Department of the Navy's (Navy's) Conventional Prompt Strike (CPS) Weapon System Flight Tests within the Hawaiian Exclusive Economic Zone (EEZ) on August 1, 2024. The EFH Assessment (EFHA) was prepared by the Navy Strategic Systems Programs (the action proponent) with the assistance of the USASMDC, in cooperation with Navy Facilities Engineering Systems Command, U. S. Fleet Forces, and U. S. Pacific Fleet. The Navy has proposed to include and adhere to standard operating procedures that include best management practices (BMPs) that, when implemented, will ensure that most adverse effects to EFH will be no more than minimal. We are providing a conservation recommendation under the EFH provisions within Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Adherence to this conservation recommendation will help you ensure that adverse effects are avoided and minimized.

Project Description

The Proposed Action consists of conducting Navy Conventional Prompt Strike (CPS) weapon system (missile) flight tests within broad Atlantic and Pacific Ocean areas. The EFHA evaluated the potential effects of proposed activities within the Hawaiian U.S. EEZ. Testing would involve up to eight flight test launches per year over a 10-year period beginning in 2025. Missiles would be launched from various sea-based locations from existing naval vessels. . The proposed CPS flight test vehicle, referred to as an All-Up-Round (AUR) missile, consists of a two-stage booster system and payload adapter. The AUR missile body is approximately 30 feet (ft) (10 meters [m]) long and 3 ft (1 m) in diameter. The AUR first- and second-stage rocket motors would contain a total of up to 9,000 kilograms (20,000 pounds) of rocket propellant. During the boost phase following launch of the AUR, the first-stage motor would burn out downrange and separate from the second stage. First-stage boosters would splash down in the Pacific Broad Ocean Area downrange from launch and as far as 330 nm

1

(611 km) offshore. Second-stage boosters and payload adapters would splash down outside of EEZs in international waters. A Flight Termination System on the test vehicle will be used if the vehicle were to deviate from its course or problems occurs during flight that requires termination.

The Proposed Action may result in spent stage 1 booster splashdown within designated EFH with a maximum direct contact/damage area of up to 54 ft^2 (5 m^2) for a single test. If the maximum of eight stage 1 booster splashdowns take place in the Hawaiian EEZ per year, there would be a maximum direct contact/damage area of approximately 430 ft^2 (40 m^2) per year. In the event of a flight test failure scenario where the CPS AUR fell intact into the ocean near the launch point, the direct contact area would be up to 320 ft^2 (30 m^2). Flight test failures may occur in up to 20% of flight tests, resulting in a maximum direct contact/damage area of approximately 650 ft^2 (60 m^2) per year for failure scenarios. Navy CPS flight test activities would potentially include vessel operations, at-sea weapon system launch, vehicle overflight, and stage 1 booster splashdown.

Essential Fish Habitat

Portions of the water column and benthos of the action area are defined as EFH and support various life stage for the management unit species (MUS) identified under the Western Pacific Regional Fishery Management Council's Pelagic and Hawai'i Archipelago Fishery Ecosystem Plans (FEPs) (WPFMC 2009a, 2009b). The marine water column from the surface to a depth of 3,280 ft from the shoreline to the outer boundary of the EEZ (200 nautical miles), and the seafloor from the shoreline out to a depth of 2,296 ft around each of the Hawaiian Islands, have been designated as EFH. As such, the water column and bottom of the Pacific Ocean around the Hawaiian Islands are designated as EFH, and support various life stages for MUS. The MUS and life stages found in these waters include eggs, larvae, juveniles, and adults of Bottomfish, Crustacean, and Pelagic MUS. Specific types of habitat considered as EFH include coral reef, patch reefs, hard substrate, artificial substrate, seagrass beds, soft substrate, lagoon, estuarine, surge zone, deep-slope terraces and pelagic/open ocean.

