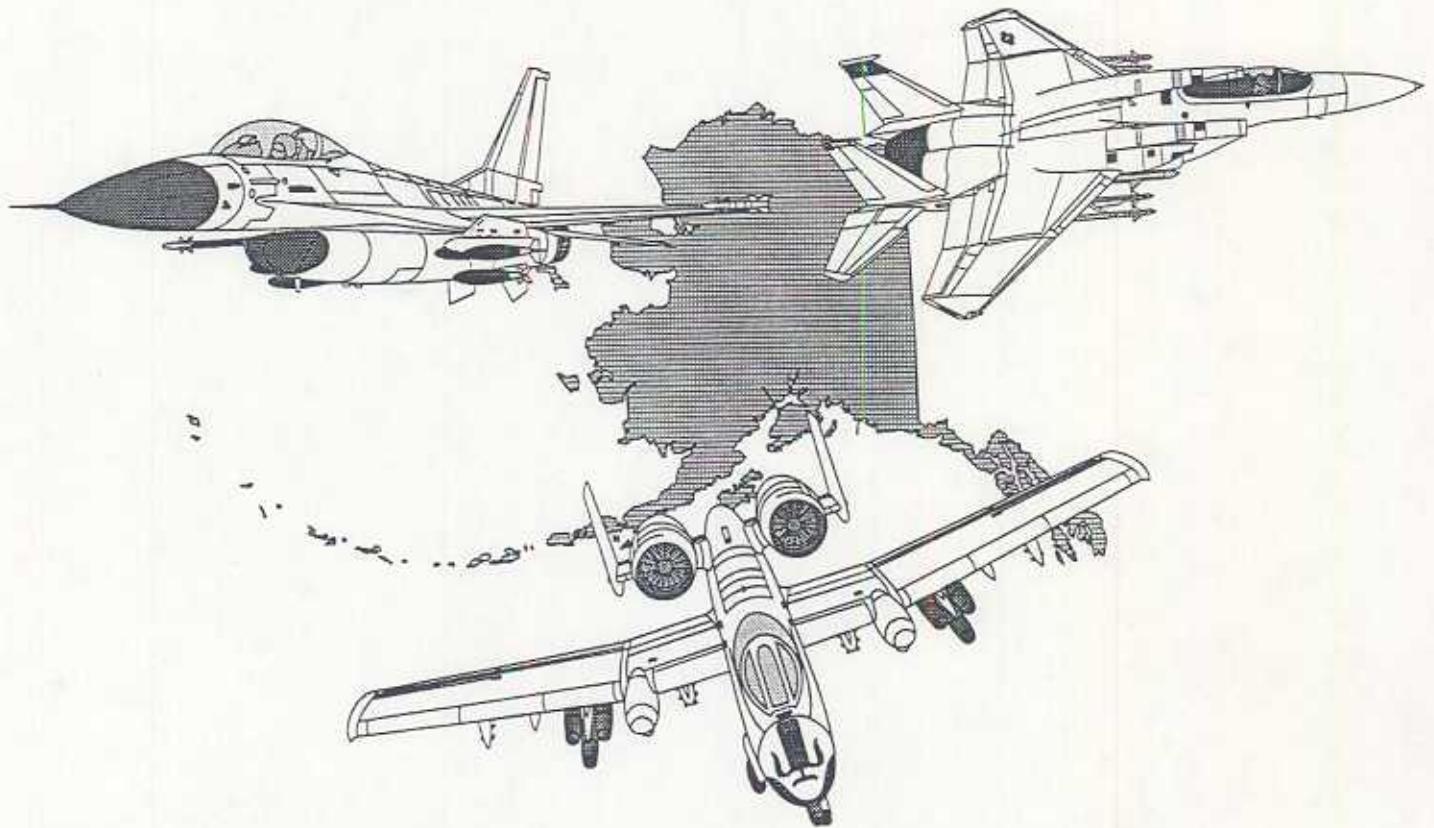


FINAL

Environmental Impact Statement

ALASKA MILITARY OPERATIONS AREAS

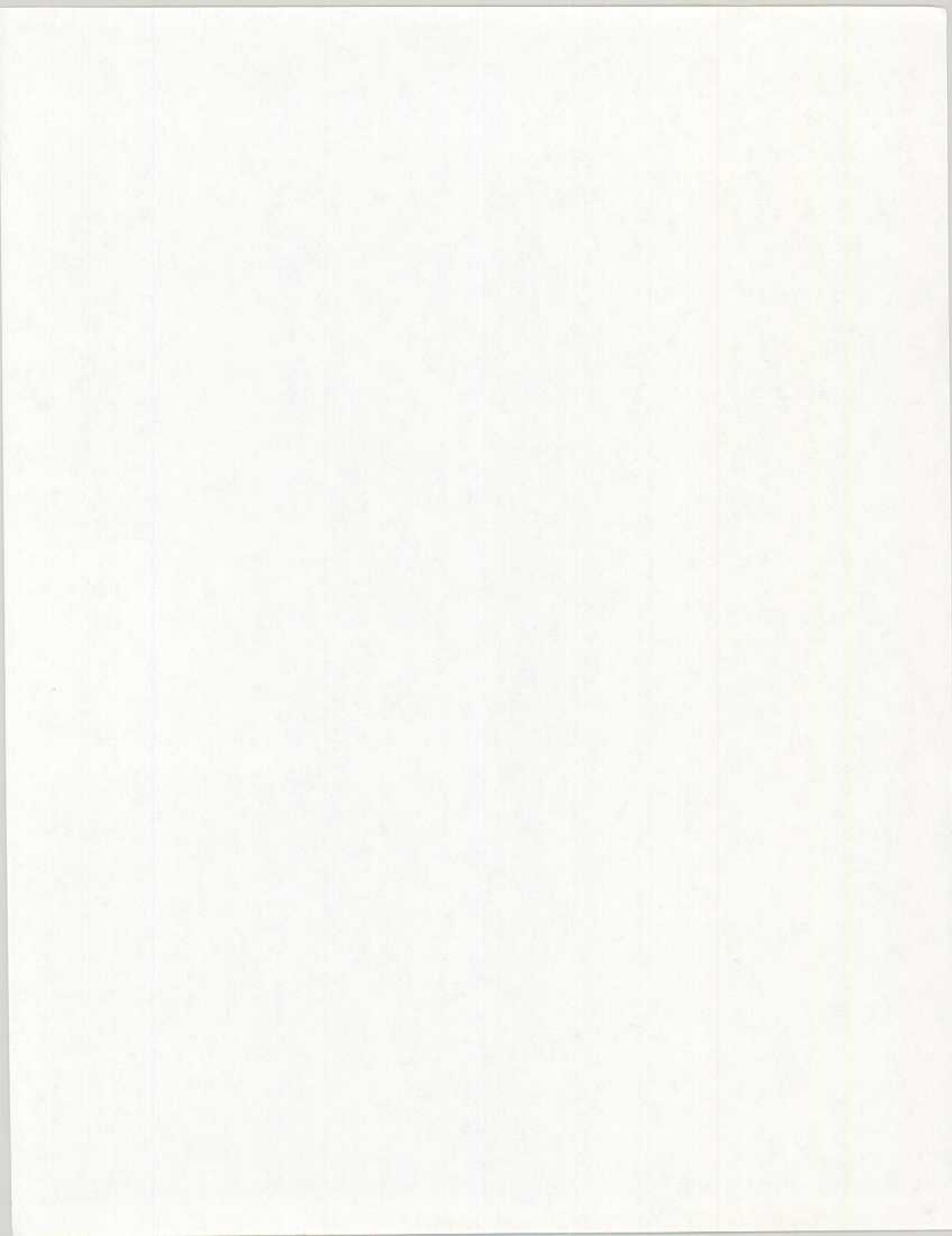


EXECUTIVE SUMMARY



*August 1995
Department of the Air Force
11th Air Force
Elmendorf AFB, Alaska*







DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

11 AF/CC
5800 G St Ste 101
Elmendorf AFB AK 99506-2130

19 JUN 1995

To the Reader:

Thank you for participating in the development of the Air Force Military Operations Areas (MOAs) Environmental Impact Statement (EIS) that assesses the potential environmental impacts of the Air Force's proposed adjustments to MOAs in Alaska. This document would not have been possible without the thoughtful comment and involvement we received from over a thousand Alaskan citizens and others. We believe that the EIS is a national trend-setting example of how civilian and military organizations, as well as the public, can work together to balance military readiness while protecting the nation's natural resources. The EIS process has benefited greatly by a constructive, interdisciplinary dialogue. The EIS is, at the same time, the product of the Air Force's commitment to a long-term relationship with the people of Alaska based on mutual respect for the needs of all concerned.

The Air Force is dedicated to sound environmental management. This is evident on the flightline, in our maintenance practices, and with our pilots and how they fly. The positive experience of the Alaska MOA EIS has renewed our environmental commitment throughout all levels of the Air Force. In the April 1995 issue of Air Force Policy Letter Digest, Air Force Secretary Sheila Widnall stated

"We know we have an obligation to the American people to practice and promote positive resource stewardship . . . And we must integrate this with our military training mission."

The Air Force in Alaska is meeting the obligation outlined by the Secretary. We have made over 30 significant modifications, changes, and/or mitigations to the MOA EIS based on comments we received. Specific results of our positive interaction with the people of Alaska include:

RESOURCE PROTECTION

- Protecting certain "at-risk" wildlife populations by restricting overflights during critical life cycle periods
- Protecting the Delta Caribou Herd by establishing a minimum overflight altitude of 3,000 feet above ground level (AGL), over calving areas, in appropriate areas of the BIRCH and EIELSON MOAs from May 15 to June 15

- Protecting Dall sheep by establishing a minimum overflight altitude of 5,000 feet AGL, over lambing areas and spring mineral licks, in appropriate areas of YUKON 1, 2, 3, and 4, BUFFALO, EIELSON, and FOX MOAs May 15 to June 15, and rutting areas from November 15 to December 15
- Reducing potential noise impacts to peregrine falcons and other resources by increasing existing flight avoidance efforts on the Yukon, Charley, and Kandik Rivers, within appropriate areas of YUKON MOAs 1, 2, 3, and 4, and by extending the avoidance period from April 15 to September 15
- Minimizing potential impacts to subsistence/sport hunting and late season recreational activities by conducting no Major Flying Exercises during September
- Minimizing potential impacts to wildlife and recreation activities by ensuring at least 2 weeks between Major Flying Exercises
- Continuously evaluating our environmental efforts, identifying where more changes are needed, and providing information to agencies and the public by establishing a Resource Protection Council with federal, state, and Air Force membership
- Reducing potential impacts to subsistence and other resources by restricting the use of YUKON 5 to Major Flying Exercises

CIVIL AVIATION/SAFETY

- Enhancing safety for civil aviators transiting the MOAs by raising the minimum altitudes of the FALCON and BIRCH MOAs and establishing Visual Flight Rules civil aviation corridors in the BUFFALO MOA along the Richardson and Alaskan Highways
- Enhancing civil aviation access and safety by dividing the YUKON 3 MOA into horizontal and vertical sections and reducing hours of scheduled activation
- Accommodating civil aviation traffic participating in subsistence/hunting and recreation activities by raising the year-round minimum altitude of YUKON 3B (southeast half of YUKON 3 MOA) to 2,000 feet AGL
- Increasing situational awareness of all aviators operating in the interior MOAs by establishing and improving the capabilities of the Special Use Airspace Information System (SUAIS) in EIELSON, BIRCH, BUFFALO, and YUKON 1,2, and 3
- Creating direct dialogue on potential impacts to aviation activities by establishing an Alaska Civil/Military Aviation Advisory Committee (ACMAAC)

NOISE

- Avoiding the creation of aircraft noise around the Gulkana and Delta National Wild and Scenic Rivers, Tangle Lakes area, and Richardson Highway by moving the eastern boundary of the FOX MOA approximately 25 miles west
- Reducing potential noise impacts by raising the minimum altitude of the YUKON 5 and FOX MOAs to 5,000 feet AGL
- Significantly reducing aircraft noise in the Salcha River and Harding Lake areas by moving the northwest boundary of the BIRCH MOA approximately 5 miles to the east
- Significantly reducing aircraft noise in the Salcha River and Harding Lake areas by eliminating the proposed CLEAR CREEK MOA

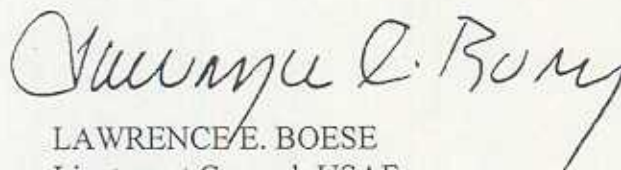
- Avoiding potential noise impacts to the Lake Clark National Park and Preserve by moving the eastern boundary of the STONY A and NAKNEK 2 MOAs to the west
- Reducing potential noise impacts and enhance civil aviation access to Nowitna Wild and Scenic River by establishing a flight avoidance area, in the GALENA MOA, over the Nowitna River of 2,000 feet AGL and 2 nautical miles either side of the river centerline from May 15 to July 15
- Reducing potential noise impacts to recreation activities by conducting no Major Flying Exercises the week prior to and the week following the 4th of July

PUBLIC INFORMATION EXCHANGE

- Assisting the public in planning activities around Major Flying Exercises by publicizing the annual Major Flying Exercise schedules in publications such as the Milepost, visitor and traveler guides, and various newspapers
- Providing the public information on Air Force aviation activities, MFE schedules, and receiving information and/or concerns about Air Force activities, by continuing the in-state toll free number for Alaska residents (1-800-538-6647)

We believe the MOA EIS is an example of how government agencies can cooperate and respond to citizen comments. This process does not conclude here. It is dynamic and, while we believe each operational requirement has been thoroughly examined and mitigated, we remain committed to achieving a balance between wartime readiness and environmental protection.

In that spirit, I am pleased to present the Alaska Military Operations Areas Environmental Impact Statement.



LAWRENCE E. BOESE
Lieutenant General, USAF
Commander

INTRODUCTION

This is a brief summary of the Final Environmental Impact Statement (Final EIS), which addresses the important issues and concerns associated with restructuring of Air Force Special Use Airspace in Alaska and examines the potential environmental consequences of five different alternatives. These issues and concerns were determined over a two-year period by soliciting input and opinions from all sectors of the public with an interest in airspace and aircraft operations and the resources potentially affected. In response to public comment on the Draft EIS, new information was included in the Final EIS, additional possible mitigation measures were identified, and a new alternative (Alternative A—Modified) was evaluated and designated as the Air Force's Preferred Alternative.

