ENVIRONMENTAL ASSESSMENT
MAY 2007

MINUTEMAN III DEACTIVATION
MALMSTROM AFB, MONTANA

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I4. ABSTRACT

This environmental assessment (EA) evaluates the potential for environmental impacts as a result of the proposed deactivation of 50 Minuteman III (MM III) Intercontinental Ballistic Missile (ICBM) Launch Facilities (LFs) and 5 Missile Alert Facilities (MAFs) assigned to Malmstrom Air Force Base (AFB), Montana. Deactivation of 50 LFs and 5 MAFs equates to the inactivation of an entire missile squadron(MS).

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ENVIRONMENTAL ASSESSMENT
FOR
MINUTEMAN III DEACTIVATION

MALMSTROM AIR FORCE BASE, MONTANA

May 2007

FINDING OF NO SIGNIFICANT IMPACT (FONSI)
MISSILE SQUADRON (MS) INACTIVATION PROJECT
MALMSTROM AFB, MONTANA

The attached environmental assessment (EA) analyzes the potential for impacts to the environment as a result of the inactivation of a MS at Malmstrom AFB, Montana. The EA was prepared in accordance with (IAW) the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code 4321 et seq.), the Council on Environmental Quality regulations implementing the procedural provisions of NEPA, 40 Code of Federal Regulations (CFR) Parts 1500-1580, and Air Force policy and procedures (32 CFR Part 989).

This FONSI summarizes the Proposed Action and alternatives and the results of the evaluation of the deactivation of an MS.

Description of Proposed Action and Alternatives

Proposed Action. The Proposed Action is the inactivation of one of the four Minuteman (MM) III MSs, based at Malmstrom AFB. These are the 10th, 12th, 490th and 564th MSs. Inactivation of any of these MSs would entail deactivation of the 5 Missile Alert Facilities (MAFs) and 50 Launch Facilities (LFs) associated with that MS.

The deactivation process is scheduled to be completed within a 2-year time period and would occur in three phases. Phase 1 involves the removal of the missiles from the LFs. Phase 2 involves the removal of salvageable items from the LFs and MAFs. Phase 3 involves the dismantlement of certain portions of the LFs and MAFs. After completion of Phases 1, 2 and 3, the LFs and MAFs would be placed into 30% caretaker status.

Phase 1 of deactivation involves the removal of the missile (which includes the reentry system (RS), booster stages and missile guidance system (MGS). The missiles are scheduled to be removed at a rate of approximately one missile per week. Booster stages would be brought back to Malmstrom AFB, loaded onto a missile transporter and transported to Hill AFB, Utah. All RSs would be returned to the Department of Energy for disposition. Some MGSs may be transferred to other missile units, stored at Malmstrom AFB for future deployment, or returned to Hill AFB for final disposition.

Phase 2 of the deactivation process involves the removal of salvageable items from the LFs and MAFs. Classified items and office and living quarter items would be recovered from the MAFs. Fluids would be drained from the fueling, coolant and hydraulic systems, and electrical filters, switches and power supply batteries would be removed. Reusable equipment would be placed in the supply system for use by Malmstrom AFB and other bases. On-site water wells would be closed. Operation of environmental control systems (i.e., heating and air conditioning) would be discontinued. Any ordnance at the LFs and MAFs would be removed and transported to the munitions storage area on Malmstrom AFB.

Phase 3 of deactivation would involve the closure of MAF wastewater treatment facilities (i.e., sewage lagoons), the removal, closure-in-place, or inactivated of storage tanks, elimination of electrical service to the sites and securing access doors at the sites, with the exception of the closure door, which cannot be sealed permanently due to Strategic Arms Reduction Treaty (START) inspection requirements. The 341st Space Wing (SW) may elect to maintain power to LFs and MAFs in order to operate sump pumps and dewatering wells. Sewage lagoon berms would be plowed and leveled to eliminate possible standing water at the sites. Aboveground storage tanks (ASTs) would be removed for use at Malmstrom AFB,

other MAF sites, or other bases. Underground storage tanks (USTs) would be closed-in-place, removed or inactivated.

Upon completion of deactivation activities, the LFs and MAFs would be subject to periodic drive-by inspections to identify vandalism, unauthorized entry, topside flooding, or excessive weed growth. The Air Force would also conduct periodic surveys for erosion, noxious weeds, and liability hazards. Site monitoring would continue until final disposition is determined. This monitoring period could range from a few days to several years. The property occupied by the LFs and MAFs would remain Air Force property, no property disposal actions would occur.

No-Action Alternative. Under the No-Action Alternative, the Air Force would not deactivate any MS at Malmstrom AFB.

Summary of Environmental Consequences

Initial analysis indicates that missile deactivation activities would not result in short- or long-term impacts to airspace, Environmental Restoration Program sites, pesticide usage, radon, medical/biohazardous waste, air quality and noise.

The resources analyzed in more detail in the EA are socioeconomics, transportation, utilities (specifically electricity, solid waste, water and wastewater), land use and aesthetics, hazardous materials and hazardous waste management, storage tanks, asbestos, lead-based paint, polychlorinated biphenyls (PCBs), ordnance, soils and geology, water resources, cultural resources, biological resources, and environmental justice.

The inactivation of one MS would result in a reduction of approximately 500 personnel at Malmstrom AFB. This reduction in personnel would not have a significant adverse impact to the natural or physical environment.

An increase in traffic would occur during deactivation activities. This increase would be minimal and temporary during the 2-year deactivation process. Traffic in the inactivated MS area would decrease from current conditions after completion of deactivation. No significant impacts to transportation are expected.

Inactivation of an MS would eliminate the water use and generation of wastewater and solid waste at 5 MAFs and 50 LFs. Wastewater lagoons would be graded. Under caretaker status electrical use at the MAFs and LFs would be eliminated. However, the 341 SW may elect to maintain power to LFs and MAFs in order to operate sump pumps and dewatering wells. Electrical usage would be reduced by an estimated 90% from current usage to operate the systems. No significant environmental impacts would be expected from the decrease in utility demands.

Because the deactivated MAFs and LFs would be retained and maintained by the Air Force, deactivation of MS facilities would not result in a significant change in land use and would not adversely affect adjacent land uses. No significant changes in visual resources would occur.

Hazardous materials used during deactivation would be similar in types and quantities to those routinely used at the LFs and MAFs. Hazardous materials removed would be used elsewhere, recycled, or disposed as hazardous wastes. A limited quantity of hazardous wastes may be generated during deactivation activities. These would be managed IAW applicable regulations and Air Force guidelines. ASTs and USTs would either be removed, closed-in-place, or inactivated. UST removal and closures would be coordinated with the state. Investigation and remediation of any leaking tank sites would remain the responsibility of the Air Force. Any asbestos or lead-based paint waste generated during deactivation

activities would be handled IAW applicable regulations. Any equipment containing PCBs that is removed during deactivation would be handled and disposed IAW applicable regulations. Missile removal would entail handling of explosive components. These would be removed and transported by qualified personnel IAW Air Force safety and security measures.

Ground disturbance from UST removal and wastewater lagoon grading could result in soil erosion. Ground-disturbing activities would affect a small area (less than 1 acre) at each site and would be subject to standard construction site management practices designed to minimize soil erosion.

LFs and MAFs are not situated within a designated 100-year flood plain, and jurisdictional wetlands do not exist at any of these facilities; therefore, no impacts due to floodplain development or encroachment, or wetland loss are expected. Any changes to the ground surface condition would be temporary, and no significant affect on runoff potential is expected. The potential for soil erosion is expected to be minimal as a result of standard construction practices that would be implemented. Discontinuing the use of groundwater at MAFs would not cause any overdraft conditions or subsidence to occur. However, discontinuing groundwater withdrawals could result in the Air Force loosing the rights to that water under Montana's "prior appropriation doctrine," where use must continue in order to maintain the appropriation right.

The LF and MAF sites are generally unvegetated. Any vegetated areas disturbed by UST removal and wastewater lagoon grading would be reseeded. The deactivated sites would be monitored by the Air Force for presence of noxious weeds. Common wildlife species present near the LFs and MAFs may be temporarily displaced during deactivation activities. Because no habitat for threatened and endangered species or wetland or other sensitive habitats are present at the LFs and MAFs there would be no significant impacts to threatened and endangered species or sensitive habitats.

No known archaeological resources are present at the LFs and MAFs and none is likely to be present because of extensive site disturbance during construction. However, should archaeological resources or human remains be unexpectedly encountered during deactivation activities, activities would cease and the State Historic Preservation Officer (SHPO) would be notified.

Inactivation of the 10th MS would affect two sites determined eligible for listing in the National Register of Historic Places (National Register), MAF A-1 and LF A-6. In the event that the Air Force proposes to deactivate MAF A-1 and LF A-6 and transfer associated real property, the Air Force will offer the facilities to the Montana SHPO as physical representation of the MM III Missile System for future interpretation by the State or other federal agencies. None of the other 10th MS facilities or the 12th MS or 490th MS facilities is considered eligible for listing on the National Register.

The 564 MS MM III missile system has been determined to be eligible for inclusion on the National Register. Based on the Memorandum of Agreement (MOA) between the Air Force, Montana SHPO, and the Advisory Council, it was agreed that inactivation of the 564 MS constitutes an undertaking that would not adversely affect the historical significance of the MM III missile system. However, the Air Force and SHPO have agreed that artwork located within MAFs and LFs is of historic importance and should be preserved through pictures and other appropriate documentation.

There are no known traditional cultural resources that would be affected by deactivation activities.

Based on the analysis conducted for this EA, it was determined that activities associated with inactivating an MS would not have adverse impacts on any of the resources analyzed in this EA; therefore, no disproportionately high and adverse impacts to low-income and minority populations are expected, and no disproportionate affect to persons under the age of 18 would occur.

Cumulative Impacts

No other reasonably foreseeable actions have been identified in the Missile Complex area that could be considered as contributing to a potential cumulative impact on the environment along with impacts associated with implementation of MS inactivation activities. The potential impacts from the Proposed Action are short term and minor, and are not expected to contribute to cumulative impacts.

Mitigation Measures

Appropriate measures listed below as outlined in the MOA would be implemented to avoid potential impacts associated with cultural resources.

Stipulation 1 of the MOA requires the Air Force to record artwork within deactivated 564 MS MAFs. The Air Force will consult with the National Park Service and Montana SHPO to determine the appropriate level of Historic American Engineering Record recordation and appropriate disposition.

Stipulation 2 of the MOA requires the Air Force to collect and catalog photographs, documents, film, video, and representative examples of furnishings and equipment associated with the 564 MS.

Stipulation 3 of the MOA requires the Air Force to maintain MAF A-1 and LF A-6 in a manner that avoids adverse effects IAW the December 2002 Programmatic Agreement based on principles from the *Interim Guidance Treatment of Cold War Historic Properties for U.S. Air Force Installations*, June 1993 and the publication *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities*, 1991, Advisory Council. In the event that the Air Force proposes to deactivate MAF A-1 and LF A-6 of the 10th MS and transfer associated real property, the Air Force will offer MAF A-1 and LF A-6 to the Montana SHPO as physical representation of the MM III Missile System for future interpretation by the State or other federal agencies.

Stipulation 4 of the MOA requires the Air Force to develop a color brochure on the history of the MM III Missile System in Montana.

Finding

As a result of the analysis of impacts in the EA, it was concluded that the proposed activities would not have a significant effect on human health or the natural environment; therefore, an environmental impact statement will not be prepared.

RICHARD E. WEBBER
Major General, USAF
Director of Installations and Mission Support

31 May 07
Date

COVER SHEET
ENVIRONMENTAL ASSESSMENT
FOR MINUTEMAN III DEACTIVATION
MALMSTROM AIR FORCE BASE, MONTANA

a. Lead Agency: Department of the Air Force

b. Proposed Action: Deactivation of 50 Minuteman III (MM III) Intercontinental Ballistic Missile Launch Facilities (LFs) and 5 Missile Alert Facilities (MAFs) assigned to Malmstrom Air Force Base (AFB), Montana.

c. Written comments and inquiries regarding this document should be directed to: Mr. Tony Lucas, 341 CES/CEV, 39 78th Street North, Building 470, Malmstrom Air Force Base, Montana 59402, facsimile (406) 731-6181; e-mail Tony.Lucas@malmstrom.af.mil.

d. Designation: Environmental Assessment (EA)

e. Abstract: Based on perceived strategic deterrent requirements, the Department of Defense has decided to further streamline and reduce the number of MM III systems deployed (deactivation of 50 LFs and 5 MAFs). This reduction in the number of MM III missiles will not only bring the number of missiles in line with current deterrent requirements, but will also result in reduced defense costs. Deactivation activities are anticipated to be completed within 2 years and would occur in three phases. Phase 1 is the removal of missiles from the LFs. Phase 2 involves the removal of salvageable items from the LFs and MAFs. Phase 3 involves the closure of MAF wastewater treatment facilities (i.e., sewage lagoons) and the removal, closure in place, or inactivation of storage tanks. Following deactivation activities, the gates to the LFs and MAFs would be secured and the sites would be placed into 30% caretaker status. Implosion or dismantlement of the LFs and MAFs is not proposed and is not evaluated in this EA.

This EA has been prepared in accordance with the National Environmental Policy Act to analyze the potential environmental consequences of the Proposed Action. Two alternatives were examined: the Proposed Action and a No-Action Alternative. The Proposed Action involves the deactivation of 50 LFs and 5 MAFs associated with a missile squadron (i.e., 10th, 12th, 490th, or 564th) at Malmstrom AFB. The No-Action Alternative involves not implementing deactivation activities.

The environmental resources potentially affected by the Proposed Action are socioeconomics, transportation, utilities, land use and aesthetics, hazardous materials management, hazardous waste management, storage tanks, asbestos, lead-based paint, polychlorinated biphenyls, ordnance, soils and geology, water resources, biological resources, cultural resources, and environmental justice. Based on the nature of the activities that would occur under the Proposed Action and No-Action Alternative, the Air Force has determined that minimal or no adverse effects to the above resources are anticipated.

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LIST OF ACRONYMS/ABBREVIATIONS

ACM	asbestos-containing material
Advisory Council	Advisory Council on Historic Preservation
AFB	Air Force Base
AFI	Air Force Instruction
AFOSH	Air Force Occupational Safety and Health
AFSPC	Air Force Space Command
AHERA	Asbestos Hazard Emergency Response Act
ARM	Administrative Rules of Montana
AST	aboveground storage tank
BMP	best management practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Community of Comparison
CPSC	Consumer Product Safety Commission
CWA	Clean Water Act
CY	calendar year
DAR	Defense Access Road
DEQ	Department of Environmental Quality
DOD	Department of Defense
DOE	Department of Energy
EA	environmental assessment
EIS	environmental impact statement
EO	Executive Order
EPA	Environmental Protection Agency
ERP	Environmental Restoration Program
FEMA	Federal Emergency Management Agency
FHA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FONSI	Finding of No Significant Impact
FY	fiscal year
HAER	Historic American Engineering Record
HVAC	heating, ventilation, and air conditioning
ICBM	Intercontinental Ballistic Missile
IHMERP	Integrated Hazardous Materials Emergency Response Plan
LCC	launch control center
LF	Launch Facility
LOS	level of service
MAF	Missile Alert Facility
MCA	Montana Code Annotated
MDEQ	Montana Department of Environmental Quality
MGS	missile guidance system
MM III	Minuteman III
MOA	Memorandum of Agreement
MPDES	Montana Pollutant Discharge Elimination System

LIST OF ACRONYMS/ABBREVIATIONS
(Continued)

MS	Missile Squadron
MT	missile transporter
MWH	megawatt hour
NA	not applicable
N/A	not available
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NOT	Notice of Termination
NPS	National Park Service
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
pCi/L	picocuries per liter
PA	Programmatic Agreement
PCB	polychlorinated biphenyl
P.L.	Public Law
POL	petroleum, oils, and lubricants
ppm	parts per million
PSRE	propulsion system rocket engine
PT	payload transporter
QD	quantity distance
RAMP	Radon Assessment and Mitigation Program
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
RS	re-entry system
SHPO	State Historic Preservation Officer
SMW	Strategic Missile Wing
SPCCP	Spill Prevention Control and Countermeasures Plan
START	Strategic Arms Reduction Treaty
SW	Space Wing
SWPPP	Storm Water Pollution Prevention Plan
TSCA	Toxic Substances Control Act
U.S.C.	U.S. Code
UST	underground storage tank

1.0 PURPOSE OF AND NEED FOR ACTION

This environmental assessment (EA) evaluates the potential for environmental impacts as a result of the proposed deactivation of 50 Minuteman III (MM III) Intercontinental Ballistic Missile (ICBM) Launch Facilities (LFs) and 5 Missile Alert Facilities (MAFs) assigned to Malmstrom Air Force Base (AFB), Montana. Deactivation of 50 LFs and 5 MAFs equates to the inactivation of an entire missile squadron (MS).

Deactivation activities are anticipated to be completed within a 2-year time period and would occur in three phases. Phase 1 is the removal of missiles from the LFs. Phase 2 involves the removal of salvageable items from the LFs and MAFs. Phase 3 involves the closure of MAF wastewater treatment facilities (i.e., sewage lagoons) and the removal or closure in place of storage tanks. Further details of deactivation activities are presented in Chapter 2.0.

This document has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code [U.S.C.] 4321, et seq.), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and Air Force policy and procedures (32 CFR Part 989).

1.1 PURPOSE AND NEED

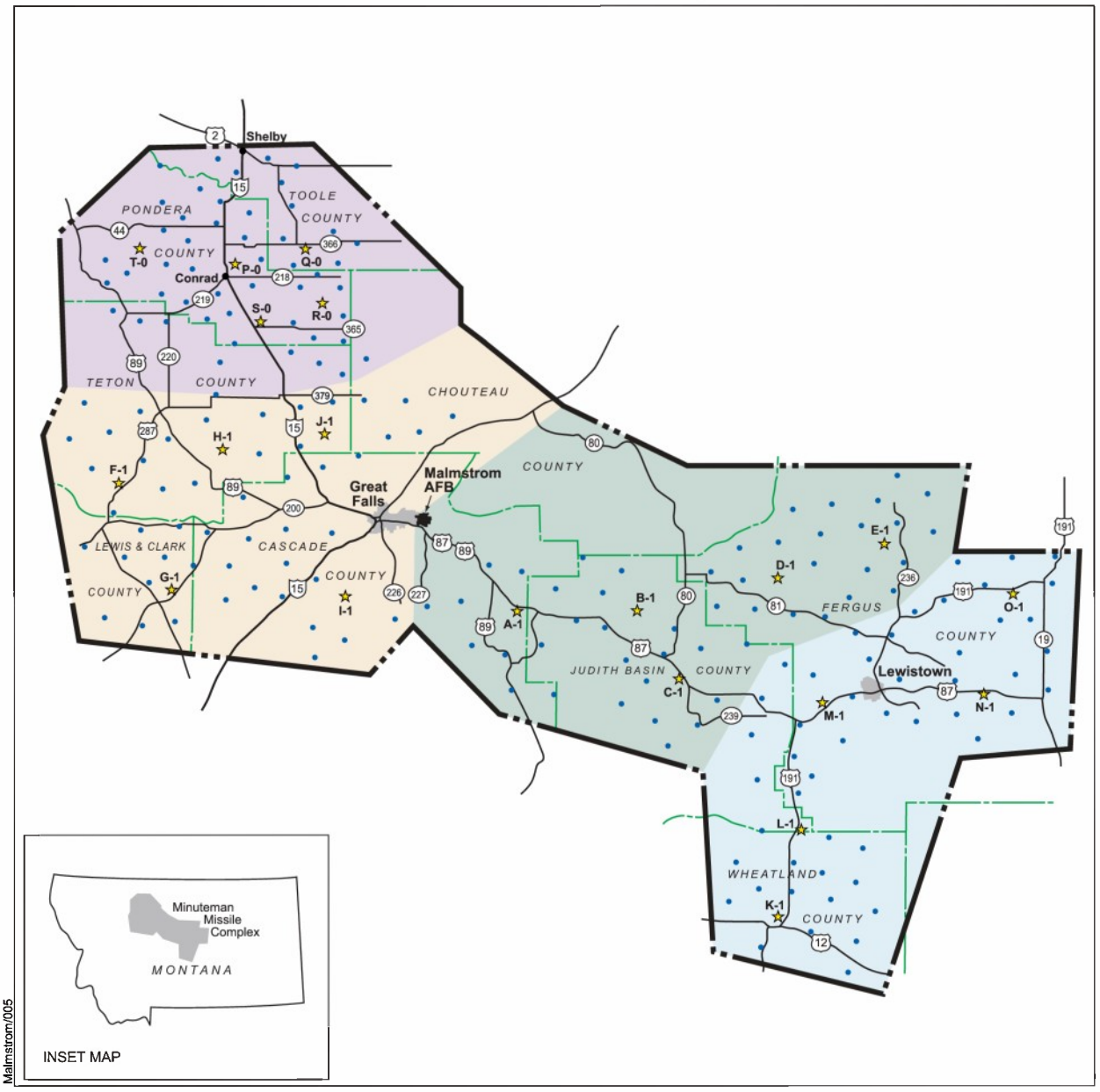
Based on perceived strategic deterrent requirements, the Department of Defense (DOD) has decided to further streamline and reduce the number of MM III systems deployed (deactivation of 50 LFs and 5 MAFs). This reduction in the number of MM III missiles will not only bring the number of missiles in line with current deterrent requirements, but will also result in reduced defense costs. Deactivation of 50 LFs and 5 MAFs would also bring the number of missiles deployed at Malmstrom AFB in line with other Air Force installations with MM III missiles deployed (i.e., Minot AFB, North Dakota, and F.E. Warren AFB, Wyoming). Deactivation would reduce DOD costs through a reduction in personnel hours for training, staffing, and maintaining the facilities (including Defense Access Roads [DARs]) and missile systems. The DOD has been demolishing particular ICBM systems to meet Strategic Arms Reduction Treaty (START) limitations; however, the actions evaluated in this EA are not a result of, nor do they affect, the existing START limitations.

1.2 LOCATION OF THE PROPOSED ACTION

Malmstrom AFB is situated approximately 0.3 mile east of the City of Great Falls in Cascade County, Montana. The 341st Space Wing (SW) is responsible for 200 LFs and 20 MAFs dispersed across 23,500 square miles of central Montana. LFs and MAFs are situated within Cascade, Chouteau, Fergus, Judith Basin, Lewis and Clark, Pondera, Teton, Toole, and Wheatland counties (Figure 1.2-1).

1.3 SCOPE OF ENVIRONMENTAL REVIEW

This document is “issue-driven,” in that it concentrates on those resources that may be affected by implementation of the Proposed Action or No-Action Alternative. The EA describes and addresses the potential environmental impacts of the activities associated with the Proposed Action and No-Action Alternative.



Malmstrom/005

EXPLANATION

- R-0 Missile Alert Facility
- 10th Missile Squadron
- 12th Missile Squadron
- 490th Missile Squadron
- 564th Missile Squadron
- Launch Facility
- County Lines
- U.S. Highway
- Interstate Highway
- State Highway
- Missile Complex Boundary

0 13.5 27 Miles

Source: U.S. Air Force, 2005j.

Minuteman III Deployment Area

Figure 1.2-1

The transportation of rocket engines, re-entry systems (RSs), and missile guidance systems (MGSs) is a routine activity conducted by Malmstrom AFB and other DOD personnel. The potential environmental impacts of these activities, as well as health and safety concerns of transporting these items has been evaluated in previous environmental and safety documentation; therefore, further evaluation of these activities is not presented in this EA (U.S. Air Force, 1991b, 2003w, 2003x).

Consistent with the CEQ regulations, the scope of analysis presented in this EA is defined by the potential range of environmental impacts that would result from implementation of the Proposed Action and No-Action Alternative.

Resources that have a potential for impact were considered in more detail in order to provide the Air Force decision maker with sufficient evidence and analysis to determine whether or not additional analysis is required pursuant to 40 CFR Part 1508.9. Resources analyzed in more detail include socioeconomics, transportation, utilities, land use and aesthetics, hazardous materials management, hazardous waste management, storage tanks, asbestos, lead-based paint, polychlorinated biphenyls (PCBs), ordnance, soils and geology, water resources, biological resources, cultural resources, and environmental justice. The affected environment and the potential environmental consequences relative to these resources are described in Chapters 3.0 and 4.0, respectively.

Initial analysis indicates that missile deactivation activities would not result in short- or long-term impacts to airspace, Environmental Restoration Program (ERP) sites, pesticide usage, radon, medical/biohazardous waste, air quality, and noise. The reasons for not addressing these resources are briefly discussed in the following paragraphs.

Airspace. There are no aircraft operations associated with the Proposed Action or No-Action Alternative and no change to air space regulations are proposed. Therefore, impacts to airspace are not expected and are not analyzed further in this EA.

Environmental Restoration Program. Two ERP sites (Site SS-12 at MAF S-0 and Site SS-11 at LF P-10) are associated with the missile complex. These sites are within the 564th MS. Both sites involved diesel fuel surface spills and have been closed (U.S. Air Force 1993a, U.S. Air Force, 1993b). Therefore, impacts from ERP investigative/remedial actions are not expected and are not analyzed further in this EA.

Pesticide Usage. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 U.S.C. Sections 136-136y) regulates the registration and use of pesticides. Pesticide management activities are subject to federal regulations contained in 40 CFR Parts 162, 165, 166, 170, and 171. Pesticide/herbicide usage at Malmstrom AFB is coordinated by the Civil Engineering Pest Management Shop in accordance with the Integrated Pest Management Plan (U.S. Air Force, 2005f). Only Air Force-approved pesticides and herbicides may be utilized and only authorized and certified personnel are permitted to apply pesticides. Pest management personnel adhere to the label directions when handling pesticides/herbicides. The Pest Management Shop provides treatment (soil sterilants and contact herbicides) at LFs primarily to control vegetation for security purposes. Care is taken not to affect neighboring agricultural lands around the LFs. Typically, herbicide applications are not conducted at MAFs. Pesticide application to control insects or rodents is not conducted at LFs and MAFs.

The Proposed Action would result in a decrease in herbicide usage. Should herbicide applications be required after deactivation activities are completed, applications would continue to be conducted in accordance with applicable laws and label directions; therefore, impacts from herbicide usage are not expected and are not analyzed further in this EA.

Radon. Radon is a naturally occurring, colorless, and odorless radioactive gas that is produced by radioactive decay of naturally occurring uranium. Radon sampling results taken in 2003 and 2004 for MAFs indicate that all MAFs have radon levels below the U.S. Environmental Protection Agency's (EPA's) recommended mitigation level of 4.0 picocuries per liter (pCi/L) except for one MAF (I-1). MAF I-1 is within the 12th MS. Radon levels at this site were 5.4 pCi/L for the 90-day assessment and 4.3 pCi/L for the 365-day assessment (U.S. Air Force 2004a).

According to the Air Force Radon Assessment and Mitigation Program (RAMP), radon levels above 4 pCi/L will be mitigated within 5 years. Recommended mitigation actions include sealing cracks that may allow radon gas to penetrate into a structure and improving ventilation systems to provide positive pressure to the structure in relation to outside air to prevent radon gas from entering the area. The Air Force will mitigate any radon levels above 4.0 pCi/L and should MAF I-1 be deactivated, the MAF would no longer be occupied; therefore, potential impacts from radon are not expected, and are not analyzed further in this EA.

Medical/Biohazardous Waste. Medical/biohazardous waste has not been generated at the LFs or MAFs and none would be generated under the Proposed Action or No-Action Alternative. Therefore, impacts from medical/biohazardous waste are not expected and are not analyzed further in this EA.

Air Quality. No significant construction, ground-disturbing activities, or traffic associated with deactivation are proposed. Vehicle traffic to the deactivated LFs and MAFs would be limited to periodic visits by security patrols to ensure site security and periodic visits by environmental flight personnel to ensure environmental conditions are stable (e.g., erosion control, noxious weed issues). Vehicle traffic associated with operations and maintenance (O&M) activities at deactivated LFs and MAFs would be reduced from current conditions (i.e., the MAFs would no longer be occupied and LFs would not be operational). Therefore, impacts to air quality would not be expected and are not analyzed further in this EA.

Noise. Noise generated from proposed deactivation activities would be minor and short-term. No demolition activities are proposed and no sensitive receptors are situated near the LFs or MAFs. Therefore, impacts from noise are not expected and are not analyzed further in this EA.

1.4 FEDERAL, STATE, AND LOCAL PERMITS AND LICENSES

The 341st SW and the regulatory compliance organization at Malmstrom AFB would work together to apply for or seek to modify various permits or licenses (as necessary) in accordance with federal, state, or local regulatory requirements.

1.5 RELATED ENVIRONMENTAL DOCUMENTS

The NEPA documents listed below have been prepared for similar actions being evaluated in this EA. These documents provided supporting information for the environmental analysis contained within this EA and are incorporated by reference.

Environmental Impact Statement for Minuteman III Missile System Dismantlement, Grand Forks AFB, North Dakota (U.S. Air Force, 1999). This environmental impact statement (EIS) evaluated the potential impacts of dismantling up to 150 MM III LFs and 15 MAFs within the deployment area west of Grand Forks AFB. Dismantlement activities included the demolition of the launcher headworks.

Environmental Impact Statement for Peacekeeper Missile System Deactivation and Dismantlement, F.E. Warren AFB, Wyoming (U.S. Air Force, 2000). This EIS evaluated the potential impacts of deactivating and dismantling 50 Peacekeeper LFs and 5 MAFs within the deployment area north and east of F.E. Warren AFB.

Environmental Assessment for Transportation and Storage of Missile Motors from the Minuteman II Missile Deactivation Program (U.S. Air Force, 1991b). This EA analyzed the potential effects of transporting Minuteman II missile motors from three installations (Malmstrom AFB, Montana; Ellsworth AFB, South Dakota; and Whiteman AFB, Missouri) to Hill AFB, Utah. The EA resulted in the signing of a Finding of No Significant Impact (FONSI).

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2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This chapter describes the Proposed Action and No-Action Alternative. The potential environmental impacts of the Proposed Action and No-Action Alternative are summarized in table form at the end of this chapter. The Proposed Action is to deactivate 50 LFs and 5 MAFs at Malmstrom AFB. The deactivation of these sites would bring the number of missiles in line with current deterrent requirements and other Space Wings at other Air Force installations, and also result in reduced defense costs. The Proposed Action and the No-Action Alternative are described briefly below, and in detail in the following sections:

Proposed Action. This alternative would involve deactivation of 50 LFs and 5 MAFs associated with a missile squadron (i.e., 10th, 12th, 490th, or 564th) at Malmstrom AFB.

No-Action Alternative. Under the No-Action Alternative, no deactivation activities would be implemented.

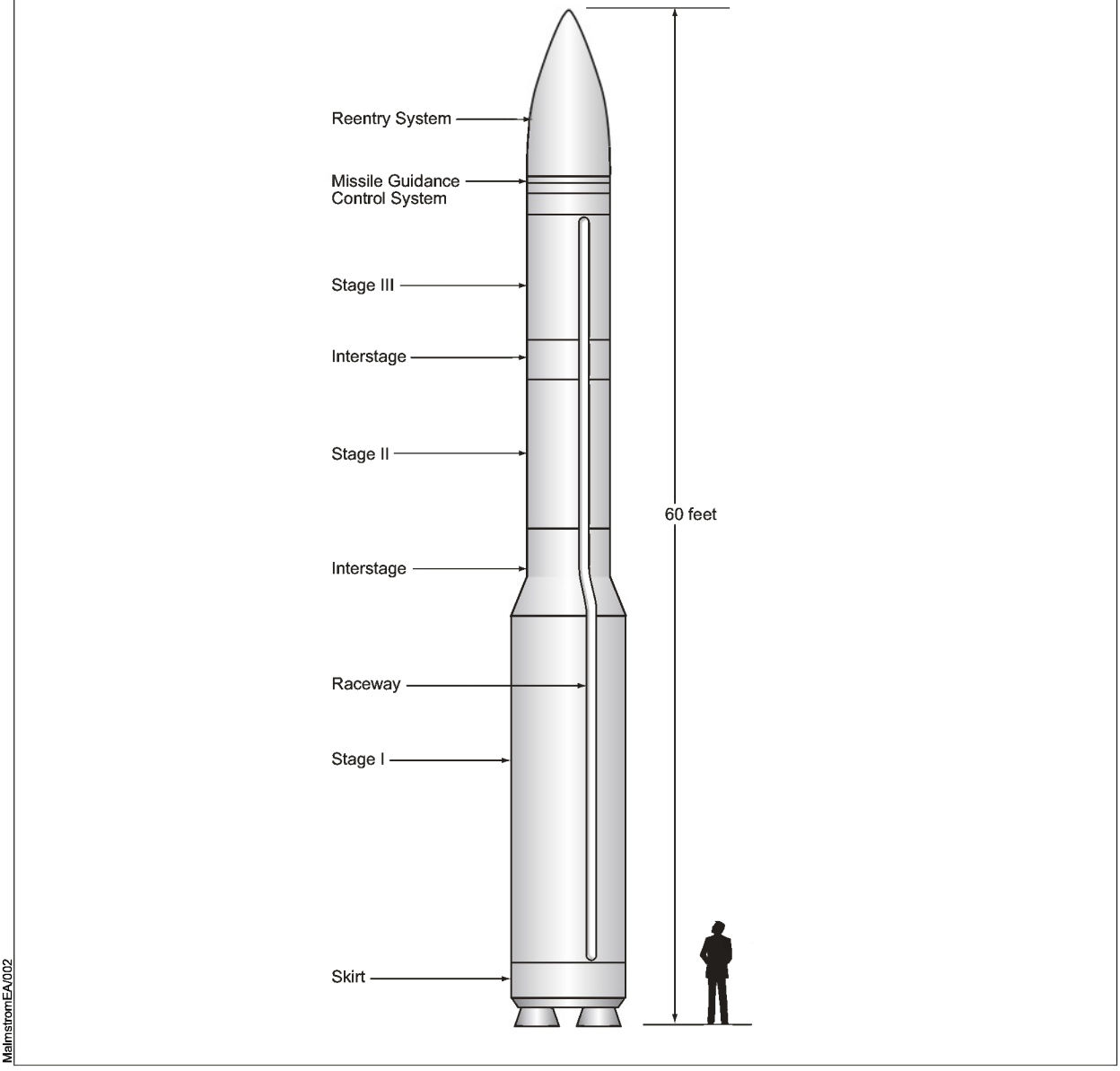
2.1.1 Background

The Minuteman missile system was conceived in the 1950s and the first MM I was deployed in the early 1960s. The first MM III was deployed in June 1970 at Minot AFB, North Dakota. Currently, 500 MM III missiles are deployed at 3 bases in the north central United States (Malmstrom AFB, Montana; Minot AFB, North Dakota; and F.E. Warren AFB, Wyoming). As a result of base realignment and closure, 150 MM III missiles deployed at Grand Forks AFB, North Dakota, were transferred to Malmstrom AFB in 1998. Today, the 341st SW comprises 4 MSs (10th, 12th, 490th, and 564th) that support the United States nuclear deterrent mission; operating, supporting, maintaining, and securing 50 Minuteman III LFs and 5 MAFs each for a total of 200 LFs and 20 MAFs.

The MM III missile is a three-stage, solid propellant, inertially guided ICBM with a range of over 7,000 nautical miles. It has a length of 60 feet, a diameter of 5.5 feet, and weighs 79,432 pounds (Figure 2.1-1).

Each MM III missile is maintained on alert in an unmanned, hardened underground launch facility approximately 80 feet deep, 12 feet in diameter, and covered by a 100-ton blast door that is blown off prior to missile launch. A launcher support building buried near the launch tube contains environmental control equipment and standby power sources (Figure 2.1-2). LF sites are approximately 1 acre in size and are enclosed within a security fence. An electronic surveillance system is used at the LF to detect intruders.

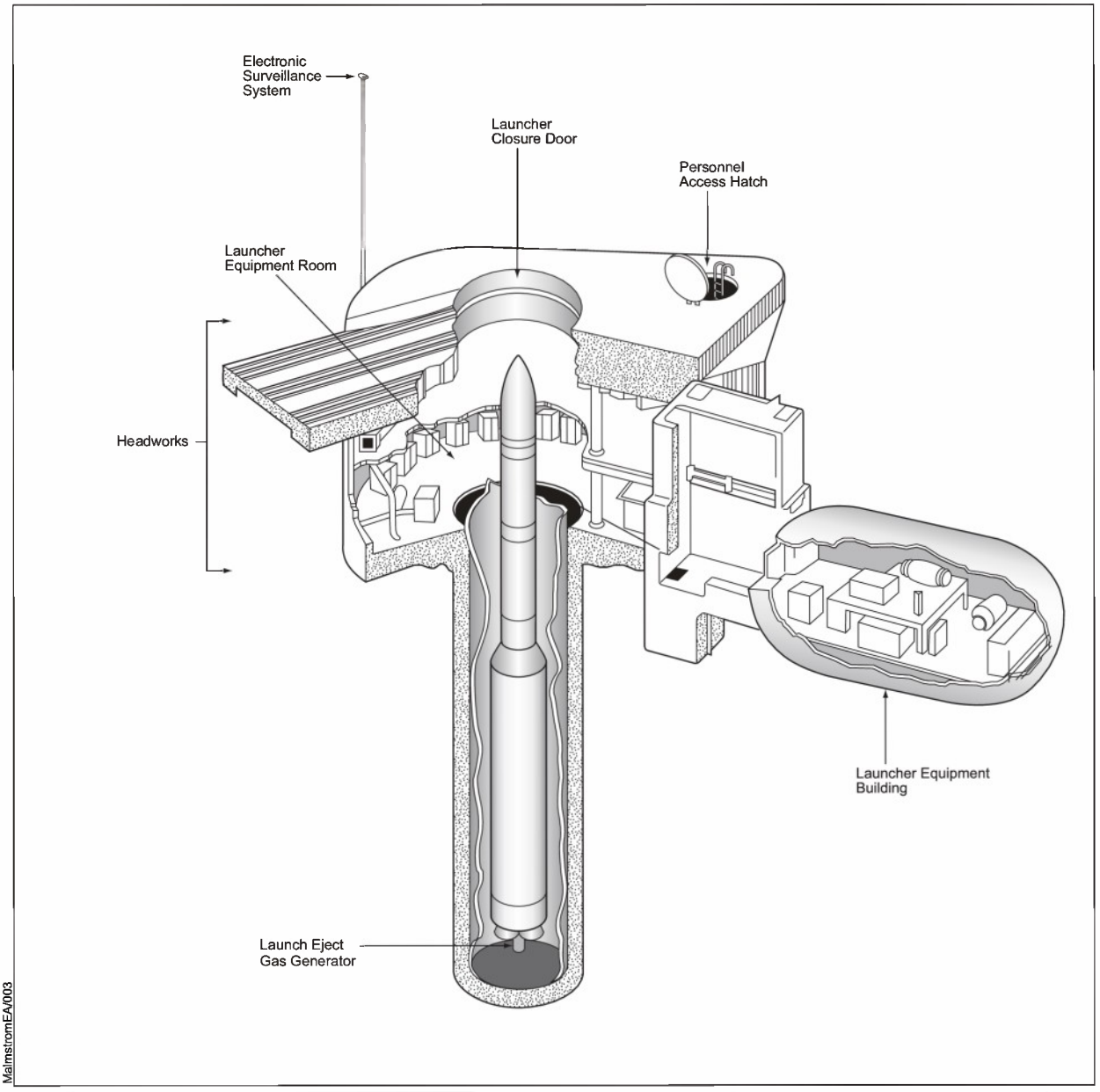
The MM III missiles are deployed in group "flights" of ten missiles controlled by a single, centrally located launch control center (LCC) manned by a Missile Combat Crew. The LCC contains the equipment needed by the crew to control and monitor the missiles and the LFs. Each LCC is separated from the others by a minimum of 14 miles and is buried at a depth of 40 to 100 feet below grade. The MAF topside contains living quarters and support equipment for the facility manager, chef, and security personnel. MAF sites are approximately 5 acres in size and are enclosed with a security fence (Figure 2.1-3). Outside of the MAF fenced area is a helicopter pad and a sewage lagoon (enclosed within a barb wire fence). Each of the 4 missile squadrons consists of 50 LFs arranged in 5 flights (10th MS [A, B, C, D, E]; 12th MS [F, G, H, I, J]; 490th MS [K, L, M, N, O]; 564th MS [P, Q, R, S, T]). For survivability, each missile



EXPLANATION

Minuteman III Missile

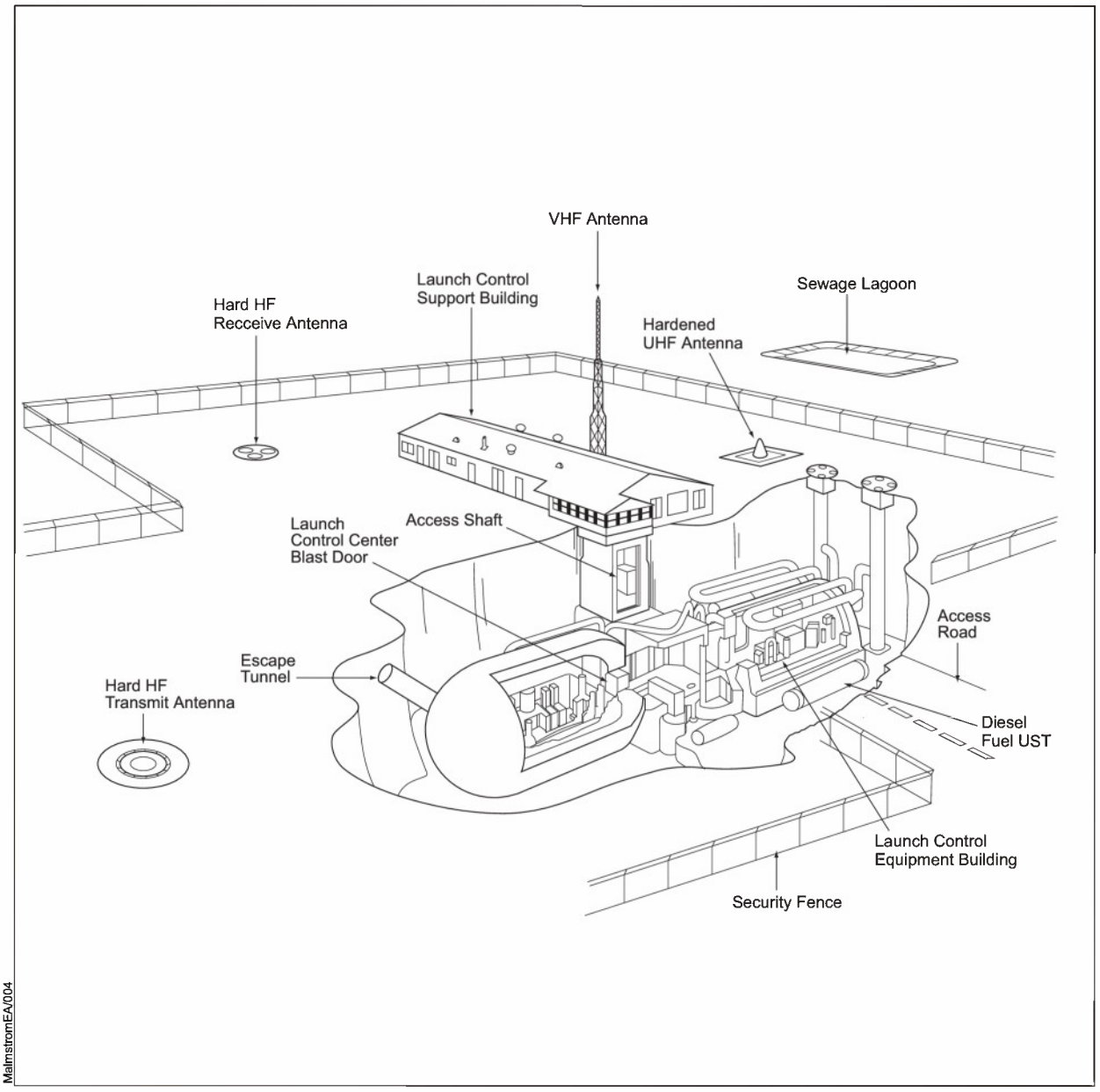
Figure 2.1-1



EXPLANATION

Launch Facility Schematic

Figure 2.1-2



EXPLANATION

Missile Alert Facility Schematic

Figure 2.1-3

is located at least three miles from adjacent missiles and is redundantly interconnected by a buried, hardened cable network that connects them with the LCCs, for 10 MS, 12 MS, and 490MS. In 564 MS, one cable and a buried MF radio system provide redundant communications. Each LCC continually monitors the operational status and security of the ten missiles and LFs in its own flight and has the capability to control, monitor, and launch all 50 missiles in the squadron. Representative photographs of LFs and MAFs are provided in Appendix A.

The personnel assigned to the missile squadrons consist primarily of Missile Combat Crew members, facility managers, facility chefs, and command and support personnel.

The Missile Combat Crew is composed of two officers, the Missile Combat Crew Commander and Deputy Missile Combat Crew Commander in the 564 MS. Three-person crews operate in 10 MS, 12 MS, and 490 MS. The crew monitors the status of the missiles at all times as well as maintenance activities, operations, emergencies, etc., within their flight area. The crew has custody of all mated RSs in their flight and is responsible for the proper implementation of applicable procedures to ensure that the missiles and pertinent subsystems are maintained in a state of constant readiness.

Each MAF in the squadron is staffed by a crew of six security forces members, one facility manager, and one chef. The security forces personnel have the responsibility of providing security for the MAF and the ten LFs in the flight. The facility manager maintains the MAF. The chef prepares meals for the Missile Combat Crew and MAF personnel and maintains the kitchen facilities (Malmstrom AFB, 2006).

LF and MAF structures in the 10th, 12th, and 490th MS are referred to as Wing I and are similar to each other in construction. The LFs and MAFs within the 564th MS are of a slightly different design from the other three MSs at Malmstrom AFB and are referred to as Wing VI.

2.2 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is the deactivation of 50 LFs and 5 MAFs within the 10th, 12th, 490th, or 564th MSs associated with Malmstrom AFB.

The 10th MS is comprised of five flights (Alpha, Bravo, Charlie, Delta, and Echo) situated within parts of Cascade, Chouteau, Fergus, and Judith Basin counties in an area approximately 15 to 90 miles southeast and east of Malmstrom AFB (Figure 1.2-1).

The 12th MS is comprised of five flights (Foxtrot, Golf, Hotel, India, and Juliet) situated within parts of Cascade, Chouteau, Lewis and Clark, and Teton counties in an area approximately 15 to 65 miles north, west, and southwest of Malmstrom AFB (see Figure 1.2-1).

The 490th MS is comprised of five flights (Kilo, Lima, Mike, November, and Oscar) situated within parts of Fergus, Judith Basin, and Wheatland counties in an area approximately 70 to 115 miles east and southeast of Malmstrom AFB (see Figure 1.2-1).

The 564th MS is comprised of five flights (Papa, Quebec, Romeo, Sierra, and Tango) situated within parts of Chouteau, Pondera, Teton, and Toole counties in an area approximately 30 to 75 miles northwest of Malmstrom AFB (see Figure 1.2-1).

The deactivation process is scheduled to be completed within a 2-year time period and would occur in three phases. Phase 1 involves the removal of the missiles from the LFs. Phase 2 involves the removal of salvageable items from the LFs and MAFs. Phase 3 involves the dismantlement of certain portions of

the LFs and MAFs. After completion of Phases 1, 2, and 3, the LFs and MAFs would be placed into 30% caretaker status. Details of activities to occur during each deactivation phase are provided below.

Phase 1 of deactivation involves the removal of the missile (which includes the RS, propulsion system rocket engine [PSRE], MGS, and booster stages). The missiles are scheduled to be removed at a rate of approximately one missile per week. Two payload transporters (PTs) would be used to remove the RS, PSRE, and MGS. Depending on the availability of PTs and manning, the RS would likely be removed one day and the PSRE and MGS removed another day. Booster stages would be brought back to Malmstrom AFB, loaded onto a missile transporter (MT), and transported to Hill AFB, Utah, on a pre-arranged schedule. All RSs would be returned to the Department of Energy (DOE) for disposition. Some MGSs may be transferred to other missile units, stored at Malmstrom AFB for future deployment, or returned to Hill AFB for final disposition.

Phase 2 of the deactivation process involves the removal of salvageable items from the LFs and MAFs. Classified items and office and living quarter items would be recovered from the MAFs. Fluids would be drained from the fueling, coolant, and hydraulic systems, and electrical filters, switches, and power supply batteries would be removed. Reusable equipment would be placed in the supply system for use by Malmstrom AFB and other bases. On-site water wells would be closed. Sump pumps for removing water accumulation from the MAFs and LFs and cathodic protection operations for tanks may be maintained to prevent damage to the facilities. Dewatering wells (supporting several Wing I Facilities) may continue to operate to protect capsules from groundwater intrusion. Operation of environmental control systems (i.e., heating and air conditioning) would be discontinued. Any ordnance at the LFs and MAFs would be removed and transported to the munitions storage area on Malmstrom AFB.

Phase 3 of deactivation would involve the closure of MAF wastewater treatment facilities (i.e., sewage lagoons), the removal, closure-in-place, or inactivation of storage tanks, elimination of electrical service to the sites, and securing access doors at the sites with the exception of the closure door, which cannot be sealed permanently due to START inspection requirements. Sewage lagoon berms would be plowed and leveled to eliminate possible standing water at the sites. The sewage lagoon contents, both liquid and sludge, would be sampled prior to lagoons being leveled and graded. Disposal of liquids and sludge would be dependent on test results. The graded area would be seeded with native grasses. Some MAF locations would require the installation of French drains for the discharge of water from sump pumps at these locations. Aboveground storage tanks (ASTs) would be removed for use at Malmstrom AFB, other MAF sites, or other bases. Underground storage tanks (USTs) would be closed-in-place, removed, or inactivated. The buried cable network would remain in-place. Implosion or dismantlement of the headworks at the LFs or demolition of the MAFs is not part of Phase 3 activities and is not evaluated in this EA.

The activities conducted to deactivate the LFs and MAFs and place them in caretaker status are similar to maintenance activities that have been and are currently conducted at active missile sites. Personnel drain or change fluids from various systems on a regular basis, electrical filters and switches are removed or replaced, and power supply batteries are regularly changed out.

30% Caretaker Status. Following deactivation activities, the gates to the LFs and MAFs would be secured and the sites would be placed into 30% caretaker status, which includes the following:

- Security fences are maintained
- Windows and doors are boarded, blocked, and locked

- All systems and equipment are shutdown, including commercial power, sump pumps, and Environmental Control System (ECS)
- Sewage lagoons are drained and filled
- Herbicides are no longer applied to control vegetation growth
- No primary (commercial) power
- Standby power is shutdown/removed
- Underground diesel fuel storage tanks are closed
- Save list items and hazardous materials are removed
- All other items are abandoned in place.

If necessary, the 341st SW may elect to maintain power to LFs and MAFs in order to operate sump pumps and dewatering wells. Upon completion of deactivation activities, the LFs and MAFs would be subject to periodic drive-by inspections to identify vandalism, unauthorized entry, topside flooding, or excessive weed growth. The Air Force would also conduct periodic surveys for erosion, noxious weeds, and liability hazards. Site monitoring would continue until final disposition is determined. This monitoring period could range from a few days to several years. The LFs and MAFs would remain Air Force property; no property disposal actions would occur.

Most of the DOD personnel affected by the deactivation of the missile systems at Malmstrom AFB would be the officers, enlisted personnel, and civilians associated with the inactivated missile squadron, other personnel (i.e., personnel associated with the remaining missile squadrons) would not be directly affected. Approximately 500 positions at Malmstrom AFB would no longer be authorized after the fourth quarter of fiscal year (FY) 2008.

2.3 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, deactivation activities as outlined under the Proposed Action would not be implemented. The 341st SW would continue to manage and maintain 200 MM III missiles within 200 LFs and supported by 20 MAFs.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER STUDY

Two other alternatives were considered but eliminated from further consideration.

The alternative to **deactivate 50 LFs and 5 MAFs at a different Air Force installation** was eliminated because it does not achieve the optimum cost savings to the Air Force. The 90th SW (Minot AFB) and the 91st SW (F.E. Warren AFB) each have 150 MM III missiles while the 341st SW has 200. Deactivating the 50 LFs and 5 MAFs from Malmstrom AFB provides balance with the other installations. Maintaining the infrastructure for a wing with only 100 missiles (as would be the case if deactivation took place at Minot AFB or F.E. Warren AFB) would be much less cost effective.

The alternative to **deactivate the 50 most costly LFs at Malmstrom AFB** was eliminated because this scenario would segment the missile squadrons affected and would not achieve the optimum cost savings to the Air Force. Currently, each missile squadron is organized with 50 LFs and 5 MAFs; however, should several of the LFs within a specific squadron be deactivated, the personnel requirements to staff an affected MAF would not change.

2.5 OTHER FUTURE ACTIONS IN THE REGION

Cumulative impacts result from "the incremental impact of actions when added to other past, present, and reasonably foreseeable future actions regardless of what agency undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (Council on Environmental Quality, 1978).

Future actions in the vicinity of the LFs and MAFs include continued agricultural activities and mining activities. Neither of these activities currently impact the sites. Because the sites would remain Air Force property, the 1,200 foot explosive quantity distance (QD) easement around each LF would remain. Activities currently permitted to occur within the easement by adjacent land owners would continue unaffected. No other major developments in the vicinity of the LFs and MAFs have been identified that would contribute to a cumulative impact.

2.6 COMPARISON OF ENVIRONMENTAL IMPACTS

Table 2.6-1 presents a comparative analysis of the Proposed Action and No-Action Alternative for each resource (i.e., socioeconomics, transportation, utilities, land use and aesthetics, hazardous materials management, hazardous waste management, storage tanks, asbestos, lead-based paint, PCBs, ordnance, soils and geology, water resources, biological resources, cultural resources, and environmental justice) evaluated in this EA. A detailed discussion of potential effects is presented in Chapter 4.0, Environmental Consequences. Neither the Proposed Action nor the No-Action Alternative are anticipated to have a significant impact on the environment.

Table 2.6-1. Summary of Influencing Factors and Environmental Impacts

Page 1 of 4

Resource	Proposed Action	No-Action Alternative
Influencing Factors		
Socioeconomics	• On-base population decrease • Regional population and military payrolls within the region are not expected to change significantly	• No change in population or employment
Transportation	• Traffic within the deactivated missile squadron would decrease • Funding for maintenance and snow removal for DARs within deactivated MS would cease	• No change in traffic volumes or patterns • No change in funding for maintenance and snow removal for DARs
Utilities	• Air Force electricity and water usage would decrease from current conditions • Any on-site water wells would be closed; Air Force may no longer retain water rights at these sites • Air Force electrical usage is expected to be approximately 800 MWH/year (10 percent of current demand) • Water usage would be reduced by approximately 1.4 million gallons per year • Solid waste disposal at Malmstrom AFB would experience a minimal reduction	• No change in utility usage
Land Use and Aesthetics	• LFs and MAFs would be placed in caretaker status leaving structures in place • Air Force would retain 1,200 foot explosive QD easement around LFs • Land uses in the vicinity of the LFs and MAFs would be limited to those uses that are currently occurring • Impacts to the aesthetic quality of the area may occur years after deactivation due to discontinued maintenance of the LFs and MAFs	• No changes in land use or aesthetics
Hazardous Materials and Hazardous Waste Management		
Hazardous Materials Management	• Hazardous materials would no longer be stored or used at the LFs and MAFs • Most hazardous materials removed during deactivation activities would be reused and recycled	• Hazardous materials would continue to be stored and used at LFs and MAFs in accordance with applicable regulations
Hazardous Waste Management	• Hazardous waste would no longer be generated at the LFs and MAFs • Because deactivation activities would be phased over a 2-year period, Malmstrom AFB is not expected to exceed limits of its small quantity generator status	• Small quantities of hazardous waste would continue to be generated at LFs and MAFs and managed in accordance with applicable regulations

Table 2.6-1. Summary of Influencing Factors and Environmental Impacts
Page 2 of 4

Resource	Proposed Action	No-Action Alternative
Hazardous Materials and Hazardous Waste Management (Continued)		
Storage Tanks	• ASTs would be removed and reused at other LFs and MAFs or at other installations • USTs would be removed, closed-in-place, or inactivated • The Air Force would continue investigation/remediation of USTs with known releases	• The Air Force would continue management of ASTs and USTs at the LFs and MAFs in accordance with applicable regulations
Asbestos	• ACM would likely be encountered during deactivation activities • Deactivation activities would be subject to applicable federal, state, and local regulations to minimize the potential risk to human health and the environment • Personnel involved in deactivation would be advised, to the extent known, of the type, condition, and amount of ACM present within LFs and MAFs	• The Air Force would continue to be responsible for management of ACM, and would continue to manage ACM in accordance with its own policy and applicable regulations
Lead-Based Paint	• Lead-based paint would likely be encountered during deactivation activities • Deactivation activities would be subject to applicable federal, state, and local regulations to minimize the potential risk to human health and the environment • Personnel involved in deactivation would be advised, to the extent known, of the type, condition, and amount of lead-based paint present within LFs and MAFs	• The Air Force would continue to be responsible for management of lead-based paint, and would continue to manage lead-based paint in accordance with its own policy and applicable regulations
Polychlorinated Biphenyls	• PCB-containing equipment and light ballasts of older light fixtures containing PCBs may be present in the LFs and MAFs • Personnel involved in deactivation activities would be notified of the potential presence of PCBs in some equipment and the light ballasts. Remaining PCB items would be managed in accordance with applicable regulations	• No change in PCB status
Ordnance	• Ordnance items would be removed from the LFs • Air Force would retain 1,200 foot explosive QD easement around LFs	• Ordnance items would remain at the LFs

Table 2.6-1. Summary of Influencing Factors and Environmental Impacts

Page 3 of 4

Resource	Proposed Action	No-Action Alternative
Natural Environment		
Soils and Geology	• Short-term impacts would occur as a result of ground disturbance associated with potential UST removals and regrading sewage lagoons • Deactivation activities would be conducted in accordance with MPDES permit requirements and site construction SWPPP • BMPs would be implemented to reduce the potential for erosion effects • Upon completion of deactivation activities, periodic monitoring of LFs and MAFs would occur to ensure long-term erosion control is achieved	• Deactivation of LFs and MAFs would not occur • No ground disturbance would occur
Water Resources	• Dewatering pumps would continue to operate at the LFs eliminating the possibility of water accumulating at LFs • No changes in site drainage patterns is anticipated • Deactivation activities would be conducted in accordance with MPDES permit requirements and site construction SWPPP • BMPs would be implemented to reduce the potential for erosion effects the site SWPPP	• Deactivation of LFs and MAFs would not occur • No ground disturbance would occur
Biological Resources	• Deactivation activities would not cause impacts to wildlife or threatened and endangered species • Jurisdictional wetlands and sensitive habitats are not present at the LFs and MAFs • Potential increase in noxious weeds due to discontinued grounds maintenance • Periodic monitoring for noxious weeds would be conducted, mechanical or chemical controls could be implemented if required	• Deactivation of LFs and MAFs would not occur
Cultural Resources	• There are no known prehistoric or historic archaeological properties or traditional resources within the LF and MAF areas • Sites A-1 and A-6 within the 10th MS have been determined to be eligible for listing on the National Register • Other LFs and MAFs within the 10th, 12th, and 490th MSs have been determined to be ineligible for listing on the National Register • LFs and MAFs within the 564th MS have been determined to be eligible for listing on the National Register.	• Deactivation of LFs and MAFs would not occur

Table 2.6-1. Summary of Influencing Factors and Environmental Impacts

Page 4 of 4

Resource	Proposed Action	No-Action Alternative
Natural Environment (Continued)		
Cultural Resources (Continued)	• Artwork located within 564th MS MAFs and LFs is of historic importance and should be preserved through pictures and other appropriate documentation • In the event that the Air Force deactivates the 10th MS, MAF A-1, and LF A-6 would be offered to the Montana SHPO as physical representation of the MM III Missile System for future interpretation by the State or other federal agencies • Artwork within deactivated 564th MS MAFs and LFs will be recorded using color digital and large format black and white photography. The appropriate level of Historic American Engineering Record (HAER) recordation will be determined • Photographs, documents, film, video, and representative examples of furnishings and equipment associated with the 564th MS will be collected and cataloged • A color brochure will be developed that depicts the history of the MM III Missile System in Montana	
Environmental Justice	• No disproportionately high and adverse impacts to low income and minority populations have been identified • No disproportionately high and adverse impacts to children have been identified	• Deactivation of LFs and MAFs would not occur

ACM = asbestos-containing material
Advisory Council = Advisory Council on Historic Preservation
AFB = Air Force Base
AST = aboveground storage tank
BMP = best management practice
DAR = Defense Access Route
LF = Launch Facility
MAF = Missile Alert Facility
MM III = Minuteman III
MPDES = Montana Pollutant Discharge Elimination System
MS = Missile Squadron
MWH = mega watt hour
National Register = National Register of Historic Places
PCB = polychlorinated biphenyl
QD = quantity distance
SHPO = State Historic Preservation Officer
SWPPP = Storm Water Pollution Prevention Plan
UST = underground storage tank

3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter describes the existing environmental conditions within the area potentially affected by proposed deactivation activities. It provides information to serve as a baseline from which to identify and evaluate potential environmental changes resulting from implementing deactivation actions. The environmental components addressed include relevant natural or human environments likely to be affected by the Proposed Action and alternatives.

Based upon the nature of the activities that would occur under the Proposed Action and No-Action Alternative, it was determined that the potential exists for the following resources to be affected or to create environmental effects: socioeconomics, transportation, utilities, land use and aesthetics, hazardous materials management, hazardous waste management, storage tanks, asbestos, lead-based paint, PCBs, ordnance, soils and geology, water resources, biological resources, cultural resources, and environmental justice.

The region of influence (ROI) to be studied will be defined for each resource area affected by the proposed activities. The ROI determines the geographical area to be addressed as the Affected Environment.

3.2 SOCIOECONOMICS

For the purpose of this analysis, socioeconomics is evaluated in terms of population and employment. Environmental justice is addressed in Section 3.11. Because personnel deployed to the MAFs reside at Malmstrom AFB or within the City of Great Falls, the majority of potential effects from the actions under consideration would likely occur in these areas. Therefore, the socioeconomic ROI for proposed deactivation activities focuses on the City of Great Falls; however, population and employment information for the 9-county area in which the missile squadrons are situated is provided for reference. The nine counties in which LFs and MAFs are situated include Cascade, Chouteau, Fergus, Judith Basin, Lewis and Clark, Pondera, Teton, Toole, and Wheatland counties.

3.2.1 Population

The base population, including military personnel, civilian workers, and dependents, totals 9,072 persons (U.S. Air Force, 2002a). The City of Great Falls is the third largest city in Montana with a 2000 population of 56,690 persons, accounting for 70 percent of the county population of 80,357 persons. The 2000 total population within the 9-county region was 176,660. Table 3.2-1 lists the population of the City of Great Falls and the counties where LFs and MAFs are situated.

3.2.2 Employment

There are 3,409 active duty military personnel assigned to Malmstrom AFB. In addition, Malmstrom AFB employs 435 appropriated fund civilian employees and 728 non-appropriated fund civilians, contractors and private-business employees. The 2000 employment for the City of Great Falls totaled 24,909; the unemployment rate for the city in 2000 was 4.2 percent. Within the 9-county ROI, employment totaled 87,099 with an unemployment rate of 4.5 percent. Table 3.2-2 lists the employment of the City of Great Falls and the counties where LFs and MAFs are situated.

Table 3.2-1. ROI Population

County	1990 Population	2000 Population[(a)]	2004 est. Population[(b)]
City of Great Falls	55,097	56,690 (2.8)	56,503 (-0.3)
Cascade County	77,691	80,357 (3.3)	79,849 (-0.6)
Chouteau County	5,452	5,970 (8.7)	5,575 (-6.6)
Fergus County	12,083	11,893 (-1.5)	11,539 (-3.0)
Judith Basin County	2,282	2,329 (2.0)	2,191 (-5.9)
Lewis and Clark County	47,495	55,716 (14.7)	57,922 (3.8)
Pondera County	6,433	6,424 (-0.2)	6,148 (-4.3)
Teton County	6,271	6,445 (2.7)	6,283 (-2.5)
Toole County	5,046	5,267 (4.2)	5,094 (-3.3)
Wheatland County	2,246	2,259 (0.5)	2,068 (-8.5)
TOTAL	164,999	176,660 (6.6)	176,669 (0.0)

Notes: (a) Number in parenthesis is percent population increase or decrease from 1990.
(b) Number in parenthesis is percent population increase or decrease from 2000.

Sources: U.S. Census Bureau, 2000a- j.

Table 3.2-2. ROI Employment

County	1990 Employment	2000 Employment[(a)]	2004 Employment[(b)]
City of Great Falls	24,377	24,909 (2.1)	N/A
Cascade County	35,063	38,386 (8.6)	39,209 (2.1)
Chouteau County	2,361	2,698 (12.5)	2,545 (-5.7)
Fergus County	5,107	5,796 (11.9)	5,567 (-3.9)
Judith Basin County	1,062	1,127 (5.7)	1,062 (-5.7)
Lewis and Clark County	22,982	29,920 (23.2)	29,940 (0.1)
Pondera County	2,688	2,836 (5.2)	2,568 (-9.4)
Teton County	2,698	2,846 (5.2)	2,885 (1.3)
Toole County	2,383	2,422 (1.6)	2,500 (3.1)
Wheatland County	944	1,068 (11.6)	1,009 (-5.5)
TOTAL	75,288	87,099 (13.5)	87,285 (0.2)

Notes: (a) Number in parenthesis is percent employment increase from 1990.
(b) Number in parenthesis is percent employment increase or decrease from 2000.
N/A = not available

Sources: U.S. Census Bureau, 2000a- j; U.S. Department of Labor, 2000a- j.

The operation of the base is an important contribution to the economy of the region through both direct employment and purchases from local businesses. Malmstrom AFB's annual military and civilian payroll is $151.6 million, and the Air Force contributes an estimated $97.9 million in construction and service contracts and other purchases from local businesses. Malmstrom AFB has a total annual economic impact of over $282 million for a 50-mile radius that includes all or portions of the counties of Cascade, Chouteau, Judith Basin, Lewis and Clark, Pondera, and Teton (U.S. Air Force, 2002a).

Primary employment sectors for the 9-county region include agriculture, education, health services, retail, and government. Table 3.2-3 provides a summary of the key employment sectors for the 9-county area as a percentage of the total employment in those counties.