Action Area Baseline Condition

The proposed Action Area intersects with approximately 348,300 $miles^2$ of the Hawaiian Islands EEZ. The Action Area includes a diversity of pelagic and benthic habitats which support diverse marine communities. Water depths in the proposed stage 1 booster splashdown and launch activity areas within the Hawaiian Islands EEZ are between 230 ft (70 m) and 19,000 ft (5,800 m) deep. The first 3,280 ft (1000 m) of the water column is EFH, and is assumed to be in good condition. The substrate within the booster drop zone is unknown but is likely a highly variable, diverse mix of hard and soft substrates depending on localized depth and geology.

Adverse Effects

NMFS anticipates that proposed activities may adversely affect MUS, but will have no

more than a minimal impact to EFH. Potential effects include physical damage, increased turbidity, and increased risk of pollutants, chemicals, and invasive species to the water column and benthos.

Physical Damage/Removal (physical stressor): Splashdowns of stage one booster components, spread of debris, or a launch failure may result in breakage or dislocation (i.e., mortality), or sub-lethal tissue abrasion of corals and benthic habitat components. Corals, which are primarily responsible for the structural complexity of coral reefs, are particularly vulnerable to physical damage because their slow-growing carbonate skeleton is relatively brittle and their polyps are easily damaged. In general, lobate, encrusting, and other massive colony morphologies tend to withstand breakage better than foliose, table, plating, and branching morphologies; more fragile forms tend to have higher growth rates (Rützler 2001). Reduction of topographic complexity in the habitats of the coral reef ecosystem reduces biodiversity and productivity (Alvarez-Filip et al. 2009). Literature reviews (Newell et al. 1998; ICES 2016) suggest that the successional marine community requires at least six to eight months to recover back to initial levels after removal, although broken coral will take many years to regrow if significant biomass is removed (Minton 2013).

Sedimentation (pollution stressor): Splashdowns may cause a temporary increase in suspended sediment when the boosters land on the benthos. Coral reef organisms are easily smothered by sediment and can experience both physiological and lethal responses to concentrations below 10 milligrams (mg)/cm^2 /day and 10 mg/Liter (L) (Tuttle and Donahue 2022). Increased turbidity can cause changes in fish behavior, including altered predator-prey relationships (Higham et al. 2015). The effect of the temporary increases in turbidity from the splash down should be no more than minimal.

Chemical Contamination (pollution stressor): Chemical pollutants may enter the marine environment from unspent rocket propellant, motors, batteries, and other system components that are not recovered. Contaminants can have a variety of lethal and sublethal effects on habitat-forming marine organisms, including alteration of growth, interference with reproduction, disruption of metabolic processes, and changes in behavior. These adverse effects can cascade through ecosystems, altering species composition and ecosystem functions and services. Some pollutants are environmentally persistent and can take years or even decades to biodegrade, and others can bioaccumulate or biomagnify through the food chain, eventually posing a direct threat to human health. Contaminant concentrations in fishes are linked to locations with increased urbanization and military history (Nalley et al. 2021; 2023).

Invasive Species (biological stressor): Increased vessel traffic may lead to the spread or introduction of invasive species on vessel hulls. Introduced species are organisms that have been moved, intentionally or unintentionally, into areas where they do not naturally occur. Invasive species rapidly increase in abundance to the point that they come to dominate their new environment, creating adverse ecological effects to other species of the ecosystem and the

functions and services it may provide (Goldberg and Wilkinson 2004). Invasive species can decrease species diversity, change trophic structure, and diminish physical structure, but adverse effects are highly variable and species-specific.

