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PROPOSED FINAL

ENVIRONMENTAL ASSESSMENT FOR THE MINUTEMAN III PROPULSION REPLACEMENT PROGRAM HILL AIR FORCE BASE, UTAH

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Finding of No Significant Impact for the Minuteman III Propulsion Replacement Program at Hill Air Force Base

Description of the Proposed Action

The Air Force intends to execute the Propulsion Replacement Program (PRP) at Hill Air Force Base (AFB), Utah. The primary objective of the PRP is to extend the service life of the Minuteman III (MM III) missile. The project involves the refurbishment of 607 MM III motors from three wings: F.E. Warren AFB, Wyoming; Malmstrom AFB, Montana; and Minot AFB, North Dakota. The purpose of this Environmental Assessment (EA) is to review environmental impacts associated with the Full Rate Production phase (FRP) of the PRP contract as it relates to transport of the missile boosters, rocket motors, and program operations at Hill AFB.

The proposed action is for the transportation, disassembly and reassembly of 607 MM III missiles in accordance with the PRP at Hill AFB. This action must be completed by 2008 due to age-out concerns with the existing motors. This action includes the truck transportation to and from three wings (F.E. Warren AFB, Malmstrom AFB, and Minot AFB), disassembly and assembly processes at Hill AFB, and shipment to and from the contractor facilities and Hill AFB. The contractor facilities are Thiokol Propulsion Systems (Thiokol) near Brigham City, Utah, and Pratt & Whitney Chemical Systems Division (CSD) near San Jose, California. Contractors are responsible for truck transport of the rocket motors between CSD and Hill AFB, however, the Air Force becomes involved if there is an accident during the transportation of the motors. Although missile transportation emergency response procedures exist covering various emergency scenarios, the routes also have been evaluated. Evaluation of the proposed action does not include contractor activities at contractor facilities, or potential environmental impacts associated with possible missile transportation accidents. This EA also does not include missile removal or emplacement at the wing silos, and any activities that occur prior to loading the missiles on or removing the missiles from the transport vehicles at the missile silos.

Two alternative actions were considered but eliminated from further analysis:

1. complete missile replacement; and
2. assembly and disassembly operations completed at each respective wing.

Complete missile replacement was analyzed during the initial planning stages of the PRP and it was determined to be non-viable and was disregarded as an alternative. Assembly and disassembly of missiles at each wing did not meet the selection criteria. The time required to select facility locations, design the facilities, and construct the facilities would make it infeasible to complete the missile refurbishment by 2008. Therefore, the proposed action selected is the completion of the MM III missile assembly and disassembly operations at Hill AFB.

Summary of Environmental Impacts

This section describes the effects that the proposed action alternative would have on the existing conditions at Hill AFB and the transportation corridors. The effects or impacts of the alternatives can be beneficial or adverse, and short-term or long-term, as discussed below.

Surface Water

No surface water bodies or surface water drainage patterns are expected to be impacted by the proposed action.

Groundwater

Groundwater conditions are not expected to be affected by the proposed action.

Geology and Soils

The proposed action does not contain any soil disturbing operations and there are no expected effects to either the geology or soils from this action.

Vegetation

Vegetation would not be disturbed or impacted under the proposed action. Therefore, there are no anticipated impacts to vegetation.

Wetlands

There would be no disturbance, changes or impacts to any wetlands under the proposed action.

Wildlife

Under the proposed action, wildlife habitats, food sources and species would not be impacted. Therefore, there are no anticipated impacts to wildlife from the proposed action.

Air Quality

Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs) would be emitted during the assembly/disassembly of the MM III missiles in the MAMS area from the use of cleaning solvents, sealers, primers and adhesives. Based on similar operations in the past, the expected emissions from the compounds used on motor assembly/disassembly operations during the FRP would be approximately 600 pounds (0.3 tons) VOC emissions and 170 pounds (0.08 tons) HAP emissions. Comparatively, for the year 2000, the total VOC emissions for Hill AFB were approximately 280 tons and total HAP emissions were approximately 105 tons. Consequently, emissions from the MAMS area missile assembly/disassembly operations are projected to be negligible in comparison to the total emissions at Hill AFB.

Emissions associated with the proposed action include mobile emissions from the diesel trucks transporting the missiles. These mobile emissions from registered diesel trucks should be accounted for in the Transportation Plans of the areas through which the missile transporter and rocket motor semi-trailer tractors pass. Therefore, the proposed action will not result in any significant air emissions increase from mobile sources. In addition, as specified in 40 CFR 93.153(c)(vii), the requirements of the Federal Conformity Rule do not apply to the routine, recurring transportation of materiel. As a result, there would be no air quality impacts from the proposed action.

Hazardous Materials and Wastes

During PRP operations, waste generated would include waste sealer, waste adhesives and disposable rags containing isopropyl alcohol and solvents. Up to 48 drums of these wastes may be generated per year. During the assembly and disassembly of the missile boosters, all hazardous materials and associated wastes would be responsibly managed according to Hill AFB policies and procedures.

Archaeological, Historical, and Cultural Resources

There are no ground disturbing activities and existing facilities will be used for the proposed action. Therefore, no impact would occur to any archaeological, historical and cultural resources under the proposed action.

Land Use

The proposed action area will be located in the Missile Assembly Maintenance and Storage (MAMS) area. This area is currently utilized for explosive-related activities, is located within the base explosive cloud, and is consistent with the current land-use plan. Additionally, all transportation corridors are existing transportation routes. Therefore, the proposed action does not effect the current land use of the transportation corridors or the MAMS facilities.

Noise

The noise impacts of the transport trucks on the interstate highways and the state routes used for the transportation corridors would be negligible. The noise levels in the MAMS area are not expected to be impacted because missile transport operations are routine. A slight increase in personnel transport to and from the MAMS area may occur, but the noise levels of this traffic would be negligible with regards to the overall noise levels at Hill AFB. Therefore, there is no anticipated impact to noise levels from the proposed action.

Health and Safety

The Air Force has an excellent safety record for the transport of missiles; strict procedures and guidelines are followed. Additionally, all components of the proposed action have explicit and safe policies and guidelines to ensure the health and safety of all involved as well as the health and safety of the general public. In the unlikely event of a transportation accident, emergency guideline procedures are in place to ensure swift and safe resolution. All regulations, policies, technical orders and operating instructions are carefully followed and strictly enforced.

Under the no-action alternative, age-out of the MM III missile would occur and the missile would not be replaced. This would compromise national security and thus the safety of each and every citizen of the United States, as determined by the National Command Authority.

Transportation

Traffic may increase on the transportation corridors however; the maximum number of missiles expected to be refurbished in a month is twelve. Therefore, the amount of traffic expected from the proposed action is not expected to be disruptive to traffic on the local or national transportation routes. A slight traffic increase may occur at Hill AFB due to the additional 50 personnel required to complete the proposed action. However, the traffic routes that would be used at Hill AFB are paved and well used and could accommodate the additional personnel. Therefore, no disturbance or impact is expected to occur to the transportation systems under the proposed action.

Socioeconomic Conditions

An increase in workforce required for the FRP phase of the PRP would be required to complete anticipated workload. Up to 50 additional staff are expected to be required to successfully complete the program. These personnel will assist with disassembly, assembly, transportation, maintenance and administration.

The MM III program employs approximately 1,200 personnel. Under the no-action alternative, military, DoD civilian and contractor personnel would be effected by the age-out and eventual loss of the MM III missile and associated programs.

Environmental Justice

Environmental justice analyses for NEPA documents attempt to determine whether a proposed action disproportionately impacts minority and poor populations. Because the FRP of the PRP would not result in any significant impacts to the surrounding community, no such analysis was conducted.

Cumulative Impacts

The proposed action would require insignificant workforce growth and expansion to support the continuation of the PRP program. There are no anticipated significantly adverse cumulative impacts expected from the actions required in the PRP program. The traffic created from the additional 50 employees (out of over 20,000 employees base wide) would not contribute significantly to congestion on base. Air emissions from incidental chemical usage would have a negligible impact on regional air quality and the National Ambient Air Quality Standards.

In considering cumulative impacts, future projects that are scheduled for the MAMS area were reviewed. Hill AFB has completed a baseline proposal for a National Missile Defense Storage, Assembly and Test (SAT) complex and an Administrative, Test and Support Area (ATS) complex within the MAMS area. This project is still in the planning stages and details regarding construction and operational parameters are not yet available therefore, the cumulative impacts of the proposed action in conjunction with the construction and operation of the proposed new complexes are difficult to assess at this time. However, following Air Force requirements, all explosive quantity distances would be maintained for the new facilities and there should be no significant cumulative impacts to health and safety from the proposed action in conjunction with the new complexes. Additionally, no significant cumulative impacts to noise and transportation are expected.

Conclusion

Based on the results of this EA, no significant adverse environmental impacts are expected due to the actions of the PRP on the proposed action transportation corridors and at the MAMS area at Hill Air Force Base, provided all policies, procedures and regulations are strictly followed. Therefore, in accordance with Air Force Instruction 32-7061, a Finding of No Significant Impact (FONSI) may be issued, and preparation of an Environmental Impact Statement (EIS) is not necessary.

Hill Air Force Base, Utah

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Authorized Signature Date

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LIST OF ACRONYMS

AFB	Air Force Base
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFPD	Air Force Policy Directive
amsl	above mean sea level
AR	Army Regulation
ATS	Administrative, Test, and Support
bgs	below ground surface
CA	California
CO	carbon monoxide
CSD	Chemical Systems Division (Pratt & Whitney)
CY	Calendar Year
DCG	Disaster Control Group
DoD	Department of Defense
DOT	Department of Transportation
EA	Environmental Assessment
ECZ	explosive clear zone
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
FRP	Full Rate Production
FY	Fiscal Year
HAP	Hazardous Air Pollutant
HAZMAT	hazardous materials
HMMS	Hazardous Materials Management System
HRIP	High Rate Initial Production
HWCF	Hazardous Waste Control Facility
ICBM	Intercontinental Ballistic Missile
LM	Logistics Missile
LMES	Logistics Missile Engineering and Safety
LMSS	Logistics Missile Shipping and Storage
LRIP	Low Rate Initial Production
MAMS	Missile Assembly Maintenance and Storage
MM	Minuteman
MSDS	Material Data Safety Sheets
MT	missile transport
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
O_3	ozone
Pb	lead
PM-10	particulate matter (less than 10 microns)
PRP	Propulsion Replacement Program
PSRE	Propulsion System Rocket Engine
RCRA	Resource Conservation and Recovery Act
SAT	Storage, Assembly, and Test
SO_2	sulfur dioxide

TI	Technical Insertion
TO	Technical Order
UT	Utah
U.S.	United States
USAF	United States Air Force
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

The Air Force intends to execute the Propulsion Replacement Program (PRP) at Hill Air Force Base (AFB), Utah. The primary objective of the PRP is to extend the service life of the Minuteman III (MM III) missile. The program involves the refurbishment of 607 MM III motors from three wings: F.E. Warren AFB, Wyoming; Malmstrom AFB, Montana; and Minot AFB, North Dakota.

Missile refurbishment is required because over time, compounds in the missile casing liner degrade and soften, and the propellant hardens and cracks. For this reason, an estimated age-out date is projected dictating when the motor must either be replaced, refurbished or removed from service. Due to these concerns, the existing MM III must be refurbished or discarded by 2008. The Air Force has determined that they are still needed. Based on these requirements, to be a viable option for the PRP, the site selected must have:

- adequate facilities to disassemble and reassemble up to 10 MM III missiles concurrently;
- trained personnel competent to disassemble and reassemble MM III missiles; and
- project oversight co-located with disassembly and reassembly operations.