Table 3.2-3. Primary Industries Providing Employment within the 9-County Area (percentage)

County	Employment Sector				
	Education, Health, Social Services	Retail Trade	Agriculture, Forestry, Fishing, Hunting, Mining	Public Administration	Government
Cascade[(a)]	23.8	14.2	--	--	17.0
Chouteau	22.0	--	32.7	--	21.0
Fergus	22.2	11.2	16.9	--	19.0
Judith Basin	15.4	--	42.0	--	17.0
Lewis and Clark	18.9	10.8	--	17.2	28.0
Pondera	24.4	13.6	20.2	--	23.0
Teton	23.4	--	20.6	--	18.0
Toole	22.0	10.4	15.4	--	24.0
Wheatland	15.6	10.2	41.0	--	17.0

Note: (a) The City of Great Falls is within Cascade County.
-- = no listing

Sources: City-data.com, 2006a-i.

3.3 TRANSPORTATION

The ROI for transportation includes federal highways (both Interstate and U.S.), state highways, and county roads in the Missile Complex area, which includes portions of 9 counties in central Montana. There are a total of 14,221 miles of public roads in the 9 counties, including interstate, primary and secondary highways, and urban and municipal roads (Daumiller, 2006). Some LFs and MAFs are situated along paved roads; however, most LF and MAF sites are located along local gravel roads.

The performance of a roadway segment is generally expressed in terms of level of service (LOS). The LOS scale ranges from A to F, based upon a volume-to-capacity ratio. LOS A, B, and C are considered good driving conditions with minor or tolerable delays by motorists. LOS D, E, and F are considered poor to completely jammed road situations.

Traffic counts for DARs are not available; however, based on the civilian activity in the region (primarily agriculture and rangeland) and the roadway type (primarily gravel), a low volume of traffic occurs on these roads; therefore, the LOS for DARs is considered to be level A.

There are 749 miles of DAR in the ROI. These are gravel roads that are maintained to a standard that allows all-weather access to the LFs and MAFs. These roads must be able to support the large transport vehicles (i.e., payload transport and transporter erector) required for missile maintenance activities. Table 3.3-1 provides information regarding the mileage of DARs for the 9-county ROI and for each of the missile squadrons.

The DARs are routinely graded numerous times each year by the county road departments; however, the addition of 4 inches of new gravel every 6 to 7 years maintains the road for the purpose of the Air Force Maintenance and Operations activities. This additional DAR maintenance is performed by construction contractors under contract to the Federal Highway Administration (FHA). Funding is provided on an as needed basis depending on what roads require new gravel. An average of approximately $2 million a year is provided for DAR regrading and gravelling. Table 3.3-2 provides the estimated average DAR funding by county and by MS for the last 10 years. Funding by county and MS was derived from the total annual funding based on the percentage of total mileage of DAR in each county and MS. For example, in 1996,

Table 3.3-1. Summary of DARs within the Missile Complex Area

County	Total Public Road Mileage	Total DAR Mileage (percent of public roads)	DAR Mileage by Squadron (percent of total DAR in County)			
			10th MS	12th MS	490th MS	564th MS
Cascade	2,225	97 (4)	23 (24)	74 (76)	0	0
Chouteau	2,304	32 (1)	0	28 (88)	0	4 (12)
Fergus	1,961	212 (11)	112 (53)	0	100 (47)	0
Judith Basin	1,058	109 (10)	91 (83)	0	18 (17)	0
Lewis and Clark	1,905	19 (1)	0	19 (100)	0	0
Pondera	1,157	119 (10)	0	0	0	119 (100)
Teton	1,665	99 (6)	0	63 (64)	0	36 (36)
Toole	1,405	8 (.5)	0	0	0	8 (100)
Wheatland	541	54 (10)	0	0	54 (100)	0
Nine-County Total	**14,221**	**749 (5)**	**226 (30)**	**184 (25)**	**172 (23)**	**167 (22)**

DAR = Defense Access Road
MS = Missile Squadron

Sources: Daumiller, 2006; U.S. Air Force, 2006 i, j.

Table 3.3-2. Estimated Average Annual Funding for DAR Maintenance (1996-2005)

County	Missile Squadron				
	10th MS	12th MS	490th MS	564th MS	County Total
Cascade	$51,665	$303,305			$354,970
Chouteau		$127,955		$4,320	$132,274
Fergus	$336,778		$262,388		$599,166
Judith Basin	$310,283		$32,520		$342,803
Lewis and Clark		$30,792			$30,792
Pondera				$237,287	$237,287
Teton		$76,909		$57,197	$134,106
Toole				$16,310	$16,310
Wheatland			$171,004		$171,004
Total	**$698,726**	**$538,961**	**$465,912**	**$315,114**	**$2,018,713**

Note: Average annual funding by county and MS was estimated from the annual total funding for all Malmstrom AFB DARs based on the percentage of total DAR mileage maintained in each county and MS over a 10-year time period.
DAR = Defense Access Road
MS = Missile Squadron

Source: Derived from U.S. Air Force, 2006k.

a total of 75.8 miles of DAR throughout the Missile Complex were maintained at a total cost of $1,064,580. In Cascade County, 33.8 miles of DAR, or 24 percent of the total DAR, were maintained. Therefore, it is estimated that funding for DAR in Cascade County in 1996 was 24 percent of $1,064,580, or $479,061. The data in Table 3.3-2 are the 10-year average of these estimates

Funding is provided to the counties for snow removal. The Air Force provides a total of $180,000 annually, plus additional funding for actual costs, for snow removal. Snow removal activities in all 9 counties are coordinated through Cascade County, which receives additional funding for this administrative effort. Table 3.3-3 shows the funding for snow removal by county for FY 2005.

Table 3.3-3. Funding for Snow Removal by County FY 2005 (Nov 2004 - Mar 2005)

County	Funding
Cascade	$33,530
Chouteau	$7,100
Fergus	$48,750
Judith Basin	$23,150
Lewis and Clark	$12,160
Pondera	$30,570
Teton	$23,410
Toole	$8,990
Wheatland	$16,110
Total	$203,770

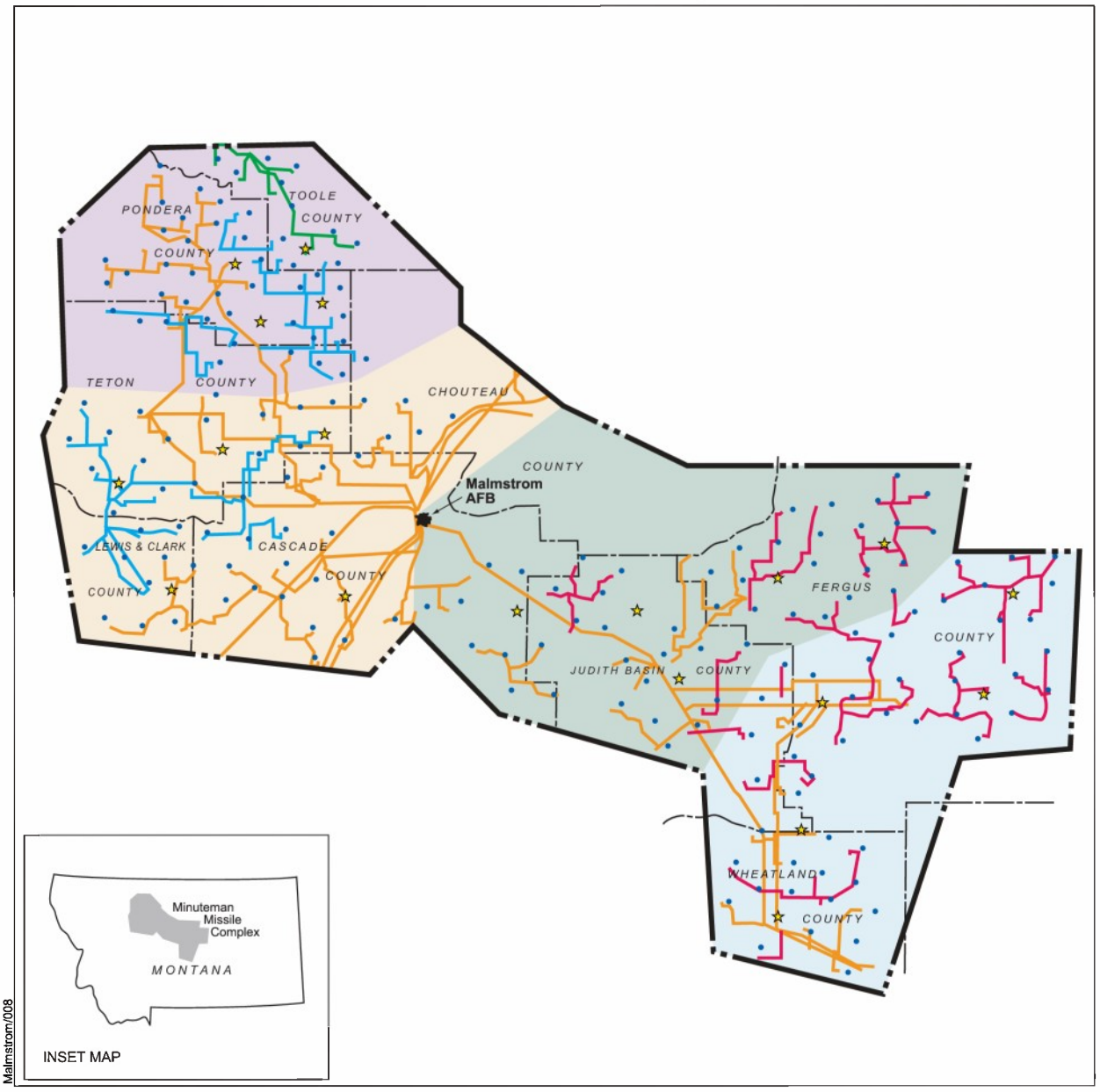
Note: Funding amounts are rounded.
FY = fiscal year

Source: U.S. Air Force, 2005g.

3.4 UTILITIES

The utility systems discussed in this section include electricity, solid waste, water, and wastewater. Heating fuel is stored on site at each MAF in USTs, with the exception of H-1 where an AST is used for heating fuel storage. Storage tanks are discussed in Section 3.6.3. The ROI for utility systems includes the service area for each provider that serves the Missile Complex LFs and MAFs. For some utilities such as wastewater and potable water, if supplied by an on-site source, the ROI is limited to the MAF sites.

Electricity. MAFs and LFs are supplied 3-phase electrical power. Electricity is provided to the MAFs and LFs by four electric companies. These companies include Fergus Electric Cooperative, Marias River Electric Cooperative, NorthWestern Energy, and Sun River Electric Cooperative (Figure 3.4-1). With the exception of Marias River Electric Cooperative, which supplies power to most of the 564th MS facilities in Toole County only, the geographic areas serviced by these companies overlap adjacent missile squadron facilities. NorthWestern Energy provides power to some LFs and MAFs in all four missile squadrons. Fergus Electric Cooperative's service area overlaps with NorthWestern Energy's service area east of Great Falls and supplies power to many LFs and MAFs within the 10th MS and 490th MS. Areas north and east of the City of Lewistown (which includes portions of both the 10th MS and 490th MS) are serviced by Fergus Electric Cooperative only. To the north and west of Great Falls, Sun River Electric Cooperative's service area overlaps NorthWestern Energy's service area and provides power to many facilities in the 12th MS and 564th MS.



EXPLANATION

- Northwest Electric Company
- Fergus Electric Company
- Sun River Electric Company
- Marias River Electric Company
- Missile Alert Facility
- Launch Facility
- 10th Missile Squadron
- 12th Missile Squadron
- 490th Missile Squadron
- 564th Missile Squadron
- Missile Complex Boundary

0 13.5 27 Miles

Source: U.S. Air Force, 1991a.

Electrical Service System within Minuteman III Deployment Area

Figure 3.4-1

Fergus Electric Cooperative, Marias River Electric Cooperative, and Sun River Electric Cooperative are 3 of 26 electric cooperatives in the State of Montana. Fergus Electric Cooperative provides service to 13 central Montana counties including 5 of the counties in the Missile Complex area (Cascade, Chouteau, Fergus, Judith Basin, and Wheatland counties) (Fergus Electric Cooperative, 2006). Marias River Electric Cooperative provides service in and around the Toole County area (Marias River Electric Cooperative, 2006). Sun River Electric Cooperative provides service to eight counties, seven of which are in the Missile Complex area (Cascade, Chouteau, Judith Basin, Lewis and Clark, Pondera, Teton, and Toole counties) (Sun River Electric Cooperative, 2006). NorthWestern Energy is an investor-owned utility that provides electricity and natural gas to parts of Montana, South Dakota, and Nebraska. NorthWestern Energy's electric distribution area in Montana covers 73 percent of the state and the company supplies power to 310,000 customers in Montana (NorthWestern Energy, 2006). Table 3.4-1 provides the annual electrical usage for each missile squadron listed by the electrical provider.

Table 3.4-1. Missile Squadron Annual Electricity Usage (MWH)

	10th MS	12th MS	490th MS	564th MS	Total by Company
Fergus Electric Cooperative	3,960	0	4,954	0	8,914
Marias River Electric Cooperative	0	0	0	1,653	1,653
NorthWestern Energy	3,788	4,742	2,645	5,000	16,175
Sun River Electric Cooperative	0	2,661	0	4,184	6,845
Total	7,748	7,403	7,599	10,837	33,587

Note: Based on CY 2005 usage
CY = calendar year
MS = Missile Squadron
MWH = megawatt hour

Sources: U.S. Air Force 2006m-p.

Solid Waste. Solid nonhazardous waste generated at MAFs is collected and returned to Malmstrom AFB for disposal. The amount of solid waste generated off base versus solid waste generated on base is not quantified. In FY 2005, 6,916 tons of solid waste were disposed by Malmstrom AFB. This included 6,776 tons of base and family housing solid waste and 140 tons of construction and demolition debris. Solid waste generated at MAFs is primarily domestic waste from personnel living at the sites. Solid waste is rarely generated at the LFs (primarily from maintenance and repair activities). Solid waste is disposed of in the High Plains Sanitary Landfill in Great Falls, Montana. This is a Class 2 landfill with an estimated annual volume of 100,000 tons (U.S. Air Force, 2003u).

Water. Potable water is supplied to each MAF from either an on-site well or a public water system with the exception of T-0, which is supplied water from a shallow well below Lake Francis. The water at D-1 and I-1 is provided from a public water system; however, potable water is provided via truck to these MAFs. The 3-year average (2002 – 2004) total water usage for all MAFs was 5,713,143 gallons. Average annual water use per MAF during this time period was 285,657 gallons. Water is not provided to LFs. Information on the water source and average annual water use by MAF is presented in Table 3.4-2.

Wastewater. Each MAF has a lagoon for disposal of sanitary wastewater. All wastewater lagoons are earthen structures lined with either bentonite (clay) or plastic. Wastewater is pumped from the lagoons and trucked away for disposal on an as-needed basis. Wastewater is not generated at the LFs.

Table 3.4-2. Water Source and Usage at MAFs

MAF	Water Source	Average Annual Use (2002-2004) (gallons)
A-1	On-site well	300,443
B-1	On-site well	265,557
C-1	On-site well	270,417
D-1	Contracted (City of Denton)	344,200
E-1	On-site well	270,794
F-1	On-site well	219,523
G-1	On-site well	212,000
H-1	Tri-County Water District	305,188
I-1	Contracted (Prairie Water Company)	330,598
J-1	Tri-County Water District	286,849
K-1	On-site well	211,231
L-1	On-site well	276,914
M-1	On-site well	344,661
N-1	On-site well	317,225
0-1	Roy Water and Sewer District	264,927
P-0	City of Conrad	253,447
Q-0	Tiber County Water District	288,787
R-0	Tiber County Water District	328,009
S-0	Tiber County Water District	373,332
T-0	Lake Francis (pump)	249,041
MAF Average		285,657

MAF = Missile Alert Facility

Source: U.S. Air Force, 2003v; U.S. Air Force, 2006l.

3.5 LAND USE AND AESTHETICS

The ROI for land use is the areas of and immediately adjacent to each of the LFs and MAFs within the 9-county Missile Complex area. The ROI for aesthetics is the area containing views of these facilities.

3.5.1 Land Use

Land within the Missile Complex area is generally rural. This area is sparsely populated, and most communities are small with exceptions such as the City of Great Falls, Conrad, Lewistown, and Shelby. However, no LFs or MAFs are situated within or adjacent to communities. LFs and MAFs are situated in undeveloped areas that consist of cropland, grazed rangeland, grassland, or woodland areas. A portion of the Lewis and Clark National Forest is within the Missile Complex area; several LFs (all in the 10th MS) are situated within the boundaries of the national forest in the Highwood and Little Belt mountains.

Each LF and MAF is a secured, military facility. There are 200 LFs and 20 MAFs within the Missile Complex area. Each LF is approximately 1 acre in area, and the MAFs are approximately 5 acres in area. These areas were purchased by the Air Force in the 1960s. There is an easement extending in a 1,200-foot radius from each LF intended to preclude the presence of inhabited buildings and to limit the use of the land to agricultural and grazing.

The buried cable network between the LFs and MAFs is at least 24 inches below the surface with junction boxes and manhole access at or near the surface level. The cable corridor has a 16.5-foot easement that allows the Air Force to maintain, repair, and operate the cable. Cultivation and harvesting of crops is permitted within this easement.

Each LF is within a fenced site surrounded by a 25-foot-wide zone that is kept free of vegetation. Farmers may not plant crops within this zone. A gravel access road is located outside of the fenced area.

Each MAF contains a support building and paved areas within a fenced compound; features outside the fenced area include a paved access road, a helicopter landing pad, a sewage lagoon, and, in some cases, large garages and ASTs.

3.5.2 Aesthetics

Visual sensitivity is characterized in terms of high, medium, and low levels. High visual sensitivity exists in areas where views are rare, unique, or in other ways special, such as in a remote pristine environment. Medium visual sensitivity is characteristic of areas where human influence and modern civilization are evident, and the presence of motorized vehicles is commonplace. Low visual sensitivity areas tend to have minimal landscape features with little change in form, line, color, and texture.

Most of the structures at an LF are level with or close to the ground. Close-up views of an LF include the mostly ground-level concrete launch cover, vent pipes, and gravel areas. The most visible features at an LF are the chain link security fencing, a single white pole (electronic surveillance system) approximately 15 feet tall, and an adjacent electrical power pole. Because the MAFs contain buildings, they are more readily visible from a greater distance than the LFs. Views of MAFs consist of one or more single-story buildings, a sewage lagoon, ASTs, an access road, and paved areas. Taller structures, including antennae, electrical power poles, and security lighting poles, are also present. Both the LF and MAF sites can be considered to have a low visual sensitivity.

The landscape in which the LFs and MAFs are situated is generally rural. Much of the area contains views of wide-open cropland and grassland areas on rolling hills, or of buttes and mountains. Some LFs are situated within forested and mountainous areas. Because of the open views, much of the Missile Complex area can be considered to have a medium or high visual sensitivity. Many MAFs are situated in open, treeless areas and are visible at a distance from public roads. The appearance of the MAFs in the generally wide open landscape is not too different from the views of the widely scattered farm and ranch buildings in the surrounding landscape. LFs are not highly visible at a distance and are not significant features in views of the local area. Therefore, although the LF and MAF sites themselves may have a low visual sensitivity, the high or medium visual sensitivity of the surrounding landscape is not greatly affected by the presence of the LFs and MAFs.

3.6 HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT

Hazardous materials and hazardous waste management activities at Malmstrom AFB are governed by specific environmental regulations. For the purpose of this analysis, the term hazardous material or hazardous waste will mean those substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Section 9601, et seq., as amended, and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Sections 6901-6992, as amended. In general, these include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health, welfare, or the environment when released into the environment. The state regulations,

which are at least as stringent as the federal regulations, are found in Administrative Rules of Montana (ARM) Title 17, Chapter 53.

The ROI for hazardous materials and hazardous waste, including non-regulated waste such as used motor oil, encompasses those areas that could potentially be exposed to a release during deactivation activities.

3.6.1 Hazardous Materials Management

Hazardous materials usage at the LFs and the MAFs are managed in accordance with Air Force Occupational Safety and Health (AFOSH) Standard 161-21, Hazard Communication, AFI 32-7086, Hazardous Materials Management, and Federal Standard 313D. Malmstrom AFB maintains an Integrated Hazardous Materials Emergency Response Plan (IHMERP) (OPLAN 32-4) that establishes responsibilities and provides prevention guidelines for hazardous materials, as well as contingency plans in the event of a hazardous materials release (U.S. Air Force, 2002b). Additionally, Malmstrom AFB also has a Storm Water Pollution Prevention Plan (SWPPP) (OPLAN 32-7041) that identifies potential sources of runoff pollutants from industrial sources, identifies the best management practices (BMPs) to eliminate/reduce such pollutants, and identifies organizations responsible for maintaining pollution control equipment or implementing pollution prevention BMPs (U.S. Air Force, 2004c).

The use of hazardous materials at each LF and MAF where deactivation activities are proposed is minimal. The hazardous materials associated with the sites are those utilized during the operation and maintenance of emergency electrical generator and heating, ventilation, and air conditioning (HVAC) systems, and facility maintenance. Hazardous materials utilized at LF and MAF facilities include petroleum, oils, and lubricants (POL); fuels, batteries, and ethylene glycol that are used for the diesel generators; sodium chromate that is utilized in facility chiller units; and refrigerant that is utilized in facility HVAC systems.

POL and diesel fuel are used in the operation and maintenance of the emergency electrical back-up generators at each LF and MAF. Lead-acid batteries are used as start-up power source for emergency back-up generators. Ethylene glycol is used at each LF and MAF as a coolant medium for the diesel generators and building cooling systems.

Sodium chromate solution is used to cool the missile guidance set of the MM III missiles. Systems at each LF hold approximately 7 gallons of the solution. Hexavalent chromium, a constituent of the solution, is a known human carcinogen if ingested. The missile guidance set cooling system at each LF includes storage tanks to hold the solution and lines to transport the coolant to the MGS.

Refrigerants are also used in the environmental control systems or HVAC systems and range from 38 pounds to 8 pounds per facility depending upon the type of LF or MAF.

Additionally, small amounts of hazardous materials such as paints and household cleaning products are utilized for routine maintenance of each LF and MAF.

Table 3.6-1 provides a summary of hazardous materials typically used/stored at LFs and MAFs.

3.6.2 Hazardous Waste Management

Malmstrom AFB is designated as a small quantity hazardous waste generator. Therefore, hazardous wastes generated at Malmstrom AFB, including the LFs and the MAFs, are regulated by RCRA (Title 40

Table 3.6-1. Hazardous Materials Typically Utilized at LFs and MAFs

	Wing I (10th, 12th, and 490th MS)		Wing VI (564th MS)	
Hazardous Material	Launch Facility	Missile Alert Facility	Launch Facility	Missile Alert Facility
Batteries	12	12	12	32
Antifreeze (generators) (gal)	12	15	12	30
Antifreeze (building cooling) (gal)	52	52	52	52
Sodium Chromate (gal)	7	0	7	0
Refrigerant (lbs)	8	38	20	24.5

Note: Hazardous substances in ASTs and USTs are addressed in Section 3.6.3, Storage Tanks.
AST = aboveground storage tank
Gal = gallon
lbs = pounds
LF = Launch Facility
MAF = Missile Alert Facility
MS = Missile Squadron
UST = underground storage tank

Source: U.S. Air Force, 2006f.

CFR 260-280), and the U.S. EPA has authorized the State of Montana to enforce RCRA regulations in the state as set forth in ARM Title 17, Chapter 53. These regulations require that hazardous waste be handled, stored, transported, disposed, or recycled according to defined procedures.

Additionally, hazardous wastes, including non-regulated waste such as motor oil, generated at the LFs and the MAFs, are managed in accordance with the Malmstrom AFB Hazardous Waste Management Plan (OPLAN 32-7042) (U.S. Air Force, 2005d). Guidance in the Malmstrom AFB Hazardous Waste Management Plan is derived from Air Force Instruction (AFI) 32-7042, Solid and Hazardous Waste Compliance, which provides a framework for complying with environmental standards applicable to the proper management of hazardous waste. The Malmstrom AFB Hazardous Waste Management Plan implements the above regulations and outlines the procedures for disposing of hazardous waste. Implementing the procedures outlined in OPLAN 32-7042 ensures the proper identification, management, and disposition of hazardous waste, and compliance with applicable federal, state, and DOD requirements. Finally, the base maintains an IHMERP (OPLAN 32-4) and the SWPPP (OPLAN 32-7041) that establishes responsibilities and contingency plans in the event of a hazardous substance release and identifies the BMPs for preventing a release of a hazardous substance, respectively.

Minimal hazard wastes are generated at LFs and MAFs during routine operations. On average, approximately 2,500 pounds of hazardous waste is produced annually from activities occurring within the 341st SW missile complex. In addition, approximately 2,500 pounds of waste antifreeze is generated annually, which is recycled rather than disposed. Any hazardous wastes generated at LFs and MAFs are properly containerized, labeled, and transported to Malmstrom AFB for disposal in accordance with OPLAN 32-7042.

3.6.3 Storage Tanks

USTs are subject to federal regulations within RCRA, 42 U.S.C. Section 6991, and U.S. EPA implementing regulations 40 CFR Part 280. These regulations were mandated by the Hazardous and Solid Waste Amendments of 1984. The Montana Department of Environmental Quality (MDEQ) manages USTs under ARM Title 17, Chapter 56. These rules are similar to the federal standards identified under 40 CFR Part 280. The MDEQ manages ASTs in accordance with ARM Title 17, Chapter 57, which has

adopted, by reference, the National Fire Protection Association standards for ASTs that contain flammable and combustible liquids, the Uniform Fire Code, as well as other standards (ARM Title 17, Chapter 57.104).

Because the storage tanks at each LF and MAF contain regulated substances, spill prevention and countermeasures for the storage tanks supporting these facilities are provided in the Malmstrom AFB IHMERP (OPLAN 32-4). Additionally, the base maintains a Spill Prevention Control and Countermeasures Plan (SPCCP) (OPLAN 32-7044) that identifies the BMPs for preventing a release of a hazardous substance (U.S. Air Force, 2003a-t).

ASTs and USTs are presently in use at LFs and MAFs for the storage of fuels and POL. Fuel storage tanks are closely regulated and must meet stringent guidelines for spill and leak protection. Existing tanks include deep buried USTs (at least 25 feet deep), shallow buried USTs (ranging from 3-10 feet deep), and aboveground day tanks that are located at LFs and MAFs. Currently, most but not all, USTs and ASTs utilized at each LF and the MAFs are of a double-wall design, fitted with leak detection monitoring systems, or located within a containment vault. Storage tanks are managed in accordance with the Malmstrom AFB IHMERP (OPLAN 32-4) and the SPCCP (OPLAN 32-7044), and wing maintenance personnel perform inspections of storage tanks at LFs and MAFs on a regular basis. Table 3.6-2 provides a description of the type of storage tanks typically associated with LFs and the MAFs.

The following sites are presently under RCRA investigation for the unintentional release of a hazardous substance (POL) from storage tanks in the past: B-1, C-1, D-1, E-1, F-1, G-1, H-1, L-1, N-1, P-0, Q-15, Q-18, and S-0 (U.S. Air Force, 2006g).

3.6.4 Asbestos

The ROI for asbestos encompasses those areas at the LFs and MAFs that have the possibility for exposure to asbestos.

Asbestos-containing material (ACM) and ACM abatement are regulated by the U.S. EPA and the Occupational Safety and Health Administration (OSHA). Release of asbestos fiber emissions into the ambient air is regulated in accordance with Section 112 of the Clean Air Act (CAA), which established the National Emissions Standards for Hazardous Air Pollutants (NESHAP). Under NESHAP, the owner of a structure must, prior to demolition or renovation of buildings with ACM, provide notice to the regulator with CAA authority (i.e., either the U.S. EPA or its state counterpart). The NESHAP regulations (40 CFR Part 61, Subpart M) address the demolition or renovation of buildings with ACM. The Asbestos Hazard Emergency Response Act (AHERA), Public Law (P.L.) 99-519 and P.L. 101-637, addresses worker protection for employees who work around or remediate ACM.

The state of Montana also manages asbestos under ARM Title 17, Chapter 74, and the Clean Air Act of Montana, Montana Code Annotated (MCA) Title 75, Chapter 2, Part 5.

Renovation or demolition of buildings with ACM can release asbestos fibers into the air. Therefore, the current Air Force practice is to manage or abate ACM in active facilities, and abate ACM per regulatory requirements prior to facility demolition. Abatement of ACM occurs when there is a potential for asbestos fiber releases that would affect the environment or human health.

Malmstrom AFB currently samples project areas prior to initiating any renovation or demolition of structures to verify the presence or absence of ACM. This process allows the Air Force to confidently

Table 3.6-2. Typical Storage Tanks at LFs and MAFs

Wing I (10th, 12th, 490th Missile Squadrons)			
Launch Facility			
Tank Type	Contents	Size (Gallons)	Use
AST	diesel	312	generator
AST	lubricating oil	30	generator
UST	diesel	4,000	generator
Missile Alert Facility			
AST	diesel	1,000	vehicle refueling
AST	gasoline	2,000	vehicle refueling
AST	diesel	150	heater/generator
AST	heating oil	270[(a) (b)]	heating
AST	heating oil	250[(b) (c)]	heating
UST	diesel	12,000[(d)]	heater/generator
Wing VI (564th Missile Squadron)			
Launch Facility			
Tank Type	Contents	Size (Gallons)	Use
AST	diesel	92	generator
AST	lubricating oil	75	generator
UST	diesel	11,000	generator
UST	diesel	4,000[(e)]	generator
Missile Alert Facility			
AST	diesel	1,000	vehicle refueling
AST	gasoline	2,000	vehicle refueling
AST	diesel	111	generator
AST	diesel	10	generator
AST	new oil	167	generator
UST	diesel	15,000	generator
UST	diesel	4,000	heating
UST	diesel	1,000	generator

Notes:
(a) = No ASTs of this content and size utilized at 10th Missile Squadron MAF A-1
(b) = No ASTs of this content and size utilized at 12th Missile Squadron MAF I-1
(c) = ASTs of this size located at 10th Missile Squadron MAF E-1, 12th Missile Squadron MAF F-1 and G-1, and 490th Missile Squadron MAF L-1 and O-1
(d) = No USTs of this content and size utilized at 12th Missile Squadron MAF H-1
(e) = Located at LFs Q-14 and Q-15
AST = aboveground storage tank
LF = Launch Facility
MAF = Missile Alert Facility
UST = underground storage tank

Source: U.S. Air Force, 2003a-t.

disclose to workers the type, condition, and estimated amount of ACM that could be present so that appropriate safety measures can be implemented to protect workers potentially exposed.

Results of ACM sampling conducted at each LF and MAF indicates that the types of ACM, and areas that ACM are found, are similar for all facilities. For the LFs, ACM was typically identified in gaskets, piping, and elbows of back-up generators at the facilities, as well as in some floor tile. For the MAFs, ACM was typically identified in pipe elbows and fittings within the domestic water pump house and the boiler room of the facilities (U.S. Air Force, 2006h). Table 3.6-3 provides a description of the areas and types of ACM identified at LFs and MAFs.

Table 3.6-3. Asbestos Identified at LFs and MAFs

Site Location		
Missile Squadron	**Launch Facilities**	**Equipment/Area With Asbestos Containing Material**
10th	A-8,10	Generator
10th	D-2,10	Generator
10th	E-11	Generator
12th	F-5	Generator
12th	H-2	Generator
12th	I-2,3,4,5	Unspecified ACM present
12th	J-5	Muffler, muffler elbow, piping to wall
12th	J-10, 11	Generator
490th	K-3	Generator
490th	L-2,4,5,6	Floor tile
490th	L-3	Generator
490th	L-7	Generator air duct
490th	M-2	Generator
490th	N-unknown	Generator
564th	P-4	Generator
564th	Q-14,14,16	Generator
564th	Q-19	Muffler
564th	R-21,24,28,29,30	Generator
564th	T-41, 46	Generator
Missile Squadron	**Missile Alert Facilities**	
10th	A-01	Domestic water pump house elbows, fittings
10th	B-01	Domestic water pump house elbows and fittings; heating system
10th	C-01	Domestic water pump house elbows and fittings; heating system
10th	D-01	Domestic water pump house elbows and fittings; heating system
10th	E-01	Domestic water pump house elbows and fittings; heating system
12th	F-01	Domestic water pump house elbows and fittings; heating system
12th	G-01	Domestic water pump house elbows and fittings; light fixture; heating system
12th	H-01	Domestic water pump house elbows and fittings; heating system
12th	I-01	Domestic water pump house elbows and fittings; light fixture; heating system
12th	J-01	Domestic water pump house elbows and fittings; heating system
490th	K-01	Domestic water pump house elbows and fittings; heating system
490th	L-01	Domestic water pump house elbows and fittings; heating system
490th	M-01	Domestic water pump house elbows and fittings; light fixture; heating system
490th	O-01	Domestic water pump house elbows and fittings; heating system
564th	P-00	Domestic water pump house fittings; heating system
564th	Q-00	Domestic water pump house fittings; heating system
564th	R-00	Domestic water pump house fittings; heating system
564th	S-00	Domestic water pump house fittings; heating system
564th	T-00	Domestic water pump house fittings; heating system

ACM = asbestos-containing material
LF = Launch Facility
MAF = Missile Alert Facility

Source: U.S. Air Force, 2006h.

3.6.5 Lead-Based Paint

The ROI for lead-based paint encompasses those areas at the LFs and MAFs that have the possibility for exposure to lead-based paint.

Lead is a heavy ductile metal commonly found in association with organic compounds, as well as in oxides, salts, or as metallic lead. Human exposure to lead has been determined to be an adverse health risk by agencies such as OSHA and the U.S. EPA. Sources of exposure to lead are through paint, dust, and soil. In 1973, the Consumer Product Safety Commission (CPSC) established a maximum lead content in paint of 0.5 percent by weight in a dry film of newly applied paint. In 1978, the Consumer Product Safety Act (P.L. 101-608 as implemented by 16 CFR Part 1303) lowered the allowable lead level in paint to 0.06 percent by weight in a dry film of newly applied paint. Hazardous waste containing lead is disposed in accordance with 40 CFR Part 260, et seq., and 29 CFR Part 1910.120. Additionally, DOD implemented a ban of lead-based paint use in 1978; therefore, it is possible that facilities constructed prior to or during 1978 may contain lead-based paint. The Air Force does not actively pursue removal of lead-based paint. Instead, it is managed in place or removed by the Air Force, as necessary.

Malmstrom AFB currently samples project areas prior to initiating any renovation or demolition of structures to verify the presence or absence of lead-based paint. This process allows the Air Force to confidently disclose to workers the type, condition, and estimated amount of lead-based paint that could be present so that appropriate safety measures can be implemented to protect workers potentially exposed.

A lead-based paint survey of the LFs and the MAFs has not been conducted; however, because the facilities were constructed prior to 1978, lead-based paint is likely to be present.

3.6.6 Polychlorinated Biphenyls

The ROI for PCBs encompasses those areas at the LFs and MAFs that have the possibility for exposure to PCBs.

The disposal of PCBs is regulated under the federal Toxic Substances Control Act (TSCA) (15 U.S.C. Section 2601, et seq., as implemented by 40 CFR Part 761), which banned the manufacture and distribution of PCBs, with the exception of PCBs used in enclosed systems. By federal definition, PCB equipment contains 500 parts per million (ppm) PCBs or more, whereas PCB-contaminated equipment contains PCB concentrations equal to or greater than 50 ppm, but less than 500 ppm. The TSCA regulates, and the U.S. EPA enforces, the removal and disposal of all sources of PCBs containing 50 ppm or more; the regulations are more stringent for PCB equipment than for PCB-contaminated equipment.

Equipment containing PCBs is known to be present at LFs and MAFs. PCBs are primarily found in electrical capacitors associated with equipment at the sites (U.S. Air Force, 1996b). As maintenance activities occur at the sites, these capacitors have been removed and replaced with non-PCB items. In addition, PCBs may be present in ballast units of older light fixtures. While not defined as PCB equipment or PCB-contaminated equipment, these ballasts could leak or spill and result in a release of PCBs. Although no PCB spills have been associated with these ballast units within the LFs and the MAFs, older ballast units are replaced with non-PCB units as part of the facility maintenance activities. Additionally, the base IHMERP (OPLAN 32-4) establishes responsibilities and contingency plans in the event of a PCB release. Table 3.6-4 provides an inventory of equipment items at the sites that are known to contain PCBs.

Table 3.6-4. PCB Locations at LFs and MAFs

Site Location	Equipment Description
564th LCCs	battery charger
10th, 12th, and 490th LCCs	battery charger
10th, 12th, and 490th LFs	battery charger
564th LFs	filter monitor
564th LFs	power supply
10th, 12th, and 490th LCCs	power supply
10th, 12th, and 490th LFs	power supply

LCC = Launch Control Center
LF = Launch Facility
MAF = Missile Alert Facility
PCB = polychlorinated biphenyl

Source: U.S. Air Force, 1996b.

Transformers at the LFs and the MAFs are situated outside the security fencing and are not Air Force property. The utility purveyor is responsible for any PCBs associated with these transformers; the PCB status of these transformers is not known.

3.6.7 Ordnance

The management of explosive items is the responsibility of the 341st SW, particularly the 341 MMXS/ Munitions Storage Area. Missile components, including RSs, MGSs, PSREs, boosters, and launch door related ordnance such as explosive bolts, ballistic gas generators, retracting actuators, and impulse squibs can be found at each of the LFs and are managed and maintained by 341st MMXS weapons and munitions maintenance personnel (U.S. Air Force, 2006c). The retirement of explosive components will require the transportation of these items from LFs to Malmstrom AFB. The transport of these explosive components is part of routine maintenance and regulated by the Department of Transportation under the Hazardous Materials Transportation Act of 1975 (49 U.S.C. Section 1761).

While the probability of an accidental explosive detonation of any type of material at an LF is very remote, QD arcs for safety from accidental detonation of explosive materials have been established for the LFs. A distance of 1,200 feet from LFs was established to preclude construction of inhabited structures within the QD.

3.7 SOILS AND GEOLOGY

The ROI for evaluation of potential impacts to soils and geology from proposed deactivation activities is the Malmstrom AFB Missile Complex area, which covers approximately 23,500 square miles in central Montana with specific impacts anticipated to occur at the individual LFs and MAFs being deactivated. The western edge of the missile complex is adjacent to the eastern edge of the Rocky Mountains and eastern edge of the Missile Complex is bounded by the Judith Mountains, with the Belt Mountains to the south, and the northern Great Plains to the north. Sedimentary rocks dominate the geologic landscape for most of the missile complex with particular soil types being specific to the parent material and the topography upon which it rests. The physiography plays an important role as to the type of soil developed at the sites. LF and MAF sites are found from the foothill areas of the Rocky Mountains to the rolling topography of the glaciated high plains. Soil types range from thick, well-drained soils found on terraces and foothill areas to well-drained, clay rich soils in the glaciated areas along the northern area of the Missile Complex.

3.7.1 Soils

Various soil types are present within the missile complex. Soil types vary depending on what area of the Missile Complex the LFs and MAFs are situated. The primary reasons for diverse soils include the diverse geologic materials from which the soils form from, and the landforms from which the soils are formed. In the central portion of the Missile Complex, near the City of Great Falls, soils are dominated by deep, well-drained to moderately well-drained soils that are present on floodplains, fans, terraces, foot slopes, glaciated terraces, fans, and uplands. Throughout central Montana, the plains rise up to meet the mountains. Streams leaving the mountains deposited gravelly and cobbly outwash as broad alluvial fans and terraces. Soils on these broad plains and terraces are typical Mollisols (dark-colored, calcium-rich soil) and Argiborolls (clay rich, dark-colored soil). Alluvial surfaces emanate from the mountains with a significant component of limestone have Calicborolls (calcium carbonate rich soil). These soils are characterized by thin, dark grayish brown calcareous clay loam. The calcium carbonate content ranges from 30 to 50 percent. Gravels, cobbles, and rock fragments are common in most soil types. The soils are typically well drained (U.S. Department of Agriculture, 1982).

3.7.2 Geology

Precambrian to Quaternary age rock units of diverse lithology and composition are exposed within the missile complex. Precambrian limestone, dolomite, quartzite, and argillite of the Belt Supergroup and Paleozoic units consisting of quartzite, sandstone, argillite, shale, limestone, and chert are exposed as partially juxtaposed thrust slices in the Rocky Mountains along the western margin of the missile complex. The largest portion of the area is characterized by predominantly Cretaceous formations of horizontal to slightly inclined beds of shale, siltstone, sandstone, and coal overlying slightly warped Paleozoic rocks. These sedimentary formations have been intruded by Tertiary igneous laccoliths and volcanic rocks forming domal, circular mountain masses and small mountain chains. In addition, glacial and fluvial processes have covered extensive areas of the plains with unconsolidated deposits of gravel, sands, silts, and clay of Quaternary age.

Malmstrom AFB and the Missile Complex are located almost entirely within Seismic Zone 1 (International Conference of Building Officials, 1991). Only the portion of the Missile Complex closest to the Rocky Mountains is within Seismic Zone 2b. While the area closest to the Rocky Mountains has the higher potential for ground shaking, the bulk of the area within the missile complex is fairly tectonically stable. In Seismic Zone 1, there is a one in ten chance of experiencing a ground acceleration of 1/10th the acceleration due to gravity (0.1 g) once in 50 years. In Seismic Zone 2b, there is a one in ten chance of experiencing a ground acceleration of 2/10th the acceleration due to gravity (0.2 g).

3.8 WATER RESOURCES

Although the Malmstrom AFB Missile Complex covers a very large area, the ROI adopted for the water resources evaluation focuses on much smaller areas associated with the specific LFs and MAFs. The ROI for an LF range in size from about 1 to 2 acres, and for MAFs they range in size from about 4 to 5 acres.

The general setting of the Missile Complex is on the western edge of the northern portion of the Great Plains physiographic province, with transitional aspects to the adjacent Rocky Mountains physiographic province. The transitional aspects are noted in Section 3.7 (Soils and Geology), and are the “foothill” mountain ranges that rise out of the surrounding plains (e.g., the Judith and Belt mountains). The Missile Complex is also located within the upper portion of the Missouri River watershed, with the river flowing northeast out of the Rocky Mountains and through the City of Great Falls, in effect bisecting the Missile

Complex. Major tributaries draining other portions of the Missile Complex include the Marias River, Teton River, and Sun River northwest of the Missouri, and Arrow Creek, Wolf Creek, and the Judith River to the southeast.

The ROI for the water resources evaluation is limited area surrounding individual LFs and MAFs scheduled for deactivation. For evaluation purposes the ROI is considered to be the area within the perimeter fencing at each LF and MAF. At the MAF this includes both the fenced area surrounding the sewage lagoon and the security fencing around the support facility structures.

3.8.1 Surface Water Runoff

The regional climate of the Missile Complex area is semiarid, as it receives less than 20 inches of precipitation annually, and the majority of that occurs from April to September. This results in a relatively sparse distribution of perennial streams, and many of those have headwaters in the mountains where precipitation is greater and water is also released from snowmelt. Direct runoff in the area often occurs as the result of thunderstorms, so small watersheds can receive heavy rainfalls for short durations, and localized flooding can occur. However, because of the nature of the physiographic setting (broadly sloping to flat topography with generally low relief) and the requirements of siting these facilities (open upland areas), they are mostly located away from perennial streams or waterways, and even small, non-perennial drainage courses. None of the LFs and MAFs is situated within a Federal Emergency Management Agency (FEMA) designated 100-year flood plain. In addition, each potential ROI (within which ground disturbance could occur) is relatively small. Therefore, the opportunity for disruption to surface drainage function or location is extremely limited. The 341st SW SPCCP (OPLAN 32-7044) provides details on the specific locations of LFs and MAFs in relation to its nearest stream course.

3.8.2 Groundwater

Regional hydrogeology of the Northern Great Plains aquifer system is varied and contains numerous aquifers. The location of the Missile Complex, along the western transition of the Great Plains into the Rocky Mountains, further complicates this hydrogeology through uplift, folding, and faulting. Local aquifers can be found in unconsolidated surface materials of Quaternary age, or in sedimentary units of Tertiary, Cretaceous, or Paleozoic ages. What groundwater is available at individual facilities is highly dependent on the local, underlying geology, and whether an alternative source is available. Local groundwater resources are used for potable water supply at half of the MAFs (see Section 3.4 Utilities). Data was not readily available on the depths of the wells installed at these facilities, nor on the specific formation/aquifer into which they were drilled. In general, high mineral content is a problem with groundwater resources in the Northern Great Plains (Whitehead, 1996).

Water resource regulations of concern at the federal and state level focus on protecting water quality. The principal federal laws protecting water quality are the Clean Water Act (CWA), as amended (33 U.S.C. Section 1251 et seq.) and the Safe Drinking Water Act (42 U.S.C. Section 300f et seq.). The U.S. EPA enforces both laws. The CWA establishes the basic structure for regulating discharges of pollutants into the waters of the United States. In addition, the CWA protects wetlands and other aquatic habitats through a permitting process that ensures development and other activities are conducted in an environmentally sound manner. The Safe Drinking Water Act is directed at protection of drinking water supplies.

Comparable laws in Montana are covered in the Montana Water Quality Act (as codified in the MCA Title 75, Chapter 5, and with regulatory authority provided by ARM Title 17, Chapter 30), and the Public Water Supply Act (codified in MCA Title 75, Chapter 6 with regulatory authority in ARM Title 17, Chapter 38).

Water supply considerations and wetlands concerns are not applicable to proposed deactivation activities. However, Montana Water Quality Act could be relevant since it includes the Montana Pollutant Discharge Elimination System (MPDES), which covers storm water permits for construction activities. If the size of the ground disturbance at any individual facility exceeds 1 acre in size, it will fall under the "General Permit for Storm Water Discharges Associated with Construction Activity" (General Permit).

3.9 BIOLOGICAL RESOURCES

Biological resources include the native and introduced plants and animals within the project area. For discussion purposes, these are divided up into vegetation, wildlife, threatened and endangered species, and sensitive habitats. Human activity has altered the natural environment at the LFs and MAFs through grading, graveling, and paving of the sites.

Because deactivation could occur at any of the MSs (10th, 12th, 490th, or 564th) within the 341 SW, the ROI for biological resources includes those portions of the 9-county area where LFs and MAFs are situated, focusing on the actual developed site of the LFs and MAFs. This ROI includes the area within which potential impacts could occur and provides a basis for evaluating the level of impact.

Relevant legislation pertaining to biological resources are briefly discussed below.

The Endangered Species Act (16 U.S.C. Sections 1531-1544) is intended to protect, maintain, and restore ecosystems upon which threatened and endangered species depend, to provide for the conservation of threatened and endangered species, and to take steps appropriate to achieve these purposes.

The Migratory Bird Treaty Act (16 U.S.C. Sections 703-712) stipulates that all migratory birds and their parts (including eggs, nests, and feathers) are fully protected. The Act implements the United States' commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource. Each of the conventions protect selected species of birds that are common to any two or more countries.

The Sikes Act (16 U.S.C. 670a-670o, 74 Stat. 1052), as amended (P.L. 86-797, approved September 15, 1960) provides for cooperation by the Departments of the Interior and Defense with State agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the United States.

3.9.1 Vegetation

The majority of the ROI consists of gently rolling terrain that is dominated by short- and mixed grass prairie habitat, rangeland, and cropland (mostly wheat). There are lacustrine and riverine habitats within the ROI that would include riparian-type vegetation. The western portion of the ROI includes the Rocky Mountain Front, and there are also isolated mountain ranges throughout central Montana, which include the Highwood Mountains, Belt Mountains, Big Snowy Mountains, and Judith Mountains. These mountainous eco-regions could include the presence of intermountain grasslands and montane shrublands.

The short- and mixed grass prairie habitats support western wheat grass (*Agropyron smithii*), blue bunch wheat grass (*Agropyron spicatum*), needle-and-thread grass (*Hesprostipa comata*), Junegrass (*Koeleria macrantha*), Kentucky blue grass (*Poa pratensis*), fescue (*Festuca* sp.), little bluestem (*Schizachyrium scoparium*), and blue gramma (*Bouteloua gracilis*) (Montana Partners in Flight, 2006).

Riparian habitats within the ROI support the dominant cottonwood (*Populus* sp.) and could include a coniferous component such as spruce (*Picea* sp.) or pine (*Pinus sp.*). The understory shrub layer could support red-osier dogwood (*Cornus sericea*), alder (*Alnus* sp.), willow (*Salix* sp.), and service berry (*Amelanchier* sp.) (Montana Partners in Flight, 2006).

Intermountain grasslands, which stretch eastward down the Rocky Mountain Front and into the isolated mountain ranges of central Montana, support needle-and-thread grass, blue gramma, bluebunch wheatgrass, western wheat grass, Idaho fescue (*Festuca idahoensis*), and rough fescue (*Festuca scabrella*) (Montana Partners in Flight, 2006).

The montane shrublands found on the eastern slopes of the Rocky Mountains are more xeric than western mesic slopes. Dominant vegetation species found in the eastern montane shrublands include bitterbrush (*Purshia tridentata*), mountain mahogany (*Cercocarpus* sp.), creeping juniper (*Juniperus horizontalis*), greasewood (*Sarcobatus vermiculatus*), and rabbitbrush (*Chrysothamnus* sp.) (Montana Partners in Flight, 2006).

Most of the island mountain ranges are dominated by the same coniferous forest types found in the western ranges, with ponderosa pine (*Pinus ponderosa*) and Douglas fir (*Psedotsuga menziessii*) being the dominant trees (Montana Partners in Flight, 2006).

The LFs and MAFs are mostly devoid of vegetation for security purposes. LFs contain no vegetation. MAFs are primarily paved or gravel with some areas of grass that are mowed.

3.9.2 Wildlife

Common wildlife that could occur regionally within the ROI include the ferruginous hawk (*Buteo regalis*), Swainson's hawk (*Buteo swainsoni*), golden eagle (*Aquila chrysaetos*), sage grouse (*Centrocercus urophasianus*), mountain plover (*Charadrius motanus*), white tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), prairie dog (*Cynomys* sp.), badger (*Taxidea taxus*), raccoon (*Procyon lotor*), deer mouse (*Peromyscus* sp.), ground squirrel (*Spermophilus* sp.), coyote (*Canis latrans*), bobcat (*Lynx rufus*), cougar (*Puma concolor*), and western rattlesnake (*Crotalus viridis*) (Montana Fish, Wildlife, & Parks, 2006).

3.9.3 Threatened and Endangered Species

Federally threatened and endangered species that occur or have the potential to occur within the ROI are listed in Table 3.9-1. Figure 3.9-1a, b, and c illustrates the occurrences of threatened and endangered species as well as designated habitat conservation areas in relation to the LF and MAF locations.

In addition to the federally threatened and endangered species that have the potential to occur within the ROI, there are also a variety of Species of Concern. The state of Montana defines Species of Concern as native animals breeding in the state that are considered to be "at risk" due to declining population trends, threats to their habitats, and/or restricted distribution. The following are Species of Concern that have the potential to occur within the ROI.

There is potential habitat for the ferruginous hawk, as well as the mountain plover, to occur within the ROI (Montana Natural Heritage Program, 2000). Potential habitat also exists for the loggerhead shrike (Lanius ludovicianus), a species included on Montana's watch list (U.S, Air Force, 2001, 2002a).

Table 3.9-1. Federally Threatened and Endangered Species within the ROI

Common Name	Scientific Name	Federal Status
Birds		
Bald Eagle	*Haliaeetus lecocephalus*	T
Piping plover	*Charadrius melodus*	T
Mammals		
Grizzly Bear	*Ursus arctos horriblis*	T
Canada lynx	*Lynx canadensis*	T
Gray Wolf	*Canis lupus*	E
Black-footed ferret	*Mustela nigripes*	E

E = endangered
T = threatened

Source: U.S. Fish and Wildlife Service, 2005, 2006.

Other state species of concern are the spotted bat (*Euderma maculatum*) and Preble's shrew (*Sorex preblei*). Habitat for the spotted bat is most often in rough, rocky, semiarid, and arid terrain, varying from ponderosa pine forest to scrub habitat and open desert. The bat typically roosts in high cliffs and forages over open forests and fields in drier ponderosa pine forests. Habitat for the Preble's shrew is most often rock fields, prairies, and forests at high elevations (U.S, Air Force, 2001).

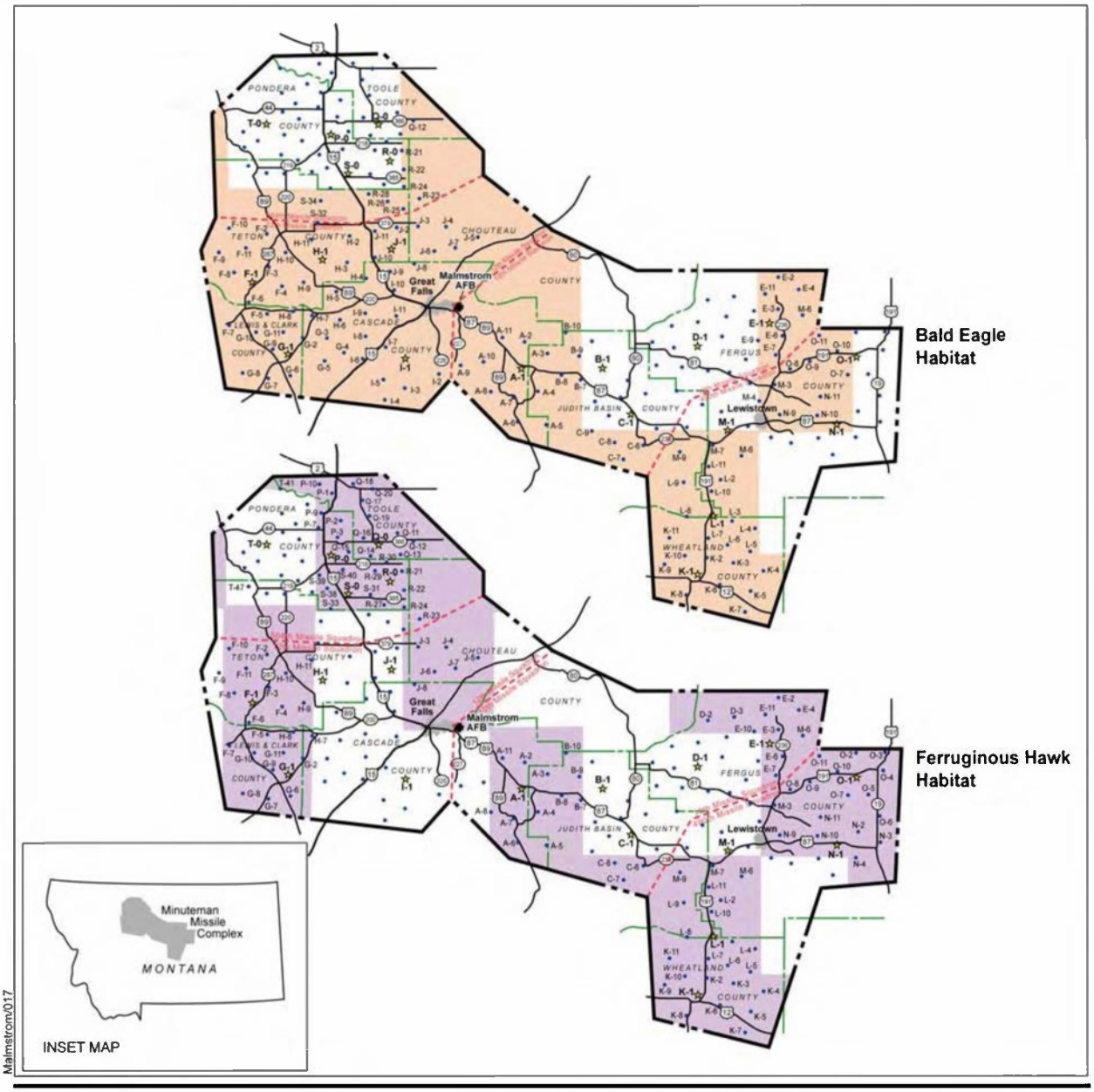
The Montana Natural Heritage Program database for the Malmstrom AFB deployment area indicates that there are a number of LF and MAF sites that are in or near potential habitat for several federally listed threatened and endangered species and state species of concern. A list of the LFs and MAFs that are in or near potential habitat for federally listed threatened and endangered species and state species of concern is provided in Table 3.9-2.

3.9.4 Sensitive Habitats

Sensitive habitats include wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer/winter habitat). Sensitive habitat in the vicinity of LFs and MAFs include wetlands.

Wetlands. Wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Federal Interagency Committee for Wetland Delineation, 1989). Wetlands are regulated under Section 404 of the CWA and Executive Order (EO) 11990 (Protection of Wetlands). Areas that are periodically wet, but do not meet all three criteria (hydrophytic vegetation, hydric soils, and wetland hydrology), are not jurisdictional wetlands subject to Section 404 of the CWA.

The ROI contains both riverine and lacustrine habitats that could potentially fall under the above described wetland definition. However, no jurisdictional wetlands have been identified within the boundaries of the LFs and MAFs. Aquatic habitats within the ROI can be found along the Missouri River, Marias River, Lake Elwell, Benton Lake, and various other irrigation-related reservoirs.



EXPLANATION

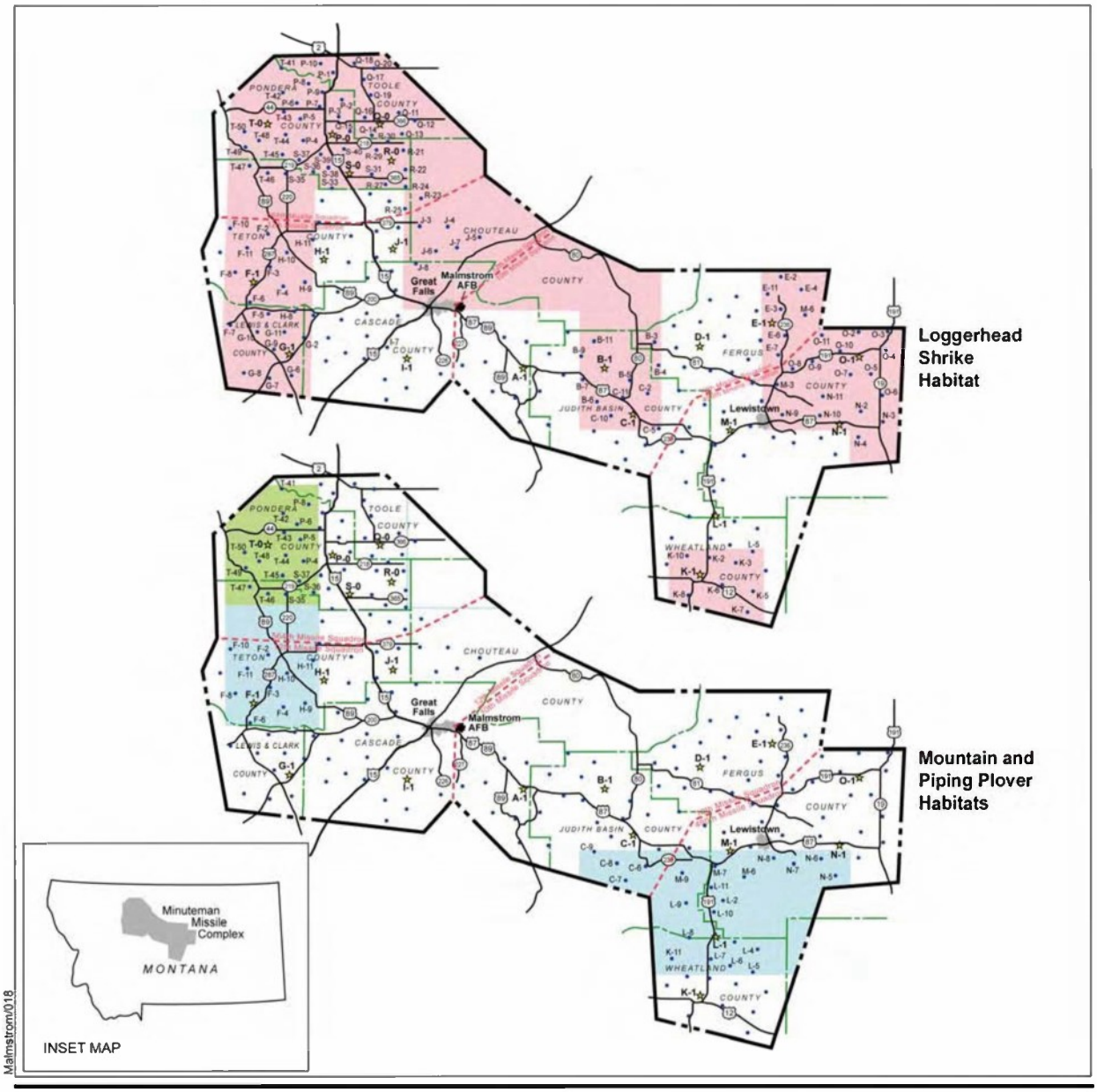
- Bald Eagle Habitat
- Ferruginous Hawk Habitat
- Launch Facility
- R-0 Missile Alert Facility
- County Lines
- 89 U.S. Highway
- 15 Interstate Highway
- 200 State Highway
- Missile Complex Boundary
- Missile Squadron Boundary

0 20 40 Miles

Source: Montana Fish, Wildlife, & Parks, 2006.

Bald Eagle and Ferruginous Hawk Habitats within Minuteman III Deployment Area

Figure 3.9-1a



EXPLANATION

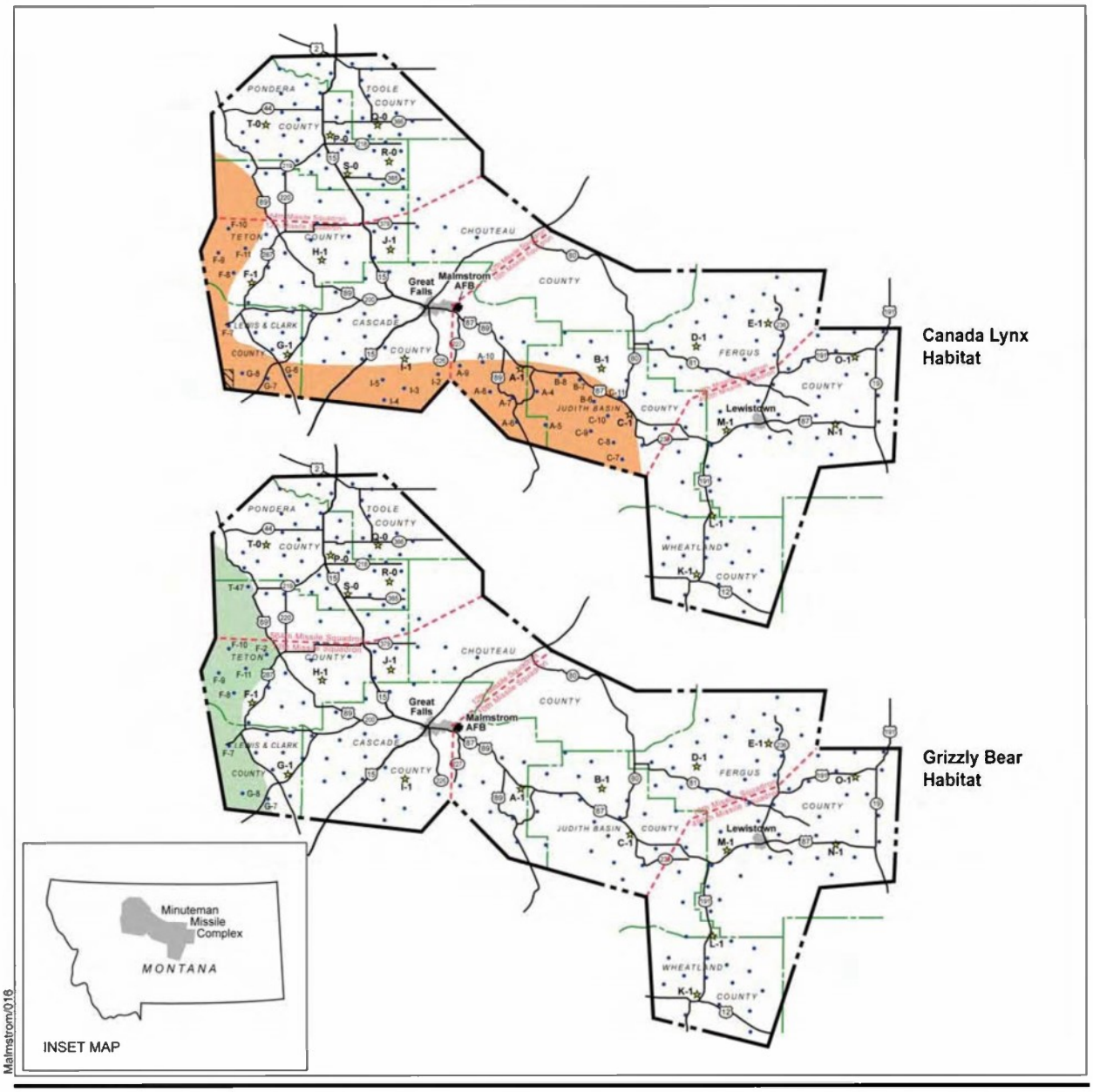
- Loggerhead Shrike Habitat
- Mountain Plover Habitat
- Piping Plover Habitat
- Launch Facility
- R-0 Missile Alert Facility
- County Lines
- U.S. Highway
- Interstate Highway
- State Highway
- Missile Complex Boundary
- Missile Squadron Boundary

0 20 40 Miles

Source: Montana Fish, Wildlife, & Parks, 2006.

Loggerhead Shrike and Mountain and Piping Plover Habitats within Minuteman III Deployment Area

Figure 3.9-1b



EXPLANATION

- Lynx Habitat
- Proposed Critical Lynx Habitat
- Grizzly Habitat
- Launch Facility
- ☆ R-0 Missile Alert Facility
- County Lines
- 89 U.S. Highway
- 15 Interstate Highway
- 200 State Highway
- Missile Complex Boundary
- Missile Squadron Boundary

0 20 40 Miles

Source: Montana Fish, Wildlife, & Parks, 2006.

