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Note: The front sides of figures are odd-numbered pages; the backs of figures are the succeeding even-numbered page.

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Acronyms and Abbreviations

3 WG	3rd Wing
354 FW	354th Fighter Wing
AACA	Alaska Air Carriers Association
ACMAC	Alaska Civil/Military Aviation Council
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
AFB	Air Force Base
AFI	Air Force Instruction
AFR	Air Force Regulation
AGL	Above Ground Level
AL_{max}	Expected maximum sound levels
ALZ	Assault Landing Zone
AMSL	Above Mean Sea Level
ANILCA	Alaska Native Interest Lands Conservation Act
AOPA	Aircraft Owners and Pilots Association
AOS	Air Operations Squadron
ATC	Air Traffic Control
ARTCC	Air Route Traffic Control Center
BASH	Bird-Aircraft Strike Hazards
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure Commission
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon monoxide
CTS	Cope Thunder Squadron
dB	Decibels
dBA	A-weighted decibels
DZ	Drop Zone
DNL	Day-night sound level
DOPAA	Description of Proposed Action and Alternatives
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FLIP AP/1B	Flight Information Publication - Area Planning, Special Use Airspace, North & South America
FONSI	Finding of No Significant Impact
FSS	Flight Service Stations

GIS	Geographic Information System
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
IR	Instrument Routes
Knot	1 nautical mile per hour = 6,076 feet per hour or 1.15 statute miles per hour
LATN	Low Altitude Tactical Navigation Area
L_{dnmr}	A-weighted, onset-rate-adjusted, average day-night sound levels
L_{eq}	Equivalent sound level
L_{max}	Single Event maximum sound level
MFE	Major Flying Exercise
Mile	Statute Mile
MOA	Military Operations Area
MTR	Military Training Route
NAA	No Action Alternative
NAAQS	National Ambient Air Quality Standards
NAS	National Airspace System
NATO	North Atlantic Treaty Organization
NCA	National Conservation Area
NEPA	National Environmental Policy Act
NM	Nautical Mile
NMFS	National Marine Fisheries Service
NORAD	North American Aerospace Defense Command
NO_X	Nitrogen Oxides
NPS	National Park Service
NWR	National Wildlife Refuge
PACAF	Pacific Air Force
PM_{10}	Particulate Matter equal to or less than 10 microns in diameter
PSD	Prevention of Significant Deterioration
RA	Restricted Area
RO	Routine Operations
RPC	Resource Protection Council
SEL	Sound Exposure Level
SO_2	Sulfur dioxide
SPL	Sound Pressure Level
SRA	State Recreation Area
SUAIS	Special Use Airspace Information Service
TCAS	Traffic Alert and Collision Avoidance System
TMOA	Temporary Military Operations Area
USAF	United States Air Force
USARAK	United States Army Alaska
USBAM	United States Bird Avoidance Model
USC	United States Code

USDoD	United States Department of Defense
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
VR	Visual Route
WGS	World Geodetic System
WTD	Weapons Training Deployment

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1.0 PURPOSE AND NEED FOR ACTION

1.1. Introduction

The United States Air Force (USAF) is proposing to modify the existing Military Training Route (MTR) structure managed by the 11th Air Force within the State of Alaska. Implementation of the proposed action is necessary to provide an optimal training environment in an era of increasingly sophisticated weaponry and combat tactics, but with tighter budget controls and fewer training opportunities.

Before the proposed action can be implemented, the USAF is required by the National Environmental Policy Act (NEPA) to assess potential impacts and evaluate possible alternatives that could mitigate or reduce impacts. This report has been prepared to fully describe the proposed action and alternatives, characterize the existing environment, and document the assessment of potential environmental impacts.

This Environmental Assessment (EA) is structured to assist military planners by providing information about conditions and potential impacts along the proposed and alternative MTRs. Planning, land-use, and environmental documents that influence or control use of land and resources by the military in Alaska were reviewed during preparation of this EA. Resource and regulatory agencies were also consulted in the assessment of potential impacts and development of alternatives. The information and conclusions in this document were based in part on these sources and are consistent with USAF plans and objectives.

This EA is carefully organized to analyze impacts based on proposed modifications to the MTR structure in Alaska. This EA meets formatting guidelines and is intended to present both general and site-specific information efficiently and in a style that is easy to review and understand.

1.2. Purpose and Need for the Proposed Action

1.2.1. Summary

The USAF is proposing to modify the existing MTR structure managed by the 11th Air Force within the State of Alaska. The existing twelve MTR ground tracks span the state from the west and southwest to the eastern Interior near the Canadian border. Under the proposed action, eight of the existing MTRs will be modified, two MTRs will be removed from service, and two will remain unchanged physically, although the use will change. Two new routes will be added to

the existing structure. Existing and proposed MTRs are depicted in Figure 1-1[1]. Figures 1-2 and 1-3 show MTR structure relative to conservation units[2]. The modifications to the MTRs are summarized in the tables in Appendix A. Appendix B tables summarize the No Action Alternative (NAA).

All existing and modified routes will be capable of supporting flight operations at:

- High (but subsonic) speeds
- Low altitude
- Daylight or darkness
- All weather conditions

The purpose of the proposed action originates in the prescribed mission of the 11th Air Force, which is directed by the President and the Secretary of Defense. As part of the Pacific Air Forces (PACAF), the 11th Air Force is instructed to maintain national security and defend the United States against attack throughout the Pacific Theater and to prepare plans, conduct operations, and coordinate activities of PACAF forces. More specifically, the 11th Air Force is directed to ensure air combat and operational readiness, develop tactics/techniques of aerial warfare, and conduct training. Relevant training programs of the USAF in Alaska are described in Section 1.2.4.

[1] Circles that appear as part of the Military Operations Areas (MOAs) in Figure 1-1 are exclusion areas for seasonal or year-round special use (i.e., wildlife habitat or seasonal recreational use).

[2] The term conservation unit refers to any federal, state or locally protected land. Conservation units identified in the EA are generally federal or state protected areas.

11th Air Force
Elmendorf AFB, Alaska
Military Training Routes

Infrastructure and Special Use Airspace
Figure 1-1

Legend

- Proposed MTRs
- Current MTRs
- Warning Areas
- Restricted Areas
- MOAs
- Military Land
- Trans-Alaska Pipeline
- Railroads
- Roads
- Towns

N

0 30 60 90 120

Nautical Miles
1:3,728,845

Albers Equal Area (Alaska) Projection

Date: June 12, 2006
Version: 4
Author: RDI-DKS
File: Infra_Miilitary_Fig1-1.mxd

Selawik
Galena
Unalakleet
Norton Sound
McGrath
Aniak
Bethel
Kwethluk
Quinhagak
Togiak
Dillingham
Naknek
King Salmon
Iliamna Lake
Cook Inlet
Gulf of Alaska
Nikiski
Kenai
Soldotna
Seldovia
Anchor Point
Homer
Seward
Houston
Big Lake
Wasilla
Palmer
Anchorage
Valdez
Cordova
Glennallen
Tok
Healy
Anderson
Nenana
Fairbanks
North Pole
Delta Junction
Circle
Eagle
Canada

1900 1902 1905 933 937 940 954 935 1909 1926 1928

162°0'0"W 160°0'0"W 158°0'0"W 156°0'0"W 154°0'0"W 152°0'0"W 150°0'0"W 148°0'0"W 146°0'0"W 144°0'0"W 142°0'0"W

66°0'0"N 64°0'0"N 62°0'0"N 60°0'0"N 58°0'0"N

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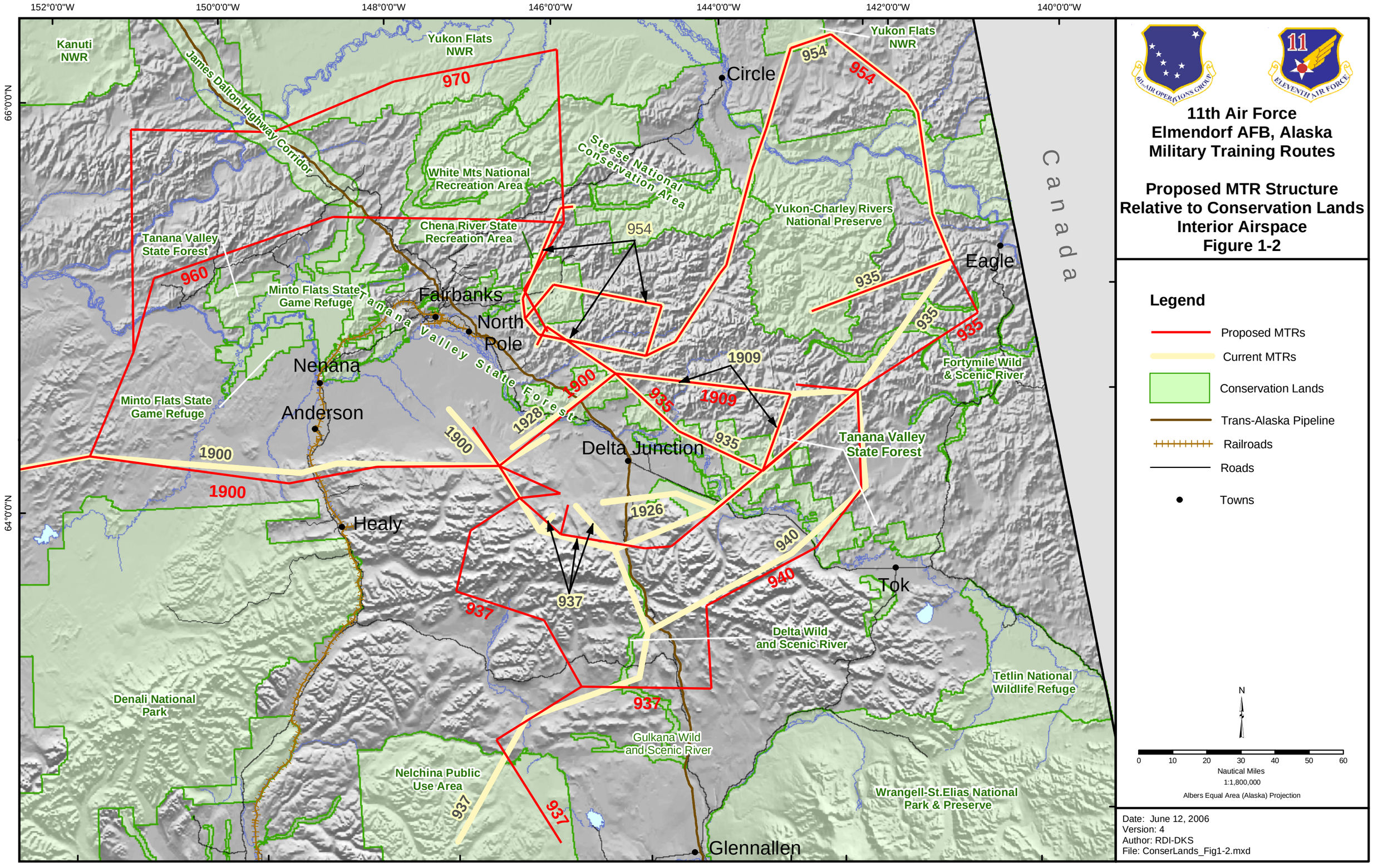

11th Air Force
Elmendorf AFB, Alaska
Military Training Routes

Proposed MTR Structure Relative to Conservation Lands
Interior Airspace
Figure 1-2

Legend

- Proposed MTRs
- Current MTRs
- Conservation Lands
- Trans-Alaska Pipeline
- Railroads
- Roads
- Towns

N

0 10 20 30 40 50 60
Nautical Miles
1:1,800,000

Albers Equal Area (Alaska) Projection

Date: June 12, 2006
Version: 4
Author: RDI-DKS
File: ConserLands_Fig1-2.mxd

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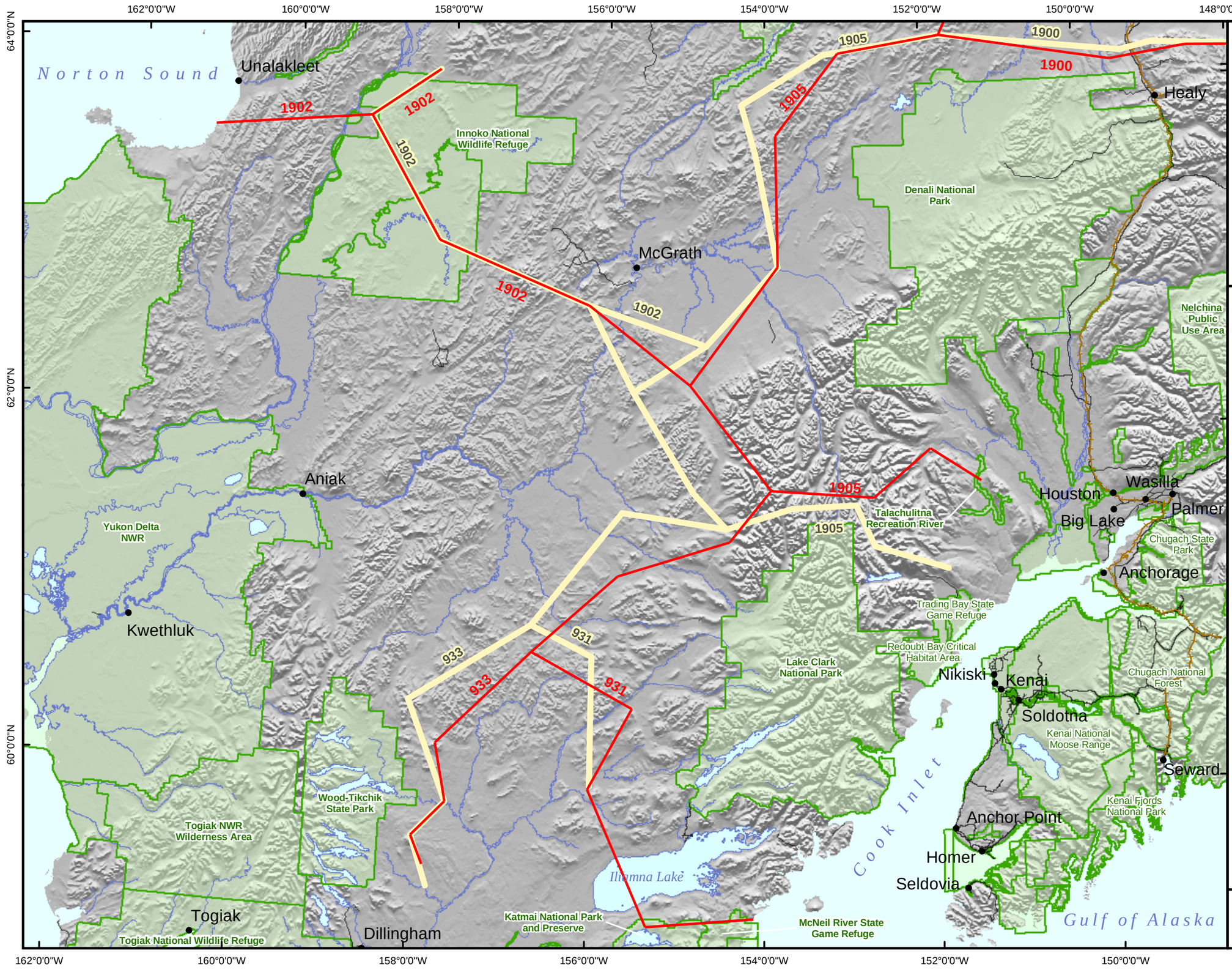