Two alternative actions were considered but were eliminated from further analysis: (1) complete missile replacement; and (2) assembly and disassembly operations completed at each respective wing. Complete missile replacement was analyzed during the initial planning stages of the PRP and was determined to be non-viable. Assembly and disassembly of missiles at each wing did not meet the selection criteria because there was insufficient time available to select facility locations, design the facilities, construct the facilities, and complete the missile refurbishment by 2008.

The proposed action is for the transportation, disassembly and reassembly of 607 MM III missiles in accordance with the PRP at Hill AFB. The proposed action includes truck transportation to and from F.E. Warren AFB, Malmstrom AFB, and Minot AFB, disassembly and assembly processes at Hill AFB, and shipment to and from contractor facilities and Hill AFB. The contractor facilities are Thiokol Propulsion Facilities (Thiokol) near Brigham City, Utah, and Pratt & Whitney Chemical Systems Division (CSD), near San Jose, California. Contractors are responsible for truck transport of the rocket motors between CSD and Hill AFB; however, the Air Force would become involved if there was an accident during the transportation of the motors. Therefore these routes were also evaluated. The scope of this Environmental Assessment (EA) does not include contractor activities at contractor facilities, missile removal or emplacement at the wing silos, or any activities that occur prior to loading the missiles on or after removing the missiles from the transport vehicles at the missile silos. The scope also does not cover potential environmental impacts associated with possible missile transportation accidents.

The second alternative is the no-action alternative. Under this alternative, the MM III missiles would not be refurbished and the missiles would eventually age-out and become unusable. The Air Force has determined that the absence of the MM III missiles would compromise national security and is not considered a viable option.

A summary of the impacts described in this section is provided in Table ES-1. It is not anticipated that the actions of the PRP would have adverse environmental impacts. Beneficial impacts to the local community and national defense are anticipated from the proposed action, as shown in Table ES-1.

Table ES-1. Anticipated Environmental Consequences from the FRP of the MM III PRP

Environmental Issues	Proposed Action Alternative Location	No-Action Alternative
Surface Water	No impact.	No impact.
Groundwater	No impact.	No impact.
Geology and Soils	No impact.	No impact.
Vegetation	No impact.	No impact.
Wetlands	No impact.	No impact.
Wildlife	No impact.	No impact.
Air Quality	No significant impact. Negligible emissions from incidental chemical usage.	No impact.
Hazardous Materials and Wastes	No significant impact. A slight increase in existing waste streams.	No impact.
Cultural Resources	No impact.	No impact.
Land Use	No impact.	No impact.
Noise	No significant adverse impact. A slight increase in personnel transport may occur, but the noise levels from this would be negligible.	No impact.
Health and Safety	No anticipated adverse impacts. Regulations, policies, technical orders and operating instructions are in place for missile handling and transport.	National security may be compromised due to the non-replacement of aged-out MM III missiles.
Transportation	No anticipated impacts. Traffic may increase on the transportation corridors and to the proposed action area; however, all routes to be used are paved and well used.	No impact.
Socioeconomics	Insignificant impacts. Up to 50 additional staff may be required.	Early age-out of the MM III would reduce employment levels at pertinent installations and companies.
Environmental Justice	No impact.	No impact.

Section 1
PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

The Air Force intends to execute the Propulsion Replacement Program (PRP) at Hill Air Force Base (AFB), Utah. The primary objective of the PRP is to extend the service life of the Minuteman III (MM III) missile. The project involves the refurbishment of 607 MM III motors from three wings: F.E. Warren AFB, Wyoming; Malmstrom AFB, Montana; and Minot AFB, North Dakota (Figure 1-1). The missiles will be transported by truck from the operational wings and silos to Hill AFB, disassembled, and the individual stages transported by truck to Thiokol Propulsion (Thiokol) facilities near Brigham City, Utah, and Pratt & Whitney, Chemical Systems Division (CSD) facilities in San Jose, California for further work. After the contractor's work is concluded, the motors will be returned to Hill AFB, reassembled, and returned to the wings. The purpose of this Environmental Assessment (EA) is to review environmental impacts associated with the Full Rate Production phase (FRP) of the PRP contract as it relates to transport of the missile boosters, rocket motors, and program operations at Hill AFB.

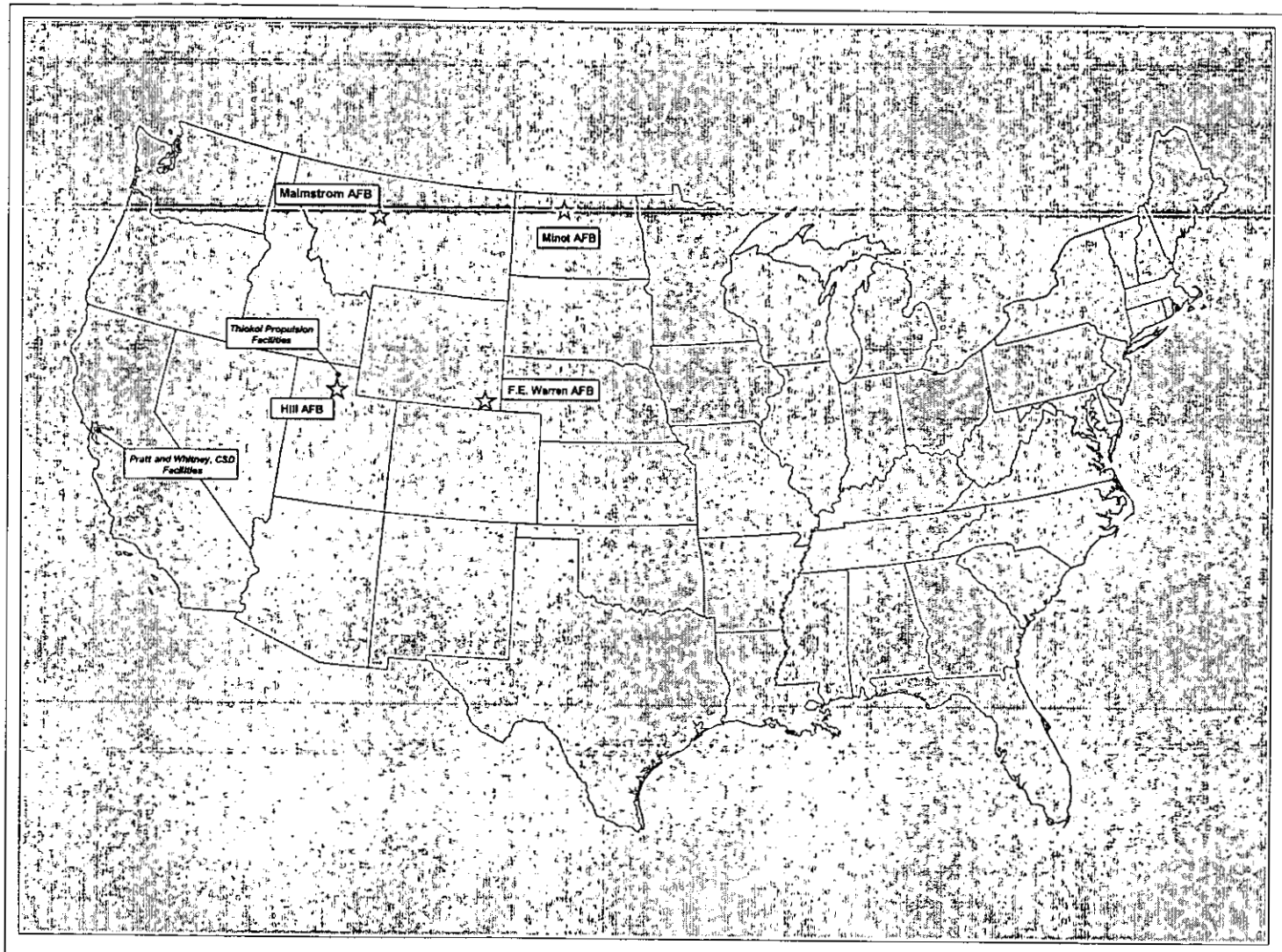
1.2 Background

In January 1993, Presidents Bush and Yeltsin signed the START II treaty. START II is a bilateral treaty negotiated by the United States and Russia during 1991 and 1992, which created an equitable and effectively verifiable agreement to reduce the number of strategic delivery vehicles (ballistic missiles and heavy bombers) and the number of warheads deployed on them. START II would halve U.S. and Russian nuclear arsenals to about 3,000-3,500 warheads each by the end of 2007. However, as START II has yet to be ratified, the final date that the treaty terms must be fulfilled is unknown. According to START II, Intercontinental Ballistic Missiles (ICBMs) carrying multi-warheads must be eliminated from each side's deployed forces; only ICBMs carrying a single warhead will be allowed. To accomplish this, the treaty allows for a reduction in the number of warheads ("downloading") on the MM III ICBM missiles.

In order to meet warhead levels set by START II, the U.S. has pursued downloading MM III missiles from three nuclear warheads to one, and provided START II is ratified and enters into force, Peacekeeper missiles could be deactivated as early as 2003. An extensive life extension program is under way to keep the MM III missiles safe, secure, and reliable well into the 21st century. These major programs include: replacement of the aging guidance system, remanufacture of the solid-propellant rocket motors, replacement of standby power systems, repair of launch facilities, and installation of updated, survivable communications equipment, and new command and control consoles to enhance immediate communications.

The subject of this EA, the MM III PRP, involves the remanufacture of the solid propellant rocket motors, replacement of the propellant, and replacement of obsolete or environmentally unsafe materials and components. There are four phases to the PRP:

1) Technical Insertion phase (TI);
2) Low Rate Initial Production 1 phase (LRIP1);
3) Low Rate Initial Production 2 phase (LRIP2); and
4) High Rate Initial Production phase (HRIP), also known as the Full Rate Production phase (FRP).



Air Force Base Locations

200 0 200 400 Miles

N
W E
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The TI phase identified improvements that could be made to the missiles. During the TI phase, MM III rocket motors were evaluated and modified to be more environmentally safe in production, operation, maintenance and disposal. The LRIP1 phase was the pilot design stage that led to the final design of the MM III. The LRIP2 stage is the current stage of the PRP program, and the revised missile production is taking place to verify production abilities and identify production problems. The FRP is the final stage of the PRP program where the missiles will be refurbished at a rate of approximately eight to twelve per month.

The FRP phase of the PRP program qualifies for a categorical exclusion under Air Force Instruction (AFI) 32-7061, Category A2.3.11 "Actions similar to other actions which have been determined to have an insignificant impact in a similar setting as established in an EIS or an EA resulting in a FONSI". A program similar to the PRP was completed at Hill AFB from 1992-1996 with the deactivation of MM II missiles (Battelle, 1991a and 1991b). The MM II deactivation program utilized the same facilities and basic processes that are proposed for this EA, however, the current processes have been improved with the elimination and/or reduction of environmentally targeted materials. In the deactivation of the MM II missiles, approximately 450 missiles were deactivated and removed from service. Since the MM III PRP is being considered a new program, the PRP ICBM Program Office determined that an EA would be performed.