Canada Lynx and Grizzly Bear Habitats within Minuteman III Deployment Area

Figure 3.9-1c

Table 3.9-2. Federally Threatened and Endangered Species and State Species of Concern near LFs and MAFs

Missile Site(s)	Threatened Species
10th Missile Squadron	
A-1, A-4, A-5, A-6, A-7, A-8, A-9, A-10 B-6, B-7, B-8 C-1, C-7, C-8, C-9, C-10, C-11	Canada lynx (*Lynx canadensis*)
C-6, C-7, C-8, C-9,	Mountain plover (*Charadrius montanus*)
12th Missile Squadron	
F-7, F-8, F-9, F-10, F-11 G-6, G-7, G-8 I-2, I-3, I-4, I-5	Canada lynx (*Lynx canadensis*)
F-2, F-7, F-8, F-9, F-10, F-11 G-7, G-8	Grizzly Bear (*Ursus arctos horribilis*)
F-1, F-2, F-3, F-4, F-6, F-8, F-10, F-11 H-9, H-10, H-11	Mountain plover (*Charadrius montanus*)
490th Missile Squadron	
K-11 L-1, L-2, L-4, L-5, L-6, L-7, L-8, L-9, L-10, L-11 M-6, M-7, M-9 N-5, N-6, N-7, N-8	Mountain plover (*Charadrius montanus*)
564th Missile Squadron	
P-4, P-5, P-6, P-8 S-35, S-36, S-37 T-0, T-41, T-42, T-43, T-44, T-45, T-46, T-47, T-48, T-49, T-50	Piping plover (*Charadrius melodus*)
T-47	Grizzly Bear (*Ursus arctos horribilis*)

Note: According to the Montana Natural Heritage Program species distribution maps, the bald eagle, ferruginous hawk, and loggerhead shrike have extensive ranges within the missile complex. Therefore, it is assumed that there is potential for incidental sightings of these species at all LFs and MAFs throughout the missile complex.

Source: U.S. Air Force, 2005b, 2005j; Montana Fish, Wildlife, & Parks, 2006.

3.10 CULTURAL RESOURCES

Cultural resources are defined as prehistoric or historic archaeological sites, buildings, structures, districts, artifacts, or other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. For ease of discussion, cultural resources have been divided into prehistoric and historic archaeological resources, historic buildings and structures, and traditional cultural resources (e.g., sacred or ceremonial sites).

For the purposes of this analysis, the term ROI is synonymous with the "area of potential effect" as defined under cultural resources legislation. The ROI for the analysis of cultural resources within this EA includes any structures and areas that may be affected by deactivation activities. This would entail the LFs and MAFs within the Missile Complex area.

Numerous laws and regulations require federal agencies to consider the effects of a proposed action on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the federal agency proposing the action, and prescribe the relationships among other

involved agencies (e.g., the State Historic Preservation Officer [SHPO], the Advisory Council on Historic Preservation [Advisory Council]). The primary law governing the treatment of cultural resources is the National Historic Preservation Act (NHPA), which requires a federal agency to consider potential impacts on historic properties from any proposed undertaking.

Only those cultural resources determined to be significant under cultural resources legislation are subject to protection or consideration by a federal agency. Significant cultural resources, whether they are prehistoric, historic, or traditional in nature, are referred to as "historic properties." Historic properties, under 36 CFR Part 800 are defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (National Register). For the purposes of these regulations, the term also includes artifacts, records, and remains that are related to, and located within, such properties. The term "eligible for inclusion in the National Register" includes properties formally determined as such by the Secretary of the Interior and all other properties that meet National Register listing criteria. Therefore, sites that meet the criteria, but are not yet evaluated, may be considered potentially eligible to the National Register and, as such, are afforded the same regulatory consideration as nominated historic properties. As a federal agency, the Air Force is responsible for identifying any historic properties associated with its property.

3.10.1 Prehistoric and Historic Archaeological Resources

Archaeological surveys conducted at Malmstrom AFB have included 126 of the 200 LF sites (LFs within each of the 4 MSs were included), and approximately 10 to 15 percent of the access roads to the Missile Complex sites. When the LFs and MAFs were constructed, they were excavated and backfilled with soil from the site and from off site. This construction procedure virtually eliminated the possibility that undiscovered archaeological resources exist at the LFs and MAFs. Malmstrom AFB has obtained Montana SHPO concurrence that there is practically no possibility of finding archaeological resources at the LF and MAF sites and no reason to survey the remaining 94 sites.

There is no requirement to survey the unsurveyed roads within the Missile Complex unless the roads are modified due to an Air Force action in such a manner that could impact undiscovered archaeological resources. Archaeological sites on or near the Malmstrom AFB deployment area are listed in Table 3.10-1. None of these sites has been determined to be eligible for the National Register; however, site 24PN75 (near LF R-22) and site 24TT271 (near a radio relay site, not an LF or MAF) are recommended as potentially eligible for listing to the National Register (U.S. Air Force, 2005c).

3.10.2 Historic Buildings and Structures

In 1959, the Air Force Ballistic Missile Committee selected Malmstrom AFB to host the first MM ICBM base. In 1961, construction began on the first MM missile launch facility, and the 341st Strategic Missile Wing (SMW) was activated as the Air Force's first MM ICBM wing. The installation and deployment of the MM missiles was accelerated when Russian Intermediate Range Ballistic Missiles were discovered in Cuba in October 1962. On October 26, 1962, the first MM LF (A-6) was placed on strategic alert during the height of the Cuban Missile crisis. The remaining nine missiles of the Alpha Flight became operational shortly thereafter, with the last missile (and the entire flight) going on strategic alert on November 10, 1962. The MM missiles at Malmstrom AFB are credited with helping to peacefully end the Cuban Missile Crisis standoff by increasing America's strategic military advantage over the Soviet Union (U.S. Air Force, 2005c).

Table 3.10-1. Archaeological Resources Near LFs and MAFs

Missile Squadron	Site	Location	Site Type	Time Period	Ownership	Description
10th	24CA614	On Belt Butte south and east of Radio Relay Site RRL02	Lithic Scatter	Unknown Aboriginal	Site is adjacent to Air Force property or ROW	Aboriginal lithic scatter of 2 tools and 20 flakes.
12th	24CA276	Along road near Square Butte, west of Great Falls	Stone Circles	Unknown Aboriginal	Site is along an access road	2 to 4 stone circles
12th	24CA277	Along section line road near Benton Lake	Lithic Scatter	Unknown Aboriginal	Site is along an access road	Primary and secondary flakes of yellowish-gray siltstone
12th	24CH667	Along a section line road near Glacial Lake Great Falls	Stone Circles	Unknown Aboriginal	Site is along an access road	Stone circle consisting of 46 stones
12th	24TT179	Along a county road 1/4 mile north of a coulee leading to a drainage from Pishkun Reservoir	Stone Circles	Unknown Aboriginal	Site is along an access road	Possible stone circle approx. 5 meter in diameter
12th	24TT271	500 meters northeast of Radio Relay Site RRL08 along north side of access road	Stone Circles	Unknown Aboriginal	Site is adjacent to Air Force property or ROW	Double coursed stone circle of 79 stones. Possible religious or ceremonial location.
490th	24FR668	N-6 near access road	Paleontological Locality	Cretaceous or Jurassic	Site is partially on Air Force ROW or easement	Fossilized marine invertebrates
490th	24WL97	K-4 access road	Paleontological Locality	Cretaceous	Site is adjacent to Air Force property or ROW	Fossilized marine gastropods in sandstone matrix
490th	24FR669	N-6 crosses access road	Railroad Grade	Historic	Site is partially on Air Force ROW or easement	Abandoned Chicago, Milwaukee, St. Paul and Pacific Railroad Spur Line
490th	24WL96	K-4 north of site	Homestead	Historic Euro-American	Site is adjacent to Air Force property or ROW	Remains include glass, stoneware, china, nails, metal fragments and brick fragments
490th	24FR649	Along a county road in Fergus County on a bench slope below the top of a piedmont	Lithic Scatter	Unknown Aboriginal	Site is along an access road	Primary and secondary flakes with retouch. Tan/gray/green chert
564th	24PN75	R-22 west of site	Stone Circles	Unknown Aboriginal	Site is adjacent to Air Force property or ROW	21 stone circles and at least 17 rock cairns

LF = Launch Facility
MAF = Missile Alert Facility
ROW = right of way

Source: U.S. Air Force 2005c.

The 10th MS received its final flight of missiles on February 28, 1963, and two months later, the 12th MS became 100 percent combat ready. In July 1963, the 490th MS became fully operational, giving the 341st SMW responsibility for 150 LFs. Construction of the final 50 LFs began in 1965 and the 564th MS was operational by April 1966. By 1967 the current configuration of 200 LF and 20 MAFs was completed (U.S. Air Force, 2005c).

An intensive survey, inventory, and evaluation of the Malmstrom AFB Cold War resources was conducted in 1996 (including Missile Complex facilities). The Base and Missile Cold War Survey (U.S. Air Force, 1997) identified a number of buildings and facilities as potentially eligible for listing in the National Register due to their Cold War significance. Four MAFs (A-1, F-1, M-1, and P-0) and four LFs (A-6, F-8, M-5, and P-4), one each in each MS, were evaluated. Only MAF A-1 and LF A-6 were recommended for nomination to the National Register based on the critical role that they played in the Cuban Missile Crisis and based on the fact that they were the first MM MAF and one of the first MM LFs, respectively (U.S. Air Force, 1997). Subsequently, they were formally determined by the Montana SHPO to be eligible for the National Register (U.S. Air Force, 2005c). The Air Force and the Montana SHPO have entered into a Programmatic Agreement (PA) regarding the exterior maintenance of MAF A-1 and LF A-6 (U.S. Air Force, 2002d). Because of extensive past interior renovation, the interior of the aboveground support facilities at MAF A-1 do not require recordation or further consultation under Section 106 of the NHPA. A copy of the PA is provided in Appendix B.

The Air Force has consulted with the Montana SHPO and the Advisory Council pursuant to 36 CFR Part 800 regulations implementing Section 106 of the NHPA, (16 U.S.C. 470f) regarding the Air Force determination that the MM III missile system, 564th MS, is eligible for inclusion on the National Register under Criterion A for its association with significant U.S. military missile activities and paradigms during the period from 1962 to 1989 and Criterion C for its technological design and function. The Montana SHPO has concurred with the Air Force determination of eligibility. The Air Force and Montana SHPO have agreed that the artwork located within the 564th MS MAFs and LFs is of historic importance and should be preserved through pictures and other appropriate documentation.

A Memorandum of Agreement (MOA) between the Air Force, Montana SHPO, and Advisory Council has been developed to document the accepted mitigations. The Draft MOA is provided in Appendix C; the MOA is anticipated to be finalized within the next 45 days.

3.10.3 Traditional Cultural Resources

Traditional resources are associated with cultural practices and beliefs of a living community that are rooted in its history and are important in maintaining the continuing cultural identity of the community. They may include archaeological resources, locations of historic events, sacred areas, sources of raw materials, topographic features, traditional hunting or gathering areas, and native plants or animals. There are no known traditional cultural resources in the ROI. Because of site disturbance that occurred during their construction, it is unlikely that any culturally sensitive areas that would be subject to the American Indian Religious Freedom Act or the Native American Graves Protection and Repatriation Act remain at the LF and MAF sites.

3.11 ENVIRONMENTAL JUSTICE

EO 12898, Environmental Justice, was issued by the President on February 11, 1994. Objectives of the EO, as it pertains to this EA, include development of federal agency implementation strategies and identification of low-income and minority populations potentially affected because of proposed federal actions. Accompanying EO 12898 was a Presidential Transmittal Memorandum referencing existing

Federal statutes and regulations to be used in conjunction with EO 12898. One of the items in this memorandum was the use of the policies and procedures of NEPA. Specifically, the memorandum indicates that,

> *"Each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of federal actions, including effects on minority communities and low-income communities, when such analysis is required by the NEPA 42 U.S.C. section 4321 et. seq."*

In addition to environmental justice issues are concerns pursuant to EO 13045, Protection of Children from Environmental Health Risks and Safety Risks. This EO directs federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children.

Although an environmental justice analysis is not mandated by NEPA, DOD has directed that NEPA will be used as the primary mechanism to implement the provision of the EO.

The Community of Comparison (COC), or ROI, for the environmental justice analysis is defined as the nine counties within the Missile Complex area (Cascade, Chouteau, Fergus, Judith Basin, Lewis and Clark, Pondera, Teton, Toole, and Wheatland counties) where deactivation activities may occur.

3.11.1 Demographic Analysis

Although EO 12898 provides no guidelines for determination of concentrations of low-income or minority populations, the demographic analysis provides information on the approximate locations of minority and low-income populations in the area potentially affected by the proposed federal action. Potential environmental impacts from the Proposed Action and No-Action Alternative would occur within the 9-county area where the MSs are located.

Demographic information from the U.S. Bureau of the Census was used to extract data on minority and low-income populations within Montana and each of the nine counties in the Missile Complex area. The census reports both ethnicity and household income status. Minority populations included in the census are identified as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and other Pacific Islander, or some other race. Information on minority populations based on the 2000 Census of Population and Housing is presented in Table 3.11-1. Only Chouteau and Pondera counties, with 16.0 percent and 16.3 percent minority populations, respectively, have a minority population percentage higher than the state average of 9.4 percent. In both counties, persons identified as American Indian and Alaska Native account for most of the minority population at 14.6 percent and 14.4 percent of the population of Chouteau and Pondera counties, respectively. A portion of the Rocky Boy's Indian Reservation is situated within Chouteau County and a portion of the Blackfeet Indian Reservation is situated within Pondera County. No LFs or MAFs are situated within the Blackfeet or Rocky Boy's Indian reservations.

U.S. Census Bureau poverty status is used in this EA to define low-income status. Poverty status is reported for families with income below poverty level ($17,184 for a family of four in 1999, as reported in the Census of Population and Housing). The most recent data available on poverty status are from 1999, as reported in the 2000 Census of Population and Housing. Of the 9 counties wholly or partially within the Missile Complex area, Chouteau, Fergus, Judith Basin, Pondera, Teton, and Wheatland counties have a percent low-income population higher than the state average of 14.6 percent (see Table 3.11-1 and Figure 3.11-1).

Table 3.11-1. Percent Minority and Low-Income Populations in Missile Complex Counties

	Population	Percent Minority	Disproportionately High	Percent of Population Below Poverty Level	Disproportionately High
United States		16.08		13.51	
Montana	**902,195**	**9.4**		**14.6**	
Cascade	80,357	9.3	No	13.5	No
Chouteau	5,970	16.0	Yes	20.5	Yes
Fergus	11,893	2.9	No	15.4	Yes
Judith Basin	2,329	1.4	No	21.1	Yes
Lewis and Clark	55,716	4.8	No	10.9	No
Pondera	6,424	16.3	Yes	18.8	Yes
Teton	6,445	3.7	No	16.6	Yes
Toole	5,267	6.1	No	12.9	No
Wheatland	2,259	3.0	No	20.4	Yes

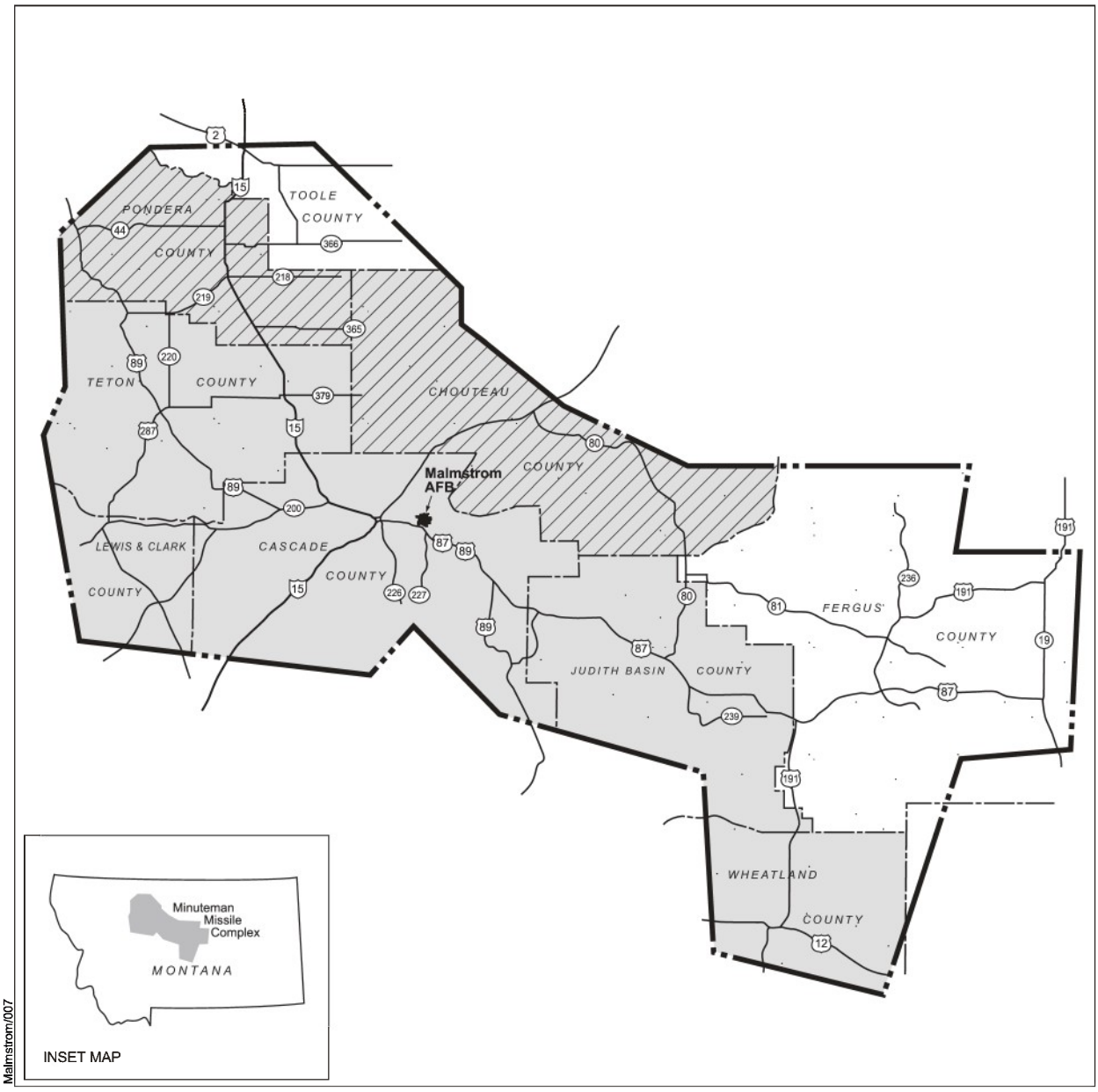
Source: U.S. Census Bureau, 2000a-k.

Youth population, for consideration of EO 13045, is defined as persons under the age of 18. Based on the 2000 Census of Population and Housing, 7 of the 9-county area have a percentage of persons under 18 years of age that is higher than the state average of 25.5 percent (Table 3.11-2).

Table 3.11-2. Percent Persons Under 18 Years of Age in Missile Complex Counties

	Percent Under Age 18	Disproportionately High
United States	**25.7**	
Montana	**25.5**	
Cascade	26.0	Yes
Chouteau	28.8	Yes
Fergus	24.5	No
Judith Basin	26.8	Yes
Lewis and Clark	25.6	Yes
Pondera	29.6	Yes
Teton	27.3	Yes
Toole	25.5	No
Wheatland	26.8	Yes

Source: U.S. Census Bureau, 2000a- k.



EXPLANATION

- County Lines
- U.S. Highway
- Interstate Highway
- State Highway

- Counties with disproportionate high-minority and/or low-income populations
- Counties with disproportionate high low-income populations
- Counties with disproportionate high percentage of children under 18 years of age

0 13.5 27 Miles

Source: U.S. Census Bureau, 2000 a-k.

Minority/Low Income Counties within Minuteman III Deployment Area

Figure 3.11-1

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter presents the results of the analysis of potential environmental effects from deactivation of 50 LFs and 5 MAFs at Malmstrom AFB. The Proposed Action and No-Action Alternative are analyzed. Changes to the natural and human environments that may result from the Proposed Action and No-Action Alternative were evaluated relative to the existing environment as described in Chapter 3.0. The potential for significant environmental consequences was evaluated utilizing the context and intensity considerations as defined in CEQ regulations for implementing the procedural provisions of NEPA (40 CFR Part 1508.27).

4.2 SOCIOECONOMICS

The potential effects of the Proposed Action and No-Action Alternative on the population and employment within the ROI are presented in this section.

4.2.1 Proposed Action

Most of the personnel affected by the inactivation of a missile squadron at Malmstrom AFB would be the officers, enlisted personnel, and civilians associated with the inactivated squadron. Other personnel (i.e., personnel associated with other MSs) would not be directly affected. Approximately 500 positions at Malmstrom AFB would no longer be authorized after the fourth quarter of FY 2008.

It is assumed that most of these personnel and their families affected by inactivation of any one of the four MSs live either on or in the vicinity of Malmstrom AFB (i.e., in the Great Falls area in Cascade County), rather than being relatively spread out across the vast 9-county missile complex area. Therefore, for analysis purposes, direct population and employment impacts are compared to the population of Cascade County.

4.2.1.1 Population.

Almost all the approximately 500 positions that would be eliminated by the inactivation of any of the four MSs at Malmstrom AFB would be military personnel. Based on a base average of 1.1 family members for each active duty military personnel, approximately 1,050 people would be directly affected by the Proposed Action. Because almost all of the positions that would be eliminated are assigned military personnel, they would likely be reassigned elsewhere. Assuming all the military personnel are transferred out of the ROI, the overall population of the Cascade County (population 80,357 in 2000) may be reduced by approximately 1.3 percent. This would be a 0.6 percent reduction in the population of the 9-county area of the 341st SW (population 176,660 in 2000). This population decrease would not be expected to result in any significant impacts to the natural or physical environment.

4.2.1.2 Employment.

The loss of approximately 500 positions would reduce Malmstrom AFB employment (currently 4,572) by approximately 11 percent. This would represent a decrease in employment of approximately 1.3 percent in Cascade County (employment 38,386 in 2000) and 0.5 percent in the 9-county ROI (employment 87,099 in 2000). It is expected that the military positions and personnel would be relocated outside the

ROI. Therefore, the direct loss of these positions would not result in an equivalent increase in unemployment in the ROI. The loss of these positions may result in an indirect loss of jobs, and a minimal increase to the ROI's unemployment rate could be expected. It is estimated that each position on Malmstrom AFB generates approximately 0.3 indirect jobs in the local community. Based on this rate, approximately 150 non-military jobs in the area could be lost. This would represent approximately 0.4 percent of the 2000 Cascade County employment level and 0.2 percent of the 9-county ROI employment level. Based on comparison to historic employment fluctuations in the ROI (see Section 3.2), the potential decrease in employment is not considered significant, and no significant impacts to the natural or physical environment would be expected.

4.2.2 No-Action Alternative

Under the No-Action Alternative, deactivation activities would not be implemented. Local and regional population and employment are not expected to change as a result of the No-Action Alternative. No significant impacts are anticipated under the No-Action Alternative.

Mitigation Measures

Because no significant impacts to socioeconomics are expected to occur, no mitigation measures would be required.

4.3 TRANSPORTATION

The effects of the Proposed Action and No-Action Alternative on transportation systems (roadways) within the ROI are presented in this section.

4.3.1 Proposed Action

The Proposed Action would result in a minimal increase in traffic during deactivation activities. There would be a temporary increase during the 2-year deactivation process. Missile deactivation activities would result in traffic associated with transport of missile components and salvaged equipment. Missile payloads would be transported to Malmstrom AFB, and boosters would be transported to Hill AFB during FY 2007. Subsequent removal and transport of equipment from the facilities would occur during FY 2008. The minimal traffic generated by the Proposed Action would not substantially increase traffic or affect the existing LOS on any road.

Transport of missile system components is a routine activity that has been conducted safely at Malmstrom AFB. The DARs are designed to allow safe access to and from the LFs by the specialized vehicles required for missile maintenance. No increase in hazards from incompatible road use would occur.

Upon completion of deactivation, traffic in the vicinity of the deactivated MS would decrease. Routine traffic from personnel and equipment traveling to and from the MAFs and LFs would cease. Only traffic from periodic security patrols to the deactivated facilities would continue. There would be no change from current traffic conditions for roads servicing the remaining three MSs.

Because the Proposed Action would not substantially increase traffic or affect the existing levels of service on any roads, and no increase in hazards from incompatible road use would occur, no significant impacts to transportation are expected.

A summary of potential financial effects as a result of deactivation is provided in the following sections for each MS.

10th Missile Squadron. Should inactivation of the 10th MS occur, portions of Cascade, Fergus, and Judith Basin counties would be affected. The 226 miles of DAR within the 10th MS area would no longer be maintained by contractors funded by the FHA. Cascade, Fergus, and Judith Basin counties would take over maintenance of the former DARs within their boundaries. Because funding for maintenance of the DARs is provided directly to contractors, there would be no direct loss of funding to the counties; however, by taking responsibility for maintenance of these roads, the counties would likely incur an increase in expenditures. The average annual cost of maintaining the DARs associated with the 10th MS over the 10-year period from 1996 to 2005 was $698,726. DARs associated with the remaining MSs would continue to be maintained using FHA funding.

The counties in the 10th MS area would experience a direct loss of funding for snow removal from the Air Force. Based on FY 2005 data, approximately $53,098 in snow removal costs would be lost annually. Snow removal funding for all other counties would not be affected.

The total miles of DAR that would be affected in each county and the approximate average annual funding associated with those DARs, and the estimated funding for snow removal associated with the 10th MS that would be lost is shown in Table 4.3-1, and discussed by county below.

Table 4.3-1. 10th Missile Squadron Defense Access Road Summary

County	10th MS DAR Miles (percent of total DAR in County)	10th MS DAR Percent of Public Roads in County	Funding for 10th MS DARs (based on percent of 10th MS DAR in County)	Snow Removal Funding (based on percent of 10th MS DAR in County)
Cascade	23 (24)	1	$51,665	$8,047
Fergus	112 (53)	6	$336,778	$25,837
Judith Basin	91 (83)	9	$310,283	$19,214
Total	**226 (30)**	**NA**	**$698,726**	**$53,098**

DAR = Defense Access Road
MS = Missile Squadron
NA = not applicable

Cascade County. Inactivation of the 10th MS would affect approximately 24 percent of the DAR in Cascade County. DAR in the county associated with the 12th MS would not be affected. The 23 miles of DAR that would be affected represent approximately 1 percent of the total mileage of public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $51,665.

Cascade County would lose an estimated $8,047 in snow removal funding annually. The county would continue to receive Air Force funding for snow removal for the 12th MS facilities located in the county.

Fergus County. Inactivation of the 10th MS would affect 53 percent of the DAR in Fergus County. DAR in the county associated with the 490th MS would not be affected. The 112 miles of DAR that would be affected represent approximately 6 percent of the total public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $336,778.

Fergus County would lose an estimated $25,837 in snow removal funding annually. The county would continue to receive Air Force funding for snow removal for the 490th MS facilities located in the county.

Judith Basin County. Inactivation of the 10th MS would affect 83 percent of the DAR in Judith Basin County. DAR in the county associated with the 490th MS would not be affected. The 91 miles of DAR that would be affected represent approximately 9 percent of the total public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $310,283.

Judith Basin County would lose an estimated $19,214 in snow removal funding annually. The county would continue to receive Air Force funding for snow removal for the 490th MS facilities located in the county.

12th Missile Squadron. Should inactivation of the 12th MS occur, portions of Cascade, Chouteau, Lewis and Clark, and Teton counties would be affected. The 189 miles of DAR within the 12th MS area would no longer be maintained by contractors funded by the FHA. Cascade, Chouteau, Lewis and Clark, and Teton counties would take over maintenance of the former DARs within their boundaries. Because funding for maintenance of the DARs is provided directly to contractors, there would be no direct loss of funding to the counties; however, by taking responsibility for maintenance of these roads the counties would likely incur an increase in expenditures. The average total annual cost of maintaining the DAR associated with the 12th MS over the 10-year period from 1996 to 2005 was $538,961. DARs associated with the remaining MSs would continue to be maintained using FHA funding.

The counties in the 12th MS area would experience a direct loss of funding for snow removal from the Air Force. Based on FY 2005 data, approximately $58,873 in snow removal costs would be lost annually. Snow removal funding for all other counties would not be affected.

The total miles of DAR that would be affected in each county and the approximate average annual funding associated with those DARs, and the estimated funding for snow removal associated with 12th MS that would be lost is shown in Table 4.3-2, and discussed by county below.

Table 4.3-2. 12th Missile Squadron Defense Access Road Summary

County	12th MS DAR Miles (percent of total DAR in County)	12th MS DAR Percent of Public Roads in County	Funding for 12th MS DARs (based on percent of 12th MS DAR in County)	Snow Removal Funding (based on percent of 12th MS DAR in County)
Cascade	74 (76)	3	$303,305	$25,483
Chouteau	28 (88)	1	$127,955	$6,248
Lewis and Clark	19 (100)	1	$30,792	$12,160
Teton	63 (64)	4	$76,909	$14,982
Total	**184 (25)**	**NA**	**$538,961**	**$58,873**

DAR = Defense Access Road
MS = Missile Squadron
NA = not applicable

Cascade County. Inactivation of the 12th MS would affect approximately 76 percent of the DAR in Cascade County. DAR in the county associated with the 10th MS would not be affected. The 74 miles of DAR that would be affected represent approximately 3 percent of the total mileage of public roads in the

county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $303,305.

Cascade County would lose an estimated $25,483 in snow removal funding annually. The county would continue to receive Air Force funding for snow removal for the 10th MS facilities located in the county.

Chouteau County. Inactivation of the 12th MS would affect approximately 88 percent of the DAR in Chouteau County. DAR in the county associated with the 564th MS would not be affected. The 28 miles of DAR that would be affected represent approximately 1 percent of the total mileage of public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $127,955.

Chouteau County would lose an estimated $6,248 in snow removal funding annually. The county would continue to receive Air Force funding for snow removal for the 564th MS facilities located in the county.

Lewis and Clark County. Inactivation of the 12th MS would affect 100 percent of the DAR in Lewis and Clark County. The 19 miles of DAR that would be affected represent approximately 1 percent of the total mileage of public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $30,792.

Because all Missile Complex facilities in Lewis and Clark County are part of the 12th MS, the county would lose all Air Force funding for snow removal activities. This amount was $12,160 in FY 2005.

Teton County. Inactivation of the 12th MS would affect approximately 64 percent of the DAR in Teton County. DAR in the county associated with the 564th MS would not be affected. The 63 miles of DAR that would be affected represent approximately 4 percent of the total mileage of public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $76,909.

Teton County would lose an estimated $14,982 in snow removal funding. The county would continue to receive Air Force funding for snow removal for the 564th MS facilities located in the county.

490th Missile Squadron. Should inactivation of the 490th MS occur, portions of Fergus, Judith Basin, and Wheatland counties would be affected. The 172 miles of DAR within the 490th MS area would no longer be maintained by contractors funded by the FHA. Fergus, Judith Basin, and Wheatland counties would take over maintenance of the former DARs within their boundaries. Because funding for maintenance of the DARs is provided directly to contractors, there would be no direct loss of funding to the counties; however, by taking responsibility for maintenance of these roads the counties would likely incur an increase in expenditures. The average total annual cost of maintaining the DARs associated with the 490th MS over the 10-year period from 1996 to 2005 was $465,912. DARs associated with the remaining MSs would continue to be maintained using FHA funding.

The counties in the 490th MS area would experience a direct loss of funding for snow removal from the Air Force. Based on FY 2005 data, approximately $42,959 in snow removal costs would be lost. Snow removal funding for all other counties would not be affected.

The total miles of DAR that would be affected in each county and the approximate average annual funding associated with those DARs, and the estimated funding for snow removal associated with 490th MS that would be lost is shown in Table 4.3-3, and discussed by county below.

Table 4.3-3. 490th Missile Squadron Defense Access Road Summary

County	490th MS DAR Miles (percent of total DAR in County)	490th MS DAR Percent of Public Roads in County	Funding for 490th MS DARs (based on percent of 490th MS DAR in County)	Snow Removal Funding (based on percent of 490th MS DAR in County)
Fergus	100 (47)	5	$262,388	$22,913
Judith Basin	18 (17)	2	$32,520	$3,936
Wheatland	54 (100)	10	$171,004	$16,110
Total	**172 (23)**	**NA**	**$465,912**	**$42,959**

DAR = Defense Access Road
MS = Missile Squadron
NA = not applicable

Fergus County. Inactivation of the 490th MS would affect approximately 47 percent of the DAR in Fergus County. DAR in the county associated with the 10th MS would not be affected. The 100 miles of DAR that would be affected represent approximately 5 percent of the total mileage of public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $262,388.

Fergus County would lose an estimated $22,913 in snow removal funding annually. The county would continue to receive Air Force funding for snow removal for the 10th MS facilities located in the county.

Judith Basin County. Inactivation of the 490th MS would affect approximately 17 percent of the DAR in Judith Basin County. DAR in the county associated with the 10th MS would not be affected. The 18 miles of DAR that would be affected represent approximately 2 percent of the total mileage of public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $32,520.

Judith Basin County would lose an estimated $3,936 in snow removal funding annually. The county would continue to receive Air Force funding for snow removal for the 10th MS facilities located in the county.

Wheatland County. Inactivation of the 490th MS would affect 100 percent of the DAR in Wheatland County. The 54 miles of DAR that would be affected represent approximately 10 percent of the total mileage of public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $171,004.

Because all Missile Complex facilities in Wheatland County are part of the 490th MS, the county would lose all Air Force funding for snow removal activities. This amount was $16,110 in FY 2005.

564th Missile Squadron. Should inactivation of the 564th MS occur, the 167 miles of DAR within the 564th MS area would no longer be maintained by contractors funded by the FHA. Chouteau, Pondera, Teton, and Toole counties would take over maintenance of the former DARs within their boundaries. Because funding for maintenance of the DARs is provided directly to contractors, there would be no direct loss of funding to the counties; however, by taking responsibility for maintenance of these roads the counties would likely incur an increase in expenditures. The average total annual cost of maintaining the DAR associated with the 564th MS over the 10-year period from 1996 to 2005 was $315,114. DARs associated with the remaining MSs would continue to be maintained using FHA funding.

The counties in the 564th MS area would experience a direct loss of funding for snow removal from the Air Force. Based on FY 2005 data, approximately $48,840 in snow removal costs would be lost annually. Snow removal funding for all other counties would not be affected.

The total miles of DAR that would be affected in each county and the approximate average annual funding associated with those DARs, and the estimated funding for snow removal associated with the 564th MS that would be lost is shown in Table 4.3-4, and discussed by county below.

Table 4.3-4. 564th Missile Squadron Defense Access Road Summary

County	564th MS DAR Miles (percent of total DAR in County)	564th MS DAR Percent of Public Roads in County	Funding for 564th MS DARs (based on percent of 564th MS DAR in County)	Snow Removal Funding (based on percent of 564th MS DAR in County)
Chouteau	4 (12)	0.2	$4,320	$852
Pondera	119 (100)	10	$237,287	$30,570
Teton	36 (36)	2	$57,197	$8,428
Toole	8 (100)	0.5	$16,310	$8,990
Total	**167 (22)**	**NA**	**$315,114**	**$48,840**

DAR = Defense Access Road
MS = Missile Squadron
NA = not applicable

Chouteau County. The Proposed Action would affect approximately 12 percent of the DAR in Chouteau County. DAR in the county associated with the 12th MS would not be affected. The 4 miles of DAR that would be affected represent approximately 0.2 percent of the total mileage of public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $4,320.

Chouteau County would lose an estimated $852 in snow removal funding annually. The county would continue to receive Air Force funding for snow removal for the 12th MS facilities located in the county.

Pondera County. The Proposed Action would affect 100 percent of the DAR in Pondera County. The 119 miles of DAR that would be affected represent approximately 10 percent of the total public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $237,287.

Because all Missile Complex facilities in Pondera County are part of the 564th MS, the county would lose all Air Force funding for snow removal activities. This amount was $30,570 in FY 2005.

Teton County. The Proposed Action would affect 36 percent of the DAR in Teton County. DAR in the county associated with the 12th MS would not be affected. The 36 miles of DAR that would be affected represent approximately 2 percent of the total public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $57,197.

Teton County would lose an estimated $8,428 in snow removal funding annually. The county would continue to receive Air Force funding for snow removal for the 12th MS facilities located in the county.

Toole County. Although 100 percent of the DAR in Toole County would be affected by the Proposed Action, the 8 miles of DAR in the county represents only 0.5 percent of the total mileage of public roads in the county. The average annual cost of maintaining these roads over the 10-year period from 1996 to 2005 was $16,310.

Because all Missile Complex facilities in Toole County are part of the 564th MS, the county would lose all Air Force funding for snow removal activities. This amount was $8,990 in FY 2005.

4.3.2 No-Action Alternative

Under the No-Action Alternative, deactivation activities would not be implemented; therefore, no change in traffic conditions would be expected. FHA funding for DAR maintenance and Air Force funding to counties for snow removal would continue. No significant impacts to transportation would be expected.

Mitigation Measures

Because no significant impacts to transportation have been identified, no mitigation measures would be required.

4.4 UTILITIES

The potential effects of the Proposed Action and No-Action Alternative on utility demands within the ROI are presented in this section. Under 30% caretaker status, utility service to the MAFs and LFs would be eliminated. However, the 341st SW may elect to maintain power to LFs and MAFs in order to operate sump pumps and dewatering wells. To support these systems, electrical usage at the sites would be approximately 10 percent of current usage.

4.4.1 Proposed Action

Electricity. Deactivation of 50 LFs and 5 MAFs would reduce electrical usage within the deactivated missile squadron area. During caretaker status, electricity would continue to be supplied to the LFs and MAFs in order to power sump pumps and cathodic protection systems for USTs. Based on the reduced electrical requirements at the LFs and MAFs, it is estimated that electrical usage under caretaker status may be approximately 10 percent of current usage (Table 4.4-1). Electrical usage by facilities in the other three MSs would not change from current conditions. Because there would be a decrease in electrical

Table 4.4-1. Estimated Missile Squadron Annual Electricity Usage Post Deactivation (MWH)

	Missile Squadron			
	10th MS	12th MS	490th MS	564th MS
Fergus Electric Cooperative	395	0	495	0
Marias River Electric Cooperative	0	0	0	165
NorthWestern Energy	380	475	265	500
Sun River Electric Cooperative	0	265	0	420
Total by Missile Squadron	775	740	760	1,085

Estimated electrical demand represents annual demand for that MS if it were deactivated.
MS = Missile Squadron
MWH = megawatt hour

demand, no significant environmental impacts would be expected. The effect on electrical power demand from inactivation of each MS, based on calendar year (CY) 2005 electrical usage, is discussed below.

10th Missile Squadron. Inactivation of the 10th MS would reduce electrical demand from the Fergus Electric Cooperative and NorthWestern Energy. Electrical demand by other MSs from these companies would not change. Overall Missile Complex electrical demand from Fergus Electric Cooperative would be reduced by approximately 40 percent and from NorthWestern Energy by approximately 21 percent. Because Sun River and Marias River electric cooperatives do not provide power to the 10th MS, there would be no change in electrical demand from these providers.

The Fergus Electric Cooperative provides electrical service to its customers in Cascade, Chouteau, Fergus, Golden Valley, Judith Basin, Meagher, Musselshell, Petroleum, Stillwater, Sweetgrass, Treasure, Wheatland, and Yellowstone counties (service to Fergus and Judith Basin counties for 10th MS). Although the Co-op would experience an approximate 40 percent reduction (3,565 megawatt hours [MWHs] annually) in electrical demand from the Air Force as a result of inactivating the 10th MS, no significant impact to the Co-op or its customers is anticipated, as they are a mid-size electrical provider serving 13 Montana counties.

NorthWestern Energy is one of the largest electrical service providers in the northwestern portion of the United States, providing over 8 million MWHs of electricity to its customers in the state of Montana in 2004. An approximate 21 percent reduction (3,408 MWHs annually) in electrical demand from the Air Force as a result of inactivating the 10th MS would not result in a significant impact to NorthWestern Energy (e.g., 0.0004 percent reduction).

12th Missile Squadron. Inactivation of the 12th MS would reduce electrical demand from the Sun River Electric Cooperative and NorthWestern Energy. Electrical demand by other MSs from these companies would not change. Overall Missile Complex electrical demand from Sun River Electric Cooperative would be reduced by approximately 35 percent and from NorthWestern Energy by approximately 26 percent. Because Fergus and Marias River electric cooperatives do not provide power to the 12th MS, there would be no change in electrical demand from these providers.

The Sun River Electric Cooperative provides electrical service to its customers in Cascade, Chouteau, Judith Basin, Lewis & Clark, Liberty, Pondera, Teton, and Toole counties (service to Cascade, Lewis & Clark, and Teton counties for 12th MS). Although the Co-op would experience an approximate 35 percent reduction (2,396 MHWs annually) in electrical demand from the Air Force as a result of deactivating the 12th MS, no significant impact to the Co-op or its customers is anticipated, as they are a mid-size electrical provider serving 8 Montana counties.

NorthWestern Energy provided over 8 million MWHs of electricity to its customers in the State of Montana in 2004. An approximate 26 percent reduction (4,267 MWHs annually) in electrical demand from the Air Force as a result of inactivating the 12th MS would not result in a significant impact to NorthWestern Energy (e.g., 0.0005 percent reduction).

490th Missile Squadron. Inactivation of the 490th MS would reduce electrical demand from the Fergus Electric Cooperative and NorthWestern Energy. Electrical demand by other MSs from these companies would not change. Overall Missile Complex electrical demand from Fergus Electric Cooperative would be reduced by approximately 50 percent and from NorthWestern Energy by approximately 15 percent. Because Sun River and Marias River electric cooperatives do not provide power to the 490th MS, there would be no change in electrical demand from these providers.

The Fergus Electric Cooperative provides electrical service to its customers in 13 Montana counties (service to Fergus, Judith Basin, and Wheatland counties for 490th MS). Although the Co-op would experience an approximate 50 percent reduction (4,459 MHWs annually) in electrical demand from the Air Force as a result of inactivating the 490th MS, no significant impact to the Co-op or its customers is anticipated, as they are a mid-size electrical provider serving 13 counties.

NorthWestern Energy provided over 8 million MWHs of electricity to the State of Montana in 2004. An approximate 15 percent reduction (2,380 MWHs annually) in electrical demand from the Air Force as a result of inactivating the 490th MS would not result in a significant impact to NorthWestern Energy (e.g., 0.0003 percent reduction).

564th Missile Squadron. Inactivation of the 564th MS would reduce electrical demand from the Marias River and Sun River electric cooperatives and NorthWestern Energy. Electrical demand by other MSs from these companies would not change (Marias River Electric Cooperative only supplies power to the 564th MS). Overall Missile Complex electrical demand from Marias River Electric Cooperative would be reduced by approximately 90 percent, from Sun River Electric Cooperative by approximately 55 percent, and from NorthWestern Energy by approximately 28 percent. Because Fergus Electric Cooperative does not provide power to the 564th MS, there would be no change in electrical demand from this provider.

The Marias River Electric Cooperative is a non-profit utility organized for the purpose of providing electrical service to its customers in and around Toole County; therefore, although the Co-op would experience an approximate 90 percent reduction (1,488 MHWs annually) in electrical demand from the Air Force as a result of inactivating the 564th MS, no significant impact to the Co-op or its customers is anticipated, as they are a non-profit corporation.

The Sun River Electric Cooperative provides electrical service to its customers in 8 Montana counties (service to Chouteau, Pondera, Teton, and Toole counties for 564th MS). Although the Co-op would experience an approximate 55 percent reduction (3,764 MHWs annually) in electrical demand from the Air Force as a result of inactivating the 564th MS, no significant impact to the Co-op or its customers is anticipated, as they are a mid-size electrical provider serving 8 Montana counties.

NorthWestern Energy provided over 8 million MWHs of electricity to the State of Montana in 2004. An approximate 28 percent reduction (4,500 MWHs annually) in electrical demand from the Air Force as a result of inactivating the 564th MS would not result in a significant impact to NorthWestern Energy (e.g., 0.0006 percent reduction).

Solid Waste. Deactivation activities are not expected to produce significant amounts of solid waste. Components that would be removed from the deactivated LFs and MAFs would be salvaged for reuse, not for disposal. Upon completion of deactivation activities, solid waste would no longer be generated at the MAFs, resulting in an overall reduction of solid waste generation at Malmstrom AFB. Solid waste generated by the other three MSs would not change. Because there would be a reduction in solid waste generation, no significant environmental impacts would be expected.

Water. Water would no longer be used at deactivated MAFs after deactivation activities are completed. Water use by the other three MSs would not change from current conditions. Annual water use reduction by MS, based on the average annual water use, is shown in Table 4.4-2. Because there would be a reduction in water usage, no significant environmental impacts would be expected.

10th Missile Squadron. Of the 5 MAFs in the 10th MS, all but one are supplied by on-site wells. Water to the remaining MAF, D-1, would no longer be provided to the Air Force by the City of Denton.

Table 4.4-2. Annual Reduction in Water Use by Missile Squadron

Missile Squadron	Annual Water Use Reduction under Deactivation (gallons)
10th MS	1,451,411
12th MS	1,354,158
490th MS	1,414,958
564th MS	1,492,616

MS = Missile Squadron

12th Missile Squadron. MAFs F-1 and G-1 have on-site water wells. Water would no longer be provided to the Air Force by the Tri-County Water District for MAFs H-1 and J-1, and by the Prairie Water Company to MAF I-1.

490th Missile Squadron. Of the 5 MAFs in the 490th MS, all but one are supplied by on-site wells. Water to the remaining MAF, O-1, would no longer be provided to the Air Force by the Roy Water and Sewer District.

564th Missile Squadron. None of the 564th MS MAFs has on-site water wells. Water would no longer be provided to the Air Force by the City of Conrad for MAF P-0, and by the Tiber County Water District to MAFs Q-0, R-0, and S-0, or pumped from Lake Francis for MAF T-0. Because there would be a reduction in water use, no significant environmental impacts would be expected.

Wastewater. Wastewater would no longer be generated at the 5 MAFs in the inactivated MS after inactivation. The sewage lagoons would be leveled and graded. The sewage lagoon contents, both liquid and sludge, would be sampled prior to the lagoons being leveled and graded. Disposal of liquids and sludge would be dependent on test results. Based on previous sampling of missile system sewage lagoons at Grand Forks AFB, the contents of the sewage lagoons would likely be suitable for land farming (i.e., pushing the berms into the lagoon depressions, mixing the soils and biosolids, and grading the area) (U.S. Air Force, 2000). If test results indicated that the liquid contents are sufficiently clean, discharge to surface drainages may occur (in accordance with any applicable permits). Wastewater treatment lagoon use at the other three MSs would not change from current conditions. Because there would be a reduction in wastewater generation and elimination of sewage lagoons, no significant environmental impacts would be expected.

4.4.2 No-Action Alternative

Under the No-Action Alternative, deactivation activities would not be implemented. There would be no changes from current utility usage. No impacts to utility systems would be expected.

Mitigation Measures

Because no significant impacts to utilities have been identified, no mitigation measures would be required.

4.5 LAND USE AND AESTHETICS

The potential effects of the Proposed Action and No-Action Alternative on land use and aesthetics within the ROI are presented in this section.

4.5.1 Proposed Action

Under the Proposed Action there would be no significant impact to land use. The inactivation of one of the four MSs would affect 50 LFs and 5 MAFs. The land use at these LFs and MAFs would change from active facilities to deactivated facilities. There would be no change in land use at the remaining 150 LFs and 15 MAFs in the other three MSs. Some equipment and items such as ASTs would be removed from the sites, and sewage lagoons would be leveled. However, buildings, security fencing, pavements, and other structures would not be removed. The facilities would be retained by the Air Force and would be maintained in caretaker status (they would continue to be secured military facilities). This change would not conflict with any land use plan, policy, or regulation and would not conflict with any adjacent land uses. The Air Force would retain both the property and adjacent restrictive easements, so there would be no change in existing land use or land use restrictions in these areas.

Visual resources would not change significantly. There would be no significant change in appearance of the 50 LFs after completion of deactivation. Because buildings would be retained and property would continue to be secured, the appearance of the 5 MAFs would not change significantly after completion of deactivation. Property would be maintained in caretaker status. The appearance of the buildings at the MAFs may eventually deteriorate from reduced maintenance. Reduced maintenance may also result in the LF and MAF sites becoming overgrown with vegetation. However, because the LF and MAF sites are considered to have a low visual sensitivity, this would not result in a substantial degradation of the visual character of the site. The potential minor change in appearance of the LFs and MAFs due to reduced maintenance would not be readily noticeable from a distance and would not change the existing visual character of the area; therefore, significant degradation of the existing visual character of the general area is not anticipated. There would be no change in appearance at the remaining 150 LFs and 15 MAFs in the other three MSs.

4.5.2 No-Action Alternative

Under the No-Action Alternative, deactivation activities would not be implemented. No change in land use or aesthetics would occur. Because none of the MSs would be deactivated, there would be no change in existing land use and aesthetics at the LFs and MAFs and adjacent areas. No significant impacts to land use and aesthetics would be expected.

Mitigation Measures

Because no significant impacts to land use and aesthetics have been identified, no mitigation measures would be required.

4.6 HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT

This section addresses the potential impacts of hazardous materials and hazardous waste management activities associated with implementation of deactivation activities. Hazardous materials management, hazardous waste management, storage tanks, asbestos, lead-based paint, PCBs, and ordnance are discussed in this section.

4.6.1 Hazardous Materials Management

4.6.1.1 Proposed Action.

Hazardous materials utilized during deactivation activities would be similar in types and quantities to those used during routine MM III removal activities. Quantities of hazardous materials likely to be removed from LFs and MAFs during deactivation alternatives are presented in Table 4.6-1. Hazardous materials utilized at the LFs and MAFs would be reintroduced into the Malmstrom AFB hazardous material management system for use elsewhere or recycled (e.g., ethylene glycol). Hazardous materials that cannot be reused by the Air Force would be disposed of through the Defense Reutilization and Marketing System or properly disposed as a hazardous or solid waste in accordance with Air Force guidelines. The phased deactivation and the small amount of hazardous materials that are anticipated for disposal should not impact Malmstrom AFBs status as a Hazardous Waste Small Quantity Generator. All cooling tanks associated with sodium chromate would be removed from the sites or closed in place. Refrigerant from environmental control systems would be evacuated in accordance with Air Force requirements before placing the sites into caretaker status. Refrigerant would be transported back to Malmstrom AFB for proper reuse or disposal. Because hazardous materials would be managed in accordance with applicable regulations and the Air Force has standard procedures for removal of MM III missiles that ensure no release or spills would occur, no significant impacts are anticipated.

Table 4.6-1. Hazardous Materials to be Removed from LFs and MAFs

	Wing I (10th, 12th, and 490th MS)		Wing VI (564th MS)	
Hazardous Material	Launch Facility	Missile Alert Facility	Launch Facility	Missile Alert Facility
Batteries	12	12	12	32
Antifreeze (generators) (gal)	12	15	12	30
Antifreeze (building cooling) (gal)	52	52	52	52
Sodium Chromate (gal)	7	0	7	0
Refrigerant (lbs)	8	38	20	24.5

Note: Hazardous substances in ASTs and USTs are addressed in Section 4.6.3, Storage Tanks.
AST = aboveground storage tank
gal = gallon
lbs = pounds
MS = Missile Squadron
UST = underground storage tank

4.6.1.2 No-Action Alternative.

Under the No-Action Alternative, the hazardous materials currently utilized at LFs and MAFs would continue to be managed in accordance with appropriate regulations and Air Force policy. Therefore, no significant impacts are anticipated.

4.6.2 Hazardous Waste Management

4.6.2.1 Proposed Action.

Limited, one time, amounts of hazardous waste may be generated from processes and support systems that utilize the hazardous materials at the LFs and the MAFs (see Section 3.3.1). The only hazardous

substance associated with LFs that would be disposed of as a hazardous waste is sodium chromate. Approximately 7 gallons of sodium chromate would be disposed from each deactivated LF for a total of 350 gallons (approximately 28 gallons per month). Hazardous substances utilized at MAFs would be reused or recycled. Quantities of hazardous wastes generated during the phased deactivation activities is not anticipated to be of an amount that would impact the environment or change Malmstrom AFB's status as a Hazardous Waste Small Quantity Generator. Hazardous wastes generated during the deactivation process would be managed in accordance with applicable regulations and Air Force guidelines; therefore, no significant impacts to the environment are anticipated.

4.6.2.2 No-Action Alternative.

Under the No-Action Alternative, hazardous wastes generated as a result of routine missile operations would continue. Since there would be no change in the amount or the type of hazardous waste generated or in the present method for managing hazardous waste at Malmstrom AFB, no significant impacts to the environment are expected.

4.6.3 Storage Tanks

4.6.3.1 Proposed Action.

USTs at the LFs and MAFs would be removed, closed in place, or inactivated. UST removals and closures would be coordinated with the state and conducted in accordance with ARM Title 17, Chapter 56, Part 7. ASTs would be removed from the LFs and MAFs and reused at other sites or properly disposed as appropriate. If it is decided that an AST is to be closed in place, closure would require the contents to be removed, the tank to be rinsed out, a blind flange to be installed, and the AST to be tagged as empty. The contents of all storage tanks taken out of service would be transported back to Malmstrom AFB for reuse or proper disposal.

In the event that USTs are inactivated, the inactivation process would be conducted in accordance with ARM Title 17, Chapter 56.701 and applicable U.S. EPA requirements. Inactivated USTs would be emptied, vent pipes would remain open and functioning, and other lines, pumps, manways, and ancillary equipment would be capped and secured. Operation and maintenance of corrosion protection (i.e., cathodic protection) would continue in accordance with ARM Title 17, Chapter 56.302. USTs that are emptied would no longer require leak detection. No significant impacts from the removal, closure in place, or inactivation of storage tanks at LFs and MAFs is anticipated.

The Air Force would continue to be responsible for investigation and remediation of UST locations where known releases have occurred (see Section 3.6.3), as well as any investigation/remediation of releases identified during the removal of tanks during deactivation activities. Because the LF and MAF sites would continue to be Air Force property, no impacts to investigative/remedial actions at the sites are anticipated.

4.6.3.2 No-Action Alternative.

Under the No-Action Alternative, storage tanks currently in operation would continue to support the LFs and the MAFs in accordance with Air Force policy. No significant impacts are anticipated.

4.6.4 Asbestos

4.6.4.1 Proposed Action.

Although the Proposed Action does not involve demolition of the LFs and MAFs, ACM would likely be encountered during removal of items and deactivation of the facilities. Workers involved in conducting deactivation actions would be advised, to the extent known, of the type, condition, and amount of ACM present at the LFs and MAFs. Deactivation activities would be subject to applicable federal, state, and local regulations to minimize the potential risk to human health and the environment. Any ACM waste generated as a result of deactivation activities would be disposed in accordance with applicable regulations. Management of ACM and ACM waste in accordance with applicable regulations would preclude any significant impacts. No significant impacts are anticipated.

4.6.4.2 No-Action Alternative.

Under the No-Action Alternative, the Air Force would continue to be responsible for the management of ACM within the LFs and MAFs. The Air Force would continue to manage ACM in accordance with current Air Force policy and applicable regulations. Management of ACM in accordance with applicable regulations would preclude any significant impacts.

4.6.5 Lead-Based Paint

4.6.5.1 Proposed Action.

Although the Proposed Action does not involve demolition of the LFs and MAFs, lead-based paint would likely be encountered during removal of items and deactivation of the facilities. Workers involved in conducting deactivation actions would be advised, to the extent known, of the type, condition, and amount of lead-based paint present at the LFs and MAFs. Deactivation activities would be subject to applicable federal, state, and local regulations to minimize the potential risk to human health and the environment. Any lead-based paint waste generated as a result of deactivation activities would be disposed in accordance with applicable regulations. Management of lead-based paint and lead-based paint waste in accordance with applicable regulations would preclude any significant impacts. No significant impacts are anticipated.

4.6.5.2 No-Action Alternative.

Under the No-Action Alternative, the Air Force would continue to be responsible for the management of lead-based paint within the LFs and MAFs. The Air Force would continue to manage lead-based paint in accordance with current Air Force policy and applicable regulations. Appropriate management of lead-based paint and lead-based paint waste in accordance with applicable regulations would preclude any significant impacts.

4.6.6 Polychlorinated Biphenyls

4.6.6.1 Proposed Action.

Electrical equipment and light ballasts of older light fixtures containing PCBs are present at the LFs and MAFs. Deactivation activities could result in the removal and disposal of equipment containing PCBs (e.g., light ballasts and other electrical equipment). Workers involved in deactivation would be notified of

the presence of PCBs in specific equipment items and the potential presence of PCBs in light ballasts. The Air Force would be responsible for ensuring removal and disposal of equipment containing PCBs is conducted in accordance with applicable regulations. Management of PCBs in accordance with applicable regulations would preclude significant impacts.

4.6.6.2 No-Action Alternative.

Under the No-Action Alternative, the Air Force would continue to be responsible for the management of PCBs within the LFs and MAFs. The Air Force would continue to manage PCBs in accordance with current Air Force policy and applicable regulations. Appropriate management of PCBs in accordance with applicable regulations would preclude any significant impacts.

4.6.7 Ordnance

4.6.7.1 Proposed Action.

Explosive components at each LF would be removed by qualified personnel and transported back to Malmstrom AFB in accordance with Air Force safety and security measures. Explosive components would be reutilized whenever possible, and any explosive component determined to be retrograde would undergo demilitarization by the Malmstrom AFB Explosive Ordnance Disposal Unit. No significant impacts are anticipated.

4.6.7.2 No-Action Alternative.

Under the No-Action Alternative, facility operations would not change, and existing explosive components would continue to be maintained in accordance with Air Force safety and security guidelines. No significant impacts from ordnance/explosive components are anticipated.

Mitigation Measures

Because no significant impacts to hazardous materials and hazardous waste management have been identified, no mitigation measures would be required.

4.7 SOILS AND GEOLOGY

The potential effects of the Proposed Action and No-Action Alternative on soils and geology within the ROI are presented in this section.

4.7.1 Proposed Action

Soils. The Proposed Action involves the removal of 50 missiles from the LFs and placing the LFs and associated MAFs into caretaker status. Impacts to soils from the Proposed Action would be minimal and would result primarily from ground disturbance associated with the backfilling of the sewage lagoon at each of the MAFs and the possible removal of USTs at the LFs and MAFs. These impacts would be short-term and minimal because the disturbed areas would be reseeded with native grasses or covered with gravel once deactivation activities are completed.

The construction contractor would likely be required to obtain a Construction Site Storm Water MPDES permit before initiating any ground-disturbing activity. If the size of the ground disturbance at any individual facility exceeds 1 acre in size, it will fall under the "General Permit for Storm Water Discharges

Associated with Construction Activity" (General Permit). An SWPPP would also be prepared for proposed ground-disturbing activities. The Construction Site Storm Water MPDES permit, together with the required SWPPP, would outline strict site management practices designed to protect the quality of the surface water, groundwater, and natural environment through which they flow. The SWPPP would identify specific areas of existing and potential soil erosion, location of structural measures for sediment control, and management practices and controls. Use of these management practices and controls would reduce the potential for erosion of disturbed soils.

Under the Proposed Action, ground-disturbing activities would occur on less than 1 acre within the boundaries of the LFs and slightly more than 1 acre at MAFs. Short-term erosion impacts could occur during ground-disturbing activities, such as removal of vegetative cover or grading. Potential impacts would be minimized through proper management practices defined within the approved SWPPP. Standard construction practices that could be implemented to minimize soil erosion include:

- Add protective cover, such as mulch or straw, to exposed soil
- Implement site grading procedures that limit the time that soils are exposed prior to being covered by impermeable surfaces or vegetation
- Implement storm water diversions to reduce water flow through exposed sites during demolition activities
- Implement temporary impoundments to catch soil eroded from the site prior to flowing into the drainage network
- Implement soil erosion plans in coordination with the local Natural Resources Conservation Service.

Geology. The missile complex is situated within Seismic Zones 1 and 2b, which represent a low to moderate potential risk for large seismic events. Since the only ground-disturbing action would be the backfilling of sewage lagoons and possible removal of USTs, there are no potential affects on geology.

Because management practices required by the Construction Site Storm Water MPDES permit and SWPPP would be implemented during deactivation activities, no significant impacts to soils and geology are anticipated.

4.7.2 No-Action Alternative

Under the No-Action Alternative, deactivation activities would not be implemented. No ground-disturbing activities would occur. No significant impacts to soils and geology would be expected.

Mitigation Measures

Because management practices required by the Construction Site Storm Water MPDES permit and SWPPP would be implemented, no significant impacts to soils and geology are anticipated. Therefore, no mitigation measures would be required.

4.8 WATER RESOURCES

Although the total area of the 50 LFs and 5 MAFs to be deactivated would approach 70 acres, the actual total area of disturbed ground would be less than 1 acre at each LF and slightly more than 1 acre at each MAF. In addition, the locations of the 50 LFs and 5 MAFs are separated by a minimum of 3 miles from any adjacent facility for strategic purposes (see Section 2.1.1). Therefore, the individual facilities were evaluated separately from any other facility when considering impacts. These facilities are not close enough to each other to be included as part of a larger development, in the MPDES terms of a "larger common plan of development."

Evaluation of potential impacts to water resources considers surface water, groundwater, and water quality. The types of potential impacts considered for surface water were changes to drainage configuration, runoff potential, flood plain development or constriction, and loss of wetlands. Groundwater impacts looked at overdraft and subsidence, loss of recharge area, and water rights. Water quality considered potential impacts to both surface water and groundwater.

4.8.1 Proposed Action

Key elements of the Proposed Action with regard to water resources are the potential removal of USTs and the regrading of the sewage lagoons (one at each MAF). Removal of a UST would likely result in the disturbance of less than 1,000 square feet of ground, for either a 4,000-gallon or a 12,000-gallon tank. Regrading the sewage lagoons would likely result in the disturbance of approximately 1 acre of ground surface. This evaluation considers the potential, in general, for impacts on the surface water, groundwater, and water quality of individual facilities (either an LF or MAF).

Surface Water Runoff. LFs and MAFs are not situated within a FEMA-designated 100-year flood plain, and jurisdictional wetlands do not exist at any of these facilities. Therefore, no impacts due to floodplain development or encroachment, or wetland loss are expected. In addition, the ROI for each site (within which ground disturbance could occur) is relatively small, and physical changes to watershed divides or stream channel locations are not expected.

As noted above, the expected area of ground disturbance at an LF is expected to be only a fraction of an acre; therefore, the General Permit would not be required. In the case of an MAF, it is expected that ground disturbance would exceed the 1 acre minimum, simply because the sewage lagoons themselves cover approximately that much area. Although this activity would qualify for inclusion under the General Permit, it would require that: (1) a Notice of Intent (NOI) form be completed and filed with the Montana Department of Environmental Quality (DEQ); (2) an SWPPP be prepared and submitted for approval; (3) appropriate fees be paid; and (4) a Notice of Termination (NOT) be filed upon completion of the deactivation activities.

Any changes to the ground surface condition would be temporary (on the order of weeks, not months), and no significant affect on runoff potential is expected either in the short time over which these activities would occur, or after their completion. The nature of the ground surface before deactivation will not change afterward, either in permeability or in topographic contour. Finally, the potential for soil erosion is expected to be minimal (see Section 4.7.1) as a result of BMPs that would be implemented during deactivation and to close up the site upon completion. Thus, there would be little likelihood of accelerated and unnatural changes to the surface topography due to erosion, and their resulting impacts on surface drainage.

Groundwater. Local, site-specific, groundwater resources have been used at about half of the MAFs. This has amounted to an average annual use per facility of about 270,000 gallons. This is a modest water use rate, and there are no reports of any individual wells experiencing overdraft conditions, and/or any local subsidence. So no current problems with this use of groundwater have been identified. The changes resulting from deactivation of MAFs (discontinuing the use of groundwater at these facilities) would not cause any overdraft conditions or subsidence to occur. The limited extent of ground surface disturbance would cause no change to the local infiltration of groundwater to recharge the aquifer. However, the one impact that discontinuing groundwater withdrawals would have at any facility currently using groundwater, is the possibility of losing the rights to that water under Montana's "prior appropriation doctrine," where use must continue in order to maintain the appropriation right. However, the latter does not constitute a potential environmental impact as much as an economic impact. Therefore, no environmental impacts to groundwater resources are expected.

Water Quality. Potential for impacts to water quality could come from erosion of sediment during the deactivation fieldwork, and its transport to the nearest watercourse, or from off-site transport of contaminants derived from sewage lagoon sediments, or UST contents during deactivation. Further, groundwater quality could potentially be impacted by spills of fuels and other hazardous substances during deactivation fieldwork and the associated use of heavy equipment. However, all of these possibilities are unlikely because of the limited scope and duration of the field activities associated with deactivation of the LFs and MAFs.

The potential for erosion would be limited by the small area to be disturbed, the short time required to be in the field, and through the BMPs that would be employed to further limit erosion and control off-site sediment transport. Contractors, in general, are better versed in hazardous materials handling and in spill containment, and would take decisive action in the case of spills to confine impacts. However, the limited scope means there are fewer and smaller stockpiles of fuel or other hazardous materials on site that could be spilled. The short duration of deactivation activities at each LF and MAF results in a smaller window of opportunity for spills or rainstorms to occur that provide opportunity to transport sediment and associated contaminants off site and into waterways.

The sewage lagoon contents, both liquid and sludge, would be sampled prior to being leveled and graded. Disposal of liquids and sludge would be dependent on test results. If test results indicated that the liquid contents are sufficiently clean, discharge to surface drainages may occur (in accordance with any applicable permits).

Impacts to groundwater are even less likely to occur because of the limited amount of work and time needed to complete the deactivation activities at any given site. In order to impact groundwater at depth (even to depths of only tens of feet), a contaminant must be mobile in soils, and spilled in sufficient quantities to allow it to move. The only potential contaminant likely to be on site for deactivation activities is diesel fuel, needed for heavy equipment operation. In the unlikely event that a diesel spill occurred, it is perhaps the least mobile fuel and would not travel far into the soil. Therefore, it is unlikely to reach groundwater unless the groundwater table is close to the surface (i.e., within 10 feet to 15 feet of the ground surface). No significant impacts to groundwater quality are anticipated.

4.8.2 No-Action Alternative

Under the No-Action Alternative, deactivation activities would not be implemented. No ground-disturbing activities would occur; therefore, no significant impacts to water resources would be expected.

Mitigation Measures

Because management practices required by the Construction Site Storm Water MPDES permit and SWPPP would be implemented, no significant impacts to water resources are anticipated. Therefore, no mitigation measures would be required.

4.9 BIOLOGICAL RESOURCES

The potential effects of the Proposed Action and No-Action Alternative on biological resources (i.e., vegetation, wildlife, threatened and endangered species, and sensitive habitats) within the ROI are presented in this section.