11th Air Force
Elmendorf AFB, Alaska
Military Training Routes

Proposed MTR Structure Relative to Conservation Lands Western Airspace
Figure 1-3

Legend

- Proposed MTRs
- Current MTRs
- Conservation Lands
- Trans-Alaska Pipeline
- Railroads
- Roads
- Towns

N

0 10 20 30 40 50 60 70 80

Nautical Miles

1:2,300,000

Albers Equal Area (Alaska) Projection

Date: June 12, 2006
Version: 4
Author: RDI-DKS
File: ConserLands_Fig1-3.mxd

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1.2.2. Military Training Routes

Federal Aviation Regulations (FAR) require military, commercial, and civilian aircraft traveling at speeds in excess of 250 knots to maintain a minimum altitude of 10,000 feet above mean sea level (AMSL)[3]. To accommodate low-altitude military training needs, the Federal Aviation Administration (FAA) allocates airspace for training at speeds greater than 250 knots and altitudes as low as 100 feet above ground level (AGL). An MTR is the flight path designated for military aircraft training at speeds higher than 250 knots and at altitudes up to 18,000 feet AMSL, although most operations are conducted below 10,000 feet AMSL. Each MTR is one-way only and restricted to either Visual Flight Rules (VFR) or Instrument Flight Rules (IFR).

Visual Routes (VRs) are flight corridors that must be flown under the FAA's visual flight rules, and they typically have a minimum altitude of 100 feet AGL and a maximum altitude of up to 5,000 feet AGL. Flights on VRs must be discontinued under instrument meteorological conditions (IMC). Aircraft separation on VRs is not formally controlled by the FAA, but rather, air traffic is generally controlled through "see and avoid" tactics or air traffic control direction. However, civilian pilots are responsible for checking with the FAA to determine whether the MTR is active and, if so, for using caution when crossing or traveling within an active MTR.

Instrument Routes (IRs) are for IFR operations. IRs can be flown at night or when the weather ceiling is less than 1,500 feet or the visibility is less than 3 miles (i.e., IMC). On IRs, aircraft separation--the time and distance that aircraft are separated from each other--is controlled by the FAA. Any military aircraft flying IRs under IFR conditions must comply with FAA instructions, e.g., FAA order 7610.4K, Sections 4-9.

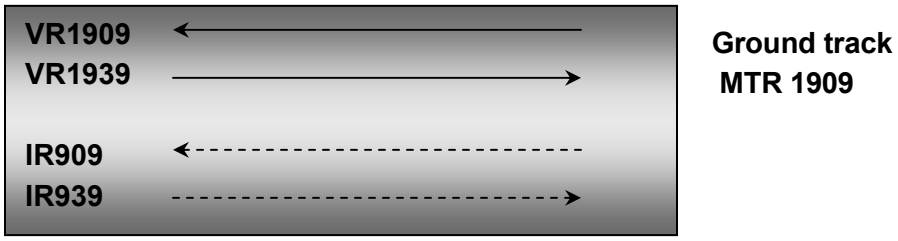
To ensure airspace safety, an MTR can only be flown in only one direction so that air traffic controllers always know which direction an MTR aircraft is flying. The FAA accommodates flights in the reverse direction by collocating two MTRs such that they are in the same physical location with one designated for flight in the forward direction and the other for flight in the opposite direction. IRs may also be collocated with VRs so that four MTRs are often located along a single ground track (e.g., a VR directed north, the reverse VR directed south, an IR directed north, and the reverse IR directed south).

Each MTR has its own unique number consisting of the classification (i.e., VR or IR) and three or four digits. MTRs that include one or more segments above 1,500 feet AGL have a three-

[3] Aircraft whose minimum safe airspeed for any particular operation is greater than 250 knots may fly below 10,000 feet MSL at that minimum safe airspeed. (14 CFR-FAR §91.117, “General Operating and Flight Rules”, Sect. 117 “Aircraft Speed”).

digit identification number (e.g., IR926, IR927). MTRs with no segment above 1,500 feet AGL have a four-digit identification number (e.g., VR1926, VR1927).

As noted previously, the ground track of a designated flight corridor can represent up to four associated MTRs, which are typically collocated. In this document, the ground track will be known by the lowest associated VR (e.g., the ground track for VR1909, VR1939, IR909, and IR939 will be known as MTR 1909), as illustrated below. Modification of one MTR will require action for all other MTRs within the same ground track, unless specifically noted otherwise.

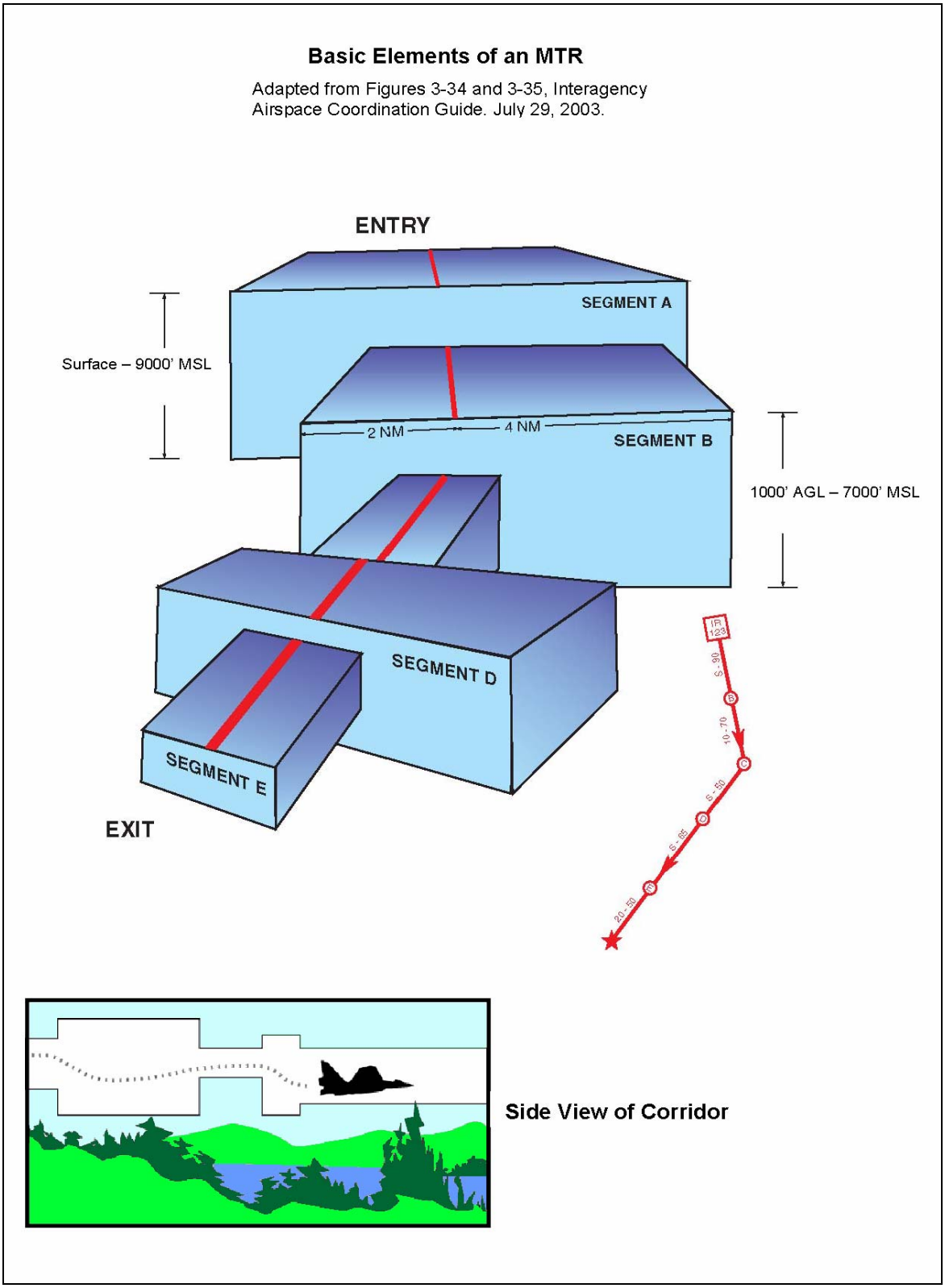


MTRs are not necessarily designated for point-to-point flight. An MTR may consist of multiple segments designated for specific military aircraft maneuvers. Each segment has a designated floor, described in feet AGL, and a designated ceiling altitude, which is typically described in feet AMSL although some lower altitude VRs can have ceiling altitudes designated AGL. Lateral boundaries of a segment are described in nautical miles (NM) to the left and right of the centerline, which is the focal point determining the geographic location of an MTR corridor (but not always centered in the segment). The corridor width may vary from 3 to 10 NM (3.5 to 12 statute miles) on either side of the centerline. Figure 1-4 graphically depicts basic elements of an MTR (Interagency Aviation Management Council 2003).

Aircraft may maneuver freely within the vertical and lateral parameters of an MTR segment. The vertical and lateral parameters of an MTR corridor may be restricted to avoid sensitive areas, flight hazards, and other conditions of use. Restrictions may also be placed on hours of operation or seasonal use to minimize potential impacts.

Important airspace safety measures have been formalized and include adequate separation and a means to notify the civilian aviation community wherever and whenever military training is conducted. For flight planning, current MTRs are described in the United States Department of Defense (USDoD) Flight Information Publication (FLIP) AP/1B (USDoD 2006) and associated maps.

Figure 1-4 Military Training Route Characteristics



1.2.3. Low-Altitude Airspace and Military Training Routes

To maintain well-trained, combat ready tactical forces, the USAF conducts regular training missions. An integral component of this training is low-altitude flight operations. Low-altitude training is designed to achieve and maintain aircrew proficiency in a variety of functions such as avoiding enemy detection and destruction, air defense, strategic and tactical bombing, electronic warfare, and tactical reconnaissance. The USAF aircraft crews must be capable of delivering ordnance accurately day or night, in all weather conditions, while using the terrain, instruments, sophisticated navigation systems, and flight operating procedures necessary to avoid detection by radar and destruction by various weapons. Low-altitude flying is also used in research and development, testing programs, and transport and delivery missions.

Types of airspace used for low altitude military purposes include:

- Military Training Routes (MTRs)
- Military Operations Areas (MOAs)
- Warning Areas (offshore)
- Restricted Areas (RAs)
- Low Altitude Tactical Navigation Areas (LATNs – slow speed)

As described in Section 1.2.2, MTRs are low-level, high-speed airspace corridors used to navigate a variety of terrain; they are typically used to conduct tactical training missions to and from MOAs or RAs. MTRs are approved for aircraft speeds in excess of 250 knots, although operations must remain subsonic. As noted in Section 1.2.2, MTRs are designated as either VRs or IRs.

MOAs are another type of low-altitude military airspace. They are controlled when active to separate military activities from IFR air traffic. Military aircraft usually have much more latitude to maneuver in MOAs than in MTRs because MOAs are typically much wider, may reach altitudes as high as 18,000 feet AMSL, and may be authorized for supersonic flight. MOA training activities typically include basic fighter maneuvers, air combat tactics, low-altitude tactical navigation, and simulated air-to-surface missions.

RAs keep non-participants (civilian flights) from entering airspace where hazardous activities such as bombing are being conducted. MTRs afford the opportunity to conduct high-speed training with access to MOAs and RAs.

1.2.4. Current Training in Alaska

Alaska is strategically important to the United States and national security because of its location between Asia and the contiguous 48 states, and its importance as a major United States supplier of resources such as energy. As a result, several military facilities have been located in Alaska including: two major Air Force Bases (AFBs), Elmendorf AFB near Anchorage and Eielson AFB near Fairbanks; currently three ancillary air stations located at King Salmon, Galena, and Shemya; and numerous other sites throughout the state. Even with the recently-announced reduction of Alaska military personnel as part of a nationwide military restructuring effort (e.g., including the Galena air station), low-altitude flight operations in regularly-scheduled training missions will still be required in Alaska to support the PACAF. At this time, there are 21 MOAs and eight RAs, including three ranges used for USAF ordnance training. MTRs provide access from the installations to MOAs and RAs for training. Additional discussion on training in Alaska is provided in the Environmental Assessment of Military Training Routes, Alaska (MTR EA) (USAF 1992) and the Final Environmental Impact Statement, Alaska Military Operations Areas (MOA EIS) (USAF 1995).

Most aircraft in Alaska practice low-level flying as part of their required general exercise missions. The primary missions of assigned F-15 and F-16 aircraft in Alaska are to be multiple-role fighters capable of air-to-surface and air-to-air interdiction missions while protecting themselves from enemy detection or fire. This type of training can only be provided by a combination of VRs and IRs that allow aircraft to operate at low altitudes and high speeds, in IMC, and at night. Low-level training is also designed to reduce radar detection, which improves an aircraft's potential to complete its mission successfully. Flying at lower altitudes increases the time an aircraft remains below the horizon and undetectable, thereby increasing the chance that the aircraft will penetrate enemy defenses and survive.

Besides routine training, USAF aircraft in Alaska also participate in Major Flying Exercises (MFEs) involving joint training operations with aircraft from bases outside Alaska, including aircraft from other countries. MFE operations mainly use MOAs, RAs and, to a lesser extent, MTRs and Warning Area 612 in the Gulf of Alaska.

National security requires the USAF to conduct these regional and international MFEs (e.g., Cope Thunder), winter/night navigation exercises, weapons training deployments, Air National Guard deployments, and multi-national North Atlantic Treaty Organization (NATO) exercises. Loss of training space overseas has increased pressure to provide training space and facilities in the United States. Each exercise is evaluated to ensure that MFE status is publicized, should the training become large enough. All Cope Thunder and most Northern Edge exercises are MFEs.