Hill AFB is an Air Force Materiel Command facility located in northern Utah about 25 miles north of Salt Lake City and approximately 5 miles south of Ogden (Figure 1-2). Existing facilities used for previous MM recycle programs exist at Hill AFB, and many of these facilities are currently in use for routine maintenance activities, including motor assembly, disassembly, maintenance and transportation operations.

1.3 Need for the Proposed Action

A triad of strategic forces exists and has been deemed fundamental to National Security Strategy. The strategic triad consists of land-based ICBMs, air-based strategic bombers, and sea-based submarine-launched ballistic missiles. Each leg of the triad contributes unique attributes that enhance deterrence and reduce risk: ICBMs provide prompt response, bombers provide flexibility, and submarines provide survivability. With the possible implementation of Start II, the MM III will become the only land-based ICBM in the strategic triad.

If the MM III missiles are not refurbished or replaced, the missiles would encounter "age-out" and would become unusable. As the MM III are potentially the sole missiles remaining in the ICBM program, due to START II, this would jeopardize the ICBM program and would eliminate the land-based capabilities of the strategic triad. Non-refurbishment or non-replacement of the MM III would compromise national defense, as determined by the National Command Authority.

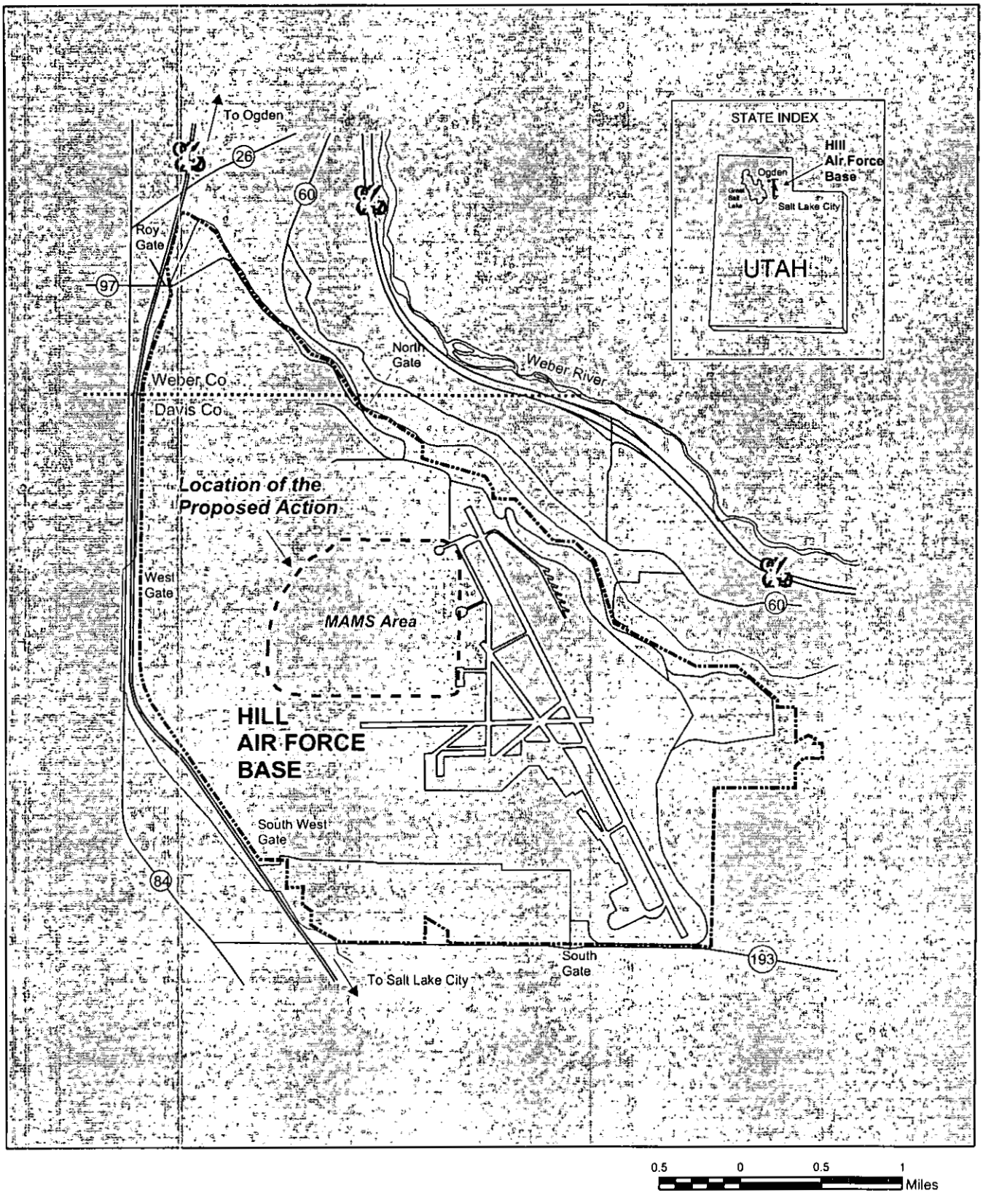


Figure 1-2. Location of the Proposed Action

1.4 Applicable Requirements

There are several regulatory environmental and procedural requirements that apply to the proposed action. The significant requirements are described below.

1.4.1 National Environmental Policy Act Requirements for Air Force Actions

The National Environmental Policy Act (NEPA) of 1969 requires federal agencies to analyze the potential environmental impacts of a proposed action and to evaluate reasonable alternative actions. The results of the analyses are used to make decisions or recommendations on whether and how to proceed with those actions. AFI 32-7061, *Environmental Impact Analysis Process,* and the Air Force Regulations (32 CFR 989) describe the process of preparing an EA for proposed actions on Air Force property. Based on the EA, either a Finding of No Significant Impact (FONSI) or an Environmental Impact Statement (EIS) is prepared. The AFI 32-7061 guidance, the Air Force Regulations, as well as the implementing regulations of NEPA (40 *Code of Federal Regulations* [CFR] 1500) were all followed in preparing this EA.

1.4.2 Military Requirements

All handling of the MM III will be accomplished in accordance with long-standing, established technical orders (TOs) to ensure safety. The TOs detail the procedures and handling instructions throughout all contact with the missile. The TOs for the assembly and disassembly of the missiles are:

- 21M-LGM30G-22-2-2 Depot Level Operations and Maintenance Control Missile Assembly and Maintenance Shops;
- 21M-LGM30G-3-1 Overhaul Instructions Depot Missile Assembly and Closeout;
- 21M-LGM30G-3-8-1 Missile Downstage Testing;
- 21M-LGM30G-3-11 Missile Disassembly;
- 21M-LGM30G-4 Illustrated Parts Breakdown;
- 2K-SRM55-3 Overhaul with Illustrated Parts Breakdown Rocket Motors M55A1;
- 2KA1-10-4-3 Overhaul with Group Assembly Parts List Nozzle Assembly M55A1;
- 2K-SR19-3 Overhaul with Illustrated Parts Breakdown Rocket Motor SR19-AJ-1; and
- 2K-SR73-3 Overhaul with Illustrated Parts Breakdown Rocket Motor SR73-AJ-1.

1.4.3 Air Quality Requirements

Air Force Policy Directive (AFPD) 32-70, Environmental Quality requires an Air Force air quality compliance program. *Air Force Instruction (AFI) 32-7040 — Air Quality Compliance* implements the specific requirements of a program for compliance with applicable Federal, State, and local standards for air quality. The air quality compliance program addresses prevention, control, abatement, documentation, and reporting of air pollution from stationary and mobile sources. *AFI 32-7040* is not intended to duplicate Federal, State and local standards, but provides a framework within

which to maintain compliance with existing standards. The instruction identifies responsibilities, and where appropriate, refers to existing standards as the basis for compliance.

1.4.4 Hazardous Materials

AFI 32-4002, Hazardous Material Emergency Planning and Response Compliance, implements *AFPD 32-40, Disaster Preparedness*, by outlining procedures for planning for and responding to Federal, State, local, and Department of Defense (DoD) emergencies involving hazardous materials (HAZMAT). It covers HAZMAT emergency planning and response, training, risk management, notification, and reporting. In general, this AFI identifies procedures necessary to ensure compliance with existing Federal, State, and local HAZMAT emergency planning and response regulations.

Air Force Manual (AFMAN) 91-201 – Explosives Safety Standards implements the specific guidance necessary to meet the objectives of *Air Force Policy Directives (AFPD) 91-2 – Safety Programs and DoD 6055.9-Std. – DoD Ammunition and Explosives Safety Standards.* It established a central source for explosive safety criteria and provides detailed requirements for transporting explosives and for operating vehicles and materials handling equipment in explosives locations.

1.4.5 Transportation Requirements

The proposed action includes transport on public roadways. When the missile booster and rocket motors are transported on the transportation corridors, Department of Transportation (DOT) regulations are applicable. From 49 *Code of Federal Regulations*, the Federal Motor Carriers Guide, United States Department of Transportation, the Parts that apply include:

- 325- Compliance with Interstate Motor Carrier Noise Emission Standards;
- 355- Compatibility of State Laws and Regulations Affecting Interstate Motor Carrier Operations;
- 382 – Controlled Substances and Alcohol Use and Testing;
- 383 – Commercial Driver's License Standards; Requirements and Penalties;
- 385 – Safety Fitness Procedures;
- 386 – Rules of Practice for Motor Carrier Safety and Hazardous Materials Proceedings;
- 391 – Qualifications of Drivers;
- 395 – Hours of Service of Drivers; and
- 397 – Transportation of Hazardous Materials; Driving and Parking Rules.

All moves are coordinated with each state DOT office. Additionally, the missile booster is an overweight transport item and DOT permits are required for each shipment. For each state that the missile booster is transported through, a state DOT permit is required. Missile Maintenance Support Branch obtains the permits for the Air Force shipments, and contract transporters are required to obtain their own DOT permits.

Army Regulation (AR) 55-162 – Permits for Oversize, Overweight, or other Special Military Movement on Public Highways in the United States establishes procedures for securing permits for the movement of military owned and operated vehicles and for commercial movements of military cargo exceeding legal weight limitations over public highways in the United States.

1.5 Scope and Organization of This Document

The remainder of this document is organized as follows:

- Section 2 provides a description of the alternative actions being proposed, including the no-action alternative;
- Section 3 describes the existing environmental conditions of the transportation corridors and at Hill AFB;
- Section 4 identifies the potential environmental consequences associated with implementation of each of the proposed alternatives;
- Section 5 presents a list of the preparers of this report;
- Section 6 contains a list of offices, agencies, and persons contacted for information used in the report; and
- Section 7 includes a list of references.

Section 2
DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section describes the proposed action and alternative actions that were considered for the refurbishment of 607 MM III missiles.

2.1 Selection Criteria

With time, compounds in the missile casing liner degrade and soften, and the propellant hardens and cracks. For this reason, an estimated age out date is projected dictating when the motor must be replaced, refurbished or removed from service. Due to these concerns the existing MM III must be refurbished by 2008. In order to meet this deadline the infrastructure to complete refurbishment must currently be in place. Based on these requirements, to be a viable option for the PRP, the site selected must have:

- adequate facilities to disassemble and reassemble up to ten MM III missiles concurrently;
- trained personnel competent to disassemble and reassemble MM III missiles; and
- project oversight co-located with disassembly and reassembly operations.