4.9.1 Proposed Action

Vegetation. The deactivation of LFs and MAFs would occur in a graveled, unvegetated area within a fence area. Dust generated from construction equipment during closure of sewage lagoons is expected to be similar to typical farming activities, except grading, filling, and other activities would be of short duration (lasting from hours to a few days). In the event that USTs are removed, fill dirt may be brought to the sites from other locations.

After the closure of the sewage lagoons and closure/removal of USTs have been completed, the sites would be contoured for proper runoff, and vegetated areas disturbed would be reseeded. Exposed bare soil can lead to invasion by different plant communities, such as non-native plants, grasses, and noxious weeds. As a best management practice, the Air Force would revegetate specific areas when deactivation activities are complete and monitor sites for noxious weed growth. In the event that noxious weeds are observed, mechanical or chemical control measures could be implemented as a means to prevent them from spreading to adjacent properties.

Wildlife. Increased human activity and noise levels in the immediate vicinity of the LFs or MAFs during deactivation activities could affect resident or migratory wildlife within the ROI. Resident wildlife (e.g., ground squirrels) would be unlikely to be temporarily displaced more than a few times due to the increased activity and noise. Displacement of common wildlife species is not considered significant due to their abundance and their ability to seek similar habitat in the surrounding area. Wildlife species temporarily displaced would likely return to the area and establish population levels similar to pre-deactivation levels.

After deactivation activities are completed, ambient noise levels would be similar to existing levels. Because Air Force activities would cease within the ROI, fewer wildlife disturbances would occur. The potential effects of deactivation activities on wildlife would not be significant.

Threatened and Endangered Species. Deactivation activities associated with the Proposed Action would occur on previously disturbed land. Protected birds that may migrate through the area, such as the bald eagle, may be temporarily startled by noise associated with deactivation activities; however, no significant impacts are anticipated as a result of deactivation activities.

Based on the assessment for the location of threatened and endangered species throughout the missile complex, the most probable federally listed species to be present at an LF or MAF would be the Canada lynx, grizzly bear, and bald eagle. The most probable state listed species to be present is the mountain plover. A list of federally listed threatened and endangered species and state species of concern that have the potential to occur near LFs and MAFs within the 10th, 12th, 490th, and 564th MSs is provided in

Table 4.9-1. A discussion of the potential presence of threatened and endangered species at specific MSs is provided below.

Table 4.9-1. Federally Threatened and Endangered Species and State Species of Concern near LFs and MAFs

	Missile Squadron Sites			
	10th Missile Squadron	12th Missile Squadron	490th Missile Squadron	564th Missile Squadron
Mountain Plover (*Charadrius montanus*) State Species of Concern	C-6, C-7, C-8, C-9	F-1, F-2, F-3, F-4, F-6, F-8, F-10, F-11, H-9, H-10, H-11	K-11, L-1, L-2, L-4, L-5, L-6, L-7, L-8, L-9, L-10, L-11, M-6, M-7, M-9, N-5, N-6, N-7, N-8	
Piping Plover (*Charadrius melodus*) Federally Threatened				P-4, P-5, P-6, P-8, S-35, S-36, S-37, T-0, T-41, T-42, T-43, T-44, T-45, T-46, T-47, T-48, T-49, T-50
Canada Lynx (*Lynx canadensis*) Federally Threatened	A-1, A-4, A-5, A-6, A-7, A-8, A-9, A-10, B-6, B-7, B-8, C-1, C-7, C-8, C-9, C-10, C-11	F-7, F-8, F-9, F-10, F-11, G-6, G-7, G-8, I-2, I-3, I-4, I-5		
Grizzly Bear (*Ursus arctos horribilis*) Federally Threatened		F-2, F-7, F-8, F-9, F-10, F-11, G-7, G-8		T-47

Note: According to the Montana Natural Heritage Program species distribution maps, the bald eagle, ferruginous hawk, and loggerhead shrike have extensive ranges within the missile complex. Therefore, it is assumed that there is potential for incidental sightings of these species at all LFs and MAFs throughout the missile complex.

Source: U.S. Air Force, 2005b, 2005j; Montana Fish, Wildlife, & Parks, 2006.

10th Missile Squadron. Inactivation of the 10th MS would involve LFs and MAFs within or near potential habitat for mountain plovers and Canada lynxes (see Table 4.9-1). Although these species have the potential to be present during project activities, each LF and MAF are relatively small in area, contained within a chain link fence, and lack the suitable habitat (i.e., vegetation cover, source of prey, etc.) required for these species to permanently reside on or adjacent to the facilities. In addition, the MAFs and LFs are active sites where military activities occur routinely. Deactivation activities may result in a temporary increase in human activity and noise levels at these sites, but because human activity currently occurs at these sites, deactivation activities would not present a significant new source of potential disturbance to these species. Upon completion of deactivation, human activity at these sites would be reduced from current levels, decreasing the potential for disturbance to these species.

12th Missile Squadron. Inactivation of the 12th MS would involve LFs and MAFs within or near potential habitat for bald eagles, mountain plovers, Canada lynxes, and grizzly bears (see Table 4.9-1). Impacts to these species would be similar to those discussed under the 10th MS above.

490th Missile Squadron. Inactivation of the 490th MS would involve LFs and MAFs within or near potential habitat for mountain plovers (see Table 4.9-1). Impacts to these species would be similar to those discussed under the 10th MS above.

564th Missile Squadron. Inactivation of the 564th MS would involve LFs and MAFs within or near potential habitat for piping plovers and Canada lynxes (see Table 4.9-1). Impacts to these species would be similar to those discussed under the 10th MS above.

The Air Force is conducting informal consultation with the U.S. Fish and Wildlife Service to confirm the threatened and endangered species list is complete, and is seeking concurrence in the decision that potential effects of proposed deactivation activities would not likely affect these identified sensitive species.

Sensitive Habitats. No jurisdictional wetlands have been identified within the boundaries of the LFs and MAFs. Ground disturbance during the closure of sewage lagoons and closure/removal of USTs could increase soil erosion from wind and water runoff, resulting in short-term impacts on drainages in the vicinity of the LFs and MAFs. However, erosion control measures (see Section 4.7) would be implemented to minimize potential erosion effects. No significant impacts are anticipated because sensitive habitats would not be affected by deactivation activities.

4.9.2 No-Action Alternative

Under the No-Action Alternative, deactivation activities would not be implemented. Ground surfaces at the LFs and MAFs would continue to be maintained. Therefore, no significant impacts to biological resources are anticipated under the No-Action Alternative.

Mitigation Measures

Because no significant impacts to biological resources have been identified, no mitigation measures would be required.

4.10 CULTURAL RESOURCES

The potential effects of the Proposed Action and No-Action Alternative on cultural resources (i.e., prehistoric and historic archaeological resources, historic buildings and structures, and traditional cultural resources) within the ROI are presented in this section.

4.10.1 Proposed Action

Prehistoric and Historic Archaeological Resources. Inactivation of an MS would not be expected to affect any prehistoric or historic archaeological resources. Ground-disturbing activities would occur during leveling of the sewage lagoons at the 5 MAFs of the deactivated MS and would also occur if USTs are removed (at LF and MAF sites). No other activities with the potential to affect archaeological resources would occur at the LFs and MAFs. Ground-disturbing activities at LF and MAF sites would not affect any known archaeological sites because none are present on the LF and MAF sites and the presence of any unknown sites is unlikely due to previous site disturbance that occurred during construction of the facilities. The one archaeological site near LF R-22 (564th MS) that is potentially eligible for the National Register would not be affected by proposed deactivation activities if the 564th MS is inactivated. However, in the event that archaeological materials are unexpectedly encountered, all activity in the immediate area

would cease, the find would be protected from further disturbance, and the Montana SHPO would be notified.

All property currently owned by the Air Force would be retained, so that any sites on, or partially on, Air Force-owned property would remain under the control of the Air Force. There would be no conveyance of potential historic resources to a nonfederal entity. Archaeological sites along access roads would not be affected because there would be no change in these roads as a result of deactivation. Deactivation activities would require the use of existing access roads without modifications. Air Force use of access roads in the inactivated MS areas would be reduced from current levels after inactivation. DAR maintenance in the deactivated MS area would be assumed by the counties. Although the potential affect on road maintenance as a result of the elimination of FHA funding for DAR maintenance is unknown, it is not expected that physical changes in the roadways that could affect archaeological sites near the roads would occur. No significant impacts to prehistoric and historic archaeological resources are expected.

Historic Buildings and Structures

10th Missile Squadron. Inactivation of the 10th MS would affect two sites determined eligible for listing in the National Register, MAF A-1 and LF A-6. The PA for these two structures addresses exterior maintenance and stewardship of their below ground features. Inactivation of the 10th MS would have the potential to adversely affect these structures due to the removal of salvageable items during deactivation and their possible deterioration under caretaker status. Because the PA does not address deactivation of the facilities or preservation, consultation with the SHPO would be required to establish appropriate mitigation measures to preserve the facilities. None of the other 10th MS facilities is considered eligible for listing on the National Register. In addition, the LFs and MAFs within the 10th MS are similar in design (i.e., construction date and function) to those in the 12th and 490th MSs; therefore, should the 10th MS be inactivated, there would continue to be LFs and MAFs in service at Malmstrom AFB that represent this style of LF and MAF. There are also similar missile systems at other AFBs (i.e., Grand Forks AFB, ND [LF N-33 and MAF O-0], Ellsworth AFB, SD [LF D-6 and LCF D-1], and Whiteman AFB [LCC O-1]) that have been inactivated and preserved as a mitigation of the inactivation. Potential adverse affects to historic resources from deactivating LFs and MAFs within the 10th MS would be mitigated as a result of similar missile systems remaining active at Malmstrom AFB and other similar missile systems having been preserved at other Air Force installations.

In accordance with the MOA, if the Air Force decides to inactivate the 10th MS and transfer the real property out of Air Force authority and control, the Montana SHPO will pursue special legislation for the Air Force to transfer MAF A-1 and LF A-6 directly to the National Park Service (NPS), State of Montana, or other agency in lieu of Title 10 U.S.C, Section 978,1 and adequate funding for the initial establishment of an interpretive site(s). The NPS, State of Montana, or other agency will provide 100 percent of funding thereafter for maintenance and repair of interpretive sites and take responsibility for all operations, maintenance, and permits. If the Montana SHPO is unable to secure legislation and funding within 2 years of notification that the Air Force intends to deactivate and dispose of these sites, the Air Force will then dispose of MAF A-1 and LF A-6 in accordance with Title 10 U.S.C, Section 9781.

With the incorporation of the mitigation measures (PA and MOA stipulations) identified below for MAF A-1 and LF A-6, no significant impacts to historic buildings and structures are anticipated.

12th Missile Squadron. None of the facilities within the 12th MS is considered eligible for listing on the National Register. In addition, the LFs and MAFs within the 12th MS are similar in design to those in the 10th and 490th MSs; therefore, should the 12th MS be inactivated, there would continue to be LFs and MAFs in service at Malmstrom AFB that represent this style of LF and MAF. As discussed under the 10th

MS above, there are also similar missile systems at other AFBs that have been deactivated and preserved. Potential adverse affects to historic resources from deactivating LFs and MAFs within the 12th MS would be mitigated as a result of similar missile systems remaining active at Malmstrom AFB and other similar missile systems having been preserved at other Air Force installations. Therefore, inactivation of the 12th MS would not result in significant adverse impacts to historic resources.

490th Missile Squadron. None of the facilities within the 490th MS is considered eligible for listing on the National Register. In addition, the LFs and MAFs within the 490th MS are similar in design to those in the 10th and 12th MSs; therefore, should the 490th MS be inactivated, there would continue to be LFs and MAFs in service at Malmstrom AFB that represent this style of LF and MAF. As discussed under the 10th MS above, there are also similar missile systems at other AFBs that have been deactivated and preserved. Potential adverse affects to historic resources from deactivating LFs and MAFs within the 490th MS would be mitigated as a result of similar missile systems remaining active at Malmstrom AFB and other similar missile systems having been preserved at other Air Force installations. Therefore, inactivation of the 490th MS would not result in significant adverse impacts to historic resources.

564th Missile Squadron. The 564th MS MM III missile system has been determined to be eligible for inclusion on the National Register. Based on the draft MOA between the Air Force, Montana SHPO, and the Advisory Council, it was agreed that inactivation of the 564th MS constitutes an undertaking that would not adversely affect the historical significance of the MM III missile system. However, the Air Force and SHPO have agreed that artwork located within MAFs and LFs is of historic importance and should be preserved through pictures and other appropriate documentation. Specific stipulations of the MOA for the 564th MS are provided below, under Mitigation Measures.

With the incorporation of the mitigation measures (MOA stipulations) identified below, no significant impacts to historic buildings and structures are anticipated.

Traditional Cultural Resources. There are no known traditional cultural resources at the LFs or MAFs. No significant impacts to traditional cultural resources are expected.

Mitigation Measures

Stipulations of the MOA to mitigate potential adverse effects to historic buildings and structures are provided below. A copy of the MOA is provided in Appendix C.

Stipulation 1 of the MOA requires the Air Force to record artwork within inactivated 564th MS MAFs using color digital and large format black and white photography. The Air Force will consult with the NPS and Montana SHPO to determine the appropriate level of HAER recordation and appropriate disposition. Copies of the HAER documentation will be made available to the Montana Historical Society and the Cascade County Historical Society.

Stipulation 2 of the MOA requires the Air Force to collect and catalog photographs, documents, film, video, and representative examples of furnishings and equipment associated with the 564th MS mission at Malmstrom AFB. The Headquarters Air Force Space Command (AFSPC) Historian will determine appropriate disposition, including archival retention or transfer to National Archives and Records Administration in coordination with Montana SHPO. Materials not retained by the AFSPC History Office or the Air Force Museum may be made available to the Montana Historical Society, Cascade County Historical Society, and Malmstrom AFB Museum.

Stipulation 3 of the MOA requires the Air Force to maintain MAF A-1 and LF A-6 (within the 10th MS) in a manner that avoids adverse effects in accordance with the PA (see Appendix B) based on principles from the *Interim Guidance Treatment of Cold War Historic Properties for U.S. Air Force Installations, June 1993* and the publication *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities*, 1991, Advisory Council. In the event that the Air Force proposes to deactivate MAF A-1 and LF A-6 of the 10th MS and transfer associated real property, the Air Force will offer MAF A-1 and LF A-6 to the Montana SHPO as physical representation of the MM III Missile System for future interpretation by the State or other federal agencies such as the NPS.

Stipulation 4 of the MOA requires the Air Force to develop a color brochure on the history of the MM III Missile System in Montana and provide copies along with the original design to the Montana SHPO.

4.10.2 No-Action Alternative

Under the No-Action Alternative, deactivation activities would not be implemented. There would be no change from existing conditions. The LFs and MAFs would remain active and would continue to be maintained. No significant impacts to cultural resources are expected.

4.11 ENVIRONMENTAL JUSTICE

In order to determine whether disproportionately high and adverse human health and environmental impacts to low-income or minority populations would result from the Proposed Action or No-Action Alternative, census data for each county were analyzed to determine if these counties contain a disproportionate percentage of low-income and/or minority residents. This is calculated by comparing the percentage of low-income residents and the percentage of minority residents in each county with the State of Montana percentages (see Table 3.11-1 and Figure 3.11-1). The counties were analyzed to determine whether they underlie impact footprints for resources analyzed in this EA. For the environmental justice analysis, impact footprints are defined as the area of projected adverse impacts for a resource based on environmental analysis of a proposed activity. The results of the environmental justice analysis are discussed below.

4.11.1 Proposed Action

Based on the analysis conducted for this EA, it was determined that activities associated with inactivating an MS would not have significant adverse impacts on any of the resources analyzed in this EA, including socioeconomics, transportation, utilities (specifically electricity, water, and solid waste), land use and aesthetics, hazardous materials and hazardous waste management, storage tanks, asbestos, lead-based paint, PCBs, ordnance, soils and geology, water resources, biological resources, and cultural resources. Because no adverse impacts have been identified for any of these resources, there are no impact footprints to overlie on the counties. No disproportionately high and adverse human health and environmental impacts to low-income and minority populations are expected, and no disproportionate affect to persons under the age of 18 would occur.

4.11.2 No-Action Alternative

Under the No-Action Alternative, deactivation activities would not be implemented. Therefore, no significant human health and environmental impacts to low-income, minority populations, and persons under the age of 18 are anticipated.

4.12 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

The Proposed Action and No-Action Alternative would not result in any unavoidable adverse environmental effect provided best management practices identified in this EA are implemented.

4.13 COMPATIBILITY OF THE PROPOSED ACTION WITH OBJECTIVES OF FEDERAL, STATE, REGIONAL, AND LOCAL LAND USE PLANS AND POLICIES

The Proposed Action and No-Action Alternative would be incompatible with federal, state, regional, and local land use plans and policies.

4.14 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

The Proposed Action and No-Action Alternative would not affect the long-term productivity of the environment because no significant environmental impacts are anticipated, provided appropriate best management practices identified in this EA are implemented. Natural resources would not be depleted.

4.15 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Implementation of the Proposed Action or No-Action Alternative would result in an irreversible or irretrievable commitment of small quantities of fuel that would be required for activities such as operation of equipment used to transport missile components and items salvaged from the LFs and MAFs, to grade sewage lagoons, and to potentially excavate USTs.

4.16 CUMULATIVE ENVIRONMENTAL CONSEQUENCES

Cumulative impacts result from "the incremental impact of actions when added to other past, present, and reasonably foreseeable future actions, regardless of what agency undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time" (Council on Environmental Quality, 1978). No other reasonably foreseeable actions have been identified in the Missile Complex area that could be considered as contributing to a potential cumulative impact on the environment, along with impacts associated with implementation of deactivation activities. The potential impacts from the Proposed Action are short term and minor, and are not expected to contribute to cumulative impacts.

5.0 CONSULTATION AND COORDINATION

The federal, state, and DOD agencies/organizations/individuals contacted during preparation of this EA are listed below:

Federal

Advisory Council on Historic Preservation
U.S. EPA, Region 8
U.S. Fish and Wildlife Service

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7.0 BIBLIOGRAPHY

City-Data.com, 2006a. Economic Profile, Cascade County, Montana, February.

City-Data.com, 2006b. Economic Profile, Chouteau County, Montana, February.

City-Data.com, 2006c. Economic Profile, Fergus County, Montana, February.

City-Data.com, 2006d. Economic Profile, Judith Basin County, Montana, February.

City-Data.com, 2006e. Economic Profile, Lewis and Clark County, Montana, February.

City-Data.com, 2006f. Economic Profile, Pondera County, Montana, February.

City-Data.com, 2006g. Economic Profile, Teton County, Montana, February.

City-Data.com, 2006h. Economic Profile, Toole County, Montana, February.

City-Data.com, 2006i. Economic Profile, Wheatland County, Montana, February.

Council on Environmental Quality, 1978. Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act.

Daumiller, 2006. Correspondence from Gary Daumiller regarding mileage of roadways in Montana, Montana State Library, February.

Federal Interagency Committee for Wetland Delineation, 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands.

Fergus Electric Cooperative, 2006. Information on the Fergus Electric Cooperative at hhtp://www.ferguselectric.coop.

Heritage Research Consultant, 1996a. Montana Historical and Architectural Inventory, Building A-06 (Alpha-06), October 2.

Heritage Research Consultant, 1996b. Montana Historical and Architectural Inventory, Building A-01 (Alpha-01), October 2.

International Conference of Building Officials, 1991. Uniform Building Code.

Malmstrom AFB, 2006. History of 490th Missile Squadron. http://www.malmstrom.af.mil

Marias River Electric Cooperative, 2006. Information on the Marias River Electric Cooperative at http://www.mariasriverec.com.

Montana Fish, Wildlife, & Parks, 2006. Website showing range in Montana where species have been documented and their natural histories. http://www.fwp.state.mt.us/wildlife/

Montana Natural Heritage Program, 2006. Montana Species of Special Concern. Internet: http://orion2.nris.stat.mt.us/mtnhp/plants

Montana Partners in Flight, 2006. Website explaining various ecoregions of Montana. http://biology.dbs.umt.edu/landbird/mbcp/mtpif/

NorthWestern Energy, 2006. Information on NorthWestern Energy at http://northwesternenergy.com.

State of Montana, 2003. Environmental Quality, Chapter 56, Underground Storage Tanks, Petroleum and Chemical Substances, Out-of-Service UST Systems and Closures, Administrative Rules of Montana, 17-6201, 31 December.

Sun River Electric Cooperative, 2006. Information on the Sun River Electric Cooperative at http://www.sunriverec.com.

U.S. Air Force, 1967. Launch Facility, Site R-21 (2125), Plot and Grading Plan, 26 July.

U.S. Air Force, 1976. Launch Control Facility, Site D-1 (35X), Plot Plan, 8 November.

U.S. Air Force, 1985. Installation Restoration Program Phase I – Records Search, 341st Strategic Missile Wing, Malmstrom AFB, Montana, January.

U.S. Air Force, 1986. Launch Facility, Site D-2 (31A), Plot Plan, 28 January.

U.S. Air Force, 1991a. Tab G-4.1, Master Plan, Missile Site Electrical Service System, Malmstrom Air Force Base, October.

U.S. Air Force, 1991b. Environmental Assessment for Transportation and Storage of Missile Motors from the Minuteman II Deactivation Program, September.

U.S. Air Force, 1993a. United States Air Force, Installation Restoration Program (IRP), Malmstrom Air Force Base, Montana, Site Closeout Decision Document, IRP Site SS-12, Launch Control Facility S-0, Fuel Spill Incident (Formerly known as Site OB-2), September.

U.S. Air Force, 1993b. United States Air Force, Installation Restoration Program (IRP), Malmstrom Air Force Base, Montana, Site Closeout Decision Document, IRP Site SS-11, Launch Facility P-10, Fuel Spill Incident (Formerly known as Site OB-1), April.

U.S. Air Force, 1996a. Memorandum from 341 CES/CEV to State Historic Preservation Officer, Subject Waiver of Section 106 and Section 110 Inventories, 1 February.

U.S. Air Force, 1996b. Polychlorinated Biphenyl (PCB) Locations at Minuteman Sites, 23 February.

U.S. Air Force, 1997. Base and Missile Cold War Survey: A Baseline Inventory of Cold War Material Culture at Malmstrom Air Force Base, Montana, 31 December.

U.S. Air Force, 1998. Launch Control Facility, Site R-0 (2115), Plot and Grading Plan, 1 October.

U.S. Air Force, 1999. Final Environmental Impact Statement, Minuteman III Missile System Dismantlement, Grand Forks AFB, North Dakota, April.

U.S. Air Force, 2000. Final Environmental Impact Statement, Peacekeeper Missile System Deactivation and Dismantlement, F.E. Warren AFB, Wyoming, December.

U.S. Air Force, 2001. Environmental Assessment, Weapons and Munitions Maintenance and Storage Complex, Malmstrom AFB, MT.

U.S. Air Force, 2002a. General Plan, Malmstrom Air Force Base, Montana.

U.S. Air Force, 2002b. Malmstrom Air Force Base 341st Space Wing, Integrated Hazardous Materials Emergency Response Plan 32-4 (U), August.

U.S. Air Force, 2002c. Missile Alert Facility Water Consumption, 2002.

U.S. Air Force, 2002d. Programmatic Agreement Between the United States Department of the Air Force and the Montana State Historic Preservation Officer Regarding the Exterior Maintenance of Missile Alert Facility Alpha-01 and Launch Facility Alpha-06 at Malmstrom Air Force Base, Montana, November.

U.S. Air Force, 2003a. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 10th Missile Squadron, Alpha Flight, February.

U.S. Air Force, 2003b. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 10th Missile Squadron, Bravo Flight, August.

U.S. Air Force, 2003c. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 10th Missile Squadron, Charlie Flight, August.

U.S. Air Force, 2003d. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 10th Missile Squadron, Delta Flight, August.

U.S. Air Force, 2003e. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 10th Missile Squadron, Echo Flight, August.

U.S. Air Force, 2003f. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 12th Missile Squadron, Fox Flight, August.

U.S. Air Force, 2003g. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 12th Missile Squadron, Golf Flight, August.

U.S. Air Force, 2003h. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 12th Missile Squadron, Hotel Flight, August.

U.S. Air Force, 2003i. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 12th Missile Squadron, India Flight, August.

U.S. Air Force, 2003j. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 12th Missile Squadron, Juliet Flight, August.

U.S. Air Force, 2003k. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 490th Missile Squadron, Kilo Flight, August.

U.S. Air Force, 2003l. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 490th Missile Squadron, Lima Flight, August.

U.S. Air Force, 2003m. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 490th Missile Squadron, Mike Flight, August.

U.S. Air Force, 2003n. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 490th Missile Squadron, November Flight, August.

U.S. Air Force, 2003o. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing I – 490th Missile Squadron, Oscar Flight, August.

U.S. Air Force, 2003p. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing VI – 564th Missile Squadron, Papa Flight, August.

U.S. Air Force, 2003q. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing VI – 564th Missile Squadron, Quebec Flight, August.

U.S. Air Force, 2003r. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing VI – 564th Missile Squadron, Romeo Flight, August.

U.S. Air Force, 2003s. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing VI – 564th Missile Squadron, Sierra Flight, August.

U.S. Air Force, 2003t. 341st Space Wing OPLAN 32-7044, Attachment D Section II, Wing VI – 564th Missile Squadron, Tango Flight, August.

U.S. Air Force, 2003u. Solid Waste Management Plan (U), OPLAN 32-7043, Malmstrom Air Force Base, Montana, 31 April.

U.S. Air Force, 2003v. Missile Alert Facility Water Consumption, 2003.

U.S. Air Force, 2003w. 341st Space Wing Maintenance OPLAN 456-03 (U), Missile Movement and Emplacement Plan.

U.S. Air Force, 2003x. 341st Space Wing Maintenance OPLAN 457-03 (U), Re-entry System Movement and Emergency Response Basic Plan.

U.S. Air Force, 2004a. Air Force Memorandum from 341 MDOS/SGOAB, Subject: 365-Day Radon Survey Results for Launch Control Centers, 5 November.

U.S. Air Force, 2004b. Missile Alert Facility Water Consumption, 2004.

U.S. Air Force, 2004c. 341st Space Wing, Malmstrom Air Force Base, Montana, MAFB OPLAN 32-7041, Storm Water Pollution Prevention, January.

U.S. Air Force, 2005a. Malmstrom Air Force Base, Base Guide and Telephone Directory.

U.S. Air Force, 2005b. Final Integrated Natural Resources Management Plan for Malmstrom Air Force Base, July.

U.S. Air Force, 2005c. Cultural Resources Management Plan for Malmstrom Air Force Base, Montana, July.

U.S. Air Force, 2005d. Headquarters 341st Space Wing, Malmstrom AFB, Montana, Hazardous Waste Management Plan, OPLAN 32-7042, 1 January.

U.S. Air Force, 2005e. Malmstrom AFB Hazardous Waste Disposal Tonnage.

U.S. Air Force, 2005f. Malmstrom AFB, Integrated Pest Management Plan.

U.S. Air Force, 2005g. Extraordinary Snow Removal Expenses, November 1 2004 through March 31 2005.

U.S. Air Force, 2005h. Malmstrom AFB Solid Waste Disposal Tonnage.

U.S. Air Force, 2005i. Missile Alert Facility Water Consumption, 2005.

U.S. Air Force, 2005j. Map of Endangered Species, Minuteman Missile Complex, June.

U.S. Air Force, 2006a. 341st Space Wing, Wing Mission Brief, 17 February.

U.S. Air Force, 2006b. Draft Environmental Assessment for Construct Physical Fitness Center, Malmstrom Air Force Base, Montana, February.

U.S. Air Force, 2006c. Outline of actions for removal of Minuteman III missiles including reentry system (RS), missile guidance system (MGS), propulsion system rocket engines (PSRE), miscellaneous ordnance, and rocket engines, February.

U.S. Air Force, 2006d. Missile Field Facility and Equipment List, 17 February.

U.S. Air Force, 2006e. Representative Sample of LF location and associated Warranty Deed from Real Property Office.

U.S. Air Force, 2006f. Inventory of Hazardous Materials Stored at Missile Sites, February.

U.S. Air Force, 2006g. MDEQ Release List, UST Releases, 14 February.

U.S. Air Force, 2006h. Asbestos Survey Results for Launch Facilities and Missile Alert Facilities, February.

U.S. Air Force, 2006i. Primary/Gravel ED T.E Route Information organized by Site ID, February.

U.S. Air Force, 2006j. Primary/Gravel ED T.E Route Information organized by County, February.

U.S. Air Force, 2006k. Budget allocation for Primary/Gravel ED T.E Route maintenance (1993 to 2005), February.

U.S. Air Force, 2006l. Inventory of water sources for MAF Sites, February.

U.S. Air Force, 2006m. Sun River Electric Coop Inc., Electrical Usage, January 2005 to December 2005

U.S. Air Force, 2006n. Northwestern Energy, Electrical Usage, January 2005 to December 2005

U.S. Air Force, 2006o. Marias River Electric, Electrical Usage, January 2005 to December 2005

U.S. Air Force, 2006p. Fergus Electric Coop Inc., Electrical Usage, January 2005 to December 2005

U.S. Air Force, 2006q. Launch Facility Diagrams (LF A-2 to A-11, B-2 to B-11, C-2 to C-11, D-2 to D-11, E-2 to E-11, F-2 to F-11, G-2 to G-11, H-2 to H-11, I-2 to I-11, J-2 to J-11, K-2 to K-11, L-2 to L-11, M-T-50), February.

U.S. Air Force, 2006r. HQ AFSPC Programming Plan 06-04, Air Force Space Command Deactivation of 50 Minuteman III WS-133B Intercontinental Ballistic Missiles and Inactivation of the 564th Missile Squadron.

U.S. Census Bureau, 2000a. 2000 State and County Quick Facts, Cascade County.

U.S. Census Bureau, 2000b. 2000 State and County Quick Facts, Chouteau County.

U.S. Census Bureau, 2000c. 2000 State and County Quick Facts, Fergus County.

U.S. Census Bureau, 2000d. 2000 State and County Quick Facts, Judith Basin County.

U.S. Census Bureau, 2000e. 2000 State and County Quick Facts, Lewis and Clark County.

U.S. Census Bureau, 2000f. 2000 State and County Quick Facts, Pondera County.

U.S. Census Bureau, 2000g. 2000 State and County Quick Facts, Teton County.

U.S. Census Bureau, 2000h. 2000 State and County Quick Facts, Toole County.

U.S. Census Bureau, 2000i. 2000 State and County Quick Facts, Wheatland County.

U.S. Census Bureau, 2000j. Profile of General Demographic Characteristics: 2000, Geographic Area: Great Falls, Montana.

U.S. Census Bureau, 2000k. Poverty Thresholds, 1999.

U.S. Department of Agriculture, 1982. Soils of Montana, November.

U.S. Department of Labor, 2000a. Bureau of Labor Statistics, Cascade County.

U.S. Department of Labor, 2000b. Bureau of Labor Statistics, Chouteau County.

U.S. Department of Labor, 2000c. Bureau of Labor Statistics, Fergus County.

U.S. Department of Labor, 2000d. Bureau of Labor Statistics, Judith Basin County.

U.S. Department of Labor, 2000e. Bureau of Labor Statistics, Lewis and Clark County.

U.S. Department of Labor, 2000f. Bureau of Labor Statistics, Pondera County.

U.S. Department of Labor, 2000g. Bureau of Labor Statistics, Teton County.

U.S. Department of Labor, 2000h. Bureau of Labor Statistics, Toole County.

U.S. Department of Labor, 2000i. Bureau of Labor Statistics, Wheatland County.

U.S. Department of Labor, 2000j. Bureau of Labor Statistics, Great Falls Metropolitan Statistical Area.

U.S. Fish and Wildlife Service, 2005. Threatened, Endangered, and Candidate Species in Montana, November.

U.S. Fish and Wildlife Service, 2006. Threatened, Endangered, Proposed, and Candidate Species, Montana Counties, January.

Whitehead, R.L., 1996. Groundwater Atlas of the United States: Montana, North Dakota, South Dakota, Wyoming. U.S. Geological Survey, Hydrologic Investigation Atlas No. HA 730-I. http://capp.water.usgs.gov/gwa/ch_i/index.html

Aerial Photographs for Wing VI Sites P-00, P-4, P-7, R-23, R-29, S-32, T-44, T-47.

Aerial Photographs for Wing I Sites A-9, A-11, C-1, E-1, E-2, E-5, E-9, I-11, J-1, I-1.

Ground level photographs from site visit to LFs J-10 and S-31, and MAFs J-1 and S-0.

8.0 DISTRIBUTION LIST

Federal Agencies

U.S. Environmental Protection Agency, Region 8
Director, Office of Federal Activities
999 18th Street, Suite 200
Denver, CO 80202-2466

U.S. EPA Montana Operations Office
Federal Building
10 West 15th Street, Suite 3200
Helena, MT 59626

U.S. Fish and Wildlife Service
Montana Field Office
100 N. Park, Suite 320
Helena, MT 59601

State Agencies

Montana Department of Natural Resources and Conservation
1625 Eleventh Avenue
Helena, MT 59620-1601

Montana Fish, Wildlife, and Parks
Region 4 Office
4600 Giant Springs Road
Great Falls, MT 59405

Montana Fish, Wildlife, and Parks
Lewistown Area Resource Office
2358 Airport Road
P.O. Box 938
Lewistown, MT 59457

State Historic Preservation Officer
Attn: Dr, Mark Baumler
1410 8th Avenue
P.O. Box 201202
Helena, MT 59620-1202

Local Agencies

Blackfeet Tribe
P.O. Box 850
Browning, MT 59417

Chippewa-Cree Tribe
Rocky Boy Route, Box 544
Box Elder, MT 59521

Confederated Salish & Kootenai Tribes
51383 Highway 93 North
P.O. Box 278
Pablo, MT 59855

Department of Defense

Department of the Air Force
HQ AFCEE/ISM
3300 Sydney Brooks
Brooks City-Base, TX 78235-5112

Department of the Air Force
HQ AFSPC/A7CV
150 Vandenberg Street, Suite 1105
Peterson AFB, CO 80914-4150

Department of the Air Force
341 CES/CEV
39 78th Street North
Building 470
Malmstrom AFB, MT 59402

Libraries

Lewistown Public Library
701 West Main
Lewistown, MT 59497

Great Falls Public Library
301 2nd Avenue North
Great Falls, MT 59401-2593

Arden G. Hill Memorial Library
7356 4th Avenue North
Malmstrom AFB, MT 59402-7506

Choteau Public Library
17 Main Avenue North
Choteau, MT 59422

Chouteau County Library
1518 Main
Fort Benton, MT 59442

Conrad Public Library
15 Fourth Avenue SW
Conrad, MT 59425

Dutton Public Library
22 Main Street West
Dutton, MT 59433

Toole County Library
229 Second Avenue South
Shelby, MT 58474

Malmstrom AFB Library
7356 Fourth Ave North, Bldg 1152
Malmstrom AFB, MT 59402-7536

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APPENDIX A

PHOTOGRAPHS

Photograph A-1. LF A-9 Aerial view.

Photograph A-2. LF T-44 Aerial view.

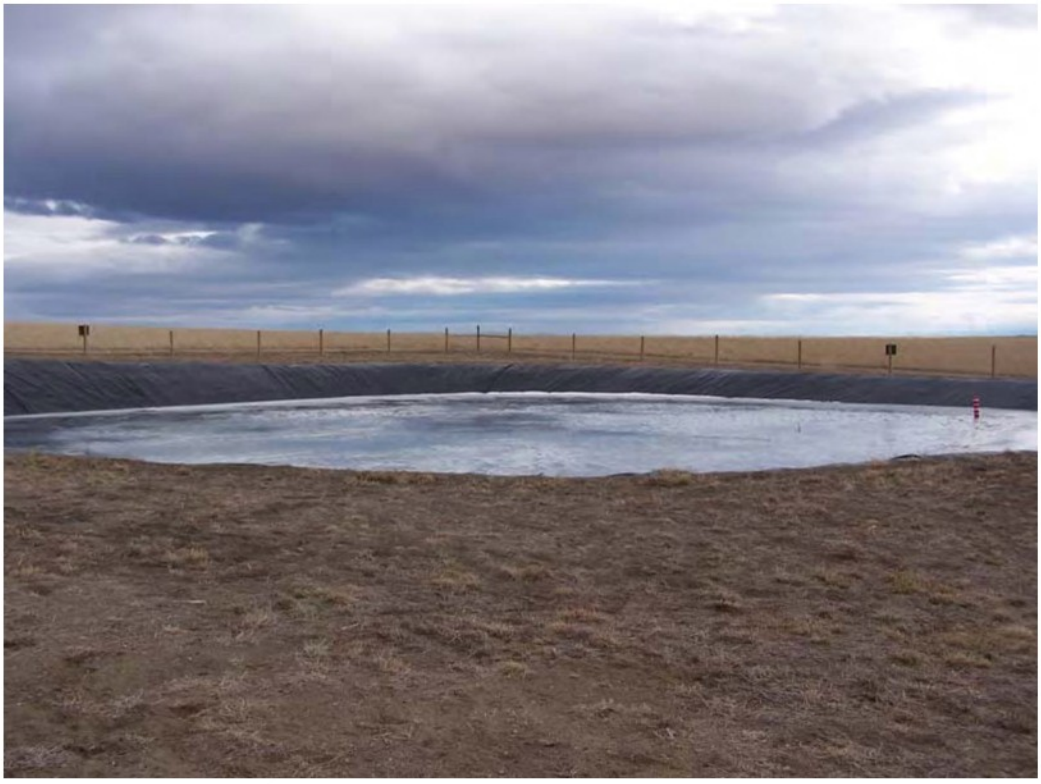
Photograph A-3. LF J-10 Surface view.

Photograph A-4. MAF C-1 Aerial view.

Photograph A-5. MAF P-0 Aerial view.

Photograph A-6. MAF J-1 View from road.

Photograph A-7. MAF J-1 ASTs outside fenceline.



Photograph A-8. MAF J-1 Sewage lagoon.

Photograph A-9. MAF S-0 Surface view.

Photograph A-10. MAF S-0 View from road.

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APPENDIX B

DECEMBER 2002, PROGRAMMATIC AGREEMENT REGARDING THE EXTERIOR MAINTENANCE OF MISSILE ALERT FACILITY ALPHA-01 AND LAUNCH FACILITY ALPHA-06

PROGRAMMATIC AGREEMENT
BETWEEN
THE UNITED STATES DEPARTMENT OF THE AIR FORCE
AND THE
THE MONTANA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE EXTERIOR MAINTENANCE OF
MISSILE ALERT FACILITY ALPHA-01 AND LAUNCH FACILITY ALPHA-06
AT MALMSTROM AIR FORCE BASE, MONTANA

December 2002

WHEREAS, the United States Department of the Air Force (Air Force), through consultation with the Montana State Historic Preservation Officer (SHPO), has determined that Missile Alert Facility Alpha-01 (MAF A-01) (Smithsonian Number 24CA0624) and Launch Facility Alpha-06 (LF A-06) (Smithsonian Number 24CA0684), historically known as the *Ace in the Hole*, and as described in Attachments 1 and 2 of this Programmatic Agreement (Agreement), are eligible for listing in the National Register of Historic Places (National Register); and

WHEREAS, the Air Force has determined that certain currently identified and future exterior modifications to MAF A-01 and LF A-06 could constitute an Undertaking under Section 106 of the Act and may have the potential to adversely affect qualities that make these historic properties eligible for listing in the National Register; and

WHEREAS, the Air Force has previously consulted with the Montana SHPO and the Advisory Council on Historic Preservation (Council) regarding potential adverse effects on MAF A-01 (Attachment 3) resulting from extensive upgrade of the facility, and subsequently entered into a Memorandum of Agreement (MOA) to mitigate those adverse effects (Attachment 4), the stipulations of which have been fully met; and

WHEREAS, the Air Force has prepared documentation of MAF A-01 as part of the aforementioned mitigation, utilizing Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) standards, which was accepted by the Montana SHPO in July 1997; and

WHEREAS, the Air Force has also prepared National Register Registration forms, (a draft of which has been provided to SHPO), a Cold War-era historic resources inventory of Malmstrom Air Force Base (MAFB), and a detailed descriptions of the background, significance, and description of MAF A-01 and LF A-06 contained in Attachments 1 and 2; each of which consists of substantial, narrative, graphic, and photographic elements that comprehensively record the history and physical features of MAF A-01 and LF A-06, and that, upon approval of this Programmatic Agreement by the Montana SHPO, no additional recordation of these historic properties will be required; and

WHEREAS, the signatories of the aforesaid MOA have agreed that the interior of the above-ground support facilities at MAF A-01 have suffered extensive past interior renovation and require no recordation or further consultation under Section 106 of the National Historic Preservation Act (the Act) (see Attachment 4); and

WHEREAS, the Montana SHPO recognizes that Malmstrom AFB MAF A-01 and LF A-06 are active components of the United States Intercontinental Ballistic Missile (ICBM) system and that in order to maintain a constant state of defensive readiness, the sensitive nature of activities

and upgrade requirements occurring below ground at these locations are issues of National Security and cannot be described, disclosed, or otherwise hindered, and are hereafter excluded from review under Section 106 of the Act; and

WHEREAS, the Air Force has previously consulted with the Montana SHPO regarding the status of archaeological sites within the MAF and LF areas and the Montana SHPO has concurred that, because of extensive ground disturbance during construction, no archaeological inventories are required for any of these areas (Attachment 5), including MAF A-01 and LF A-06, and that, except as stipulated in Section I of this Agreement, any ground-disturbing activities (e.g., for new construction or utility repair) within the MAF and LF areas will not require consultation under Section 106 of the Act; and

WHEREAS, the definitions given in Attachment 6 are applicable throughout this Agreement;

NOW, THEREFORE, the Air Force and the Montana SHPO agree that the Undertakings described herein shall be implemented in accordance with the following stipulations, to take into account the effect of such Undertakings on historic properties and to fulfill the Air Force's Section 106 responsibilities for all aspects of the Undertakings.

STIPULATIONS

The Air Force shall ensure that the following measures are carried out:

I. UNEXPECTED ARCHAEOLOGICAL DISCOVERIES

Although the depth and extent of ground disturbance is extensive at all MAF and LF sites, including MAF A-01 and LF A-06, the Air Force is cognizant that there is always the possibility that archaeological materials may be unexpectedly uncovered during construction activities. In the event prehistoric or historic archaeological materials, particularly osteological remains (bones), are unexpectedly encountered, all activity shall cease in the immediate area of the find, the area protected from further disturbance, and the Montana SHPO notified.

II. STEWARDSHIP OF BELOW GROUND FEATURES OF MAF A-01 AND LF A-06

The Air Force agrees to continue its policy of good stewardship in the care of historic properties and will, to the extent practical, maintain, or replace in kind, any historic features within the below ground elements of MAF A-01 and LF A-06. This includes structural, mechanical, electrical, and electronic features within the subsurface exterior (e.g., entryway, blast door) and interior (capsule) chambers of the MAF and the LF launch tube and support building (see Attachments 1 and 2).

III. ACTIVITIES THAT DO NOT REQUIRE AGENCY REVIEW

The following currently proposed projects and routine maintenance activities will be considered to have no adverse effect on the qualities that make MAF A-01 or LF A-06 eligible for listing in the National Register. Consultation with, or notification to, the Montana SHPO or the Council beyond that which is presented within this Agreement is not required.

A. Currently Proposed Projects

1. **MAF A-01 Installation of Fire Sprinkler System.** A sprinkler system will be installed within the MAF buildings for fire suppression purposes. The system design includes the installation of an underground water storage tank as shown in Attachment 7. The sprinkler system will not affect the appearance of the outside of the existing facility.

2. **Water Treatment System Upgrade at MAF A-01.** The water treatment system inside the pumphouse at MAF A-01 will be upgraded to a more efficient and modern system. Changes will be limited to equipment inside the pumphouse and will not affect the exterior appearance of the facility.

3. **Cathodic Protection Upgrade at LF A-06.** The wiring in the rectifier cabinet for the Underground Storage Tank (as well as other underground equipment) cathodic protection system requires replacement. The outside appearance of the cabinet and the facility will not be changed.

4. **Upgrade of ICBM Super High Frequency Satellite Terminal (ISST).** The ISST system is a critical component of the MAF A-01 communications network. It is scheduled to be upgraded in order to maintain the weapons system at the highest possible state of readiness. The upgrade will involve installation of an underground cable system and upgrades to electrical equipment. It will not alter the appearance of the facility.

5. **Upgrade of Existing Antennas.** Antennas are a critical component of the MAF communication system and have been key elements of the MAF complex appearance since its original construction. To ensure clear, rapid, and stable communication between MAFB and other elements of the 10th Missile Squadron, the antenna systems require periodic upgrade. The upgrade of the antenna system at MAF A-01 will be undertaken in a manner that is in keeping with the overall historic appearance of the complex and will not detract from its historical significance.

6. **Kitchen Repair.** Some of the equipment located inside the MAF A-01 kitchen will be replaced and/or upgraded. The mission of the kitchen will remain the same and the outside appearance of MAF A-01 will not be affected.

7. **LF A-06 Concrete Repair.** The concrete at LF A-06 is severely cracked. Water leaking through the cracks has the potential to affect and damage LF underground features and increase maintenance requirements. The existing concrete will not be replaced, rather, the surface will be repaired to prevent water leaks. The repairs will match the color of the existing surface as closely as possible and will not alter the visual integrity of the property.

8. **LF A-06 Day Tank Replacement.** The day tank (fuel tank) in the underground equipment room at LF A-06 will be replaced with a new double wall tank with interstitial monitoring to detect leaks. The function

of the tank will remain the same and the outside appearance of LF A-06 will not change.

9. **Installation of the Minuteman MEECN (Minimum Essential Emergency Communications Network) Antenna & Communication System.** The ISST communications system (Item 5.) at MAF A-01 will eventually be replaced by the MEECN communication system. The MEECN system is an Extremely High Frequency (EHF) communication system which consists of an above ground hardened antenna subsystem and associated hardware mounted on a support structure connected to a below ground subsystem providing the operator interface. Attachment 8, Figure 1 shows a conceptual diagram of the facility after installation of the MEECN system. The above ground equipment consists of an EHF antenna located under a radome, and mounted on a cylindrical shelter. The shelter contains environmental control units, an amplifier, and power generators, and is mounted on a concrete base. Attachment 8, Figure 2 shows the approximate shelter and radome configuration and dimensions. The below ground hardware consists of the terminal electronics, controls, and associated communication devices. The approximate location of the MEECN equipment at MAF A-01 is shown in Attachment 8, Figure 3. The installation of the MEECN system at MAF A-01 is necessary to keep the weapons system operational and is consistent with the historical use of the facility. The installation of the radome and shelter will change the exterior appearance of the facility slightly, but will not significantly affect the historical significance of the facility as the new radome and shelter are similar in appearance and function to outside antennas which currently exist at MAF A-01 and have existed there in various forms since it was constructed. Underground equipment installed as part of the MEECN project will have no affect on the appearance or historical significance of MAF A-01.

10. **Installation of Surveillance Cameras and Intrusion Detection System.** Surveillance cameras will be positioned to view the outside of the facility and other critical areas within the MAF A-01 complex. Cameras will be connected to a monitor in the Flight Security Office and to an intrusion detection system. The intrusion detection system will be installed at the gate and all other points of penetration around the facility and around critical equipment. It will detect unauthorized entry and provide alarms. Equipment to be installed includes small cameras, sensors, cables, wires, and a monitor. This equipment will be small and unobtrusive and will not significantly affect the appearance or the historical significance of the facility.

B. Proposed and Routine Maintenance Activities

The following proposed and routine maintenance activities are required in order to keep MAF A-01 and LF A-06 in a constant state of defensive readiness. These activities will be conducted in the most sensitive manner possible in order to maintain the exterior historical appearance of the facilities, while supporting the requirements of the mission. To the extent possible, maintenance activities will be conducted in a manner consistent with *The Secretary of the Interior's Standards for*

Rehabilitation and Illustrated Guidelines for Rehabilitation of Historic Buildings (1995), and Section 110 of the Act. If feasible, items will be repaired rather than replaced; when replaced every effort will be made to use "in kind" materials or an aesthetically acceptable substitute (both in color and design).

In addition, because the history and current exterior appearance of MAF A-01 and LF A-06 have been recently and substantially documented as described within **WHEREAS** 4 and 5 of this Agreement, as well as within the Attachments to this Agreement, no further mitigation is required for the routine maintenance activities described herein and no additional consultation is required under Section 106 of the Act. Routine maintenance activities at MAF A-01 and LF A-06 include:

1. Replacement of hoses or ducts that are damaged or deteriorating
2. Repair and replacement of pavement with similar materials, within the same footprint
3. Control and repair of MAF and LF grounds that are being eroded. Repairs will not substantially alter the facility landscape
4. Repair of water leaks and any water damage in any concrete or asphalt surfaces
5. Repair, or replacement in kind, of electrical and communication panels and panel wires
6. Inspection of the track that moves the maintenance cover over the LF A-06 launch tube and rewelding the teeth (or, if necessary in-kind replacement)
7. Replacement of the LF A-06 ballistic actuator (the piston that launches the door) with a rebuilt one
8. Replacement of the LF A-06 air conditioning system
9. Modification of the diesel generators in MAF A-01 and LF A-06 with interchangeable fuel oil filters
10. Repair or replacement of loose, worn, or damaged items, including:
    - Siding
    - Roofing materials and roof vents
    - Windows or doors
    - Security fencing, gates, and locks
11. Application of paint following proper surface preparation and using compatible colors
12. Installation of mechanical or service equipment in such a manner that they are inconspicuous from view

13. Maintenance and repair of access roads, curbs, or parking lots

14. Maintenance and repair of the sewage lagoon at MAF A-01

15. Maintenance and repair of the Helipad

16. Landscape maintenance, including mowing and removal of trees, shrubs, or other plants and revegetation and minor earthwork to control erosion

17. Unanticipated environmental remediation (e.g., fuel spills).

IV. GENERAL PROVISIONS

A. Dispute Resolution

Should any party to this Agreement object at any time to the manner in which the terms of this Agreement are implemented or to any documentation prepared in accordance with and subject to the terms of this Agreement, the Air Force shall consult with the objecting party to resolve the objection. If the Air Force determines within 30 days of receipt of the objection that the objection cannot be resolved, the Air Force shall forward all documentation relevant to the dispute to the Council. Upon receipt of all pertinent documentation, the Council will provide comments in accordance with 36 CFR 800.7.

Any Council comment provided in response to the Air Force's request will be taken into account by the Air Force in accordance with 36 CFR Part 800.7(c)(4) with reference only to the subject of the dispute; the Air Force's responsibility to carry out all actions under this Agreement that are not subjects of the dispute will remain unchanged.

B. Public Objection

At any time during implementation of the measures stipulated in the Agreement, should an objection to any such measure be raised by a member of the public, the Air Force shall take the objection into account and consult, as needed, with the objecting party, the Montana SHPO, and the Council, if necessary to resolve the objection.

C. Annual Reporting

For each of the 5 years covering the duration of this Agreement, MAFB shall prepare and submit to the Montana SHPO an annual report. The report shall describe any upgrades or routine maintenance activities affecting historic properties covered under this Agreement that were undertaken in the previous calendar year, or anticipated for the next calendar year. The annual report shall document these activities and their associated provisions in the Agreement, and identify any problems or issues related to implementation of the Agreement. The report shall be submitted no later than 31 January of each year for the previous year.

V. AMENDMENTS, NONCOMPLIANCE, AND TERMINATION

If the Air Force or the Montana SHPO determines that the terms of this Agreement cannot be met, or believes that an amendment or addendum is necessary, the party making such determination shall immediately consult with the other signatories to consider and develop an amendment or addendum to the Agreement pursuant to 36 CFR Part 800.6(c)(7) and 800.6(c)(8). If this Agreement is not amended as provided for in this stipulation, any signatory may terminate it, whereupon the Air Force shall proceed in accordance with 36 CFR Part 800.6(c)(8). Such amendment or addendum shall be executed in the same manner as the original Agreement pursuant to 36 CFR Part 800.

VI. DURATION OF THE AGREEMENT

This Agreement will be in effect for 5 years from the date of execution, which will be the date of the final signature. Three months prior to the end of the 5th year, the agreement will be reviewed by the Air Force, the Montana SHPO, and the Council for possible modification, termination, or extension.

VII. ANTI-DEFICIENCY ACT

The stipulations of this Agreement are subject to the provisions of the Anti-Deficiency Act (31 United States Code [U.S.C.] Sec. 1341). If compliance with the Anti-Deficiency Act alters or impairs the Air Force's ability to implement the stipulations of this agreement, the Air Force will consult in accordance with the amendment and termination procedures found in Stipulation V.

Execution of this Agreement by the Air Force and the Montana SHPO and implementation of its terms, evidences that the Air Force has afforded the Council an opportunity to comment on the Undertaking and its potential effect on historic properties, that the Air Force has taken into account the effects of the Undertaking on historic properties, and that the Air Force has satisfied its responsibilities under Section 106 of the Act and applicable implementing regulations.

UNITED STATES DEPARTMENT OF THE AIR FORCE,
MALMSTROM AIR FORCE BASE

By: _____ Date: 23 February 2003
C. Donald Alston, Colonel, USAF
341st Space Wing Commander

MONTANA STATE HISTORIC PRESERVATION OFFICER

By: _____ Date: MARCH 12, 2003
State Historic Preservation Officer

APPENDIX C

DRAFT MEMORANDUM OF AGREEMENT REGARDING DEACTIVATION OF THE 564TH MINUTEMAN III MISSILE SQUADRON

DRAFT FOR DISCUSSION PURPOSES ONLY

MEMORANDUM OF AGREEMENT AMONG MALMSTROM AFB, THE MONTANA STATE HISTORIC PRESERVATION OFFICE, AND THE ADVISORY COUNCIL FOR HISTORIC PRESERVATION REGARDING INACTIVATION OF THE 564th MINUTE MAN III MISSILE SQUADRON

17 OCTOBER 2006

WHEREAS, the Air Force proposes to deactivate 50 Minute Man III (MMIII) Missile Launch Facilities (LF) and 5 Missile Alert Facilities (MAF) within the 564th Missile Squadron (MS) at Malmstrom Air Force Base (MAFB) and maintain them in 30% caretaker status (Undertaking), as described in the Attachment; and

WHEREAS, the Air Force has determined that the MMIII Missile System in Montana is eligible for inclusion on the National Register of Historic Places under Criterion A for its association with significant U.S. military missile activities and paradigms during the period from 1962 to 1989 and Criterion C for its technological design and function (Attachment); and

WHEREAS, MAFB has consulted with the Montana State Historic Preservation Office (MTSHPO) pursuant to 36 CFR Part 800, implementing Section 106 of the National Historic Preservation Act (NHPA), 16 USC 470f; and

WHEREAS, MAFB, MTSHPO, and Advisory Council on Historic Preservation (ACHP) have consulted to resolve adverse effects under 36 CFR 800.6; and

WHEREAS, MAFB completed a formal inventory and evaluation of Cold War era buildings at MAFB pursuant to Section 110 of the NHPA (16 USC 470h-2) including the facilities of the four missile squadrons at MAFB, the 10th MS, the 12th MS, the 490th MS, and the 564th MS; and

WHEREAS, MAFB and the MTSHPO determined that the MAF Alpha One (A-1) and LF Alpha Six (A-6) within the 10th MS at MAFB are exceptionally significant for their role in the Cold War and subsequently entered into a Programmatic Agreement (PA), (Attachment) in December 2002 with the MTSHPO regarding historic maintenance/modification of these sites; and

WHEREAS, MAFB and the MTSHPO agree that the artwork located within MAFs and LFs of the 564th MS, Smithsonian Site Numbers 24 PN 0146, TT0573, and TL0787, is of historic importance and should be preserved through pictures and other appropriate documentation; and

WHEREAS, the Air Force has further preserved the historic significance of the MMIII Missile System by creating interpretive sites at other missile system sites in the United States (e.g., transfer of MAF O-0 and LF N-33 at Grand Forks AFB, North Dakota to the State of North Dakota; transfer of a LF at Ellsworth AFB, South Dakota to the National Parks Service at Badlands National Park); conducting Historic American Building Survey (HABS)/Historic American Engineering Record (HAER); and accomplishing context studies such as *To Defend and Deter: The Legacy of the United States Cold War Missile Program*, 1990, that educate the public on the Cold War Era and the Air Force's Intercontinental Ballistic Missile program.

WHEREAS, MAFB has determined that there are no Federally-recognized Indian tribes that would need to be consulted regarding this Undertaking pursuant to 36 CFR § 800.2; and

NOW, THEREFORE, MAFB, the MTSHPO, and ACHP agree that the following stipulations shall be implemented with regards to the referenced Undertaking.

STIPULATIONS

MAFB shall ensure that the following stipulations are carried out:

(1) MAFB shall record artwork located within the 5 MAFs and 50 LFs of the 564th MS using color digital and large format black and white photography. MAFB shall consult with the National Park Service (NPS) and MTSHPO to determine and carry out the appropriate level of HAER recordation and appropriate disposition. Copies of the HAER documentation will be made available to the Montana Historical Society and the Cascade County Historical Society within two years of the execution of this agreement.

(2) MAFB shall collect and catalog photographs, documents, film, video, and representative examples of furnishings and equipment in the 564th MS mission at MAFB associated with the Cuban Missile Crisis. The Headquarters Air Force Space Command (AFSPC) Historian will determine appropriate disposition including archival retention or transfer to National Archives and Records Administration in coordination with MTSHPO. Materials not retained by the AFSPC History Office or the Air Force Museum may be made available to the Montana Historical Society, Cascade County Historical Society, and MAFB Museum.

(3) MAFB shall develop a color brochure on the history of the MMIII Missile System in MT and provide one thousand copies along with the original design to the MTSHPO within two years of the execution of this agreement.

(4) (a) MAFB will continue to maintain MAF A-1 and LF A-6, 10th MS, in a manner that avoids adverse effects in accordance with the December 2002 PA between the USAF and MTSHPO regarding the exterior maintenance of MAF Alpha-01 and LF Alpha-06 (Attachment)

(b) If the Air Force proposes to deactivate MAF A-1 and LF A-6 of the 10 MS and transfer associated real property:

(i) MAFB shall immediately notify the MTSHPO and offer MAF A-1 and LF A-6 for transfer to another federal, state, or other agency for future interpretation and preservation;

(ii) Consult with interested parties for the potential transfer of MAF A-1 and LF A-6 pursuant to 36 CFR Part 800; and

(iii) For a period of three (3) years from the date of notification, MAFB shall preserve and maintain MAF A-1 and LF A-6 in accordance with the December 2002 PA between the USAF and MTSHPO regarding the exterior maintenance of MAF Alpha-01 and LF Alpha-06. During this period, the MTSHPO shall work with their Congressional delegation to pursue special legislation for the Air Force to transfer both MAF A-1 and LF A-6 directly to a federal, state, or other agency in lieu of 10 USC 9781.

(A) If successful in pursuing such legislation and subsequent transfer, the potential recipient in consultation with the MTSHPO will ensure adequate funding is provided for the initial establishment of an interpretive site(s) for MAF A-1 and LF A-6.

(B) Any agency that may subsequently receive MAF A-1 and LF A-6 shall upon receipt and thereafter provide 100% of funding for the maintenance and repair of MAF A-1 and LF A-6, and take responsibility for all operations, maintenance, and permits for the sewage lagoon and cathodic protection system.

(c) If the stipulations above are not met within that time period (see b(iii) above), MAFB may proceed to dispose of MAF A-1 and LF A-6 in accordance with 10 USC 9781.

(5) DISPUTE RESOLUTION

At any time during the implementation of the measures stipulated in this agreement, if a signatory objects to the manner of implementation, MAFB shall take the objection into account and consult as needed. If MAFB determines the objection cannot be resolved, MAFB will:

(1) Forward all documentation relevant to the dispute, including MAFB's proposed resolution, to the ACHP. The ACHP shall provide MAFB with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, MAFB shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP and the MTSHPO, and provide them with a

copy of this written response. MAFB will then proceed according to its final decision.

(2) If the ACHP does not provide its advice regarding the dispute within the thirty day period, MAFB may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, MAFB shall prepare a written response that takes into account any timely comments regarding the dispute from the MTSHPO, and provide them and the ACHP with a copy of such written response.

(3) MAFB's responsibilities to carry out all other actions subject to the terms of this agreement that are not the subject of the dispute remain unchanged.

(6) ANTI-DEFICIENCY ACT

All actions set forth in this Memorandum of Agreement (MOA) requiring expenditure of MAFB funds in future fiscal years are expressly subject to the availability of appropriations and requirements of the Anti-Deficiency Act (31 U.S.C. Section 1341). If sufficient funds are not made available to fully carry out the terms of the agreement, the installation commander shall consult with the signatories to either terminate or amend this agreement in accordance with the termination and amendment procedures set forth in the agreement.

(7) AMENDMENTS

Any party to this agreement may propose that it be amended. An amendment to this agreement will go into effect upon written concurrence by all signatories.

(8) TERMINATION

Any signatory to this MOA may terminate it by providing thirty (30) days written notice to all signatories, provided that the signatories have consulted prior to termination to seek agreement on amendments or other actions that would avoid termination.

(9) AGREEMENT REVIEW

This Agreement will be reviewed by MAFB. The MTSHPO, and ACHP for possible modification, termination, or extension every five years from the date of execution, which will be the date of the final signature.

(10) IMPLEMENTATION

Approval of this MOA constitutes acceptance of the terms of this agreement. Compliance with the terms of this agreement is evidence that MAFB has taken into account the effects of this undertaking on historic properties and afforded the ACHP and MTSHPO opportunity to comment.

UNITED STATES DEPARTMENT OF THE AIR FORCE
MALMSTROM AFB

By_____ Date_____

Commander, 341st Space Wing

MONTANA STATE HISTORIC PRESERVATION OFFICER

By_____ Date_____
Mark Baumler, PhD
State Historic Preservation Officer

ADVISORY COUNCIL FOR HISTORIC PRESERVATION

By_____ Date_____
John M. Fowler
Executive Director

ATTACHMENT

23 Mar 06 Determination of Eligibility for MMIII Missile System at MAFB MT and Determination of Effect for Proposed Inactivation of the 564th MS

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE SPACE COMMAND

MAR 2 3 2006

Mr. Stanley E. Rogers
HQ AFSPC/A7CVP
150 Vandenberg Street, Suite 1105
Peterson AFB CO 80914-4150

Mr. Stan Wilmoth, Ph.D.
Acting State Historic Preservation Officer
Montana State Historic Preservation Office
1410 8th Avenue
PO Box 201202
Helena MT 59620-1202

SUBJECT: Determination of Eligibility for the Minuteman III (MMIII) Missile System at Malmstrom Air Force Base (AFB) and Determination of Effect for the Proposed Deactivation of the 564th Missile Squadron

Dear Mr. Wilmoth,

The purpose of the letter is to initiate consultation in accordance with 36 CFR 800 on the proposed deactivation of the 564th MMIII Missile Squadron within the Malmstrom AFB deployment area or Area of Potential Affect (APE) depicted in Attachment 1. The United States Air Force (USAF) has previously determined that Missile Alert Facility (MAF) Alpha One (A-1) and Launch Facility (LF) Alpha Six (A-6) within the 10th Missile Squadron are exceptionally-significant for their role in the Cold War and subsequently entered into a Programmatic Agreement (PA) in December 2002 (Attachment 2) with your office regarding modification of these sites.

The USAF has also determined that the MMIII Missile System, described in Attachment 3, is eligible for inclusion on the National Register of Historic Places under Criterion A for its association with significant United States military missile activities and paradigms during the Cold War period (1946 to 1989) and Criterion C for its technological design and function. The MMIII Missile System does not embody characteristics of an architectural, engineering, technological, style, method, or technique of construction that significantly distinguish it from the other MMIII systems nationwide. The only distinguishing characteristics of the MMIII sites near Malmstrom AFB reside in the "human element." Human elements such as artwork, photography, correspondence and other such elements depict the role of the missile wings during the Cold War. Therefore, the only preservation and mitigation activity warranted for specific sites may be recordation of those human elements. Please refer to the Base and Missile Cold War Survey for Malmstrom AFB at Attachment 4 detailing our analysis and findings.

Attachment 5 describes the proposed undertaking (deactivation and caretaker status). The USAF has determined that deactivation of 564th Squadron at Malmstrom AFB would not result in adverse effects to the MMIII Missile System since the USAF has completely preserved the significant qualities and integrity of the System. Specifically, the significance of the System has been preserved through establishment of static displays, production of educational materials and recordation. To date, the USAF has transferred an intact LF to the National Park Service at the Badlands National Park as mitigation for deactivation and dismantlement of MMIII sites at Ellsworth AFB, SD. The USAF has also agreed to transfer a MAF and an LF to the State of North Dakota as mitigation for deactivation of sites at Grand Forks AFB, ND. The USAF has accomplished Historic Architectural Engineering Record (HAER) documentation of artwork within the facilities at Grand Forks AFB. Lastly, the MMIII Missile System is still operational at Minot AFB, Francis E. Warren AFB and Malmstrom AFB.

We hereby request your concurrence on the USAF determination of eligibility and determination of no adverse effect for the deactivation of the 564th Squadron at Malmstrom AFB. Our point of contact is Ms. Vicki Williams, Command Cultural Resources Manager, (719) 554-6938, E-mail Victoria.Williams@Peterson.af.mil.