1.2.5. Need for the Proposed Action

MTRs are needed to meet the current mission of the 3rd Wing (3 WG) and 354th Fighter Wing (354 FW) to provide air superiority and air interdiction forces for the 11th Air Force, Alaskan North American Aerospace Defense Command (NORAD) Region[4], PACAF, and forces for other USAF tasks. These units fly a combined annual average of about 200 to 400 sorties on the twelve existing MTRs, which pre-date the special use airspace changes after 1995 (USAF 1995). MTR use in the years 2002 through 2004 includes:

Unit/Squadron	2002	2003	2004
3WG sorties	21	40	53
354 FW sorties	183	412	244

PACAF fighter aircrews are typically limited to a training floor of 500 feet AGL; however each proposed MTR will be evaluated down to 100 feet AGL due to the lower altitude training needs of other aircraft during joint exercises. There is also current planning for the beddown of eight C-17 aircraft in 2007. These aircraft will require the use of the MTR structure for tactical navigation training of approximately 400 to 800 sorties per year.

The USAF regularly re-evaluates its Alaskan airspace needs to assess changes in assigned aircraft, missions, and airspace availability in other military training areas. Recently, the USAF documented the need to implement proposed changes to the existing MTR structure (USAF 2005a).

The USAF has identified the following limitations in the present MTR structure:

- No route connects to the coastline, limiting realistic Naval training capability.
- Several routes do not connect with RAs, thus reducing the effectiveness of MTRs as travel corridors.
- Some routes do not have adequate radio coverage, limiting efficient and effective use.
- Some routes are longer than necessary.
- Some routes are frequently limited by poor weather conditions, preventing access into Interior airspace ranges from the south.

[4] The Alaskan North American Aerospace Defense Command (NORAD) Region, based at Elmendorf AFB, maintains the capability to detect, validate, and warn of any aircraft and/or cruise missile threat in its area of operations that could threaten North American security.

- Some routes have extensive mitigation in place, sometimes restricting use for extended periods.

The proposed action that addresses each of these needs and considers alternative actions is presented in Section 2.0.

1.2.6. Regulatory Compliance

The USAF will decide whether to go forward with the proposed action, an alternative action, or the "no action alternative" (NAA). In making this decision, the USAF will consider the findings of this EA. The FAA has jurisdiction over the IR routes (FAA Order 7610.4 Special Military Operations) whereas the USAF has jurisdiction over the VR routes. Therefore, the USAF and the FAA will work cooperatively to complete the EA in 2007.

A number of laws, regulations, executive orders, and USAF policies will be considered in the assessment and the final decision about implementation. Key regulatory factors are described below.

Implementing proposed changes in the Alaska MTRs constitutes a federal action, and as such is subject to requirements of the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [USC] 4321 et seq.). The purpose of NEPA is to ensure that decisions on proposed federal actions consider potential environmental consequences. The President's Council on Environmental Quality (CEQ) issued a series of regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500 - 1508). These regulations require federal agencies to provide sufficient information and analysis (i.e., an EA) to determine whether impacts are potentially significant and require an EIS for extended analysis or whether there can be a Finding of No Significant Impact (FONSI).

The USDoD has also issued instructions that supplement the requirements of NEPA and the CEQ (USDoD 1996). This instruction documents USDoD policy to fully consider the environmental consequences of proposed actions in conjunction with national security requirements and to prepare necessary NEPA documentation whenever a proposed action has the potential for significant environmental impacts and a decision will be made related to one or more alternative means of accomplishing that proposed action.

Further, the USAF has regulations and instructions for implementing USAF Policy Directive 32-7061, Environmental Quality, including the specific tasks and procedures for successfully conducting the USAF Environmental Impact Analysis Process (EIAP) (USAF 2003). Because the proposed action involves use of airspace, this document has also been prepared under FAA guidelines and regulations for implementation of NEPA (FAA 2004). The applicable FAA Orders are listed separately in Section 5, References, of this document.

In addition to NEPA, the USAF must ensure compliance with other pertinent environmental requirements in making a decision on the proposed action. Both development of the EA and defensible completion of the USAF decision-making process involve consideration of all relevant laws, regulations, executive orders, and enforceable policies, including those of the FAA. These key regulatory requirements are:

- The Federal Aviation Act of 1958, as amended
- The Clean Air Act of 1963, as amended
- The National Historic Preservation Act of 1966, as amended
- The Endangered Species Act of 1973, as amended
- The Coastal Zone Management Act of 1972, as amended
- Magnuson-Stevens Fishery Conservation and Management Act, as amended (Essential Fish Habitat provisions)
- Executive Order 11988 (Floodplain Management)
- Executive Order 11990 (Protection of Wetlands)
- Executive Order 12898 (Environmental Justice)
- Executive Order 13175 (Indian Tribal Government Consultation and Coordination)

FAA Orders, see listing in references.

There are other federal, state and local controls (e.g., USDoD; American Indian and Alaska Native Policy; State Implementation Plans for Air Quality Goals; national wildlife refuge management plans). Additionally, resource and regulatory agencies will develop site-specific or circumstance-specific requirements to reduce potential impacts. These are typically documented as mitigation in the EA, and considered in the overall assessment of impacts.

2. 0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA)

This section describes how the USAF proposes to meet existing needs in the MTR structure. It presents the selection criteria used to screen alternatives, and describes in detail the proposed action and alternatives to be evaluated, including the NAA.

2.1 Project Selection Criteria

The USAF was tasked with developing a project that could meet the existing needs and concerns described in Section 1.2.5. Additionally, the USAF developed a list of operational, public use, and environmental selection criteria or objectives that were used to identify and screen potential alternatives. These criteria were designed to meet military training objectives while minimizing costs and environmental consequences, and are described in detail in the 1992 MTR EA.

2.2 Proposed Action

The proposed action includes modification of eight existing MTRs, elimination of two existing MTRs, addition of two new MTRs, and retaining two existing MTRs without physical modification. The total number of MTRs will remain the same.

For purposes of this assessment, each ground track has four associated MTRs (i.e., IR and VR in each direction). Therefore, any change in one MTR implies comparable adjustment in the three collocated MTRs, except where noted otherwise. To address the project need identified in Section 1.2.5, the proposed action consists of the following major elements:

- Establish new MTRs to provide weather alternate training routes with connectivity among existing MTRs and RAs.
- Eliminate routes that are rarely used yet lie in high civilian air traffic areas.
- Establish connectivity to the coastlines to facilitate Naval training.
- Move away from extensive mitigation currently in place.
- Update MTR design to allow for maximum efficiency in training operations such as improving radio coverage and shortening routes that are unnecessarily long.

The physical MTR structure for the proposed action is provided in Appendix A. A complete description of airspace use and predicted noise levels for the proposed action is provided in Appendix F.

The proposed action will not affect currently published use times. MTR operations would normally occur on weekdays, except holidays, between the hours of 7:00 AM and 10:00 PM. The hours from 10:00 PM to 7:00 AM will remain unavailable for MTR use. Speeds on all routes will normally be greater than 250 knots and will always be subsonic. Typical speeds for F-15Es would be 540 knots, F-16C/Gs would be 500 knots, C-17s would be 300 knots and C-130s would be 210 knots.

Flight operations on MTRs would occur at all altitudes from 100 feet AGL to the MTR ceiling, which is typically 1,500 to 11,000 feet AGL. The expected altitude distribution is shown below.

MTR altitude greater than or equal to:	Estimated percentage (%) of total sorties flown:
100 feet AGL	100%
300 feet AGL	≥ 99%
500 feet AGL	≥ 95%
750 feet AGL	≥ 50%

No restrictions will apply to flight tracks on the MTRs except that flights along each must be unidirectional. Pilots, however, typically navigate based on the coordinates of MTR turn points. Therefore, the distribution of sorties across the useable width of each MTR will likely be normal (i.e., Gaussian distribution) with a standard deviation estimated to be 3.3 NM. This means that 66 percent of sortie training will be within 3.3 NM of route centerline.

All existing Special Procedures entries listed in the FLIP AP/1B will remain unchanged except where route points change. The procedures for contacting Anchorage Air Route Traffic Control Center (ARTCC) and the USAF, as presently described in the FLIP AP/1B, would not change under the proposed action. If the airspace changes are approved, FLIP AP/1B changes will be released to the publisher after the FAA issues its approval.

Existing available airspace includes the routes described in the 1992 MTR EA, except that the chart datum used is World Geodetic System (WGS) 84.

Proposed changes to the existing MTR structure are depicted in Figures 2-1 and 2-2.

The USAF has designed its proposed action to address the purpose and need identified in Section 1.2. As noted, existing routes do not connect to coastlines, and therefore limit Naval training during deployments to Alaska. Several routes do not connect to an RA, reducing the effectiveness of MTRs. Unforeseen poor weather conditions severely limit access from the south into Interior ranges. Some routes are longer than necessary. Some routes do not have adequate radio connectivity with Air Traffic Control (ATC) and some unnecessarily pass though

multiple ATC sectors. Some routes have extensive mitigation in place, which can close the route for extended periods. The proposed changes remedy many of these problems.

The proposed action offers effective training opportunities, increased military readiness training, and eliminates routes that are infrequently used and lie in high use VFR areas. The Alaska Civil/Military Aviation Council (ACMAC), the 11th AF Resource Protection Council (RPC), and several Alaska Native Tribes were consulted in initial scoping meetings in 2004 and 2005, which have resulted in refinements to the proposed action. These three groups have been instrumental in reducing impacts on the environment and the general public, including aviation interests. The United States Army Alaska (USARAK) also has two ongoing airspace initiatives which would be affected by this action, and they were also consulted. The Missile Defense Agency conducting the Ballistic Missile Defense Initiative at Ft. Greely, AK was consulted as well. A number of improvements in the proposed action that reduce impacts on affected parties are documented in the USAF Test/Training Space Needs Statement for the Modification of Military Training Routes (USAF 2005a).

Additionally, current planning is underway for the beddown of eight C-17 Globemaster III aircraft in 2007. The C-17's will use the MTR structure for tactical navigation training on approximately 400 to 800 sorties a year. A sortie will consist of one airdrop and several assault landings. Tactical navigation training could involve in-flight refueling and will last approximately four hours. A separate EA addressing the impacts of C-17 beddown is currently in progress (USAF 2005b). The C-17 Beddown EA covers items such as hanger space, parking space, refueling pits, and other actions necessary to support the beddown at Elmendorf AFB. A similar analysis addresses Assault Landing Zone and Drop Zone requirements. For efficiency, the estimated use of MTRs for C-17 training is addressed in this document.

Table 2-1 provides an impact summary of the proposed action compared to the NAA. A complete discussion of the impacts associated with the proposed action and the NAA is provided in Section 4.0.

Table 2-1 Summary of Impacts - Proposed Action Compared to the No Action Alternative

MTR	Notable Route Change	Aircraft Use	Resources Affected	Net Impact	Summary Table[1]
931	Extend to coast	+	-	-	4-1
933	n/c	+	+	+	4-2
935	n/c	n/c	n/c	n/c	4-3
937	Alternate entries; reroute	+	n/c	+	4-4
940	Absorb parts of NAA 937	+	-	n/c	4-5
954	n/c	+	n/c	+	4-6
960*	New MTR	-	-	-	4-7
970*	New MTR	-	-	-	4-8
1900	Absorb 1928	+	n/c	+	4-9
1902	Extend to coast	+	n/c	n/c	4-10
1905	n/c	+	-	+	4-11
1909	n/c	+	n/c	+	4-12
1926	Eliminate/absorb in 940	+	+	+	4-13
1928	Eliminate/absorb in 1900	+	+	+	4-14

n/c = No change from the NAA

+ = Positive change (proposed action reduces impacts from the NAA)

- = Negative change (proposed action increases impacts from the NAA)

[1] Tables 4-1 through 4-14 can be found in the respective MTR tabs in Section 4. Also see Appendix C for a complete description of resources occurring under MTRs.

* Withdrawn from Proposed Action – Will not be implemented.

152°0'0"W 150°0'0"W 148°0'0"W 146°0'0"W 144°0'0"W 142°0'0"W 140°0'0"W

64°0'0"N

Canada

Allakaket
Beaver
Birch Creek
Stevens Village
Circle
Central
Circle Hot Springs
Livengood
Rampart
Tanana
Minto
Chena Hot Springs
Fox
Ester
Fairbanks
North Pole
Manley Hot Springs
Eagle
Eagle Village
Nenana
Chicken
Anderson
Big Delta
Delta Junction
Healy Lake
Dot Lake
Lake Minchumina
Healy
McKinley Park
Tanacross
Tok
Tetlin
Cantwell
Northway
Paxson
Mentasta Lake
Slana
Chistochina
Nabesna
Petersville
Gulkana
Gakona
Talkeetna
Glennallen
Nelchina
Tazlina
Copper Center