2.2 Alternatives Considered But Eliminated from Further Analysis

2.2.1 Complete Missile Replacement

Complete missile replacement was analyzed as an alternative during the initial planning stages of the PRP. During analysis, it was determined that complete missile replacement was not a viable option and was disregarded as an alternative. It was determined that significant amounts of design effort to redesign the missile and large amounts of environmental resources creating excessive costs would have been required for complete missile replacement. The MM III refurbishment option was determined to be much more environmentally and economically viable in comparison to the complete missile replacement option.

2.2.2 Constructing Missile Assembly and Disassembly Facilities at each Wing

This alternative action entails the same processes as the proposed action, however, the assembly and disassembly processes would occur at each individual wing prior to missile transport to contractor facilities. This alternative would reduce transportation requirements but would require new facilities at each wing that would be able to assemble and disassemble the missiles and would require trained personnel at each facility. Program offices at each wing would be required to administer the program in each location and a head office would be required to coordinate the program offices. The time that would be required to select facility locations, design the facilities, construct the facilities, and complete the missile refurbishment by 2008 makes this alternative infeasible. Additionally, excessive costs and greater potential for environmental impacts associated with duplicative facility construction make this alternative less desirable. This alternative does not meet the selection criteria and therefore was not evaluated further.

2.3 Proposed Action

The proposed action is for the transportation, disassembly and reassembly of 607 MM III missiles in accordance with the PRP at Hill AFB. This section describes the truck transportation to and from three wings (F.E. Warren AFB, Malmstrom AFB, and Minot AFB), disassembly and assembly

processes at Hill AFB, and shipment to and from the contractor facilities and Hill AFB. The Air Force will transport the missile boosters between the three wings and Hill AFB, and the rocket motors between Thiokol and Hill AFB. Contractors would be responsible for truck transport of the rocket motors between Hill AFB and CSD, and the transport of rocket motor parts between Thiokol and CSD, however, the Air Force would become involved if there were an accident during the transportation of the motors. Although missile transportation emergency response procedures exist covering various emergency scenarios, these routes have been evaluated. Evaluation of the proposed action does not include contractor activities at contractor facilities, or potential environmental impacts associated with possible missile transportation accidents. This EA also does not include evaluation of missile removal or emplacement at the wing silos, and any activities that occur prior to loading the missiles on or after removing the missiles from the transport vehicles at the missile silos. Figure 2-1 illustrates the proposed action of this EA.

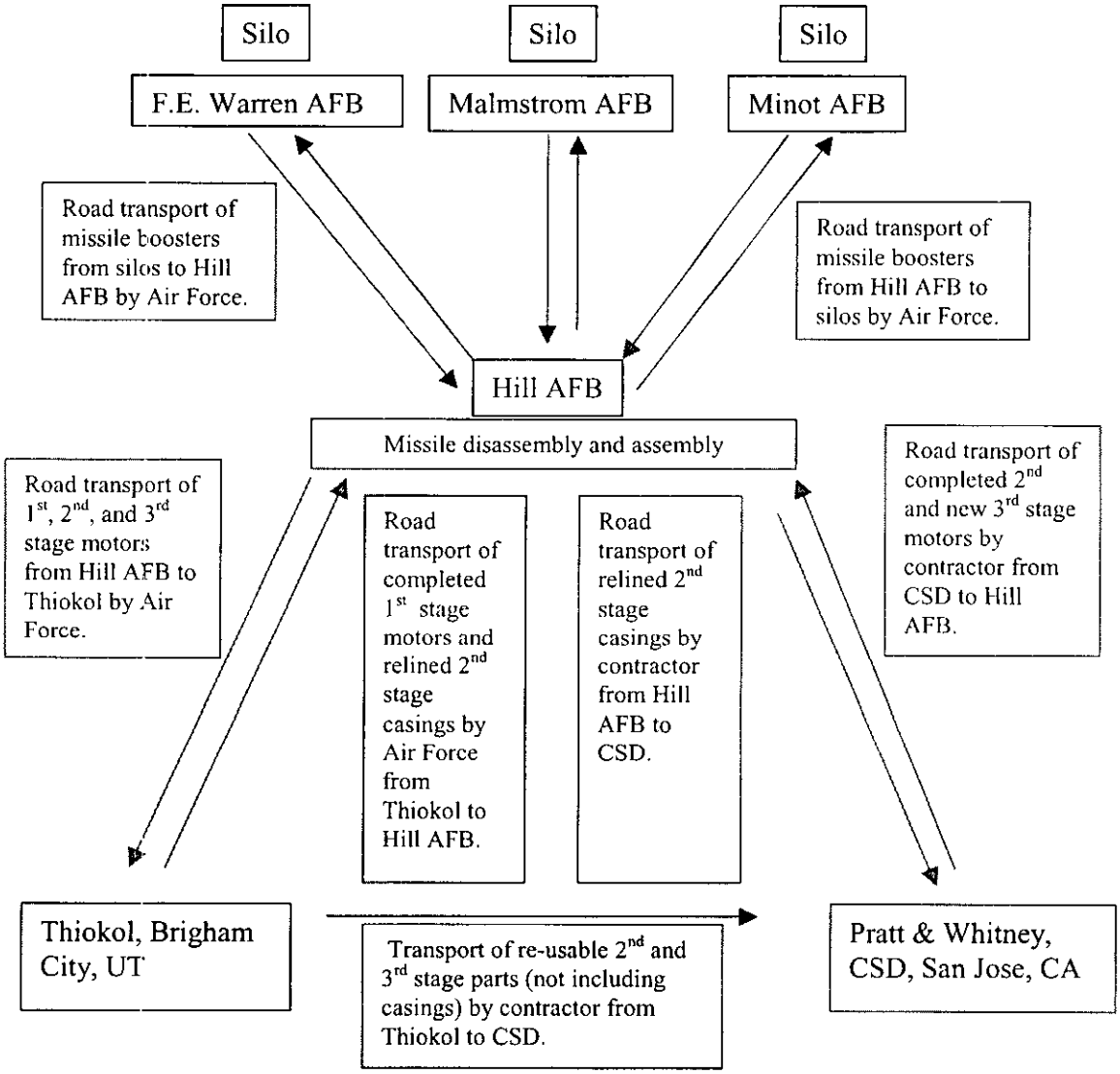


Figure 2-1. Proposed Action

2.3.1 Minuteman III Missile

The MM III booster is a three-stage solid propellant propulsion device. The overall length of the missile is approximately 59.9 feet and it weighs approximately 79,432 pounds. Figure 2-2 shows the MM III, and Table 2-1 gives a summary description of the dimensions of each stage of the MM III.

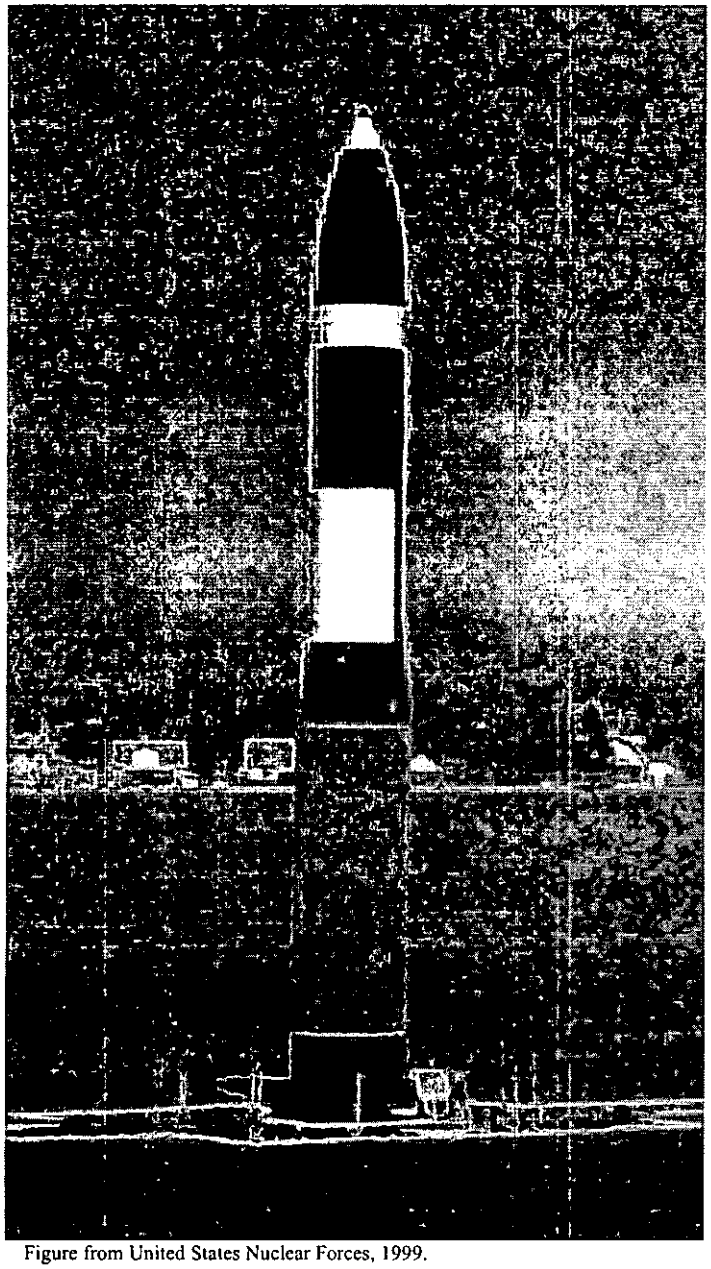


Figure from United States Nuclear Forces, 1999.

Figure 2-2. The Minuteman III Missile

Table 2-1. Summary of the Three Stages of the Minuteman III Missile

Stage	Diameter (inches)	Length (feet)
1st	65.7	18.6
2nd	52.1	9.1
3rd	52.1	5.5

2.3.2 Missile Booster and Rocket Motor Transport

The action of removing the missiles from their silos is guided by routine procedures and is out of the scope of this EA. However, in preparation for truck transport, the liquid propulsion system rocket engine (PSRE), the warheads, and the ignition power source are all removed from the missile and retained at the silo base. The missile booster is then loaded onto transport trucks at the silos. Once the missile booster is loaded on the transport truck, the scope of this EA begins.