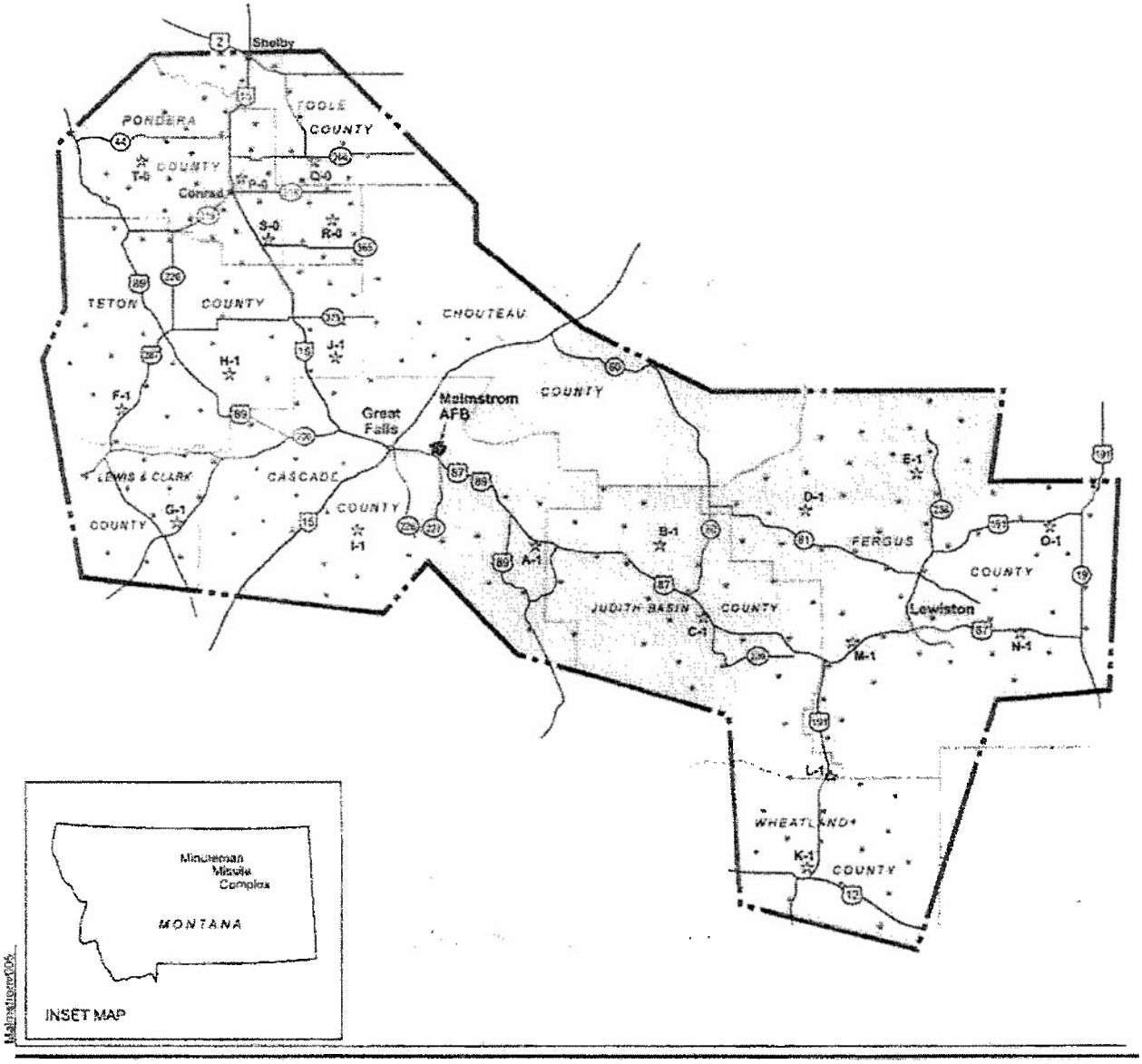
STANLEY E. ROGERS, GS-14
Chief, Environmental Planning & Conservation

Attachments:
1. Area of Potential Effect
2. Programmatic Agreement, December 2002
3. Description of the MMIII Missile System
4. Base and Missile Cold War Survey
5. Description of the Proposed Undertaking

cc:
341 CES/CC

ATTACHMENT 1

AREA OF POTENTIAL EFFECT
(MALMSTROM AFB DEPLOYMENT AREA)



EXPLANATION

- ☆ R-0 Missile Alert Facility
- 10th Missile Squadron
- 12th Missile Squadron
- 490th Missile Squadron
- 564th Missile Squadron
- Launch Facility
- County Lines
- U.S. Highway
- Interstate Highway
- State Highway
- Missile Complex Boundary

0 13.5 27 Miles

Minuteman III Deployment Area

ATTACHMENT 2

PROGRAMMATIC AGREEMENT
EXTERIOR MAINTENANCE OF A-1 AND A-6
DECEMBER 2002

PROGRAMMATIC AGREEMENT
BETWEEN
THE UNITED STATES DEPARTMENT OF THE AIR FORCE
AND THE
THE MONTANA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE EXTERIOR MAINTENANCE OF
MISSILE ALERT FACILITY ALPHA-01 AND LAUNCH FACILITY ALPHA-06
AT MALMSTROM AIR FORCE BASE, MONTANA

December 2002

WHEREAS, the United States Department of the Air Force (Air Force), through consultation with the Montana State Historic Preservation Officer (SHPO), has determined that Missile Alert Facility Alpha-01 (MAF A-01) (Smithsonian Number 24CA0624) and Launch Facility Alpha-06 (LF A-06) (Smithsonian Number 24CA0684), historically known as the *Ace in the Hole*, and as described in Attachments 1 and 2 of this Programmatic Agreement (Agreement), are eligible for listing in the National Register of Historic Places (National Register); and

WHEREAS, the Air Force has determined that certain currently identified and future exterior modifications to MAF A-01 and LF A-06 could constitute an Undertaking under Section 106 of the Act and may have the potential to adversely affect qualities that make these historic properties eligible for listing in the National Register; and

WHEREAS, the Air Force has previously consulted with the Montana SHPO and the Advisory Council on Historic Preservation (Council) regarding potential adverse effects on MAF A-01 (Attachment 3) resulting from extensive upgrade of the facility, and subsequently entered into a Memorandum of Agreement (MOA) to mitigate those adverse effects (Attachment 4), the stipulations of which have been fully met; and

WHEREAS, the Air Force has prepared documentation of MAF A-01 as part of the aforementioned mitigation, utilizing Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) standards, which was accepted by the Montana SHPO in July 1997; and

WHEREAS, the Air Force has also prepared National Register Registration forms, (a draft of which has been provided to SHPO), a Cold War-era historic resources inventory of Malmstrom Air Force Base (MAFB), and a detailed descriptions of the background, significance, and description of MAF A-01 and LF A-06 contained in Attachments 1 and 2; each of which consists of substantial, narrative, graphic, and photographic elements that comprehensively record the history and physical features of MAF A-01 and LF A-06, and that, upon approval of this Programmatic Agreement by the Montana SHPO, no additional recordation of these historic properties will be required; and

WHEREAS, the signatories of the aforesaid MOA have agreed that the interior of the above-ground support facilities at MAF A-01 have suffered extensive past interior renovation and require no recordation or further consultation under Section 106 of the National Historic Preservation Act (the Act) (see Attachment 4); and

WHEREAS, the Montana SHPO recognizes that Malmstrom AFB MAF A-01 and LF A-06 are active components of the United States Intercontinental Ballistic Missile (ICBM) system and that in order to maintain a constant state of defensive readiness, the sensitive nature of activities

and upgrade requirements occurring below ground at these locations are issues of National Security and cannot be described, disclosed, or otherwise hindered, and are hereafter excluded from review under Section 106 of the Act; and

WHEREAS, the Air Force has previously consulted with the Montana SHPO regarding the status of archaeological sites within the MAF and LF areas and the Montana SHPO has concurred that, because of extensive ground disturbance during construction, no archaeological inventories are required for any of these areas (Attachment 5), including MAF A-01 and LF A-06, and that, except as stipulated in Section I of this Agreement, any ground-disturbing activities (e.g., for new construction or utility repair) within the MAF and LF areas will not require consultation under Section 106 of the Act; and

WHEREAS, the definitions given in Attachment 6 are applicable throughout this Agreement;

NOW, THEREFORE, the Air Force and the Montana SHPO agree that the Undertakings described herein shall be implemented in accordance with the following stipulations, to take into account the effect of such Undertakings on historic properties and to fulfill the Air Force's Section 106 responsibilities for all aspects of the Undertakings.

STIPULATIONS

The Air Force shall ensure that the following measures are carried out:

I. UNEXPECTED ARCHAEOLOGICAL DISCOVERIES

Although the depth and extent of ground disturbance is extensive at all MAF and LF sites, including MAF A-01 and LF A-06, the Air Force is cognizant that there is always the possibility that archaeological materials may be unexpectedly uncovered during construction activities. In the event prehistoric or historic archaeological materials, particularly osteological remains (bones), are unexpectedly encountered, all activity shall cease in the immediate area of the find, the area protected from further disturbance, and the Montana SHPO notified.

II. STEWARDSHIP OF BELOW GROUND FEATURES OF MAF A-01 AND LF A-06

The Air Force agrees to continue its policy of good stewardship in the care of historic properties and will, to the extent practical, maintain, or replace in kind, any historic features within the below ground elements of MAF A-01 and LF A-06. This includes structural, mechanical, electrical, and electronic features within the subsurface exterior (e.g., entryway, blast door) and interior (capsule) chambers of the MAF and the LF launch tube and support building (see Attachments 1 and 2).

III. ACTIVITIES THAT DO NOT REQUIRE AGENCY REVIEW

The following currently proposed projects and routine maintenance activities will be considered to have no adverse effect on the qualities that make MAF A-01 or LF A-06 eligible for listing in the National Register. Consultation with, or notification to, the Montana SHPO or the Council beyond that which is presented within this Agreement is not required.

A. Currently Proposed Projects

1. **MAF A-01 Installation of Fire Sprinkler System.** A sprinkler system will be installed within the MAF buildings for fire suppression purposes. The system design includes the installation of an underground water storage tank as shown in Attachment 7. The sprinkler system will not affect the appearance of the outside of the existing facility.

2. **Water Treatment System Upgrade at MAF A-01.** The water treatment system inside the pumphouse at MAF A-01 will be upgraded to a more efficient and modern system. Changes will be limited to equipment inside the pumphouse and will not affect the exterior appearance of the facility.

3. **Cathodic Protection Upgrade at LF A-06.** The wiring in the rectifier cabinet for the Underground Storage Tank (as well as other underground equipment) cathodic protection system requires replacement. The outside appearance of the cabinet and the facility will not be changed.

4. **Upgrade of ICBM Super High Frequency Satellite Terminal (ISST).** The ISST system is a critical component of the MAF A-01 communications network. It is scheduled to be upgraded in order to maintain the weapons system at the highest possible state of readiness. The upgrade will involve installation of an underground cable system and upgrades to electrical equipment. It will not alter the appearance of the facility.

5. **Upgrade of Existing Antennas.** Antennas are a critical component of the MAF communication system and have been key elements of the MAF complex appearance since its original construction. To ensure clear, rapid, and stable communication between MAFB and other elements of the 10th Missile Squadron, the antenna systems require periodic upgrade. The upgrade of the antenna system at MAF A-01 will be undertaken in a manner that is in keeping with the overall historic appearance of the complex and will not detract from its historical significance.

6. **Kitchen Repair.** Some of the equipment located inside the MAF A-01 kitchen will be replaced and/or upgraded. The mission of the kitchen will remain the same and the outside appearance of MAF A-01 will not be affected.

7. **LF A-06 Concrete Repair.** The concrete at LF A-06 is severely cracked. Water leaking through the cracks has the potential to affect and damage LF underground features and increase maintenance requirements. The existing concrete will not be replaced, rather, the surface will be repaired to prevent water leaks. The repairs will match the color of the existing surface as closely as possible and will not alter the visual integrity of the property.

8. **LF A-06 Day Tank Replacement.** The day tank (fuel tank) in the underground equipment room at LF A-06 will be replaced with a new double wall tank with interstitial monitoring to detect leaks. The function

of the tank will remain the same and the outside appearance of LF A-06 will not change.

9. **Installation of the Minuteman MEECN (Minimum Essential Emergency Communications Network) Antenna & Communication System.** The ISST communications system (Item 5.) at MAF A-01 will eventually be replaced by the MEECN communication system. The MEECN system is an Extremely High Frequency (EHF) communication system which consists of an above ground hardened antenna subsystem and associated hardware mounted on a support structure connected to a below ground subsystem providing the operator interface. Attachment 8, Figure 1 shows a conceptual diagram of the facility after installation of the MEECN system. The above ground equipment consists of an EHF antenna located under a radome, and mounted on a cylindrical shelter. The shelter contains environmental control units, an amplifier, and power generators, and is mounted on a concrete base. Attachment 8, Figure 2 shows the approximate shelter and radome configuration and dimensions. The below ground hardware consists of the terminal electronics, controls, and associated communication devices. The approximate location of the MEECN equipment at MAF A-01 is shown in Attachment 8, Figure 3. The installation of the MEECN system at MAF A-01 is necessary to keep the weapons system operational and is consistent with the historical use of the facility. The installation of the radome and shelter will change the exterior appearance of the facility slightly, but will not significantly affect the historical significance of the facility as the new radome and shelter are similar in appearance and function to outside antennas which currently exist at MAF A-01 and have existed there in various forms since it was constructed. Underground equipment installed as part of the MEECN project will have no affect on the appearance or historical significance of MAF A-01.

10. **Installation of Surveillance Cameras and Intrusion Detection System.** Surveillance cameras will be positioned to view the outside of the facility and other critical areas within the MAF A-01 complex. Cameras will be connected to a monitor in the Flight Security Office and to an intrusion detection system. The intrusion detection system will be installed at the gate and all other points of penetration around the facility and around critical equipment. It will detect unauthorized entry and provide alarms. Equipment to be installed includes small cameras, sensors, cables, wires, and a monitor. This equipment will be small and unobtrusive and will not significantly affect the appearance or the historical significance of the facility.

B. Proposed and Routine Maintenance Activities

The following proposed and routine maintenance activities are required in order to keep MAF A-01 and LF A-06 in a constant state of defensive readiness. These activities will be conducted in the most sensitive manner possible in order to maintain the exterior historical appearance of the facilities, while supporting the requirements of the mission. To the extent possible, maintenance activities will be conducted in a manner consistent with *The Secretary of the Interior's Standards for*

Rehabilitation and Illustrated Guidelines for Rehabilitation of Historic Buildings (1995), and Section 110 of the Act. If feasible, items will be repaired rather than replaced; when replaced every effort will be made to use "in kind" materials or an aesthetically acceptable substitute (both in color and design).

In addition, because the history and current exterior appearance of MAF A-01 and LF A-06 have been recently and substantially documented as described within **WHEREAS** 4 and 5 of this Agreement, as well as within the Attachments to this Agreement, no further mitigation is required for the routine maintenance activities described herein and no additional consultation is required under Section 106 of the Act. Routine maintenance activities at MAF A-01 and LF A-06 include:

1. Replacement of hoses or ducts that are damaged or deteriorating
2. Repair and replacement of pavement with similar materials, within the same footprint
3. Control and repair of MAF and LF grounds that are being eroded. Repairs will not substantially alter the facility landscape
4. Repair of water leaks and any water damage in any concrete or asphalt surfaces
5. Repair, or replacement in kind, of electrical and communication panels and panel wires
6. Inspection of the track that moves the maintenance cover over the LF A-06 launch tube and rewelding the teeth (or, if necessary in-kind replacement)
7. Replacement of the LF A-06 ballistic actuator (the piston that launches the door) with a rebuilt one
8. Replacement of the LF A-06 air conditioning system
9. Modification of the diesel generators in MAF A-01 and LF A-06 with interchangeable fuel oil filters
10. Repair or replacement of loose, worn, or damaged items, including:
    - Siding
    - Roofing materials and roof vents
    - Windows or doors
    - Security fencing, gates, and locks
11. Application of paint following proper surface preparation and using compatible colors
12. Installation of mechanical or service equipment in such a manner that they are inconspicuous from view

13. Maintenance and repair of access roads, curbs, or parking lots

14. Maintenance and repair of the sewage lagoon at MAF A-01

15. Maintenance and repair of the Helipad

16. Landscape maintenance, including mowing and removal of trees, shrubs, or other plants and revegetation and minor earthwork to control erosion

17. Unanticipated environmental remediation (e.g., fuel spills).

IV. GENERAL PROVISIONS

A. Dispute Resolution

Should any party to this Agreement object at any time to the manner in which the terms of this Agreement are implemented or to any documentation prepared in accordance with and subject to the terms of this Agreement, the Air Force shall consult with the objecting party to resolve the objection. If the Air Force determines within 30 days of receipt of the objection that the objection cannot be resolved, the Air Force shall forward all documentation relevant to the dispute to the Council. Upon receipt of all pertinent documentation, the Council will provide comments in accordance with 36 CFR 800.7.

Any Council comment provided in response to the Air Force's request will be taken into account by the Air Force in accordance with 36 CFR Part 800.7(c)(4) with reference only to the subject of the dispute; the Air Force's responsibility to carry out all actions under this Agreement that are not subjects of the dispute will remain unchanged.

B. Public Objection

At any time during implementation of the measures stipulated in the Agreement, should an objection to any such measure be raised by a member of the public, the Air Force shall take the objection into account and consult, as needed, with the objecting party, the Montana SHPO, and the Council, if necessary to resolve the objection.

C. Annual Reporting

For each of the 5 years covering the duration of this Agreement, MAFB shall prepare and submit to the Montana SHPO an annual report. The report shall describe any upgrades or routine maintenance activities affecting historic properties covered under this Agreement that were undertaken in the previous calendar year, or anticipated for the next calendar year. The annual report shall document these activities and their associated provisions in the Agreement, and identify any problems or issues related to implementation of the Agreement. The report shall be submitted no later than 31 January of each year for the previous year.

V. AMENDMENTS, NONCOMPLIANCE, AND TERMINATION

If the Air Force or the Montana SHPO determines that the terms of this Agreement cannot be met, or believes that an amendment or addendum is necessary, the party making such determination shall immediately consult with the other signatories to consider and develop an amendment or addendum to the Agreement pursuant to 36 CFR Part 800.6(c)(7) and 800.6(c)(8). If this Agreement is not amended as provided for in this stipulation, any signatory may terminate it, whereupon the Air Force shall proceed in accordance with 36 CFR Part 800.6(c)(8). Such amendment or addendum shall be executed in the same manner as the original Agreement pursuant to 36 CFR Part 800.

VI. DURATION OF THE AGREEMENT

This Agreement will be in effect for 5 years from the date of execution, which will be the date of the final signature. Three months prior to the end of the 5th year, the agreement will be reviewed by the Air Force, the Montana SHPO, and the Council for possible modification, termination, or extension.

VII. ANTI-DEFICIENCY ACT

The stipulations of this Agreement are subject to the provisions of the Anti-Deficiency Act (31 United States Code [U.S.C.] Sec. 1341). If compliance with the Anti-Deficiency Act alters or impairs the Air Force's ability to implement the stipulations of this agreement, the Air Force will consult in accordance with the amendment and termination procedures found in Stipulation V.

Execution of this Agreement by the Air Force and the Montana SHPO and implementation of its terms, evidences that the Air Force has afforded the Council an opportunity to comment on the Undertaking and its potential effect on historic properties, that the Air Force has taken into account the effects of the Undertaking on historic properties, and that the Air Force has satisfied its responsibilities under Section 106 of the Act and applicable implementing regulations.

UNITED STATES DEPARTMENT OF THE AIR FORCE,
MALMSTROM AIR FORCE BASE

By: _____ Date: 28 February 2003
C. Donald Alston, Colonel, USAF
341st Space Wing Commander

MONTANA STATE HISTORIC PRESERVATION OFFICER

By: _____ Date: March 4, 2003
State Historic Preservation Officer

ATTACHMENT 3

DESCRIPTION OF THE MINUTEMAN III MISSLE SYSTEM

The Minuteman missile system was conceived in the 1950s and the first Minuteman I was deployed in the early 1960s. The first Minuteman III (MMIII) was deployed in June 1970 at Minot AFB, ND. The MMIII System extends across the northern tier of the Continental United States and is based at Minot AFB and Grand Forks AFB, ND, Malmstrom AFB, MT and Francis E. Warren AFB, WY. The 341st Missile Wing at Malmstrom AFB is responsible for 200 Launch Facilities (LFs) and 20 Missile Alert Facilities (MAFs) dispersed across 23,500 square miles of central Montana. The Wing is comprised of the 10th, 12th, 490th and 564th Missile Squadrons (MSs). Each of the 4 MSs consist of 50 LFs with one missile per LF and 5 MAFs with one MAF per flight of 10 LFs. They are arranged in 5 flights (10th MS [A, B, C, D, E]; 12th MS [F, G, H, I, J]; 490th MS [K, L, M, N, O] and 564th MS [P, Q, R, S, T]). LF and MAF facilities in the 10th, 12th and 490th MS are referred to as Wing I. LF and MAF facilities in the 564th are of a slightly different design and are referred to as Wing VI.

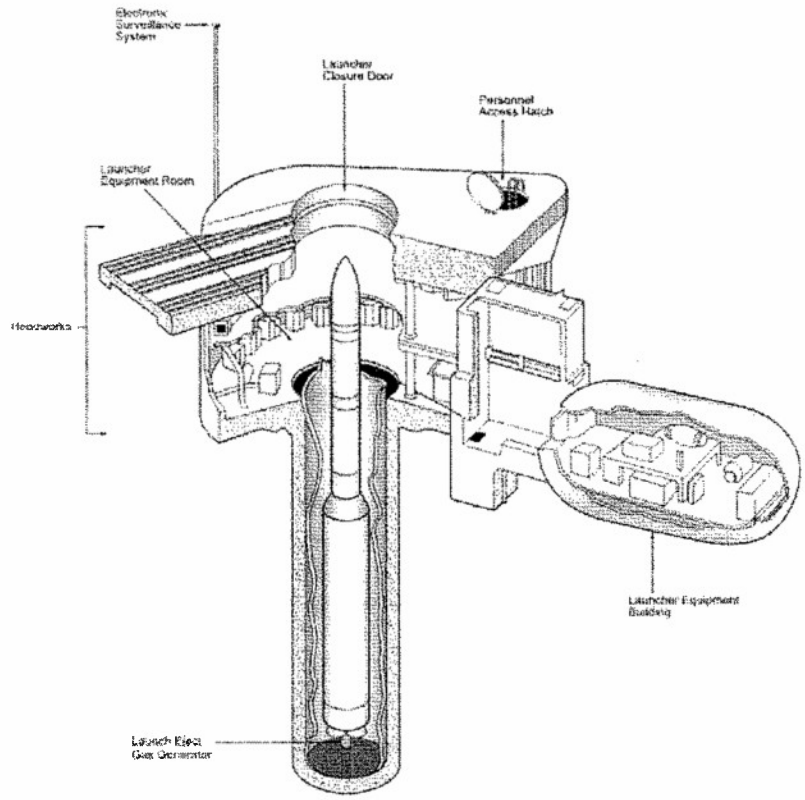
Minuteman III Missile. The MMIII missile is a three-stage, solid propellant, inertially guided ICBM with a range of over 7,000 nautical miles. It has a length of 60 feet, a diameter of 5.5 feet and weighs 79,432 pounds.

Launch Control Centers. The LCC is an underground structure of reinforced concrete and steel that houses the missile combat crew. Each LCC is connected to 10 LFs by the Hardened Intersite Cable System (HICS). The LCC is co-located with the LCEB, which houses support equipment for the LCC. LCEB support equipment includes a diesel generator, environmental control, communications and electrical power. Each LCC continually monitors the operational status and security of the 10 missiles and LFs in its own flight and has the capability to control, monitor and launch all 50 missiles in the squadron.

Hardened Intersite Cable System. The HICS provides command and control communications between the MAFs and LFs. The system is shallow buried and forms a web-like communication network enabling any MAF to communicate with any other LF in the event that another MAF losses communications with its LF flight.

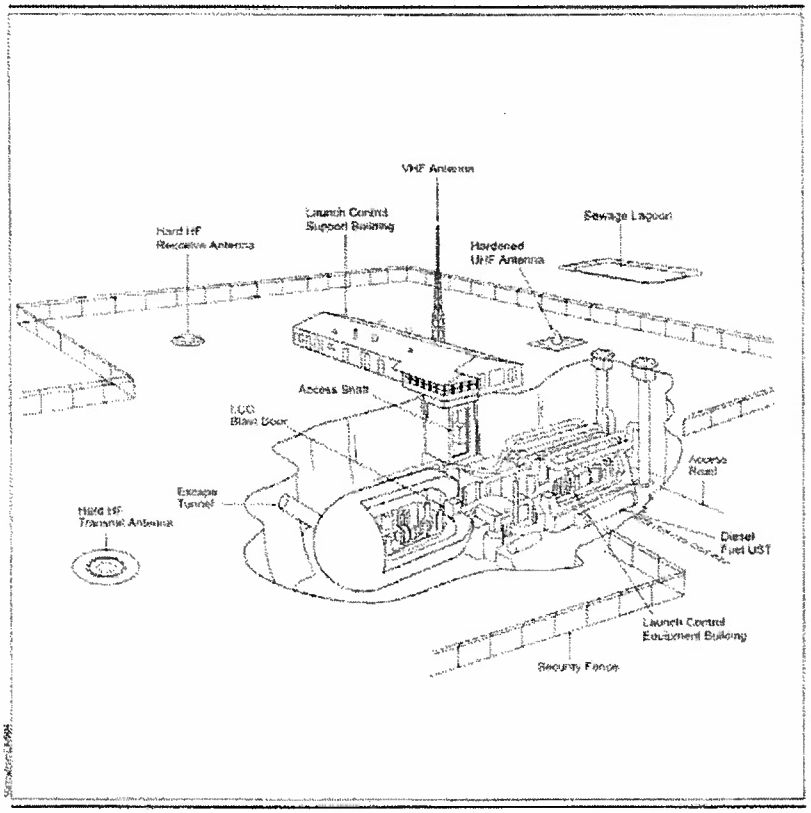
Defense Access Roads. Access roads lead from the nearest State or County road to each MAF or LF. These roads are from tens of yards to three-quarters of a mile in length. Approximately 100 miles of gravel Defense Access Roads are maintained by the Air Force to support the sites.

Launch Facilities. Each LF is located on an Air Force-owned site of approximately 10 acres within a 1.4 acre fenced area. Surface facilities on site consist of a large concrete slab covering the top of the silo and a 100-ton blast door that is blown off prior to missile launch. Surface facilities have lighting and security sensors. The LF consists of a vertical cylindrical launch tube and a Launcher Equipment Building (LEB). The interior of the launch tube is approximately 80 ft deep and houses the missile. The LEB is buried at a depth of approximately 21 feet and houses support equipment for the site including a diesel generator, environmental control, communications and electrical power. An electronic surveillance system is used at the LF to detect intruders.



Launch Facility Schematic

Missile Alert Facilities. Each MAF is located on an Air Force-owned site of approximately 20 acres within a 4 acre fenced area. MAFs are enclosed by a security fence and a surface building containing communication, recreation and housing facilities for maintenance and security personnel. An elevator within the building descends about 40 feet to the underground Launch Control Center (LCC) and Launch Control Equipment Building (LCEB). The MAF area also contains underground storage tanks for water and fuel. Each MAF has a large garage for maintenance equipment, communications, antennas, lighting, security sensors and other support equipment. Outside of the MAF fenced area is a helicopter pad and a sewage lagoon enclosed within a barbed wire fence.



Missile Alert Facility Schematic

ATTACHMENT 4

BASE AND MISSILE COLD WAR SURVEY

BASE AND MISSILE COLD WAR SURVEY: A BASELINE INVENTORY OF COLD WAR MATERIAL CULTURE AT MALMSTROM AIR FORCE BASE, MONTANA

Prepared for

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Malmstrom Air Force Base, Montana

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December 31, 1997

MANAGEMENT SUMMARY

CH2M HILL conducted a material culture inventory at Malmstrom Air Force Base, Montana, during the summer and fall, 1996 to identify extant Cold War resources important to the base, its history, and its Cold War mission as discussed in the historic context and methodology. A variety of repositories at the base were inventoried: the Wing History Office, Public Affairs Office, Civil Engineering Office and Drafting Department, Real Property Office, and the Malmstrom Air Force Base Museum and Air Park. A photographic reconnaissance of the base was conducted to document Cold War resources as well as representative architecture on the base.

The Cold War resources selected for documentation and evaluation include 214 non-housing buildings and structures, 2 Capehart and 2 Wherry housing units, 8 Minuteman Missile facilities, as well as objects and records/documents. These resources represent the United States Air Force alert posture, weapons delivery potential, and deterrence capabilities during the Cold War era. Recommendations for these resources range from stewardship to National Register of Historic Places eligibility.

Four resources (Buildings 106 and 165/170 and the Alpha-01 and Alpha-06 Minuteman Missile facilities) are recommended as currently eligible for listing in the National Register of Historic Places while four other resources (Buildings 250, 300, 1700 and 1708) appear to warrant nomination pending the outcome of recommended additional background research. Several other resources may qualify for listing in the National Register pending either additional research or attainment of 50 years of age (Buildings 360, 500, 769, 1460, 1464, 1705, 3070, and 17,100).

LIST OF ACRONYMS

AACS -	Airways and Air Communication Service
ABM -	Anti Ballistic Missile
ACC -	Air Combat Command
ACHP -	Advisory Council on Historic Preservation
ACM -	Advanced Cruise Missile
AC&W-	Aircraft Control and Warning
ADCC-	Air Defense Control Center
AEC-	Atomic Energy Commission
ADC-	Air Defense Command
ADS-	Air Defense Sector
AFB-	Air Force Base
AFCS-	Air Force Communications Squadron
AFS-	Air Force Station
AGE-	Air Ground Equipment
AMC-	Air Mobility Command
AMC-	Air Materiel Command
APCS-	Air Photographic and Charting Service
ARCS-	Air Resupply and Communication Squadron
ARS-	Air Refueling Squadron
ARS-	Air Rescue Service
ARW-	Air Refueling Wing
ASC-	Air Service Command
ATC-	Air Transport Command
AWS-	Air Weather Service
BRAC-	Base Realignment and Closure Commission
BMEWS-	Ballistic Missile Early Warning System
CEBMCO-	Corps [of] Engineers Ballistic Missile Construction Office
Col.-	Colonel
CONUS-	Continental United States
DCR-	Deputy Commander for Resource Management
DEW-	Distant Early Warning [Line]
DO-	Deputy Commander for Operations
DOD-	Department of Defense
DSES-	Defense Systems Evaluation Squadron
EWO-	Emergency War Order
FEAF-	Far East Air Force
FHA-	Federal Housing Authority
FIS-	Fighter-Interceptor Squadron
FMMS-	Field Missile Maintenance Squadron
GWEN-	Ground Wave Emergency Network
HQ-	Headquarters
ICBM-	Intercontinental Ballistic Missile
IRBM-	Intermediate-Range Ballistic Missile
LCC-	Launch Control Center

LCF-	Launch Control Facility (see LCC)
LF-	Launch Facility
MAFS-	Missile Alert Facilities
MATS-	Military Air Transport Service
MIRV-	Multiple Independently-Targetable Reentry Vehicles
MPT-	see page 64 of report (Bryant 1993)
MTTU-	Medium Transport Training Unit
NHPA-	National Historic Preservation Act of 1996, as amended
NRHP-	National Register of Historic Places
MMS-	Missile Maintenance Squadron
MOA-	Memorandum of Agreement
MSR-	Missile Site Radar
NHL-	National Historic Landmark
NORAD-	North American Air Defense Command
NRHP-	National Register of Historic Places
OMMS-	Organizational Missile Maintenance Squadron
ORI-	Operational Readiness Inspection
PA-	Programmatic Agreements
PAR-	Perimeter Acquisition Radar
RET-	Retired
RLS-	Remote Launch Site
SAC-	Strategic Air Command
SAGE-	Semiautomatic Ground Environment [radar]
SALT-	Strategic Arms Limitation Treaty
SATAF-	Site Activation Task Force
SDI-	Strategic Defense Initiative
SHPO-	State Historic Preservation Office
SLBM-	Sea (Submarine) Launched Ballistic Missile
SMS-	Strategic Missile Squadron
STRATCOM-	Strategic Communications System
TAC-	Tactical Air Command
USACE-	United States Army Corps of Engineers
USAF-	United States Air Force
WW II-	World War II

GLOSSARY

Anti-Ballistic Missile Protocol - signed in 1974, this agreement amends the Strategic Limitation Treaty by reducing the number of anti-ballistic missile systems developed by the United States and the Soviet Union to one each.

Defense Triad - a group of three weapons systems that was viewed by President Eisenhower at the end of the 1950s as the basis for stable deterrence between the United States and the Soviet Union. The weapons systems included the B-52 bomber, the Polaris submarine launched ballistic missile, and the Minuteman intercontinental ballistic missile.

Gaither Report - a report concerning the Cold War produced by the Gaither Committee in 1957. It predicted an increase in the arms race and continued escalation of the Cold War. It recommended a drastic increase in military spending and initiation of a multibillion dollar civil defense system.

Historic American Building Survey - a division of the National Park Service which provides documentation of historically significant buildings, structures, sites, or objects. Documentation includes measured drawings, perspective corrected photographs, a written history, and field documentation.

Killian Report - (the Surprise Attack Study) a list of recommendations presented to the National Security Council for building the United States military forces. It contains recommendations for research and development of new technologies, including long-range nuclear missiles, dispersal of the country's existing bomber force, and development of early warning radar systems.

Legacy Program - a preservation program developed by the Department of Defense to identify and conserve irreplaceable biological, cultural, and geophysical resources, and to determine how to better integrate the conservation of these resources with the dynamic requirements of military missions.

Limited Nuclear Test Ban Treaty - a multilateral agreement signed by over 100 nations. The treaty prohibits nuclear testing underwater, in the atmosphere, and in outer space. It does not prohibit underground testing. The Treaty, signed in 1963, aimed to reduce environmental damage caused by nuclear testing.

National Emergency War Order - the war plan kept by the President and other national command authorities that directs the function of individual military bases should the nation go to war.

National Register of Historic Places - a listing, maintained by the Keeper of the Register under the Secretary of the Interior, of historic buildings, districts, landscapes, sites, and objects.

Section 106 - a review process in the National Historic Preservation Act by which effects of an undertaking on a historic or potentially historic property are evaluated.

Section 110 - a requirement in the National Historic Preservation Act that all federal agencies locate, identify, and nominate to the Secretary of the Interior all properties, owned or under control of the agency, that appear to qualify for inclusion in the National Register of Historic Places.

Strategic Arms Limitation Treaty I - signed in 1972, this was the first treaty to actually limit the number of nuclear weapons deployed. Anti-ballistic missile systems and strategic missile launchers were the weapons systems limited in this agreement.

Strategic Arms Limitation Treaty II - developed in 1979, this treaty further limited the number of nuclear weapons deployed by each side by setting numerically equal limits. The treaty also addresses modernization of systems for the first time, allowing development of only one new intercontinental ballistic missile. Though this agreement was not signed, due to deterioration of United States and Soviet relations in the late 1970s, both sides agreed to abide by its terms.

Strategic Arms Reduction Talks - a series of negotiations in 1982 and 1983 between the United States and the Soviet Union that sought to reduce the number of strategic nuclear weapons. No agreement was ever reached, primarily because neither side could agree on which weapons to reduce. The Soviet Union walked out of the negotiations after the United States began deploying Pershing II ballistic missiles and Tomahawk cruise missiles in Western Europe in December 1983.

Vladivostock Accord - signed in 1974, this agreement set new limits on the number of nuclear weapons deployed by the United States and the Soviet Union. Unlike the Strategic Arms Limitation Treaty I, this agreement set numerically equal limits on the number of nuclear weapons equipped with more than one warhead.

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1.0 INTRODUCTION

CH2M HILL, under contract with the Department of the Air Force, Air Force Materiel Command (HSC/PK), Brooks Air Force Base, Texas, conducted a reconnaissance inventory of Cold War material culture at Malmstrom Air Force Base, Montana (Figure 1). The objective of this study was to identify and evaluate those properties representative of the Cold War heritage of the United States as defined by the "Interim Guidance for Cold War Resources" for the 341 Civil Engineering Squadron (341 CES/CEVP) at Malmstrom Air Force Base.

For the purpose of this study, representative properties are defined as "buildings, structures, sites, objects and districts built, used, or associated with critical events or persons during the Cold War period that possess exceptional historic importance to the Nation or that are outstanding examples of technological or scientific achievement."

The rationale for this study is that cultural resources, particularly those associated with the Cold War heritage, are at risk as these resources are upgraded or modified by the Air Force. Therefore, a systematic reconnaissance study of the Cold War material culture is critical for the protection of exceptionally significant historic resources to ensure that future generations will have a physical record of this time period. Thus, the results of this study establish a compliance framework for the management of these properties at Malmstrom AFB in accordance with historic preservations laws and provide information needed for effective stewardship.

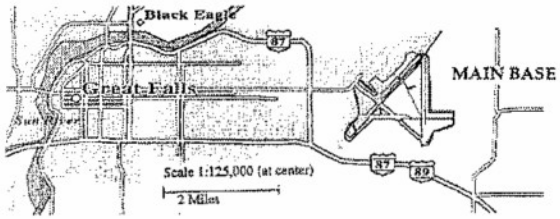
Four temporal phases encompass significant Cold War events and related developments in U.S. government policy and military strategy. The relationship of resources to these phases aids research during the inventory, evaluation, and prioritization processes. As explicated by Lowe, et al. (1996:1-3), the phases are as follows:

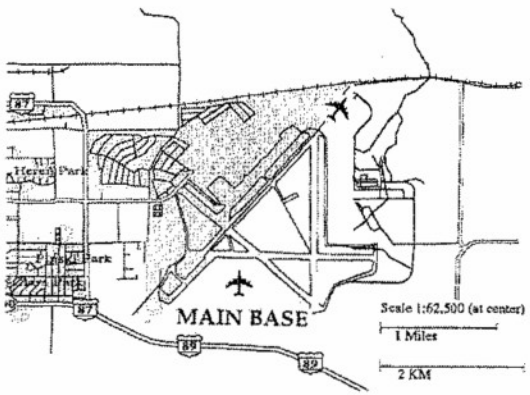
- **Phase I - July 1945 - January 1953**

  This phase begins with the explosion of the first experimental atomic bomb at Alamagordo, New Mexico - an event that triggered a period of intensive technological experimentation. Spanning the Truman administration, Phase I represents the inception and perpetuation of Cold War propaganda that fueled fear and mistrust of the Soviet Union and significantly accelerated the nuclear arms race.

- **Phase II - January 1953 - November 1963**

  This phase begins with the Eisenhower administration and is characterized by a continued massing of nuclear and conventional forces and an associated explosion in defense technology. During Phase II, deterrence through intimidation was the driving force behind U.S. strategy. With the signing of the Limited Nuclear Test Ban Treaty by Kennedy, both the U.S. and the Soviet Union leaned towards more amiable co-existence and a condition of détente was born.





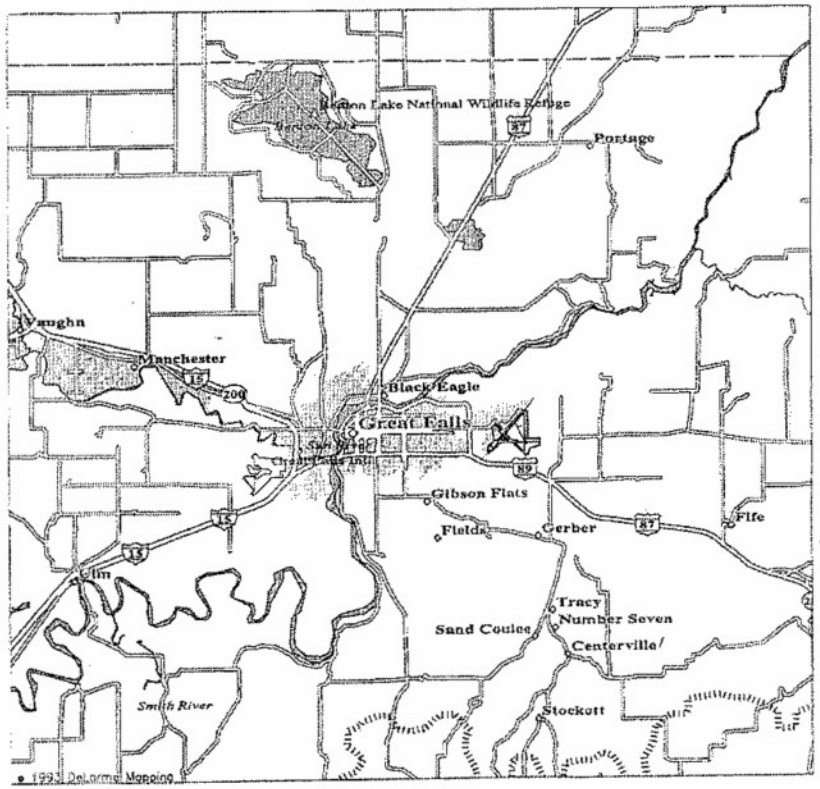


FIGURE 1

MALMSTROM AIR FORCE BASE, GREAT FALLS, MONTANA

- **Phase III - November 1963 - January 1981**

  This phase covers the entire era of détente between the U.S. and the Soviet Union and is characterized by multiple attempts at nuclear arms limitation talks and agreements. Strategic Arms Limitation Treaty (SALT) I, the Vladivostok Accord, the Anti-Ballistic Missile Protocol, and SALT II were all signed by the leaders of the two superpowers during this phase.

- **Phase IV - January 1981 - November 1989**

  The phase begins with the start of Reagan's administration and ends with the opening of the Berlin Wall. This phase is characterized by the massive buildup of military forces, triggering new technological developments focused on upgrading and modernization, all as a prelude to Strategic Arms Reduction Talks (START). Détente was replaced with deterrence through intimidation, with a focus on the threat of the Strategic Defense Initiative (SDI).

The overall goal of Cold War studies is to comply with Section 110 of the National Historic Preservation Act (NHPA) of 1966, as amended. Section 110 requires federal agencies to inventory cultural resources under their control and evaluate those that are significant or potentially eligible for listing in the National Register of Historic Places (NRHP).

The goal of this project is to establish an understanding of the Cold War material culture at Malmstrom AFB through the identification and evaluation of resources associated with this period of history which is temporally recognized as 1946 - 1989. This goal is met through the establishment of a Cold War historic context for Malmstrom with a methodology for the assessment of its resources and creation of an inventory of the structures and objects from the Cold War era with an assessment of the historic significance of these properties.

2.0 BASE DESCRIPTION

Malmstrom Air Force Base as it is known today, began in May 1942. In 1939, the Great Falls chamber of commerce contacted two Montana senators and requested they lobby for a military installation. In early 1941, the Civil Aeronautics Authority provided funds for the construction of the Great Falls Municipal Airport and military operations were to be co-located there. In May 1942, construction began on an Army Air Corps base six miles east of Great Falls (officially named Great Falls Army Air Base) and was known as the East Base to distinguish it from the municipal airport. A detailed history of the base is presented later.

Presently, Malmstrom is the only Air Force base in Montana and is home of the Air Force Space Command's 341st Missile Wing and the Air Mobility Command's 43rd Air Refueling Group. Malmstrom is located in the west central part of Montana, in a section of rolling plains about 75 miles east of the Rocky Mountains. Aside from the important role of Malmstrom Air Force Base in the local economy, the primary economic pursuit in the Great Falls vicinity is agriculture and related industries.

Malmstrom, like many Air Force Bases, is a place of dynamic change. As missions come and go, the physical infrastructure of the base is modified to suit the special needs of particular groups and/or squadrons. As aircraft change, hangars and alert facilities are modified. Modernization of various operational facilities (e.g., radar, equipment storage facilities, aircraft or missile maintenance shops, etc.) occurs frequently. Over the last several years, almost all of the buildings dating from World War II have been demolished and replaced with modern structures and facilities. Buildings dating from the Cold War still survive, but many have been modified several times. Several early Cold War buildings have already been demolished and others are scheduled for demolition in the near future.

It is difficult to describe Malmstrom since it is changing rapidly. There is no doubt however, that the Air Force has, over several decades, invested many millions of dollars in buildings, structures, and mission critical facilities and related support. The real estate data base only lists currently standing structures and buildings and their original cost of purchase to the government. Demolished structures and buildings have been removed from the data-base.

As of mid-1996, Malmstrom had 204 facilities and 80 buildings encompassing some 141,473 square feet. These facilities and buildings are carried on the books at $17.9 million dollars. In addition, as of mid-1996, Malmstrom had 5089 facilities and 1447 buildings associated with its missile forces encompassing some 4.7 million square feet. These facilities and buildings are valued at $577.4 million dollars. Many tens of millions of dollars have been spent on modernization, expendable supplies of all kinds, personnel costs/salaries and the like.

2.1 CURRENT BASE MISSION

Malmstrom Air Force Base is part of the Air Force Space Command (AFSPC), which was created September 1, 1982 and is headquartered at Peterson AFB, Colorado. AFSPC defends America through its space and intercontinental missile (ICBM) operations and implementation of its four primary missions:

- Space forces support - launching satellites and other high-value payloads into space using a variety of expendable launch vehicles and operating those satellites once in space.
- Space control - ensure friendly use of space through the conduct of counterspace operations encompassing surveillance, negation and protection.
- Force enhancement - provide weather, communications, intelligence, missile warning and navigation.
- Force application - maintain and operate a rapid response land-based ICBM force as the Air Force's only on-alert strategic deterrent.

AFSPC has two numbered air forces - the 14th (Vandenberg AFB, California) and 20th (F.E. Warren AFB, Wyoming). The 20th operates and maintains AFSPC's ICBM weapon systems in support of U.S. Strategic Command war plans. The ICBM force consists of Minuteman III and Peacekeeper missiles that provide the critical component of America's on-alert strategic forces. As the nation's "silent sentinels," ICBMs, and the people who operate them, have remained on continuous around-the-clock alert since 1959 - - longer than any other U.S. strategic force. More than 500 ICBMs are currently on alert in reinforced launch facilities beneath the Great Plains.

Today, Malmstrom Air Force Base hosts both the 341st Missile Wing, 341st Missile Wing Staff Agencies and the newly arrived 819 Red Horse Squadron. Active units include:

341st Logistics Group	341st Medical Group	341st Operations Group
- 341 Contracting Squadron	- 341 Aerospace Medicine Squad.	- 10th Missile Squadron
- 341 Logistics Support Squadron	- 341 Dental Squadron	- 12th Missile Squadron
- 341 Maintenance Squadron	- 341 Medical Operations Squad.	- 490th Missile Squadron
- 341 Supply Squadron	- 341 Medical Support Squadron	- 564th Missile Squadron
- 341 Transportation Squadron		- 741st Security Police Squadron
		- 341st Operations Support Squad.
		- 40th Rescue Flight

341st Support Group	341st MW Staff Agencies	819th Red Horse Squadron
- 341 Civil Engineer Squadron	- Chapel Services	- (moved to Malmstrom 1996/97)
- 341 Communications Squadron	- Command Post	-
- 341 Mission Support Squadron	- Historian	-
- 341 Security Police Squadron	- Manpower	
- 341 Services Squadron	- Quality, Safety, Plans	
	- START	
	- Social Actions	
	- 341 Comptroller Squadron	
	- Public Affairs	
	- Staff Judge Advocate.	

2.2 CURRENT BASE LAYOUT

Malmstrom Air Force Base is located on the eastern edge of Great Falls, Montana (Figure 1), south of the Missouri River and north of Interstate Highway 89/87. The air base consists of a main northeast/southwest oriented flightline and parallel runway which is flanked on the northwest by various buildings, facilities and housing units and open land with weapons storage buildings to the southeast (Figure 2).

Unit Entity	Date In	Date Out
4061 Air Police Squadron (4061 Combat Defense Squadron)	1 July 1957	15 July 1961
4061 Air Refueling Wing	1 July 1957	15 July 1961
4061 Armament and Electronics Maintenance Squadron	1 July 1957	15 July 1961
4061 Field Maintenance Squadron	1 July 1957	15 July 1961
4061 Food Service Squadron	1 July 1957	15 July 1961
4061 Installations Squadron (4061 Civil Engineering Squadron)	1 July 1957	15 July 1961
4061 Operations Squadron	1 July 1957	15 July 1961
4061 Periodic Maintenance Squadron (4061 Organizational Maintenance Squadron)	1 July 1957	15 July 1961
4061 Supply Squadron	1 July 1957	15 July 1961
4061 Transportation Squadron	1 July 1957	15 July 1961
1958		
994 Aircraft Control and Warning Squadron	8 August 1958	1 Nov. 1958
1959		
29 Weather Squadron	8 June 1959	1 July 1961
854 Medical Group (USAF Hospital, Malmstrom)	1 February 1959	present
4061 Aircraft Support Squadron	1 February 1959	15 July 1961
4642 Support Squadron	15 July 1959	1 July 1972
Great Falls Air Defense Sector	1 March 1959	1 April 1966
1960		
22 Air Division (22 Strategic Aerospace Division)	9 September 1960	1 July 1962
1961		
10 Strategic Missile Squadron	1 December 1961	present?
341 Civil Engineering Squadron	25 April 1961	present
341 Combat Defense Squadron (341 Security Police Squadron)	15 July 1961	present
341 Combat Support Group	15 July 1961	present
341 Consolidated Aircraft Maintenance Squadron	15 July 1961	1 Nov. 1970
341 Food Service Squadron (341 Services Squadron)	26 April 1961	1 March 1970
341 Missile Maintenance Squadron	1 December 1961	30 Sept. 1975
341 Operations Squadron (341 Communications Squadron)	26 April 1961	1 October 1977
341 Strategic Missile Wing	15 July 1961	present
341 Supply Squadron	15 July 1961	present
341 Transportation Squadron	15 July 1961	present
1962		
12 Strategic Missile Squadron	1 March 1962	present
490 Strategic Missile Squadron	1 May 1962	present
1964		
813 Strategic Aerospace Division	1 July 1964	2 July 1966
1966		
28 Air Division	1 April 1966	19 Nov. 1969
564 Strategic Missile Squadron	1 April 1966	present
1968		
71 Fighter-Interceptor Squadron (71 Tactical Fighter Squadron)	18 July 1968	1 July 1971
1969		
24 Air Division	19 November 1969	present
1971		
319 Fighter-Interceptor Squadron	1 July 1971	30 April 1972
801 Radar Squadron	30 June 1971	1 July 1974

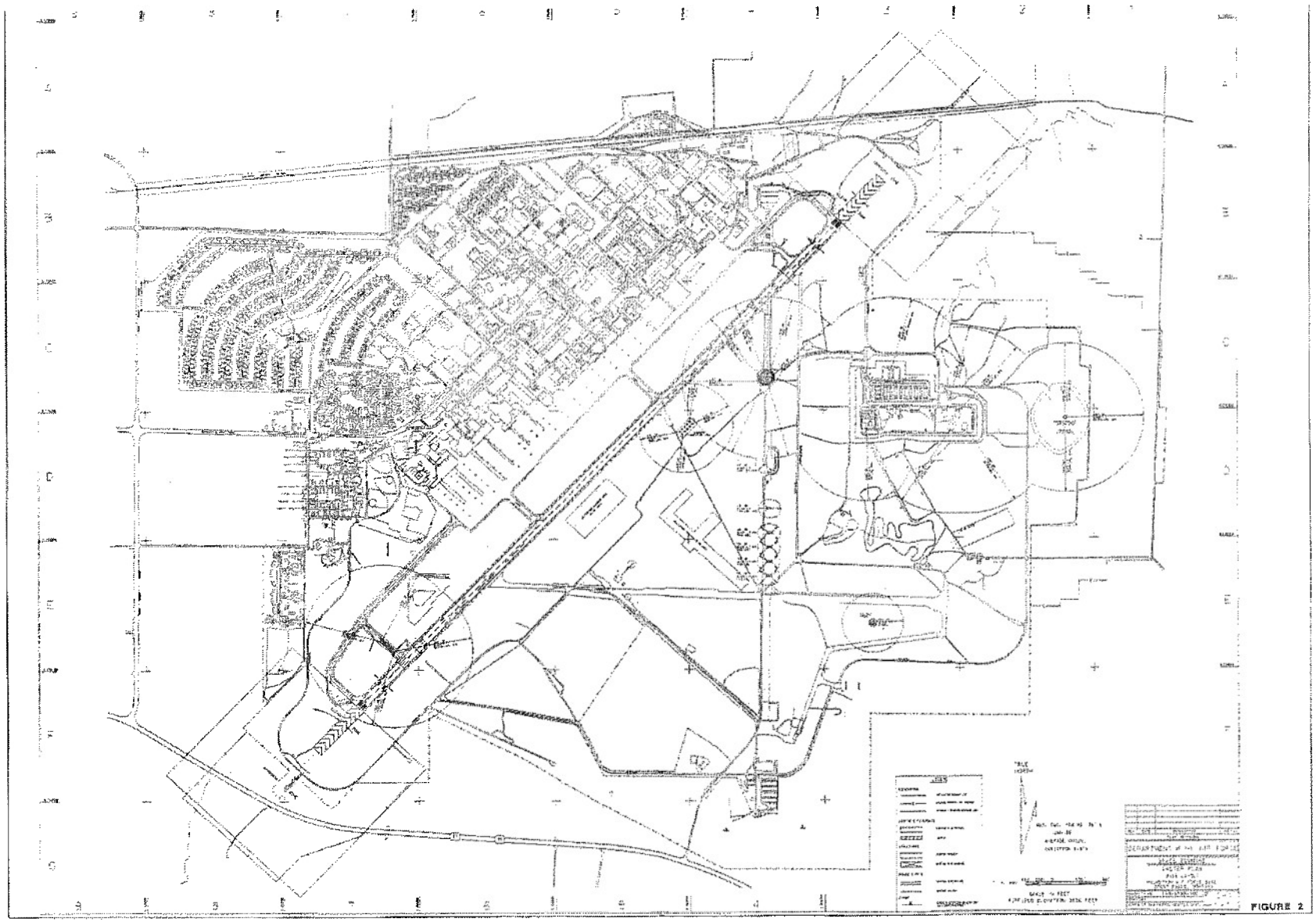
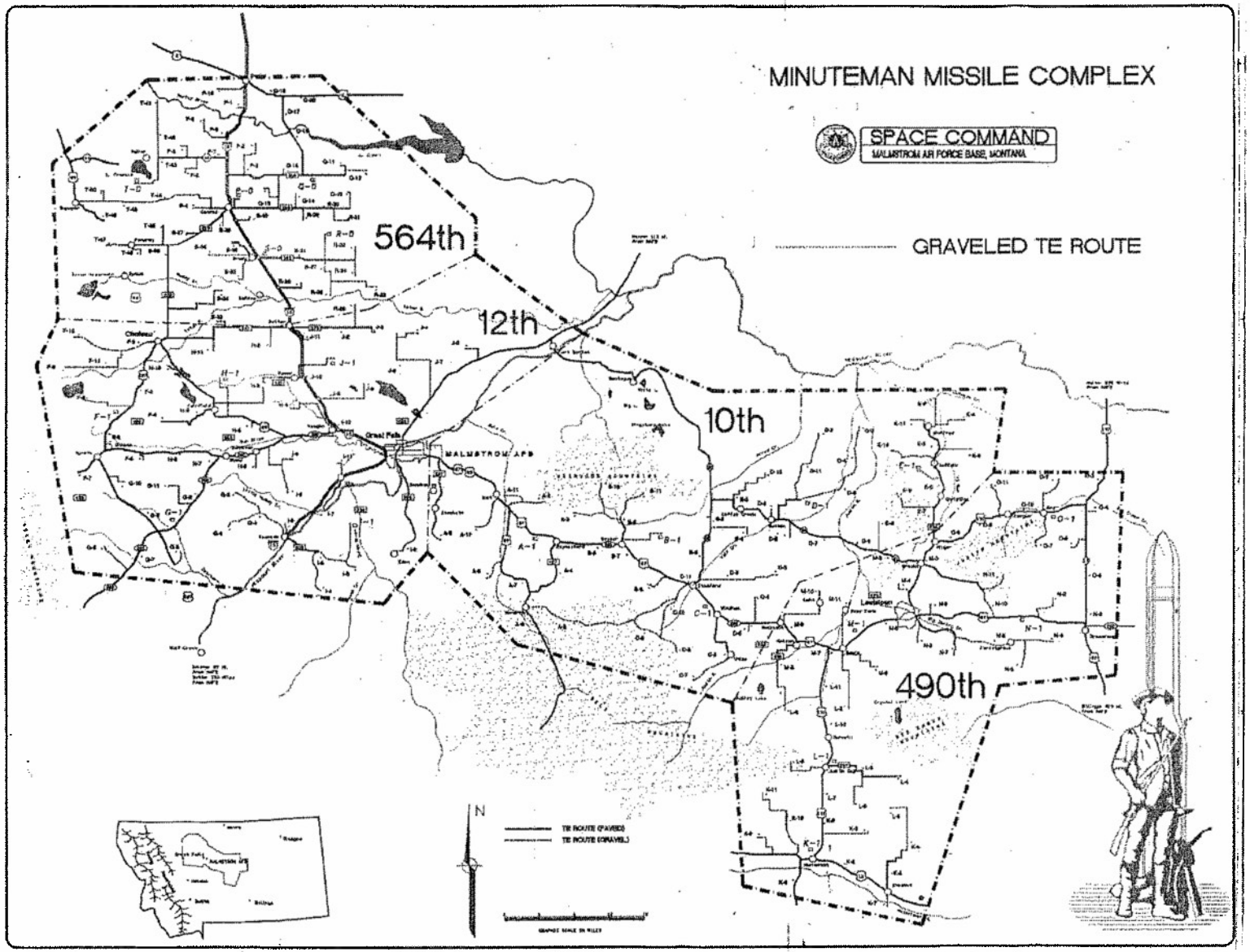


FIGURE 2

Since its construction during WW II the overall plan of Malmstrom AFB has not changed (see Appendix C - historical maps). One notable exception is the runway configuration, which was triangular in orientation during the WW II era but was later reconstructed to its current linear configuration.

In addition the main base itself, Malmstrom's Minuteman missile launch control and launch facilities are geographically dispersed throughout the surrounding countryside (Figure 3).


MINUTEMAN MISSILE COMPLEX
SPACE COMMAND
MALMSTROM AIR FORCE BASE, MONTANA
GRAVELED TE ROUTE
564th
12th
10th
490th
MALMSTROM AFB
Great Falls
Lewistown
N

3.0 HISTORICAL CONTEXT

The period immediately following WW II marked the birth of the Cold War. British Prime Minister Winston Churchill wrote to President Harry Truman on May 12, 1945 that an "iron curtain" was descending upon the Russian Front and that there was little doubt that the entire region would soon be under their control. Of the July 1945 Potsdam Conference, Admiral Leahy later wrote that the conference brought into sharp focus the struggle between two great ideas - the Anglo-Saxon democratic principles of government and the aggressive and expansionist police-state tactics of Stalinist Russia.

The term "Cold War" was first popularized in 1947 and has come to signify the state of hostile relations that developed between the Soviet Union and the United States at the end of WW II. Often viewed as an ideological confrontation between communist and noncommunist governments, this hostility was manifested in economic pressure, propaganda, an arms race, and other covert activities. Churchill's 1946 Iron Curtain speech is generally considered to be the opening event of the Cold War and the dismantling of the Berlin Wall in 1989 or the dissolution of the Soviet Union in 1991 as the closing event(s). Nuclear weapons played an important role throughout the Cold War and contributed mightily to its intensity and longevity. The legacy of the Cold War is evident in the military, political, and cultural history of the United States.

The historical context of the Cold War is a work in progress and no attempt is made here to write a Cold War historical context. Rather, this context concentrates on Malmstrom Air Force Base itself and its role in the Cold War.

3.1 SYNOPTIC HISTORY OF MALMSTROM AIR FORCE BASE

A key to understanding the Cold War (1946-1989) historic context of Malmstrom Air Force Base is to understand the broad outlines of Malmstrom's overall development, which started during World War II (WW II). The following chronology of events provides a general overview of Malmstrom's development. More specific discussions follow in later sections.

Chronology

May 1942: Construction began on an Army air base some six miles east of Great Falls, Montana. This base, later Malmstrom Air Force Base, was one of two bases that the US Army Air Forces (AAF) had at Great Falls during WW II. The other was the municipal airport (Gore Field), located about five miles west of Great Falls. In December 1937, the Chamber of Commerce of Great Falls urged Senators Burton K. Wheeler and James E. Murray of Montana, and Major General Oscar Westover, Chief of the Air Corps, to consider the development of the municipal airport at Great Falls for possible defense usage. In November 1939 the Great Falls Airport Commission had appealed to Harry Hines Woodring, Secretary of War, to locate an Air Corps squadron at Great Falls. The Civil Aeronautics Authority aided in the development of Great Falls Municipal Airport. On 22 June 1942, soon after work was begun on the Army base east of the city, the 7th Ferrying Group of the Air Transport Command (ATC) arrived at the municipal airport to establish an air route between Great Falls and Ladd Field, Fairbanks, Alaska, mostly for the purpose of ferrying Lend-Lease aircraft to the USSR.

6 July 1942: The War Department assigned "Great Falls, Montana, Air Base" (later Great Falls Army Air Base) to the Second Air Force.

30 November 1942 - October 1943: The Second Air Force used the base to train bombardment groups.

December 1942: The base contained about 2,650 acres; four runways (each 8,850 feet long and 300 feet wide with bituminous paving); taxiways connecting the ends of all runways with the concrete apron (which was 4,889 feet long and 500 feet wide); two hangars, an operations office, and a control tower (located on the northern edge of the apron). A spur of the Chicago, Milwaukee, St. Paul and Pacific Railroad served the base and paved access roads connected the base with US Highways 87 and 89.

20 September 1943: Station 5, Alaskan Wing, Air Transport Command, was organized at Great Falls AFB.

15 October 1943: Air Service Command (ASC) assumed jurisdiction of Great Falls AAB from the Second Air Force.

31 December 1943: By this time more buildings, including a consolidated mess, post exchange, theater, and a 400-bed hospital had been constructed. The ASC moved its units from Gore Field to Great Falls AAB, and a detachment of the 7th Transport Group moved over from Gore Field. The base population was about 1,600 persons.

1 January - 31 December 1944: 3,204 Lend-Lease aircraft departed from Great Falls AAB for the USSR (1,096 P-39s, 1,016 P-63s, 252 C-47s, 415 B-25s, and 425 A-20s). A total of 1,717,712 pounds of Russian-bound freight was shipped aboard these aircraft (1,167,307 pounds of aircraft parts; 55,315 pounds of tools; 184,236 pounds of equipment; 5.124 pounds of explosives; 43,618 pounds of medical supplies; 54, 309 pounds of diplomatic mail; and 14,155 pounds of personal mail).

21 June 1944: Nine USSR civilians passed through Great Falls AAB en route to the Dumbarton Oaks Conference on international monetary matters. This delegation stopped again on 6 October 1944 while returning to the USSR.

7 July 1944: Vice President Henry A. Wallace visited the base.

1 August 1944: Station 5, Alaskan Wing, ATC, was discontinued and its personnel were reassigned to the 1455th Army Air Forces Base Unit, which was organized at the base.

October 1944 - April 1945: 103 C-54s and 70 P-38Ls were modified at Great Falls AAB prior to their assignment to other operational commands.

April 1945: 137 Russians passed through Great Falls AAB en route to the United Nations Conference at San Francisco.

September 1945: Aircraft shipments to the USSR were terminated. More than 7,000 planes had been processed during a 21-month period.

1946: C-54s from the base provided air transportation between the US and Alaska. The base also served as a staging point for an arctic expedition called "Project Nanook" (which established a weather forecasting system in the arctic).

31 July 1946: Base assigned strength was 2,097.

10 October 1946 - 6 March 1947: A reserve training unit of the Fourth Air Force was active at Great Falls AAB.

1947-1953: Cargo aircraft, mostly C-54s, continued to transport men and equipment between Great Falls AAB and Alaskan air bases.

January 1947: Base population was 915.

27 July 1947: General of the Army Dwight D. Eisenhower visited Great Falls AAB.

1 August 1947: ATC inaugurated a new air route from Great Falls through Alaska and along the Aleutian chain to Japan.

September 1947 - March 1948: Infantry divisions, transported by C-82s, moved through Great Falls to participate in maneuvers in Alaska.

October 1947 and February 1948: The 94th Fighter-Interceptor Squadron, equipped with P-80s, passed through Great Falls during October 1947 en route to strengthen air defenses of Alaska. At Great Falls the pilots were issued clothing appropriate for arctic weather, and the P-80s were winterized. Four months later the 94th again passed through the base en route back to March AFB, California.

1947-1948: Great Falls AAB supported transports which delivered materiel to establish a chain of radar beacons to aid aerial navigation in the arctic.

13 January 1948: Base redesignated Great Falls Air Force Base (AFB).

1 June 1948: Great Falls AFB was assigned to Military Air Transport Service (MATS), which replaced ATC. 1455th Air Force Base Unit was discontinued - the 517th (later called the 1701st) Air Transport Wing organized at Great Falls AFB.

October 1948 - December 1949: To assist in the Berlin Airlift, a C-54 Replacement Training Unit functioned at Great Falls AFB from October 1948 until May 1949; a transition training program for C-54 crews continued until December 1949.

1949: 192 units of Wherry Housing (24 apartment buildings with 8 family units) were constructed at the base.

June 1950: Assigned strength at the base was 1,880.

July - September 1950: MATS planes stationed at Great Falls began airlift operations in support of the Korean War. They flew from Fairfield-Suisun AFB in California to Hawaii, Johnson, Kwajalein, Guam, and Tokyo; but the main route ran from Great Falls AFB to McChord AFB in Washington, Elmendorf AFB in Alaska, Shemya, and Tokyo.

1 May 1951: Air Defense Command activated the 29th Air Division, 545th Aircraft Control and Warning (AC&W) Group, and the 679th AC&W Squadron at Great Falls AFB.

April 1952: C-54s from the base began transporting men and materiel to Thule, Greenland, to build a large air base there.

10 April 1952: 29th Air Division became operational on a 24-hour basis. Five radar sites in northern Montana and North Dakota reported directly to the Air Defense Control Center (ADCC) at Great Falls AFB. The division was responsible for air defense of Idaho, Montana, Wyoming, and parts of Nevada, Utah, and Colorado.

14 July 1952: A new $2,300,000 runway was opened.

1 November 1952: The 29th Air Division occupied a new Air Defense Control Center (ADCC).

12 November 1952: First units of the second Wherry housing project were occupied (400 units on-base, costing $3,200,000).

16 February 1953: The 29th Air Division became responsible for the defense of Montana, North Dakota, South Dakota, Wyoming, and Nebraska.

22 April 1953: Scheduled flights by MATS between Great Falls and Alaskan bases ceased.

1 May 1953: The 1701st Air Transport Wing was discontinued, and its air transport squadrons moved to Travis AFB, California, with their C-54s. The 1300 Air Base Wing of MATS moved from Mountain Home AFB, Idaho, to Great Falls AFB. The primary mission of the 1300th was to train the 582nd Resupply and Communications Wing (a psychological warfare unit) for eventual overseas deployment.

8 November 1953: The 29th Fighter-Interceptor Squadron was activated at Great Falls AFB. It was assigned F-94C (Starfighter) aircraft during 1954. The 186th Fighter-Interceptor Squadron, an Air National Guard unit stationed at Gore Field, provided F-86s as augmentation forces for air defense of the area.

18 December 1953: The Strategic Air Command (SAC) activated the 407th Strategic Fighter Wing at the base.

1 February 1954: The 1300th Air Base Wing was discontinued. Command jurisdiction of the base passed from MATS to SAC. The 407th Strategic Fighter Wing assumes command/control of the base. F-84G (Thunderjets) of the 407th begin long-range escort operations from Great Falls AFB. These aircraft are later joined by KB-29 tankers assigned to the 407th for in-flight refueling of the F-84G straight-wing escort fighters.