970 954 960 935 1909 1900 1928 1926 940 937 905

11th Air Force
Elmendorf AFB, Alaska
Military Training Routes

Proposed Military Training Routes - Interior Airspace
Figure 2-1

Legend

- Current MTRs

Proposed MTRs

- MTR 935
- MTR 937
- MTR 940
- MTR 954
- MTR 960
- MTR 970
- MTR 1900
- MTR 1909

N

0 10 20 30 40 50 60
Nautical Miles
1:1,914,711

Albers Equal Area (Alaska) Projection

Date: June 12, 2006
Version: 4
Author: RDI-DKS
File:Prop_Military_Fig2-1.mxd

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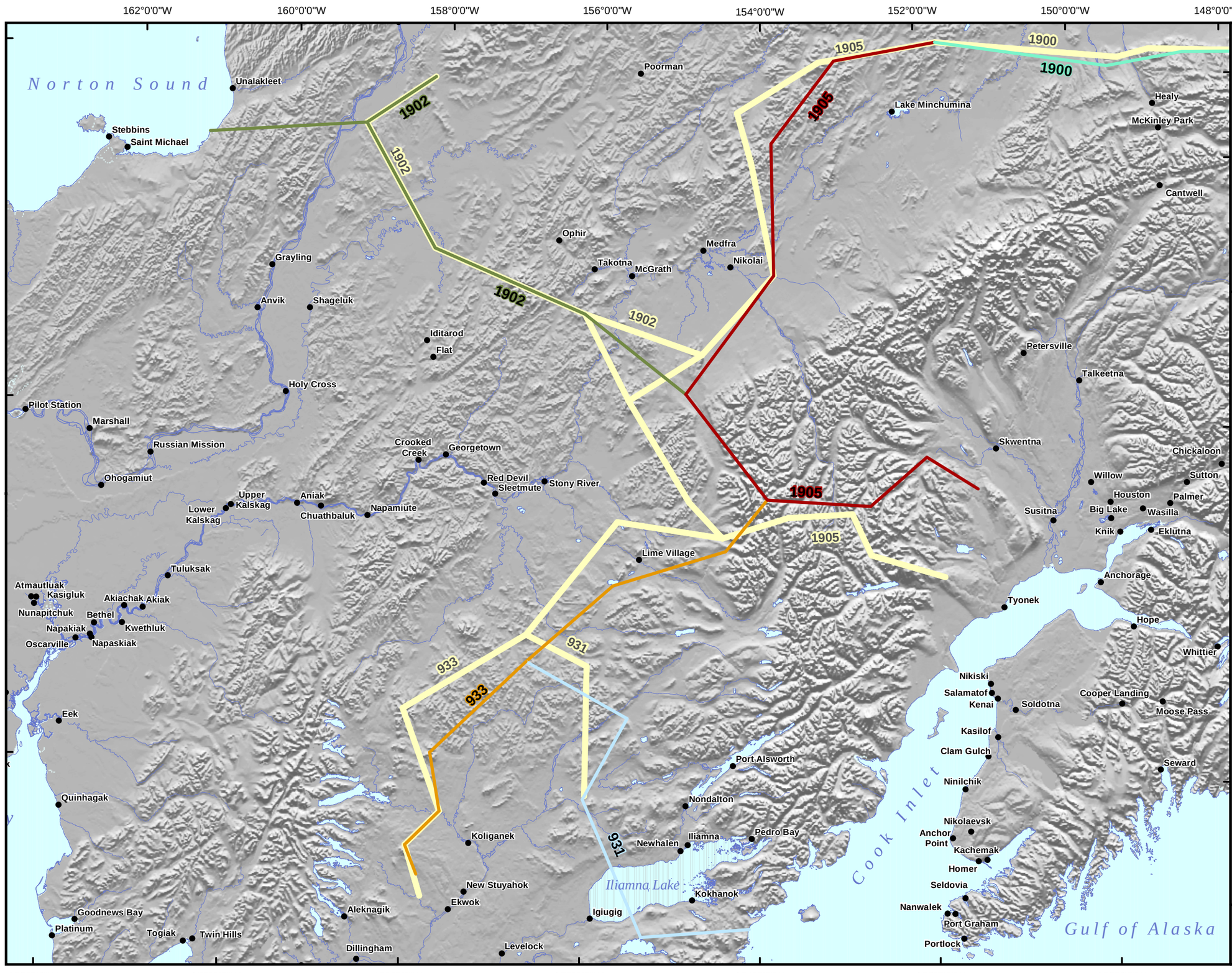

11th Air Force
Elmendorf AFB, Alaska
Military Training Routes

Proposed Military Training Routes - Western Airspace
Figure 2-2

Legend

Current MTRs

Proposed MTRs

- MTR 1902
- MTR 931
- MTR 933
- MTR 1900
- MTR 1905

Date: June 12, 2006
Version: 4
Author: RDI-DKS
File:Prop_Military_Fig2-2.mxd

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2.3 Alternatives to the Proposed Action

The NEPA process requires that reasonable alternatives to the proposed action be considered to reduce or eliminate potential environmental impacts. NEPA also requires that the NAA be evaluated to determine the environmental consequences of retaining the status quo. The statement of needs and project selection criteria form the basis for developing alternatives (32 CFR 989.8) – that is, reasonable alternatives should satisfy the same needs and meet the same project criteria as the proposed action. The only identified alternative to the proposed action is the NAA.

The NAA would result in no change to the existing MTR structure in Alaska. No modifications would take place and no MTRs would be created or eliminated. The MTR structure would remain the same as the Preferred Alternative as described in the USAF's 1992 MTR EA. This would most likely occur if the results of this EA showed a significant negative impact on the environment that cannot be mitigated or if there is no funding to conduct a full analysis. The MTR structure of the NAA is depicted in Figures 2-3 and 2-4. A description of airspace use and noise levels for the NAA is provided in Appendix F.

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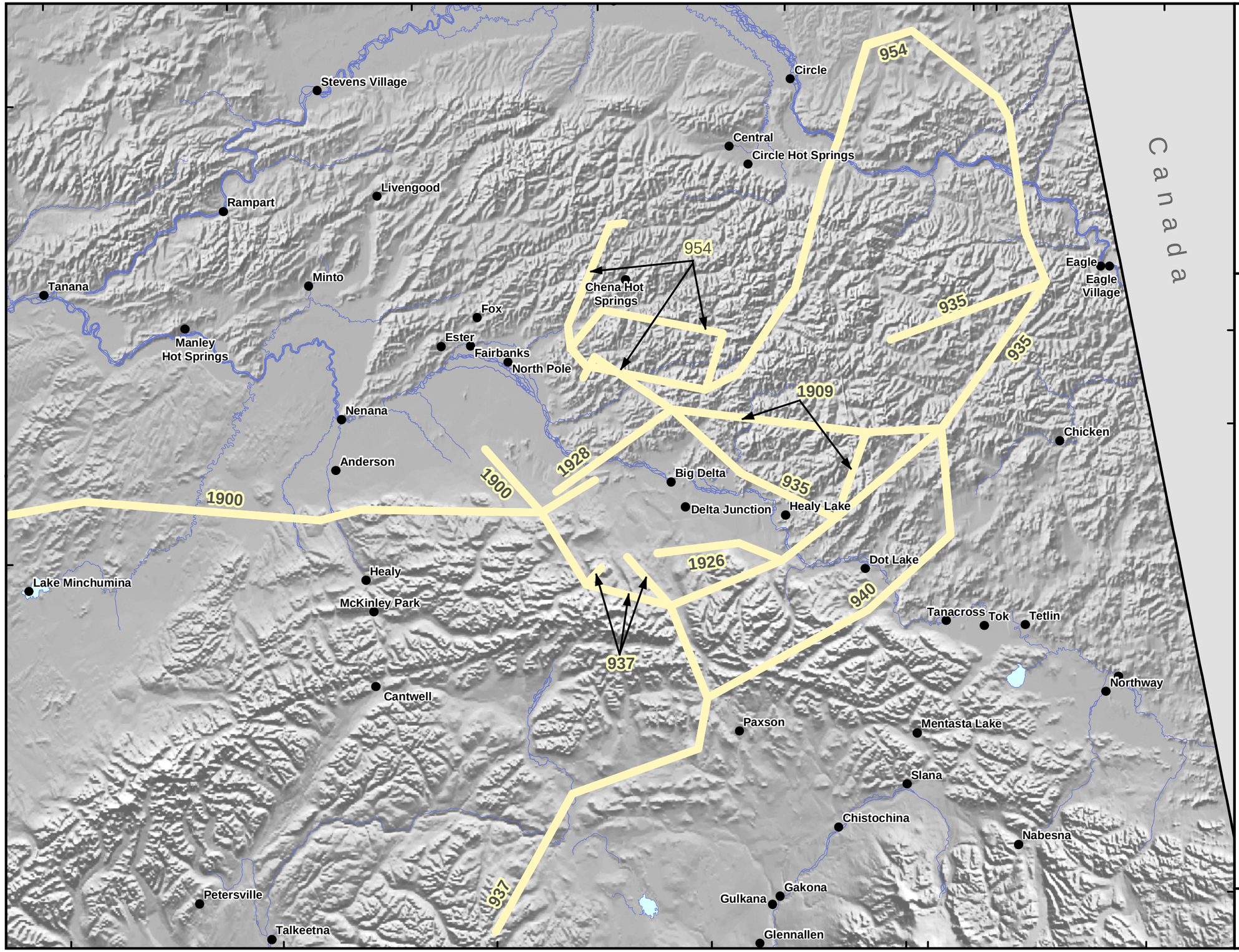
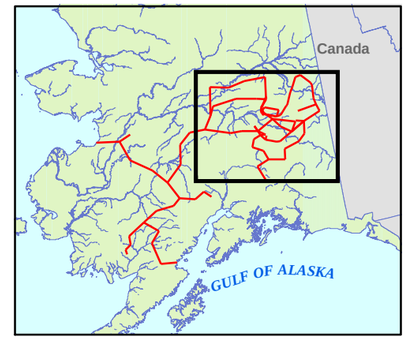


11th Air Force
Elmendorf AFB, Alaska
Military Training Routes

No-Action Alternative
Interior Airspace
Figure 2-3

Legend

Current MTRs



N

0 10 20 30 40

Nautical Miles

1:1,806,353

Albers Equal Area (Alaska) Projection

Date: June 12, 2006
Version: 4
Author: RDI-DKS
File:No-Action_Fig2-3.mxd

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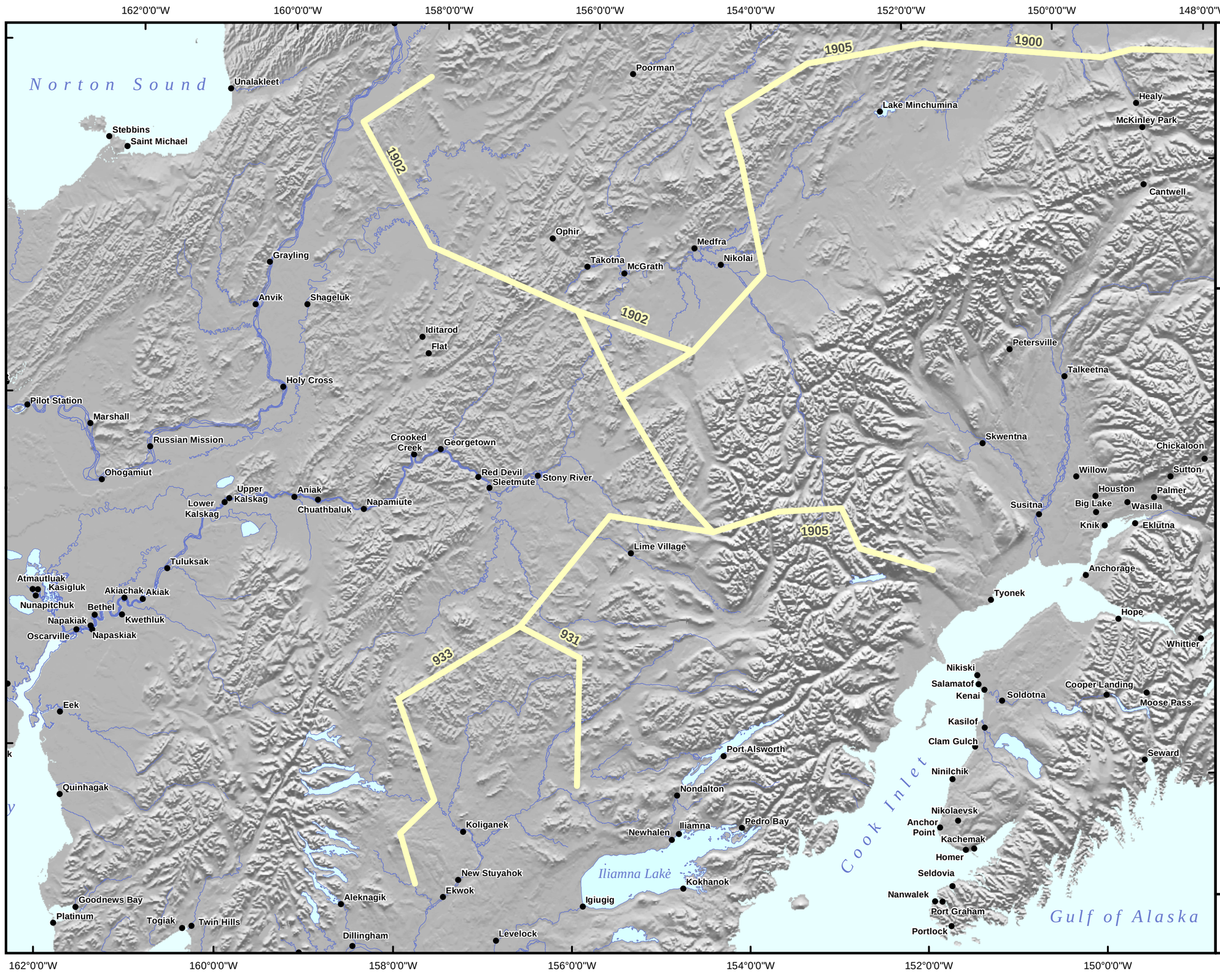

11th Air Force
Elmendorf AFB, Alaska
Military Training Routes

No-Action Alternative
Western Airspace
Figure 2-4

Legend

Current MTRs

Date: June 12, 2006
Version: 4
Author: RDI-DKS
File:No-Action_Fig2-4.mxd

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3.0 AFFECTED ENVIRONMENT

This section describes the environment that may be affected by the proposed action and the No Action Alternative (NAA). The environment described in this section will provide the baseline for the impact assessment in Section 4.0.
Environmental resources discussed in this section include

Physical resources
- Climate and Topography
- Vegetation

Human resources
- Subsistence
- Parks and Recreation
- Airspace and Civilian Air Safety
- Air Quality
- Noise

Socioeconomics

Wildlife resources
- Waterfowl
- Raptors
- Moose
- Caribou
- Bears
- Dall's Sheep
- Bison
- Marine Birds
- Marine Mammals

The folowing resources were evaluated by both the Air Force and the representatives of the communities located in the area of concern for each route and determined to have minimal or no impact on the environment. The proposed action does not involve any type of ground disturbing activity, construction or establishment of new facilities that would create adverse impacts on these resource areas.

Coastal Resources
Construction
Farmlands
Threatened and Endangered Species
Floodplains
Hazardous Materials, Pollution Prevention, and Solid Waste
Historical, Architectural, Archaeological, and Cultural Resources
Light Emissions and Visual Impacts
.Natural Resources and Energy Supply
Secondary (Induced) Impacts
Water Quality
Wetlands
Wild and Scenic Rivers

An outline of all resources occurring under the MTRs for the proposed action and the NAA is provided in Appendix C.

3.1 PHYSICAL ENVIRONMENT

3.1.1 Climate and Topography

The interior airspace and a majority of the western airspace experience a predominantly continental climate, characterized by extreme temperature variations and low precipitation and humidity (USAF 1995). Summers here are typically short, from mid-May through mid-September and winters are long, extending from December through mid-April. Spring break-up lasts from April to mid-May and snow cover is common approximately 200 days a year. MTRs 931, 933, 1902, and 1905 are influenced by a maritime climate, characterized by milder summers. They experience long, cold winters with higher precipitation and humidity than found in Interior Alaska.