Best Management Practices

The Navy has proposed a number of Standard Operating Procedures and Mitigation Measures that will minimize impacts of the action on EFH. The mitigation measures include:

- Vessel operations would not involve any intentional ocean discharges of fuel, toxic wastes, or plastics and other solid wastes that could potentially harm marine life.
- Test launches would be conducted at least 93 km (50 nm) and up to 370 km (200 nm) offshore.
- No launches or missile component splashdown would occur within marine national monuments or national marine sanctuaries located in the ocean study areas. No anchoring would occur within marine national monuments or national marine sanctuaries
- With the exception of target sites at Kwajalein Atoll, no missile components are expected to splash down or impact within territorial seas or non-U.S. EEZs.
- Stage 1 booster splashdowns would occur in deep ocean waters downrange from launch and as far as 330 nm offshore of any land areas
- All stage 2 splashdown and payload target sites would be outside of EEZs in international waters
- Support ship personnel would search for any visible floating test debris after payload impact. Any visible components of the payload or other test debris found floating would be recovered. as much as practicable.
- When within a 320-m (350-yard) radius of live hard bottom, shallow-water coral reefs, precious coral beds, artificial reefs, and shipwrecks, the Navy would not place anchors or mooring devices on the seafloor (except in designated locations).

NMFS Concerns

The splashdowns of rocket booster stages may result in adverse effects to EFH from physical damage to benthic organisms, including corals or seagrass, that occur at depths of less than 2,297 ft (700 m) in the EEZ from sinking debris. Less than 1% of the action area is shallower than 2,297 ft (700 m) deep, so adverse effects of stage one splashdowns on benthic EFH is expected to be very rare. If a stage from a missile did land in an area with coral reef, the effect could be significant, but the chance of that happening has been minimized. Chemical contamination of the water column up to 3,280 ft (1000 m) may result from unburned solid propellant residue, batteries, and petroleum from recovery vessels. Increased vessel traffic may cause introduction of invasive species from vessel hulls. Vessel travel for launch related activities may result in spread of invasive species from the hulls of vessels.

Conservation Recommendation

NMFS provides the following EFH conservation recommendation pursuant to 50 CFR

600.920 that when implemented—along with the provided standard operating procedures and mitigation measures—will ensure that potential adverse effects to EFH are avoided and minimized:

Conservation Recommendation 1: Ensure all vessel hulls do not pose a risk of introducing new invasive species and will not increase abundance of invasive species present at the project location

Conclusion

NMFS appreciates the coordination and consultation on the CPS flight tests. We have provided an EFH conservation recommendation that when implemented—along with the CPS proposed mitigation measures—will ensure that potential adverse effects to EFH are avoided and minimized.

Please be advised that regulations (Section 305(b)(4)(B)) to implement the EFH provisions of the Magnuson-Stevens Act require that federal activities agencies provide a written response to this letter within 30 days of its receipt and, a preliminary response is acceptable if more time is needed. The final response must include a description of measures to be required to avoid, mitigate, or offset the adverse effects of the proposed activities. If the response is inconsistent with our EFH conservation recommendation, an explanation of the reason for not implementing the recommendation must be provided at least 10 days prior to final approval of the activities.

Please do not hesitate to contact me with any comments, questions or to request further technical assistance at alexandria.barkman@noaa.gov.

Regards,

Alex

References

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Alexandria Barkman, PhD.
EFH Consulting Biologist, PIRO Habitat Conservation Division
National Marine Fisheries Service | U.S. Department of Commerce
Office: (808) 725-5150

www.fisheries.noaa.gov

E.2.11 EFH Consultation Recommendations Response

From: Fuller, David G CIV USARMY SMDC (USA)
To: Barkman, Alexandria L CIV (USA)
Cc: Karen Hoksbergen - KFS
Subject: EFH consultation request for Navy Conventional Prompt Strike Weapon System Flight Tests
Date: Tuesday, September 10, 2024 9:26:29 AM

Aloha Dr. Barkman,

U.S. Army Space & Missile Defense Command (USASMDC) received your Essential Fish Habitat (EFH) consultation conclusions and conservation recommendations for the Navy Conventional Prompt Strike (CPS) Flight Tests Program on August 28, 2024. The Action Proponent, the Department of the Navy Strategic Systems Programs, has accepted your conservation recommendation to ensure all vessel hulls do not pose a risk of introducing new invasive species and will not increase abundance of invasive species present at the project location. The Navy has standard operating procedures in place to periodically clean and inspect vessel hulls which would be implanted as part of the Proposed Navy CPS Flight Tests Action. The Navy will implement the standard operating procedure that "Vessel hulls will be periodically inspected and cleaned to reduce the risk of introduction or spread of invasive species" to ensure that potential adverse effects to EFH are avoided and minimized. With this written acceptance of the National Marine Fisheries Service's conservation recommendations, we consider the subject EFH consultation complete.