This Final EIS completes the process of evaluating five different alternatives, including a No Action Alternative, for restructuring and using Air Force Special Use Airspace in Alaska. In general, the Air Force proposes to:

- Convert some previously utilized Temporary Military Operations Areas (TMOAs) to permanent MOAs;
- Modify some existing permanent MOAs;
- Create some new permanent MOAs;
- Continue to conduct supersonic aircraft operations in the currently authorized STONY A and B MOAs, SUSITNA MOA, YUKON 2 MOA, and YUKON 1 MOA (MFEs only); add supersonic aircraft operations in YUKON 1 MOA (routine and MFE training), YUKON 3 (High), 4 and 5 MOAs, and FOX MOA;
- Continue to conduct routine and joint/combined training with Alaska-based and deployed aircraft; and
- Continue to conduct up to six MFEs per year (not to exceed 60 days per year), but increase the number of authorized MFE aircraft from 85 to 100 and increase the number of MFE sorties from 150 to 200 per MFE-day;
- Continue to use chaff and flares during routine and MFE training as presently allowed in YUKON 1, YUKON 2, SUSITNA, STONY A, STONY B, NAKNEK 1, NAKNEK 2, and GALENA MOAs, and authorize use of chaff and flares for routine and MFE training in all new permanent MOAs in accordance with current 11th Air Force directives for safe employment.

A MOA is Special Use Airspace designated for nonhazardous military flight training activities such as air combat tactics, transition, formation training, and aerobatics. MOAs are depicted on various aviation charts so that pilots can be aware of their location and parameters. The MOAs considered in this EIS are located in the Northern Interior, Southern Interior, Southcentral, and Western Regions of Alaska.

BACKGROUND

The mission of the Air Force is defined by the National Command Authority (i.e., the President and the Secretary of Defense). The directives of the National Command Authority are translated into regulations and instructions issued by Department of Defense (DoD) commanders. As part of the Pacific Air Forces (PACAF), the mission of the 11th Air Force is first defined in the Commander-in-Chief, United States Pacific Command Instruction S3050.6 (*Pacific Command Strategy*) as follows:

"...to maintain the security of and defend the United States against attack throughout the Pacific Theater; to support and advance the national policies and interests of the United States; ...and to prepare plans, conduct operations, and coordinate activities of PACAF forces in consonance with higher authorities directives."

This mission is further defined through 11th Air Force directives to include offensive and defensive counter air, air interdiction, close air support and forward air control, suppression of enemy defenses, electronic combat, air refueling, and theater airlift. This variety of missions coupled with the number and types of aircraft and their related weapons systems require large and varied airspace, approved for both subsonic and supersonic operations.

Although the Alaska MOA structure has changed little since it was established in 1976, there have been considerable changes in the tasking, composition, numbers, capabilities, weapons systems, training programs, and airspace requirements of the aircraft assigned to Elmendorf and Eielson Air Force Bases (AFBs). The scope and complexity of Alaska-based unit taskings

has increased considerably with the focus of air operations now including support for more complex, world-wide contingency air operations. During the 1980s, F-15Cs replaced the F-4 aircraft at Elmendorf AFB and A-10s replaced the F-4s at Eielson AFB. In 1991, Elmendorf AFB gained an additional squadron of F-15Es, and Eielson AFB gained a squadron of F-16Cs. The F-15s and F-16Cs brought new technological dimensions to Alaskan air forces, such as supersonic flight and Advanced Medium Range Air-to-Air Missile capabilities. Other units throughout PACAF have undergone similar changes. These changes collectively required a revision of training programs to assure readiness. The existing Alaska MOA airspace no longer meets the requirements of these updated training programs and unduly hampers the ability of Alaska-based units to meet their more diverse and demanding responsibilities.

With the closing of Clark Air Base in the Philippines in 1991, Alaska became the closest U.S.-controlled tactical flying training area available to PACAF forces and U.S. allies in the Pacific. Consequently, in addition to aircraft permanently assigned to Alaska, other aircraft deploy here to participate in joint/combined flying training and MFEs like Cope Thunder. MFEs are designed to give aircrews their first taste of mock air warfare, ultimately increasing their chance of survival in real combat environments. The complex combat scenarios and advanced capabilities of many of the participating aircraft (e.g., supersonic flight) require large parcels of airspace. MFE airspace must also provide access to air-to-ground weapons ranges and use of ground-based threat radar and weapon system simulators. Exercise support missions such as air refueling, command and control, search and rescue, fighter escort, and electronic warfare further increase the amount of airspace required for MFEs. The existing Alaska MOA structure fails to fully support the Air Force's commitment to conduct MFEs and joint/combined training.

PURPOSE AND NEED

The purpose of the Proposed Action is to restructure and upgrade the MOAs in Alaska. The Proposed Action is needed to ensure that military aircrews are able to receive comprehensive and realistic tactical flying training in as safe an airspace as possible. This specific need stems from the larger need to secure the continued fighting efficiency and effectiveness of U.S. and allied air forces by providing airspace that allows these forces to train to U.S. Air Force (USAF) standards. The existing Alaska MOA structure imposes significant restrictions and inefficiencies on training opportunities, training realism, and the full use of all capabilities of the sophisticated aircraft/weapons systems presently based in Alaska. These restrictions significantly limit 11th Air Force (11 AF) units' abilities to more fully develop their combat capability in order to meet more demanding and complex wartime requirements.

The existing Alaska MOA structure lacks day-to-day, mutually accessible MOA airspace between Elmendorf and Eielson AFBs, precluding the accomplishment of significant routine training and, in particular, Dissimilar Air Combat Training (DACT) and Composite Force Training (CFT). DACT and CFT are critical air combat training building blocks that are readily available to other military aviation units throughout the continental United States. The lack of mutually accessible airspace suitable to conduct these critical categories of training unduly hampers Alaska-based units ability to achieve and maintain assigned combat readiness levels.

The existing Alaska MOA structure also lacks direct linkage between the MOAs and the Oklahoma (R-2202) and Blair Lakes (R-2211) air-to-ground weapons ranges and their associated ground based threat radar weapon system simulators. The isolation of these ranges from the MOA structure eliminates the ability to design realistic aircrew routine training scenarios that would integrate the most basic phases of a ground attack mission (ingress, attack, and egress). This lack of realism significantly restricts the efficient development of combat capability.

The tasking, composition, numbers, capabilities, and associated readiness training programs have changed. These changes have required Alaska-based units to further segment individual permanent MOAs, laterally and vertically, to accommodate simultaneous, de-conflicted use by separate flights of aircraft conducting independent training scenarios. This segmentation of individual MOAs often yields lateral and/or vertical airspace dimensions that are well below the standards specified in the *U.S. Air Force Airspace Master Plan* (1993). Increases in the scope and complexity of Alaska-based unit taskings further amplifies the negative impact of MOA segmentation on the ability to conduct realistic air combat training to achieve assigned readiness levels.

The existing Alaska MOA structure is inadequate to support the Air Force's commitment to conduct the most realistic and effective MFEs and joint/combined training possible. A number of TMOAs were negotiated and established and activated as required for each MFE. However, under Federal Aviation Administration (FAA) regulations, establishing and activating TMOAs takes a minimum of four months lead time to process through environmental and FAA channels. Furthermore, TMOAs are rarely charted on civilian or DoD aviation charts and are typically activated by the Notice to Airmen (NOTAM) system prior to each use. Converting previously utilized TMOAs to permanent MOAs, as proposed, would allow this airspace to be charted and make information pertaining to airspace boundaries readily available to all aviators.

The existing Alaska MOA structure possesses several characteristics that must be preserved when considering and evaluating the airspace restructuring alternatives. The MOAs must continue to be:

- accessible,
- geographically dispersed within the accessible region to deal with Alaska's often adverse weather,
- suitably sized,
- arrayed to minimize interference with civilian route structures, and
- equipped with a suitable degree of lateral segmentation to provide for flexible FAA management of civilian and military access and operations within these MOAs.

Establishing a single, regional-sized MOA would not permit the designation of varied floors or ceilings where necessary to avoid other FAA route/airspace structures or environmentally sensitive areas. A tailored array of contiguous, multiple MOAs possessing different floors/ceilings where necessary that achieves military readiness requirements, provides for civil aviation access, allows efficient FAA management of MOA access, and is sensitive to environmental concerns is the most prudent and balanced restructuring concept.

PLANNING PROCESS

The National Environmental Policy Act (NEPA) requires that any agency proposing a major federal action prepare a detailed statement on the environmental impact of the proposed action, alternatives to the proposed action, and any adverse effects that cannot be avoided should the proposed or alternative action be implemented. The term "major" does not refer to the size of the action, but to the significance of its potential impact. The Council on Environmental Quality (CEQ) regulations for implementing NEPA also require agencies to seek public and agency input during the preparation of an EIS through a process known as scoping and, later, through public hearings on the Draft EIS.

This environmental impact analysis process started on July 9, 1993, with the Air Force's publication of a Notice of Intent to prepare this EIS in the *Federal Register*. From September 20 through November 15, 1993, public scoping meetings were held in 14 locations throughout the state to give the public an opportunity to voice concerns regarding the Proposed Action and identify issues they wished to see addressed in the EIS. The Air Force delayed public scoping meetings until late September to avoid conflict with summer subsistence and recreation activities. Following publication of the Notice of Intent, meetings were announced in regional and local Alaska newspapers and then again at least two weeks prior to each meeting. The Air Force also solicited input from federal, state, and local agencies, Alaska Native groups, and civil aviation groups. As a result of this solicitation of input, an additional alternative was identified which resulted in an additional scoping meeting in Tok on February 8, 1994. All relevant issues identified through the scoping process have been addressed in this Final EIS. This EIS is intended to provide the decision-maker with an environmental disclosure sufficiently detailed to enable an informed decision among alternatives. Of equal importance, the preparation of the EIS facilitated broad and active participation by the public, agencies, and other interested organizations in the planning process.

The Notice of Availability of the Draft EIS was published in the *Federal Register* on 2 September 1994. Public hearings were conducted in September and October, 1994, at the same locations visited during scoping, and provided an opportunity for the public to comment on the findings presented in the Draft EIS. The public comment period, initially planned to close on October 31, 1994, was extended by the Air Force to November 30, 1994, to allow more time for the public to study and comment on the Draft EIS. All substantive comments received within the public comment period were considered and

included in this Final EIS. Comments received after the close of the comment period were reviewed and the issues raised were found to be similar to those received during the comment period.

The Secretary of the Air Force or her designee will decide which of the alternatives to implement. Concurrent with the development and release of the Final EIS, the FAA will circularize (present for public review) an Aeronautical Study in accordance with *FAA Handbook 7400.2*. The results of this study, along with the Final EIS, will form the basis of FAA's decision regarding the proposal for restructuring MOAs in Alaska and the Air Force's Record of Decision. It is important to note that the FAA has final authority for approving, modifying, or denying a proposal to establish airspace, including MOAs. Following completion of the FAA Aeronautical Study, the Air Force will publish its Record of Decision identifying the Preferred Alternative and all mitigation measures to be implemented. The Record of Decision is anticipated for release in the winter of 1995-96. Approval and charting of the airspace in its final form and implementation of the Preferred Alternative would follow in the spring of 1996.

ISSUES SUMMARY

The range of issues and concerns expressed through verbal and written comments on the Draft EIS were similar to those raised during scoping. Some 214 written comments were received from individuals, agencies, and other interested groups. Comments were also recorded at the 15 public hearings and through the statewide toll-free phone number established to receive input and disseminate information pertaining to the EIS. Issues continued to vary considerably from one location to another, but the key issues remained constant and it is these key issues that are addressed in the Final EIS:

- ✦ **Airspace Management, Aircraft Operations, and Aviation Safety.** Potential hazards of military flight operations in areas of heavy civilian and/or non-DoD agency aircraft activities; potential impacts on public use of airspace by private and commercial pilots; possible impacts on public use airports and air traffic control services provided by the FAA; and potential increases in aircraft mishap rates.
- ✦ **Chaff and Flares/Hazardous Operations.** Potential impacts associated with the use of chaff and flares, airborne lasers, and munitions; and possible impacts on emergency response procedures associated with fire management, hazardous material and hazardous waste handling, and fuel jettison.
- ✦ **Wildlife.** Potential long- and short-term impacts on biodiversity, protected species, and specific animal populations due to repeated exposure to aircraft noise.
- ✦ **Recreation.** Potential for military aircraft overflights and associated noise to affect recreation resources and the recreation experience.
- ✦ **Subsistence.** Potential impacts of aircraft overflights on subsistence resources and subsistence activities, particularly on public lands.
- ✦ **Land Use.** Potential for increased noise levels due to military aircraft overflights to affect land status, use, or management policies; wilderness values; aesthetic characteristics; and the quality of life.
- ✦ **Air Quality.** Potential for increased aircraft emissions of criteria air pollutants to affect air quality, particularly in the Anchorage and Fairbanks carbon monoxide nonattainment areas and the Denali National Park and Preserve Prevention of Significant Deterioration Class I air quality area.
- ✦ **Socioeconomics.** Potential for increases in transient military personnel and aircraft activity associated with MFEs to affect local economies.

DESCRIPTION OF THE ALTERNATIVES

Features Common to All Alternatives

Four factors were considered in identifying alternatives: 1) aircraft operational parameters, 2) existing facilities and assets, 3) existing airspace infrastructure, and 4) the tactical flying training program and airspace standards. An alternative had to meet strict criteria associated with these factors in order to meet the combat readiness requirements of the Air Force in Alaska and be considered a reasonable alternative.

Routine training involves aircraft departing from their base, participating in training missions that have one or more objectives (e.g., counter air, air interdiction, close air support, forward air control, suppression of enemy defenses), and returning to base. This scenario (take-off, training flight, and full-stop landing) is called a "sortie." Because an aircraft can pass through one or more MOAs while conducting one sortie, several operations may be conducted during one sortie. For the purposes of this EIS, operations are the number of times an aircraft conducting 11th Air Force flying training on a routine or MFE flying day would "pass" through a MOA.