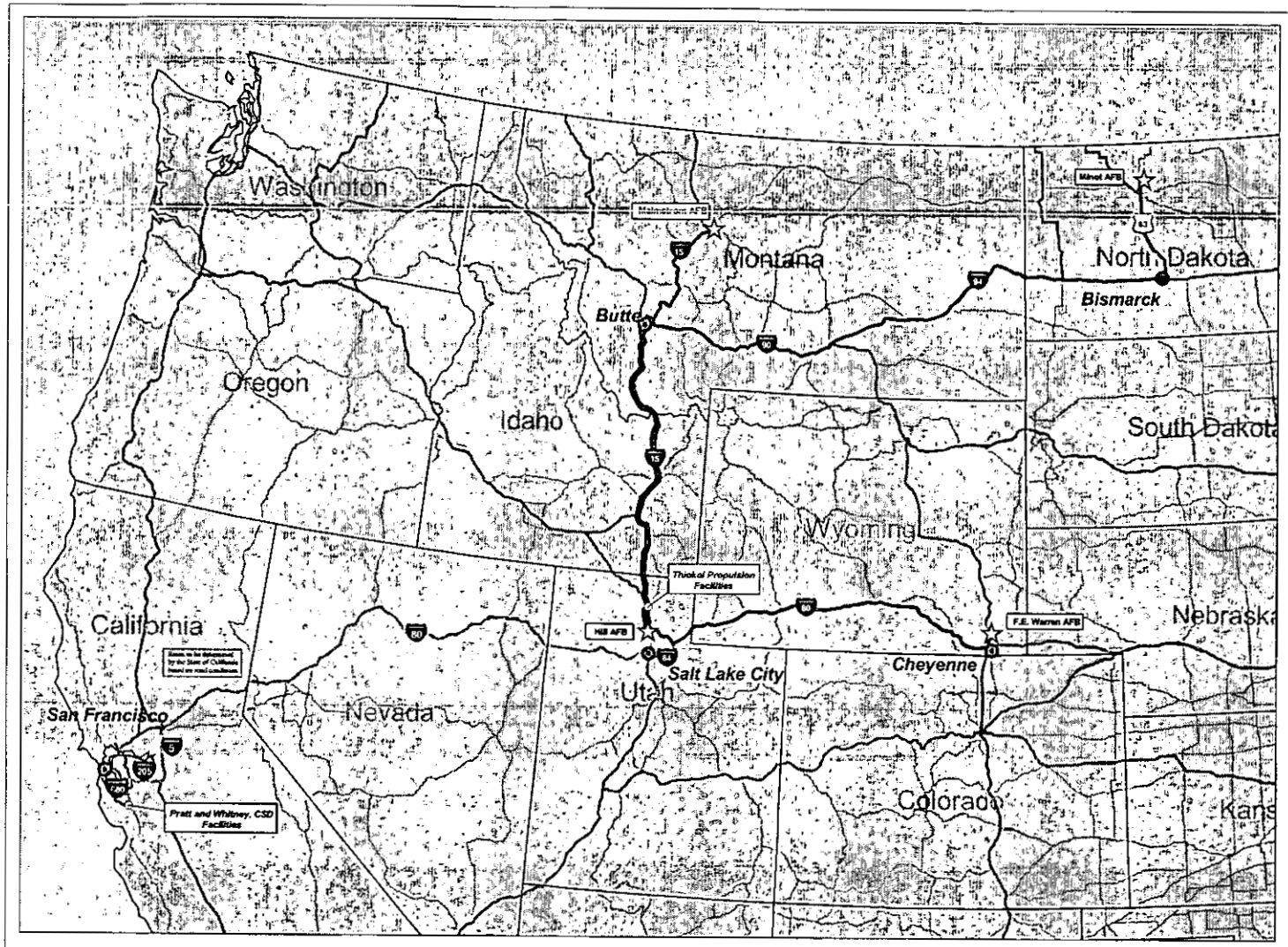
The missile booster at this time encompasses the three rocket motor stages and the inner stages fully connected. Each rocket stage is individually supported on special transport carriages that are loaded onto rails in the missile transport (MT) trailer. The missile transport trailer provides temperature control and provides safe travel for the missile booster. Appendix A shows a missile transporter truck and trailer. The MM III booster would be transported to and from each of the three wings on specified routes to Hill AFB. Figure 2-3 shows the routes that have been selected for the transport of the rocket boosters. The MM III boosters are transported between Hill AFB and the three wings in government-owned rocket motor semi-trailer. The missile booster is classed as "secret" and an escort vehicle accompanies the truck transporting the missile booster. During transport, the missile booster is never left unattended.

After disassembly, the MM III rocket motors are transported between Hill AFB and Thiokol by the Air Force in government owned tractors and trailers, and are transported between Hill AFB and CSD by contractors using commercial tractors with government trailers. The government trailer that is used for the transport of the rocket motors is environmentally controlled and provides the safe transportation container required for the rocket motors. The rocket motors have a lower security designation and do not require an escort vehicle. Two commercial drivers are required in each tractor to ensure safety.

2.3.3 Disassembly and Assembly Operations

Once at Hill AFB, the missile booster is rolled from the MT trailer onto rails in one of ten designated buildings at Hill AFB located in the Missile Assembly Maintenance and Storage (MAMS) area, Figure 1-2. All ten buildings are similar and contain the same facilities. This area is located within the base explosive cloud and all explosive safety distances are maintained.

In the disassembly process the propellant is not affected. Disassembly is dictated by routine maintenance procedures that are detailed in the TOs. The technicians first remove bolts, fasteners and sealer to separate the rocket motor inner stages from the rocket boosters using hand tools. Samples have been collected and analyzed from all the waste sealants that are produced in the disassembly process by the Hazardous Waste Control Facility. The waste sealant that is non-hazardous is disposed of in non-hazardous waste and the waste sealant that has been found to be hazardous is collected and emptied at the end of each shift into hazardous materials drums provided by the Hazardous Waste Control Facility. After each drum is collected by the Hazardous Waste Control Facility, a representative sample is


Transportation Routes for PRP
Washington
Oregon
California
Nevada
Idaho
Montana
Wyoming
Utah
Colorado
North Dakota
South Dakota
Nebraska
Kans
Minot AFB
Bismarck
Butte
Malmstrom AFB
Thiokol Propulsion Facilities
Hill AFB
F.E. Warren AFB
Salt Lake City
Cheyenne
San Francisco
Pratt and Whitney, CSD Facilities
100 0 100 200 Miles
N
W
E
S

collected and analyzed by the Hill AFB Laboratory. Dependant upon the sample results, the drum will be disposed of at either a RCRA or non-RCRA disposal facility by Safety Kleen.

After the missile motors are disassembled, the missile flight components and subassemblies are removed with hand tools, and the motor nozzles are checked for cracks with isopropyl alcohol. Cheesecloth rags are used to wipe the isopropyl alcohol over the motor nozzles. The excess alcohol is evaporated in the process and the cheesecloth rags are disposed of in a drum provided by the Hazardous Waste Control Facility and disposed of by Safety Kleen.

The inner stages that are retained at the proposed action area are used for the next missile to be assembled. There are no explosives in the inner stages, and hazardous storage of the inner stages is not required.

After the missile booster is disassembled, the three rocket motor stages are transported to Thiokol near Brigham City, Utah. At Thiokol, parts are removed from all motors and the propellant is washed out of the 1st and 2nd stage cases, which are relined with rubber. Thiokol completely refurbishes the 1st stage motor; replacing the propellant and reassembling the motor; and Thiokol destroys the 3rd stage motor. The 2nd stage motor case is transported from Thiokol back to Hill AFB then from Hill AFB to CSD near San Jose, California for completion. The re-useable disassembled parts from the 2nd and 3rd stage motors are transported from Thiokol to CSD where the 2nd stage motor case is refurbished and refilled with propellant and reassembled, and the 3rd stage motor is completely remanufactured using the salvaged parts from the previous 3rd stage motor. After reassembly, the 1st stage motors are transported back to Hill AFB from Thiokol and the 2nd and 3rd stage motors are transported back to Hill AFB from CSD. Contractor refurbishment actions at Thiokol and CSD are not included within the scope of this EA. Contractor transport of the rocket motors between CSD and Hill AFB, and the transport of the 2nd and 3rd stage parts between Thiokol and CSD are reviewed in this EA because the Air Force becomes involved with the transport of the motors if an accident occurs during transport.

After the refurbished motors arrive back at Hill AFB, the missile booster is reassembled. The reassembly process is governed by routine maintenance procedures that are detailed in TOs. The technicians mount the flight components and subassemblies on the missile stages using hand tools. The panel fastener areas are cleaned, and sealer and sealer applications are applied to cover fasteners. Primer is used in the reassembly process, and contains solvents. Prior to connecting the stages, the cork insulation is repaired, if required. This involves material containing epoxy and cork mix. The stages are connected to the inner stage panels using nut runners. The waste materials produced in the assembly process are cheesecloth rags that collect waste solvents and waste adhesives. Samples have been collected and analyzed from all waste adhesives that are produced in the assembly process by the Hazardous Waste Control Facility. All waste adhesives have been found to be non-hazardous. The rags that collect the waste solvents are collected and deposited into the same hazardous waste drums as the hazardous waste sealant in the disassembly procedure. All hazardous materials used are properly stored in an explosives chemical cabinet.

It is anticipated that during Full Rate Production (FRP) up to twelve missiles will be in various stages of production at one time, and each missile will take approximately eight months for complete refurbishment. The production and delivery schedule for the MM III is shown in Table 2-2.

Table 2-2. Proposed Remanufacture Production and Delivery Schedule

Missile Status	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	**Total**
Operational	5	27	74	86	86	86	86	50	**500**
Spares	2	3	9	3	3	2	2	2	**26**
Operational Test & Evaluation	2	3	3	4	4	5	5	33	**59**
Aging Surveillance	0	0	0	3	3	3	3	10	**22**
Total	**9**	**33**	**86**	**96**	**96**	**96**	**96**	**95**	**607**
Phase of PRP	**LRIP1**	**LRIP2**	**FRP**	**FRP**	**FRP**	**FRP**	**FRP**	**FRP**	

Note: The government fiscal year (FY) is from October to September. October 2001 will initiate FY 02.

2.4 No-Action Alternative

Under the no-action alternative, the MM III weapon system would be unable to meet future mission readiness requirements as age-out occurs. The no-action alternative is not considered a reasonable option. If the missiles are not refurbished, there would no longer be an ICBM program and ultimately, as determined by the National Command Authority, national defense would be compromised.

Section 3
DESCRIPTION OF THE EXISTING ENVIRONMENT

This section describes the general environment at Hill AFB and along the transportation corridors for the proposed action. The following sections characterize the physical conditions, natural and historic resources, environmental quality, land use, health and safety, transportation and socioeconomics at Hill AFB and the transportation corridors.

3.1 Surface Water

3.1.1 Hill AFB

Within the boundaries of Hill AFB, there are no streams, rivers or lakes. Drainage for Hill AFB is provided for by three drainage systems located off-base with drainage ponds located throughout the base. In undeveloped areas, surface runoff either infiltrates into the ground or is routed by drainage lines to retention ponds.

The nearest canal system to the proposed action area is the Davis-Weber Canal, located off-base. This drainage system is located approximately 0.5 miles northeast of the proposed action area. The closest man-made drainage pond is approximately 0.5 miles south of the proposed action area.

There are numerous natural wetlands close to the east and western boundaries of Hill AFB. However, there are no natural or manmade wetlands in the proposed action area. The closest natural wetland is approximately 470 feet east of the proposed action area (USAF, 1989).