Thank you for the timely consultation conclusions and recommendations.

V/r,
David

David Fuller
NEPA Program Manager
Environmental Division/NEPA Branch
U.S. Army Space & Missile Defense Command
Redstone Arsenal, AL
(c) 256.425.2016
(o) 256.955.5585
david.g.fuller6.civ@army.mil

E.2.12 NMFS EFH Consultation Conclusion Response

From:	Alexandria Barkman - NOAA Federal
To:	Fuller, David G CIV USARMY SMDC (USA)
Cc:	Karen Hoksbergen - KFS
Subject:	Re: EFH consultation request for Navy Conventional Prompt Strike Weapon System Flight Tests
Date:	Tuesday, September 10, 2024 6:00:50 PM

Aloha David,
Thank you for agreeing to implement the conservation recommendation. The Essential Fish Habitat consultation for the Navy Conventional Prompt Strike Flight Tests Program is complete.

Regards,
Alex

--
Alexandria Barkman, PhD.
EFH Consulting Biologist, PIRO Habitat Conservation Division
National Marine Fisheries Service | U.S. Department of Commerce
Office: (808) 725-5150

www.fisheries.noaa.gov

E.3. UES Compliance Correspondence

E.3.1 Example of NPA Submission Letter to UES Appropriate Agencies

Note: In addition to the NMFS letter in this section, a similar letter or memo was also sent to RMIEPA, USFWS, USACE, and USEPA.

DEPARTMENT OF THE ARMY
U.S. ARMY SPACE AND MISSILE DEFENSE COMMAND
POST OFFICE BOX 1500
HUNTSVILLE, ALABAMA 35807-3801

REPLY TO
ATTENTION OF

Environmental Division

May 30, 2024

Steve Kolinski, PhD
National Marine Fisheries Service
Pacific Islands Regional Office
1845 Wasp Boulevard, Building 176
Honolulu, HI 96818

Re: Notice of Proposed Activity at United States Army Kwajalein Atoll for Navy Conventional Prompt Strike Weapon System Flight Tests (Control Number NPA-24-SMDC-01)

Dear Dr. Kolinski,

The United States Army Space and Missile Defense Command (USASMDC) is assisting the Department of the Navy Strategic Systems Programs, the Action Proponent, in environmental compliance for the proposed Navy Conventional Prompt Strike (CPS) Weapon System Flight Tests program which includes activities at United States Army Kwajalein Atoll (USAKA) in the Republic of the Marshall Islands (RMI). The Action Proponent, in cooperation with USASMDC, has determined that proposed activities at Kwajalein Atoll have the potential to affect the USAKA environment and would therefore require a Document of Environmental Protection (DEP) and a Notice of Proposed Activity (NPA) under the *Environmental Standards and Procedures for United States Army Kwajalein Atoll (USAKA) Activities in the Republic of the Marshall Islands* (UES). This letter documents submittal of the NPA for the proposed Navy CPS Weapons System Flight Tests activity.

The Proposed Action consists of conducting Navy CPS weapon system (missile) flight tests in both Atlantic and Pacific Ocean regions. Testing would involve up to eight flight test launches per year from various sea-based launch locations conducted over a 10-year period. All flight tests would be at-sea missile tests launched from existing naval vessels operating in Pacific and Atlantic broad ocean areas (BOAs). After launch, flight test activities would include vehicle flight over the Pacific and/or Atlantic Oceans and would involve splashdown of spent boosters and fairings in Pacific and Atlantic BOAs. Navy CPS flight test payloads would impact at target sites in the BOA and at USAKA. Within the RMI, payload target sites include the deep-water Kwajalein Missile Impact Scoring System test range and a land site on Illeginni Islet at the Ronald Reagan Ballistic Missile Defense Test Site.