Routine training (which includes joint and combined training for analysis purposes) would occur throughout the year. However, due to fiscal constraints, these training activities would occur over an average of 240 days per year, including 60 days of MFE training. This assumption does not imply that flying activities would only take place 240 days per year. Rather, it means that the number of flying hours allocated to 11th Air Force units through the annual budget are typically distributed over 240 days per year in order to assure unit combat readiness throughout the year (see Appendix E).

Routine training (including joint and combined training) could take place Monday through Friday, between 7:00 a.m. and 10:00 p.m.¹ Training could also take place, on average, up to two weekends per quarter. In general, routine training activities would occur at a reduced level during certain periods such as around Thanksgiving and Christmas or when 11th Air Force units are deployed out of the state for other training.

Exercise training includes MFES, Low-Altitude Navigation and Targeting Infrared for Night (LANTIRN) exercises, weapons training deployments, Air National Guard and Air Force Reserve deployments, and multinational exercises. Exercises integrate air-to-air and air-to-ground missions as well as support missions such as airborne command and control, electronic combat, tactical airlift, and search and rescue. Participants in MFES may include aircraft from other U.S. military services, North Atlantic Treaty Organization (NATO) allies, and allies from other nations. During an MFE, a combat scenario is developed and roles are given to participating aircraft. Ground forces position simulated air defenses throughout the training area to provide, in conjunction with airborne defenses, a realistic air defense environment. Participating aircraft are temporarily assigned to an airbase in Alaska from which they depart and to which they return at the end of a sortie. During an exercise, aircraft typically accomplish two sorties per day.

MFE training would occur no more than 60 days per year (up to 6 exercises per year). Typically, one exercise would take place some time between February and April, four exercises between May and August, and one more exercise between October and November. Generally, an MFE would run for 10 flying days, but could last for as many as 15 flying days. MFE training would peak during the summer months (June through August); no MFES would occur during the winter months of December and January. MFES would normally occur Monday through Friday, 8:00 a.m. to 6:00 p.m.¹ Training on weekends may also occur, an average of two weekends per quarter. In general, exercise operations would take place for 2 hours before noon (12:00 noon.) and 2 hours after noon (12:00 noon.) each exercise day. The morning and afternoon periods could run consecutively. During an exercise, the total number of daily aircraft sorties (exercise and routine training sorties) from Eielson AFB may increase as much as 174 percent over routine daily training sorties. At Elmendorf AFB, the total number of daily aircraft sorties (exercise and routine training sorties) may increase as much as 95 percent over routine daily training sorties. Flight operations during an exercise would normally use Northern Interior, Southern Interior, and

¹Sometimes it may be necessary for the Air Force to train outside the published hours. This would require that a special Notice to Airman (NOTAM) advisory be approved and issued by the FAA. However, the Air Force would plan MOA operations to begin after 7:00 a.m. local time and cease before 10:00 p.m. local time.

Southcentral MOAs (except for SUSITNA MOA), and would include use of the air-to-ground weapons ranges. MFE training may involve as many as 100 aircraft per day, each flying as many as 2 sorties per day, for a total of 200 MFE sorties per day (except under the No Action Alternative).

Included in the 60 MFE-day period, a maximum of two nighttime MFEs could be conducted each year, for a maximum of 30 days annually. Night MFEs would usually be scheduled for February/March and October/November. During these MFEs, aircraft landings could take place at Eielson and Elmendorf AFBs between 10:00 p.m. and 11:00 p.m., but all landings would be completed by 11:00 p.m. Aircraft operations in the MOAs and aircraft take-offs from the bases would not occur after 10:00 p.m. Night MFE operations would be limited to 10 percent of the total daily MFE sorties, or an average of 20 sorties per night.

Table ES-1 summarizes the average daily aircraft activity by MOA for each alternative. A couple of definitions of terms used in this table are in order. A "routine training day" is a day during which only routine flying training is conducted. An "MFE training day" is a day during which MFEs and routine flying training are conducted. MOA aircraft activity data are based on the average of 240 training days per year. Numbers in Table ES-1 depict the maximum anticipated average number of times an aircraft conducting routine or MFE flying training would "pass" through a MOA on a routine or MFE training day.

Table ES-1 Average Daily Aircraft Operations by MOA for Each Alternative.¹

MOA (TMOA)	No Action Alternative (TMOA)		Proposed Action		Alternative A		Alternative B		Alternative A—Modified	
	Routine training day	MFE training day ²	Routine training day	MFE training day ²	Routine training day	MFE training day ²	Routine training day	MFE training day ²	Routine training day	MFE training day ²
NORTHERN INTERIOR REGION										
YUKON 1	11	149	18	206	PA ³	PA	PA	PA	PA	PA
YUKON 2	14	152	12	201	PA	PA	PA	PA	PA	PA
YUKON 3 (YUKON 3)	N/A ⁴	119	8	166	PA	PA	PA	PA	PA	PA
YUKON 4 (YUKON 3)	N/A	N/A	7	164	PA	PA	N/A	N/A	PA	PA
YUKON 5 (YUKON 4)	N/A	132	<1	170	PA	PA	N/A	N/A	N/A	PA
YUKON 6 (YUKON 1A)	N/A	70	14	107	PA	PA	PA	PA	PA	PA
SOUTHERN INTERIOR REGION										
BUFFALO (BUFLO)	N/A	140	12	86	PA	PA	PA	PA	PA	PA
BIRCH (EIELSON A)	N/A	140	14	145	17	152	PA	PA	17	152
EIELSON (EIELSON B)	N/A	140	11	105	13	111	PA	PA	13	111
FALCON	N/A	N/A	5	13	PA	PA	PA	PA	PA	PA
CLEAR CREEK	N/A	N/A	5	13	N/A	N/A	PA	PA	N/A	N/A
SOUTHCENTRAL REGION										
FOX (FOX 1)	N/A	50	16	80	PA	PA	PA	PA	PA	PA
TANANA (FOX 2)	N/A	50	N/A	N/A	N/A	N/A	8	164	N/A	N/A
SUSITNA	8	7	3	3	PA	PA	PA	PA	PA	PA
WESTERN REGION ^{2,3}										
NAKNEK 1	7	6	5	4	PA	PA	PA	PA	PA	PA
NAKNEK 2	4	4	3	3	PA	PA	PA	PA	PA	PA
STONY A ⁵	18	23	17	23	PA	PA	PA	PA	PA	PA
STONY B ⁵	8	13	7	13	PA	PA	PA	PA	PA	PA
(STONY C) ⁵	N/A	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GALENA	<1	<1	<1	<1	PA	PA	PA	PA	PA	PA

Source: see Appendix E, Distribution of MOA Sorties worksheets. Fractions have been rounded up to the next highest whole number; where operations in a MOA were determined to be less than 1 per day, this has been indicated by "<1."

¹ Numbers in this table depict the anticipated average number of times an aircraft conducting 11th Air Force flying training on a routine or MFE flying day would "pass" through a MOA. Because an aircraft can pass through one or more MOAs while conducting one "sortie" (one take-off, training flight, and full-stop landing), it would be incorrect to add the total operations depicted in this table to determine the total number of sorties generating specified MOA activity. Please refer to Table 2-6 for sortie numbers.

² Numbers on MFE training days include routine and MFE activity: routine training typically would continue to occur at slightly reduced rates during MFEs.

³ PA indicates that the number would be the same as under the Proposed Action (PA).

⁴ N/A means not applicable to this MOA. (See description of training operations conducted in each MOA in sections 2.4.2 through 2.4.6).

⁵ Numbers in MFE training day column for the Western Region reflect routine training and limited air-to-air exercise training rather than MFE training.

Proposed Action—Key Elements

Specifically, the Proposed Action would: 1) convert seven previously utilized TMOAs—YUKON 3, YUKON 4, YUKON 1A, BUFLO, EIELSON A, EIELSON B, and FOX 1—to the permanent MOAs YUKON 3, YUKON 4, YUKON 5, YUKON 6, BUFFALO, BIRCH, EIELSON, and FOX; 2) modify the times of operation, vertical dimensions, and/or internal boundaries of five existing MOAs (YUKON 1, STONY B, NAKNEK 1, NAKNEK 2, and GALENA MOAs); 3) create two new permanent MOAs—CLEAR CREEK and FALCON; 4) conduct supersonic aircraft operations down to 5,000 feet above ground level (AGL) in nine YUKON 1, YUKON 2, YUKON 3, YUKON 4, YUKON 5, SUSITNA, FOX, STONY A, and STONY B MOAs; 5) standardize floors for supersonic operations in three existing MOAs (YUKON 1, STONY A, and STONY B) at 5,000 AGL; 6) conduct routine and joint/combined flying training with Alaska-based and deployed aircraft; 7) conduct up to six MFEs per year involving up to 100 aircraft in a maximum of 200 sorties per MFE-day, using the proposed MOA structure and existing air-to-ground weapons ranges; and 8) use chaff and flares during routine and MFE training in selected permanent MOAs in accordance with 11th Air Force directives for safe employment. An overview of the Proposed Action, which would encompass an estimated 63,420 square miles, is presented in Figure ES-1.

Compared to existing conditions (i.e., the No Action Alternative), increases in the number of aircraft operations in some MOAs would be quite small and operations on other MOAs would actually decrease (for example, in the YUKON 2, SUSITNA, NAKNEK, and STONY MOAs). In other cases, particularly in the YUKON 1-6 and FOX MOAs, the increases would be more substantial, with MOA operations increasing up to 16 operations on routine training days and between 30 and 57 operations on MFE training days.

Positive aspects of the Proposed Action include: 1) raising the floor of the YUKON 1 MOA from the surface to 100 feet AGL; 2) raising the floor of the YUKON 4 TMOA from 2,000 feet AGL to 3,000 feet AGL; 3) eliminating the FOX 2 and STONY C TMOAs entirely; 4) reducing the standard hours of operation in the NAKNEK 1 and NAKNEK 2 MOAs from 6:00 a.m. to 6:00 p.m., Monday through Friday to 10:00 a.m. to 3:00 p.m., Monday through Friday; 5) reducing the standard hours of operation in the GALENA MOA from 8:00 a.m. to 6:00 p.m., Monday through Friday to activation by the Notice to Airmen System for infrequent use; and 6) decreasing routine aircraft operations in some of the existing permanent MOAs, although the decreases would be relatively minor.

Potential negative aspects of the Proposed Action include: 1) authorizing the YUKON 1, YUKON 3, YUKON 4, YUKON 5, and FOX MOAs for supersonic operations down to 5,000 feet AGL during routine and MFE flying training; 2) lowering the floor of the BUFFALO MOA from 1,000 feet AGL to 300 feet AGL; and 3) lowering the floor of the STONY B MOA from 3,000 feet AGL to 100 feet AGL. Converting the TMOAs to permanent MOAs would make them available for routine flying training year-round. Increases in the number of military aircraft operations are likely to be most discernible in the BUFFALO, BIRCH, EIELSON, CLEAR CREEK, and FALCON MOAs with an average of 5 to 14 routine flying training operations per day; and in the FOX MOA with 16 per day.

Alternative A—Key Elements

The Proposed Action and Alternative A are identical except that the CLEAR CREEK MOA (approximately 400 square miles) would not be established and the relatively low number of aircraft training operations planned for this MOA (5 per routine training day and 13 per MFE training day) would be conducted instead in the FALCON and EIELSON MOAs. An overview of Alternative A is presented in Figure ES-2. This alternative was developed based on public input received during the scoping process. Alternative A reasonably satisfies the mandatory criteria established by the Air Force. The positive and negative aspects described for the Proposed Action are true of this alternative as well, with the additional positive aspect that resources underlying the proposed CLEAR CREEK MOA would not be affected. Alternative A would encompass approximately 63,020 square miles.

Alternative B—Key Elements

Under Alternative B, the YUKON 4 and YUKON 5 MOAs (approximately 8,030 square miles) would not be established and another new supersonic MOA, the TANANA MOA, would be created (approximately 6,810 square miles). All other elements of Alternative B are identical to the Proposed Action. An overview of Alternative B is presented in Figure ES-3.

This alternative was also developed in response to public comments received during scoping concerning other possible locations for MOAs. This alternative reasonably satisfies the mandatory criteria used by the Air Force. Because this alternative is similar in many respects to the Proposed Action, most of the positive and negative aspects described for the Proposed Action are true of this alternative as well. There are two notable differences, however: 1) any negative aspects associated with establishing the YUKON 4 and YUKON 5 MOAs would not be realized; and 2) any positive elements of eliminating the FOX 2 TMOA would be negated by establishment of the TANANA MOA, which would cover essentially the same territory plus substantially more and would be authorized for supersonic operations down to 5,000 feet AGL. Alternative B would overlie about 62,200 square miles.

Alternative A—Modified (Preferred Alternative)—Key Elements

Alternative A—Modified was developed in response to comments received on the Draft EIS. It differs from the Proposed Action and Alternative A in the following ways: 1) the CLEAR CREEK MOA would not be established, 2) the external boundaries of the STONY A, NAKNEK 2, BIRCH, and FOX MOAs would be altered to reduce the overall size of these MOAs and preclude the potential for direct overflight of sensitive resources, 3) the floors of the FOX and YUKON 5 MOAs would be 5,000 feet AGL rather than 3,000 feet AGL, 4) the YUKON 5 MOA would be used for MFEs only, 5) the floor of the YUKON 3B MOA (the southeastern half of the proposed YUKON 3 MOA) would be 2,000 feet AGL rather than 100 feet AGL, and 6) the floor for supersonic operations would be 5,000 feet AGL or 12,000 feet mean sea level (MSL), whichever is higher, in YUKON 1, YUKON 2, YUKON 3, YUKON 4, YUKON 5, SUSITNA, FOX, STONY A, and STONY B MOAs. An overview of Alternative A—Modified is presented in Figure ES-4. This alternative would encompass roughly 60,780 square miles.