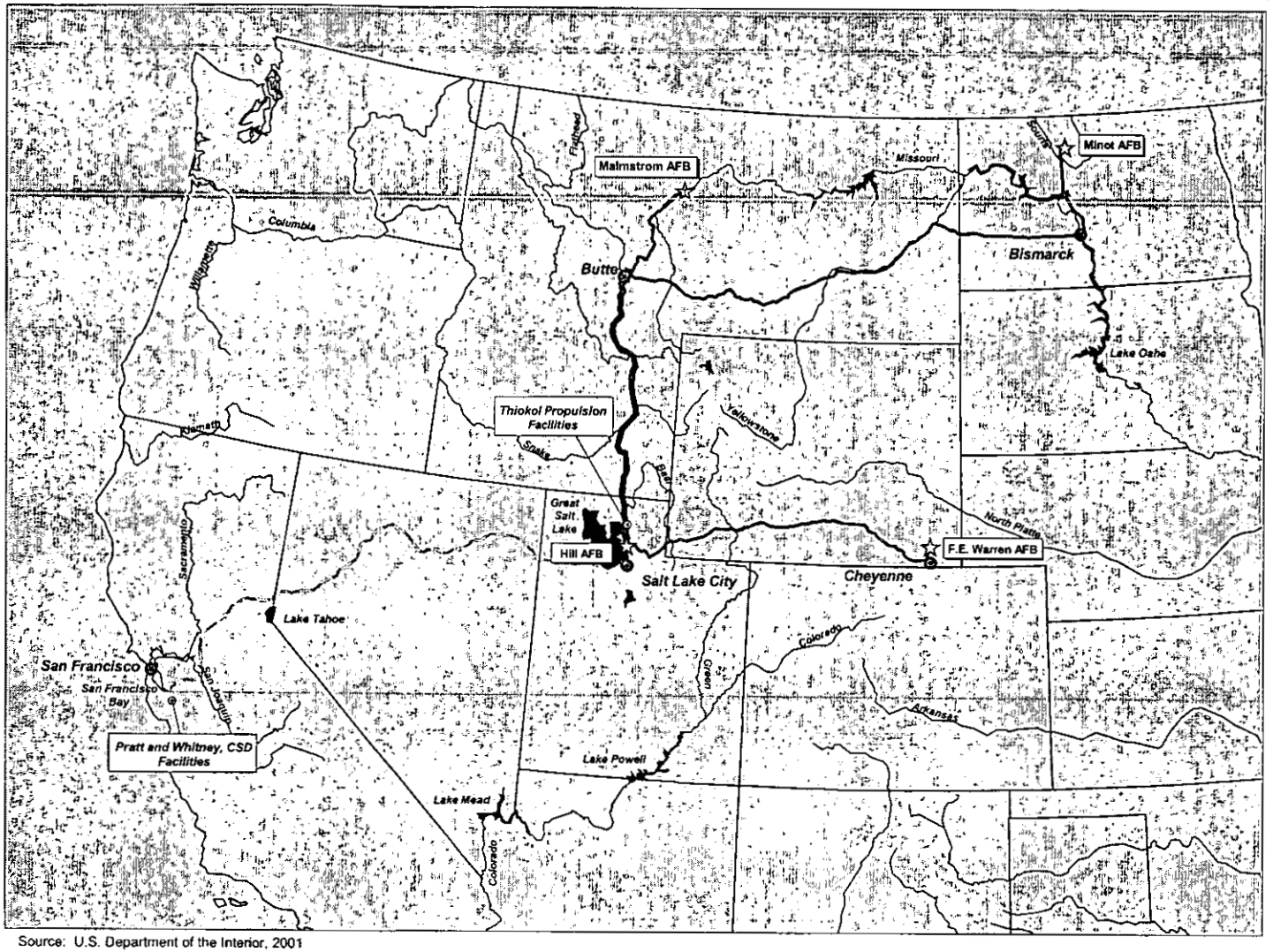
3.1.2 Transportation Corridors

As shown in Figure 3-1, numerous major rivers are situated close to the transportation corridors (U.S. Department of the Interior, 2001). In North Dakota, the transport route crosses the Souris River and the Missouri River. In Montana, the transportation corridor follows the Yellowstone River west, then crosses the Yellowstone River, the Missouri River and the Flathead River. In Idaho, the transportation route crosses the Snake River. In Wyoming, the transportation route crosses the Green and Bear Rivers. In Utah, the transportation routes cross the Bear River and follow the south and east edges of the Great Salt Lake. No significant surface water bodies are encountered in Nevada. In California, depending upon the routes chosen, the Sacramento River, San Joaquin River and the southern boundary of San Francisco Bay may be encountered.

3.2 Groundwater

3.2.1 Hill AFB

Hill AFB is located in the Weber Delta sub-district, where of the three primary aquifers, two are the principal aquifers of the East Shore area. The Sunset and the Delta aquifers are deep, confined aquifers with depths below ground surface (bgs) of 250 to 400 feet and 500 to 700 feet, respectively. These aquifers are recharged through subsurface flow infiltrating fractures and joints in the Wasatch Range and from the under-flow of a deep unconfined aquifer near the mountain front. The third aquifer overlays the Sunset and the Delta aquifers, and is an unnamed, deep unconfined aquifer (Montgomery Watson, 1998).



Source: U.S. Department of the Interior, 2001

3.2.2 Transportation Corridors

The primary aquifers that are located in the western United States are presented in Figure 3-2 (U.S. Department of the Interior, 2001). The aquifers will be discussed going from east to west across the eight states that the transportation corridors span.

North Dakota, Montana and Wyoming

Groundwater is obtained primarily from wells completed in unconsolidated-deposit aquifers that consist mostly of sand and gravel, and from wells completed in semiconsolidated- and consolidated-rock aquifers, chiefly sandstone and limestone. The primary aquifers in the North Dakota and eastern Montana section of the corridor are Upper Cretaceous aquifers and Lower Tertiary aquifers. From Malmstrom AFB south to the Idaho border, the Northern Rocky Mountains Intermontane Basins aquifer systems predominate. Paleozoic aquifers are the primary aquifers around Cheyenne. The remainder of the Wyoming corridor is primarily the consolidated-rock aquifer systems of the Colorado Plateau. Agriculture, primarily irrigation, is one of the largest uses of groundwater in these areas (USGS, 1996).

Idaho

Aquifers in Pliocene and younger basaltic rocks characterize the Snake River Plain of southern Idaho. Permeable zones at the tops and the bottoms of the basalt flows yield large volumes of water to irrigation wells. These aquifers also discharge about one million gallons per day to the walls of the Snake River Canyon. Paleozoic aquifers are encountered south of the Snake River Plain aquifer system to just north of the Utah border (USGS, 1994).

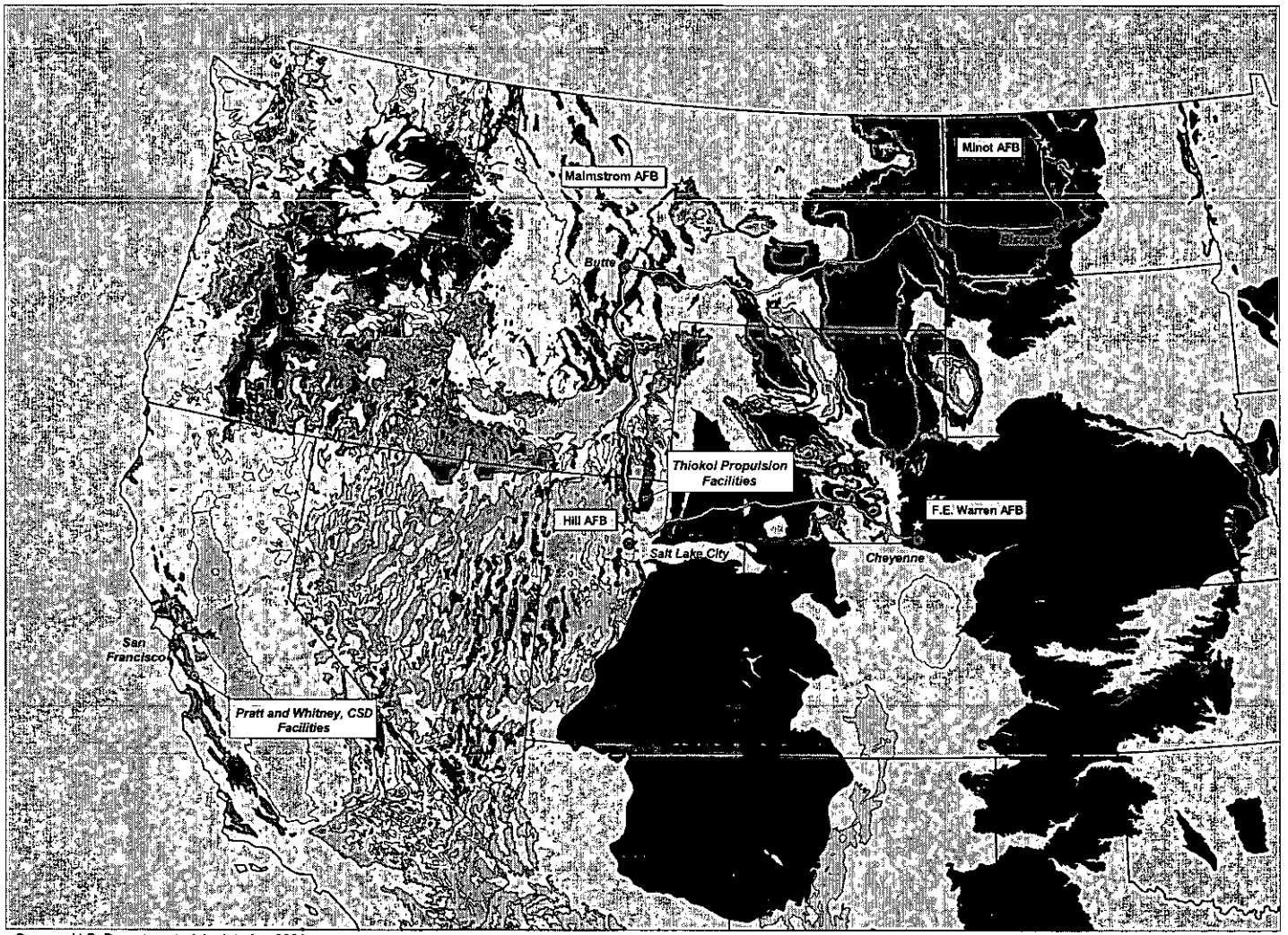
Utah and Nevada

The transportation corridors used in the proposed action extend across the expansive Basin and Range aquifer system of western Utah and Nevada. All the groundwater in this area is ultimately derived from infiltration of precipitation, which varies considerably with the elevation and topography of the area. Western Utah is drained by numerous streams that terminate in local desert basins, the Great Salt Lake, or other local lakes and reservoirs. The Basin and Range aquifers are in unconsolidated sediments. The water-yielding materials in this area are in valleys and basins, and consist primarily of unconsolidated alluvial-fan deposits, although locally flood plain and lacustrine (lake) beach deposits may yield water to wells. Ground water is generally under unconfined, or water-table conditions at the margins of the basins, but as the unconsolidated deposits become finer grained toward the centers of the basins, the water becomes confined. Rarely, basins might be hydraulically connected in the subsurface by fractures or solution openings in the underlying bedrock. These multiple-basin systems end in a terminal discharge area, or sink, from which water leaves the flow system by evaporation. Also, several basins or valleys may develop surface-water drainage that hydraulically connects the basins, and groundwater flows between the basins, mostly through the unconsolidated alluvial stream/flood plain sediments (USGS, 1995a and USGS 1995b).

California

The Central Valley aquifer system occupies most of a large basin in central California between the Sierra Nevada and the Coast Range Mountains. The Central Valley is the single most important source of agricultural products in the United States; the groundwater for irrigation has been essential in the development of that industry. The basin contains a single, large, basin-fill aquifer system, the largest such system in the Nation. Although the valley is filled with tens of thousands of feet of unconsolidated sediments, most of the fresh groundwater is at depths of less than 2,500 feet (USGS, 1995b).

As shown on Figure 3-2, the California Coastal Basin Aquifer is encountered in the area surrounding CSD near San Jose.