The Department of the Navy, with the assistance of USASMDC, has prepared a Draft Environmental Assessment (EA) / Overseas Environmental Assessment (OEA) to meet requirements of the U.S. National Environmental Policy Act (NEPA). The U.S. Army Garrison-

Kwajalein Atoll (USAG-KA), USASMDC, and U.S. Navy are submitting the Draft EA/OEA as the NPA for this project to meet their compliance requirements under the UES, Sixteenth Edition, in accordance with UES Section (§) 2-17.3.8(a)(1). This NPA submission, which includes the *Navy CPS Weapon System Flight Tests Draft EA/OEA* and the *Navy CPS Weapon System Flight Tests Biological Assessment for Activities at Kwajalein Atoll*, includes all information to meet requirements of UES § 2-17.3.2 as detailed in **Table 1**. The Draft EA/OEA also contains an evaluation of the potential effects of the Proposed Action on species and habitats listed in UES Appendices 3-4C and 3-4D, and these materials serve as the preliminary review in accordance with UES § 3-4.6.3 coordination procedures.

Table 1. Details of NPA Requirements Fulfillment for the Proposed Activity

UES § 2-17.3.2 Part	Description of NPA Requirement	Status or Location in the Navy CPS Flight Tests Draft EA/OEA		
		EA/OEA Volume	Section (s)	Page(s)
(a)	Type of activity.	Volume 1	2.1	2-1
(b)	Location of activity.	Volume 1	2.1.4.3 & 2.1.4.4	2-10 to 2-12
(c)	Technical description of the activity, including the chemical processes used.	Volume 1	2.1	2-1 to 2-16
(d)	Technical drawing of the activity, including schematics.	Volume 1	2.1	2-1 to 2-16
(e)	Environmental areas potentially affected by the activity (air, water, hazardous waste, pesticides, cultural resources, etc.).	Volume 1	1.6	1-6 to 1-10
(f)	Description of the environmental setting of the activity.	Volume 1	3.2	3-22 to 3-43
(g)	Analysis of the effect of the activity on the environmental area in the absence of environmental controls.	Volume 1	4.2.2 & 4.3.2.2	4-12 to 4-25, 4-31 to 4-36
		Volume 2	D.2	D-20 to D-30
(h)	Technical description and analysis of the environmental controls used in the activity.	Volume 2	Appendix C	C-1 to C-11
(i)	Dispersion model for modeling air sources.	**Not Applicable** – The proposed activity does not involve construction or operation of new or major stationary air pollution sources which would require dispersion modeling. Additional air quality impact analyses are found within the EA/OEA in:		
		Volume 1	4.2.2.1	4-12 to 4-13
(j)	Analysis of waste discharge for point-source waste discharges to water (UES § 3-2.7.1).	**Not Applicable** – The proposed activity does not involve point-source waste discharges as defined in the UES.		
(k)	Information required under UES § 3-6.5.3 and 3-6.5.7 for treatment, storage, or disposal facilities.	Volume 1	3.2.6.2 4.2.2.6	3-40 4-21 to 4-23
(l)	Biological assessment [UES § 3-4.5.3(c)] if endangered resources may be affected.	In the *Navy CPS Weapon System Flight Tests Biological Assessment for Activities at Kwajalein Atoll*, which is included in this NPA submission.		
(m)	Information on receiving-water quality for water discharges.	Volume 1	4.2.2.5	4-20 to 4-21