No Action Alternative—Key Elements

The No Action Alternative would maintain the status quo. 11th Air Force would continue to apply for some or all of the nine previously utilized TMOAs (YUKON 3, YUKON 4, YUKON 1A, FOX 1, FOX 2, STONY C, BUFLO, EIELSON A, and EIELSON B) up to six times each year in order to conduct MFEs. The times of operations, vertical dimensions, and internal boundaries of the existing YUKON 1, YUKON 2, SUSITNA, STONY A, STONY B, NAKNEK 1, NAKNEK 2, and GALENA MOAs would remain the same. Supersonic operations would only be conducted in YUKON 2, SUSITNA, STONY A, and STONY B MOAs; and in YUKON 1 MOA during MFEs. The floors of these MOAs for supersonic operations would continue to be 5,000 feet AGL or 10,000 feet MSL, whichever is higher. Routine and joint/combined flying training by Alaska-based and deployed aircraft would be conducted only in permanent airspace. MFEs would be conducted in the MOA/TMOA structure with up to 85 aircraft participating in a maximum of 150 sorties per MFE-day. An overview of the No Action Alternative, which would involve about 70,970 square miles, is presented in Figure ES-5.

Figure ES-1 Overview of the Proposed Action

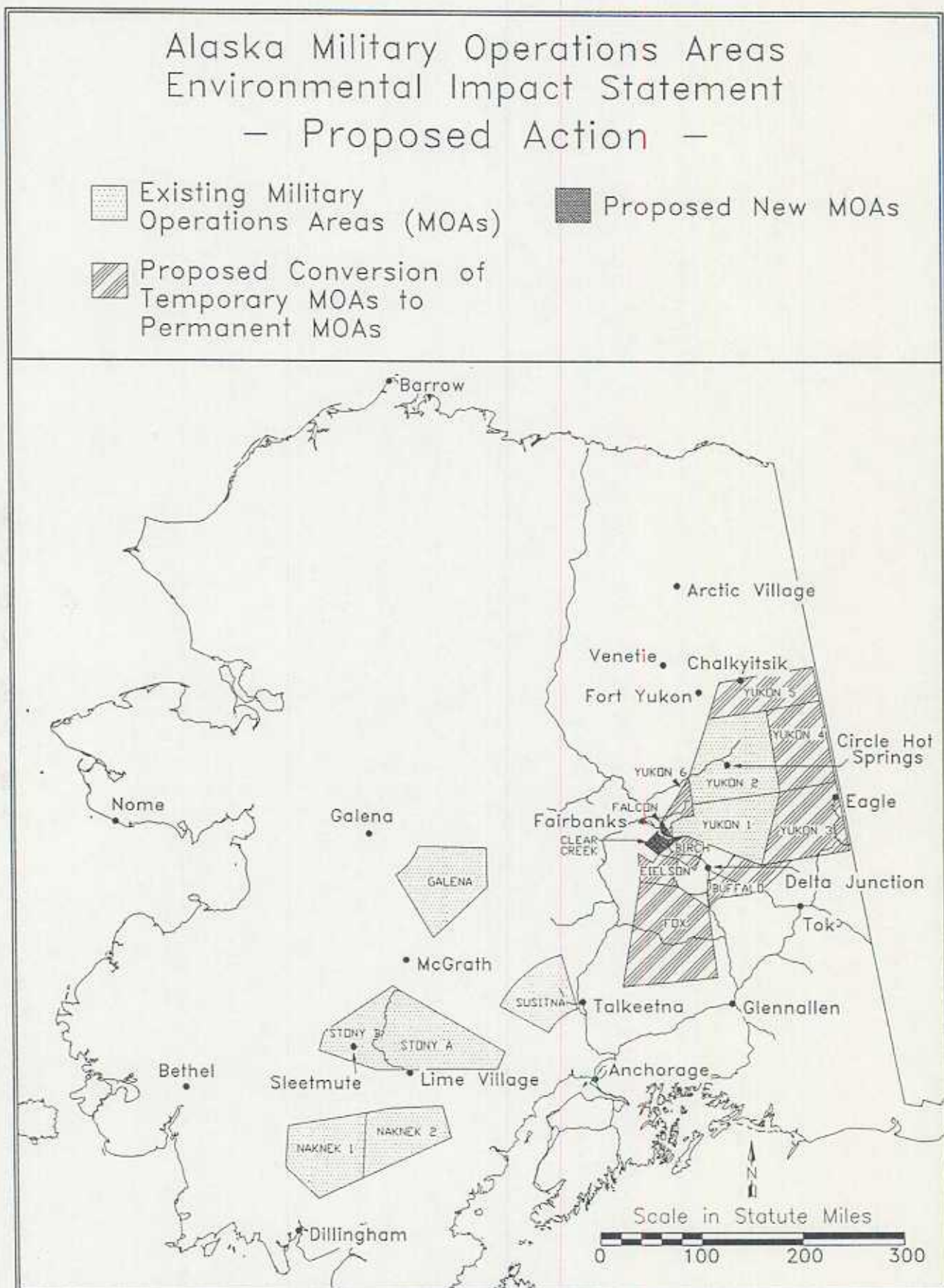


Figure ES-2 Overview of Alternative A

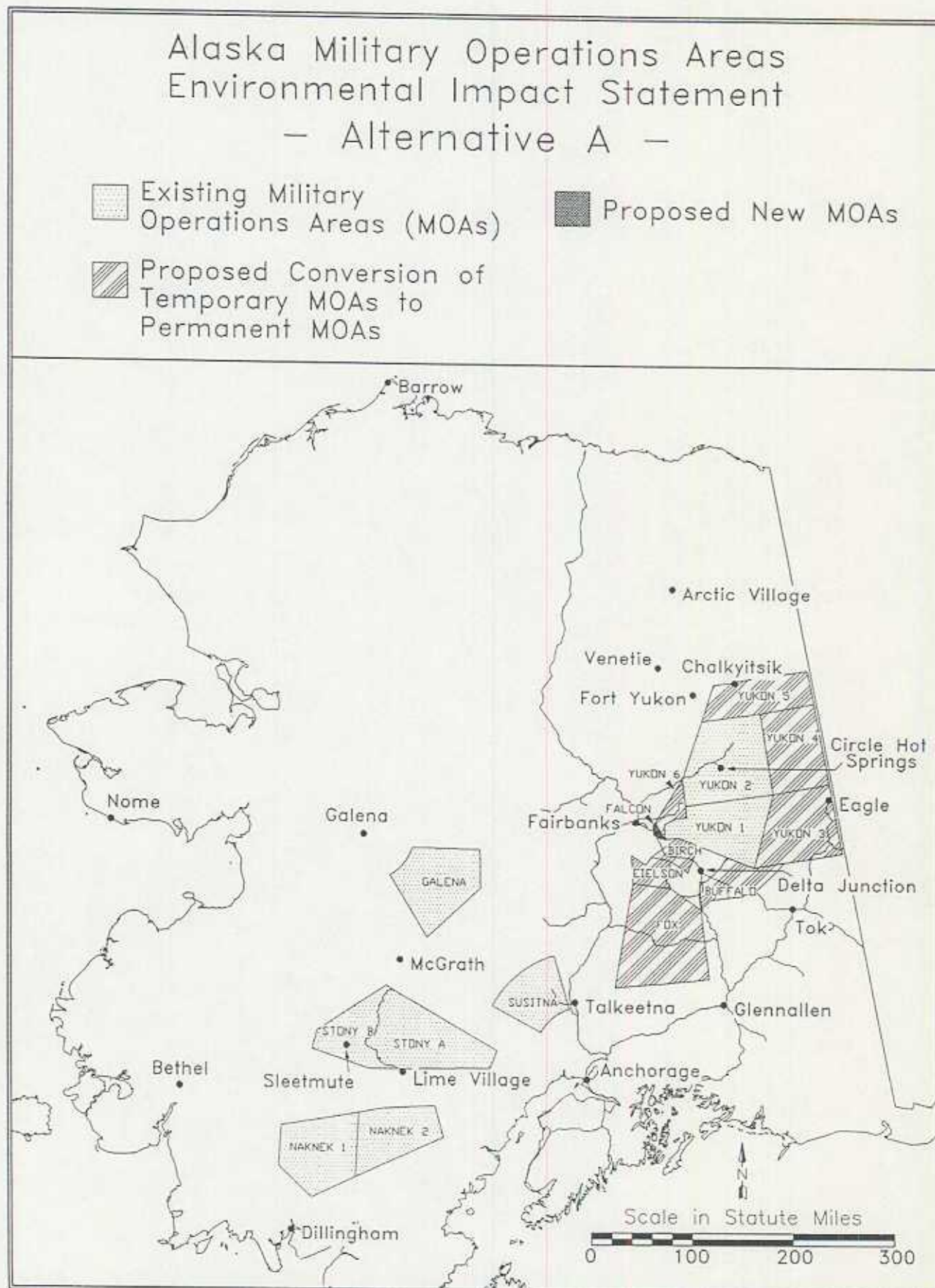


Figure ES-3 Overview of Alternative B

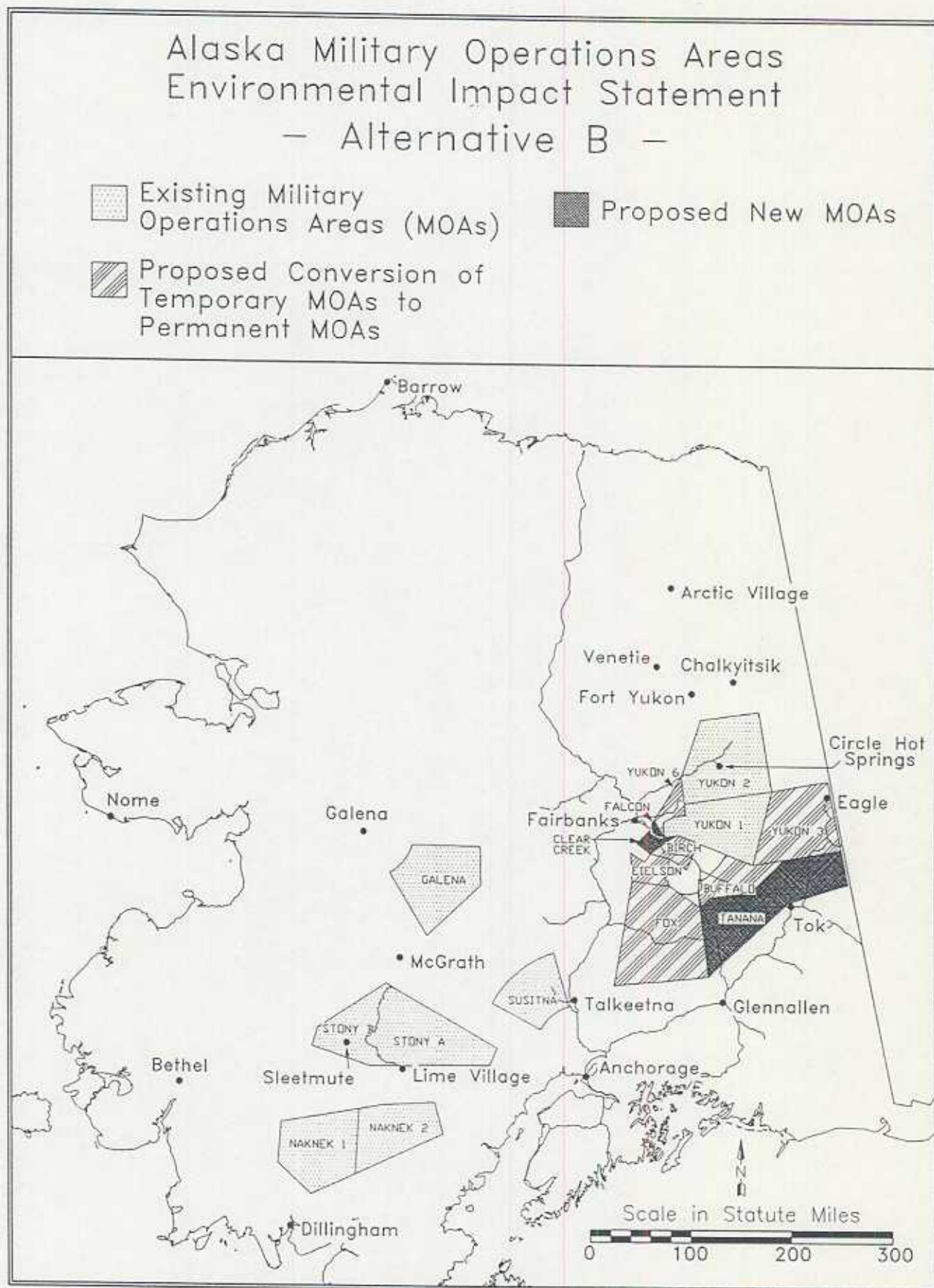


Figure ES-4 Overview of Alternative A—Modified

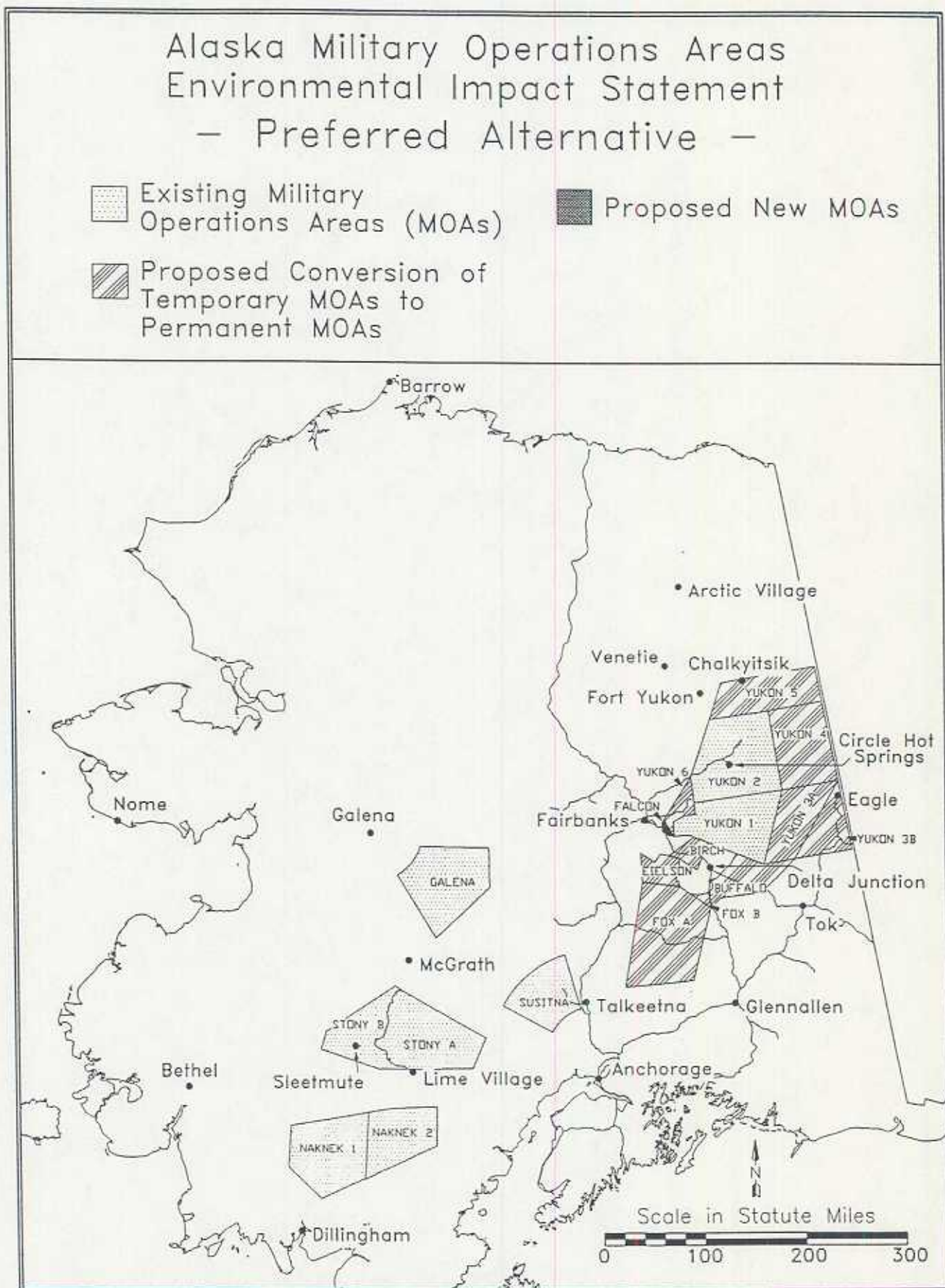
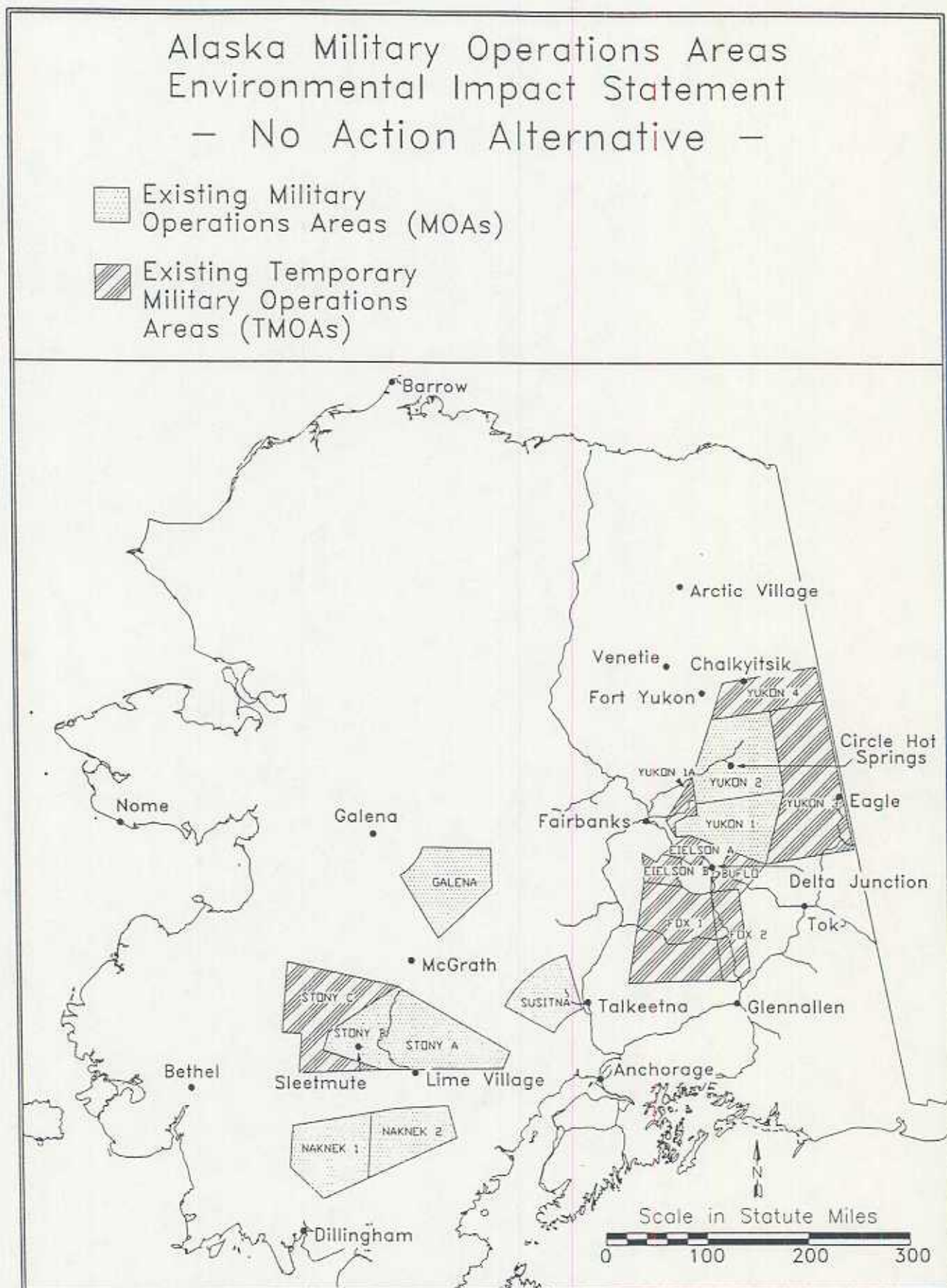


Figure ES-5 Overview of the No Action Alternative



ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

Determining Environmental Consequences

Existing environmental conditions provided the basis for analyzing the potential effects of the alternatives. The impact analysis relied on a mix of established methodologies (e.g., for land use and air quality) and methodologies developed specifically for this EIS in the absence of established approaches (e.g., for recreation and subsistence). Because implementation of any alternative, including the No Action Alternative, would affect the environment, the methodologies were designed to predict not only what impact was likely to result, but also the probable severity of the impact. Thus, impact levels were defined broadly as none or negligible (Level I Impacts); adverse, but not significant (Level II Impacts); and significantly adverse (Level III Impacts). Direct and indirect effects were considered, as were short-term, long-term, and potential cumulative effects.

Resources for which adverse impacts (Level II) or significantly adverse impacts (Level III) are predicted are identified; resources not specifically mentioned are expected to sustain no or negligible impacts (Level I). Note that the FAA assumes responsibility for assessing impact levels (I, II, or III) with regard to airspace management, aircraft operations, and aviation safety through its circularization process for the Air Force's airspace proposal. Consequently, except for mishap potential for military aircraft using the airspace, the Final EIS does not predict impacts to these resource elements.

Effects that Do Not Vary Significantly Among Alternatives

Chaff, Flares, and Hazardous Operations (Sections 3.3 and 4.3)¹

The airspace approved for use of chaff and flares would increase, but existing employment procedures preclude any increased risk of wildland fires or other environmental degradation (Level I Impacts). The use of airborne lasers in the MOAs would be restricted to the eye-safe "training" mode to avoid any potential injury to humans (Level I Impacts). Munitions expenditures would not increase, nor would they exceed the annual range cleanup capability (Level I Impacts). The slightly higher number of MFE sorties could incrementally increase the occurrence of emergency fuel jettisoning, but existing procedures designed to avoid environmental degradation accommodate this increase (Level I Impacts).

The types of hazardous materials present at the bases would not change, and any increase in the amounts of hazardous materials present or the amounts of hazardous waste generated would be expected to be negligible. The handling and use of hazardous materials would remain subject to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Emergency Planning and Community Right-to-Know Act, Air Force Occupational Safety and Health standards, and state regulations. Additional hazardous waste, regardless of quantity, would continue to be handled in accordance with the procedures for large quantity generators established by the Resource Conservation and Recovery Act. Actual discharges of hazardous materials and hazardous wastes are possible and would be reported in accordance with state and federal law, although the potential for such occurrences is thought to be slight. Releases would be the subject of immediate response by trained personnel, and the potential for damage to human health or the environment is minimal (Level I Impacts).

Land Use (Sections 3.8 and 4.8)

Potential adverse effects to land use are anticipated for areas that have not been previously exposed to average sound levels considered by the American National Standards Institute to be incompatible or marginally compatible with the predominant land use (Level II Impacts). Level II Impacts are predicted for 689 on-base residents of Eielson AFB who were not previously exposed to Day-Night Average Sound Levels (DNL) greater than 65 decibels, 176 of whom are predicted to be "Highly Annoyed" by this exposure. Level II impacts are also predicted for 504 residents located off-base, but adjacent to

¹Section numbers refer to the location of more detailed information in the *Final EIS* about existing conditions and environmental consequences.

Elmendorf AFB, who were not previously exposed to DNL greater than 65 decibels, 106 of whom are anticipated to be "Highly Annoyed."

Air Quality (Sections 3.9 and 4.9)