Central Alaska has a broad and diverse terrain, marked by low mountain ranges and rolling uplands. The interior region is bordered by the Brooks Range to the north and the Alaska Range to the south. The Yukon River, the largest in the state, flows through Interior Alaska, as well as several other large tributaries such as the Tanana, Porcupine, and Koyukuk Rivers. Routes that extend to the south and west fly over the far western portion of the Alaskan Range as well as the Kuskokwim Range.

3.1.2 Vegetation

The vegetation in the affected area varies widely, but is predominantly alpine tundra and upland spruce-hardwood forest. There are areas of lowland spruce-hardwood forest, bottomland spruce-poplar forest, as well as wetlands and muskeg. As the proposed action does not involve ground activities, impacts on vegetation will be minimal, and thus are not discussed to a great extent in this document.

3.2 HUMAN ENVIRONMENT

3.2.1 Subsistence

A number of the communities within the affected area are either partly or entirely dependent on subsistence activities. The Alaska Native Interest Lands Conservation Act (ANILCA) of 1980 recognized the importance of subsistence use of natural resources and gave priority use on federal public lands to rural Alaska residents (USAF 1995). Approximately 50 percent of the food for three-quarters of the Alaska Native families in the state's smaller communities is acquired through subsistence activities (USFWS 1992). Because of the dependence of many Alaskans on subsistence activities, low-level military overflights and their potential impact on wildlife are a particular concern.

This document identifies villages within and adjacent to the affected area that participate in some form of subsistence activity. The principal species harvested by these communities are

moose, caribou, black and brown bear, Dall's sheep, fish, waterfowl, and small game. Community profiles were previously prepared for affected villages, including information such as population, estimated subsistence participation, history, employment, and general patterns of subsistence use. These profiles are provided in Appendix D.

3.2.2 Parks and Recreation

Both the existing and proposed MTRs cross areas used for recreational purposes. Recreation uses both inside and outside state and federal lands include hunting, fishing, boating, hiking, camping, and observing wildlife. In addition to the recreational uses associated with these areas, there are economic uses associated with them as well. Businesses such as hunting and fishing guides, lodges, air taxis, and other tourist related services benefit from recreational activities.

Hunting and fishing are extremely popular activities in Alaska, both commercially and recreationally. In 2002, there were 97,537 hunting licenses and 436,362 fishing licenses sold in Alaska. In 2003, 99,121 hunting licenses and 442,474 fishing licenses were sold (IAFWA 2006).

Additionally, visitor statistics for state and federal recreation areas are valuable in assessing the scope of the affected environment and the potential for impact. Appendix H provides an outline of visitor use statistics for a number of popular state and federal conservation lands for the past two years.

3.2.3 Airspace and Aviation Safety

The FAA is the sole agency charged with managing all airspace over the United States. More specifically, airspace management is via the National Airspace System (NAS) that is made up of a collection of complex systems and procedures, information services, facilities, aircraft, and personnel. The primary user groups are commercial aircraft, general aviation, resource management agencies, and military operations. The USDoD requirements for airspace to perform training exercises are described in Section 1.2.

Safety is a fundamental objective of airspace management, including civilian airspace use, collision potential, and potential bird-aircraft strike hazards (BASH). The changes to air traffic and the MTR structure would most likely be noticeable to small aircraft pilots. Civilian aircraft do not normally fly around MTRs to avoid encounters with high-speed, low-altitude military aircraft. All pilots could enhance safety by either flying over or around MTRs, but in some cases, this is unrealistic. All pilots are responsible for checking with the FAA to determine whether the MTR is active and for using caution when crossing or traveling within an active MTR. If a military aircraft on a VR encounters a civilian aircraft, see-and-avoid rules apply. If Instrument Meteorological Conditions (IMC) are encountered, the aircraft is on an IR, and IFR separation rules apply.

BASH presents a hazard to all aircraft operations as they can cause severe damage to aircraft or possibly result in a crash. Potential hazards in the affected area range from severe (e.g., during periods of bird migration) to mild during the winter months. Two of the largest bird migration corridors in the state, the Yukon and Tanana River areas, are used by sandhill cranes, gulls, and raptors and also serve as nesting areas. These, and virtually every other river system in the vicinity of the MTRs, are used by migratory birds to some extent.

The USAF has developed procedures to reduce BASH. The United States Bird Avoidance Model (USBAM) is a predictive bird avoidance model using Geographic Information System (GIS) technology to analyze bird habitat, migration, and breeding information. This model is in place to ensure minimal safety risks to pilots and aircraft from bird strikes.

3.2.4 Air Quality

Aircraft conducting operations on the proposed MTRs will be emitting pollutants, so it is important to assess the effect on ambient air quality and visibility. Ambient air quality could be affected if the aircraft emissions are sufficient to exceed the National Ambient Air Quality Standards (NAAQS) or the Prevention of Significant Deterioration (PSD) limits along the MTRs (40 CFR 50, et seq). NAAQS have been issued for seven criteria pollutants, of which four are typically emitted from the aircraft. These pollutants include:

- Nitrogen oxides (NO_x)
- Sulfur dioxide (SO_2)
- Carbon monoxide (CO)
- Particulate matter equal to or less than 10 microns in diameter (PM_{10})

NAAQS are the primary standards used by the United States Environmental Protection Agency (USEPA) for evaluating air quality in the United States. Therefore, the NAAQS will be used to describe the affected environment and any impacts associated with the proposed action.

The Alaska Department of Environmental Conservation (ADEC) has designated two parts of the state as maintenance areas for CO: 1) the Anchorage urban area and 2) the Fairbanks and North Pole urban areas (18 AAC 50.015). Additionally, the Eagle River area of Anchorage and the Mendenhall Valley area of Juneau have been designated as nonattainment for PM_{10} (18 AAC 50.015). However, none of the proposed MTRs, existing MTRs, or AFBs are located in any of these areas.

Since all other areas of Alaska are attainment areas, the PSD increments apply to the areas where each of the proposed and existing MTRs are located. The USEPA and ADEC classify attainment areas as Class I, II, or III wherein Class I areas have the smallest PSD increments

and Class III areas have the largest. PSD increments for Class I, II, and III areas have been promulgated for PM_{10}, SO_2, and NO_x. Four relatively small PSD Class I areas exist in the State of Alaska; including Denali National Park, and no PSD Class III areas exist. The remainder of the state has been classified as a Class II area.

3.2.5 Noise

Noise is defined as any sound that is undesirable because it interferes with communications, is intense enough to damage hearing, or is otherwise annoying (FICON 1992). Human response to noise can vary according to the type and characteristics of the noise source, the distance between the noise source and the receptor, the sensitivity of the receptor, and the time of day.

Due to the wide variations in noise events, noise is measured using a logarithmic scale expressed in decibels (dB). Given the characteristics of working with a logarithmic function, a 10 dB increase in the noise level corresponds to a 100 percent increase in the perceived sound. Under most conditions, a 5 dB change is necessary for a noise increase to be noticeable (USEPA 1974). For comparison purposes, normal conversation at a distance of 3 feet is approximately 60 dB, loud speech would approach 70 dB, and a train passing by at a subway platform is approximately 90 dB. At approximately 120 dB, sound could be intense enough to induce pain and 130 dB or more would lead to immediate and permanent hearing damage.

Because the human ear does not respond to sounds of varying frequency and intensity in a linear fashion, various "weighting" factors are applied to noise measurements in an effort to produce results which correspond to human response. These weighting factors are applied to the levels of sound in specific frequency intervals and added or subtracted based on the average human response to sounds in that frequency range; the resultant values are then summed to determine the overall "weighted" level. The most commonly used weighting systems are the "A" and "C" scales. The A-scale de-emphasizes the low- and high-frequency portions of the sound spectrum. This weighting provides a good approximation of the response of the average human ear (between a frequency of 1,000 to 8,000 Hertz) and correlates well with the average person's judgment of the relative loudness of a noise event. All sound levels analyzed in this EA are A-weighted. This is referred to as dBA.

The metrics used to describe and evaluate a sound environment are:

- The one-third octave band sound pressure level (SPL) from which all other sound measures are derived.
- Single Event maximum sound level (L_{max}).
- Single event energy dose levels such as sound exposure levels (SELs) which reflect both maximum sound level and event duration.

- Cumulative energy average levels - such as the equivalent sound level (L_{eq}); the annual, A-weighted, average day-night sound level (DNL); and the monthly, A-weighted, onset weight adjusted, average day-night sound level (L_{dnmr}), which account for the magnitude and duration of sound events over some period of time by averaging the total energy of multiple events.

SPLs and single event maximum sound levels are used to assess the potential impacts of noise on structures and animals. DNL and L_{dnmr} are used only to assess the impact of noise on humans. Regardless whether the receptor is human or animal, aircraft noise levels depend on several factors. Aircraft type is a primary factor, since each engine type has a different size and design. Other factors include environmental conditions (e.g., temperature, wind speed, and direction), topography, horizontal distance from flight route, flight altitude, and spacing between sorties. A more detailed explanation of noise impacts is provided in Appendix E.

3.2.5.1 Magnitude of Noise at Ground Level

As discussed in the 1992 MTR EA, the magnitude of noise on the ground created by low altitude flight operations is affected by a variety of factors. These factors include the aircraft type, the flight altitude above ground level (AGL), and the lateral distance from the route centerline. Previous assessments have focused on the F-15s and F-16s stationed in Alaska as the primary users of the low altitude training. These aircraft will remain the primary high speed users of these routes; however, the introduction of the C-17 will also add additional primary users in the future. This assessment focuses on all three types of aircraft and will discuss the two important parameters affecting the magnitude of noise on the ground: 1) the aircraft altitude above the ground and 2) the horizontal distance from the route centerline (or the receptor experiencing the sound event).

The USAF proposes to fly the MTRs as low as 100 feet AGL, although very little flight activity occurs at that altitude. It is expected that 99 percent of the flight activity occurs at altitudes of 300 feet AGL or higher. The expected altitude distribution of F-15, F-16, or C-17 operations is depicted below:

Altitude Greater Than or Equal to	Percentage of Sorties
100 feet AGL	100%
300	≥ 99%
500	≥ 95%
700	≥ 50%

Sound dissipates rapidly with increases in aircraft altitude or increase in horizontal distance from the receptor. Figure 3-1 presents a representation of the expected maximum sound levels

(AL_{max}) across an MTR for an F-15 flying at four different altitudes (100, 500, 750, and 1,500 feet AGL).

In addition, as noted in the 1992 MTR EA, the USAF has found that observable effects in wildlife generally begin to appear in the AL_{max} range of 85 to 90 dB (Kull 1992). For the aircraft identified as likely to commonly use the MTRs, AL_{max} at 100 feet AGL directly below the aircraft ranges from approximately 119 dB for an F-16 up to approximately 133 dB for an F-15. All aircraft potentially flying the route at 100 feet AGL produce sound levels greater than the level where some wildlife have been shown to react to noise levels of AL_{max} 85 dB. The altitude below which $AL_{max} \geq 85$ dB on the ground directly under the aircraft was estimated for each of the three primary aircraft using the routes. The F-15 generates $AL_{max} \geq 85$ dB at or below 7,100 feet AGL; the F-16 generates the same sound levels at or below 2,600 feet AGL; and for the C-17 the altitude is approximately 1,100 AGL. As most operations would occur below 1,500 feet AGL, nearly all F-16 sorties and F-15 sorties would be expected to produce sound levels in excess of AL_{max} 85 dB. Similarly, single event sound levels below the C-17 would be expected to exceed AL_{max} 85 dB.

The highest noise exposure occurs directly under the aircraft's flight path. As described in Appendix E (Sound Basics), the rate at which sound energy decreases as distance from the sound source increases is an inverse square function $(1/distance)^2$. For instance, the sound level at 2,000 feet from the source will be one-fourth as loud as the sound at a distance of 1,000 feet. Hence, once an aircraft drops below the altitude where $AL_{max} \geq 85$ dB on the ground, the corridor on the ground widens with respect to the area exposed to $AL_{max} \geq 85$ dB. Table 3-1 provides estimates of the noise corridor range of $AL_{max} \geq 85$ dB as a function of aircraft flight altitude.

Figure 3-1 Military Training Route Single Event Noise Profile: AL_{max} (dB) for an F-15

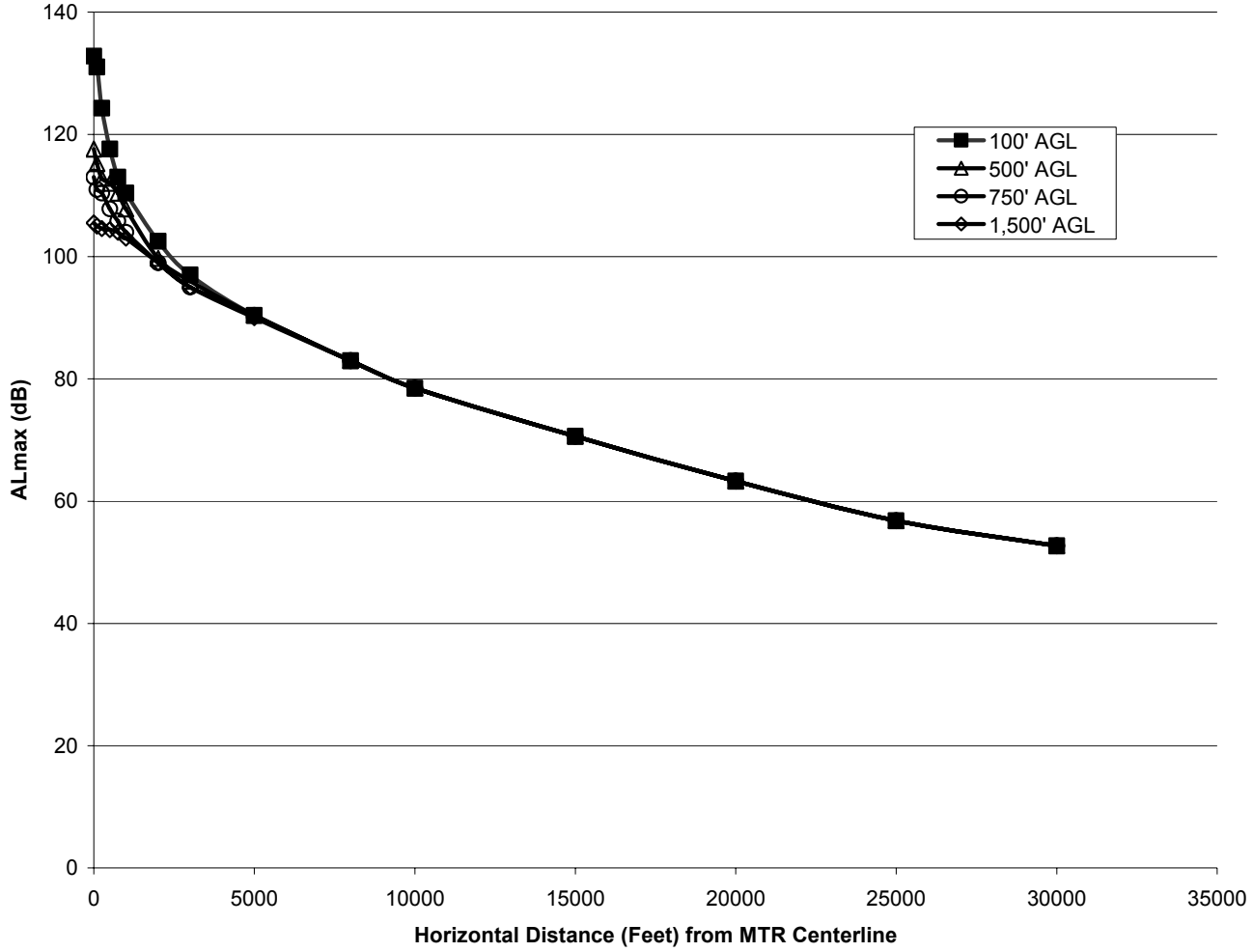

Table 3-1 Noise Corridor for F-15s, F-16s, and C-17s

Flight Altitude (feet AGL)	F-15	F-16	C-17
Approximate Distance (feet) from Route Centerline Where AL_{max} = 85 dB			
100	7,099	2,000	1,095
300	7,094	1,975	1,060
500	7,082	1,935	980
750	7,060	1,850	800
1,500	6,940	1,350	0
Approximate Noise Corridor Width (miles)			
100	2.69	0.76	0.41
300	2.69	0.75	0.40
500	2.68	0.73	0.37
750	2.67	0.70	0.30
1,500	2.63	0.5	0