UES § 2-17.3.2 Part	Description of NPA Requirement	Status or Location in the Navy CPS Flight Tests Draft EA/OEA		
		EA/OEA Volume	Section (s)	Page(s)
(n)	Information on marine life, currents, and other characteristics of an ocean disposal site (UES §§ 3-4 and 3-5).	**Not Applicable** – The proposed activity does not include direct or secondary ocean disposal of wastes. Material and debris resulting from routine tests conducted at or near USAG-KA are not considered ocean disposal under the standards of UES §3-5.5.5(a)(3). Similarly, routine discharges of effluent incidental to the propulsion of vessels or the operation of motor-driven equipment on vessels is not considered ocean disposal under the standards of UES §3-5.5.5(a)(1).		
(o)	Information on marine life and environment in areas where dredging or filling will take place (UES §§ 3-2, 3-4, and 3-5).	**Not Applicable** – No ocean dredging or filling will take place for proposed test flight activities.		
(p)	Species and numbers of migratory birds and other wildlife species and habitats that may be affected (UES § 3-4.6.3(c), UES Appendix 3-4C and UES Appendix 3-4D).	Volume 1	3.2.3 & 4.2.2.3	3-24 to 3-35, 4-13 to 4-17
		Volume 2	D.2	D-20 to D-30
(q)	Analysis of climate change and its potential impacts on the activity, and a description of related limitations and requirements.	Volume 1	3.2.1, 4.2.2.1, & 4.3.2.2	3-22 to 3-23, 4-12 to 4-13, 4-31 to 4-36
		Additional analysis of the cumulative effects of climate change on biological resources can be found in Section 5.0, pages 61 to 65 of the *Navy CPS Weapon System Flight Tests Biological Assessment for Activities at Kwajalein Atoll*, which is included in this NPA submission.		

We request your review of the enclosed Draft EA/OEA and Biological Assessment sections identified in Table 1 as the NPA. Because the Proposed Action may affect species and habitats listed in UES Appendices 3-4C and 3-4D we also request your review of the Draft EA/OEA as the preliminary review. If you have any environmental comments and recommendations for the proposed activity, we request that you submit them by September 1, 2024, or within 90 days of receipt of the NPA. A blank environmental comments and recommendations matrix is enclosed for your use. Please submit all comments and recommendations to David Fuller in my office at david.g.fuller6.civ@army.mil with a copy to Karen Hoksbergen at hoksbergenk@kfs-llc.com. As a note, this requested NPA review is occurring concurrently with the NEPA public review period of the Draft EA/OEA and any comments or recommendations received on the EA/OEA will be considered along with public comments during preparation of the final EA/OEA. For any technical questions regarding the NPA or the review request, please contact me, David Hasley, at 256-955-4170 or david.c.hasley.civ@army.mil. We would greatly appreciate acknowledgement in writing (electronic mail will be sufficient) that the NPA has been received.

Copies of this letter and the NPA submission materials will be distributed to Ms. Moriana Phillip, Republic of the Marshall Islands Environmental Protection Authority – Majuro; Mr. Michael Desilets, U.S. Army Corps of Engineers – Honolulu; Ms. Angela Sandoval, U.S. Environmental Protection Agency – Region 9; Dr. Dan Polhemus, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office; Mr. Gus Aljure, U.S. Army Garrison –

Kwajalein Atoll, Environmental Division, and Mr. Patrick Chauvey, U.S. Army Garrison – Kwajalein Atoll, Directorate of Public Works.

Sincerely,

HASLEY.DAVID.C.1230984308 Digitally signed by HASLEY.DAVID.C.1230984308 Date: 2024.05.22 10:22:28 -05'00'

David Hasley
USASMDC Environmental Division Chief
UES Co-Chairperson

Enclosures (3):

(1) Navy CPS Weapon System Flight Tests Draft Environmental Assessment / Overseas Environmental Assessment
(2) Navy CPS Weapon System Flight Tests Biological Assessment for Activities at Kwajalein Atoll
(3) Blank Environmental Comments and Recommendations Form

4