Source: U.S. Department of the Interior, 2001

3.3 Geology and Soils

3.3.1 Hill AFB

Hill AFB is located on a delta created by the flow of the Weber River into ancient Lake Bonneville. The approximately 6,700 acres of delta sediments that Hill AFB occupies range in elevation from approximately 4,600 feet above mean sea level (amsl) along the western boundary of the base to approximately 5,045 feet amsl along the eastern boundary.

The surficial deposits along the East Shore were deposited during the Alpine and Provo stages of Lake Bonneville and have been grouped into the Alpine and Provo Formations, respectively. In the vicinity of Hill AFB, the Provo Formation consists of gravel and sand is generally 10-30 feet thick. The Provo Formation overlies the Alpine Formation (gravel, sand, clay and silt with interbedded layers of fine sand and clay) which can be 101 to 135 feet thick (Montgomery Watson, 1998).

Surface soil in the proposed action area has been classed as Timpanogos Fine Silty Loam for the majority of the area and Francis Loamy Fine Sand for the western edge and the southern portion of the proposed action area. Francis Loamy Fine Sand is highly permeable and is extremely droughty, with a gravely nature. Timpanogos Fine Silty Loam has relatively high levels of nitrogen, phosphorus, potassium and organic matter (USAF, 1989).

3.3.2 Transportation Corridors

The soils of the transportation corridors are classified according to U.S. Soil Taxonomy system. The definitions for the soils are from Encyclopaedia Britannica, 1999-2001, and are as follows:

- Alfisol – Alfisols are arable soils with water content adequate for at least three consecutive months of the growing season. Alfisols typically exhibit well-developed, contrasting soil horizons (layers) depleted in calcium carbonate but enriched in aluminum-and iron-bearing minerals.

- Aridisol -- Aridisols are dry, desertlike soils that have low organic content and are sparsely vegetated by drought-or salt-tolerant plants. Dry climate and low humus content limit their arability without irrigation.

- Entisol – Entisols are soils defined by the absence or near absence of horizons (layers) that clearly reflect soil-forming processes. Entisols are formed on surface features of recent geologic origin, on underlying material that is highly resistant to weathering, or under conditions of extreme wetness or dryness.

- Inceptisol – Inceptisols are soils of relatively new origin and are characterized by having only the weakest appearance of horizons, or layers, produced by soil-forming factors. Inceptisol soil profiles give some indication of clay minerals, metal oxides or humus accumulating in layer, but such accumulation is not sufficient to classify the soil into an order defined by characteristic surface or subsurface horizons.

- Mollisol -- Mollisols are characterized by a significant accumulation of humus in the surface horizon, or uppermost layer, which is almost always formed under native grass vegetation. The important mineral nutrients – calcium, magnesium, potassium, and sodium – are found through most, if not all, layers of the Mollisol soil profile.

Following the transportation corridors from east to west (Figure 3-3), the routes travel through nine ecosystem provinces. The geology (geology.about.com) and soils (USDA Forest Service, 1995) of these ecosystem provinces are listed below.

332 - Great Plains Steppe Province

A blanket of glacial sand and gravel covers three-fourths of North Dakota. The geography around Minot AFB is characterized by flat and rolling plains. The soils in this province are primarily Mollisols with dark upper horizons.

331 - Great Plains - Palouse Dry Steppe Province

A blanket of glacial sand and gravel covers three-fourths of North Dakota and continues into Montana. From north of Glacier International Park in the west to the plains in the east and the great Precambrian Belt complex in the Rockies, Montana is glaciated country.

The majority of the travel corridor through North Dakota, Montana and immediately around F.E. Warren AFB in Wyoming is characterized by rolling plains and tablelands with occasional valleys, canyons, and buttes. For this province the dominant pedogenic process is calcification, and salinization is dominant on poorly drained sites. Mollisols are typical soils in this province. The humus content in these soils is small due to the sparse vegetation.

M331 - Southern Rocky Mountain Steppe

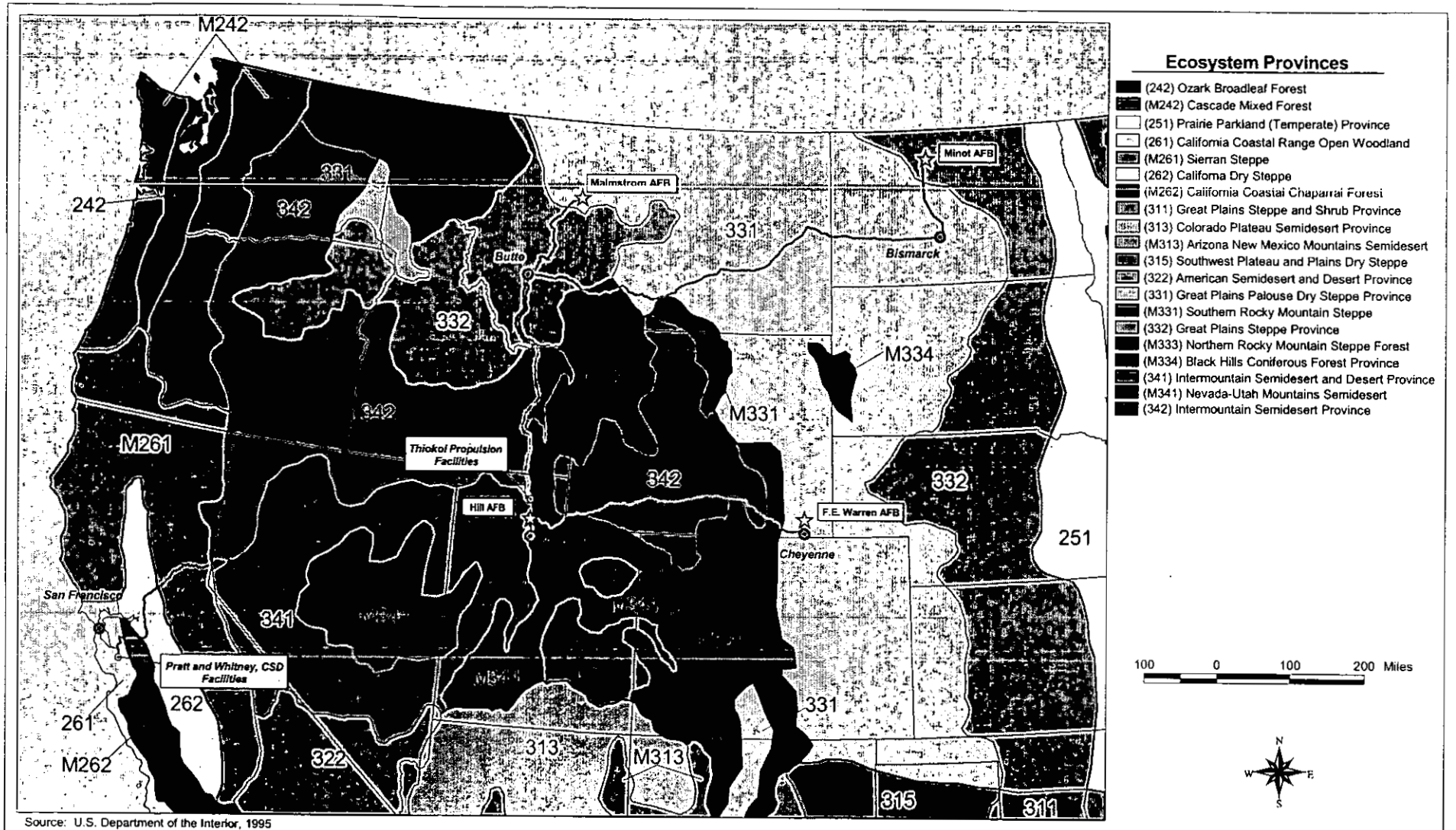
Parts of the travel corridors through Montana, Wyoming, Idaho and Utah are located in the Rocky Mountains, which are as much as 14,000 feet amsl. Intermontane depressions in this region can be as low as 6,000 feet amsl. In Wyoming and Utah, many high-elevation plateaus are composed of dissected, horizontally layered rocks. The soil orders in this province occur in zones and range from Mollisols and Alfisols in the montane zone to Aridisols in the foothill zone. Due to the steep slopes and recent glaciation, there are also areas of Inceptisols.

342 – Intermountain Semidesert Province

Through northern Idaho and most of Wyoming, the transport route covers the plains and tablelands of the Columbia-Snake River Plateaus and Wyoming Basin. This province has extensive alluvial deposits in the floodplains of streams and in the fans at the foot of the mountains. Dry lakebeds are numerous, and there are extensive eolian deposits, including both dune sand and loess. In the Columbia River Basin, loess deposits are up to 150 feet thick and soils developed from them are correspondingly complex. Aridisols dominate all basin and lowland areas; Mollisols are found at higher elevations. Soils in the Wyoming Basin are alkaline Aridisols. Subsoils contain a layer enriched with lime and/or gypsum, which may develop into a caliche hardpan. Because the basin is semiarid and weathering is slight, soil texture and composition are governed by parent materials. Entisols are found in the Bighorn basin.

341 - Intermountain Semidesert and Desert Province

Much of this province is made up of separate interior basins and the lower parts of many basins have heavy accumulations of alkaline and saline salts. Many mountains rise steeply from the plains. Aridisols dominate all basin and lowland areas; forest soils are found at higher elevations. Narrow bands of Entisols lie in stream floodplains and rocky landscapes. Salt flats and playas without soils are extensive in the lower parts of basins with interior drainage.



Source: U.S. Department of the Interior, 1995

M261 – Sierran Steppe

The travel route in the eastern part of California goes through the discontinuous coastal plains, low mountains and interior valleys adjacent to the Pacific Ocean from San Francisco to San Diego. The soils of this region are mostly Alfisols and Mollisols. They are high in bases and fertile when soil water is adequate.

262 – California Dry Steppe

In the Central Valley of California the transport route travels over a flat alluvial plain between the Sierra Nevada and the Coast Ranges. Elevations range from sea level to 500 feet. This area has broad, nearly level valleys bordered by sloping alluvial fans, slightly dissected terraces and the lower foothills of the surrounding uplands. The soils of this region are mostly Entisols and Alfisols. The Entisols are usually at the lower elevations and the Alfisols at slightly higher elevations, away from the valley floor.

M262 – California Coastal Range Open Woodland

The transport route in this province travels over the California Coast Ranges which are gently to steeply sloping low mountains underlain by shale, sandstone, and igneous and volcanic rocks. The pattern of Alfisols, Entisols, and Mollisols in this region is complex. Mollisols are usually found along the coast; Alfisols occur in the north; and the south consists mostly of Entisols.

261 – California Coastal Chaparral Forest and Shrub Province

The CSD facility is situated in the province that comprises the northern Coast Range, the Klamath Mountains, and the Sierra Nevada. Most of the area is covered with steeply sloping to precipitous mountains crossed by many valleys with steep gradients. The long west slope of the Sierra Nevada rises gradually from 2,000 feet to more than 14,000 feet, the east slope drops abruptly to the floor of the Great Basin, at an elevation of about 4,000 feet. Ultisols are extensive on mountain slopes where air is humid; dry Alfisols predominate at lower elevations. Entisols occupy the narrow floodplains and alluvial fans of the valleys.

3.4 Vegetation

3.4.1 Hill AFB

The MAMS area has been listed as a mowed, semi-improved developed area (USAF, 1989). The designation of the proposed action area indicates that it is mowed frequently with periodic maintenance as a pest control measure. Introduced grasses and annual forbs such as cheat grass and crested wheatgrass generally represent these areas. At this time, there are no known endangered or threatened vegetative species located at the proposed action location.