3.2.5.2 Duration of the Noise Event at Ground Level

The duration of the noise event is also important in assessing potential impacts. The faster an aircraft flies, the shorter duration of the exposure to a particular noise level. Table 3-2 depicts the estimated duration of noise events directly below an aircraft's flight path for two sound levels, $AL_{max} \geq 85$ dB and $AL_{max} \geq 40$ dB.

Table 3-2 Estimated Noise Duration (in seconds) for F-15s, F-16s, and C-17s Directly Under the Aircraft

Flight Altitude (feet AGL)	F-15[1]		F-16[1]		C-17[5]	
	$AL_{max} \geq 40$ dB	$AL_{max} \geq 85$ dB	$AL_{max} \geq 40$ dB	$AL_{max} \geq 85$ dB	$AL_{max} \geq 40$ dB	$AL_{max} \geq 85$ dB
100	86.3	15.3	63.6	4.7	62.0	4.4
300	86.3	15.3	63.6	4.7	62.0	4.2
500	86.3	15.3	63.5	4.6	62.0	3.9
750	86.3	15.2	63.5	4.4	61.9	3.2
1,500	86.2	15.0	63.5	3.1	31.7	0

Note: As distance from the aircraft flight route centerline increases, the duration of a particular noise event will decrease.

[5] All units are in seconds.

As can be seen in Table 3-2, the peak time for a noise event in excess of AL_{max} ≥ 85 dB is less than 5 seconds for two of the three aircraft F-16s and C-17s) — essentially an instantaneous event while the duration of the event for the F-15 is approximately 15 seconds. As this event happens so quickly, wildlife are unlikely to detect the event until the aircraft is above or possibly past their location. This type of event generally activates the sympathetic nervous system (Moller 1978) causing an instinctive "startle reflex." Researchers have found that some animals do not always habituate to this type of event (Harrington and Veitch 1991).

AL_{max} ≥ 40 dB provides a reasonable estimate of the overall duration of the noise event, which is approximately 1 minute for F-16s and C-17s These sound levels would be present for approximately 1.5 minutes when being created by the F15s. Rural areas are usually categorized as having an ambient sound level of about 40 dB. Thus, AL_{max} ≥ 40 dB will provide an estimation of the amount of time an observer would hear a sound event above the ambient levels. The duration of the noise event, however, is not the same as the duration of animal disturbance since animals generally require a calming period before they can return to pre-disturbance activities. Little literature is available on the calming period of wildlife after a noise event. Studies of caribou have indicated that most normal behavior occurs about 1 to 2 minutes after the noise event is complete (Harrington and Veitch 1991). Little to nothing is known of other wildlife species. Some animals, particularly birds and possibly bears, may take longer than 1 to 2 minutes to settle back into normal activities (Swennen et al. 1989).

3.2.6 Socioeconomics

Previously, socioeconomics related to the MTRs for Interior and Western Alaska were generally described and discussed in the 1992 MTR EA (USAF 1992) and in the 1995 MOA EIS (USAF 1995). For this EA's proposed action, the total number of MTRs will remain the same (but with route differences) within the same region of Alaska, and so the prior documents can be referred to for that information.

As described previously in Section 2.2 of this EA, other recent military initiatives have been identified and the socioeconomics of those actions are being assessed in other EAs and an EIS. These include:

- Beddown and operation of eight new C-17 Globemaster III aircraft at Elmendorf AFB (USAF 2004).
- C-17 aircrew training in Alaskan airspace in C-17 Flight Training Areas (USAF 2005b).
- Transformation of Fort Richardson's 172nd Stryker Infantry Brigade combat team (USARAK 2004).

As part of evaluating this proposed action, Executive Order 12898 (White House 1994) directs federal agencies to identify and address disproportionately high and adverse impacts to minority and low-income populations. The C-17 Flight Training Area EA (USAF 2005b) that includes MTRs as part of their assessment, addressed these requirements by reviewing socioeconomic

information, such as the economic activity and public services provided in Alaska, and included Fort Greely, Fort Wainwright, Fort Richardson, Delta Junction, and Fairbanks. Additional socioeconomic information, not included in USAF (2005b) relevant to this proposed action, is discussed below.

With regards to environmental justice, USAF (2005b) notes that the percentage of State of Alaska's individuals living at or below the poverty level is 9.4 percent (versus 12.4 percent nationally [U.S. Census Bureau 2006]). Relative to U.S. Census Areas, the majority of the MTRs in the proposed action traverse three Census Areas: the Fairbanks North Star Borough; Southeast Fairbanks, the region located east of Fairbanks to the United States/Canadian border; and the Yukon-Koyukuk Census Area--the largest Census Area in the state--extending north of Fairbanks to the North Slope Borough boundary, and east to west from the Canadian border to the western coastal Census Areas. Percentages of individuals living at or below the poverty level in these Census Areas (based on 1999 U.S. Census Bureau data) are 7.8 (Fairbanks North Star Borough), 18.9 (Southeast Fairbanks), and 23.8 percent (Yukon-Koyukuk). For the Denali Borough, Nome, Lake/Peninsula Borough (in southwest Alaska), and Bethel Census Areas, only one or two MTRs occur, they therefore are probably the least impacted by the proposed action. For these four Census Areas, the percentages of individuals living at or below the poverty level are 7.9, 17.4, 18.9, and 20.6, respectively (U.S. Census Bureau 2006).

For the Census Areas where MTRs occur, three Census Areas have predominantly white populations: Fairbanks North Star Borough (77.8 percent white); Southeast Fairbanks (79 percent), and Denali Borough (85.7 percent). This compares to 69.3 percent white and 15.6 percent Alaska Native for the entire State of Alaska. The remaining Census Areas traversed by MTRs have predominantly Alaska Native populations, i.e., from lowest to highest, Yukon-Koyukuk 70.9 percent; Lake/Peninsula Borough 73.5 percent; Nome 75.2 percent; and Bethel 81.9 percent (U.S. Census Bureau 2006).

3.3 WILDLIFE ENVIRONMENT

Alaskan wildlife are an important resource for subsistence, sport, and non-consumptive uses such as photography and viewing. Residents of many remote villages in Alaska rely on fish and game to provide a major portion of their food resources. Revenues generated by sport hunting and fishing and by non-consumptive activities make a significant contribution to the Alaskan economy, and federal, state, and local governments typically consider wildlife to be an intrinsically valuable resource.

For all MTRs, land mammals and birds are wildlife groups that could conceivably be affected by low-level flight operations. Amphibians and reptiles are uncommon in Alaska, do not provide an important food source or recreation-related activities, and would not be significantly affected by military overflights. Potential effects on fish are not evaluated as overflights are not known to have adverse effects on fish. Potential impacts on marine mammals and seabirds are considered however, because they occur beneath two routes in the proposed action (MTRs 931

and 1902) that they connect to the coast. Figures provided in Section 4.0 illustrate wildlife habitat in relation to the proposed action and the NAA for the majority of the species described below.

3.3.1 Waterfowl

Waterfowl general habitat, breeding, and migration areas are so extensive throughout the state that nearly all of the MTRs in the proposed action will involve waterfowl to some extent.

3.3.2 Raptors

Bald Eagle *(Haliaeetus leucocephalus)*

Found only in North America, bald eagles are more abundant in Alaska than anywhere else in the United States. Bald eagles are often found along Alaska's coast, offshore islands, and Interior lakes and rivers. The highest densities occur throughout the islands of Southeast Alaska.

Golden Eagle (*Aquila chrysaetos*)

Golden eagles are found in northern regions of the entire northern hemisphere. In Alaska, the range extends as far north as the Brooks Range with a limited and scattered distribution in Southeast and rare occurrences in the Aleutians or Alaska Peninsula. Not all eagles migrate, but most go south when food supplies decline.

American Peregrine Falcon (*Falco peregrinus anatum*)

The American Peregrine falcon occurs throughout much of Alaska. Their range extends from the arctic to the southeastern coast and the Alaska Peninsula. A significant nesting population exists in and around the Yukon-Charley Rivers area. Appendix G provides more in-depth wildlife information on the bald eagle and Peregrine falcon.

3.3.3 Moose (*Alces alces*)

Moose are distributed throughout Alaska, excluding the southeastern panhandle, the southwestern Alaska Peninsula, and most islands. Moose are generally found below 4,500 feet elevation and prefer spruce forests, swamps, and willow thickets. They are most abundant in recently burned areas that contain willow and birch shrubs, on timberline plateaus, and along the major rivers of Southcentral and Interior Alaska. Their seasonal range is influenced by elevation, snow depth, and food availability. Appendix G provides more in-depth wildlife information for moose and other species potentially affected by the proposed action.

3.3.4Caribou (*Rangifer tarandus*)

Like moose, caribou are distributed throughout most of Alaska excluding the southeast panhandle and most islands. Caribou are migratory and generally form large herds, ranging in size from several hundred to several thousand animals. Caribou in Alaska are distributed in 32 herds. A herd uses a calving area that is separate from the calving areas of other herds, but different herds may mix together on winter ranges. While the distribution and migratory paths of caribou herds vary depending on weather, food availability, and animal numbers, herds generally tend to demonstrate some site fidelity. Appendix G provides more in-depth wildlife information for caribou and other species potentially affected by the proposed action.

3.3.5 Bears

Black Bears (*Ursus americanus*)

Black bears are the most abundant of the three species of North American bears. In Alaska, black bears occur over most of the forested areas of the state. They are not found on the Seward Peninsula, on the Yukon-Kuskokwim Delta, or north of the Brooks Range. Black bears are most often associated with forests, but depending on the time of year, they may be found from sea level to alpine areas.

Brown Bears (*Ursus arctos*)

Brown bears occur throughout Alaska. Brown bears are very much a part of the Alaskan habitat and are a favorite topic with most hunters, hikers, photographers, and fishermen. Bear populations vary depending on the productivity of the environment. In areas of low productivity, such as on Alaska's North Slope, studies have revealed bear densities as low as one bear per 300 square miles. In areas teeming with easily available food, such as Admiralty Island in Southeast Alaska, densities as high as one bear per square mile have been found. In central Alaska, both north and south of the Alaska Range, bear densities tend to be intermediate, about one bear per 15-23 square miles. Appendix G provides more in-depth wildlife information for bears and other species potentially affected by the proposed action.

3.3.6 Dall's Sheep (*Ovis dalli dalli*)

Dall's sheep occur primarily in alpine habitat above 2,500 feet elevation in areas such as the Brooks Range, the Talkeetna, Wrangell, Chugach, and Kenai Mountains, and the Tanana/Yukon uplands. Dall's sheep prefer this rugged and open terrain that allows them to detect and flee from potential predators. They generally display site fidelity. Appendix G provides more in-depth wildlife information for Dall's sheep and other species potentially affected by the proposed action.

3.3.7 Bison (*Bison bison*)

All of Alaska's existing wild bison came from 20 animals released near Delta Junction. Natural emigration and transplants have now created additional herds at Copper River, Chitina River, and Farewell. Small domestic herds are located at Healy, near Kodiak, and on Popov Island. Bison are grazing animals and, in Alaska, find only limited amounts of food along rivers, in recent burns, and sedge potholes.

3.3.8 Marine Birds

Spectacled Eider *(Somateria fischeri*)

Spectacled eiders in Alaska historically have been most abundant on the Yukon-Kuskokwim Delta and North Slope. Since the early 1970s, the number of spectacled eiders in western Alaska has declined by more than 90 percent to about 8,000 birds. This severe reduction raised concern about this bird's future, and in 1993, the spectacled eider was designated a threatened species under the federal Endangered Species Act.

Steller's Eider *(Polysticta stelleri*)

The Steller's eider is the least abundant eider in Alaska with a discontinuous breeding range along the coast from the Alaska Peninsula northward, including Seward Peninsula, St. Lawrence and Nunivak Islands, and the Beaufort Sea coast. During the breeding season, the species was most abundant in Alaska on the Yukon-Kuskokwim Delta where they may have been common in some areas. However, sightings are now rare and very few nests have been found in the region since the mid-1970s.

3.3.9 Marine Mammals

The waters surrounding Alaska have a great diversity of marine mammals made up of 25 different species. At the MTR coastal connections (i.e., MTR 931 near Kamishak Bay in lower Cook Inlet and MTR 1902 in inner Norton Sound), six of these species, i.e., humpback whale, killer whale, beluga whale, Steller sea lion, harbor seal, and sea otter commonly occur. These six species are described below.