8 February 1954: The first F-84G aircraft arrived and were assigned to the 407th Wing.

23 February 1954: General Curtis E. LeMay, Commander of SAC, visited the base.

20 December 1954 - 15 July 1955: 91st Strategic Reconnaissance Squadron, Fighter, was reassigned from Far East Air Force (FEAF) to SAC and stationed at Great Falls AFB. It moved to Larson AFB, Washington on 15 July 1955.

March - October 1955: The 407th Wing converted from F-84Gs to F-84Fs.

1 October 1955: Great Falls AFB was redesignated Malmstrom AFB and formally dedicated on 15 July 1956.

1956 - 1957: A radar site was constructed at Malmstrom AFB and became operational as a unit of the 29th Air Division. New construction at the base included a crash and fire station, rocket storage building, exchange sales store, gymnasium, readiness crew building, base chapel, apron and alert taxiway, pavement for streets, and an alert hangar.

June 1957 - July 1957: The 407th Air Refueling Squadron converted from KB-29s to KC-97s. Boeing-built KC-97 (Stratotankers) arrive at Malmstrom to replace the KB-29 aircraft in the refueling role.

1 July 1957: The 407th Strategic Fighter Wing was deactivated. The 4061st Air Refueling Wing was organized by SAC. The 407th Air Refueling Squadron, which was converting from KB-29s to KC-97s, was reassigned from the 407th Wing to the 4061st Wing.

July 1957: The 29th Fighter-Interceptor Squadron converted from F-94s to F-89s.

1 September 1957: The 97th Air Refueling Squadron, equipped with KC-97s, moved to Malmstrom and was assigned to the 4061st Wing.

1958-1959: About 70 WW II buildings were razed at Malmstrom; a hydrant refueling system was constructed; entrances on the "twin hangars" were raised to allow KC-97 entry; winterized nose docks were constructed for outside maintenance on KC-97s; a Semiautomatic Ground Environment (SAGE) Direction Center was built for the 29th Air Division, and a new non-commissioned officers mess was completed.

9 May 1958: Work was started on 150 units of Capehart housing (the first units were occupied in Feb. 1959).

1959: The 4061st Air Refueling Wing provided refueling support for SAC bombers rotating to and from forward bases in Alaska in support of the Reflex program.

1 March 1959: The Great Falls Air Defense Sector, a unit of the 29th Air Division, was organized.

31 December 1959: Personnel assigned at Malmstrom totaled 3,954.

1 April 1960: The 29th Fighter-Interceptor Squadron began converting from F-89s to F-101s.

23 September 1960: HQ USAF released $53,500,000 for construction of Minuteman missile facilities in the vicinity of Malmstrom AFB. This was to be the first operational Minuteman complex assigned to SAC.

15 February 1961: Great Falls Air Defense Sector became operational as a part of the SAGE system.

16 March 1961: Construction began on the first launch facility at Malmstrom.

June 1961: Congress approved 260 additional Capehart units for Malmstrom.

1 July 1961: The 29th Air Division HQ was moved, minus personnel and equipment, to Richard-Gebaur AFB, Missouri.

15 July 1961: The 4061st Air Refueling Wing was discontinued. The 341st Strategic Wing (ICBM-Minuteman) was activated.

1 November 1961: 10th Strategic Missile Squadron and 341st Missile Maintenance Squadron Activated.

15 December 1961: Construction of the first flight of launch facilities was completed.

1 March 1962: 12th Strategic Missile Squadron was activated.

1 May 1962: Construction of the first squadron of launch facilities was completed. The 490th Strategic Missile Squadron was activated.

23 July 1962: The first Minuteman missile arrives at Malmstrom.

27 July 1962: The first Minuteman missile was emplaced at Alpha-9 Launch Facility.

27 September 1962: Construction on last "A" model operational facilities was completed.

15 October 1962: U-2 aircraft photos reveal the presence of Soviet missile base construction in Cuba.

24 October 1962: Headquarters SAC accepted the first flight of 10 Minuteman ICBMs for the 10th Strategic Missile Squadron.

26 October 1962: The first Minuteman missile flight is complete as Alpha-6 is proclaimed operational in the 10th Strategic Missile Squadron during the Cuban Missile Crisis.

28 October 1962: Soviet Premier Krushchev agreed to halt work on the Cuban missile bases, dismantle the missiles and return them to the USSR.

11 November 1962: During a presidential press conference, Mr. James Fisk of the St. Louis Post Dispatch asked the President, "At any time did you consider nuclear war to be imminent?" To that, President Kennedy responded, "I had confidence in the final outcome of our diplomacy...of course, Mr. Khrushchev knew we had an ace in the hole in our improved strategic forces."

28 February 1963: Headquarters SAC declared the first Minuteman Squadron, the 10th SMS, to be operational with the final flight of 10 Minuteman I missiles turned over to the unit.

April 1963: The 12th SMS became the first 100% combat-ready Minuteman squadron.

15 May 1963: The final flight of the 12th SMS became operational.

14 June 1963: The 150th missile arrived at Launch Facility Oscar-8.

3 July 1963: The third and last Minuteman I squadron, the 490th, became operational as the final flight activated.

13 December 1963: SAC conducted the first ORI of a Minuteman wing at the 341st SMW. The 490th SMS was the first ICBM squadron to successfully exercise all missiles on alert during an ORI.

August 1964: The 341st SMW began to replace its "A" model Minuteman missiles with "B" models. The Air Force announced that 50 Minuteman II missiles would be added to the 341st SMW.

1 April 1966: Headquarters USAF activated the 20th and last Minuteman ICBM squadron - the 564th SMS at Malmstrom. The 24th Air Division (previously the Great Falls Air Defense Sector) activates, increasing the defense area covered by Malmstrom to 500,000 square miles.

26 October 1966: Construction on the last launch facilities of the 564th SMS begins.

23 March 1967: The 1000th Minuteman missile arrives at Malmstrom.

21 April 1967: Headquarters SAC declared the 564th operational. This completed the deployment of the 1000 ICBM Minuteman force.

11 August 1967: The 10th, 12th, and 490th SMSs began the force modernization program designed to replace their Minuteman I's with Minuteman II's.

15 January 1969: The last "A" model Minuteman I's are removed from alert at Malmstrom.

12 February 1969: The last Minuteman I's are removed from their silos at Malmstrom.

27 May 1969: The force modernization program at Malmstrom ended. The wing was then totally equipped with Minuteman II missiles.

1 July 1973: The 17th Defense System Evaluation Squadron moved to Malmstrom, bringing their EB-57 (Canberra) aircraft. The mission of the 17th was to test the nation's air defenses along the northern tier.

26 October 1973: The 341st participated in the military alert in reaction to the 1973 Arab-Israeli War.

20 January 1975: Teams from Ogden, Utah began replacing the 50 Minuteman II's of the 564th with Minuteman III's.

11 July 1975: Minuteman III, No. 550, became operational at Malmstrom.

30 September 1975: The 341st Field Missile Maintenance Squadron and the 341st Organizational Missile Maintenance Squadron were activated.

November 1975: The integrated improvement program which included command data buffer and the improved launch control system began at Malmstrom.

1977: The Air Force modified Minuteman missiles to permit them to be remotely retargeted by launch crews. Silos were also fortified to better withstand the shock of nuclear detonation. Initiation of the Rivet Saved program, wherein SAC's chronology book changed the (missile) enable code, allowed one person (on alert) to sleep. This change enabled SAC to allow a huge drawdown of missileers.

1979: A two-year program to modernize the Minuteman system is completed at a cost of nearly $365 million. On March 29, national defense cuts are announced which later resulted in the phase-out of the 17th Defense Evaluation Squadron and the SAGE Defense System.

30 June 1983: The 24th North American Aerospace Defense Division which guarded the skies of the northern United States and Canada against surprise attack since 1966 was deactivated.

17 January 1985: The 341st became the lead unit in the Minuteman Integrated Life Extension Program (Rivet Mile).

13 February 1987: The prototype for the small ICBM mobile launcher arrived at Malmstrom for testing.

1988: The 301st Air Refueling Wing is reactivated at Malmstrom, bringing KC-135R refueling aircraft and nearly 700 military and civilian jobs to Malmstrom.

27 May 1988: Rivet Mile Phase I ended at the 341st.

7 September 1988: The new generation transporter/erector was tested at several 341st sites.

4 April 1989: The hardened intersite cable system splice case modification designed to replace over 3,700 original cable splices throughout the complex began at the 341st.

7 July 1989: The 341st began operations as part of the 40th Air Division.

August 1990: Several Malmstrom units are deployed in support of Operation Desert Shield.

1991: More Malmstrom units were deployed as Desert Shield became Desert Storm.

14 June 1991: The 40th Air Division deactivated and the 301 ARW began reporting to the 15th Air Force.

1 September 1991: Headquarters USAF redesignated the 341st Strategic Missile Wing as the 341st Missile Wing.

28 September 1991: President Bush ordered all Minuteman II missiles to stand down from alert. The 341st began compliance with that order.

13 November 1991: J-03 became the first Minuteman II to be removed from its silo as a result of President Bush's draw down order.

15 January 1992: the 341st MW assumed tenant unit status at Malmstrom.

1 June 1992: SAC is deactivated and the new Air Combat Command and Air Mobility Command take their places in history. The 301st Air Refueling Wing became the 43rd Air Refueling Wing assigned to Air Mobility Command. The 341st MW was assigned to Air Combat Command.

18 November 1992: The 12th SMS regained alert status with the installation of a Minuteman III in site Juliet 09.

9 June 1993: The command of the 341st MW, under the 20th Air Force, transferred from Air Combat Command to US Space Command (as did the 20th Air Force and all other missile wings).

17 August 1993: Launch Facility Alpha-05 transferred from Rivet Mile control back to the missile wing signaling the completion of Rivet Mile Cycle 2X and the beginning of Rivet Mile 2010.

3.2 THE WW II ROOTS OF MALMSTROM AFB: EAST BASE AND GORE FIELD

In 1940, an army inspection group under Col. DeFord arrived in Great Falls to explore the establishment of an army air base (Stuwe 1974:56). It was agreed that this location would be an ideal spot for a bomber base to protect coastal cities from possible air attack. Another inspection group came in 1941 and received the persuasive support of Senators Wheeler and Murray and the Great Falls Chamber of Commerce.

Shortly after Pearl Harbor, a citizens group from Great Falls traveled to Washington DC to push for a base. Confirmation that Great Falls had been selected for a base did not arrive until April 1942 and construction began that spring. The Chamber of Commerce was notified that Great Falls was to have one of six Ferrying Command bases located in the U.S.

Construction of "East Base" continued around the clock. The first complete buildings were barracks and mess hall facilities. On the east end of the base was a hangar known as the "Russian Hangar", the name being given since it was from this hangar that planes departed for Russia (Stuwe 1974:58). The twin hangars, located at the west end of the base, housed maintenance and aero repair. Everything necessary for the inspection and maintenance of aircraft was available in this huge area. Construction of the Great Falls Army Air Base was completed by December 1942.

In the spring of 1943, the new base was first used for bomber training programs. Several Bombardment Groups flying B-17s trained as units in Montana preparing for their deployment to England to join the mighty 8th Air Force's offensive against Germany.

Work on the runways continued throughout the winter of 1942-43. During the spring thaw, the runways began to settle and crack and the cement would not support the heavy bombers. By October 1943, the bomber program was abandoned by the 2nd Air Force and the base became the headquarters of the Air Service Command. By February 1944, both the East Base and "Gore Field" (see below) were under the jurisdiction of the Air Transport Command (ATC), ferrying aircraft within or without the continental U.S., as directed by Army Air Forces (Stuwe 1974:59).

Gore Field is located 300 feet above the city of Great Falls, at an elevation of over 3,000 feet and had over 300 clear flying days a year. Prior to its military takeover, Gore Field (or Gore Hill) was Great Fall's municipal airport. The original ferrying group supervised stations along the Northwest route until 17 November 1942 when the Alaskan Wing of the Air Transport Command (7th Ferrying group from Seattle) moved to Great Falls to begin operations. The original group pilots at Gore Field continued to move thousands of B-17 Flying Fortresses and B-29 Superfortresses from Boeing's factory to modification centers and ports of aerial embarkation within the U.S. The 7th Ferrying Group of the ATC remained at Gore Field until it was deactivated in November 1945. By May 1946, some 2,406 personnel, civilians, officers and enlisted men, were employed at East Base (Stuwe 1974:60). After the war, the 1701st Air Transport Wing of the Military Air Transport Service used the base to train the C-54 aircrews for the Berlin Airlift (see below). A comprehensive listing of base operating units between 1946 and 1989 is presented in Table 1.

Lend-Lease

After Congress passed the Lend-Lease Act in March 1941 to extend aid to Britain and the exiled government of Poland, the Soviets came to Washington (August 1941) to observe our aircraft factories which were constructing planes for shipment to the Soviet Union. In the early days of Lend-Lease, convoys to Russia were attacked by Nazi submarines and bad weather in the North Atlantic made for dangerous flying conditions for American crews. Russian concerns rose as plane losses mounted.

Because Russia was not yet at war with Japan and had signed a five year pack with them in April 1941, they were hesitant to agree to the Alaskan route, fearful that Japan would discover they were receiving Lend-Lease from the U.S. Keeping this secret was impossible because the Alaskan bound planes left Great Falls after the Red-Star insignia was painted on each plane.

Since the Russians were reluctant to settle for an Alaskan route, the U.S. tried flying medium bombers from South American to Africa but sandstorms ruined the engines. Because Russia could not get badly needed planes for the Stalingrad offensive, they finally agreed to open an Alaskan-Siberian route through Canada (Stuwe 1974:20). In February 1943, Major Jordon, the East Base liaison officer for Lend-Lease, flew the 1,926-mile Great Falls to Fairbanks route in six days! As the crow flies, Great Falls is in a virtual direct line with Moscow and this was to be the secret pipeline. After the Russians agreed to the Alaskan-Siberian route, Gore Field was designated as the chief take-off point in the U.S. This was to be the pipeline for aircraft, the hub of global air operations of the Air Transport Command (ATC). The base officially became an ATC base on 1 January 1944.

Between 1942 and 1945, a total of 7,983 aircraft were processed for flight to Russia consisting mainly of B-25s, A-20s, P-39s, and P-63s (after being inspected and winterized). By order of the President, the Russians had top priority and meeting their quota came first.

TABLE 1

Units Assigned to Malmstrom AFB During the Cold War: 1946-1989

(cf. Malmstrom Air Force Base 1992a, 1993)

Unit Entity	Date In	Date Out
1946		
418 Army Air Force Base Unit	10 October 1946	1 March 1947
1947		
10 Airdrome Group, Provisional	5 May 1947	1 June 1948
28 Air Transport Squadron, Prov.	5 May 1947	1 June 1948
34 Maintenance Squadron, Prov.	5 May 1947	unknown
50 Support Squadron	5 May 1947	unknown
51 Air Installations Squadron, Prov.	5 May 1947	unknown
52 Airdrome Squadron, Prov.	5 May 1947	13 January 1948
101 Airdrome Squadron, Prov.	11 August 1947	1 June 1948
102 Airdrome Squadron, Prov.	5 May 1947	1 June 1948
103 Airdrome Squadron, Prov.	5 May 1947	1 June 1948
104 Airdrome Squadron, Prov.	5 May 1947	1 June 1948
105 Airdrome Squadron, Prov.	5 May 1947	1 June 1948
1948		
5 Air Transport Squadron (1270 Air Transport Squadron)	1 June 1948	23 April 1949
6 Air Transport Squadron (1271 Air Transport Squadron)	1 June 1948	20 July 1952
7 Air Transport Squadron (1272 Air Trans. Squad.; 1741 Air Trans. Squad.)	1 June 1948	6 April 1953
186 Airways and Air Communications Service (1904 AACS Squad.; 1904 Comm. Squad.)	1 June 1948	1 July 1976
341 & 342 Bomb Squadrons	12 March 1948	16 March 1948

Unit Entity	Date In	Date Out
517 Air Base Group (1701 Air Base Group)	1 June 1948	1 May 1953
517 Air Traffic Squadron (1701 Air Traffic Squadron)	1 June 1948	1 June 1953
517 Air Transport Wing (1701 Air Transport Wing)	1 June 1948	1 May 1953
517 Maintenance Squadron (1701 Maintenance Squadron)	1 June 1948	1 May 1953
517 Medical Services Squadron (1701 Medical Services Squadron; 1701 Medical Group)	1 June 1948	1 May 1953
517 Supply & Maintenance Group (1701 Maintenance & Support Gp.)	1 June 1948	1 May 1953
517 Supply Squadron (1701 Supply Squadron)	1 June 1948	1 May 1953
756 Air Force Base Unit	10 May 1948	3 June 1948
1435 Air Transport Group, Prov.	1 October 1948	unknown
1436 Transitional Training Squad.	1 October 1948	unknown
1437 Maintenance Squadron	1 October 1948	unknown
1701 Replacement Squadron	1 October 1948	23 August 1949
Squadron A, 517 Air Base Group (1701 Communications Squadron)	1 June 1948	25 October 1949
Squadron B, 517 Air Base Group (1701 Air Police Squadron)	1 June 1948	1 May 1953
Squadron C, 517 Air Base Group (1701 Installations Squadron)	1 June 1948	1 May 1953
Squadron D, 517 Air Base Group (1701 Food Service Squadron)	1 June 1948	1 May 1953
Squadron E, 517 Air Base Group (1701 Motor Vehicle Squadron)	1 June 1948	1 May 1953
Squadron F, 517 Air Base Group	1 June 1948	3 October 1948
1949		
1701 Embarkation Squadron	23 April 1949	21 June 1950
1701 Maintenance Group	23 April 1949	25 October 1949
1701 Supply Group	23 April 1949	25 October 1949
1701 Support Squadron	25 October 1949	20 March 1950
1722, 1723, 1724 Maintenance Squadrons	23 April 1949	25 October 1949
8523 Air Transport Squadron	27 June 1949	10 May 1951
8538 Airways and Air Communications Squadron	27 June 1949	23 June 1951
1950		
1740 Air Transport Squadron, Prov	27 July 1950	14 Sept. 1950
1951		
29 Air Defense	1 March 1951	1 February 1952
545 Aircraft Control and Warning Group	1 March 1951	6 February 1952
679 Aircraft Control and Warning Squadron	1 March 1951	6 February 1952
1290 Air Transport Group	16 June 1951	20 July 1952
1701 Aerial Port Squadron	23 June 1951	1 June 1953
1701 Women in the Air Force Squadron	2 October 1951	1 June 1952
4773 Ground Observer Squadron	16 April 1951	25 March 1959
1952		
7 Women in the Air Force Squadron	1 July 1952	18 January 1954
29 Air Division (29 Air Division [SAGE])	1 February 1952	1 July 1961
75 Air Transport Squadron	20 July 1952	16 May 1953
84 and 85 Air Transport Squadrons	20 July 1952	16 May 1953
1287 Air Transport Squadron	24 January 1952	20 July 1952
1953		
29 Fighter-Interceptor Squadron	8 November 1953	18 July 1968
407 Air Base Group	18 December 1953	1 July 1957

Unit Entity	Date In	Date Out
407 Air Police Squadron	18 December 1953	1 July 1957
407 Air Refueling Squadron	18 December 1953	15 July 1961
407 Armament & Electronics Maintenance Squadron	18 December 1953	1 July 1957
407 Field Maintenance Squadron	18 December 1953	1 July 1957
407 Food Service Squadron	18 December 1953	1 July 1957
407 Installations Squadron	18 December 1953	1 July 1957
407 Motor Vehicle Squadron (407 Transportation Squadron)	18 December 1953	1 July 1957
407 Operations Squadron	18 December 1953	1 July 1957
407 Periodic Maintenance Squadron	18 December 1953	1 July 1957
407 Strategic Fighter Wing	18 December 1953	1 July 1957
407 Supply Squadron	18 December 1953	1 July 1957
407 Tactical Hospital	18 December 1953	1 July 1957
482 Air Resupply Squadron	1 May 1953	25 January 1954
515, 516, and 517 Strategic Fighter Squadrons	18 December 1953	1 July 1957
582 Air Resupply & Communications Group (582 Air Resupply Group)	1 May 1953	25 January 1954
582 Air Resupply & Communications Wing	1 May 1953	14 August 1953
582 Airborne Materiel Assembly Squadron	1 May 1953	25 January 1954
582 Communications Squadron	1 May 1953	14 August 1953
582 Holding & Briefing Squadron	1 May 1953	14 August 1953
582 Reproduction Squadron	1 May 1953	14 August 1953
902 Aircraft Control and Warning Squadron	20 May 1953	16 Dec. 1954
903 Aircraft Control and Warning Squadron	20 May 1953	25 October 1955
908 Aircraft Control and Warning Squadron	12 August 1953	25 Sept. 1954
1300 Air Base Group	1 May 1953	1 February 1954
1300 Air Base Wing	1 May 1953	1 February 1954
1300 Air Police Squadron	1 May 1953	1 February 1954
1300 Air Resupply & Communications Squadron [Special] (1100 Air Support Group)	1 May 1953	18 April 1954
1300 Food Service Squadron	1 May 1953	1 February 1954
1300 Installations Squadron	1 May 1953	1 February 1954
1300 Maintenance & Supply Group	1 May 1953	1 February 1954
1300 Maintenance Squadron	1 May 1953	1 February 1954
1300 Medical Group	1 May 1953	1 February 1954
1300 Motor Vehicle Squadron	1 May 1953	1 February 1954
1300 Student Squadron	1 May 1953	20 Nov. 1953
1300 Supply Squadron	1 May 1953	1 February 1954
1300 Training Group	1 May 1953	1 February 1954
1301 Training Squadron	1 May 1953	20 Nov. 1953
1302 Training Squadron	1 May 1953	20 Nov. 1953
4122 Air Base Squadron	25 October 1953	18 Dec. 1953
1954		
91 Strategic Reconnaissance Sqd.	20 December 1954	17 July 1955
1955		
801 Aircraft Control and Warning Squadron (801 Radar Squadron [SAGE])	8 October 1955	31 December 1969
1956		
Malmstrom Task Force, Provisional	1 July 1956	unknown
1957		
97 Air Refueling Squadron	1 September 1957	15 March 1964
607 Aircraft Control and Warning Squadron	8 December 1957	29 July 1958
4061 Air Base Group (4061 Combat Support Group)	1 July 1957	15 July 1961

Unit Entity	Date In	Date Out
1972		
4642 Air Defense Squadron	1 July 1972	1 January 1975
4677 Defense System Evaluation Squadron	31 August 1972	1 July 1974
1973		
341 Missile Security Squadron	1 October 1973	present
341 Security Police Group	1 October 1973	1 June 1992
1974		
17 Defense System Evaluation Squadron	1 July 1974	13 July 1979
1975		
24 Air Defense Squadron	1 January 1975	present
341 Field Missile Maintenance Squadron	30 Sept. 1975	present
341 Organizational Missile Maintenance Squadron	30 September 1975	present
1977		
342 Missile Security Squadron	1 October 1977	present
343 Missile Security Squadron	1 October 1977	present
344 Missile Security Squadron	1 October 1977	present
2153 Communications Squadron	2 October 1977	present
1978		
341 Services Squadron	1 October 1978	present
1988		
301 Air Refueling Wing	5 January 1988	1 June 1992
1989		
40 Air Division - Host Unit	7 July 1989	14 July 1991
1992		
43 Air Refueling Wing	1 June 1992	present
43 Operations Group	1 June 1992	present
43 Logistics Group	1 June 1992	present
43 Support Group	1 June 1992	present
43 Medical Group	1 June 1992	present
301 - Host Unit	15 January 1992	1 June 1992
43 - Host Unit	1 June 1992	present

3.3 THE POST WAR/COLD WAR PERIOD

Malmstrom AFB was named in honor of Col. Einar Axel Malmstrom (1907-1954). Colonel Malmstrom was shot down on his 58th combat fighter mission in WW II and became the US commander of Luftwaffe Stalag Luft 1 South Compound, at Barth Germany. Malmstrom and his fellow prisoners at Stalag Luft 1 were liberated by the Russians. He died in the crash of a T-33 on 21 August 1954 near Great Falls AFB (Mueller 1989:355).

As noted above, construction of what is today Malmstrom AFB began on 9 May 1942 and the base was officially established on 15 December 1942. It was first occupied, however, on 11 November 1942. Its first name was Great Falls Army Air Base (1 August 1942) and later, Great Falls Army Air Field (27 October 1942). It was named Great Falls Air Force Base on 13 January 1948 (Mueller 1989:355) and finally named Malmstrom AFB on 1 October 1955.

Although Great Falls AFB was founded during WW II to serve as a training and logistics hub, its mission changed after WW II with the beginning of the Cold War and the Berlin Airlift. The Military Air Transport Service (MATS) which arrived in mid-1948 would play a major training role during the Berlin Airlift - the first major conflict of the growing Cold War.

The Military Air Transport Service at Malmstrom AFB

On 1 June 1948, the Military Air Transport Service (MATS) arrived at Malmstrom AFB, bringing with it the 517th Air Transport Wing (which was redesignated as the 1701st Air Transport Wing on 1 October 1948). MATS operated a global air transport system for the DOD and also provided supporting air communications, weather, rescue, and flight services. The prime mission of MATS was air transport of people, materiel, mail, strategic materials, and other cargo (Goldberg 1957:147-148).

MATS supporting services included the Airways and Air Communication Service (AACS) which provided airway communications facilities, navigational aids, and flight services for the Air Force and used highly technical facilities and equipment (direction finders, radio ranges, ground-controlled-approach and instrument-landing systems, radio and radar beacons, air-to-ground and point-to-point radio, message centers, and cryptocenter). AACS was responsible for the installation, operation, and maintenance of the USAF Strategic Communications System (STRATCOM).

Another MATS supporting service was the Air Weather Service (AWS) which furnished vital weather information for the Air Force and Army. The Air Rescue Service (ARS) carried out worldwide search and rescue operations over both land and water. The Air Photographic and Charting Service (APCS) was responsible for the research, production, reproduction, worldwide distribution and storage of aeronautical charts (Goldberg 1957:151). MATS operations had varying life-spans at Malmstrom AFB (see Table 1).

The Berlin Airlift

The world was still not at peace in 1948. Cold War bluffs and threats between the Soviet Union and the United States propelled international politics into an age of deterrence. The U.S. military prepared not only to win a major conflict but also to prevent war as well. Great Falls AFB played a key role in the first test of the Cold War.

By this time, Great Falls AFB had gained significant importance as a training center. Because of generally good flying weather and since the base's runway was not shared with a tenant unit, MATS officials designated Great Falls AFB as a training site for C-54 crews. On 13 August, 1948, the base's parent unit - the 1701st Air Transport Wing, assumed sole responsibility for training crews who would eventually become the backbone of Operation Vittles. During the Berlin Airlift, Great Falls AFB served a key role in aircrew training and replacement when MATS established a Replacement Training Unit at Great Falls AFB (Smith 1991:69).

Just as MATS was getting settled in at Great Falls AFB in June 1948, by June 22, the Russians had cut off all rail, barge, and highway traffic into the part of Berlin occupied by the Americans, British, and French. The Western Powers had to either withdraw their forces and abandon West Berlin to the Russians or supply the necessities of life to the military community and to more than 2,000,000 Germans by the only remaining means of transportation - air (Goldberg 1957:235). Any attempt to bludgeon a path through Soviet lines could have ignited World War III. The daily airlift requirement could be met only by a full-scale operation. Operation Vittles was the name given to the strategic airlift of food and supplies to a city of over two million inhabitants.

On July 23, MATS sent 72 C-54s (eight squadrons) to Germany. This operation required more than 2,500 men. Dependable and rugged, the C-54s had been designed for passenger and not cargo transport. Nevertheless, they performed well on the coal and food runs. The C-54s were the backbone of the Berlin Airlift fleet and ultimately as many as 319 of about 400 planes in active service joined the airlift.

Of these 319 C-54s, 19 were used for the pilot and aircrew replacement training program set up at Great Falls AFB in October 1948. As noted in Table 1, four units moved into Great Falls AFB on 1 October 1948: the 1435 Air Transport Group, Provisional; the 1436 Transitional Training Squadron; the 1437 Maintenance Squadron; and the 1701 Replacement Squadron. According to RET Col. Hanson (personal communication, 1996), all but the very first C-54 airlift crews serving in the Berlin Airlift were trained at Malmstrom. The exact air route into Berlin from West Germany was simulated over the Montana skies. The crews were able to practice the exact maneuvers that were to be followed during actual lift operations over Germany.

As Smith (1991:72) observed, the Berlin Airlift was important in that it demonstrated American resolve to meet a Cold War challenge and America's allies around the world regarded the airlift as a triumph of will. It also impressed the Soviets who could not have mounted such an extensive operation. The airlift provided valuable experience in operation techniques, air traffic control, and aircraft maintenance and reconditioning. The Berlin Airlift proved that airlift is a more flexible tool for executing national policy than either fighter or bomber aircraft (Smith 1991:72).

Korean War Airlift

During the Korean War, Travis AFB, California was the main gateway to the Pacific islands and the Far East and was the stateside terminal for the Pacific Airlift during the war. MATS planes also flew into the USAF bases at Anchorage and Fairbanks, Alaska, from Great Falls AFB (Malmstrom) until June 1953 when McCord AFB, Washington became the aerial port for Alaska. Malmstrom played an important training role during the Korean War as well. In late May, 1950, a medium transport training unit (MTTU) for C-54 aircrews was just getting started at Great Falls AFB, graduating 12 aircraft commanders on 24 June 1950. The next day, at 0400 hours, the North Koreans invaded South Korea (Smith 1991:74).

The 29th Air Division at Malmstrom AFB

In March 1951, the 29th Air Division, Defense, was activated at Great Falls AFB. It was to consist of fighter/interceptor squadrons, aircraft control and warning squadrons (Radar), and ground observer detachments. The 29th Fighter Interceptor Squadron was activated on 8 November 1953 at Great Falls AFB with F-94Cs and was later equipped with the F-89J and F-101B interceptors. It remained active for 15 years until 27 April 1968. The F-106 was flown from Malmstrom AFB by the 71st Fighter Interceptor Squadron and the 319th Fighter Interceptor Group. From 1951 to the closing of the 24th NORAD Region in July 1983, the base was a major Air Defense Command and Control Center.

In May 1953, the 1701st was deactivated and replaced by the 1300th Air Base Wing (ABW) and the 582nd Air Resupply and Communication Squadron (ARCS). While the 1300th ABW assumed responsibility for the base's operation, the 582nd ARCS supported the MATS airlift mission.

On 1 February 1954, with the arrival of the 407th Strategic Fighter Wing (SFW), the base command shifted to the Strategic Air Command (SAC). Flying F-84Bs, F-84Fs, and KB-29s, the 407th built a distinguished record until SAC phased out their escort fighter program. Even as new weapon systems were being developed and debates raged over the effectiveness of the manned bomber, SAC still activated the 407th SFW to provide fighter protection for SAC's bombers in the same manner as during WW II. With its recently completed $2 million runway and facility modernization (July 1952), Great Falls AFB was a logical choice as a strategic air base and the 407th SFW was ordered to Montana.

Realizing that smaller escort planes could not keep up with the new, long-range, B-52 bombers, SAC began replacing the jet fighters with air refueling tankers. With this innovation, the 4061st Air Refueling Wing replaced the 407th SFW at Malmstrom AFB. For a time, both units were active at the base. The sudden increase in personnel put a strain on the local housing market and as a result, 260 Capehart housing units were under construction between February 1959 and May 1962.

The Strategic Fighter Wings at Malmstrom AFB

In January 1953, a significant change in the primary mission of SAC's fighters produced a redesignation of the wings (Boyd 1988:15). The primary mission became the delivery of nuclear weapons in support of a strategic offensive. Escort of bombers became a secondary mission. On 20 January 1953, all fighter-escort units were redesignated strategic fighter wings and squadrons. On 8 November 1953, the 29th Fighter-Interceptor Squadron came to Malmstrom and remained there until 18 July 1968.

On 20 December 1954, the 91st Strategic Reconnaissance Squadron, Medium, Photographic, was reassigned to SAC, attached to the 407th Strategic Fighter Wing at Great Falls AFB and redesignated the 91st Strategic Reconnaissance Squadron, Fighter (Boyd 1988:16). The 91st moved from Great Falls AFB to Larson AFB in mid-July 1955. The 91st was to become one of the most unusual squadrons in the USAF. It was equipped with RBF-84K aircraft which were the fighters that were carried in the bomb bay of the B-36 in what came to be known as the Fighter Conveyor project. RF-84F and RB-36D aircraft were modified - the fighter was equipped with a retractable hook and the bomber was equipped with a trapeze. This combination permitted the fighter to be carried in the bomb bay of the bomber for a long distance closer to the target and, after the operational sortie, the bomber would recover the fighter and carry it back to the home base. However, hookups between the two aircraft were problematic and the program was terminated in 1956 (Boyd 1988:16).

The 407th Strategic Fighter Wing arrived at Malmstrom AFB on 18 December 1953 just as the base command shifted to SAC. After World War II and in the early years of the Cold War, the role of fighter aircraft changed. The major event was the replacement of older bombers by much swifter jets. The new planes changed SAC's tactics for penetrating enemy territory. Rather than fly in large, vulnerable, formations, the fast B-47s and B-52s would fly singly or in small formations under cover of darkness or bad weather, relying on speed, deception, and evasive tactics to get them to the target and back. Thus, the fighter's role as a bomber escort ended and SAC found other uses for them (Goldberg 1957:125).

In 1952, SAC directed that fighters would be equipped to use atomic weapons and be employed as part of the strategic striking force. Their new mission included counterair operations against airfields and aircraft, attacks against strategic targets, diversionary strikes, and other operations to assist the big bombers. Thus, the fighters were then considered part of the strategic striking force and were assigned Emergency War Plan sorties and targets (Boyd 1988:20).

Interestingly, a conversion program that replaced the F-84G with F-84F aircraft was fraught with difficulties including engine problems. Although SAC received its first F-84F in January 1954, none of the six fighter wings was combat ready until 1955. By the end of 1955, however, only two of the six wings still retained combat readiness, partly due to engine problems. In 1956, only the 31st, 506th, and Malmstroms' 407th were combat ready (Boyd 1988:23). It became apparent that the fighters had no truly legitimate mission in SAC since they were essentially fighter-bombers. While they could use atomic weapons, so could aircraft assigned to the TAC where the Air Force's fighter-bombers were assigned. By 1957, most SAC fighter units were transferred to the TAC and the remaining SAC fighter wings were inactivated and their staff used by SAC for other purposes (Goldberg 1957:125).

SAC began air refueling for bombers in 1948 and application of air refueling techniques to the jet fighters was a logical step. The 407th Air Refueling Squadron (ARS) was activated at Great Falls AFB on 18 December 1953 and assigned to the 407th SFW with an aircraft authorization of 20 UE KB-29s (Boyd 1988:17). Air refueling technology made vast changes in the deployment of strategic fighter aircraft. In the early years, the fighters followed flight plans that had them land at many bases enroute. In the new era, the fighter squadron launched from the home base, was refueled, and then landed at Great Falls AFB. They would leave the next day and with one air refueling in Canada and arrive at the Alaska based that evening. The 407th SFW, already stationed at Malmstrom AFB, flew direct on its deployments in 1955 and 1957. On 1 July 1957, all rotations of SAC fighter wings to Alaska terminated along with the end of the integration of fighters in the command (Boyd 1988:33).

The F-84 fighters (Thunderjet, Thunderstreak, and Thunderflash) were assigned in greater numbers than any other fighter and more F-84s were assigned than all other fighters combined (Boyd 1988:71). Further, they were assigned for the longest time period (June - December 1948 and September 1949 - 1 July 1957). Each succeeding model was an attempt to alleviate the basic design deficiencies in the F-84: insufficient range and inadequate speed for the escort mission (Boyd 1988:73). While F-84Gs were improvements over the F-84Es, the "G" still failed to satisfy SAC's requirement for support of strategic forces. The air refueling capabilities of the F-84G resolved some of the questions of range, but the F-84G was still considered inadequate. Republic Aviation Corporation had started production of fuselages to the successor of the F-84E as the swept-wing F-84F. A new engine (J-65) was installed in the partially constructed F-84Fs that had been shunted aside on the production line to build the F-84Gs. Again, engine problems and production delays hampered deployment. The 407th SFW didn't receive its F-84Fs until 1 November 1954 and only received its F-84Gs in March of 1954 (Boyd 1988:95). As of 31 December 1959, Malmstrom's main interceptor fighter was the F-89J (Schaffel 1991:230).

Table 2 provides a chronological list of aircraft (and later missiles) assigned to Malmstrom during the Cold War.

TABLE 2

Chronological List of Aircraft/Missiles Assigned to Malmstrom AFB During the Cold War, 1946-1989

(cf. Narducci 1988, 1990)

Dates In and Out	Weapon System	Comments
January 1944	B-17	Flying Fortress bomber
13 August 1948 - September 1952	C-54	Skymaster
8 November 1953 - April 1957	F-94C	Starfighter
1 February 1954 - unknown	T-33	Shooting Star trainer
1 February 1954 - 29 July 1957	KB-29	air tanker
8 February 1954 - 1 October 1955	F-84G	Thunderjet fighter-bomber
19 March 1955 - 12 June 1957	F-84F	Thunderstreak fighter-bomber
24 April 1957 - November 1963	F-89J	Scorpion fighter-interceptor
29 July 1957 - 15 July 1961	KC-97G	Stratotanker
13 November 1961 - 15 Jan. 1962	C-47, H-19	Skytrain
13 November 1961 - 20 April 1965	H-3	
11 December 1962 - 15 May 1967	Minuteman I Missile	10th Strategic Missile Squadron
8 November 1963 - 18 July 1968	F-101	VOO DOO air defense fighter
27 December 1965 - present	UH-1	"Huey" helicopters
21 April 1967 - January 1975	Minuteman II Missile	564th Strategic Missile Squadron
19 August 1967 - 19 November 1978	Minuteman II Missile modification	10th, 12th, 490th Stat. Missile Sqs.
18 July 1968 - unknown	F-106	(Air National Guard)
1 July 1972 - 1 July 1979	EB-57	Canberra bomber (electronic counter measures)
19 January 1975 - present	Minuteman III CDB	w/ "Command Data Buffer"
19 July 1977 - 1995	Minuteman II ILCS	w/ "Improved Launch Control Sys."
5 January 1988 - present	KC-135R	air tanker

The Semiautomatic Ground Environment (SAGE) System Comes to Malmstrom AFB

Malmstrom AFB played an important role in the Nation's air defense. Under the control of the 801st AC&W Squadron, Malmstrom became operational in 1957 with AN/FPS-20 and AN/FPS-6 radars. A second height finder was added in 1960 that was subsequently upgraded to an AN/FPS-90 set. In 1959, this station was performing air traffic control duties for the FAA. A Great Falls Air Defense Sector was activated on March 1, 1959 at Malmstrom and two years later, Malmstrom hosted a SAGE site (see below). By 1966, Malmstrom hosted an AN/FPS-24 radar. In December 1969, the 801st AC&W squadron was inactivated at Malmstrom (Winkler 1996:Appended Information).

After much debate, President Eisenhower authorized a huge air defense buildup to deter an enemy from attack and to blunt attack if it came, by a combination of effective retaliatory power and continental air defense of steadily increasing effectiveness (Schaffel 1989:15). Under the terms of the so-called New Look defense strategy, the stage was set for the huge defense buildup of the second half of the 1950s.

The technologically advanced network that emerged was centered on the computer-oriented semiautomatic ground environment (SAGE) system; in mid-1953 the Air Force conceptually adopted the SAGE system to augment air defense communication facilities. SAGE was built and tested in the Cape Cod area in 1953-54 and accepted for deployment throughout the U.S.

The Air Defense Command divided the continental U.S. into eight air defense regions with eight SAGE combat operations centers and 32 air defense sectors with 32 SAGE direction centers. The first SAGE installations were located in the northeastern U.S., then in the Midwest, and then in the northwest and on the west coast. The first SAGE direction center became operational at McGuire AFB, New Jersey in June 1958 and others were under construction. The entire system was deployed by March 1962 (Futrell 1989:532; Goldberg 1957:136; Winkler 1996:40). Some 142 primary radar stations and 96 gap-filler radar sites in the U.S. and Canada provided data to the SAGE blockhouses (Winkler 1996:40).

SAGE was a powerful but expensive system and was extraordinarily vulnerable. The combat and direction centers were housed in huge concrete blockhouses, hardened to withstand overpressures of only five pounds per square inch. Air Force planners realized Soviet ICBMs could destroy all or part of the SAGE system long before their first bombers crossed the Arctic Circle (Winkler 1996:45).

In theory, under an actual attack, the DEW (Distant Early Warning) Line would detect unidentified planes approaching North America over the polar routes. The news would be relayed by means of high-wave scatter broadcasts to the Air Defense Combat Operations Center at Colorado Springs and then SAC bombers would be alerted. Forward-based interceptors would then be directed through the extensive SAGE command-and-control network to achieve positive identification. Warning lines in mid-Canada and on the Canadian-American border would concurrently pick up the invader's trail. If positive identification of enemy aircraft was confirmed, friendly fighters would be vectored to intercept and destroy the enemy. To synchronize and administer the vast air defense apparatus, the United States and Canada established the North American Air Defense Command (NORAD) in the summer of 1957.

SAGE system units were installed at Air Division Direction Centers (into which Canada and the U.S. were divided for defensive action). The SAGE system consisted of a high-speed, electronic digital computer that received, processed, stored, and displayed air surveillance information and sent the information or instructions to air defense units as directed. An entire air battle (or peacetime air traffic) could be controlled by a SAGE system. The SAGE combat and direction centers commanded a vast array of weapons including 41 fighter-interceptor squadrons (800 aircraft), seven BOMARC missile squadrons and scores of Army Nike missile battalions (Winkler 1996:41).

According to Mueller (1989), the first manual radar facility came to Malmstrom AFB on February 1, 1952 as part of the 29th Air Division and construction began on a second radar facility on October 8, 1955 as part of the 801 AC&W (801 Radar). The SAGE direction center at Malmstrom was completed in 1959 (Mueller 1989) and was fully operational by 1961 or 1962 (RET. Col. Hanson, personal communication, 1996). By 1970, the number of SAGE centers in the continental U.S. had been reduced to six (McCord AFB, Washington; Luke AFB, Arizona; Malmstrom AFB, Montana; Duluth International Airport, Minnesota; Hancock Field near Syracuse, New York; and Fort Lee AFS in Virginia)(Winkler 1996:50).

SAGE was part of the much larger NORAD alert operation and NORAD's first line of defense was the DEW Line; and the SAGE facility at Malmstrom was located about 1,500 miles south of the DEW Line. The DEW Line stretched for 3,000 miles along the northern rim of the continent. Its 50 stations' surveillance radar's interlocked like an electric warning fan 12 miles high, from Alaska's Lisburne to Canada's Baffin Island. Penetrations of this radar defense by unidentified aircraft would be relayed southward in seconds through the system to the Alaskan Air Command in Anchorage or Pepperrell AFB in Newfoundland, R.C.A.F. Headquarters at St. Hubert near Montreal and NORAD at Colorado Springs.

With SAC bombers warned and on their way, electronically guided elements behind the DEW lines, such as interceptor fighters and guided missiles, already in place - would take on NORAD's second role (to intercept and destroy the attackers). Some 600 miles south of the Arctic DEW line laid the Mid-Canada Line. It was designed to pick up invaders and plot information on their course (to facilitate their interception north of settled areas). Aircraft control and warning stations of the Pinetree system along both sides of the U.S. - Canadian border would be brought into action, pinpointing the targets in the sky with radar and directing their destruction by anti-aircraft fire, guided missiles, or interceptor planes (Time 1957:67).

Helping to speed interception were the newly developed SAGE system units. Into SAGE computers would be fed information about aircraft anywhere within the Air Division's radar area. The information would be instantaneously translated into symbols on TV-like picture tubes, showing current air situations, and automatically calculating correct employment of defense weapons (Time 1957:67).

As air battle commanders viewed the screen, they could direct interception by remote control, automatically ordering fighter planes to "scramble" or fire from anti-aircraft and Nike guided-missile batteries in the area. In either case, the interceptors or missiles would be steered to the targets by directions from SAGE. As the battle progressed, information would be automatically transferred to computers and picture tubes in the adjacent Air Division area.

The Minuteman Comes to Malmstrom AFB

With the rapid development of the three-stage, solid-fuel Minuteman I (MM I) missile in the late 1950s, SAC searched for deployment sites. Because its location placed Minuteman missiles within striking range of most strategic targets in the Soviet Union, the Air Force Ballistic Missile Committee selected Malmstrom AFB on December 23, 1959 to host the first Minuteman ICBM base. The Minuteman missile was the primary weapon at Malmstrom during the Cold War (see Table 3).

TABLE 3

Chronological SAC Order of Battle
Malmstrom AFB During the Cold War 1950-1995

(cf. Malmstrom Air Force Base 1992b, 1987a)

Dates	Equipment/Weapons	Units
1950	not part of SAC at this time	not applicable
December 1956	F-84F, KB-29P	515, 516, & 517 Strat. Fighter Sq.
December 1964	LGM-30A Minuteman I missile	341st SMW, 10th, 12th & 490th Strategic Missile Squadrons
December 1970	LGM-30F Minuteman II missile	341st SMW, 10th, 12th, 490th, & 564th Strategic Missile Squadrons
Autumn 1978	LGM-30F Minuteman II missile LGM-30G Minuteman III missile	341st SMW, 10th, 12th, 490th SMS 341st SMW, 564th SMS
1987	LGM-30F Minuteman II missile LGM-30G Minuteman III missile	341st SMW, 10th, 12th, 490th SMS 341st SMW, 564th SMS
1995 - 21st century	Minuteman III missiles	341 SMW, 10th, 12th, 490th & 564th SMS

The Seattle District Corps of Engineers was designated to provide the required advance engineering, site feasibility studies, surveys, soil and foundation investigations and determination of utility sources and land acquisition (Lonnquest and Winkler 1996:III-132). The land acquisition involved some 5,200 tracts scattered across an area of 20,000 square miles of north-central Montana - the largest for any single project undertaken by the Corps. At its peak, the Corps Engineers Ballistic Missile Construction Office (CEBMCO) employed up to 80 people at its real estate office to negotiate with some 1,378 owners of desired parcels (Corps of Engineers 1969:5-5). Modifications of silo design required CEBMCO to renegotiate easements with the landowners on 12 different occasions over the four year span of the project (Lonnquest and Winkler 1996:III-133).

The first construction contract was awarded to the George A. Fuller Company - Del E. Webb Corporation joint-venture with a bid of $61,773,644. This Fixed Price Incentive Contract featured a target cost, target profit and a formula for determining the final price and final profit. The CEBMCO imposed a system in which excessive costs would be split, with the contractor picking up 25% of the tab. With this formula, the final project cost would come to over $79,000,000. Design changes, unanticipated high water tables, an electrician strike (November 1-12, 1961) and spring storms (1962) hindered progress. On December 15, 1962, the contractors completed work on the 10th silo and turned it over to the Air Force for finishing and missile installation (Lonnquest and Winkler 1996:III-134).

On July 15, 1961, a former B-47 Bomber Group, the 341st came back to life as a Strategic Missile Wing at Malmstrom AFB. The mission of the 341st Strategic Missile Wing (341st SMW) is to maintain the operational capability to conduct strategic warfare in support of the Emergency War Order (EWO). The 341st SMW maintained its 20 launch control facilities and 200 Minuteman launch facilities with their associated missiles in strategic readiness (Clark and Martin 1988:89).

The 341st SMW was activated on September 15, 1942 as the 341st Bombardment Group (BG) (Medium) in Karachi, India. The group trained in B-25 aircraft prior to entering combat in late 1942, operating chiefly against enemy transportation in central Burma until early 1944. The group moved to China in January 1944 and engaged mostly in sea sweeps and attacks against Japanese inland shipping. The 341st flew its last combat mission in July 1945 and was inactivated on November 2, 1945 after returning to the U.S. (Clark and Martin 1988:89).

The 341st was activated as a reserve unit at Westover Field, Massachusetts, from December 27, 1946 until June 27, 1949. The 341st Bombardment Wing, Medium, was formed from "scratch" at Abilene (later, Dyess) AFB, Texas, on September 1, 1955. It was equipped with B-47 bombers and KC-97 air tankers. The wing carried out strategic bombardment and air refueling training operations until it was inactivated on June 25, 1961. On July 1, 1961, the wing became the 341st SMW at Malmstrom AFB, becoming the Air Force's first Minuteman wing. Through the Cold War period, the 341st SMW was the only wing assigned both MM II and MM III missiles. As of 1988, the wing was assigned four operational missile squadrons: three squadrons assigned a total of 150 Minuteman II missiles and one assigned 50 Minuteman III missiles (Clark and Martin 1988:90). The wing's 200 launch facilities and 20 launch control facilities covered 23,000 square miles in Montana making it SAC's largest Minuteman wing.

In late July 1962, the first MM I arrived at Malmstrom and was placed at Alpha-9 launch facility. The historic importance of these first Minuteman missiles is explained below for its crucial role in the Cuban Missile Crisis. The 10th SMS accepted its final flight on February 28, 1963 and two months later, the 12th SMS became 100 percent combat ready. In July 1963, the 490th SMS became fully operational, giving the 341st SMW responsibility for 150 silos. While Malmstrom was home to the oldest Minuteman squadron, it also became home to the youngest when in August 1964, the Air Force announced plans to build an additional 50 silos to house MM II missiles. On February 23, 1965, Morrison Knudsen Company and Associates won the contract to build the additional silos and construction started two weeks later. By September 1965, 1,593 men were working on the sites. On April 1, 1966, the 564th SMS stood up and just over a year later, America's 1,000th Minuteman missile would be in place and on alert at Malmstrom (Lonnquest and Winkler 1996:III-136). The Minuteman was ready to perform its mission at a minute's notice - just like the patriots at Lexington and Concord for whom the missile is named.

The Cuban Missile Crisis

With photographic evidence in hand of Soviet deployment of R-12 and R-14 missile launchers on Cuba, President Kennedy ordered a quarantine of Cuba to prevent the missile sites from being completed. American forces, including the new strategic missile units and strategic bombers were placed on alert. Naval forces moved into the Caribbean to prepare for an amphibious invasion if needed (Zaloga 1993:212). The NORAD prepared its interceptors to dispatch any Soviet strategic bombers that might attack the United States from the north and Moscow brought its missile units to full alert. The missiles were fueled and readied for launch and the United States and the Soviet Union were as close as they would ever come to thermonuclear war. The historic importance of these first Minuteman missiles is explained by Lonnquest and Winkler (1996:III-134-135):

The timely arrival of additional missiles no doubt played a critical role in the nation's defense, as the Soviets attempted to establish Intermediate-Range Ballistic Missile (IRBM) based on the island of Cuba during the fall of 1962. On October 15, 1962, U-2 photos revealed the presence of these sites to the United States. One week later President Kennedy addressed the nation and announced the establishment of a naval quarantine around Cuba. On October 24, SAC accepted control of the first flight of silos and placed them on alert status two days later. On October 28, Premier Khrushchev agreed to halt construction activity and return the IRBMs to the Soviet Union. Later, when asked if he had felt that nuclear war may have been imminent, the President responded, "I had confidence in the final outcome of our diplomacy...Of course, Mr. Khrushchev knew we had an ace in the hole in our improved strategic forces."

Khrushchev regarded Kennedy as inept and feckless and lacking in conviction. He also misunderstood traditional American attitudes towards foreign military intervention in the Caribbean. He expected Kennedy to react with diplomatic protests, not military action - "The Americans will have to swallow our missiles, as we have had to swallow their missiles [deployed in Turkey]"(cf. Zaloga 1993:212). Kennedy's strongly worded television address on Monday evening, October 22, 1962, initiated the crisis and forced Khrushchev to consider his own weak position.

On October 22, 1962, Soviet strategic forces amounted to about 20 operational missile launchers (in Russia); its nuclear submarine fleet was mostly in port; its 100 long-range bombers could reach the United States but the TU-95 Bear and M-4 Bison bombers would have run a gauntlet of American air defenses. In contrast, the American nuclear strike force was formidable; U.S. forces had 179 ICBM launchers, 112 SLBMs (sea or submarine launched ballistic missiles), and 1,450 strategic bombers. In all, the U.S. could strike the Soviets with about 4,000 nuclear warheads, most of which would have penetrated Soviet defenses. The Soviets could only deliver about 220 warheads - with little probability of success (Zaloga 1993:213).

By the time the crisis reached its peak on October 27, 1962, the CIA estimated half of the 24 R-12 launchers were operational and the remaining sites would be operational the following day. The CIA estimated that about 70 to 75 percent of the missiles would prove functional. That day, the Soviets shot down an American U-2 reconnaissance aircraft using surface to air missiles. Khrushchev was upset and realized the situation was getting out of hand. The White House and the Kremlin took diplomatic steps to defuse the situation. After intense negotiations, Khrushchev agreed to withdraw the missiles from Cuba and Kennedy agreed to refrain from an American invasion of Cuba and tacitly agreed to remove U.S. missiles from Turkey (Zaloga 1993:214). The missiles in Turkey were of no concern since they were no longer of much value to the American ICBM program. Kennedy had an "ace in the hole." Khrushchev did not understand the fragility of the early missile technology. Even if the Cuban missiles reached operational status, they still would have been vulnerable to American air attack. Unless used in a surprise attack, the long preparation time for missile launch and the short time that the missiles could be left fueled and erected meant that the force could be easily destroyed on the ground. American military leaders knew that they enjoyed a substantial superiority over the Soviets in strategic weapons (Zaloga 1993:216).

Of all the ICBMs, the Minuteman deserves the title "The Nation's Ace in the Hole." Using solid fuel installed at the time of missile manufacture, the Minuteman required little maintenance, could remain stored in its silo for long periods and could be launched in a matter of seconds. As noted earlier, the timely arrival of the Minuteman missile to the nation's arsenal no doubt played a critical role in the America's defense during the Cuban missile crisis (cf. Lonnquest and Winkler 1996:III-134-135). On October 24, 1962, SAC accepted control of the first flight of silos and placed them on alert status on October 26. On October 28th, Khrushchev agreed to halt construction activity and return the missiles to the Soviet Union.

In a letter to the Secretary of the Air Force (Eugene M. Zuckert) dated October 29, 1962, President Kennedy praised the achievement:

> "...despite the many contingencies which militated against success, the sustained effort to maintain the schedule was effective. I am extremely pleased with the Department of the Air Force's accomplishments and proud of the dedicated personnel who made it possible."

For becoming operational months ahead of schedule and thus significantly contributing to the security of the nation during the Cuban Missile Crisis, the 341st SMW was awarded the Air Force Outstanding Unit Award for the period 22 October 1962 to 31 December 1963 (see Appendix I).

The lessons of the Cuban Missile Crisis are as important to the post Cold War World as they were during the Cold War. What Americans expect from their national leaders was permanently altered by the Cuban Missile Crisis. As explained by Werder (1995:4), international diplomacy between the Superpowers was changed forever, from the installation of the "hot line" communications system between Moscow and Washington to transmit rapid exchanges of correspondence (designed to prevent future mis-understandings of Superpower intent or deed), to President Nixon's establishment of détente with the Soviets and his recognition of the People's Republic of China. All of these events can be traced directly to the Missile Crisis of October 1962. Much of America's military technology developed in the last three decades was spawned in the wake of the missile crisis - advanced nuclear weapons and missile designs, new intelligence satellites, reconnaissance aircraft, and stealth technology - probably owe their existence to this crisis. The incident validated Kennedy's "flexible response" strategy and proved the value of joint military operations in meeting a direct threat.

In a research report prepared for the Air War College at Air University, Karl Werder (1995) explained as follows in his Executive Summary:

> In what was the most serious "clash" during the Cold War, the United States and the Soviet Union came dangerously close to thermonuclear war when their Superpower rivalry manifested itself with the placement of nuclear weapons on the Island of Cuba in October 1962. This potentially cataclysmic incident brought policy makers on both sides to seriously question their use of diplomacy, intelligence, nuclear weapons, military force, and to moderate their somewhat simplistic foreign policy rhetoric of national interests. Both sides had advanced to the edge of the precipice overlooking nuclear war, and had stepped back; staunchly determined to avoid any possibilities of a reoccurrence.

In an article written by Mr. Eliot A. Cohen, "Why We Should Stop Studying the Cuban Missile Crisis," Mr. Cohen argues that this incident should no longer be considered by political-military students of history as the classic case model for national security decision-making. Mr. Cohen argues that "the Cuban Missile Crisis is and will remain singularly un-representative of post-war crises, and it offers precious little historical guidance for American statesmen today." I disagree with Mr. Cohen.

I believe there are many lessons that can still be learned from the Cuban Missile Crisis. First, in the absence of another incident of this magnitude between the Superpowers, what other event can be considered representative of effective crisis management and national security decision-making? Secondly, the strategic intelligence advantage that President John F. Kennedy held over his adversary, Nikita Khrushchev, proved to be a decisive difference. Kennedy knew when Khrushchev was lying, what his capabilities were, and just as important, what they were not.

Additionally, in this day and age of high-tech, "Third Wave" theories of our national ability to depend upon technical intelligence collection and information warfare, Colonel Oleg Penkovsky stands as a classic example of the value of human intelligence operations. Without the information on Soviet missiles, launchers, and associated equipment that Colonel Penkovsky provided to the Central Intelligence Agency, American intelligence analysts could not have assured President Kennedy that he had three days to think about the problem and his options. In those three days, Kennedy wisely chose to continue his dialog with Khrushchev, a dialog that ended in a Soviet agreement to remove the missiles from Cuba.

In the intervening thirty-three years since the Cuban Missile Crisis, despite serious international friction's, there had not been another incident like it. In geopolitics, the interests of great powers often collide. Crisis management is necessary if crises arise, but crisis prevention and crisis avoidance based on political restraint and accommodations of differences are much to be preferred. Arms control agreements, strategic arms reduction agreements, and improved communications are all positive steps along this pathway. So is knowing what the other fellow is about to do.

Wing Commander Burton C. Andrus, Jr.

In his own words, Col. Burton C. Andrus, Jr. told his story to the Minuteman base newspaper (Andrus 1987). His story is as follows:

Within hours of the President's TV announcement that the Soviets were emplacing Intercontinental Ballistic Missiles in Cuba, a message addressed "Eyes Only" to Col. B.C. Andrus, Jr., commander of the 341st Strategic Missile Wing, arrived, and I was called to the communications center to engage in a one-on-one telecon with commander in chief of Strategic Air Command, Gen. Thomas Power. In summary, he told me to find out if it would be possible to posture the ten birds of Flight "A," target them, and find a way to command a launch, despite the fact that the system was designed to require launch commands to come from at least two separate launch control centers. At that moment, Flight "A" was the only one which had all its equipment installed. At Flight "B," contractors were still pouring concrete. In minutes my staff assembled, and I alerted Site Activation Task Force Commander Colonel Goldsworthy that I would heed his best technical advice on an extremely sensitive matter - quickly. After emphasizing the sensitivity of the exercise, I asked if anyone could see a way to "kluge" the system so that we would have a launch capability. This, I emphasized, would be accomplished only at no risk to command and control. My other concern: Could our maintenance men, who had yet to see a live re-entry vehicle, safely complete the posturing and alignment part of the job? Needless to say, the last thing I wanted to do was to call General Power back and say, "It can't be done."

Having had a little more than a year in command of the 341st, I had already realized that I was blessed with the finest corps of enlisted men I had ever served with. I could say the same for the combat crew officers - all were volunteers with outstanding records and tremendous motivation. I was also counting on outstanding capability and professionalism of Colonel Goldsworthy and his technical experts who had grown up with the Minuteman system. I had commanded a B-47 wing for more than two years and been in SAC long enough to know a weapons system hadn't been invented that could outsmart professional airmen. So, I was not surprised when less than 24 hours later, I was briefed by my guys that we had a plan we knew would work. The key: Introduce the critical part of a second launch control unit into Alfa's Launch Control Center circuitry so that a double crew could turn four keys simultaneously and thus launch the birds. With the outstanding professionalism of the maintenance teams, I assumed that posturing the birds would be well within their capabilities. October's weather would also not pose a problem to the theodolite crews doing the alignment. By this time things were becoming extremely real. But we had done our homework and SATAF had agreed with our conclusion. Therefore, I apprised Headquarters SAC of our plan to put Minuteman into the SAC War Plan, using a "kluged" system, as ordered. SAC accepted my recommendation and directed implementation. Immediately life became hectic-even for old SAC troops who had toughed our previous tests, but this wasn't a test. At one point during the posturing exercise, I found TSgt. Robinson back on the job after I'd ordered him to go home and get some rest. He knew he was a key player, so after a two hour nap in his quarters, he returned to the Alfa Launch Control Center. In less than 10 days I had a message ready for SAC Headquarters, "The 341st Strategic Missile Wing is ready for target assignment and participation in the SAC War Plan. Request authority to put Alfa Flight on strategic alert." Approval came quickly. At exactly 3:07 p.m., the afternoon of October 22, 1962, the first Minuteman ICBM went on strategic alert and SAC could report a new weapons system had entered the war plan. Before the end of the day my command post reported to Headquarters SAC and the National Military Command Center: "Ten minuteman missiles of Alfa Flight are on strategic alert and *in the green*." The 341st accomplished this first-of-a-kind task without injuring a man, having a reportable accident, or even scratching paint! Mission accomplished - another SAC milestone met ahead of schedule.

Deployment

By late 1955, the Air Force hoped to have 120 Atlas missiles on duty by 1960 to deter a Soviet first strike (Lonnquest and Winkler 1996:IX-1). With the threat of the Soviet missile program, Sputnik, and the missile gap debate, a force of 600 ICBMs was recommended in the influential 1957 Gaither report. General Curtis LeMay, however, wanted to deploy 10,000 solid-fuel missiles. Since the Minuteman proved to be so effective, in the early 1960s, Secretary of Defense Robert McNamara fixed the nation's land-based ICBM force at 1,000 Minuteman plus the 54 Titan II's then under construction (Lonnquest and Winkler 1996:IX-2). The Air Force's deployment strategy was designed to:

- maximize operational capability
- minimize the sites' vulnerability (dispersal, so each launch site was a separate target)
- minimize the danger to U.S. and Canadian citizens
- make wise use of taxpayer's money

Consistent with its deployment strategy, the Air Force originally intended to deploy the first operational Minuteman squadron at Vandenberg AFB on the southern California coast. Once a design flaw in the first stage booster was discovered, the flight range of the Minuteman IA (the first production model) was reduced from 6,300 to 4,300 miles - a major setback since a 4,300 mile range was insufficient to carry the missiles over the North Pole and strike targets in the central Soviet Union.

Rather than delay deployment by six months to a year to allow for booster redesign, the Air Force resolved the issue by moving the Minutemen squadron from Vandenberg to Malmstrom AFB. Since Malmstrom was 600 miles farther north, it put the missiles that much closer to their targets and Malmstrom's 3,500 foot elevation made it easier to boost the missiles into space (Lonnquest and Winkler 1996:IX-3).

Closer proximity was not the only reason the MM I missile was deployed at Malmstrom. Montana was selected for the first Minuteman wing because conditions in the area met the design criteria for the system: the soil structure was relatively constant and underground water was not prevalent (80 percent of the soil in the nation did not meet this criteria). The 3,500-foot elevation gave the missile a head start on its upward flight, equaling a 6 percent fuel saving (Malmstrom Air Force Base 1982:4).

Construction

In August 1960, the Army Corps of Engineers, to whom the Air Force had turned to build launch sites and support facilities, established the Corps of Engineers Ballistic Missile Construction Office (CEBMCO) to supervise site construction (Lonnquest and Winkler 1996:IX-5). Building the launch sites and support facilities was one of the largest military construction programs ever undertaken by the Corps. Over 10 years, CEBMCO built about 1,200 launch facilities, each consisting of multiple structures (Lonnquest and Winkler 1996:IX-7).

The construction of the Minuteman silos was less challenging than the complex Atlas F launch facilities. The Minuteman silos were smaller, only 80 feet high and 12 feet in diameter, and contained neither the complex liquid-fuel propellant loading system nor the elevator that lifted the Atlas missiles into firing position (Lonnquest and Winkler 1996:IX-10). Construction crews excavated a 34 foot-deep circular cut and from there drilled a 15 foot diameter shaft down to the 94 foot level. Then, a 62 foot high prefabricated rebar-ringed steel silo liner was lowered into place. After alignment, concrete was pumped around it to form the silo walls. Once the silo was completed, the underground launcher equipment and support buildings were built and the excavation backfilled (Lonnquest and Winkler 1996:IX-10). Between 1961 and 1966, the CEBMCO built 1,000 Minuteman launch facilities at the rate of one every 1.8 days!

Construction of Minuteman facilities was a relatively simple, low-cost, repetitious task, that lent itself to considerable use of assembly-line techniques and prefabrications (Hayes 1962:403).

Wing Organization/Operations

During most of the Cold War period the 341st SMW had a total of 200 remote, hardened and unmanned Launch Facilities (LFs) and 20 hardened, underground, manned Launch Control Centers (LCCs), or Missile Alert Facilities (MAFs). Each of the four strategic missile squadrons (SMS) - the 10th, 12th, 490th, and 564th - had 50 LF's and five LCC's. All of the 50 LFs and five LCCs within a squadron were interconnected by cable control and monitoring systems to insure that the missiles would always be monitored and controlled, even if only one LCC were operating. The 564th SMS, being a more modern system, also had a radio system that was redundant to the cable system.

During the early 1980s, the Public Affairs Division - 341st SMW provided general background information about how the missile operations were conducted at Malmstrom during the later phases of the Cold War (cf. Malmstrom AFB 1982:6-8). Malmstrom AFB had a Deputy Commander for Operations (DO) who was responsible for the missile combat crew members and facility managers of the Minuteman weapon systems. The DO maintained command supervision over the 10th, 12th, and 490th Minuteman II squadrons and the 564th Minuteman III squadron. The DO supervised six subordinate Operations divisions: Command Control (Wing Command Post), Training, Standardization, Plans and Intelligence, Codes, and Facilities Management Divisions. The DO supervised some 700 personnel operating over 23,000 square miles. The subordinate command of the missiles was divided equally among the four strategic missile squadrons, each squadron being responsible for 50 missiles. The sites are called Launch Facilities (LF's) and are controlled by five Launch Control Facilities (LCFs).