Emissions of criteria air pollutants due to increased aircraft operations during MFEs would result in negligible (Level I) impacts) to the Fairbanks and Anchorage carbon monoxide nonattainment areas, the Denali National Park and Preserve Prevention of Significant Deterioration Class I air quality area, and all other areas within the Region of Influence.

Socioeconomics (Sections 3.10 and 4.10)

The local economies of Eielson and Elmendorf AFBs would experience beneficial financial input from transient personnel associated with MFEs. At Eielson AFB, a maximum estimate of 1,015 transient personnel per MFE, each staying 15 days and spending an average of \$55.00 per day, would result in \$837,375.00 spent per MFE; or a total of \$5,024,250.00 spent annually (6 MFEs per year), most within the Fairbanks North Star Borough and surrounding region. At Elmendorf AFB, a maximum estimate of 322 transient personnel per MFE, each staying 15 days and also spending an average of \$55.00 per day, would result in \$265,650.00 spent per MFE; or a total of \$1,593,900.00 spent annually (6 MFEs per year), most within the Municipality of Anchorage and surrounding region.

There is no evidence that recreationists would choose to go elsewhere to recreate on the basis of exposure to or knowledge of aircraft overflights. Therefore, potential impacts to commercial recreation resources and activities under the existing and proposed MOAs are predicted to be Level I or less.

Effects on Resources that Vary Among Alternatives

Airspace Management, Aircraft Operations, and Aviation Safety (Sections 3.2 and 4.2)

Proposed Action and Alternative A

There would be increased potential for incidental interaction between military and civil aviation and occasional disruption of civil aviation in YUKON 3, YUKON 4, BIRCH, EIELSON, BUFFALO, and STONY B MOAs.

Alternative B

There would be increased potential for midair collision between military and civil aircraft in areas of high civil aviation activity in the TANANA MOA. Also predicted in the TANANA MOA is the probable closure of V-481, V-444, and V-515 to IFR traffic necessitating changes in existing FAA preferred routings and complete restructuring of 11th Air Force and FAA procedures for coordinating airspace use.

Alternative A—Modified

The potential for interaction between military and civil aviation and disruption of civil aviation would be reduced in the YUKON 3, BUFFALO, and BIRCH MOAs with the creation of civil flight corridors and elevation of these MOA floors as compared to the Proposed Action.

No Action Alternative

Occasional disruptions of civil flight activities are possible with activation of TMOAs along the Alaska and Richardson highways during MFEs. No impact would be expected along the Holitna and Kuskokwim drainages under the STONY B MOA.

Biological Resources (Sections 3.5 and 4.5)

Proposed Action

Significant adverse impacts to wildlife are defined as impacts that may help cause or maintain substantial reduction or large-scale dislocation of local, regional, or entire wildlife populations (Level III Impacts). Adverse impacts are defined as impacts that may help cause or maintain minor reduction or displacement of local, regional, or entire wildlife populations (Level II Impacts). Potential Level III and Level II impacts would generally result from cumulative rather than direct or indirect effects of military aircraft overflight. As the potential Level II impacts identified encompass such large areas, they are described in general terms only.

Consultation with the U.S. Fish and Wildlife Service, in accordance with Section 7 of the Endangered Species Act, identified the American peregrine falcon (*Falco peregrinus anatum*) as the only protected species of concern. Because nest-avoidance restrictions stipulated in a 1993 Biological Opinion and 1994 supplement would remain in force, no significant adverse impact to protected species is anticipated.

Level III Impacts are possible for the following biological resources:

- Trumpeter swans nesting along the west fork of the Gulkana River under the FOX MOA and, to a lesser degree, along the three major drainages beneath the SUSITNA MOA;
- The Delta Caribou Herd located under the CLEAR CREEK, BIRCH, EIELSON, and FOX MOAs, and on the Oklahoma and Blair Lakes air-to-ground weapons ranges; and
- Dall sheep populations in the northern Alaska Range and the Tanana Hills under the YUKON 1-4, BUFFALO, EIELSON, and FOX MOAs, and on the Oklahoma air-to-ground weapons range.

Level II Impacts are possible for the following biological resources:

- Peregrine falcon nest sites located outside existing Flight Avoidance Areas and under MOAs with floors lower than 2,000 feet AGL or supersonic aircraft operations;
- Waterfowl concentration and breeding areas located under MOAs with floors lower than 2,000 feet AGL or supersonic aircraft operations;
- Raptor breeding areas and nesting concentrations located under MOAs with floors lower than 2,000 feet AGL or supersonic aircraft operations;
- Caribou critical-season habitat (calving, post-calving, summer concentration, rutting, and wintering) located under MOAs with floors lower than 3,000 feet AGL or supersonic aircraft operations;
- Moose critical-season habitat (calving, rutting, and wintering) located under MOAs with floors lower than 3,000 feet AGL or supersonic aircraft operations;
- Dall sheep general habitat located under MOAs with floors lower than 5,000 feet AGL or supersonic aircraft operations;
- Brown and black bear critical-season habitat (breeding, den site selection, cub rearing, and concentrations on seasonally important food sources) located under MOAs with floors lower than 3,000 feet AGL or supersonic aircraft operations; and
- Wolves dependent on caribou or moose populations susceptible to adverse impacts.

Alternative A

With regard to biological resources, the only appreciable difference between this alternative and the Proposed Action is that slightly less Delta caribou herd winter range would be affected with elimination of the CLEAR CREEK MOA.