Other marine mammal species less likely to frequent the MTR coastal connections in lower Cook Inlet and inner Norton Sound are gray whale (*Eschrichtius robustus)* that migrate offshore from northern Mexico to feeding areas in the Chukchi and Beaufort Seas; minke whale (*Balaenoptera acutorostrata*) that range broadly throughout the North Pacific Ocean but are poorly known; harbor porpoise (*Phocoena phocoena*) that are coastal in distribution ranging from Point Barrow south; and Dall's porpoise (*Phocoenoides dalli*) that are distributed throughout the North Pacific Ocean and lower Cook Inlet.

Humpback Whale (*Megaptera novaeangliae*)

Humpback whales occur throughout the world's oceans, but they are not common in arctic waters. Although humpbacks may be seen at any time of year in Alaska, most animals undertake long distance migrations during the fall to temperate or tropical wintering areas where reproduction occurs and the young are born. During spring, the animals migrate back to Alaska where food is abundant. When in Alaska, humpback whales tend to concentrate in several specific areas including Southeast Alaska, Prince William Sound, the area near Kodiak and the Barren Islands, the area between the Semidi and Shumagin Islands, and the eastern Aleutian Islands and southern Bering Sea.

Killer Whale (*Orcinus orca*)

Killer whales are found throughout the marine waters of Alaska, but occur most commonly over the waters of the continental shelf from Southeast Alaska through the Aleutian Islands and northward into the Chukchi and Beaufort Seas. Killer whales migrate northward throughout the Bering Strait in the spring as the pack ice retreats. In the Pacific Northwest and Alaska, they occur in groups of animals called pods. Most pods in Alaska number fewer than 40 animals and the individuals that comprise each pod change very little. Killer whale pods are matrilineal and consist of a female and her offspring of both sexes. Some pods are seen throughout much of the year in certain areas and are termed “resident” pods. Other pods appear to move over broad areas and are termed “transient” pods.

Beluga Whale (*Delphinapterus leucas*)

Belugas range widely in arctic and subarctic waters and are often the most important small cetacean to northern coastal peoples. They are often found in ice-covered regions in winter and spring and in coastal waters in summer and autumn. Two populations occur in Alaska. The Cook Inlet population of an estimated 300 to 400 animals occurs in the inlet and Shelikof Strait region, although wanderers have been seen east to Yakutat Bay and to Kodiak Island. Belugas of the Bering Sea population range throughout the Bering, Chukchi, and Beaufort Seas. They winter in the drifting ice of the Bering Sea, moving in summer to concentration areas scattered along the coast from Bristol Bay to the Mackenzie River Delta in Canada. In Alaska, major concentrations occur in Bristol Bay, Norton Sound, Kotzebue Sound, and Kasegaluk Lagoon. Belugas sometimes occur in herds of up to 1,000 individuals, although small groups of two to five are common. The Cook Inlet beluga population is considered "depleted" but "stable" by the National Marine Fisheries Service (NMFS), and has not been listed under the Endangered Species Act because the subsistence harvest of Cook Inlet belugas, which was thought to have contributed to the population depletion, was prohibited in 1999 (Angliss and Lodge 2002).

Steller Sea Lion (*Eumetopias jubatus*)

Steller sea lions are found from the northwestern California coast northward into the Bering Sea to Bering Straits, in the Okhotsk Sea and along the Kamchatka Peninsula in Russia, and in the Kurile and Commander Islands. Seasonal movements occur generally from exposed areas in summer to protected areas in winter. Steller sea lions can move over long distances. The longest recorded movement was by an animal marked at Marmot Island near Kodiak and taken near Ketchikan, a distance of approximately 900 miles (1,645 km). Steller sea lions are common in lower Cook Inlet. The western United States population was estimated at 35,000 animals by NMFS, with the population trend identified as "decreasing" (Angliss and Lodge 2002). Unlike the Cook Inlet beluga population, it is unknown why the Steller sea lion population has decreased and numerous research efforts have been initiated in recent years to try and determine the cause.

Harbor Seal (*Phoca vitulina*)

Harbor seals are found in Alaska along the coast from British Columbia north to Kuskokwim Bay and west throughout the Aleutian Islands. Harbor seals leave the water periodically to rest, give birth, and nurse their pups. Reefs, sand and gravel beaches, sand and mud bars, and glacial and sea ice are commonly used for haulout sites. Harbor seals are sometimes found in rivers and lakes, usually on a seasonal basis (present in summer, absent in winter). At Iliamna Lake, seals are present year-round and are probably resident. Births of harbor seal pups are not restricted to a few major rookeries (as is the case for many species of pinnipeds) but occur at many haulout sites.

Sea Otter (*Enhydra lutris*)

The sea otter lives in shallow water areas along the shores of the North Pacific. In 1960, the State of Alaska assumed management authority for sea otters. The management program conducted by the state included the successful reintroduction of sea otters to unoccupied habitat in Southeast Alaska, British Columbia, and Washington. The Marine Mammal Protection Act transferred management authority to the U.S. Fish and Wildlife Service (USFWS) in 1972. Recovery of the Alaska sea otter population has been dramatic. Most of the sea otter habitat in Alaska has now been repopulated.

Appendix G provides more in-depth wildlife information for marine mammals and other species potentially affected by the proposed action.

4.0 ENVIRONMENTAL IMPACTS

4.1 Previous Studies

Anticipated impacts associated with low-level military overflights in Alaska were analyzed and discussed at length in the 1992 MTR EA. Similarly, the impacts associated with large training exercises and airspace use by military aircraft was described in the 1995 MOA EIS. Potential impacts identified in these previous studies include noise, air quality, health and safety, subsistence activities, parks and recreation, and wildlife.

With the exception of two new MTRs and the instances when the routes depart from the original MTR corridor, impacts related to the proposed action are not expected to differ greatly from those described in the aforementioned documents and, in many instances, will actually be reduced relative to the 1992 MTR EA because of fewer flights. Therefore, these documents can be referenced for a complete description of impacts associated with MTR use under the currently proposed action. The proposed action and its resulting aircraft sortie assignments are based on past history of aircraft use, proposed changes in aircraft anticipated to use the routes in the near future, and all known force structure changes at the time of the drafting of the DOPAA and this EA.

Since the 1992 MTR EA and 1995 MOA EIS were prepared, a set of studies commissioned by the multi-agency Resource Protection Council (RPC) has been conducted to assess the impacts of military flight training operations on wildlife and recreational resources. A study of the effects of military aircraft on Dall's sheep behavior was conducted by the National Park Service (NPS) from 1999 to 2000 and states that there were no overt indications that military overflights affected sheep populations (Lawler et al. 2005). Additionally, the study concluded that the actual levels of military activity observed during MFEs generally did not cause significant effects on sheep behavior and habitat use when compared to the background level of military sorties (Lawler et al. 2005).

Neotropical migrant songbirds were the focus of another recent study to determine whether an increase in military training exercises could be a potential threat to the species' populations. The study was conducted over a period of three years, and compared factors such as species diversity, nesting productivity, and breeding density in birds breeding at Eielson AFB, versus a control population at the Bonanza Creek Experimental Forest. The conclusion was that the effects of military overflights on Neotropical migrant songbirds were generally mild, and varied among species (Rozell 2003). They found no significant differences in the reproductive success of the majority of species studied between Eielson AFB and Bonanza Creek. Additionally, there were no significant differences in species diversity or abundance between the two locations, suggesting the birds are not avoiding Eielson AFB as a breeding site (Rozell 2003).

The impact of low-level military aircraft on Peregrine falcons was the focus of another study commissioned by the RPC and conducted from 2001 through 2003. The study focused on nest site occupancy, breeding success, and productivity along the upper Yukon River and in the Yukon 1 and 2 MOAs (off-river). Data collected during the study period suggested that jet activity did not adversly affect the Peregrine falcons in the Yukon MOAs. No severe responses to military overflights were observed (Ambrose and Donaldson 2004).

Human use of parks, refuges, and recreation areas was identified as another issue that could potentially be impacted by military aircraft specifically under MOAs. A study was conducted and coordinated through the RPC to determine the effectiveness of mitigation measures set forth in the 1995 MOA EIS Record of Decision (USAF 1997). The study found that encounters with military aircraft had minimal impacts on behavior of human users. Virtually no one stopped participating in their recreational activities, and military overflights appeared to play only a minor role when planning recreational activities in MOAs (Swanson 2004).

4.2 Impact Assessment Summary

Impact assessment in this EA focuses on changes from the existing MTR structure assessed in the original MTR EA and MOA EIS. The tables in this section summarize resources that may be affected by the proposed action and NAA. Detailed supporting documentation for resources is provided in Appendix C. Discussion of the aircraft flight operations and resulting noise impacts can be found in Appendix F.

Mitigation measures established in the FLIP AP/1B, the original MTR EA, and the MOA EIS are carried forward as part of this EA unless otherwise noted herein. In addition, through its recent scoping process in preparation of this EA, the USAF has mitigated impacts of the proposed action by readjusting MTR routes in response to agency and tribal concerns.

An impact summary of the proposed action compared to the NAA is provided in Table 4-0. Under the proposed action, flight training operations are reduced for most routes resulting in lower impacts. Typical MTR use will average approximately one to three flights per week resulting in occasional instantaneous noise impacts, as opposed to a long-term, continuous disturbance. Under all scenarios (the proposed action and the NAA), predicted L_{DNMR} noise levels are under 55 dB, which is the USEPA-recommended maximum outdoor exposure level (see Appendix F).

There are three cases where impacts are proposed to increase relative to the NAA. Two of these cases (MTRs 960 and 970) are where new MTRs are proposed, and one (MTR 931) is where the existing MTR will be extended into a new area. However, for each of these three routes, maximum operations would average only one flight per week. The resultant impacts are insignificant in all cases.

Table 4-0 Summary of Impacts - Proposed Action Compared to the No Action Alternative

MTR	Notable Route Change	Aircraft Use	Resources Affected	Net Impact	Summary Table[1]
931	Extend to coast	+	-	-	4-1
933	n/c	+	+	+	4-2
935	n/c	n/c	n/c	n/c	4-3
937	Alternate entries; reroute	+	n/c	+	4-4
940	Absorb parts of NAA 937	+	-	n/c	4-5
954	n/c	+	n/c	+	4-6
960*	New MTR	-	-	-	4-7
970*	New MTR	-	-	-	4-8
1900	Absorb 1928	+	n/c	+	4-9
1902	Extend to coast	+	n/c	n/c	4-10
1905	n/c	+	-	+	4-11
1909	n/c	+	n/c	+	4-12
1926	Eliminate/absorb in 940	+	+	+	4-13
1928	Eliminate/absorb in 1900	+	+	+	4-14

n/c = No change from the NAA

+ = Positive change (proposed action reduces impacts from the NAA)

- = Negative change (proposed action increases impacts from the NAA)

[1] Tables 4-1 through 4-14 can be found in the respective MTR tabs in this section. Also see Appendix C for a complete description of resources occurring under MTRs.

* Withdrawn from Proposed Action – Will Not be implemented

4.3 Existing Routes

The majority of the changes to the current MTR structure will result in similar or reduced impacts to the existing environment. The route changes are generally designed to increase the efficiency of training and decrease impacts on human and wildlife resources. The net civilian aviation and noise impacts are almost all positive because of the reduced numbers of sorties under the proposed action. In the few cases where sorties increase on certain route segments, the proposed number of flights is still insignificant. For instance, on MTR 1909, Segment B-C, the proposed number of sorties is 4 per week compared to 2 per week for the NAA. Additionally, the ground tracks for MTRs 954 and 1909 are not changing so the NAA and the proposed action are the same.

MTRs 933, 935, 937, 940, 1900, and 1905 will have route changes to increase training efficiency and/or decrease impacts. MTRs 1926 and 1928 will be eliminated, although the functions of these two routes will be absorbed in other existing routes (MTRs 940 and 1900). Although MTRs 937 and 940 appear to have increased in length, they actually have a number of alternative configurations for weather or administrative efficiency purposes, are collocated with each other to a large extent, and are absorbing functions from other routes. Thus, the overall effect of the route changes for these eight MTRs is a similar or reduced number of resources affected for the proposed action compared to the NAA. Additionally, flight operations are reduced on almost every segment of these routes resulting in a proposed net reduction in impacts.

Two existing MTRs – 931 and 1902 – will have new segments that extend into areas without an existing MTR. Under the proposed action, MTR 931 will gain two legs over Iliamna Lake, Katmai National Park, and McNeil River State Game Refuge, and will connect to the coastline at Kamishak Bay (Figure 4-1A at Tab MTR 931). Similarly, under the proposed action, MTR 1902 will add a leg and connect to the coastline at Norton Sound (Figure 4-10A at Tab MTR 1902).

As a result of USAF scoping and consultations with local tribal governments in 2004 and 2005, the initial MTR 931 proposed by the USAF was modified to avoid important subsistence hunting areas. Additionally, the proposed number of sorties flown by F-15Es on MTRs 931 and 1902 was decreased from 0.4 per day to 0.1 per day (an average of about one flight every two weeks) and with reduced use during MFEs.

The resulting maximum sound levels for operations along MTRs 931 and 1902 are estimated to be well below L_{dnmr} 55 dB (see Appendix F), the USEPA-recommended maximum outdoor exposure level. Thus, noise levels will be negligible. Therefore, the anticipated impacts on subsistence activities and wildlife resources, including marine birds and mammals, will be occasional, short in duration, and overall insignificant.

Expected environmental impacts from the proposed action for existing routes should be small, localized, and temporary. Mitigation measures will be carried forward from the FLIP AP/1B, the 1992 MTR EA, and the 1995 MOA EIS to ensure minimal impacts for the proposed action. Section 4.6 provides additional information on USAF consultation and mitigation.

4.4 New Routes

The USAF proposes two new MTRs – 960 and 970 – in areas where they do not currently exist and resulting in the potential for impacts. The two new routes which are proposed and analyzed in the document as MTR 960 and MTR 907 ***will not be implemented*** due to changes in the types of aircraft that are based in Alaska and their assigned missions that have occurred after the analysis of this proposed action was completed.

4.4.1 New Interior MTR 960

MTR 960 would cover an area of approximately 2,648 sq. miles beginning north of Denali National Park (see Figure 4-7A at Tab MTR 960). Segment B-C continues north across the Tanana River, Segment C-D is just outside Minto Flats State Game Refuge, and Segment D-E occurs over a small portion of the Refuge and just south of the Beaver Creek Wild and Scenic River. The route continues west until the final Segments F-G and G-H turn southward, crossing the Chena River State Recreation Area.