The LCFs are manned "around the clock" by missile combat crews, composed of a missile combat crew commander and a deputy missile combat crew commander, whose duty was performed in the LCF capsule. LCF housekeeping is the job of the noncommissioned officer assigned as facility manager. The Command Control Division is the operations focal point for both teletype and voice communications with the 20 LCFs and high headquarters. The Command Control Division is also responsible for monitoring and controlling all missile and aircraft emergencies within the missile complex and Malmstrom AFB. It is also required to be prepared to relay Presidential release authority to missile and aircrews in event of communications failures. The Training Division is responsible for the weapon systems training, planning, and preparation of day-to-day scheduled activities of missile combat crews to insure their capability of performing their primary responsibility of launching the missiles, if needed. Plans and Intelligence keep all EWO documents up to date, as well as keeping the Wing Commander informed on current intelligence situations. The EWO Training Branch is responsible for training combat crews in fast reaction messages that crew personnel on duty would react to if the President released authority to launch the missile forces. The Codes Division stored, verified, and issued code components to insure that unauthorized data is not entered into the missile computer. The Facilities Management Division is responsible for providing the LCFs with qualified facility managers, supplies/equipment support and accountability, and insuring coordination of Wing and Base agencies in support of the LCFs.

Wing Maintenance/Resources

Missile maintenance activity is a large and highly diverse organizational undertaking. The Deputy Commander for Maintenance has a staff and two maintenance squadrons. The 341st Organizational Missile Maintenance (OMMS) and the 341st Field Missile Maintenance (FMMS) has one primary mission - maintain the 200 Minuteman missiles in a constant state of alert readiness. The Deputy Commander for Maintenance plans, schedules, and controls the maintenance operations. The support staff provide the training, analysis and quality inspections required to assure that the maintenance is accomplished in a professional manner. More than 600 personnel are assigned to this mission.

Missile maintenance is accomplished primarily by personnel in the OMMS. The mobile teams assigned to this squadron work on a schedule that provides a maintenance response capability for 23,000 square miles, 24 hours a day, every day of the year.

The personnel transport the missiles, guidance systems and re-entry vehicles to the site and assemble them into a functional entity. Post-emplacement repair is conducted by these teams. The FMMS provide a specialist's capability to repair equipment and systems that are not the responsibility of the OMMS teams. The complexity of missile support systems require specific specialist knowledge and skills. The FMMS also provide repair capability for aerospace ground equipment used by the maintenance personnel.

The Vehicle and Equipment Control Branch of FMMS provide the necessary care and custody of the large numbers of vehicles and special equipment used by the maintenance teams. It ensures safe, reliable vehicles and equipment, properly configured, to insure that the maintenance dispatches are accomplished in a planned and orderly manner. The Re-Entry Vehicle Branch has the responsibility for performing maintenance on the re-entry vehicle and associated equipment. The main function of the missile maintenance is to maintain the assigned missiles in an optimum state of readiness and to keep the nation's "Ace in the Hole" a ready deterrent to our enemies.

The 2153rd Communications Squadron (AFCS) is responsible for maintaining the radio and wire communications systems connecting Malmstrom's Minuteman missiles with the national command structure. It maintains the radio and cable communications networks, including about 2,100 miles of buried cable which interconnects 200 LF's, the 20 LCC's, and the Wing Headquarters.

The Deputy Commander for Resource Management (DCR) is responsible for managing supplies, money and vehicles needed by the maintenance, operations and other wing organizations. The DCR complex consists of the 341st Supply Squadron, the 341st Transportation Squadron and the Comptroller, Contracting, and Data Automation functions. The Transportation Squadron manage over 800 vehicles that travel an average of more than 700,000 miles per month in servicing the base's 23,000 square mile missile complex. The squadron operates a base taxi fleet, U-Drive-It vehicles and a Transportation Control Center responsible for keeping track of all traffic in the field. They also maintain mobile maintenance teams to respond to break-downs and emergencies.

ICBM Evolution and Modernization

The MM I, deployed in 1962, was a second generation Air Force ICBM. It was followed by the Titan II (1963), the MM II (1966), and the MM III (1971), with each missile being more capable than the last. The MM II had more efficient engines and the MM III was the first to carry multiple warheads (Lonnquest and Winkler 1996:XII-1). Each generation of missile could strike further, with more power, and with greater accuracy than the first generation ICBMs, and the MM II and III were easier and less expensive to maintain than their predecessors and were more survivable. Beginning in the 1960s, the Air Force began 'hardening' its missile launch and control facilities by burying them deeper underground, wrapping them in additional layers of reinforced concrete, and protecting them against the effects of electromagnetic pulses arising from a nuclear attack (Lonnquest and Winkler 1996:XII-1).

The MM I (A model) was the original three-stage, solid-fueled, instant reacting system. The modified MM I (B model) incorporated substantial performance improvements. The MM III incorporates a new, larger second-stage motor, improved guidance, greater range and payload capabilities, more flexible targeting, and an increased capability of surviving an attack.

The MM II was much improved over its predecessor the MM I - it was two feet taller, 8,000 pounds heavier, and its new second stage engine extended its range from 6,300 to 7,000 miles and its payload increased so it could carry a 1.2 megaton warhead. It was also equipped with a new Autonetics guidance system that narrowed its circular error probable to 1.5 miles at maximum range (Lonnquest and Winkler 1996:XII-6). It had some eight times the "kill" capability of MM I.

The first MM II squadron went on operational alert at Grand Forks AFB, North Dakota in May 1966. Throughout the late 1960s, the Air Force replaced many of the older MM I missiles with MM II's and by May 1969, the solid-fuel ICBM force stood at 1,000 missiles - 500 Minuteman Is and 500 MM II's (Lonnquest and Winkler 1996:XII-7). In 1991, the MM II's were taken off operational alert by President Bush. Currently, MM II's are being removed from their silos and the launch facilities and launch control centers are being destroyed except at Malmstrom, where the silos are being readied to accept MM III's.

A new third stage engine increased MM III's range to 8,000 miles and greatly increased its payload - it was the first ICBM to be fitted with MIRVs. Thus, a single missile could carry multiple warheads, each directed at a different target. Changes in the reentry system gives the MM III a better chance to survive enemy defensive measures. The improved missile also has more flexibility in where and when it will deliver its payload. The missile weighs about 6,000 pounds more than MM II. The 564th SMS, which has 50 MM III missiles, also had the latest in guidance control during the 1980s. Known as Command Data Buffer (CDB), this hardware and software modification allowed the missile to have its targets changed from the LCC. Previously a combat targeting team had to be dispatched from the base which was a lengthy process. The major advantage is quick reaction to directions from higher headquarters. CDB has been known as "dial-a-target" in some circles (Malmstrom Air Force Base 1982:5-B).

SAC placed its first MM III squadron at Minot AFB, North Dakota on operational alert in January 1971. All of the MM III's were to be placed in reconfigured MM I and II silos. By July 1975, the force modernization was complete and the land-based ICBM force stood at 450 MM II's, 550 MM III's, and 54 Titan II. As of 1995, 530 MM III's were still on guard and will remain on alert well into the 21st century (Lonnquest and Winkler 1996:XII-8).

On September 27, 1991, President Bush announced a series of steps to reduce Cold War-era nuclear tensions. He ordered the Air Force to remove all of its 450 MM II ICBMs off operational alert. Within 72 hours, the missiles at Whiteman, Ellsworth and Malmstrom Air Force Bases were taken off alert status for the first time in over twenty years.

At Malmstrom AFB, 150 MM II silos were taken off alert status and during 1993 and 1994. Thirty of these silos were backfitted with MM III missiles to join an additional 50 silos, in the 564th, that have been built in the late 1960s already containing the newer missiles. Along with the 50 silos at Malmstrom that remained unaffected by President Bush's September 27, 1991 order, 450 MM III silos remained on alert status, split evenly between North Dakota's Minot, and Grand Forks Air Force Bases as well as Wyoming's F.E. Warren Air Force Base (Lonnquest and Winkler 1996:XII-9).

In 1995, the Base Realignment and Closure Commission (BRAC) announced that Malmstrom AFB would not close. This announcement enables Malmstrom to begin acquiring more Minuteman III missiles from missile wings that are being deactivated. On August 10, 1995, after three and one half years of work, the last MM II missile was removed from its silo at Malmstrom - the last MM II at Malmstrom and also the last MM II missile in the entire Air Force inventory (Gohl 1995). In late 1995 and continuing through 1996 and possibly early 1998, deactivated MM III missiles from Grand Forks AFB are being transferred to Malmstrom and emplaced in currently empty MM II silos. Once this process has been completed, Malmstrom will have 200 operational MM III missiles on alert.

Anti-Ballistic Missile Defense of Malmstrom AFB

Several anti-ballistic missile (ABM) systems were developed during the Cold War years including the Nike-Zeus (1956-63), the Nike X (1963-67), the Sentinel (1967-69), and the Safeguard system (1969-1976). In 1959, two Nike-Hercules missile bases were installed near Great Falls (Stuwe 1974:133).

The Safeguard system, which was built around the Sprint and Spartan missiles, was the only ABM system to become operational (Lonnquest and Winkler 1996:XI-1). There are few physical reminders left of the enormous sums of money spent in developing an ABM capability. The Corps began construction on three Safeguard sites in Massachusetts, North Dakota, and Montana, but only the North Dakota system attained operational status.

In early 1970, the Nixon administration announced plans to begin the expansion phase of Safeguard by adding six sites to the two authorized by Congress in the fall of 1969. The expansion program soon ran into congressional opposition (Baucom 1992:58-59). In the Senate, it was argued that ballistic missile defense was not technically feasible, deployment would escalate the arms race, and a missile defense system would take money from social programs (Baucom 1992:60). Safeguard supporters argued that deployment would send a message to the Soviets that the U.S. was prepared to meet any expansion in Soviet strategic programs and they would thus be convinced that the only sensible course of action would be to agree to strategic arms limitations. By March 1972, the U.S. offered to the Soviets that each side could have only two ABM sites; Grand Forks and Malmstrom AFBs in the U.S. and the GALOSH system at Moscow and at one of their ICBM sites (Baucom 1992:68).

As finally set forth in the ABM accord, each side was to have a single ABM facility within a 150 km radius of its capital and one site within a 150 km radius of a missile field (Baucom 1992:70). While Safeguard construction outside of Grand Forks, North Dakota went smoothly, construction at Malmstrom was delayed by labor disputes. About 1,200 workers were employed on Safeguard construction near Conrad, Montana in early Spring 1972 (Great Falls Tribune 1973).

By the time the ABM Treaty was signed on May 26, 1972, the North Dakota site had just reached 85% completion while the Malmstrom site (at Conrad, Montana) had just reached the 10% completion mark. Since the ABM Treaty only allowed defense of a single ICBM site, work at Malmstrom ceased. The government salvaged all of the usable material and then covered the foundations of the unfinished structures with topsoil.

Today, only the first story of the huge unfinished perimeter acquisition radar building is visible on the site (Lonnquest and Winkler 1996:XI-11). Interestingly, the North Dakota Safeguard site could also offer a limited degree of protection for MM missiles at Malmstrom, Minot, F.E. Warren, and Ellsworth AFBs (but it could not defend all sites simultaneously)(cf. Baucom 1992:222).

From the U.S. perspective, the SALT I agreements effectively institutionalized the doctrine of mutual assured destruction (MAD). As John Newhouse put it, "...the ABM Treaty had at last been signed, with each side renouncing the defense of its society and territory against the other's nuclear weapons...that is the treaty's historic essence" (Baucom 1992:71). In confirming deterrence through assured destruction as a U.S. nuclear doctrine, the SALT I accords effectively killed the American Safeguard system (Baucom 1992:71).

A detailed political and construction history of the Safeguard system was prepared by the Huntsville District of the Army Corps of Engineers, whose sole mission was to construct ABM facilities (cf. Kitchens 1978). Reconnaissance and site preparation for an ABM site at Malmstrom were started on 12 October 1969 and a public announcement was made on 20 October. The reaction in Conrad and Shelby, the two small communities most affected by the news, was a mixture of quiet elation at impending opportunities tempered by trepidation at the prospect of adverse effects that might be generated by heavy construction in the vicinity. Interestingly, in this socio-politically conservative region, there was no protest nor much enthusiasm for what the natives viewed as an extension of previous MM construction around Great Falls into their immediate neighborhood (Kitchens 1978:59).

As with other Safeguard sites, Malmstrom's ABM facilities were strategically situated for defense of underground MM silos. The PAR (Perimeter Acquisition Radar) and one RLS (Remote Launch Site) site were 50 miles away from the Canadian border (see box below). A second RLS was also sited in Toole County (ca. 28 miles W/NW of the PAR by air and six miles south of Shelby). The Malmstrom MSR (Missile Site Radar) with attendant Spartan and Sprint missile launching cells were located about seven miles southeast of Conrad (Kitchens 1978:60).

> The largest of Safeguard's structures, the Perimeter Acquisition Radar (PAR) building is one of the most solidly constructed buildings in the world. Nearly cubical in shape with dimensions of 204 by 213 feet at the base and rising to over 120 feet, the structure's northern-faced antenna wall sloped away from the ground at a 25° angle. PAR's "phased-array" antenna incorporated 6,888 elements, each sending a pulse that would bounce off an incoming target coming over the north pole. Through comparison of the reflected signals received back from the incoming object, trajectories were computed. Originally this information was to be passed to the Missile Site Radar, the sensor developed to track the incoming objects and provide guidance information to the interceptor missiles. However, with the shutdown of Safeguard, NORAD determined that the PAR could serve as a fallback sensor to the ballistic missile early warning system and provide data for the Spacetrack system (Winkler 1996:70).

The geographical setting for the Malmstrom and Grand Forks ABM sites were remarkably similar. The terrain around Conrad and Shelby was mostly flat or gently rolling high prairie with a cover of grass and small shrubs supporting cattle ranching or wheat farming. People were few and far between in this isolated and sparsely populated region. The largest settlements were Conrad (2,665) and Shelby (4, 017). Great Falls, a city of 64,500, lay some 60 miles to the southeast of Shelby. The impact of Safeguard on the human community in Montana closely paralleled that experienced in North Dakota. The Omaha District U.S. Army Corps of Engineers conducted a Safeguard Community Impact Study for the Huntsville Division and other agencies. The adequacy of federal assistance became moot since the project became entangled in protracted labor troubles that greatly retarded the expected influx of new arrivals (Kitchens 1978:60-62).

The 1970 year-end summary report showed significant construction progress for the Malmstrom ABM facilities near Conrad. By late February 1971, visitors to the Conrad-Shelby sites could see giant white concrete shells reaching from ground level up through the second floor slab of the PAR Building and its power plant, while out of the top surfaces rows of heavy reinforcing rods, piping, and other protrusions awaited the commencement of Phase II work (Kitchens 1978:72).

As 1971 came to a close, the Safeguard effort at Grand Forks was proceeding well. The delays at Malmstrom were not from design or construction deficiencies, but from broad socio-economic forces at work everywhere (labor unrest, high inflation, etc.). On May 26, 1972, the U.S. and the Soviets signed the ABM Treaty. The effects of the Treaty permitted only one ABM site located within American MM fields, so on May 27, 1972, the Secretary of Defense directed suspension of all Safeguard construction at Malmstrom and all future work at other sites except Grand Forks.

The last chapter in the history of the ABM facilities came on September 11, 1973, when the Huntsville Division awarded two contracts for cleanup and restoration of the sites to as near natural condition as practicable. Over the next six months, two contracting firms cut away protruding reinforcing steel, bundled it, and shipped it out for scrap salvage. The same treatment was given wiring, piping, fencing, light poles, and other salvageable fixtures. Roads, parking lots, curbs, gutters, trailer sites, the heat sink, waste water pond, and the Spartan and Sprint holes were ripped up or filled in and landscaped.

Various agencies carried out the most useful items (office furniture and supplies). Most of the vast aggregate piles were transferred to Pondera County, eventually to be spread over its roads. As the final step, topsoil was bulldozed over the foundation ruins, graded, and seeded. By July 1974, most concrete reminders of Safeguard facilities at Conrad and Shelby had received a dignified burial beneath thousands of yards of earth and a waving cover of wind-blown grass. The unfinished first level of the PAR Building alone stood above ground as a mute monument of what might have been America's second ABM installation (Kitchens 1978:97-100).

The Ground Wave Emergency Network (GWEN) System Comes to Malmstrom AFB

In the 1980s, the Air Force Communications Command (AFCC) was given responsibility for a small portion of the Ground Wave Emergency Network (GWEN) program. This network was part of the Minimum Essential Emergency Communications Network which was designed to provide high confidence connectivity throughout the continental United States for critical command, control, and communications before, during, and after a nuclear attack. This connectivity would be achieved by using a highly redundant network of unmanned, electromagnetic pulse hardened communications nodes connected by low frequency radio groundwave signals (Snyder 1991:230).

First deployed in 1984, GWEN validated the concept through an Initial Connectivity Capability that provided connectivity between SAC Headquarters, NORAD, and Buckley Air National Guard Base, Colorado, while simultaneously providing a receive-only capability at 11 SAC bases. Later, a full-scale development of the system was demonstrated by testing a Thin Line Connectivity Capability across the U.S. This Thin Line connected 8 input-output terminals, 30 receive-only terminals, and 56 tower relay nodes, the minimum number of relay nodes needed to make the GWEN system operational. The government accepted this Thin Line Connectivity Capability system on December 23, 1987.

Although Malmstrom's MM missile launch facilities were dispersed and hardened, immobile features such as missile silos required support with redundancy. Whereas bomber bases can rely on dispersal plans, in the event of an enemy attack, immobile missile facilities are more vulnerable. With concern about Soviet advanced cruise missiles (ACM's) penetrating through Canadian defenses, the Ground Wave Emergency Network (GWEN) system, with its multitude of sending and receiving microwave stations, was set up to support the missile facilities at Malmstrom with redundancy (Sorenson, 1989:157). Missile sites could be destroyed and the messages between other missile sites could still be channeled to alternative stations.

Late Cold War Developments

In the early 1970s, the 17th Defense Systems Evaluation Squadron, equipped with EB-57 (Canberra Bombers) became the main flying unit at the base. It had a dual mission in support of NATO and often deployed to Europe. It was designed to be packed up on short notice and deployed to Germany to fight (or train others). The EB-57 was a realistic bomber target for base training. It could carry a great deal of radar jamming equipment and chaff and simulated the radar jamming capabilities of Soviet bombers.

On January 5, 1988, the 301st Air Refueling Wing was reactivated at Malmstrom bringing the refueling mission back for the third time. During the Gulf War (1991) conflict with Iraq, the 301st played a key role. Their tankers off loaded 68.5 million pounds of fuel to 3,383 receivers. Numerous security police and persons with special skills from Malmstrom also participated in the war. On June 1, 1992, the 301st was deactivated and reactivated as the 43rd Air Refueling Wing (ARW) and Malmstrom became an Air Mobility Command Base. The wing flew the KC-135R on world-wide missions. The 43rd ARW has recently departed Malmstrom and the base is now under control of the Air Force Space Command (AFSPC).

3.4 THE GROWTH OF MALMSTROM AFB AND ITS IMPACT ON GREAT FALLS

A modern air base - with runways, taxiways, warm-up and parking aprons, hangars, and shops is a complicated and costly establishment. It must have control towers and navigational aids, fuel storage tanks, warehouses, and housing for personnel (Goldberg 1957:189). During WW II, the Army Air Force built a vast array of air bases around the world. Peace brought rapid reduction in the number of stations and by June 1948, the Air Force has only 290 major installations and of the 112 in the United States, only 90 were active. Most of the U.S. bases were training bases and were unsuitable to meet the changed strategic situation after 1945.

Housing for men and their families posed one of the Air Force's most critical problems after 1945. By mid-1950, about 55,000 officers and enlisted men legally entitled to government-furnished family quarters did not have them and some 63,000 more urgently needed housing (Goldberg 1957:190). The U.S. Air Force relied mostly on family housing constructed under the Wherry-Spence Act of August 1949. This law enabled the Federal Housing Administration to insure privately financed housing on or near military installations to the extent of $500 million, or up to $1 billion by presidential consent. At Malmstrom, some 192 Wherry housing units were constructed in 1949 and a 400 unit Wherry project was completed by 1952.

In August 1955, Congress passed the Capehart Amendment to Title VIII of the National Housing Act. This permitted expansion of Wherry housing by authorizing the use of quarters allowances of occupants to pay off the mortgages. By 1959, a 150 unit Capehart project was completed at Malmstrom.

Four runways were constructed at Malmstrom AFB by December 1942 and the base hosted bomber crew training between 1942 and 1943. Its principal mission was preparing Lend-Lease aircraft for shipment to the Soviet Union between 1944-1945. Lend-Lease planes were taking off from the Great Falls Army Airbase for Russia via Alaska, after being winterized for trans-Arctic flights and having the Red Star added to the olive drab paint (U.S.Army Corps of Engineers 1969:3-40).

After WW II, the base served as an aerial port for personnel and cargo moving between the continental United States (CONUS) and Alaskan bases between 1946 and 1953. In 1949, a total of 192 Wherry housing units were constructed. Between World War II and the Korean War, the Seattle District U.S. Army Corps of Engineers converted existing structures to uses required by planned, permanent, peacetime forces at certain postwar installations and constructed permanent structures to house and train Air Force units at Great Falls AFB (U.S. Army Corps of Engineers 1969:5-1).

Between 1953 and 1961, the base served fighter interceptor and air refueling missions. In 1959, a SAGE direction center was completed. Between 1961 and 1965, 150 MM II launch and launch control facilities were installed and 50 MM III missiles were installed by July 11, 1975. Between November 3, 1976 and March 1, 1979, the general missile upgrading program was completed (Mueller 1989).

The base was operated by several major commands including the 2d Air Force (July 6, 1942 - redesignated Second Air Force on September 18, 1942), the Air Service Command (October 15, 1943), the Air Transport Command (January 1, 1944), the Military Air Transport Service (June 1, 1948), the Strategic Air Command (February 1, 1954 - 1994), and most recently, the Air Force Space Command (1994 - present). Useful information can be found in several documents (cf. USAF 1987, 1989, 1990, 1991; DOD 1980; and USACE 1970).

Socio-Economic Impacts

Once missile silos were deployed, the Air Force fostered good community relations. Missile crews and families became active within the surrounding community. Malmstrom, surrounded by 200 MM missile silos, illustrates how a SAC missile base affected the nearby community. In 1969, the Malmstrom Analysis Division stated:

> The millions of disposable dollars earned by the Malmstrom employees flow into the local community through expenditures for food, housing, clothing, household appliances, transportation, and other needs which were satisfied by merchants in this area. The Malmstrom family of 23,200 people represents approximately one-third of the people who shop in the Great Falls area. Malmstrom's value cannot be assessed entirely in dollars and cents...but, the Malmstrom family also contributes many services which add much to the civic and cultural well-being of Central Montana... one of 18 teachers in the city (Great Falls) schools belongs to a Malmstrom family... more than 125 dependents of base personnel are employed by the city's hospitals... Malmstrom personnel contributed about $61,000 dollars to welfare funds through the Consolidated Federal Campaign... Malmstrom personnel donated 504 pints of blood... Aircraft of all types flew many missions into our wilderness areas searching for and rescuing lost and/or injured persons. In 1969 Malmstrom employed as many as 45 students... Malmstrom personnel are doing their part whenever possible to serve the community and to promote good community relations (cf. Lonnquest and Winkler 1996:IX-10, 11).

No earlier records documenting the economic impact of Malmstrom AFB on the City of Great Falls is on file with the Chamber of Commerce or the base comptroller. Statistics show fluctuating levels of economic impact reflecting the initial construction of missile silos in 1962, the arrival of the 564th SMS between 1965-1967, upgrading the 10th, 12th, and 490th SMS to Minuteman II missiles between 1967 and 1969, and the most recent ILCS modifications to the 10th, 12th, and 490th SMS between 1977 and 1978.

In round numbers the economic impact of the base operations on Great Falls during the period 1961-1978 is illustrated in Table 4. Since 1978, the base has continued to play a large role in the economic vitality of Great Falls and vicinity.

TABLE 4

Economic Impact of Malmstrom AFB During Part of the Cold War
1961-1978
(cf. Department of Defense 1980)

Year	Total Economic Impact
1961	$49 million
1962	$109 million
1963	$65 million
1964	$45 million
1965	$75 million
1966	$75 million
1967	$82 million
1968	$75 million
1969	$87 million
1970	$80 million
1971	$88 million
1972	$86 million
1973	$216 million
1974	$162 million
1975	$184 million
1976	$194 million
1977	$234 million
1978	$188 million

While the construction and growth of Malmstrom AFB had obvious socioeconomic effects on the community of Great Falls, the acquisition of missile fields over some 23,000 square miles of territory surrounding Great Falls had noticeable effects on the rural population. The CEBMCO obtained tract ownership data from local title companies and people experienced in real estate work were recruited from all available sources. The 80+ real estate staff devoted themselves to gaining legal access for site investigations and permits-of-entry from landowners. Some 1,378 ownerships were involved in the sites under consideration for the 165 control and launcher bases. Subsequently, an additional 642 rights-of-entry were obtained for construction (Corps of Engineers 1969:5-6).

The next phase was to secure entry rights and easements for communication and fire control cable lines connecting all the base sites. The cross-country line required 1,800 miles of right-of-way. Initial entry permits on 5,000 tracts of land under 3,500 ownerships allowed contractors to proceed with the understanding that the Government would pay for any damages and would later negotiate for a permanent easement (Corps of Engineers 1969:5-6). Because much of the rural land surrounding Great Falls was under joint interests, such as farm or mineral leases and mortgages and estates/trusteeships, the negotiations were often protracted multiparty affairs. Many titles were so clouded that they required much effort to clear. Others could not be secured satisfactorily and required condemnation. Under three percent of the tracts ultimately went to court. This record, together with the general willingness of owners to grant entry for purposes that could not be divulged in detail, stands as a high tribute to the patriotic spirit of the Montana residents and the considerate conduct of the personnel who dealt with them (Corps of Engineers 1969:5-6).

There were a few exceptions to the local spirit of cooperation. Due to urgent construction schedules, land was entered during seasons most inconvenient to farmers. Fences were cut, trenches were left open in cattle pastures, crops were destroyed, timber was removed, and water and power supplies were interrupted. It was not uncommon for a negotiator to encounter a very irate landowner (Corps of Engineers 1969:5-7).

Wherry and Capehart Housing at Malmstrom

After WW II, there was an unprecedented housing shortage in the U.S. As noted by Temme (1995:2), the housing market had been suffering since 1926, through the Great Depression, and during WW II as the abrupt decline in building materials available for private construction drastically limited the number of new starts and compromised the quality of existing units. With post-war family formation, the housing shortage in the U.S. rose to over 1.5 million units.

The national housing shortage was most harsh on military families. In 1948, the U.S. Army had a deficiency of over 193,000 family housing units. Military families were offered tar paper shacks, converted chicken coops, corners of damp basements, and even converted beer truck trailers to live in (Temme 1995:3). SAC calculated that over 111,848 airmen were lost during a four year period through failure to reenlist. General Curtis LeMay testified to the Senate Banking and Currency Committee that of the five factors influencing decisions to leave the service, the lack of adequate housing was the most important (Temme 1995:4).

Because military families were assigned to remote areas of the country, often removed from urban areas, it was difficult to locate already scarce rental property. These families were assigned to their posts for an indefinite and often short period of time making it difficult to almost impossible to obtain financing to purchase a home. Military families, whose average income was $80/month were often forced to pay $65-$75/month for one or two room hovels, often with no electricity or running water. These problems received widespread public attention thanks to a Life Magazine article in March 1949. The Life expose covered the lives of military families around Ft. Dix and McGuire AFB in New Jersey, Great Falls AFB (Malmstrom) in Montana and Ft. Ord in California (Temme 1995:5).

The DOD realized that insufficient and inadequate housing had a deleterious effect on mission readiness and the U.S. Senate offered a solution. Senator Kenneth Wherry of Nebraska proposed a plan in 1949 by which housing developers could lease government land on or near military installations for a period of 75 years and on this land build homes which they would rent to military families. Upon completion of the housing, the developers then agreed to act as landlords, collecting rents and maintaining the units.

Developers were selected by the DOD based on low bid and presumed ability to undertake the project. They were guaranteed up to 90 percent financing at reduced 30-year-mortgage rates by the Federal Housing Authority (FHA), and financing was obtained from funding sources of the developer's choice. The act initially provided some $6,100 per unit, a figure which was quickly raised to $8,400 out of concern by nearby civilian residents about the potential value loss to their property as a result of the "bargain basement" homes being erected (Temme 1995:6).

The first "Wherry housing" was built in 1950 and the first wave of Wherry construction was multi-unit townhouses in a standard plan being used as a response to urban housing shortages throughout the nation. Within a few months, the types of Wherry housing ranged from townhouses to duplexes and single family detached units. Builders typically used standard plans that were being built throughout civilian neighborhoods across the nation, and based their choices on the size, number of rooms, and cost of construction (Temme 1995:6).

The residents of early Wherry housing were almost always grateful for the on-post housing, and many held fond memories for the years they spent in it; but they were almost universally unhappy with the small size of the units and the lack of privacy due to noise transmission through the paper-thin walls (Temme 1995:7).

Unfortunately, some developers built their housing only for the amount of the 90 percent financing, rather than contributing their 10% share. This resulted in inferior construction materials and methods in a number of developments across the nation. The developers were unhappy with the slow return on their investments and wanted to sell the units outright. In response to the deteriorating effectiveness of the Wherry program, Senator Homer Capehart of Indiana proposed in 1956 an alternative housing program which would provide larger and more expensive homes designed and built by the government and would be owned and operated by the DOD (Temme 1995:7). Wherry developers feared that given the choice, military residents would select to live in the Capehart housing. The government then issued a guarantee that all Wherry housing at an installation would be purchased from the developer by the DOD before Capehart housing could be awarded to the installation.

There are over 44,000 Wherry housing units in the U.S. and since 1956, the DOD has acquired nearly all of the Wherry housing that was built. The Wherry housing program was an important event in the history of military housing and this program and the subsequent Capehart Act set precedence for all future military housing ventures, including the 801 and 802 housing. At this time, the Army and Air Force are currently studying the approach used by the Wherry program as a potential approach to replacing the deteriorating housing stock within a downsizing defense infrastructure (Temme 1995:10).

The Wherry and Capehart housing programs made important contributions to the evolution of military housing but the houses themselves are extremely common and even in their day were considered a "stop-gap" measure to prevent declining morale and readiness. They came at a time of experimentation in mass housing and there is virtually nothing to distinguish these houses architecturally from thousands of others just like them that dot the American landscape (Temme 1995:10). While former Wherry residents had generally good memories of their years in Wherry housing, those memories were motivated primarily by issues of safety, convenience, and community, rather than by the houses themselves. A former Wherry occupant summarized the general consensus of The Retired Officers Association group interviewed about Wherry housing by the USACE:

> It was a concept that was very welcome and appropriate for the times. Adequate housing was difficult to find, and scattered the military people throughout communities that were not large enough to absorb them. Our transportation was limited to one car. Without this type of neighborhood, wives had to drive husbands long distances at odd hours, or be isolated with small children and no transportation. It also served our community and social needs. We were very glad to have it, and remember those years as happy ones, due largely to this type of community housing.

The Wherry and Capehart housing units at Malmstrom are typical examples of both multi-unit and single-family detached housing of the 1950s and 1960s and all are illustrative of cost saving devices used during that period. Their floor plans are common and are of the type found in countless neighborhoods across the country. These housing units are not linked to a significant architect, builder, or developer. The only characteristic that distinguishes these housing types from any similar civilian economy post-WW II housing is that it is built on a military installation and is a product of a program that offered housing relief to military families at a time when housing was greatly needed. While the memories and the lessons learned from the national Wherry and Capehart housing programs are worth maintaining, Malmstrom housing should not be considered exceptionally historically significant and does not merit consideration for listing in the NRHP.

According to real estate records provided by Malmstrom AFB (Real Property Office), a total of 86 Wherry housing units were constructed including twenty-eight 16-unit multiple family houses, fifteen 12-unit houses, forty-one 8-unit houses, and two 2-unit houses. In contrast, virtually all of the 357 Capehart housing units built at Malmstrom consisted of duplexes (two family attached units) or single family detached units (353 duplexes and 4 single family residences) (see Table 5).

TABLE 5

Wherry and Capehart Housing at Malmstrom AFB
(from Real Property Records - Malmstrom AFB)

Type	Dates	# Families	Layout	Square feet	Cost	No.
Wherry	1961	16	8 units - ground fl. 6 units - 2nd fl. 2 units - 3rd fl.	8689 - 1086@ 6336 - 1056@ 2353 - 1176@	$148,502	4
Wherry	1961	16	8 units - ground fl. 6 units - 2nd fl. 2 units - 3rd fl.	8526 - 1065@ 6108 - 1018@ 2418 - 1209@	$165,255	6
Wherry	1961	16	8 units - ground fl. 6 units - 2nd fl. 2 units - 3rd fl.	8002 - 1000@ 5748 - 958@ 2268 - 1134@	$155,238	18
Wherry	1961	12	6 units - ground fl. 4 units - 2nd fl. 2 units - 3rd fl.	6455 - 1075@ 4088 - 1022@ 2367 - 1183@	$125,300	6
Wherry	1961	12	6 units - ground fl. 4 units - 2nd fl. 2 units - 3rd fl.	6100 - 1016@ 3832 - 958@ 2268 - 1134@	$124,196	9
Wherry	1961	8	8 units - 2 floors	8206 - 1025@	$160,757	1
Wherry	1961	8	4 units - 1-2 level 2 units - 3rd level 2 units - 4th level	5998 - 1499@ 2858 - 1429@ 3140 - 1570@	$84,878	23
Wherry	1961	8	4 units - ground fl. 2 units - 2nd fl. 2 units - 3rd fl.	4500 - 1125@ 2062 - 1031@ 2438 - 1219@	$86,176	8
Wherry	1961	8	4 units - ground fl. 2 units - 2nd fl. 2 units - 3rd fl.	4197 - 1049@ 1916 - 958@ 2281 - 1140@	$82,313	9
Wherry att.garage	1961	2	2 units - ground fl. 2 vehicle garage	2672 - 1336@ 572 - 286@ car	$38,936 $2002	2

TABLE 5 continued

Wherry and Capehart Housing at Malmstrom AFB
(from Real Property Records - Malmstrom AFB)

Type	Dates	# Families	Layout	Square feet	Cost	No.
Capehart att.carport	1959	2	2 units 2 vehicle carport	3012 - 1506@ 720 - 360@ car	$57,904 $3,047	3
Capehart att.garage	1961	2	2 units 2 vehicle garage	2992 - 1496@ 528 - 264@ car	$90,967 $1,848	12
Capehart att.garage	1961	2	2 units 2 vehicle garage	2880 - 1440@ 528 - 264@ car	$44,934 $1,848	18
Capehart att.carport	1959	2	2 units 2 vehicle carport	2780 - 1390@ 720 - 360@ car	$61,095 $3,047	7
Capehart att.carport	1959	2	2 units 2 vehicle carport	2726 - 1363@ 720 - 360@ car	$58,413 $4,295	8
Capehart att.garage	1961	2	2 units 2 vehicle garage	2688 - 1344@ 528 - 264@ car	$47,170 $1,848	102
Capehart att.carport	1959	2	2 units 2 vehicle carport	2612 - 1306@ 551 - 275@ car	$55,330 $1,378	15
Capehart att.carport	1959	2	2 units 2 vehicle carport	2426 - 1213@ 582 - 291@ car	$55,334 $3,950	34
Capehart att.garage	1961-63	2	2 units 2 vehicle garage	2338 - 1169@ 528 - 254@ car	$59,705 $1,848	77
Capehart att.garage	1961-63	2	2 units 2 vehicle garage	2316 - 1158@ 528 - 254@ car	$44,868 $1,848	70
Capehart att.carport	1959	2	2 units 2 vehicle carport	2112 - 1056@ 550 - 275@ car	$53,651 $3,870	7
Capehart att.carport	1959	1	1 unit 2 vehicle carport	2582 504	$78,237 $1,260	1
Capehart att.carport	1959	1	1 unit 2 vehicle carport	2137 500	$69,686 $3,187	1
Capehart att.garage	1961	1	1 unit 2 vehicle garage	1822 528	$77,692 $1,848	1
Capehart att.garage	1961	1	1 unit 1 vehicle garage	1496 264	$28,714 $924	1

3.5 A PERSPECTIVE ON THE COLD WAR ARMS RACE AND ITS REFLECTION AT MALMSTROM AFB

Stewart Udall's (1994) book, *The Myths of August*, explored Cold War issues that ultimately related to the deployment of missiles at Malmstrom AFB and other installations. In the fall of 1957, the Soviets surprised the West by using a large rocket to loft the first earth-circling satellite into space. Although President Eisenhower put the Sputnik launch into calm perspective ("We never considered ourselves to be in a race"), journalists and Democrats eyeing the 1960 presidential campaign cast Sputnik as a humiliating defeat for the United States and a stunning technological victory for the Soviets (Udall 1994:141). The truth was that the actual deployment of ballistic missiles in the next four years would soon demonstrate that army rocket experts at Redstone Arsenal in Alabama enjoyed a substantial lead over their Russian counterparts.

Walter McDougall (1985) in his book *The Heavens and the Earth: A Political History of the Space Age*, illuminated several truths and illusions during the Sputnik episode. As summarized by Udall (1994:142):

> President Eisenhower had vigorously supported a secret effort to develop rockets and missiles that, experts believed, would have the potential to deliver nuclear bombs on targets thousands of miles away. If Ike had considered it vital for the United States to put a small satellite in outer space in 1956, a year ahead of Sputnik, the army's Redstone rocket was ready to fly and could have been used to achieve this objective. It was Eisenhower's view that until tests were completed and ICBMs were in hand, "first and foremost, space was about spying," and his experts had been working overtime developing a top-secret spy satellite that would use advanced photographic techniques to provide intelligence about the Soviet Union's military preparedness. However, the lack of any legal precedent for such overflights, as Professor McDougall explains, confronted Ike's advisors with this quandary.

There were two ways a legal precedent could be made for spy satellites - the real priority of U.S. policy. The U.S. could launch an innocent little scientific grapefruit under international auspices, thus establishing by common consent the right to orbit satellites over the territory of other nations, or to let the Soviets launch a satellite first. Thus, Eisenhower's supposed failures were ironic. During the prolonged furor over the missile and space "gaps", Ike was restrained by secrecy imperatives and could not use vital facts to defend his record. Ike knew that the Soviets were moving at a slow pace in building an ICBM force, based on U-2 spy plane overflights in the stratosphere over the Soviet Union. Ike could not reveal that U.S. technologists had won this vital reconnaissance race. Hence, aided by America's self-inflicted inferiority complex, the Soviets easily convinced the world that their Sputnik signified they had leapfrogged ahead of the U.S. in military rocketry and space science. Ike, silenced by secrecy, viewed Sputnik differently. To him, it opened the door to open-spy surveillance that would in due course enable U.S. leaders to follow strategic developments behind the Iron Curtain on a day-to-day basis - a bonanza for American intelligence. He also realized that as the Soviets perfected their own spy satellites, mutual surveillance would aid the cause of peace by eliminating military surprises (Udall 1994:143).

McDougall (1984) defended Eisenhower's leadership and blasted the political gamesmanship of Senators Lyndon Johnson and John Kennedy as they alarmed the electorate with a misleading picture of a "space and missile mess." The dire conclusions drawn by the Democrats about the Soviet challenge, and the urgency to win the missile race, became a theme of their 1960 presidential campaign and a goal that pushed U.S. production of nuclear weapons to levels which guaranteed overkill capacity. Once in power, its not surprising that the Minuteman program received great support from the Kennedy-Johnson Administrations and that Kennedy referred to Malmstrom's ready missiles as his "Ace in the Hole" during the Cuban Missile Crisis.

Udall (1994:143-144) observed that a scare argument that the Russians had achieved an edge in antiballistic missiles prompted the newly elected Nixon administration to "waste $5.7 billion on a useless Safeguard antiballistic-missile system." The partially completed Malmstrom Safeguard complex at Conrad, Montana, stands in mute testament to an expensive program that was cut short by both political reasons (the ABM Treaty) and its questionable effectiveness.

Udall (1994:144) concluded:

> History's judgments are sometimes expressed in statistics, and the disparity between the fear figures bandied about by the weapons-gap brigade and the actual outcome of the arms race between the superpowers constitutes a shocking verdict. The missile gap, from its beginnings in the fall of 1957 to its end in 1961, was a mirage. By 1962, the U.S. had deployed 180 ICBMs and had at least a 10-to-1 advantage in this crucial category of offensive weapons. Once he studied the data gathered by our spy satellites, Robert McNamara, President Kennedy's secretary of defense, conceded there was no missile gap. The official estimate of the Soviet force was 75 ICBMs, but in the mid-seventies Daniel O. Graham, a former chief of the Defense Intelligence Agency, revealed that the actual 1961 figure as 4.

The 1973 Arab-Israeli War.

Tensions in the Middle East erupted into open conflict when Egyptian forces successfully crossed the Suez canal in October 1973 and attacked Israeli forces in the Sinai desert. An Israeli airborne counterattack into Egypt saved the day for Israel, but soon raised the possibility of conflict escalation. The U.S., which was helping Israel with logistical support, wanted to avoid escalation and prevent a superpower confrontation. As directed by the Joint Chiefs of Staff, SAC generated its forces to a higher readiness posture in support of U.S. interests. The command stood ready from 24 - 25 October 1973 whereupon it was able to stand down (Anonymous 1991:39-30).

The Global Shield 79 Exercise

From 8 - 16 July 1979, SAC conducted Global Shield 79, one of the most comprehensive nuclear war plan exercises ever conducted in SAC history. For the first time, the command exercised every phase of its role in the Single Integrated Operational Plan short of nuclear warfare. Command units generated hundreds of bombers, tankers, and missiles to alert status (Anonymous 1991:34).

3.6 A PERSPECTIVE ON MALMSTROM AFB's UNIQUE ROLE IN THE COLD WAR

Malmstrom AFB, for being located in a relatively isolated area of the United States, played important support roles during the Cold War era. Malmstrom AFB:

- Was the crucial training site for C-54 crews involved with the Berlin Airlift (all but the very first C-54 crews in the Berlin Airlift were trained at Malmstrom).
- Played an important training role during the Korean War, again training C-54 aircrews (and MATS planes also flew into Alaskan bases from Great Falls).
- Played an important role in the defense of the continental U.S. when the 29th Air Division, Defense, activated in 1951 (fighter/interceptor squadrons, radar, and ground observer detachments).
- Was an important air refueling base for jet fighters that could take off from Great Falls and arrive in Alaska with only one air refueling.
- Played an important role in the defense of the continental U.S. when SAC fighters were equipped to deliver atomic warheads in the early-mid 1950s (MAFB's close proximity to the Canadian border facilitated quick dispatch of fighters for counterair operations against Soviet ground targets and to assist large bombers).

- Played an important role in the defense of the continental U.S. with the arrival of a NORAD station and associated SAGE facility/equipment (enemy aircraft that penetrated across the DEW Line and the Mid-Canada Line could be first intercepted by American forces from Malmstrom).
- Played a crucial role during the Cuban Missile Crisis with the timely deployment of the MM I missile.
- Played a significant role in maintaining a credible deterrence against Soviet attack with the deployment of MM I and II missiles during the 1960s.
- Played a significant role in U.S. deterrence forces during the 1970s and 1980s with missile modernization programs and deployment of MM III missiles.
- Was one of two ABM sites developed during the early 1970s.
- Played a significant role in U.S. air defense with the arrival of the 17th Defense Systems Evaluation Squadron with EB-57 Canberra Bombers (dual mission: support NATO with deployment to Germany to train or fight and for base training - simulation of Soviet radar jamming capabilities enabled base personnel to learn how to counter Soviet bomber attack, etc.).

As observed by Col Gerald Hanson, Retired, Malmstrom's unique geographical setting was a major factor that contributed to its Cold War importance. Col Hanson believes the primary reason Malmstrom was a missile and air refueling tanker base, an air defense center, and a station for strategic fighters was its close proximity to the Soviet Union on trans-polar routes. Malmstrom is located in an ideal spot for trans-polar missions to Europe, Russia and Asiatic Russia, and much of China. Malmstrom is closer to Russia and the Bering Straight than it is to Miami, Florida. About 75 percent of the former Soviet Union is less than 4,500 nautical miles from Malmstrom and over 95 percent of it is closer than the denominal range of a Minuteman missile (e.g., 7,500 miles). A large piece of China is also within target range of Malmstrom's missiles.

4.0 METHODOLOGY

4.1 INVENTORY STRATEGY

Following a kickoff meeting between Air Force and contractor personnel, inventory work at Malmstrom began with a number of informal oral interviews with key base personnel including the Point of Contact (Mr. Tim Neu), the 341 Missile Wing History Office (Sgt. Stan Gohl), Mr. Jim Morris (341 Environmental Flight), Mr. Don Frieling, Chief of Missile Engineering (341 EES/CEM), and Lt Col Gerald Hanson (Retired, President, Malmstrom Historical Foundation and Curator, Malmstrom AFB Museum) (see Appendix G - Oral Interviews). Oral interviews were also conducted by Ms. Julia Cantrell (AFCEE) with "missileers" who served at Malmstrom in varying capacities (e.g., command, field, etc.) during the Cold War and post Cost War eras.

During and immediately after the initial base tour, contacts were initiated with Ms. Cindy McConnell (Real Property CES), and several other individuals in order to secure background information, potential interview subjects, and to acquire copies of various drawings and other written documents. To identify real property, the following documentation was sought:

- building inventories
- architectural drawing file indices
- written histories and management documents
- base maps
- aerial photographs
- completed NRHP nominations for base properties
- personal property and records/documents

The inventory documented representative types of real property, personal property, and record/documents. Included were buildings, structures, sites, landscapes, and objects with data recorded either on Montana SHPO Inventory Forms or as appended materials to this report. Each resource was assigned a unique number, generally described in a data log (e.g., MAFB-00001) and photographed as appropriate. Where numerous examples exist of a certain property type (e.g., missile launch facilities), a group was assigned a single number and a representative sample photographed.

Definition of Resources

The NHPA of 1966 (as amended) established the NRHP as a listing of resources important for their historical value on the national, state, or local level. Both the Legacy Program and the Air Force use NRHP terminology and definitions to structure their studies and to categorize individual resources (Lewis, et al. 1995:112). This enables military property types to be integrated into NRHP categories (e.g., buildings, structures, objects, sites, and districts). USAF Interim Guidance (USAF 1993:4-5) with some modifications by Lewis, et al. (1995:112-113) provide useful definitions:

- **Buildings** are defined as edifices created to shelter any form of human activity. A building must be considered in its entirety, in that all significant features should be identified and its parts should not be evaluated independently. Examples include: administration buildings, chapels, dormitories, family housing, garages, hangars, launch control centers, libraries, and radar stations.

- **Structures** are made for purposes other than sheltering human activity. As above, all extant structural elements should be considered before an eligibility assessment can be made. Examples include: bridges, fences, missiles and their silos, launch pads and associated weaponry, railroads, roads, runways, water towers, and wind tunnels.

- **Objects** are works that are primarily artistic in nature or that are relatively small in scale and simply constructed. Although often moveable, an object is associated with a specific setting or environment. Examples include: fountains, monuments, or statuary as well as art work, signage, trophy cases, and individual static displays of aircraft.

- **Sites** are locations of significant events, missions, or activities (although physical remains need not necessarily be present). Examples include: locations of early rocket testing or test tracks (now dismantled), nuclear testing ranges, treaty signing locations, aircraft wreak sites, and nuclear manufacturing facilities. ***Landscapes*** are properties designed for human use through purposeful layout or elements for human activity, information, and/or enjoyment. Examples include recreational parks, playgrounds, static display parks, and arrangements of signage and other physical elements to portray a meaning (entrances to bases or ranges) or create scenery.

- **Districts** are significant concentrations of buildings, structures, and other cultural resources united historically or aesthetically by plan or physical development. Examples include groups of buildings that may lack any significant architectural or engineering merit but either hosted a crucial code breaking or intelligence gathering activity or were built for nuclear weapons testing (laboratories). An entire mission could also qualify, as could historically significant bases, airports, and support facilities.

USAF Interim Guidance (USAF 1993:78) suggests five main property type groups and several subgroups of Cold War assets augmented by Lewis, et al. (1995:113)(see Table 6).

TABLE 6

Property Types Found at USAF Facilities

Operational and Support Installations	Combat Weapons and Support Systems
Base & Command Centers	Missiles
Missile Stations	Alert Facilities
Housing	Ground Vehicles and Equipment
Storage	Maintenance Docks and Hangers
Base Retail	Communications
Recreation	Storage
Infrastructure	Memorial
Mess/Social	Weapons Platforms
Memorial	Documentation
Communications	
Documentation	

TABLE 6 Continued

Property Types Found at USAF Facilities

Materiel Dvlp. Facilities	Training Facilities	Intelligence Facilities
Research Labs	Base Support	Radar Sites
Manufacturing Sites	Flight Training	Spy Satellites
Test Sites	Intelligence Training	Listening Posts
Proving Grounds	Combat Training	Communications
Communications	Combat Support Train.	Documentation
Documentation	Launch Complexes	
	Combat Training Ranges	
	POW Training Camps	
	Impact Areas & Targets	
	Communications	
	Documentation	

Malmstrom's Important Resource Property Types

Malmstrom AFB is a relatively large, complex, air base that has a number of operational and support installations including base and command centers, missile stations, housing, base retail facilities, mess halls and social and recreational facilities, memorials and a museum, and storage and other infrastructure. Being host to the 341st MW, Malmstrom has several combat weapons and support systems, and had such systems prior to the coming of the MM missiles. In addition to Malmstrom's current flights of MM III missiles and missile alert facilities, it has a very large complement of ground vehicles and equipment needed to transport alert crews to and from remote missile sites, and several aircraft maintenance docks and hangars that supported the recently departed 43rd Refueling Wing. Malmstrom has always been an important training base and its training facilities include a missile silo training facility, missile launch training facilities, flight training (for air tankers), and possibly other training missions. Malmstrom is not noted for having significant materiel development facilities. With its important geographic proximity to the Soviet Union, Malmstrom had and continues to have important intelligence facilities. Until recently, Malmstrom hosted a NORAD and SAGE center in Building 500. Malmstrom has radar and other communications facilities on base and a wide array of radar, GWEN sites, and radio repeater communication facilities spread out in the remote missile fields.

Malmstrom's Cold War missile program assets include several important resource property types including Launch Control Facilities, Launch Facilities and other kinds of physical objects and structures. A Launch Control Facility (LCF) or a Missile Alert Facility (MAF) is a soft, above-ground facility which contains the following:

- A Flight Security Control Center manned by Security Police teams.
- A dining and recreational area (TV and lounge) with an adjacent kitchen
- Shower and latrine facilities.
- Seven bedrooms (nine in 564th SMS LCC's)
- Water treatment and heating plant rooms.
- A telephone equipment room for communications equipment.
- A standby diesel generator room which provides electrical (AC) power in the event of a commercial power failure.
- An environmental control room with: heat exchanger, heated shelter for three vehicles, helicopter landing pad, parking area, antenna fields and sewage lagoon.

A Launch Control Facility (LCF) is a hardened, underground (60-90 ft.) reinforced concrete and steel-lined "capsule." It contains equipment and personnel capable of controlling, monitoring, and launching all or part of the 50 missiles within the squadron. The walls of the LCF are about 4 1/2 feet thick. A blast door, weighing eight tons, provides entrance and exit to the capsule from the access shaft. An escape hatch three feet in diameter is located at the far end of the LCF. Essential LCF launch equipment and the Missile Combat Crew are located in a shock isolated room suspended by four pneumatic shock isolators. Electronic equipment contained within the LCF includes the launch control console, communication control console, power supply group, control and monitoring system racks, primary alert system, radio set, telephone set repeater, SAC automated communications and control system racks, and survivable low frequency radio receiving equipment. Environmental control equipment provides cooling for electronic components, as well s conditioned air for personnel. Primary electrical power is supplied by a storage battery set. Personnel support facilities include an over, refrigerator, survival kit, emergency kit, bunk, toilet, and oxygen regeneration unit.

A Launch Facility (LF) is a hardened, underground steel and concrete "silo" about 80 feet deep. It consists of a launch tube containing the missile and its spring shock isolation system, and a two-level equipment room. The upper level of the equipment room contains the electronic equipment that provides the interface between the missile and the LCF command control and status monitoring systems. The missile's on board inertial guidance platforms are also controlled for alignment by equipment mounted on this upper level of the launcher equipment room. On the lower level, are emergency power supply batteries and the LF environmental control air conditioning system. A separate sub-surface equipment room contains a standby diesel generator and environmental control heat exchangers. Normal electrical power is from commercial sources. The launch tube is covered by a ballistically actuated concrete sliding door that weighs 108 tons.

4.2 RESOURCE EVALUATION METHODS AND STRATEGY

Lewis, et al. (1995:115) observed that evaluation of the historical significance of Cold War resources is as problematic as their identification; and two main issues hinder evaluation:

- A lack historical perspective because Cold War resources are of relatively recent origin.
- An absence of baseline data for comparative evaluation because most Cold War studies are in their initial phases and have yet to produce synthetic research reports.

Evaluation of Cold War resources is a relatively new process, driven by existing federal historic preservation laws. The NRHP is the nation's official list of important historic resources and includes over 52,000 buildings, structures, objects, sites, and districts (ACHP 1991:28). Lewis, et al. (1995:115-116) suggest that the necessary tools to aid in the evaluation of Cold War resources for eligibility for inclusion in the NRHP include standard legislative stipulations, Legacy Program guidance materials, National Park Service Interagency Resources Division guidance materials, and the Advisory Council on Historic Preservation (ACHP). Pertinent discussions presented by Lewis, et al. (1995:115-134) are reviewed here and their useful synthesis is gratefully acknowledged.

Significance

Cultural resources are manifestations of past human activity, occupation, or use; including prehistoric and historic sites and objects and locations of traditional cultural or religious importance to specified social/cultural groups. Generally, properties must be at least 50 years old to be deemed historic, but exceptions can be made for properties that have not reached the 50-year threshold (e.g., properties with "exceptional significance"). Resources may be considered eligible for including in the NRHP if they are deemed important in American history, architecture, archaeology, engineering, or culture. They must also possess integrity of location, design, setting, materials, workmanship, feeling, and association and as appropriate, meet at least one of the four criteria:

- Are associated with events that have made a significant contribution to the broad patterns of our history;
- Are associated with the lives of persons significant in our past;
- Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant distinguishable entity whose components may lack individual distinction; and/or
- Have yielded, or may be likely to yield, information important in prehistory or history (36 CFR Part 60.4).

A historic property is a cultural resource listed in, or eligible for listing in, the NRHP (and may include artifacts, records, and remains). Properties eligible for inclusion are those both formally determined as such by the Secretary of the Interior and those that meet NRHP criteria (see above).

Exceptional Significance

The 50 year age criterion was established to ensure that the passage of time has been sufficiently long to allow adequate perspective for evaluating the true historical significance of a resource. When the original regulations for listing resources in the NRHP were compiled, exceptions were made for resources younger than 50 years and have attained historical significance. Listing of recently significant properties is allowed if they are of exceptional importance or significance. For military purposes, missiles and nuclear facilities (Trinity Site, Launch Complex 33 at White Sands Missile Range, Mission Control Center at Cape Canaveral and associated launch pads) have been listed in the NRHP. Other Cold War assets have either been determined eligible or are considered potentially eligible (Department of Defense 1994:15). As Lewis, et al. (1995:116) observed:

> The Cold War is undeniably an event that was significant on the national, as well as state and local levels. The end of the Cold War has brought about a restructuring of the Department of Defense away from its focus on Soviet containment. Through this restructuring, key resources defining the era and its ideology could be lost by destruction, lack of adequate maintenance, or complete neglect. In light of the rapid technological changes of the 20th century, a high priority must be placed on protecting the physical environment that manifested the Cold War and, in some cases led to the end of the Cold War and the accompanying revisions in political policy.

Due to the nature of the resources involved and since the Air Force is quickly changing, waiting 50 years before engaging in the historic preservation quest could result in the loss of many Cold War resources.

National Historic Landmarks

While NRHP-listed and determined eligible properties can be significant at the national, state, or local levels, National Historic Landmarks (NHL's) include only those properties that are nationally significant. ICBM Launch Control Facility D-1 and Launch Facility D-9 at Ellsworth AFB, South Dakota, was recently designated as the Minuteman ICBM National Historic Landmark under criteria 1 and 4 (see below). These facilities were also found to be eligible for listing in the NRHP under criteria a and c (see below) (cf. Hess, Roise and Company 1994). In support of the development of this new NHL, the National Park Service recently published ***Special Resource Study, Management Alternatives, Environmental Assessment: Minuteman Missile Sites, Ellsworth Air Force Base, South Dakota*** (National Park Service 1995).

NHL criteria state that the quality of national significance is ascribed to buildings, structures, objects, sites, and districts that possess exceptional value or quality in illustrating or interpreting the heritage of the United States in history, architecture, archaeology, engineering, and culture; the possess a high degree of integrity of location, design, setting, materials, workmanship, feeling, and association; and:

- Are associated with events that have made a significant contribution to, and are identified with, or that outstandingly represent, the broad patterns of United States history and from which an understanding and appreciation of those patterns may be gained;
- Are associated importantly with the lives of persons nationally significant in United States history;
- That represent some great idea or ideal of the American people;
- That embody the distinguishing characteristics of an architectural type specimen exceptionally valuable for the study of a period, style or method of construction, or that represent a significant, distinctive, and exceptional entity whose components may lack individual distinction;
- That are composed of integral parts of the environment not sufficiently significant by reason of historical association or artistic merit to warrant individual recognition but collectively compose an entity of exceptional historical or artistic significance, or outstandingly commemorate or illustrate a way of life or culture; and/or
- Have yielded, or may be likely to yield, information of major scientific importance by revealing new cultures, or by shedding light upon periods of occupation over large areas of the United States. Such sites are those which have yielded, or which may reasonably be expected to yield, data affecting theories, concepts, and ideas to a major degree (36 CFR Part 65.4).

As will be discussed later in Section 5.0, missile alert and launch facilities connected with the Cuban Missile Crisis are probably eligible for listing in the NRHP and their high degree of integrity and exceptional historical significance may make them good candidates for NHL status at some point in the future.

Section 106

One of the key regulatory drivers that triggered this study is the Section 106 (and 110) review process established under the National Historic Preservation Act (NHPA) and outlined in ACHP regulations for the *Protection of Historic Properties* (36 CFR 800). It is a step-by-step sequence that includes the ACHP in the decision-making process regarding treatment of historic properties. The main steps of the 106 process are:

1. Identification and evaluation of all historic properties (both listed and eligible for listing in the NRHP) that may be affected by a project: if no historic properties are identified, the SHPO and interested parties are notified by the agency and the project proceeds; if historic properties are found the process goes to Step 2.

2. Determination of the effect of the proposed undertaking may have on the identified historic properties: if there will be no effect and the SHPO concurs, the project proceeds; if there will be no adverse effect and the SHPO and ACHP agree, the project proceeds; if there will be an adverse effect the process goes to Step 3.

3. Consultation among the agency, SHPO, and ACHP to attempt to avoid, minimize, or mitigate the adverse effect: this step either results in the development and execution of a Memorandum of Agreement (MOA) in which case the process goes to Step 4, or if no MOA is developed, consultation is terminated at this point.

4. ACHP comments on the project: this step may result in the project proceeding, either with the agency implementing the terms of the MOA or with the agency considering the ACHP's comments and notifying the ACHP of their decision to proceed.

Programmatic Agreements (PA's) can help streamline the Section 106 review process in certain situations. The ACHP actually encourages military base managers to consider the execution of PA's for undertakings on the lands they oversee.

Section 110

Section 110 of the NHPA is aimed to establish an on-going consideration of historic properties into a federal agency's projects and programs. A federal agency can meet its Section 106 responsibilities to take into account the effects of their undertakings on historic properties by fully implementing the provisions of Section 110. Section 110 requires a federal agency to:

- Assume responsibility for the preservation of historic properties owned or controlled by the agency, and utilize such properties where available and feasible;

- Establish programs to identify, inventory, and nominate all resources under the agency's ownership or control that appear to qualify for inclusion on the NRHP, and assure that any such property that might qualify for inclusion is not inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly;

- Document for future use and reference any historic properties that must be substantially altered or demolished by an agency action;

- Designate a Federal Historic Preservation Office to coordinate the agency's preservation activities under the NHPA;
- Carry out agency missions in a manner consistent with the intents and purposes of the NHPA;
- Request that the Secretary of the Interior review plans for treatment of surplus federally owned historic properties when transferred from agency control; and
- Undertake planning efforts and actions to minimize harm to National Historic Landmarks.

Legacy Program and USAF Interim Guidance

While the Section 106/110 regulations are well understood, evaluation of Cold War properties is somewhat problematic. To address Cold War and other resources, the Department of Defense set up the Legacy Program and promulgated evaluation methods (Department of Defense 1994:3) that stipulate that a resource must:

- be built, used, or associated with critical events or persons corresponding to the temporal parameters established in a phased approach and described in a historic context, and
- possess exceptional historic importance to the United States or be an outstanding example of technological or scientific achievement

and the historical or cultural significance of personal property and/or records and documents must:

- be ascribed through professional evaluation of historic associations to persons, events, places, eras, or with military organizations pertinent to the Cold War.

More specifically, the United States Air Force has published Interim Guidance (USAF 1993) that provides specific criteria that can be used to evaluate the historical significance of Cold War properties (e.g., NRHP criteria *combined* with NHL concepts applied specifically to Cold War resources) and cautioned that Criterion (d) is not particularly applicable to Cold War properties. Exceptionally significant properties include those buildings, structures, objects, sites, or districts that:

- Possess exceptional value or quality in illustrating or interpreting the Cold War heritage of the United States;
- That possess a high degree of integrity or location, design, setting, workmanship, feeling, and association, and
- That meet at least one of the following criteria:
    - That portray direct association with events that have made a significant contribution to, are directly identified with, or outstandingly represent the broad national pattern of United States Cold War history and aid in understanding that pattern;
    - That portray direct and important association with the lives of persons nationally significant in United States Cold War history;

* That embody the characteristics of an architectural, engineering, technological, or scientific type specimen exceptionally valuable for understanding a component of United States Cold War history or representing some great idea or ideal of United States citizenry embodying the Cold War; or

* Have yielded or may likely to yield information of exceptional importance to United States Cold War history.

It should be noted that the significance criteria emphasize the evaluation of resources at the *national* level of Cold War history since most Cold War material culture is not yet 50 years old and therefore must by evaluated as *exceptionally significant* to be immediately eligible for NRHP listing. Potential resource significance at the state and local level should also be considered (Department of Defense 1994:16).

Tools

Several "tools" (concepts, methods, strategies, etc.) have been developed by Legacy Program researchers that help develop a methodology for the inventory and evaluation of Cold War properties at Malmstrom AFB. The most important tool is the "historic context" (historical themes, time, and geographical areas) that form the historic circumstances and factors from which a property emerges. Evaluation of a Malmstrom property within its context ensures an understanding of its role and relationship with similar properties.

Another important tool is chronology. Since the 50-year threshold is arbitrary and our understanding of history occurs in blocks of time rather than year-by-year, resource evaluation is structured into periods when applying the criteria for exceptional significance. A resource is most accurately evaluated in terms of the period of its relationship to historical events and/or important individuals. Often, the more recently a property has achieved significance, the more difficult it is to demonstrate exceptional importance (National Park Service 1990).

To evaluate and justify exceptional significance, it is necessary to identify all properties in a geographical context that portray the same associations and determine those that best illustrate or represent the historical, architectural, cultural, engineering, or archaeological values (National Park Service 1990:6).

Nominations of properties for their association with living persons is not encouraged (cf. National Park Service 1990:7). Properties which are integral parts of a district do not need to be individually eligible or of exceptional significance, regardless of their age. Properties can acquire historical significance before 50 years, either because they were not built to last that long or by their nature are subject to integrity loss before 50 years (e.g., temporary WW II housing). Hence, an evaluation factor is whether a type or category of resources (as a whole) has faced such rapid loss that relatively young survivors can be viewed as exceptional and historic. With respect to Cold War resources, sole surviving members of a class or type of facility or resource can be exceptionally important.

Justifications of exceptional significance must address two issues:

- Using the four NRHP eligibility criteria, it is necessary to explain *why* a property is historically significant using direct reference to the relevant NRHP criteria

- Discuss the context used to evaluate a property and demonstrate that the context and the associated resources are "historic." That is, document the existence of sufficient research or evidence to evaluate a resource dispassionately and use background information to summarize the way in which a resource is exceptional.

The Air Force's Interim Guidance (USAF 1993) indicates that comparative evaluation of property significance is problematic for Cold War resources because adequate baseline data is not yet available. One factor is the degree of recognition of a resource by the public or the degree to which a resource reflects elements of common national memory and identity from the Cold War era. As suggested to Lewis, et al. (1995:123) by historian Joseph S. Murphey, until appropriate temporal perspective is achieved in future decades, properties of exceptional Cold War significance should be those that will provide tangible manifestations to today's generation with which to interpret the ideological differences extant in the Cold War era. Murphy identified four primary themes of the Cold War era and suggested that a material artifact must illustrate one or more of these themes which convey the ideological differences in U.S.-Soviet relations:

- The bipolar battle of opposing economic and political ideologies, present in the struggle for geo-political power in western Europe and the containment of Soviet expansionism and influence in the Third World;
- The massive American investment in research and development of technology to battle real and perceived strategic military challenges with the Soviet Union (e.g., the arms race, the bomber gap, the missile gap), for political leverage (i.e., for use in treaties), and for the psychological comfort of the nation's citizenry, forever changing the economic, geographic, and social landscape of the nation (e.g., the military-industrial complex, the interstate highway system, and the computer);
- The development of offensive/defensive systems and development of readiness programs for protection against an attack by the Soviet Union and to ensure the survivability of military installations and the general civilian population; or
- The omnipresent potential to use nuclear devices, keeping the Cold War cold through such concepts as mutually assured destruction.

It is also important to balance two very different, but not necessarily opposing, interests when evaluating Cold War scientific/technological resources:

- The need to preserve the physical reminders of U.S. scientific legacy.
- The continual need to upgrade scientific and technical research facilities that are still in operation.

These interests are particularly germane to Malmstrom's missiles. For active scientific or technological facilities, the continual upgrading of obsolete equipment is necessary to keep properties functioning and to maintain the effectiveness of the mission (e.g., on-going upgrades to the Minuteman system during the Cold War years). These modifications, over time, can compromise the historical integrity of the resource.

Key issues that must be considered in evaluating the significance of scientific or technological properties are age, representativeness v. uniqueness, integrity, and the qualifications of the evaluator and persons consulted to assist in the evaluation. A key variable is whether or not properties are recognized by "consensus" to be significant.