Alternative B

This alternative differs most notably from the Proposed Action in that significant adverse impacts could also accrue to a few trumpeter swan nesting areas along the Tanana River under the TANANA MOA and to considerably more Dall sheep habitat under the TANANA MOA. This alternative would affect less waterfowl breeding area, and slightly more raptor breeding and nesting concentration areas and critical-season moose habitat.

Alternative A—Modified

This alternative differs from the Proposed Action in several ways. Potential Level III impacts to trumpeter swans would be substantially reduced by shifting the eastern boundary of the FOX MOA west and away from breeding areas. Potential Level III impacts to the Delta caribou herd would be reduced with elimination of the CLEAR CREEK MOA and reduction in size of the BIRCH MOA (i.e., shifted away from the Salcha River). In addition, raising the floors of the FOX and YUKON 5 MOAs to 5,000 feet AGL limiting YUKON 5 to MFEs only would minimize the potential for adverse effects to wildlife populations under these MOAs, although supersonic operations would still be authorized.

No Action Alternative

This alternative would eliminate the potential for Level III Impacts to the major Gulkana River trumpeter swan populations under the FOX TMOAs, although it would affect more waterfowl concentration area and less waterfowl breeding area than the Proposed Action. One half of the identified peregrine falcon nest sites would be affected. Slightly less Delta caribou herd winter range and substantially less critical-season caribou habitat overall would be affected. Less critical-season moose habitat and less brown bear habitat, but slightly more Dall sheep general habitat would be affected.

Recreation Resources (Sections 3.6 and 4.6)**Proposed Action**

Significant adverse impacts to recreation uses and areas are considered to be impacts that would be inconsistent with an area's Recreation Opportunity Setting and that could permanently alter the setting (Level III Impacts). Adverse impacts are defined as impacts that would be inconsistent with an area's Recreation Opportunity Setting and that could temporarily alter the setting (Level II Impacts). In general, significant adverse impacts could occur in high sensitivity recreation areas subjected to intensive low-altitude overflight, while adverse impacts would be more likely to occur in recreation areas of medium sensitivity or in high sensitivity areas exposed to less intensive aircraft overflight. Intensive low-altitude overflights capable of producing Level III or Level II Impacts are most likely to occur during MFEs, when large numbers of low-flying aircraft could pass through an area within a period of a few hours each day, for up to 10 to 15 days at a time.

Level III Impacts to recreation resources are predicted for the following:

- Fortymile National Wild, Scenic, and Recreational River under the YUKON 3 MOA—87 percent of designated river affected;
- Yukon-Charley Rivers National Preserve and Charley National Wild River under the YUKON 3 and YUKON 4 MOAs—54 percent affected;
- Gulkana National Wild River (Middle and West Forks) under the FOX MOA—47 percent and 50 percent affected, respectively;
- Delta National Wild, Scenic, and Recreational River under the FOX MOA—48 percent affected;
- Twenty-three trails located along the Denali Highway under the FOX MOA; and
- Proposed West Fork Gulkana River Area of Critical Environmental Concern under the FOX MOA.

Level II Impacts to recreation resources are predicted for the following:

- Steese National Conservation Area and Birch Creek National Wild River under the YUKON 2 MOA;
- Walker Fork Campground under the YUKON 3 MOA;
- Taylor Highway under the YUKON 3 MOA—50 percent affected;
- Yukon-Charley Rivers National Preserve and Charley National Wild River under the YUKON 1 and YUKON 2 MOAs—46 percent affected; and
- Tangle Lakes, Tangle River, and Brushkana Campgrounds and Tangle River National Register Archaeological District under the FOX MOA.

Alternative A

Under Alternative A, the Salcha River State Recreation Site would not be affected at all and only 29 percent of the Tanana Valley State Forest would be affected compared to 35 percent under the Proposed Action.

Alternative B

There are two notable differences between this alternative and the Proposed Action. One, this alternative would result in potentially significant adverse impacts (Level III Impacts) to the main stem of the Gulkana National Wild River (96 percent affected) and twelve trails located along the Richardson Highway; and adverse impacts (Level II Impacts) to the West Fork Campground. Two, Alternative B would affect only 61 percent of the Yukon-Charley Rivers National Preserve rather than 100 percent, and significant adverse impacts are predicted for only 15 percent of the preserve instead of 54 percent. Otherwise, the same recreation areas predicted to sustain Level III and Level II Impacts under the Proposed Action would be affected; however, in most cases Alternative B would affect substantially more of each area. Specific differences in the amount of area affected are highlighted as follows:

- Fortymile National Wild, Scenic, and Recreational River under the YUKON 3 and TANANA MOAs—97 percent affected;
- Gulkana National Wild River (Middle Fork) under the FOX MOA and TANANA MOAs—100 percent affected;
- Gulkana National Wild River (West Fork) under the FOX MOA and TANANA MOAs—97 percent affected;
- Delta National Wild, Scenic, and Recreational River under the FOX MOA and TANANA MOAs—100 percent affected;
- Portions of some 23 trails located along the Denali Highway under the FOX and TANANA MOAs; and
- Taylor Highway—100 percent affected.

Alternative A—Modified

This alternative differs in a number of ways from the Proposed Action. Potential impacts to much of the Fortymile National Wild and Scenic River system, the Taylor Highway, and the Walker Fork Campground would be reduced to negligible (Level I) by raising the floor of the southeastern portion of the YUKON 3 MOA (YUKON 3B) to 2,000 feet AGL. Impacts to the Delta National Wild and Scenic River, the main stem and middle forks of the Gulkana National Wild River, and the Tangle Lakes/Tangle River area would be eliminated by shifting the eastern boundary of the FOX MOA westward. Raising the floor of the FOX MOA to 5,000 feet AGL would reduce predicted impacts to the Denali Highway, Brushkana Campground, Proposed West Fork Area of Critical Environmental Concern, and the small segment of the west fork of the Gulkana River that would remain under the MOA to Level I. Predicted impacts to the Steese National Conservation Area, Birch Creek National Wild River, Yukon-Charley Rivers National Preserve, and Charley National Wild River would not differ from the Proposed Action.

No Action Alternative

Many recreation resources would sustain the same level of impacts as predicted for the Proposed Action. However, for resources located under TMOAs these impacts would occur only during MFEs. Specific differences in predicted impacts between the two alternatives are outlined below:

- Fortymile National Wild, Scenic, and Recreational River and the Yukon-Charley Rivers National Preserve and Charley National Wild River would see Level I Impacts during MFEs and none at other times, compared to Level III Impacts under the Proposed Action;
- Gulkana National Wild River (Middle and West Forks), Delta National Wild, Scenic, and Recreational River, twenty-three trails located along the Denali Highway, and the Proposed West Fork Gulkana River Area of Critical Environmental Concern would experience Level II Impacts during MFEs and none at other times, compared to Level III Impacts under the Proposed Action;
- Tangle Lakes, Tangle River, and Brushkana Campgrounds and Tangle River National Register Archaeological District and the Taylor Highway would sustain Level I Impacts during MFEs and none at other times, compared to Level II Impacts under the Proposed Action; and
- Gulkana National Wild River (Main Stem) and twelve trails located along the Richardson Highway would see Level II Impacts during MFEs and none at other times, compared to no impacts under the Proposed Action by virtue of not being located under any MOAs. Similarly, the Innoko National Wildlife Refuge would experience Level I Impacts during surge exercises in STONY C TMOA, while it would sustain no impacts under the Proposed Action.

Subsistence Resources (Sections 3.7 and 4.7)

Proposed Action

Significant adverse impacts to subsistence are characterized as repetitive, concentrated impacts from aircraft overflights that could increase the level of effort required to harvest subsistence resources by an estimated 2 to 7 days, subsequently increasing the likelihood of reduced harvest levels during the primary or critical subsistence season for communities with a high sensitivity ranking (Level III Impacts). Adverse impacts are defined as impacts that could increase the level of effort required to harvest subsistence resources by an estimated 2 to 7 days, subsequently increasing the likelihood of reduced harvest levels during the critical subsistence season for communities with a medium sensitivity ranking (Level II Impacts). Again, repetitive low-altitude overflights likely to produce Level III or Level II Impacts are most probable during MFEs.

Level III Impacts to subsistence are predicted for the following communities:

- Eagle Village during MFEs conducted August through September in YUKON 3 MOA; and
- Dot Lake and Healy Lake during MFEs conducted August through September in BUFFALO MOA.

Level II Impacts to subsistence are predicted for the following communities:

- Circle during MFEs conducted August through September in YUKON 2 MOA;
- Eagle City and Chicken during MFEs conducted August through September in YUKON 3 MOA; and
- Lime Village during surge exercises and routine flying training conducted in STONY A and STONY B MOAs during April through May and mid-August through October.

Alternative A

With regard to subsistence, there is no appreciable difference between this alternative and the Proposed Action.

Alternative B

In addition to the villages expected to sustain Level III and Level II Impacts under the Proposed Action, significant adverse impacts are predicted for the communities of Tanacross, Dot Lake, and Healy Lake during MFEs conducted August through September in the TANANA MOA. Adverse impacts are predicted as well for Dot Lake during MFEs conducted in December through February in the BUFFALO MOA, and for Tanacross during MFEs conducted in December through February in the TANANA MOA.

Alternative A—Modified

Potential impacts to subsistence would not differ substantially from the Proposed Action, but some distinctions would occur. Most notably, raising the floor of the southeastern portion of YUKON 3 MOA (YUKON 3B) to 2,000 feet AGL would reduce average and single event noise levels and any associated effects on subsistence resources or activities for the communities of Eagle Village, Eagle City, and Chicken.

No Action Alternative

For the most part, impacts to subsistence resources predicted for the No Action Alternative are similar to those anticipated for the Proposed Action. A notable difference is that Dot Lake, Red Devil, Sleetmute, and Stony River would be less affected and less likely to sustain adverse impacts under this alternative. On the other hand, adverse impacts (Level II Impacts) are predicted for the community of Chuathbaluk during surge exercises in the STONY C TMOA in August and September.

Comparison of the Environmental Consequences of the Alternatives

Table ES-2 summarizes, for comparison, the major potential effects of each alternative on the resources of concern that were identified through scoping (described in Chapter 3 and analyzed in Chapter 4). The most obvious and direct effect of any of the alternatives would be the exposure of resources to aircraft activity and noise. The primary source of impact would be noise; for many resources, methods for evaluating impacts from exposure to increased or more frequent noise are not fully mature. In keeping with the goals of the National Environmental Policy Act (NEPA), the methodologies employed in this

EIS were designed to use quantifiable variables to assess what, in many cases, are subjective effects. But the probability that any of the alternatives would result in long-term, cumulative impacts is difficult to precisely estimate due to the complexity of the many variables involved and, in some instances, the low probability of measurable impacts occurring. In the larger context of other human-caused and natural disturbances of the environment, any impacts stemming from the proposed changes in airspace configuration and use would, in all likelihood, be relatively minor. However, the extent to which they would contribute to the total cumulative impact on a resource is important. Evidence of such impacts can only be determined through an impact monitoring program designed to detect changes in biological, social, and/or physical parameters. Detection of changes that exceed the acceptable level or threshold (as determined by the appropriate regulatory or management agency, in consultation with the Air Force) would trigger a mitigation response. A complete discussion of the impact assessment process and outcome is found in Chapter 4.

Table ES-2 Environmental Consequences of the Alternatives¹

Resource	No Action Alternative	Proposed Action	Alternative A	Alternative B	Alternative A—Modified
Airspace Management, Aircraft Operations, Aviation Safety					
Airspace Management, Aircraft Operations, and Aviation Safety	Negligible Impact.	Potential Adverse Impact: YUKON 3 and 4, BIRCH, EIELSON, BUFFALO, and STONY B MOAs.	Potential Adverse Impact: YUKON 3 and 4, BIRCH, EIELSON, BUFFALO, and STONY B MOAs.	Potential Significant Adverse Impact: TANANA MOA. Potential Adverse Impact: YUKON 3 and 4, BIRCH, EIELSON, BUFFALO, and STONY B MOAs.	Potential Adverse Impact: STONY B MOA.
Chaff, Flares, and Hazardous Operations					
Chaff, Flares, and Hazardous Operations	Negligible Impact.	Negligible Impact.	Negligible Impact.	Negligible Impact.	Negligible Impact.
Biological Resources					
American peregrine falcon	Potential Adverse Impact: falcons nesting outside Flight Avoidance Area #17.	Potential Adverse Impact: falcons nesting outside Flight Avoidance Area #17.	Potential Adverse Impact: falcons nesting outside Flight Avoidance Area #17.	Potential Adverse Impact: falcons nesting outside Flight Avoidance Area #17.	Potential Adverse Impact: falcons nesting outside Flight Avoidance Area #17.
Waterfowl	Potential Significant Adverse Impact: trumpeter swan breeding areas under SUSITNA MOA.	Potential Significant Adverse Impact: trumpeter swan breeding areas under SUSITNA and FOX MOAs.	Potential Significant Adverse Impact: trumpeter swan breeding areas under SUSITNA and FOX MOAs.	Potential Significant Adverse Impact: trumpeter swan breeding areas under SUSITNA, FOX, and TANANA MOAs.	Potential Significant Adverse Impact: trumpeter swan breeding areas under SUSITNA and FOX MOAs, but breeding areas under FOX largely avoided.
Raptors	Potential Adverse Impact: breeding and nesting concentration areas overflow below 2,000 ft AGL or at supersonic speed.	Potential Adverse Impact: breeding and nesting concentration areas overflow below 2,000 ft AGL or at supersonic speed.	Potential Adverse Impact: breeding and nesting concentration areas overflow below 2,000 ft AGL or at supersonic speed.	Potential Adverse Impact: breeding and nesting concentration areas overflow below 2,000 ft AGL or at supersonic speed.	Potential Adverse Impact: breeding and nesting concentration areas overflow below 2,000 ft AGL or at supersonic speed.
Caribou	Potential Significant Adverse Impact: Delta herd under EIELSON A and B, and FOX 1 and 2 MOAs, and on Oklahoma and Blair Lakes ranges if key life cycle phase overflow.	Potential Significant Adverse Impact: Delta herd under CLEAR CREEK, BIRCH, EIELSON, and FOX MOAs, and on Oklahoma and Blair Lakes ranges.	Potential Significant Adverse Impact: Delta herd under BIRCH, EIELSON, and FOX MOAs, and on Oklahoma and Blair Lakes ranges.	Potential Significant Adverse Impact: Delta herd under CLEAR CREEK, BIRCH, EIELSON, and FOX MOAs, and on Oklahoma and Blair Lakes ranges.	Potential Significant Adverse Impact: Delta caribou herd under BIRCH, EIELSON, and FOX MOAs, and on Oklahoma and Blair Lakes ranges.
	Potential Adverse Impact: calving, summer concentration, rutting, or wintering areas overflow below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact: calving, summer concentration, rutting, or wintering areas overflow below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact: calving, summer concentration, rutting, or wintering areas overflow below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact: calving, summer concentration, rutting, or wintering areas overflow below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact: calving, summer concentration, rutting, or wintering areas overflow below 3,000 ft AGL or at supersonic speed.
Moose	Potential Adverse Impact: critical life cycle habitat overflow below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact: critical life cycle habitat overflow below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact: critical life cycle habitat overflow below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact: critical life cycle habitat overflow below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact: critical life cycle habitat overflow below 3,000 ft AGL or at supersonic speed.