General habitat for bears and moose has been identified under the majority of the proposed route, as well as moose calving and rutting areas (see Figure 4-7B at Tab MTR 960 and those in Appendix C). General waterfowl habitat/nesting area was identified, primarily under Segments A-B and B-C. Segment B-C also crosses a major migration route along the Tanana River corridor. No significant caribou habitat has been identified below the proposed route, with the exception of a small area at point F. The route crosses only a small portion of subsistence lands for moose on Segment B-C just west of Manley Hot Springs. Communities adjacent to the proposed route are profiled in Appendix D. See Figures 4-7B through 4-7H for wildlife habitat and subsistence use areas.

Under the proposed action, MTR 960 would be created to provide alternate routing to the Yukon 2 MOA and the Stewart Creek Range located in R-2205. The latter portions of the route transition through Yukon 2 MOA and R-2205 (see Figure 1-1 for MTRs relative to MOAs). Routine operations through the airspace are estimated at 0.1 sorties per day on average for F-15Es and F-16C/Ds, and it is also expected that the new C-17s proposed for beddown at Elmendorf AFB may also use the new route at a rate of approximately 0.1 sorties per day (or an average of about one flight every two weeks). The actual numbers of aircraft utilizing the routes may vary from the figures used in the analysis due to current mission assignments, out-of-state assignments, and force structure consideration. We are utilizing our best professional judgment in the proposed action to account for both the known and unknown force structure changes in the near future.

The maximum sound levels for operations along MTR 960 are expected to remain well below L_{dnmr} 55 dB.

Relative to environmental justice, impacts would occur to environmental justice if minority or low-income populations had disproportionately high and adverse impacts as a result of the proposed action. MTR 960 is located on the northernmost edge of the Fairbanks North Star Borough Census Area and the Yukon-Koyukuk Census Area. The Fairbanks North Star Borough Census Area has a predominantly white population (77.8 percent) with 7.8 percent individuals below the poverty level that is better than the overall State of Alaska and United States levels of 9.4 and 12.4 percent, respectively. For the more rural Yukon-Koyukuk Census Area, that population is predominantly Alaskan Native (70.9 percent) with 23.8 percent of the

individuals living at or below the poverty level (less than twice that of the overall United States). No disproportionate effects would be expected related to environmental justice.

Due to changes in the assigned aircraft and their missions, the U.S. Air Force will not be including this route in the proposed action. The deletion of this route has no impact to the overall finding of no significant impact. As noted in Table 4-7, there are no positive impacts (I.e. positive changes from the No Action Alternative) from the use of the proposed route.

4.4.2 New Interior MTR 970

MTR 970 would cover an area of approximately 3,815 sq. miles, beginning just south of the Tanana River and continuing north across the James Dalton Highway corridor (see Figure 4-8A at Tab MTR 970). Segments C-D, D-E, and E-F run east over the Yukon Flats National Wildlife Refuge (NWR) and then south over the Steese National Conservation Area (NCA). Segments F-G and G-H occur over Chena River State Recreation Area (SRA) and the route ends just to the south of this area.

The majority of the proposed route covers general habitat for moose and bears. Segments A-B, E-F, and F-G occur over caribou habitat and caribou calving areas (see Figure 4-8C at Tab MTR 970). The route also crosses general habitat for waterfowl, but for the most part, avoids areas identified for nesting except for a small portion on Segment A-B. Some subsistence areas for moose and caribou are crossed, just west of Manley Hot Springs on Segment A-B and south of Birch Creek at point E. See Figures 4-8B through 4-8J for wildlife habitat and subsistence use areas.

Under the proposed action, MTR 970 would be created to provide a second alternate routing to the Yukon 2 MOA and the Stewart Creek Range located in R-2205. The latter portions of the route transition through Yukon 2 MOA and R-2205. Routine operations through the airspace are estimated at 0.1 sorties per day on average for F-15Es and F-16C/Ds (an average of about one flight every two weeks), and it is also expected that the new C-17s proposed for beddown at Elmendorf AFB may also use the new route at a rate of approximately 0.1 sorties per day. The actual numbers of aircraft utilizing the routes may vary from the figures used in the analysis due to current mission assignments, out-of-state assignments, and force structure consideration. We are utilizing our best professional judgment in the proposed action to account for both the known and unknown force structure changes in the near future.

The maximum sound levels for operations along MTR 970 are expected to remain well below L_{dnmr} 55 dB.

Relative to environmental justice, MTR 970 is located in the Yukon-Koyukuk Census Area. For the rural Yukon-Koyukuk Census Area, that population is predominantly Alaskan Native (70.9 percent) with 23.8 percent of the individuals living at or below the poverty level; this is less than

twice that of the overall United States. No disproportionate effects are expected related to environmental justice.

4.4.3 Conclusions

MTRs 960 and 970 extend into areas that do not currently have military flight training operations. However, the infrequent operations proposed and the low resulting noise levels should result in an insignificant impact on the environment and the individuals residing there.

Due to changes in the assigned aircraft and their missions, the U.S. Air Force will not be including this route in the proposed action. The deletion of these routes has no impact to the overall finding of no significant impact. As note in Tables 4-7 and 4-8, there are no positive impacts (i.e. positive changes from the No Action Alternative) from the use of the proposed route.

4.5 Cumulative Impacts

The examination of cumulative effects as defined by the CEQ (40 CFR 1508.7; USEPA CEQ 2001) requires that the predicted direct and indirect effects of a proposed action and its alternatives be examined in conjunction with the effects of other past, present, and reasonably foreseeable future actions.

The USAF is considering other actions in Alaska at this time. The evaluation of cumulative impacts primarily considers planned projects in the immediate project area that would impact similar resources.

4.5.1 Baseline – 1995 Military Operations Areas EIS

Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative effects of military flight training operations in Alaska were analyzed extensively in the 1995 MOA EIS. Therefore, the 1995 analysis serves as the baseline for review of cumulative actions in this EA.

One of the primary training changes assessed in the 1995 MOA EIS was Cope Thunder. PACAF moved its Cope Thunder training exercises from the Philippines to Alaska in 1991, due to the closure of Clark AFB. These exercises feature realistic scenarios that may be encountered in combat situations. A typical scenario may involve more than 100 aircraft, although the MTRs will be used minimally for MFEs. Cumulative impacts from Cope Thunder were assessed in the 1995 MOA EIS. Changes in MTR use due to Cope Thunder are included in the aircraft use levels assessed in this EA.

Certain MTRs are located in areas with existing MOAs or ground ranges (Figure 1-1). In almost all cases, MOA operations are sufficiently low such that noise levels (L_{dnmr}) remain below 55 dB.

The only exceptions are: 1) in the Yukon 1 and 2 MOAs in the vicinity of MTR 954, Segments E-H, where noise is expected to be about 55 dB under both the proposed action and NAA, and 2) in the Buffalo MOA in the vicinity of MTR 1926 in the NAA where the assessed noise level is 58.1 dB. The USAF proposes to eliminate MTR 1926 and reroute MTR 940 slightly south of this area to reduce the cumulative impact.

MTRs that connect to ranges will also encounter higher noise levels, although virtually all of the noise is attributable to range or MOA operations, not the MTR. MTRs that connect to Stewart Creek Range (R-2205) in the northeast section of Eielson AFB include 935, 954, 960, and 970 where sound levels could reach up to L_{dnmr} 63 dB. MTRs that connect to Blair Lakes Range (R-2211) in the south section of Fort Wainwright include 937, 940, and 1900 where sound levels could reach up to L_{dnmr} 71 dB. MTRs that connect to Oklahoma Range (R-2202) at Fort Greely include 937, 940, 1900, 1926, and 1928 where sound levels could reach up to L_{dnmr} 60 dB.

All of these impacts were previously assessed in the 1995 MOA EIS and appropriate mitigation measures were implemented where needed. The proposed MTR changes will generally reduce noise levels by a small amount due to the reduction in planned flight operations.

4.5.2 C-17 Beddown EA at Elmendorf AFB

The USAF is proposing to convert the existing C-130 fleet at Elmendorf AFB. The *C-17 Beddown EA* (USAF 2004) addresses the potential impacts related to the construction of new support facilities at Elmendorf AFB, routine flights to and from the installation, and other related actions. A Finding of No Significant Impact (FONSI) has been concluded and the cumulative impacts are considered to be negligible.

4.5.3 Development of C-17 Flight Training Areas at Elmendorf AFB

As part of the mission to convert the existing C-130 fleet at Elmendorf AFB to C-17s, the USAF is assessing the potential impacts associated with cargo aircraft aircrew training in Alaskan airspace. This training would include assault landings and take-offs on assault landing zones (ALZs), air drop training at designated drop zones (DZs), tactical navigation, and air-refueling training. The addition of C-17s to the aircraft mix has been addressed in this EA and the proposed flight activities would not perceptibly increase noise levels. Potential cumulative impacts are considered to be negligible.

4.5.4 Stationing of F-22 Aircraft at Elmendorf AFB

The stationing of F-22 aircraft at Elmendorf AFB and F-22 flight training activities is a possibility as missions change. These aircraft are not addressed in this EA as it is not known if or when they will be stationed in Alaska. If this should occur, potential impacts would be addressed in a separate F-22 beddown EA.

4.5.5 Transformation of 172nd Infantry Brigade to a Stryker Brigade

The 172nd Infantry Brigade at Fort Wainright and Fort Richardson is scheduled to be transformed into a Stryker Brigade Combat Team. The Transformation of USARAK Final EIS (USARAK 2004) has evaluated the probable environmental impacts of this action. C-17 aircraft would be used to support deployment of the 172nd Stryker Brigade. There is no set date for this deployment. The projected cumulative impacts of this action are negligible.

4.5.6 Conclusions

This USAF proposed action, in combination with other planned projects in the area of the MTRs, will have relatively little impact. Mitigation measures will be carried forward from the FLIP AP/1B, the 1992 MTR EA, and the 1995 MOA EIS to ensure minimal impacts for the proposed action.

4.6 Summary and Mitigation

The USAF proposes to modify the existing MTR structure managed by the 11th Air Force within the State of Alaska. Implementation of the proposed action is necessary to provide an optimal training environment in an era of increasingly sophisticated weaponry and combat tactics, but with tighter budget controls and fewer training opportunities.

Before the proposed action can be implemented, the USAF is required by the National Environmental Policy Act (NEPA) to assess potential impacts and evaluate possible alternatives that could mitigate or reduce impacts. This report has been prepared to fully describe the proposed action and alternatives, characterize the existing environment, and document the assessment of potential environmental impacts.

Prior to finalizing the DOPAA, the USAF conducted extensive discussions with local tribal governments as well as the USFWS, the Alaska Department of Fish and Game (ADF&G), the NPS, and the Bureau of Land Management (BLM). The purpose of these discussions was to mitigate impacts before they became part of the proposed action in this EA.

Tribes suggested several route changes and mitigation for altitude during the spring and fall months due to waterfowl habitat and safety impacts associated with waterfowl migration. The subsequent consultation with the USFWS and the ADF&G reinforced this mitigation. As a result of these consultations, the USAF revised the ground tracks for MTRs 960 and 970 to avoid critical waterfowl migration routes. MTR 960 was narrowed on Segment D-E to avoid the Beaver Creek Wild and Scenic River and on Segment G-H to minimize impact on Fairbanks airspace. The USAF also agreed to rerouting and reduced operations for MTRs 931 and 1902 where the routes would extend to the coast. In an additional effort to mitigate the impact of connecting MTR 931 to the coast, the USAF has narrowed the route width on Segment D-E to 1 NM south of centerline (see Figure 4-1A). In response to concerns from the BLM regarding

national conservation lands adjacent to proposed MTR 960, the USAF has moved point E to the south and reduced the route width to 3 NM north of centerline on Segment D-E. Numerous other refinements to the routing of other MTRs were identified and incorporated into the DOPAA. A graphical depiction of the modifications from the original proposed routes can be found in the USAF Test/Training Space Needs Statement for the Modification of Military Training Routes (USAF 2005a).

Overall, the potential impacts from the proposed action and NAA on noise, health and safety, air quality, and quality of life should be minimal. In addition, to address specific concerns about health and safety and quality of life, the USAF proposes to implement mitigation to minimize impacts on remote cabins and lodges. Aircraft will maintain adequate clearance during flight operations consistent with FAR 91.119, particularly when lodges are known to be occupied.

As noted previously, mitigation measures will be carried forward from the FLIP AP/1B, the 1992 MTR EA, and the 1995 MOA EIS to ensure minimal impacts for the proposed action. Table A-5 in Appendix A provides a complete description of mitigation that will be in effect under the proposed action.

As previously stated, the U.S. Air Force has analyzed the environmental impacts of two new proposed MTRs, MTR 960 and MTR 970, and chosen not to request these routes bee activated and charted due to changes in the assigned aircraft that occurred after the analysis of the impacts was completed.

The following areas of FAA Order 1050.1E, Change 1, were analyzed and found to have no significant impacts on the environment for the reasons stated below.

TOPIC	**FINDING**
Air Quality	Aircraft use is low, approximately one aircraft per week. Emissions are located above the mixing zone for ground impacts. MTRs are located in an attainment area.
Coastal Resources	USF&WS stated there are no impacts to coastal barriers.
Compatible Land Use	No land use restrictions are imposed on the ground beneath the Proposed MTRs.
Construction Impacts	No construction is associated with this proposal.
Department of Transportation Act, Section 4(f)	Does not apply.
Farmlands	No farmlands located beneath the proposed MTRs.
Fish, Wildlife and Plants	No ground disturbing activities are proposed. No threatened or endangered species present in the study area.

TOPIC	FINDING
Floodplains	No ground disturbing actions associated with this proposed action.
Hazardous Materials, Pollution Prevention, and Solid Waste	No ground based facilities associated with the proposed action.
Historical, Architectural, Archaeological, and Cultural Resources	Consultations conducted with the appropriate Native Tribes and SHPO. No ground or facility disturbing actions associated with the proposed routes.
Light Emissions and Visual Impacts.	No construction of any type associated with this proposed action.
Natural Resources and Energy Supply.	No aircraft are being reassigned as part of this proposed action.
Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks	Populated area are avoided by 1-3 miles in all directions and at least 1,000 feet above ground level, as a minimum.
Water Quality, Wetlands	No ground disturbing activities are associated with this proposed action.
Wild and Scenic Rivers.	Mitigation Measures for the routes that cross Wild and Scenic Rivers are listed in Appendix A. Usual avoidance measures are to avoid the area by 5 nautical miles and cross the river at a minimum altitude of 5,000 feet above ground level or higher.

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