With respect to the representativeness or uniqueness of a facility, structure, or object, this factor should *only* be considered after an initial eligibility assessment has been made. For example, a property such as a Minuteman missile launch facility can be considered as an individual, stand-alone entity. In theory, then, the number and condition of similar launch facilities should not enter into decisions about whether or not the subject launch facility is significant, but should instead come into play during consultation regarding management of the launch facility property. Uniqueness is the general rule for NHLs while representativeness is generally used for NRHP properties (but these are not mutually exclusive).

With respect to integrity, there is a convincing argument that continuity in function leads to continuity of integrity, whether intentional or not. That is, if a facility is utilized for a similar function through the years (e.g., the Minuteman launch facility), it is more likely to retain original operating parts than if its function is entirely changed. Thus, the amount of original historic fabric, including materiel and equipment, that is extant determines integrity. For a property to be NRHP eligible, it must have integrity, operationally defined as retaining sufficient physical presence to enable a preservable entity to communicate relative significance. The authenticity of a properties' historical identity, evidenced by the survival of physical traits that existed during the property's historical period is crucial. A property that retains the physical character it possessed in the past has the capacity to convey the association that makes it significant (whether the association is with historical patterns, persons, architectural or engineering design, science and technology, or information about a culture or people).

Survival of some or all of the seven qualities of integrity (location, design, setting, materials, workmanship, feeling, and association) enables a property to maintain a direct link with the past and convey the relationship making it historically important. Normally a property must meet at least two of the seven to be considered eligible for NRHP listing (ACHP 1991:32). Functional changes in the character or use of a scientific property are distinct from qualitative changes (minor) that accompany ongoing improvements to structures and equipment that enable the facility to keep functioning at its original purpose. Often, integrity of association may be present while the remaining six attributes are not. If an attribute does not directly affect the characteristics making the property significant, the lack of integrity in that area may not preclude NRHP eligibility. Therefore, it is critical that consensus is reached regarding exactly what elements of a property contribute to its significance, not only to establish eligibility but to help decide what alterations would damage its historical integrity and to help in making firm management decisions.

Cultural resource specialists often have rather limited knowledge of the scientific or strategic pursuits behind the physical properties they evaluate. Thus, it is vital to include technical personnel and scientists in all phases of resource identification, evaluation, and prioritization. For example, persons familiar with the Cold War, persons who were in the service during the Cold War, and persons who worked in the defense industry or had a role in the defense establishment (services), are valuable resources. Through oral histories, these individuals can play an important role in helping cultural resource specialists better understand the historic context of a property and the scientific or strategic contributions it made.

Resource Ranking/Prioritization Strategies

This section outlines the methodology or strategy used to rank or prioritize the Malmstrom AFB properties inventoried in 1996 by CH2M HILL and AFCEE staff. Following Lewis, et al. (1995:126-128), there are six main topics that lend themselves to numerical ranking:

1. **The relationship of a resource to the role it played in the Cold War.**

    - **Direct Cold War Relationship [Direct]** is assigned to those resources at Malmstrom that manifest the ideological differences of the Cold War in a recognizable way, through being part of a technological advance important to the base, or through a significant association with a Cold War event or an important figure in the Cold War.
        - HIGHEST RANKING

    - **Indirect Cold War Relationship [Indirect]** includes those resources that are identified with or are of the Cold War period, that may relay information about local history, construction technology, or local persons of importance.
        - NEXT HIGHEST RANKING

    - **No Cold War Relationship but are of the Cold War period [None, but]** includes those resources that are identified with or are of the Cold War period but do not convey national meaning or have local importance.
        - NEXT RANKING

    - **Not of the Cold War period [None]** includes resources that may be important in their own right but are not of the Cold War period (e.g., significant WW II resources).
        - LOWEST RANKING

2. **The relationship of a resource to the context aspects.**

    - Policy/Strategy [P&S]
    - Technology [Tech.]
    - Architectural/Engineering Design [A&E]
    - Social Impacts [SI]

3. **The relationship to the four temporal phases of the Cold War.** When dealing with exceptionally significant resources, the older the property, the more the value, given the increase in historical perspective (with the passage of time). Rankings proceed in descending order from highest to lowest:

    - **Phase I** (July 1945 to January 1953)
    - **Phase II** (January 1953 to November 1963)
    - **Phase III** (November 1963 to January 1981)
    - **Phase IV** (January 1981 to November 1989)

4. **The level of importance of a resource** can be ranked as follows:

    - A **"premier"** resource is one that has major importance in identifying the base's role within the national Cold War context (e.g. Minuteman missiles).

- A "high" ranked resource is one that has importance to the individual base's role although not necessarily at the national level (e.g., a hardened building/structure at a base that directly reflects the Cold War ideology even though it may not serve a major base function).

- A "**medium**" ranked resource is one that has limited importance in the individual base Cold War context (e.g., a wood truss hangar built or used during the Cold War period, but one that doesn't add to or define a significant event in that period).

- A "**low**" ranked resource is one that has importance to the base but does not reflect the Cold War or the period (e.g., a WW II hangar).

5. **The percentage of historic fabric.** This is a qualitative estimation as to how much of the historic architectural or original material or design remains intact. For buildings, this will help determine architectural integrity and to determine if the building still conveys its meaning using the NRHP integrity categories. A property must retain a minimum of two of these categories to have integrity, with the actual ranking a subjective decision based on those parameters. Rankings are prioritized as follows, from highest to lowest:

    - 76 - 100%
    - 51 - 75%
    - 26 - 50%
    - 0 - 25%

6. **The severity of existing threats.** Resource facing severe threats will receive the highest score, since they are higher in priority for preservation than are resources with low threats.

    - **Severe** threats are those that pose an immediate problem for the resource (pending demolition, archives located under leaking roof, etc.).

    - **High** threats are those that pose a problem, although not as immediate as a severe one.

    - **Moderate** threats are those still of concern, yet they do not represent much more than a standard degree of threats.

    - **Low** threats essentially represent a lack of identified problems at this time.

Another resource ranking/prioritization scheme was developed by Joseph S. Murphey, who utilized a slightly different technique for the categorization of property types than the USAF Interim Guidance (USAF 1993). Murphey identified the following categories and ranked them in order of importance (Lewis, et al. 1995:130-131):

- **Research and Development.** [R&D] These properties reveal the very nature of the Cold War that produced the vast military-industrial complex devoted to technological solutions to an ideological confrontation. These properties directly lead to breakthrough developments resulting in technological hardware that could affect the strategic balance of power.

- C^3I Complexes and Systems. [C^3I] Maintaining command, control, communications, and intelligence (C^3I) was the key to survivability before, during, and after a nuclear first strike. These properties thereby reveal the extent of the mistrust and suspicion of Soviet intentions.
- **Strategic Weapon Systems and Support. [SWS&S]** Planned and deployed weapons systems and their direct support structures specifically designed to combat Soviet forces were the bargaining chips of arms control negotiations and formed the basis for the balance of power.
- **Strategic Materiel Production Facilities. [SMPF]** The vast infrastructure of industrial facilities was used to produce the high-technology hardware which gave credence to U.S. Cold War resolve.
- **Operational Support Facilities. [OSF]** Depots, storage warehouses, maintenance docks and hangars, etc., provided operational mission support and movement of men and materiel.
- **Training Facilities. [TF]** These properties were used to train personnel for Cold War missions.
- **Social Support Facilities. [SSF]** Dorms, theaters, chapels, exchanges, etc., provided necessary support services for personnel.

Murphey believes the first three property types are most likely to exhibit exceptional significance due to their direct influence in Cold War policy making, whereas the remaining four are less likely to be directly involved. Nevertheless, any property of any type can unexpectedly illustrate the symbolism of the ideological and economic battle of the superpowers in an exceptionally significant manner (Lewis, et al. 1995:131).

Once a matrix has been completed, using one or more of the resource ranking/prioritization strategies described above, the relative importance of a resource, along with its current physical condition and severity of threats, can be used to develop recommendations. Such recommendations can include:

- **NRHP listing. [NRHP list]** if the property is considered as important to the base Cold War context and appears to meet NRHP criteria at that level.
- **Preservation/conservation/repair. [PCR]** if a property is considered important and requires attention to maintain or repair to avoid loss or further deterioration.
- **Stewardship. [Steward]** if a property is important, but differs from the above in that the property may not require active preservation.
- **Further research. [+ Research]** if a property is important, but differs from the above in that the property may not require active preservation.
- **No further work [No + work]** if a property is not considered to be important or eligible for the NRHP, and consequently requires no protection or care.

5.0 INVENTORY RESULTS AND RECOMMENDATIONS

5.1 INTRODUCTION

As of June 11, 1996, there were 1,158 buildings at Malmstrom AFB of which 944 consist of housing units and their associated garage/storage structures and 214 (non-housing) buildings. The 214 non-housing buildings do not include such non-buildings as power poles, runways, or small structures (fire hydrants, etc.). In addition to these buildings located at the Main Base, 200 MM missile facilities lie in remote areas away from the Main Base. These facilities include 200 individual missile launch facilities (LF's - e.g., "silos") and 20 individual Missile Alert Facilities (MAF's - e.g., manned control centers - one for each 10 LF's). In addition, there are 3 GWEN (ground wave emergency network) sites and 5 radio relay sites. The 3 GWEN sites (built in 1985) and the 5 radio relay sites (constructed in 1971) were inventoried and evaluated in 1995 by Thompson and Greiser (1995) and determined to be ineligible for listing in the National Register.

The inventory was conducted in early October 1996 by CH2M HILL (led by Ms. Sara Scott and assisted by Mr. David Schwab) and the AFCEE (led by Ms. Julia Cantrell and assisted by Ms. Victoria Wark).

5.2 INVENTORY ORGANIZATION

The Cold War facilities inventoried at Malmstrom AFB were evaluated in terms of the resource ranking and/or prioritization strategies described in Section 4.2 above. The inventory was based on a sampling plan that divided Malmstrom's Main Base buildings/structures into three categories:

1. Potentially important buildings/structures
2. Buildings/structures having little to no historic importance
3. Wherry and Capehart housing units

Potentially Important Buildings/Structures

For each potentially important building/structure located on the Main Base, the field teams prepared a Montana SHPO Inventory Form and photographed the front, sides, and rear elevations of each standing building/structure using black and white print film. Where possible, the field teams investigated, in greater detail, the mission history of the buildings/structures, their Cold War significance, and any physical changes/alterations. Each of the potentially important buildings/structures was photographed from all four elevations/sides and selected interior photographs were taken where possible. The following Main Base buildings/structures were identified as being potentially significant: Buildings 160 (Nutter Hall), 165 (Johnson Hall), 219, 230, 250, 295, 300, 349, 360, 400, 500, 581, 769, 850, 870, 1460, 1464, 1700, 1705, 1708, 1840, 1845, 1846, 3064, and 3070.

Buildings/Structures Having Little to No Historic Importance

For each building/structure located on the Main Base designated as having little to no historic importance, the field teams prepared a Montana SHPO Inventory Form and photographed the front elevation of each standing building/structure using black and white print film.

Wherry and Capehart Housing Units

A representative sample of Wherry and Capehart housing was inventoried by the field teams. Real property records indicate that 86 Wherry housing units were constructed at Malmstrom consisting of a variety of multiple family housing units or clusters of units. Records also indicate that 357 Capehart housing units were constructed including 353 duplexes and 4 single family residences.

An inventory form was prepared for a Capehart duplex (Building 4004), a Capehart single family residence (Building 4007), a six-plex Wherry residence (Building 15) and an eight-plex Wherry residence (Building 44). Since the Malmstrom AFB Housing Office photographed all of its Wherry and Capehart housing, we did not photograph these housing units. Copies of Air Force photos were made for inclusion as the required photo-documentation (see Appendix B). It was assumed from the outset that none of the Wherry or Capehart housing units at Malmstrom AFB would be eligible for inclusion in the National Register since they are relatively common at military bases throughout the United States and the housing doesn't meet the "exceptionally important" criteria for eligibility of properties less than 50 years old.

Missile Sites

Buildings and structures located off the Main Base consist of MM missile facilities, GWEN sites and radio relay sites. The most important are the missiles and the most important of these are the missiles and related facilities built during Phase II of the Cold War. The first missile unit to arrive at Malmstrom was the 10th Strategic Missile Squadron (Kennedy's "Ace in the Hole" during the Cuban Missile Crisis) of the 341st Strategic Missile Wing. The first MM I missile site was Alpha-09; but it was Alpha-06 that went on "strategic alert" on 26 October 1962. On 10 August 1995, the last MM II missile was removed from its silo - the last MM II missile in the entire Air Force inventory. Today, only MM III missiles are on operational alert at Malmstrom.

Since Malmstrom has over 200 LF's and 20 MCF's, the following missile facilities were identified as the most historically important and representative:

- LCC Alpha-01 and LF Alpha-06. The first MM I launch control facility completed. Representative LCC associated with the 10th SMS. The first MM I launch facility to go on "strategic alert" at Malmstrom during the height of the Cuban Missile Crisis. Representative LF associated with the 10th SMS.

- LCC P-0 (Conrad) and LF P-4 (Conrad). These are representative facilities associated with the 564th SMS - the "odd squad" unit. On April 21, 1967, the 564th's fifty (50) MM II missiles went on operational alert. The "odd squad" unit remained as such until July 8, 1975 when the 564th SMS had been upgraded with MM III missiles and the other three SMS's with MM II.
- LCC M-1 (Moore) and LF M-5 (Lewistown). Representative facilities associated with the 490th SMS - a MM I squadron.
- LCC F-1 (Augusta) and LF F-8 (Augusta). Representative facilities associated with the 12th SMS - a MM I squadron.

Photographs of Minuteman missile "blast door" art were taken by Dr. Dan Friese of Ellsworth AFB (South Dakota) in 1995 and are included in this inventory (see Appendix K). As noted above, GWEN sites and radio relay sites were studied by others (Thompson and Greiser 1995).

5.3 RESOURCE RANKING AND SIGNIFICANCE EVALUATION

Four buildings are recommended for immediate nomination to the NRHP. Two buildings (Nutter Hall - Building 160 and Johnson Hall - Building 165/170) and two missile facilities (Alpha-01 MAF and Alpha-06 LF) clearly meet the criteria of exceptional significance as described in Section 4.2. Four additional buildings appear to warrant nomination pending the outcome of recommended additional background research on these buildings (Buildings 250, 300, 1700 and 1708). Several other buildings at the Main Base may qualify for listing in the NRHP pending either additional research or attainment of 50 years of age (Buildings 360, 500, 769, 1460, 1464, 1705, 3070, and 17,100).

Aside from Alpha-01 and -06, the other randomly selected missile facilities inventoried may qualify for listing in the NRHP (Foxtrot-1, -8; Mike-1, -5; and Papa-0, -4). In fact, all of the missile facilities at Malmstrom may qualify for listing in the NRHP but none are 50 years old (and the oldest won't reach 50 until 2012). Alpha-01 and -06 are so exceptionally significant that they, and perhaps the rest of Alpha flight, are recommended for eventual National Historic Landmark status. Application of the resource ranking and prioritization criteria (Section 4.2) is summarized in Table 4.

TABLE 7

Resource Ranking and Significance Evaluation

Pot. Impt. Building Facility	Relationship	Context/ Aspect	Cold War Phase	Level of Import.	% of Historic Fabric	Threat	Murphey Rank	Treatment Plan
160	Direct	P&S	II, III, IV	premier	26-50	mod.	C^3I, SWS&S	NRHP list + Research
165	Direct	P&S, Tech.	II, III, IV	premier	26-50	mod.	C^3I, SWS&S, TF	NRHP list + Research
219	Indirect	P&S, Tech.	II, III, IV	medium	76-100	mod.	C^3I, SWS&S, OSF, TF	Steward. + Research
230	None, but	Tech.	II, III,	low	76-100	severe	SWS&S	No + work
250	Direct	P&S, Tech., A&E	II	premier	51-75	mod.	C^3I, SWS&S, OSF,	NRHP list + Research
295	None	SI	III	low	76-100	mod.	SSF	No + work

Pot. Impt. Building Facility	Relationship	Context/ Aspect	Cold War Phase	Level of Import.	% of Historic Fabric	Threat	Murphey Rank	Treatment Plan
300	Direct	P&S	II, III	premier	26-50	mod.	C^3I, SWS&S, OSF, TF	NRHP list + Research
330	None	Tech.	II, III, IV	low	0-25	mod.	SWS&S	No + work
349	None	n/a	II, III, IV	low	26-50	mod.	OSF	Steward. Reevaluate later
360	Direct	n/a	II, III, IV	high	51-75	severe	C^3I, SWS&S, OSP	Steward. + Research
400	None, but	A/E	II, III, IV	low	76-100	mod.	OSF	Steward. Reevaluate later
500	Direct	P&S, Tech. A/E	II, III, IV	premier	26-50	mod.	C^3I, SWS&S	Steward. + Research
581	None, but	P&S	I, II, III, IV	low	26-50	mod.	OSF, TF, SSF	No + work
769	Direct	P&S, Tech.	II, III, IV	premier	76-100	mod.	C^3I, SWS&S, TF	Steward + Research
850	None, but	n/a	II, III, IV	low	76-100	mod.	OSF	No + work
870	None, but	n/a	II, III, IV	low	51-75	mod.	OSF	No + work
1460	Direct	n/a	II, III, IV	high	76-100	mod.	SWS&S, OSF	Steward. + Research
1464	Direct	n/a	II, III, IV	high	76-100	mod.	SWS&S, OSF	Steward. + Research
1700	Direct	P&S, Tech.	II, III, IV	premier	76-100	mod.	C^3I, SWS&S, OSF	NRHP list + Research
1705	Direct	P&S, Tech., A&E	II, III, IV	high	76-100	mod.	SWS&S, OSF	Steward. + Research
1708	Direct	P&S, Tech.	II, III	premier	76-100	mod.	C^3I, SWS&S, TF	NRHP list + Research
3070	Direct	P&S, Tech., A&E	II, III, IV	high	76-100	high	C^3I,	Steward. + Research
17,100	Direct	P&S, Tech. A&E	III, IV	high	76-100	mod.	C^3I, SWS&S, TF	Steward. + Research

Missile Facilities	Relationship	Context/ Aspect	Cold War Phase	Level of Import.	% of Historic Fabric	Threat	Murphey Rank	Treatment Plan
Alpha 1	Direct	A/E, P&S, Tech.	II, III, IV	premier	76-100	low	R&D, C^3I, SWS&S	NRHP list
Alpha 6	Direct	A/E, P&S, Tech.	II, III, IV	premier	76-100	low	R&D, C^3I, SWS&S	NRHP list
Foxtrot 1	Direct	A/E, P&S, Tech.	II, III, IV	premier	76-100	low	R&D, C^3I, SWS&S	Steward.
Foxtrot 8	Direct	A/E, P&S, Tech.	II, III, IV	premier	76-100	low	R&D, C^3I, SWS&S	Steward.

Missile Facilities	Relationship	Context/ Aspect	Cold War Phase	Level of Import	% of Historic Fabric	Threat	Murphey Rank	Treatment Plan
Mike 1	Direct	A/E, P&S, Tech.	II, III, IV	premier	76-100	low	R&D, C^3I, SWS&S	Steward.
Mike 5	Direct	A/E, P&S, Tech.	II, III, IV	premier	76-100	low	R&D, C^3I, SWS&S	Steward.
Papa 0	Direct	A/E, P&S, Tech.	III, IV	high	76-100	low	R&D, C^3I, SWS&S	Steward.
Papa 4	Direct	A/E, P&S, Tech.	III, IV	high	76-100	low	R&D, C^3I, SWS&S	Steward.

5.4 RESOURCES OF EXCEPTIONAL IMPORTANCE

Building 160

Building 160 (Nutter Hall) was dedicated in honor of Montana Governor Donald G. Nutter who died in January 1962 in a C-47 aircraft accident while flying with the Montana Air National Guard. It was built in 1957 as a KC-97 aircraft alert/operations facility. Almost immediately, however, it was converted to a missile wing operations facility and served as a missile wing headquarters until modified to become the missile command post. Later, the building was expanded to support the 564th SMS's missile maintenance command and control post. Until recently, Nutter Hall served as staff offices for the 341st SMW and the 341st Missile Command Post.

This missile wing was the first Air Force MM ICBM wing in the United States and its operations were crucial element in the calculus that resolved the Cuban Missile Crisis in 1962; it was President Kennedy's "Ace in the Hole" in deterring a potential nuclear war with the Soviet Union. Nutter Hall functioned as the "hub" of missile wing operations until that function was moved to Building 500 in the early 1990s. Evidence suggests that the command structure that would have authorized the launch of the MM I missiles during the Cuban Missile Crisis was located in Nutter Hall (or possibly in Building 769). The present whereabouts of the original MM I launch control panel has not been determined.

Nutter Hall appears to be of exceptional importance within the base and national Cold War contexts during Phases II through IV. As an operational and support installation, Nutter Hall may meet National Register of Historical Places criteria (a) and (c) based on the critical role it played as a missile operations facility and command post for the 341st Strategic Missile Wing and the 564th Strategic Missile Squadron.

The architectural integrity of Nutter Hall has been compromised through several exterior and interior modifications. Air Force property records indicate the exterior changes consist of minor cosmetic alterations and the interior changes consist of modernization of building utilities and associated walls and ceilings. Examination of similar resource types outside Malmstrom AFB was not undertaken.

Additional research comparing original photographs of Nutter Hall with its current appearance and a comparative study of Nutter Hall with existing missile operation facilities/command posts on other Air Force bases would be necessary to adequately assess the National Register eligibility of this resource from a regional and national perspective. In the interim, site protection and stewardship are recommended to retain the current integrity of the building while its eligibility is being determined by the Montana SHPO.

Building 165/170

Building 165/170, also known as Johnson Hall (dedicated in honor of Lt. Johnson of Lewistown, Montana who died in the Vietnam War) was built in 1962. Building 165 was recently joined with Building 170 and both are now collectively referred to as Building 165. Building 170 once hosted the fighter operations and still contains the G and C vaults for weapons targeting operations. During Phases II - IV of the Cold War, Building 170 had the control maintenance system, electronic maintenance labs and other facilities that helped keep the missiles on alert status. Building 170 was where the missile launch codes were loaded and where missile operations were controlled.

The building vaults are unmodified and look like they did when they were constructed to support the wing configurations. Most of the improvements done to the building relate to security. The vaults have high security doors that are stronger than bank vaults and are used for top security purposes. According to informant Jake Karnop (retired base civil engineer), emergency war order training was conducted in Building 170. The entire building was a totally secure facility and was initially constructed with the whole exterior covered with copped cladding. This was done to accommodate for radio interference related to the radar towers of the 801st. It also had shielded doors for heightened security.

Johnson Hall appears to be of exceptional importance within the base and national Cold War contexts during Phases II through IV. As an operational and support installation, Johnson Hall may meet National Register of Historic Places criterion (a) based on the critical role it played as a missile operations/maintenance facility and as a top secret security location for the base.

The integrity of Johnson Hall has been compromised through exterior and interior modifications. Air Force property records indicate the exterior of the building has been extensively remodeled and the original copper cladding has been removed. Records also indicate the building has had eight updates since it was constructed in 1962. Most of the updating includes changes related to fire protection, heating and air conditioning, and security. An examination of similar resource types outside Malmstrom AFB was not undertaken. Additional research comparing original photographs of Building 165/170 with its current appearance and a comparative study of Building 165 with existing with existing missile operation facilities/top secret security locations on other Air Force bases would be necessary to adequately assess the National Register eligibility of this resource from a regional and national perspective. In the interim, site protection and stewardship are recommended to retain the current integrity of the building while its eligibility is being determined by the Montana SHPO.

Building 250

Building 250 was constructed in 1959 and originally served as the KC-97 air tanker alert crew facility. The building is architecturally unique in that hallways emanate from the building in every direction. Air Force men stood alert in this building which was equipped with a dining area and sleeping facilities. Air tankers were parked outside Building 250 in a line so the airmen could run out to the tankers (which already had blast shields in place) so they could pull straight out and take off. After the KC-97s were deactivated, other missile squadrons including the 10th, 12th, 49th, and 564th occupied the building. When the KC-135s were activated, the building was reconverted back to an alert crew facility.

Building 250 appears to be of exceptional importance within the base and national Cold War contexts during Phases II and III. As a critical combat weapons and support facility, it may meet National Register of Historic Places criteria (a) and (c) based on its role as an alert facility in support of Malmstrom's Air Defense Command.

Although Building 250 has been updated six times since its construction in 1959, most of the updating consisted of changes to heating, air conditioning, fire protection, and utility modernization. The overall building has had a few cosmetic changes, but basically remains the same on its exterior and interior. Inside is a dining room, a recreation room, and sleeping facilities for alert crews. Further research which compares original photographs of Building 250 with its current appearance and a comparative study of Building 250 with existing alert crew facilities at other Air Force bases within the United States would be necessary to adequately assess the National Register eligibility of this resource from a regional and national perspective. In the interim, site protection and stewardship are recommended to retain the current integrity of the building while its eligibility is being determined by the Montana SHPO.

Building 300

Building 300 was constructed in 1958 as the KC-97 air tanker operations facility. Shortly after it was built, it became headquarters for the Security Police. Later, it was used to support aircraft maintenance activities and administration for the newer KC-135's. The building played a key role related to missile security; within the building training was conducted, dispatch occurred, and the armory was stationed and maintained. In addition, the building supported the command element for the large security police contingency which controlled the geographically vast missile complex and the associated weapons storage area on base.

Both the interior and exterior of Building 300 has been remodeled. Since 1958, the interior has been remodeled five times; most of the changes are related to electric power generation, fire detection, security alarms, and the addition of air conditioning units.

Building 300 appears to be of exceptional importance within the base and national Cold War contexts during Phases II and III and it may meet National Register of Historic Places criteria (a) and (c) based on its role as an alert facility in support of Malmstrom's Air Defense Command.

Further research which compares original photographs of Building 300 with its current appearance and a comparative study of Building 300 with existing alert crew facilities at other Air Force bases within the United States would be necessary to adequately assess the National Register eligibility of this resource from a regional and national perspective. In the interim, site protection and stewardship are recommended to retain the current integrity of the building while its eligibility is being determined by the Montana SHPO.

Building 1700

Building 1700 was constructed in 1956 as an aircraft alert facility - the original fighter crew facility at Malmstrom. The building was used by the former 29th Fighter Interceptor Squadron and was designed to accommodate F-89 fighters. When larger aircraft were used, the doors on the front of the building were added. Currently, Building 1700 serves as a helicopter alert facility.

Building 1700 looks the same as it did when it was originally constructed except that it has been painted and the roof has been improved. Some shops have been constructed inside and the building interior has been updated five times since 1956; heating and air conditioning, fire detection system, and modern electrical utilities.

Building 1700 appears to be of exceptional importance within the base and national Cold War contexts during Phases II - IV and it may meet National Register of Historic Places criteria (a) and (c) based on its role as an alert facility in support of Malmstrom's air defense mission. Further research which compares original photographs of Building 1700 with its current appearance and a comparative study of Building 1700 with existing alert crew facilities at other Air Force bases within the United States would be necessary to adequately assess the National Register eligibility of this resource from a regional and national perspective. In the interim, site protection and stewardship are recommended to retain the current integrity of the building while its eligibility is being determined by the Montana SHPO.

Building 1708

Building 1708 was constructed in 1957 as a fighter alert crew facility and served as the operations building for the 29th Fighter Interceptor Squadron. This building contained the flight commander offices and the office of the operations officer; it apparently once held a large security briefing room that was two stories high (but this part of the building has now been divided up). The briefing room was related to the KC-135 and missile maintenance operations. During the time the building was being used as a fighter interceptor facility, it contained flight simulators and trainers.

Although Building 1708 has been added onto, it still maintains much of its original integrity on the exterior as well as the interior. The building has been updated five times since 1957; fire detection system, heating and air conditioning modifications, and addition of a compressed air plant.

Building 1708 appears to be of exceptional importance within the base and national Cold War contexts during Phases II and III as a combat weapons and support facility. The building may meet National Register of Historic Places criteria (a) and (c) based on its role as an alert facility in support of Malmstrom's air defense mission. Further research which compares original photographs of Building 1708 with its current appearance and a comparative study of Building 1708 with existing alert crew facilities at other Air Force bases within the United States would be necessary to adequately assess the National Register eligibility of this resource from a regional and national perspective. In the interim, site protection and stewardship are recommended to retain the current integrity of the building while its eligibility is being determined by the Montana SHPO.

Minuteman Missile Facilities

Of Malmstrom's 200 launch facilities and 20 launch control facilities, the Alpha-01 Launch Control Facility and the Alpha-06 Launch Facility are resources of exceptional significance and are recommended as being eligible for listing in the National Register of Historic Places. The remaining MM missile facilities at Malmstrom may become eligible in the near future. Recommending NRHP eligibility for MM missile facilities is not without precedent. Indeed, the rationale for finding Malmstrom's MM facilities to be NRHP-eligible is developed in reference to the situation at Ellsworth AFB where certain facilities were determined to be sufficiently significant to warrant their designation as National Historic Landmarks - a designation that requires an even higher level of significance than does NRHP-eligible.

The MM II Launch Control Facility D-1 and Launch Facility D-9, affiliated with Ellsworth Air Force Base, South Dakota, achieved exceptional national significance under National Historic Landmark Criterion One (History) as important icons of American participation in the arms race and the Cold War (Hess, Roise & Company 1994:21).

When the Soviets began to extend their boundaries and increase military strength after WW II, many American leaders believed these activities represented a deep-seated and innately hostile expansionism. In order to halt this process, the U.S. adopted a policy of patient but firm containment of Russian expansive tendencies. By the early 1950s it was apparent that any attempt to confront the Soviets using conventional military forces would be both tremendously expensive and politically unacceptable. American leaders formulated a new strategy - Communist aggression would be deterred by threatening immediate and massive retaliation using weapons of mass destruction.

As the nation mobilized to implement this strategy during the 1950s, the USAF was called upon to develop and deploy an entirely new type of weapon capable of delivering a warhead to targets half a world away (the ICBM). The ICBM project was the largest military development program ever undertaken by the U.S. in peacetime. By the early 1960s, the missile program had helped spawn the "military - industrial complex", a major element of American economic and social life. Billions of American dollars, hundreds of thousands of American workers, and more than 2,000 companies were directly involved in the effort to develop an effective ICBM and the MM weapon system was the culmination of that effort (Hess, Roise & Company 1994:22).

Between 1962 and 1967, 1,000 MM missiles were deployed in hardened underground launch silos, dispersed throughout the central U.S. For the next 30 years, the missiles remained on continuous alert and formed the backbone of the American nuclear arsenal and served as an important instrument of American foreign diplomacy. With their ability to unleash apocalyptic destructive power on an enemy at a moment's notice, the MM made hot war unthinkable and thus helped the protracted Cold War standoff possible (Hess, Roise & Company 1994:22).

These same facilities achieved exceptional national significance under National Historic Landmark Criterion Four (Engineering) as representative sites that illustrate a major breakthrough in American missile technology and strategic warfare.

Powerful, accurate, reliable, and capable of being economically mass produced, the solid-fueled MM represented a major technological advancement over earlier ICBMs. The early ICBMs were highly complex machines that required constant attention from on-site crews and their volatile, corrosive, liquid propellants made underground storage difficult. The simple, solid-fueled MM solved these problems and became the first missile to be deployed in fully dispersed, remote-controlled, blast-proof underground facilities. Thus, the MM constituted the nations' first truly effective deterrence weapon. The ICBM's value as a deterrent was contingent upon its ability to retaliate instantly even after a nuclear attack and the basing system still used today was developed to help the system survive attack (Hess, Roise & Company 1994:23).

The nation's first MM deployment area was at Malmstrom AFB in 1962. The original installation consisted of 150 hardened underground missile silos (Launch Facilities) and 15 Launch Control Facilities (LCF) dispersed over near 19,000 square miles. Malmstrom's missiles were organized into 10-missile operation units (flights) and the silos for each flight were connected to an underground command post at one of the LCFs (each staffed by a two-person launch crew). An above-ground support building at each LCF provided accommodations for security guards and other personnel. During the next four years, identical MM facilities were activated at Ellsworth, Minot, Whiteman, F.E. Warren, and Grand Forks AFBs. Later sites incorporated an important structural change designed to increase their resistance to nuclear attack. At Ellsworth and Malmstrom, mechanical support equipment for the LCC's was housed in "soft" buildings above ground. At all subsequent sites, this equipment was installed in blastproof "hardened" enclosures below ground.

In 1966, the Air Force started replacing the entire MM I arsenal with improved MM II. In 1971, the MM II launchers at Minot, Grand Forks, F.E. Warren and Squadron 20 at Malmstrom were rebuilt to accommodate the more advanced MM III. By 1975, 550 silos in these deployment areas had been equipped with new electronic ground support equipment and missile suspension systems, and their closure doors had been reinforced with nearly 20 tons of additional concrete. Closure doors on the remaining MM II launchers at Whiteman and Malmstrom were reinforced at about the same time (Hess, Roise & Company 1994:24).

After the dissolution of the Soviet Union in 1991, President Bush ordered the immediate deactivation of all 450 remaining MM II sites and the 150 launchers at Malmstrom were scheduled for conversion to the MM III system. A deactivated and preserved MM II launch control center (Oscar One) at Whiteman AFB, Missouri, is atypical of all other MM facilities. All other MM facilities were dispersed in rural areas outside the confines of air bases to increase their chances for surviving a nuclear attack. Oscar-One is located on a military base and is a more modern version of MM - significantly different from the Cuban Missile Crisis-era configuration of Delta Flight at Ellsworth or the Alpha Flight at Malmstrom. Oscar-One also does not have above-ground support facilities.

The MM III missiles at F.E. Warren Air Force Base, Wyoming, were evaluated using the criteria of exceptional significance (Bryant 1993). The rationale used at F.E. Warren can be used at Malmstrom. With the exception of the new Peacekeeper Missile, the MM III is the next generation of ICBM introduced in 1973 and as of 1996, is the longest-lived missile system of the Cold War and represents a number of major Cold War themes.

The MM missile system represents the Air Force's strategy to implement the following military doctrines:

- Forward power projection
- Capability to engage at all scales; limited/theater/global
- Rapid deployment
- Rapid resupply
- Large standing force
- 24 hour vigilance
- Short warning/response time
- High level of security
- emphasis on high level of technology

Forward Power Projection refers to the military's ability to deliver a forceful military threat well beyond military unit's physical location. The ICBM is the ultimate weapon for projecting military force. The MM III is capable of delivering three warheads virtually anywhere on earth and represents the Air Force's commitment to providing a deterrent on a global scale. The MM III is a rapid deployment weapon, capable of responding to a threat on very short notice and delivering its payload to a target thousands of miles away in less than half and hour. It has been on duty 24 hours a day, 365 days a year for nearly 23 years to provide a deterrence to hostile acts from other nations. Under the concept of deterrence, the MM III provides the U.S. with a high level of military security and represents the ultimate in high technology employed to accomplish military objectives (Bryant 1993).

The MM III missile system is directly associated with events that have made an exceptionally significant contribution to, and outstandingly represent, the broad national patterns of U.S. Cold War history. Further, it represents one of the enduring ideals of the American people throughout the Cold War; Peace Through Strength.

Even though the MM III system is not over 50 years old, it qualifies for listing in the NRHP as a property of exceptional importance because of its association with the Cold War and the Cold War's influence on virtually every facet of American life over the past 48 years or so. The nature of the resource is such that technological obsolescence likely will result in the weapon being decommissioned, reconfigured or destroyed before 50 years have passed and no intact structures are likely to remain unless measures to protect them are taken now (Bryant 1993).

The MM III missile system has 100 percent integrity of location, design, setting, materials, workmanship, feeling and association at present because it is an operational system constantly inspected and maintained in a state of alert.

The major feature of the system is the missile itself, with the LCF/silo and MPT of secondary importance, and the roads, cables, and administrative and security facilities of lesser importance in assessing the physical integrity of the system. The missile itself is an object rather than a site and would maintain its significance even if moved (as several have been to Malmstrom AFB). The missile is designed to be moved from the silos to the maintenance facilities on base, and in its most significant mode, moved (launched) from the silo to a target area. As a representation of the Cold War, the missile as an isolated object, rather than the weapons system complex, serves as the image of the times (Bryant 1993).

Existing silos at F.E. Warren, Minot, Grand Forks, and Malmstrom were extensively modified to accommodate the MM III. Each silo's launch tube was equipped with a new suspension system designed to hold the missile absolutely motionless during the aftershocks from a nuclear attack. A ten-inch thick layer of borated concrete was added to the top of each silo's closure door to protect the missile from radiation, and the ballistic actuators that opened the doors were rebuilt to handle the extra load. The refurbished silos were also equipped with a system of seals, filters, and surge arrestors designed to prevent sensitive electronic equipment from being damaged by the powerful electromagnetic waves generated during nuclear explosions.

Alpha-01

The Alpha-01 Missile Alert Facility is of exceptional importance within the base and national Cold War contexts during Phases II through IV. As an operational and support installation, Alpha-01 meets NRHP criterion (a) based on the critical role it played in the Cuban Missile Crisis and the fact that it was the first MM Missile Alert Facility constructed in the United States. Although its utilities and communications have been changed over the years, it could also meet NRHP criterion (c) for the role it played as part of a military technological system that was crucial during the Cuban Missile Crisis and the overall United States Cold War effort. It is recommended that Alpha-01 be nominated to the NRHP and once this facility is no longer in active use, it is recommended that it be designated as a National Historic Landmark. In the interim, site protection and stewardship are recommended to retain the current integrity of the building while its eligibility is being determined by the Montana SHPO.

Alpha-06

The Alpha-06 Missile Launch Facility is of exceptional importance within the base and national Cold War contexts during Phases II through IV. As an operational and support installation, Alpha-06 meets NRHP criterion (a) based on the critical role it played in the Cuban Missile Crisis and the fact that is was one of the first (Alpha-09 was the first) Minuteman Missile Launch Facilities constructed in the United States. It was the first silo to go on alert during the Cuban Missile Crisis. Alpha-06 may also meet NRHP criterion (c) for the role it played as part of a military technological system that was crucial during the Cuban Missile Crisis and to the overall United States Cold War effort. It is recommended that Alpha-06 be nominated to the NRHP and once this facility is no longer in active use, it is recommended that it be designated as a National Historic Landmark. In the interim, site protection and stewardship are recommended to retain the current integrity of the building while its eligibility is being determined by the Montana SHPO.

6.0 REFERENCES CITED

Adams, B.D. *Ballistic Missile Defense.* American Elsevier Publishing Company, New York. 1971.

Advisory Council on Historic Preservation. *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities.* Advisory Council on Historic Preservation, Washington, D.C. 1991.

Andrus, B.C., Jr. (Col.) *Wing commander of 1962 tells his story.* Minuteman 33(42):4A. Minuteman [base newspaper] published by Malmstrom Air Force Base, Montana. October 23, 1987.

Anonymous. *From Snark to Peacekeeper: A Pictorial History of Strategic Air Command Missiles.* Office of the Historian, Headquarters Strategic Air Command, Offutt Air Force Base, Nebraska. 1990.

-----. *Peace...is our Profession: Alert Operations and the Strategic Air Command, 1957-1991.* Office of the Historican, Headquarters Strategic Air Command, Offutt Air Force Base, Nebraska. 1991.

-----. *ICBM Abbreviations and Acronyms.* Office of the Historian, Headquarters Strategic Air Command, Offutt Air Force Base, Nebraska. 1991.

Associated Press. *Minuteman Site Location "Not Secret", but Will Remain Classified Info.* Washington, Associated Press. n.d.

Baucom, D.R. *The Origins of SDI, 1944-1983.* University Press of Kansas. 1992.

Boyd, R.J. *SAC Fighter Planes and Their Operations.* Office of the Historian, Headquarters Strategic Air Command, Offutt Air Force Base, Nebraska. 1988.

Bruce-Briggs, B. *The Shield of Faith: A Chronicle of Strategic Defense from Zeppelins to Star Wars.* Simon and Schuster, Inc., New York. 1988.

Bryant, R. *National Register Evaluation of Exceptional Significance for Minuteman III Missiles at F.E. Warrent Air Force Base.* MS on file, 90 CES/CEV, F.E. Warren Air Force Base, Wyoming. 1993.

Cimbala, S.J. (ed.) *Strategic Air Defense.* SR Books, Wilmington, Delaware. 1989.

Cimbala, S.J. *Strategic Evolution and Air Defenses.* In, S.J. Cimbala (ed.) Strategic Air Defense, pp: 231-252. SR Books, Wilmington, Delaware. 1989.

Clark, R.F. and H.F. Martin. *Strategic Air Command: Unit Mission and History Summaries.* Office of the Historian, Headquarters Strategic Air Command, Offutt Air Force Base, Nebraska. 1988.

Collins, J.J. *The Strategic Air Defense of North America: A Canadian Viewpoint.* In, S.J. Cimbala (ed.) Strategic Air Defense, pp: 95-122. SR Books, Wilmington, Delware. 1989.

Department of Defense. *Coming in from the Cold: Military Heritage in the Cold War - Report on the Department of Defense Legacy Cold War Project.* Center for Air Force History, Washingon, D.C. 1994.

----------. *Economic Adjustment Program, Great Falls/Cascade County, Montana: Malmstrom AFB Realignment Report.* Office of the Secretary of Defense, Office of Economic Adjustment. Washington, DC: The Pentagon. 1980.

Dinerstein, H.S. *The Making of a Missile Crisis: October 1962.* The John Hopkins University Press, Baltimore. 1976.

Elia, R.J. *Preserving a Cold War Legacy.* Archaeology 48(3):48-49. 1995.

Futrell, R.F. *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force: 1907-1960 (Volume I).* Air University Press, Maxwell Air Force Base, Alabama. 1989.

Glines, C.V., Jr. *The Compact History of the United States Air Force.* Hawthorn Books, Inc. 1973.

Goldberg, A. (ed.). *A History of the United States Air Force: 1907-1957.* D. Van Nostrand Company, Inc., Princeton, New Jersey. 1957.

Gohl, S.D. (S Sgt USAF, 341st Missile Wing Historian). *A Brief History of the 341st Missile Wing Stationed at Malmstrom AFB, Great Falls, Montana.* Manuscript on file with the 341st Strategic Missile Wing History Office, Malmstrom Air Force Base, Montana. 1995.

Goodie, C.B. *Strategic Air Command: A Portrait.* Simon and Schuster, New York. 1965.

Great Falls Leader. *Minuteman Bids Rejected; Engineers Refigure Plans.* December 23, 1960.

-----. *Missile Program Top News Events in Great Falls During 1960.* December 28, 1960.

-----. *Preston To Speak At Annual C of C Meeting Jan. 9.* January 1, 1961.

-----. *Boeing Plans No Delay in Housing.* January 4, 1961.

-----. *South Dakota Base Marked as 3rd Minuteman Site.* January 5, 1961.

-----. *Minuteman Project Decision Now Close.* January 9, 1961.

-----. *Missile Work May Cause School Crisis.* March 7, 1961.

-----. *Now A Captain.* March 10, 1961.

-----. *Formal Ceremony...Closing Switches "Fires" Silo Work.* March 16, 1961.

-----. *$27 Million Missile Sub-Contracts Listed.* March 23, 1961.

-----. *Rubbery.* [solid rocket fuel] March 18, 1961.

-----. *Congress Concerned...Mobile Minuteman Expansion Urged.* April 12, 1961.

-----. *Boeing Official Tells Housing Plans Here.* April 17, 1961.

-----. *Missile Project Employment Practices Criticized by County.* April 26, 1961.

-----. *Base Primary Mission Now is ICBM Support.* May 1, 1961.

-----. *First Missile Liner Installed in Silo.* May 24, 1961.

-----. *Minuteman To Get Plastic Coat.* June 13, 1961.

-----. *Final Minuteman II Flight is Accepted.* April 21, 1967.

-----. *Modernization Work On Missiles Begins.* August 15, 1967.

Great Falls Tribune. *Falls Newsmen See Minuteman Shot Delay.* January 31, 1960.

-----. *Bids Rejected...Start Delayed on Minuteman.* December 24, 1960.

-----. *Task Force Gets New Quarters.* December 29, 1960.

-----. *In Lewiston Talk...Minuteman's Deterrent Role Told by Preston.* Jan. 11, 1961.

-----. *Minuteman Construction Job To Be Done on Time, Colonel Says.* January 11, 1961.

-----. *Test Firing Time Nears for Minuteman.* January 22, 1961.

-----. *Minuteman Launch Center.* January 26, 1961.

-----. *Minuteman Parts Ordered For $2,125,861.* January 26, 1961.

-----. *Boeing Gets Lewistown Housing Sites.* January 26, 1961.

-----. *Cost of Minuteman Complex In State Estimated $330 Million.* January 26, 1961.

-----. *Space Fever Invades Cape for Firing of Minuteman.* January 29, 1961.

-----. *Minuteman Formal Ground-Breaking Ceremony Will Be Conducted at Base Theater Thursday.* March 15, 1961.

-----. *State Said Right for ICBM Sites.* March 16, 1961.

-----. *Missile Program Expected to Bring 3,000 New Pupils.* March 16, 1961.

-----. *Minuteman Vehicles Spared Tax.* March 21, 1961.

-----. *Former Montana Resident Guides Minuteman Launch Complex Work.* May 7, 1961.

-----. *Appropriations Made for More Missile Sites.* May 10, 1961.

-----. *18-Foot Missile Road Accepted by County.* May 24, 1961.

-----. *Missile Liner in Place.* May 25, 1961.

-----. *Easements Asked for Cable Lines.* June 2, 1961.

-----. *Missile Cable Ditching Will Start This Month.* June 6, 1961.

-----. *Local Labor Will Work on Missile Cable Laying.* June 14, 1961.

-----. *Gen. Preston Leaving for Vandenberg Base.* June 14, 1961.

-----. *1,000th Minuteman Missile is Transferred.* April 22, 1967.

-----. *Minuteman Ready at Malmstrom Since Late 1962.* August 23, 1967.

-----. *Fifty New Minutemen.* August 23, 1967.

Halle, L.J. *The Cold War As History.* Harper & Row, Publishers, New York. 1967.

Hayes, T.J. III. *ICBM Site Construction.* The Military Engineer, No. 362:399-403, November-December, 1962.

Hastings, P. *The Cold War: 1945-1969.* Ernest Benn, Ltd., London. 1969.

Hess, Roise & Company. *National Historic Landmark Nomination: Minuteman ICBM National Historic Landmark.* Nomination Form on file, National Park Service, Washington, D.C. March 8, 1994.

Historic American Engineering Record. *Historic American Engineering Record Drawings and Photographs - Minuteman ICBM National Historic Landmark, Elsworth Air Force Base, South Dakota.* HAER SD-50, on file, National Park Service, Washington, D.C. 1994.

Hoffecker, J.F. and M. Greby. *Prehistoric and Historic Resources at Malmstrom Air Force Base: Field Survey Report.* Report on file, Headquarters, USAF Air Mobility Command, Scott Air Force Base, Illinois and 341st Civil Engineering Squadron, Malmstrom Air Force Base, Montana. 1995.

Hoffecker, J.F. and G.M. Kaszynski. *Inventory of Cold War Historic Properties, Air Force Space Command, 21st Space Wing: Study Design.* Argonne National Laboratory, Argonne, Illinois. 1994.

Hoffecker, J.F. and M. Whorton. *Historic Properties of the Cold War Era, 21st Space Wing, U.S.Air Force Space Command.* DRAFT on file, U.S. Department of Energy, Argonne National Laboratory, Illinois. October 1995.

Ingram, K. *History of the Cold War.* Philosophical Library, Garden City Press, Ltd. 1955.

Jensen, O.E. *The Years of Decline: Air Defense from 1960 to 1908.* In, S.J. Cimbala (ed.), Strategic Air Defense. SR Books, Wilmington, Delaware. 1989.

Jockel, J.T. *No Boundaries Upstairs: Canada, the United States, and the Origins of North American Air Defence.* University of British Columbia Press, Vancouver. 1987.

Johnson, W.G. and C.M. Beck. *Proving Ground of the Nuclear Age.* Archaeology 48(3):42-47. 1995.

Kitchens, J.H. III. *A History of the Huntsville Division, U.S. Army Corps of Engineers, 1967-1976.* U.S. Army Corps of Engineers, Huntsville, Alabama. 1978.

Knaack, M.S. *Encyclopedia of US Air Force Aircraft and Missile Systems, Volume I. Post-World War II Fighters, 1945-1973.* Office of Air Force History, Washington, DC. 1978.

Lewis, K., K.J. Roxlau, L.E. Rhodes, P. Boyer, and J.S. Murphey. *A Systemic Study of Air Combat Command Cold War Material Culture, Volume I: Historic Context and Methodology for Assessment.* United States Air Force Air Combat Command, Langley Air Force Base, Virginia. 1995.

Longacre, E.G. *Strategic Air Command: The Foramative Years (1944-1949).* Office of the Historian, Headquarters Strategic Air Command, Offutt Air Force Base, Nebrasksa 68113.

Lonnquest, J.C. and D.F. Winkler. *To Defend and Deter: The Legacy of the United States Cold War Missile Program.* DRAFT Report, Department of Defence Guided Missile Program, Germantown, Maryland. 1996.

Lowe, J.A., L.E. Rhodes, K.J. Roxlau. *A Systemic Study of Air Combat Command Cold War Material Culture, Volume II-8: A Baseline Inventory of Cold War Material Culture at Fairchild Air Force Base.* United States Air Force Air Combat Command, Langley Air Force Base, Virginia. 1996.

Markusen, A., P. Hall, S. Campbell, and S. Deitrick. *The Rise of the Gunbelt:The Military Remapping of Industrial America.* Oxford University Press, New York. 1991.

Malmstrom Air Force Base. *Malmstrom Air Force Base.* Malmstrom Air Force Base Fact Sheet (February 1994). 43rd Air Refueling Wing Public Affairs, Malmstrom Air Force Base, Montana. Manuscript on file with the 341st Strategic Missile Wing History Office, Malmstrom Air Force Base, Montana. 1994a.

----. *341st Missile Wing.* Malmstrom Air Force Base Fact Sheet (11 February 1994). 43rd Air Refueling Wing Public Affairs, Malmstrom Air Force Base, Montana. Manuscript on file with the 341st Strategic Missile Wing History Office, Malmstrom Air Force Base, Montana. 1994b.

-----. *Chronology of Malmstrom AFB and the 341 Missile Wing: the First Minuteman Wing.* [a 4-page manuscript chronology]. Manuscript on file with the 341st Strategic Missile Wing History Office, Malmstrom Air Force Base, Montana. 1993.

-----. *Malmstrom AFB: 1942-1992, 50th [Anniversary], Great Falls, Montana.* Manuscript on file with the 341st Strategic Missile Wing History Office, Malmstrom Air Force Base, Montana. 1992a.

----. *Milestones in Malmstrom's History: In Celebration of the 50th Anniversary of Malmstrom Air Force Base, Great Falls, Montana (1942-1992).* [a 4-page circular published for the 50th Anniversary Celebration]. Publication on file with the 341st Strategic Missile Wing History Office, Malmstrom Air Force Base, Montana. 1992b.

----. *Minuteman General Familiarization Handout.* [a 33-page manuscript provided to airmen/women assigned to Minuteman missile duty]. Manuscript on file with the 341st Strategic Missile Wing History Office, Malmstrom Air Force Base, Montana. 1991.

----. *25 Years of Minuteman Deterrence.* Publication for the 25 year Anniversary Celebration, Octber 1987. Publication on file with the 341st Strategic Missile Wing History Office, Malmstrom Air Force Base, Montana. 1987a.

----. *Malmstrom's Missiles of October: 25 Years of Minuteman Deterrence - Malmstrom's Missiles of October Celebration, 23-25 October 1987, Sheraton Great Falls and Malmstrom AFB Montana.* [a 4-page+ manuscript/publication produced for the 25th Anniversay Celebration containing brief historical sketches]. Manuscript/publication on file with the 341st Strategic Missile Wing History Office, Malmstrom Air Force Base, Montana. 1987b.

-----. *Ten Missiles were set to go.* Minuteman 33(42), October 23, 1978. Minuteman [base newspaper] published by Malmstrom Air Force Base, Montana. 1987c.

-----. *341st Strategic Missile Wing: Malmstrom Air Force Base.* [a 10-page + manuscript/publication providing background information on the 341st]. Manuscript/publication on file with the 341st Strategic Missile Wing History Office, Malmstrom Air Force Base, Montana. 1982.

-----. *A Brief History of the 341st Strategic Missile Wing and Malmstrom Air Force Base (14 August 1942 - 31 December 1970).* Manuscript on file with the 341st Strategic Missile Wing, Malmstrom Air Force Base, Montana. 1971.

-----. *Malmstrom Directory and Guide.* [A 21-page directory and guide published as a resource for newly arrived airmen/women]. Publication on file with the 341st Strategic Missile Wing History Office, Malmstrom Air Force Base, Montana. ca. 1958-1959.

-----. *Chronology: Malmstrom Air Force Base May 1942 - July 1961.* Manuscript on file, 341st Strategic Missile Wing History Office, Malmstrom AFB, Montana. n.d.

Lewiston (The) Daily News (Lewiston, Montana). *Minuteman Bids Rejected, Plans to be Revised.* December 23, 1960.

-----. *Start of Minuteman Project Indefinite.* December 25, 1960.

-----. *Way Is Now Properly Cleared for Boeing Missile Housing.* December 25, 1960.

-----. *Minuteman Parts Order Placed for Over $2 Million.* January 26, 1961.

-----. *Denton P-TA Sees Films on Minuteman Program.* February 8, 1961.

-----. *Minuteman Installation Program Scheduled for Immediate Start.* March 8, 1961.

-----. *Minuteman Office to Open Here is 60 Days.* March 15, 1961.

-----. *Excavation Finished on 4 Missile Shafts.* April 27, 1961.

Mayer, T.K. *Understanding Weapons and Arms Control: A Guide to the Issues.* Fourth Edition, Revised. Brassey's (US), Inc., Maxwell Macmillan Pergamon Publishing Corp., Washington. 1991.

McDougall, W.A. *The Heavens and the Earth: A Political History of the Space Age.* Basic Books, Inc., New York. 1985.

McNamara, R. *Blundering Into Disaster: Surviving the First Century of the Nuclear Age.* Pantheon Books, New York. 1986.

Mueller, R. *Air Force Bases: Active Air Force Bases within the United States of America on 17 September 1982. Volume I.* Office of Air Force History, Washington, D.C. 1989.

Narducci, H.M. *Strategic Air Command and the Alert Program: A Brief History.* Office of the Historian, Headquarters Strategic Air Command, Offutt Air Force Base, Nebraska. 1988.

-----. *SAC Missile Chronology 1939-1988.* Office of the Historian, Headquarters Strategic Air Command, Offutt Air Force Base, Nebraska. 1990.

National Park Service. *Guidelines for Evaluating and Nominating Properties that Have Achieved Significance within the Last Fifty Years.* National Register Bulletin 22. National Park Service, Washington, D.C. 1990.

National Park Service. *Special Resource Study: Management Alternatives (and) Environmental Assessment - Minuteman Missile Sites, Ellsworth Air Force Base, South Dakota.* National Park Service, Denver (and Department of Defence, U.S. Air Force Legacy Cultural Resource Management Program). 1995.

Neal, R. *Ace in the Hole.* Doubleday & Company, Inc., Garden City, New York. 1962.

Neufeld, J. *The Development of Ballistic Missiles in the United States Air Force: 1945-1960.* Office of Air Force History, Washington, D.C. 1990.

Newhouse, J. *War and Peace in the Nuclear Age.* Alfred A. Knopf, New York. 1989.

Neilson, K. and R.G. Haycock (eds). *The Cold War and Defense.* Praeger, New York. 1990.

Nielson, J.M. *Armed Forces on a Northern Frontier: The Military in Alaska's History 1867:1987.* Greenwood Press, New York. 1988.

Parrott, B. *The Soviet Union and Ballistic Missile Defense.* SAIS Papers in International Affairs No. 14. Westview Press, Boulder, Colorado and London with the Foreign Policy Institute, School of Advanced International Studies, John Hopkins University. 1987.

Patterson, P.E., D.P. Staley, and K.J. Roxlau. *A Systemic Study of Air Combat Command Cold War Material Culture, Volume II-18: A Baseline Inventory of Cold War Material Culture at McConnell Air Force Base.* United States Air Force Air Combat Command, Langley Air Force Base, Virginia. 1996.

Peacock, L.T. *Strategic Air Command.* Arms & Armour Press, London, New York, Sydney. 1988.

Polman, N. *Strategic Weapons: An Introduction.* Crane, Russak & Company, Inc., New York. 1975.

Roxlau, R.B., K.J. Roxlau, and K. Lewis. *A Systemic Study of Air Combat Command Cold War Material Culture, Volume III: Summary Report and Final Programmatic Recommendations.* United States Air Force Air Combat Command, Langley Air Force Base, Virginia. 1995. (DRAFT)

Schaffel, K. *The U.S.Air Force's Philosophy of Strategic Defense: A Historical Overview.* In, S.J. Cimbala (ed.), Strategic Air Defense, pp: 3-22. SR Books, Wilmington, Delaware. 1989.

----------. *The Emerging Shield: The Air Force and the Evolution of Continental Air Defense, 1945-1960.* Office of Air Force History, Washington, D.C. 1991.

Siracusa, J.M. and G. St. John Barclay. *The Impact of the Cold War: Reconsiderations.* National University Publications, Kennikat Press, Port Washington, New York. 1977.

Smith, J.H. *Anything, Anywhere, Anytime: An Illustrated History of the Military Airlift Command, 1941-1991.* Military Airlift Command, Office of History. Headquarters Military Airlift Command, Scott Air Force Base, Illinois. 1991.

Snyder, T.S. (ed.). *Force Communications Command: 1938-1991, An Illustrated History.* Third Edition. Air Force Communications Command Office of History, Scott Air Force Base, Illinois. 1991.

Sorenson, D.S. *Defending Against the Advanced Cruise Missile: The Ultimate Air Defense Nightmare?* In, S.J. Cimbala (ed.) Strategic Air Defense, pp: 139-160. SR Books, Wilmington, Delaware. 1989.

Stuwe, J.W. *Air Transport Command - Army Air Forces: East Base 1940-1946.* Privately published. Book on file, Library of Congress (Catalog No. 0331339). 1974.

Temme, V.J. *Aero Vista Wherry Housing at Ft. Bliss, Texas.* Report on file, Tri-Services Cultural Resource Research Center, U.S. Army Construction Engineering Research Laboratories, Champaign, Illinois. 1995.

Thompson, R.W. and T.W. Greiser. *Cultural Resource Assessment of Five Radio Repeaters and Three GWEN Sites, Malmstrom Air Force Base, Montana.* Report on file, 341st Civil Engineering Squadron, Malmstrom Air Force Base, Montana. 1995.

Time Magazine. *NORAD: Defense of a Continent.* Time Magazine. November 25, 1957.

Trzeciak, J.A. (Sgt.) *Colonel readied crews during Cuban crisis.* Minuteman 33(42):4A. Minuteman [base newspaper] published by Malmstrom Air Force Base, Montana. October 23, 1987.

Udall, S.L. The Myths of August: A Personal Exploration of Our Tragic Cold War Affair with the Atom. Pantheon Books, New York. 1994.

United States Air Force. *Air Force Instruction 32-7065, 13 June 1994, Civil Engineering, Cultural Resources Management.* Headquarters, United States Air Force, Washington, D.C. 13 June 1994.

----------. *Interim Guidance: Treatment of Cold War Historic Properties for U.S. Air Force Installations.* MS prepared by Dr. Paul Green, United States Air Force, Washington, D.C. 1993.

----------. *Conversion of the Minuteman II Missile System to the Minuteman III System at Malmstrom Air Force Base, Montana: Final Environmental Impact Statement.* Strategic Air Command, Offutt Air Force Base, Nebraska. September 1991.

----------. *Economic Resource Impact Statement.* United States Air Force 40th Air Division, Cost Analysis Branch, Malmstrom Air Force Base, Montana. September 1990.

----------. *Final Environmental Impact Statement: Second KC-135R Air Refueling Squadron, Malmstrom Air Force Base, Montana.* Norton Air Force Base, California. August 1989.

----------. *Military Airlift Command: Backbone of Detterence.* HQ Military Airlift Command Office of Public Affairs and Detachment 1, 1361st Audiovisual Squadron. U.S. Government Printing Office. 1988.

----------. *Draft Environmental Impact Statement: Small Intercontinental Ballistic Missile Program: Malmstrom Air Force Base, Montana.* Unites States Department of the Air Force, Washington, DC. 1987.

United States Army Corps of Engineers. *Community Impact Report, Malmstrom Deployment Area.* U.S. Army Corps of Engineers, Omaha District, SAFEGUARD System Command. Huntsville, Alabama. 1970.

United States Army Corps of Engineers. *History of the Seattle District 1896-1968: 72 Years in Peace and War.* U.S. Army Corps of Engineers, Seattle. 1969.

Weisberger, B.A. *Cold War, Cold Peace: The United States and Russia Since 1945.* American Heritage, New York, distributed by Houghton Mifflin Co., Boston. 1984.

Werder, K.K. *Continuing Lessons of the Cuban Missile Crisis, October 1962.* Report on file, Air War College, Air University, Maxwell Air Force Base, Alabama. April 14, 1995.

Whitfield, S.J. *The Culture of the Cold War.* The Johns Hopkins University Press, Baltimore. 1991.

Winkler, D.F. *Searching the Skies: The Legacy of the United States Cold War Defense Radar Program.* DRAFT report on file, U.S.A.F. Air Combat Command, Langley, Virginia. February 6, 1996.

Wolk, H.S. *Planning and Organizing the Postwar Air Force, 1943-1947.* Office of Air Force History, Washington, D.C. 1984.

Zaloga, S.J. *Target America: The Soviet Union and the Strategic Arms Race, 1945-1964.* Presidio Press, Novato, California. 1993.

ATTACHMENT 5

DESCRIPTION OF THE PROPOSED UNDERTAKING (DEACTIVATION OF THE 564th MISSILE SQUADRON)

The United States Air Force (USAF) proposes to deactivate 50 MMIII Launch Facilities (LFs) and 5 Missile Alert Facilities (MAFs) within the 564th Missile Squadron in 2 phases and place them into 30% caretaker status following deactivation. The 564th MS is comprised of five flights (Papa, Quebec, Romeo, Sierra and Tango) situated within parts of Chouteau, Pondera, Teton and Toole counties in an area approximately 30 to 75 miles northwest of Malmstrom AFB. The USAF does not propose to dismantle the LFs and MAFs or dispose of any real property at this time.

The deactivation process is scheduled to be completed within the next 2 years (remove missiles in FY 2007, remove hazardous and other components in FY 2008) and would occur in 3 phases. Phase 1 involves the removal of the missiles from the LFs. Phase 2 involves the removal of salvageable items from the LFs and MAFs. Phase 3 involves the dismantlement of certain portions of the LFs and MAFs. After completion of Phases 1, 2, and 3, the LFs and MAFs would be placed into caretaker status. Details of activities to occur during each deactivation phase are provided below.

Phase 1 of deactivation involves the removal of the missile (which includes the RS, propulsion system rocket engines [PSREs], MGS and booster stages). The missiles are scheduled to be removed at a rate of approximately one missile per week (actual time to remove a missile can be accomplished in less than a one week time frame). Two payload transporters (PTs) would be used to remove the RS, PSREs and MGS. Depending on the availability of PTs, the RS would likely be removed one day and the PSREs and MGS removed another day. Booster stages would be brought back to Malmstrom AFB, loaded onto a missile transporter (MT) and transported to Hill AFB, UT, on a pre-arranged schedule. All RSs would be returned to the Department of Energy (DOE) for retirement and future dismantlement. Some MGSs may WP/16-Mar-06/032-06 Environmental Assessment for MMIII Deactivation Malmstrom AFB, MT be transferred to other missile units, stored at Malmstrom AFB for future deployment, or returned to the Boeing Guidance Repair Center in Newark, Ohio, for modification/maintenance.

Phase 2 of the deactivation process involves the removal of salvageable items from the LFs and MAFs. Classified items and office and living quarter items would be recovered from the MAFs. Fluids would be drained from the fueling, coolant and hydraulic systems and electrical filters, switches and power supply batteries would be removed. Reusable equipment would be placed in the supply system for use by Malmstrom AFB and other bases. On-site water wells would be closed. Sump pumps for removing water accumulation from the LFs and cathodic protection operations for tanks would be maintained to prevent damage to the facilities. Operation of environmental control systems (i.e., heating and air conditioning) would be discontinued. Any ordnance at the LFs and MAFs would be removed and transported to the munitions storage area on Malmstrom AFB.

Phase 3 of deactivation would involve the closure of MAF wastewater treatment facilities (i.e., sewage lagoons), the removal or closure-in-place of storage tanks, reduction in electrical service to the sites and securing (i.e., welding shut) access doors at the sites. Sewage lagoon berms would be plowed and leveled to eliminate possible standing water at the sites. Aboveground storage tanks (ASTs) would be removed for use at Malmstrom AFB, other MAF sites, or other bases. Underground storage tanks (USTs) would be closed-in-place or removed. The buried cable network would remain in-place.

The activities conducted to deactivate the LFs and MAFs and place them in caretaker status are similar to maintenance activities that have been and are currently conducted at active missile sites. Personnel drain or change fluids from various systems on a regular basis, electrical filters and switches are removed or replaced and power supply batteries are regularly changed out.

Following deactivation activities, the gates to the LFs and MAFs would be secured and the sites would be placed into caretaker status. No further maintenance of the facilities or grounds would occur after deactivation. Herbicides would no longer be applied to control vegetation growth at the LFs. Air Force security teams would perform periodic security checks of each location after site deactivation. The Air Force would also conduct periodic surveys for erosion, noxious weeds and liability hazards. The LFs and MAFs would remain Air Force property; no property disposal actions would occur.

MONTANA HISTORICAL SOCIETY
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STANLEY E ROGERS
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RE: Determination of Eligibility for the Minuteman III (MMIII) Missile System at Malmstrom Air Force Base (AFB) and Determination of Effect for the Proposed Deactivation of the 564th Missile Squadron

Dear Stanley:

We concur with your assessment of the Eligibility of the subject site. An important aspect of eligibility was overlooked in our opinion. We think that sites like this are eligible at the national, regional, and local level. In light of this fact we do not think that mitigation done in other states will make this a no adverse effect in Montana. We think that if the form of mitigation completed in the other states were done in Montana, we then could concur in a no adverse effect for this undertaking.

If you have any questions about any points that I have made, you may call me at (406) 444-0388, or email jwarhank@.mt.gov.

Sincerely,

Josef J Warhank
Review & Compliance Officer

file: DOD/ Air Force/2006

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