Resource	No Action Alternative	Proposed Action	Alternative A	Alternative B	Alternative A--Modified
Dall sheep	Potential Significant Adverse Impact: YUKON 1-4, BUFFALO, EIELSON B, and FOX 1 and 2 MOAs, and Oklahoma range. Potential Adverse Impact: critical life cycle habitat overflown below 5,000 ft AGL or at supersonic speed.	Potential Significant Adverse Impact: YUKON 1-4, BUFFALO, EIELSON, and FOX MOAs, and Oklahoma range. Potential Adverse Impact: critical life cycle habitat overflown below 5,000 ft AGL or at supersonic speed.	Potential Significant Adverse Impact: YUKON 1-4, BUFFALO, EIELSON, and FOX MOAs, and Oklahoma range. Potential Adverse Impact: critical life cycle habitat overflown below 5,000 ft AGL or at supersonic speed.	Potential Significant Adverse Impact: YUKON 1-4, BUFFALO, EIELSON, and FOX MOAs, and Oklahoma range. Potential Adverse Impact: critical life cycle habitat overflown below 5,000 ft AGL or at supersonic speed.	Potential Significant Adverse Impact: YUKON 1-4, BUFFALO, EIELSON, and FOX MOAs, and Oklahoma range. Potential Adverse Impact: critical life cycle habitat overflown below 5,000 ft AGL or at supersonic speed.
Brown and Black Bears	Potential Adverse Impact (localized to individuals): overflights below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact (localized to individuals): overflights below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact (localized to individuals): overflights below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact (localized to individuals): overflights below 3,000 ft AGL or at supersonic speed.	Potential Adverse Impact (localized to individuals): overflights below 3,000 ft AGL or at supersonic speed.
Wolves	Potential Adverse Impact: if prey species (caribou or moose) sustain Level II or higher impacts.	Potential Adverse Impact: if prey species (caribou or moose) sustain Level II or higher impacts.	Potential Adverse Impact: if prey species (caribou or moose) sustain Level II or higher impacts.	Potential Adverse Impact: if prey species (caribou or moose) sustain Level II or higher impacts.	Potential Adverse Impact: if prey species (caribou or moose) sustain Level II or higher impacts.
Recreation					
Steese National Conservation Area and Birch Creek National Wild River	Potential Adverse Impact: YUKON 2 MOA.	Potential Adverse Impact: YUKON 2 MOA.	Potential Adverse Impact: YUKON 2 MOA.	Potential Adverse Impact: YUKON 2 MOA.	Potential Adverse Impact: YUKON 2 MOA.
Yukon-Charley Rivers National Preserve and Charley National Wild River	Potential Adverse Impact: YUKON 1 and 2 MOAs. Potential Significant Adverse Impact: YUKON 3 TMOA during MFEs.	Potential Adverse Impact: YUKON 1 and 2 MOAs. Potential Significant Adverse Impact: YUKON 3 and 4 MOAs.	Potential Adverse Impact: YUKON 1 and 2 MOAs. Potential Significant Adverse Impact: YUKON 3 and 4 MOAs.	Potential Adverse Impact: YUKON 1 and 2 MOAs. Potential Significant Adverse Impact: YUKON 3 and 4 MOAs.	Potential Adverse Impact: YUKON 1 and 2 MOAs. Potential Significant Adverse Impact: YUKON 3 and 4 MOAs.
Fortymile National Wild & Scenic River	Negligible Impact: YUKON 3 TMOA during MFEs.	Potential Significant Adverse Impact: YUKON 3 MOA.	Potential Significant Adverse Impact: YUKON 3 MOA.	Potential Significant Adverse Impact: YUKON 3 and TANANA MOAs.	Potential Significant Adverse Impact: YUKON 3A MOA. Negligible Impact: YUKON 3B MOA (2,000 ft AGL Floor).
Taylor Highway	Negligible Impact: YUKON 3 TMOA during MFEs.	Potential Adverse Impact: YUKON 3 MOA.	Potential Adverse Impact: YUKON 3 MOA.	Potential Adverse Impact: YUKON 3 and TANANA MOAs.	Negligible Impact: YUKON 3B MOA (2,000 ft AGL Floor).
Walker Fork Campground	Negligible Impact: YUKON 3 TMOA during MFEs.	Potential Adverse Impact: YUKON 3 MOA.	Potential Adverse Impact: YUKON 3 MOA.	Potential Adverse Impact: YUKON 3 MOA.	Negligible Impact: YUKON 3B MOA (2,000 ft AGL Floor).
Gulkana National Wild River Main Stem	Potential Adverse Impact: FOX TMOAs during MFEs.	Not affected.	Not affected.	Potential Significant Adverse Impact: TANANA MOA.	Not affected.
Gulkana National Wild River Middle Fork	Potential Adverse Impact: FOX TMOAs during MFEs.	Potential Significant Adverse Impact: FOX MOA.	Potential Significant Adverse Impact: FOX MOA.	Potential Significant Adverse Impact: FOX and TANANA MOAs.	Not affected.
Gulkana National Wild River West Fork	Potential Adverse Impact: FOX TMOAs during MFEs.	Potential Significant Adverse Impact: FOX MOA.	Potential Significant Adverse Impact: FOX MOA.	Potential Significant Adverse Impact: FOX and TANANA MOAs.	Negligible Impact: FOX A MOA (5,000 ft AGL Floor).

Resource	No Action Alternative	Proposed Action	Alternative A	Alternative B	Alternative A—Modified
Delta National Wild River	Potential Adverse Impact: FOX TMOAs during MFEs.	Potential Significant Adverse Impact: FOX MOA.	Potential Significant Adverse Impact: FOX MOA.	Potential Significant Adverse Impact: FOX and TANANA MOAs.	Not affected.
Denali Highway	Potential Adverse Impact: FOX TMOAs during MFEs.	Potential Significant Adverse Impact: FOX MOA.	Potential Significant Adverse Impact: FOX MOA.	Potential Significant Adverse Impact: FOX and TANANA MOAs.	Negligible Impact: FOX A MOA (5,000 ft AGL Floor).
Tangle Lakes & Tangle River Campgrounds; Tangle Lakes National Register Archaeological District	Negligible Impact: FOX TMOAs during MFEs.	Potential Adverse Impact: FOX MOA.	Potential Adverse Impact: FOX MOA.	Potential Adverse Impact: FOX MOA.	Not affected.
Brushkana Campground	Negligible Impact: FOX TMOAs during MFEs.	Potential Adverse Impact: FOX MOA.	Potential Adverse Impact: FOX MOA.	Potential Adverse Impact: FOX MOA.	Negligible Impact: FOX A MOA (5,000 ft AGL Floor).
Proposed West Fork Area of Critical Environmental Concern	Potential Adverse Impact: FOX TMOAs during MFEs.	Potential Significant Adverse Impact: FOX MOA.	Potential Significant Adverse Impact: FOX MOA.	Potential Significant Adverse Impact: FOX and TANANA MOAs.	Negligible Impact: FOX A MOA (5,000 ft AGL Floor).
Richardson Highway	Potential Adverse Impact: FOX 2 TMOA during MFEs.	Not affected.	Not affected.	Potential Significant Adverse Impact: TANANA MOA.	Not affected.
West Fork Campground	Not affected.	Not affected.	Not affected.	Potential Adverse Impact: TANANA MOA.	Not affected.
Subsistence					
Circle	Potential Adverse Impact: YUKON 2 MOA during MFEs in Aug-Sep.	Potential Adverse Impact: YUKON 2 MOA during MFEs in Aug-Sep.	Potential Adverse Impact: YUKON 2 MOA during MFEs in Aug-Sep.	Potential Adverse Impact: YUKON 2 MOA during MFEs in Aug-Sep.	Potential Adverse Impact: YUKON 2 MOA during MFEs in Aug-Sep.
Eagle Village	Negligible Impact.	Potential Significant Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.	Potential Significant Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.	Potential Significant Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.	Potential Adverse to Significant Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.
Eagle City	Negligible Impact.	Potential Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.	Potential Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.	Potential Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.	Potential Adverse to Significant Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.
Chicken	Negligible Impact.	Potential Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.	Potential Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.	Potential Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.	Potential Adverse to Significant Adverse Impact: YUKON 3 MOA during MFEs in Aug-Sep.
Dot Lake	Potential Adverse Impact: BUFLO TMOA during MFEs in Aug-Sep.	Potential Significant Adverse Impact: BUFFALO MOA during MFEs in Aug-Sep.	Potential Significant Adverse Impact: BUFFALO MOA during MFEs in Aug-Sep.	Potential Significant Adverse Impact: BUFFALO and TANANA MOAs during MFEs in Aug-Sep.	Potential Adverse to Significant Adverse Impact: BUFFALO MOA during MFEs in Aug-Sep.
Healy Lake	Potential Significant Adverse Impact: BUFLO TMOA during MFEs in Aug-Sep.	Potential Significant Adverse Impact: BUFFALO MOA during MFEs in Aug-Sep.	Potential Significant Adverse Impact: BUFFALO MOA during MFEs in Aug-Sep.	Potential Significant Adverse Impact: BUFFALO and TANANA MOAs during MFEs in Aug-Sep.	Potential Adverse to Significant Adverse Impact: BUFFALO MOA during MFEs in Aug-Sep.

Resource	No Action Alternative	Proposed Action	Alternative A	Alternative B	Alternative A--Modified
Tanacross	Negligible Impact.	Negligible Impact.	Negligible Impact.	Potential Significant Adverse Impact: TANANA MOA during MFEs in Aug-Sep. Potential Adverse Impact: TANANA MOA during MFEs in Dec-Feb.	Negligible Impact.
Lime Village	Potential Adverse Impact: STONY A MOA in mid-Aug-Sep.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.
Nopamiute	Potential Adverse Impact: STONY B MOA and STONY C TMOA during surge training in Aug-Sep.	Potential Adverse Impact: STONY B MOA in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY B MOA in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY B MOA in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY B MOA in Apr-May, mid-Aug-Oct.
Red Devil	Negligible Impact: STONY B MOA surge training in mid-Aug-Sep, mid-Apr-mid-May.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.
Sleetmute	Negligible Impact: STONY B MOA during surge training in Aug-Sep, mid-Apr-mid-May.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.
Stony River	Negligible Impact: STONY B MOA during surge training in Aug-Sep, mid-Apr-mid-May.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.	Potential Adverse Impact: STONY A and B MOAs in Apr-May, mid-Aug-Oct.
Chuathbaluk	Potential Adverse Impact: STONY B MOA and STONY C TMOA during surge training in Aug-Sep.	Negligible Impact: STONY B MOA in Apr-May, Aug-Sep.	Negligible Impact: STONY B MOA in Apr-May, Aug-Sep.	Negligible Impact: STONY B MOA in Apr-May, Aug-Sep.	Negligible Impact: STONY B MOA in Apr-May, Aug-Sep.
Land Use					
Eligson AFB (on-base)	Negligible Impact: 919 residents exposed to DNL \geq 65 dB; 193 residents predicted to be Highly Annoyed ¹ .	Potential Adverse Impact: 1,608 residents exposed to DNL \geq 65 dB, an increase of 689; 369 residents predicted to be Highly Annoyed, an increase of 176.	Potential Adverse Impact: 1,608 residents exposed to DNL \geq 65 dB, an increase of 689; 369 residents predicted to be Highly Annoyed, an increase of 176.	Potential Adverse Impact: 1,608 residents exposed to DNL \geq 65 dB, an increase of 689; 369 residents predicted to be Highly Annoyed, an increase of 176.	Potential Adverse Impact: 1,608 residents exposed to DNL \geq 65 dB, an increase of 689; 369 residents predicted to be Highly Annoyed, an increase of 176.
Elmendorf AFB (off-base)	Negligible Impact: 497 residents exposed to DNL \geq 65 dB; 104 residents predicted to be Highly Annoyed.	Potential Adverse Impact: 1,001 residents exposed to DNL \geq 65 dB, an increase of 504; 210 residents predicted to be Highly Annoyed, an increase of 106.	Potential Adverse Impact: 1,001 residents exposed to DNL \geq 65 dB, an increase of 504; 210 residents predicted to be Highly Annoyed, an increase of 106.	Potential Adverse Impact: 1,001 residents exposed to DNL \geq 65 dB, an increase of 504; 210 residents predicted to be Highly Annoyed, an increase of 106.	Potential Adverse Impact: 1,001 residents exposed to DNL \geq 65 dB, an increase of 504; 210 residents predicted to be Highly Annoyed, an increase of 106.

¹ If a resource is not specifically mentioned, negligible or no impacts are predicted.² Day-Night Average A-Weighted Sound Level (DNL).

Proposed Mitigation Measures to Reduce or Eliminate Adverse Impacts

A number of mitigation measures in addition to the ones identified by the Air Force in the Draft EIS were suggested during the public comment period. Many of these mitigations were judged reasonable by the Air Force. Some were used to develop Alternative A—Modified (the Preferred Alternative); others could also be applied individually or in various combinations to any of the alternatives considered in the EIS. Table ES-3 presents mitigation measures that may be used to avoid or minimize potential environmental impacts. For the most part, impacts and mitigation fall into two categories: 1) potential conflicts with general aviation, and 2) noise concerns. Noise impact mitigations were developed for the F-15 and F-16 aircraft—the aircraft that would be the predominant users of the MOAs. Although other aircraft capable of producing slightly higher noise levels would occasionally use the airspace, there is only about a 2 to 4 decibel (dB) difference in single-event maximum noise levels between these aircraft and the F-15 and F-16, use levels projected for these aircraft are low, and their activities would be dispersed over large areas. Given these factors, mitigation designed to alleviate noise impacts from F-15 and F-16 aircraft should be sufficient. The mitigations listed are technically feasible measures the Air Force would be able to execute.

Measures designed to mitigate the noise-derived adverse impacts identified in this analysis were developed based on a review of pertinent background information, including an Interagency Agreement between the National Park Service, U.S. Fish and Wildlife Service, Bureau of Land Management, and the Federal Aviation Administration (1993) that encourages pilots making VFR flights over noise sensitive areas to "... make every effort to fly not less than 2,000 feet above the surface, weather permitting. . ." A recently completed study prepared for the National Park Service examined the effect of aircraft altitude on sound levels on the ground (Anderson and Horonjeff 1992). Briefly, this study suggested that enforcing minimum altitude restrictions is an effective mitigation only when aircraft are operating at relatively low altitudes to begin with. The greatest acoustical benefit occurs when aircraft slant distance (height above ground) is increased from 125 feet to 1,000 feet (decreasing maximum sound level by 24 dB), then to 2,000 feet (an additional 8 dB decrease), and then to 3,000 feet (an additional 5 dB decrease). Increasing slant distance further, from 3,000 to 5,000 feet, results in moderate to substantial sound level reductions (roughly a 4 dB reduction for each 1,000-foot increase). Beyond 5,000 feet, each 1,000-foot increase produces only a "very small" reduction in sound level (about 2 dB for each 1,000-foot step) (ibid.). The study concluded that minimum altitude restrictions over NPS units should be applied on a case-by-case basis for site-specific sensitivities and declined to recommend any minimum altitude restriction for NPS units in general.

For some short- and long-term effects, impacts cannot be precisely estimated now due to their complexity or the low probability of their occurrence. Additional information will be required to develop suitable mitigation. Actual impacts will be measured through an impact monitoring program designed to detect changes in biological, social, and/or physical parameters. Detection of changes that exceed the maximum acceptable level or threshold (as determined by the appropriate regulatory agency or agencies) would trigger a mitigation response plan.

In its Record of Decision (ROD), the Air Force will identify which mitigation measures will be adopted and which, if any, will not, with an explanation of why they will not be adopted. The ROD will also include a mitigation implementation and monitoring plan.

Table ES-3 Potential Mitigation Measures

Mitigation	MOA(s) Affected	Resource(s) Mitigated	Effectiveness
MOA Altitude (Floor or Ceiling) and Internal Boundary Changes			
Raise the minimum altitude (floor) to 5,000 ft AGL.	YUKON 5 FOX	Aviation Safety Biological Resources Recreation Subsistence Land Use	This would reduce single-event and average noise levels, and improve civil aviation access.
Raise the minimum altitude (floor) to 500 ft AGL.	BIRCH FALCON CLEAR CREEK*	Aviation Safety	This would improve civil aviation access along major VFR flyways, including the Alaska and Richardson highways and the trans-Alaska oil pipeline.
Establish a civilian flight corridor at 4,000 ft MSL to 6,000 ft MSL to protect the VFR hemispheric altitudes of 4,500 ft MSL and 5,500 ft MSL, 2 nautical miles (NM) either side of the Alaska Highway. Establish a civilian flight corridor at 4,000 ft MSL to 6,000 ft MSL to protect the VFR hemispheric altitudes of 4,500 ft MSL and 5,500 ft MSL, ½ NM either side of the Richardson Highway.	BUFFALO TANANA (Alt. B)	Aviation Safety	This would improve civil aviation access along major VFR flyways, including the Alaska and Richardson highways and the trans-Alaska oil pipeline.
Raise the floor to 500 ft AGL below the civilian flight corridor, 2 NM either side of the Alaska Highway and ½ NM either side of the Richardson Highway.	BUFFALO TANANA (Alt. B)	Aviation Safety	This would improve civil aviation access along major VFR flyways, including the Alaska and Richardson highways and the trans-Alaska oil pipeline.
Raise the floor to 5,000 ft AGL west of the line from 63°37'00" N, 145°00'00"W to 62°47'37"N, 145°00'00"W.	TANANA (Alt. B)	Aviation Safety Recreation Subsistence Land Use	This would reduce single-event and average noise levels and potential impacts to the Tangle Lakes/Tangle River area, Gulkana and Delta National Wild Rivers, Denali Highway, Proposed West Fork of the Gulkana River ACEC ¹ , and Richardson Highway.

Mitigation	MOA(s) Affected	Resource(s) Mitigated	Effectiveness
Raise the floor to 2,000 ft AGL east of the line from 64°59'59"N, 143°00'00"W to 63°23'00"N, 143°05'00"W.	TANANA (Alt. B)	Aviation Safety Recreation Subsistence Land Use	This would reduce single-event and average noise levels and potential impacts to the Fortymile National Wild River, Taylor Highway, and West Fork Campground; and improve civil aviation access to Eagle, Chicken, and Boundary from Tok.
Divide the MOA into horizontal and vertical sections and raise the floor to 2,000 ft AGL east and south of the line running from the northeast corner of YUKON 3 MOA to the intersection with the northeast corner of BUFFALO MOA (from 64°59'59"N, 141°05'00"W to 63°59'59"N, 143°00'00"W).	YUKON 3A (Low) YUKON 3B (Low) YUKON 3 (High)	Aviation Safety Recreation Subsistence	This would reduce single-event and average noise levels and potential impacts to the Fortymile National Wild River, Taylor Highway, and Walker Fork Campground; and improve civil aviation access to Eagle, Chicken, and Boundary from Tok.
MOA External Boundary Changes			
Move the northwest boundary approximately 5 NM to the southeast (terminal points at 64°31'17"N, 146°09'31"W and 64°17'43"N, 147°03'29"W).	BIRCH	Aviation Safety Recreation Subsistence Land Use	This would avoid the Salcha River and Harding Lake areas. Resources and activities in these areas would not be exposed to direct aircraft overflights and associated noise levels.
Move the southeast corner approximately 20 NM to the west (terminal points at 63°30'00"N, 145°54'00"W and 62°30'00"N, 146°43'19"W).	FOX	Aviation Safety Biological Resources Recreation Subsistence Land Use	This would avoid the Gulkana and Delta National Wild Rivers, Tangle Lakes area, Richardson Highway, proposed West Fork of the Gulkana River ACEC, and trumpeter swan nesting areas. Resources and activities in these areas would not be exposed to direct aircraft overflights and associated noise levels.
Move the eastern boundary approximately 20 NM to the west (terminal points at 61°51'22"N, 153°14'44"W and 61°25'01"N, 153°38'39"W).	STONY A	Recreation	This would avoid Lake Clark National Park and Preserve, and prevent visitors and resources from being exposed to direct aircraft overflights and associated noise levels.

Mitigation	MOA(s) Affected	Resource(s) Mitigated	Effectiveness
Move the eastern boundary approximately 10 NM to the west (terminal points at 60°52'33"N, 154°43'15"W and 60°18'58"N, 154°43'15"W).	NAKNEK 2	Recreation	This would avoid Lake Clark National Park and Preserve, and prevent visitors and resources from being exposed to direct aircraft overflights and associated noise levels.
Use Restrictions — MFEs			
Conduct no MFEs during September, December, or January.	All MOAs	Aviation Safety Recreation Subsistence Land Use	This would minimize potential impacts to sport and subsistence hunting and other late season recreation and aviation activities.
Provide a minimum 2-week break between MFEs.	All MOAs	Biological Resources Recreation Land Use	This would minimize potential impacts to wildlife and recreationists by providing periods when outdoor activities could be planned to avoid MFEs and providing quiet periods for wildlife.
Conduct no MFEs the week prior to and the week following the 4th of July.	All MOAs	Recreation	This would minimize potential impacts during one of the highest recreation use periods of the year.
Limit use to MFEs only.	YUKON 5 th	Aviation Safety Biological Resources Recreation Subsistence	This would maintain the <i>status quo</i> for military aircraft operations in the area.
Use Restrictions — Supersonic Operations			
Limit supersonic operations to Functional Check Flights (FCFs) and Operational Check Flights (OCFs) along an east/west line south of the Denali National Park and Preserve.	SUSITNA	Recreation	This would minimize potential noise (sonic boom) effects on the resources and users of Denali National Park and Preserve and the community of Petersville.
Conduct supersonic operations at or above 5,000 ft AGL or 12,000 ft MSL, whichever is higher. NOTE: Supersonic operations in STONY A and B MOAs would continue to be conducted at or above 5,000 ft AGL or 10,000 ft MSL, whichever is higher.	YUKON 1-5 SUSITNA FOX TANANA (Alt. B)	Biological Resources Recreation Subsistence Land Use	This would reduce the maximum peak overpressures from sonic booms, minimizing potential impacts associated with supersonic operations.

Mitigation	MOA(s) Affected	Resource(s) Mitigated	Effectiveness
Flight Avoidance Areas and Overflight/Operational Restrictions			
Establish a Flight Avoidance Area over the Kuskokwim and Holitna rivers (east and south of the community of Red Devil) of 2,000 ft AGL and 2 NM either side of the river centerlines. Effective from May 15 to September 15.	STONY B	Biological Resources Aviation Safety Land Use	This would improve civil aviation access to communities along the rivers; and would reduce single-event and average noise levels and potential impacts to residents, subsistence users, recreationists, and wildlife along the rivers.
Increase the existing peregrine falcon Flight Avoidance Areas (2,000 ft AGL and 2 NM either side of the river centerline) on the Charley, Kandik, and Yukon rivers to extend from April 15 to September 15.	YUKON 1-4	Biological Resources Recreation Aviation Safety	This would reduce noise levels and enhance civil aviation access along the rivers.
Establish a Flight Avoidance Area over the Nowitna National Wild River (2,000 ft AGL and 2 NM either side of the river centerline) from May 15 to July 15.	GALENA	Biological Resources Recreation Aviation Safety	This would reduce noise levels and enhance civil aviation access along the river.
Protect "at-risk" wildlife populations by restricting overflights during critical life-cycle periods. "At-risk" populations and temporal and spatial protection parameters to be established through consultation with management agencies, and the smallest practicable and effective area mitigated.	All MOAs	Biological Resources	This would reduce noise levels and the potential for negative behavioral responses. The focus on "at risk" populations during critical life-cycle periods minimizes the likelihood of long-term negative effects.
Protect the Delta caribou herd by establishing a minimum overflight altitude of 3,000 ft AGL over calving areas (nominally from May 15 to June 15).	BIRCH EIELSON	Biological Resources	This would reduce noise levels and the potential for negative behavioral responses.
Protect Dall sheep in the Northern Alaska Range and the Tanana Hills by establishing a minimum overflight altitude of 5,000 ft AGL over lambing areas and spring mineral licks (nominally from May 15 to June 15) and over rutting areas (nominally from November 15 to December 15).	YUKON 1-4 BUFFALO EIELSON FOX"	Biological Resources	This would reduce noise levels and the potential for negative behavioral responses.

Mitigation	MOA(s) Affected	Resource(s) Mitigated	Effectiveness
Communication and Information Exchange			
Continue to provide the Special Use Airspace Information Service (SUAIS).	EIELSON BIRCH BUFFALO YUKON 1, 2, and 3	Aviation Safety	This would increase situational awareness of all aviators operating in the Interior MOAs.
Continue the in-state toll free number (1-800-538-6647).	All MOAs	Recreation Subsistence Land Use	This would provide the public with a mechanism for obtaining information on Air Force aviation activities and MFE schedules, and conveying information and/or concerns to the Air Force (see Appendix O).
Notify Alaska press outlets of the annual MFE schedule for release in publications such as the <i>Milepost</i> , visitor and travel guides, and various newspapers.	All MOAs	Aviation Safety Recreation Subsistence Land Use	This would enable individuals to plan activities around the MFE schedule if they wished.
Continue operation of the Alaska Civil/Military Aviation Advisory Committee (ACMAAC).	All MOAs	Airspace Management Aviation Safety	This would provide for direct dialogue between airspace users to resolve potential impacts to aviation activities.
Establish a Resource Protection Council consisting of three inter-agency (federal, state, and Air Force) coordination teams: 1) Resource Protection/Mitigation, 2) Public Information, and 3) Research and Monitoring.	All MOAs	Biological Resources Recreation Subsistence Land Use	This would provide a forum for monitoring the efficacy of mitigation measures, providing information to the public, and identifying and filling data gaps.

Note: Unless otherwise indicated, mitigation would be year-round.

¹Under Alternative A—Modified, the CLEAR CREEK MOA would not be established.

²Under Alternative A—Modified, the floors of YUKON 5 MOA and FOX MOA would be 5,000 ft AGL year-round.

³Area of Critical Environmental Concern (ACEC).

Distribution of the Final EIS

The Final EIS and/or Executive Summary were distributed to 940 individuals, agencies, and organizations. The Final EIS is also available for public review at the following locations:

■ Anchorage	Bureau of Land Management Alaska Resources Library Consortium Library, University of Alaska, Anchorage Anchorage Law Library Arctic Environmental Information & Data Center
■ Aniak	Public Library
■ Arctic Village	Old Community Hall
■ Bethel	Kuskokwim Consortium Library
■ Chalkyitsik	Village Council Building
■ Circle/Central	Circle Hot Springs Resort
■ Delta Junction	Public Library
■ Denali National Park	Denali National Park Library
■ Dillingham	Public Library
■ Eagle	Eagle School Library
■ Fairbanks	Noel Wien Public Library Rasmuson Library, University of Alaska, Fairbanks
■ Fort Yukon	Native Village Building
■ Glennallen	Copper Valley Community Library
■ Juneau	Alaska State Library
■ Lime Village	Lime Village School
■ McGrath	McGrath Community Library
■ North Pole	Public Library
■ Palmer	Public Library
■ Sleetmute	Sleetmute School

■ Talkeetna	Public Library
■ Tok	Public Library
■ Venetie	Tribal Council Office
■ Wasilla	Public Library

This Page Intentionally Left Blank