3.4.2 Transportation Corridors

Following the transportation corridors from east to west (Figure 3-3), the routes travel through nine ecosystem provinces. The vegetation (USDA Forest Service, 1995) of these provinces is listed below. Vegetation is identified as threatened or endangered as listed by the U.S. Fish and Wildlife Service, June 2001.

332 - Great Plains Steppe Province

The vegetation around Minot AFB is a mixture of shortgrass and tall grass species including blue grama, hairy grama, buffalo grass, little bluestem, needle-and-thread grass, wheatgrass, needlegrass, and galleta. Numerous forbs also are present including sunflowers, ragweed and goldenrod.

331 - Great Plains - Palouse Dry Steppe Province

The vegetation of the majority of the travel corridor through North Dakota, Montana and immediately around F.E. Warren AFB is shortgrass prairie. The steppe is dry and arid approximately half

of the year and characterized by short grasses that are usually sparsely distributed, consisting of buffalo grass, sunflower and locoweed, grama, wheatgrass and needlegrass. The Palouse grassland includes shrubs, bluebinch wheatgrass, and bluegrass.

M331 - Southern Rocky Mountain Steppe

Parts of the travel corridors through Montana, Wyoming, Idaho and Utah have vegetation that is characterized as Southern Rocky Mountain Steppe. The vegetation is this zone is dependent on elevation and latitude. Alpine tundra and the absence of trees characterize the highest elevation (the alpine zone). With a decrease in elevation, the vegetative zones move through the subalpine zone, (characterized by Englemann spruce and subalpine fir), the montane zone (characterized by ponderosa pine, Douglas-fir and sagebrush), and the foothill (woodland) zone (characterized by mountain–mahogany and scrub oak along the border of the Colorado Plateau Province, and alternating ponderosa pine and pinyon-juniper associations).

342 – Intermountain Semidesert Province

Through northern Idaho and most of Wyoming, the primary vegetation is sagebrush or shadescale mixed with short grasses. Near streams and mountains valley bottoms the vegetation becomes willows and sedges grading to greasewood and other alkali-tolerant plants.

341 – Intermountain Semidesert and Desert Province

Through western Utah and most of Nevada, sagebrush dominates. Other common vegetation is shadescale, saltbrush, spring hopsage, horsebrush, greasewood and saltgrass. Higher in elevation, the woodland zone is characterized by pinyon pine and juniper and the montane belt is characterized by ponderosa pine and Douglas fir. At the highest elevations subalpine belt is characterized by subalpine fir and Englemann spruce.

M261 – Sierran Steppe

Through the eastern part of California, the lower slopes and foothills have coniferous and shrub associations. At higher elevations digger pine and blue oak dominate. Most of the low hill areas are covered with close growing evergreen scrub, or chaparral with bruckbrush and manzanita. Three species of manzanita are listed as threatened and three species of manzanita are listed as endangered. The Montane zone is characterized by various species of pine and fir on dry eastern slopes. The subalpine zone is characterized by mountain hemlock, California red fir, and various pine.

262 – California Dry Steppe

In the middle of California the grassland vegetation becomes introduced annual grasses including avens, brome, and barley. Greasewood, picklewood, saltgrass and shadescale characterize the alkaline flats vegetation.

M262 – California Coastal Range Open Woodland

Immediately adjacent to the California Dry Steppe Province, the vegetation becomes dominated by scherophyll forest (characterized by California live oak, California laurel, and golden chinkapin), and shrub climax (chamise and manzanita, Christmasberry, California Scrub Oak, ceanothus, and mountain mahogany). Three species of manzanita and one species of ceanothus are considered threatened, and three species of manzanita and two species of ceanothus are considered endangered. Sagebrush and grassland communities characterize the interior valleys.

261 – California Coastal Chaparral Forest and Shrub Province

The vegetation surrounding the CSD facility includes Monterey cypress, and several species of pine. The coastal plains and larger valleys have sagebrush and grassland communities. On the hills and lower mountains, there is scherophyll forest, and chaparral with chamise and various manzanitas are on

steep hill and mountain slopes too dry to support oak woodland or oak forest. Three species of manzanita are considered threatened, and three species are considered endangered. Most of the coastal plains and interior valleys have been converted to urban use or irrigated agriculture and citrus, grapes, avocados and nuts are grown extensively.

3.5 Wildlife

3.5.1 Hill AFB

Wildlife at Hill AFB includes large and small mammals, birds, amphibians and reptiles common to the mountain-brush habitat and the western United States. Mule deer, fox, coyotes, lizards, pheasants, meadowlarks, magpies, mallard ducks, and blue herons have been identified at Hill AFB. Two threatened or endangered species have been noted in the immediate vicinity of Hill AFB – peregrine falcons and bald eagles (Montgomery Watson, 1998). Either of these species may occasionally enter the base boundaries. At this time, there are no known endangered or threatened wildlife species located at the proposed action location.

3.5.2 Transportation Corridors

Following the transportation corridors from east to west (Figure 3-3), the routes travel through nine ecosystem provinces. The wildlife (USDA Forest Service, 1995) of these ecosystem provinces is listed below. The wildlife are identified as threatened or endangered as listed by the U.S. Fish and Wildlife Service, June 2001.

332 - Great Plains Steppe Province

The wildlife around Minot AFB includes mammals such as pronghorn antelope and coyotes. Other wildlife includes jackrabbits, cottontails, squirrels, prairie dogs, gophers, badger, and the blackfoot ferret. The blackfooted ferret is classed as an endangered species. The northern portion of this province is an important breeding area for migrating waterfowl. Birds in this province include the prairie chicken, bobwhite, and sharp tailed grouse. The prairie chicken is classed as a threatened species.

331 - Great Plains - Palouse Dry Steppe Province

The majority of the travel corridor through North Dakota, Montana and immediately around F.E. Warren AFB travels through the habitat for such mammals as pronghorn antelope, mule deer, coyote, and white tail deer. Other wildlife includes jackrabbit, desert cottontail, prairie dogs, squirrel, badger and blackfooted ferret. The blackfooted ferret is classed as an endangered species. Birds in this province include prairie chicken, sage grouse, and sharp tailed grouse.

M331 - Southern Rocky Mountain Steppe

Parts of the travel corridors through Montana, Wyoming, Idaho and Utah are located in the Rocky Mountains, which are inhabited by large mammals, which include elk, deer, bighorn sheep, mountain lion, bobcat, beaver, grizzly bear, black bear, and moose. The grizzly bear is classed as a threatened species. Other wildlife include mice, squirrels, and chipmunks. The Preble's meadow jumping mouse is a threatened species in Wyoming, and the northern Idaho ground squirrel is a threatened species in Idaho. Common birds in this region include nuthatches, bluebirds, chickadees, grouse, hawks and owls. The Mexican spotted owl is a threatened species in Utah.

342 – Intermountain Semidesert Province

Through the northern Idaho and most of Wyoming, the transport route travels through a province that includes wildlife such as coyote, pronghorn antelope, mountain lion, bobcat, squirrel, prairie dog, jackrabbit, porcupine, moose, elk and deer. This province is an important breeding and resting ground for migrating waterfowl. Birds that inhabit this province include: Canada geese, mallards, grouse, hawk, falcon and owls. Lizards and rattlesnakes also are present in this area.

341 – Intermountain Semidesert and Desert Province

Through western Utah and most of Nevada this province is inhabited by few large mammals, but does include mule deer, mountain lion, bobcat, badger, and pronghorn antelope. Other wildlife and birds include: whitetail prairie dog, squirrels, kangaroo mice, wood rats, burrowing owl, golden eagle, sage grouse, and hawks.

M261 – Sierran Steppe

The travel route in the eastern part of California is habitat for large mammals including mule deer, mountain lion, coyote and black bear. Other wildlife includes golden-mantled squirrel, bushytailed wood rat, and yellow-haired porcupine. Birds in this province include: mountain quail, Lincoln's sparrow, blue goose, Cooper's Hawk, and various owl. The California mountain kingsnake also inhabits this province.

262 – California Dry Steppe

In the Central Valley of California the transport route passes through the province whose wildlife includes beechy ground squirrel, cottontail, blacktail jackrabbit, mule deer, coyote, and bobcat. Six species of another common mammal, the kangaroo rat, are endangered. Birds in this province include mourning dove, western kingbird, mockingbird, lesser goldfinch, scrubjay, loggerhead shrike, roadrunner, California quail, and golden eagle. The loggerhead shrike is listed as an endangered species. Other wildlife in this province includes Cooper's hawks, snakes and lizards.

M262 – California Coastal Range Open Woodland

The transport route in this province travels over the California Coast Ranges that are inhabited by mammals, including mule deer, coyote, mountain lion, bobcat, gray fox, and spotted and striped skunks. Other wildlife includes Meriam chipmunk, California mouse, five-toed kangaroo rat, and Rufousided towhee. Birds inhabiting this province include several species of sparrows, hermit thrushes and Audubon's warblers. The California condor also is present and is classified as an endangered species. Reptiles that inhabit this province include coast horned lizards and gopher snakes.

261 – California Coastal Chaparral Forest and Shrub Province

The CSD facility is situated in a province that is inhabited by the brushy rabbit and the opossum. Birds in this province include the lesser goldfinch and golden-crowned sparrow. Coastal California is a migration route for other birds such as ducks and geese.

3.6 Air Quality

3.6.1 Hill AFB

The proposed action area is located in Davis County. Davis County is designated by the Environmental Protection Agency (EPA) as a maintenance area for ozone and as an attainment area for all other National Ambient Air Quality Standards (NAAQS). The NAAQS include the criteria pollutants of nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), ozone (O_3), particulate matter (PM-10) and lead (Pb).

Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs) are currently emitted during the assembly/disassembly of the MM III missiles in the MAMS area from the use of cleaning solvents, primers, sealers and adhesives. The emissions from these products are typically minimal. For the calendar year (CY) 2000, the MM III PRP program disassembled one MM III missile per month, and there were no missiles re-assembled. In this time, the Hill AFB Hazardous Material Management System (HMMS) tracked that products that would emit 49 pounds (0.025 ton) VOC emissions and 14 pounds

(0.007 ton) HAP emissions were issued to missile assembly and disassembly operations. A list of these chemicals is shown in Appendix B.

3.6.2 Transportation Corridors

Montana, North Dakota, Utah and Wyoming are located in EPA Region VIII and California and Nevada are located in EPA Region IX. Figures 3-4 and 3-5 show the attainment status of the counties along the travel routes as of January 2001 (EPA AIRS Graphics, 2001).

Figure 3-4 shows the non-attainment areas for CO, O_3, Pb, and SO_2. There were no areas of non-attainment for NO_2. The primary non-attainment areas for CO, Pb, and SO_2 are: from Malmstrom AFB to Butte, from Thiokol to Salt Lake City, and from Salt Lake City west to the Nevada border. Other areas of non-attainment are just east of the California/Nevada border and in central Montana. The entire proposed corridor in California and just over the Nevada border are non-attainment areas for O_3.

Figure 3-5 shows the non-attainment areas for particulate matter (PM-10). Areas of the corridors that are in non-attainment for PM-10 are eastern Montana, Butte, southern Idaho, Thiokol to Hill AFB, Salt Lake City, and the central portion of the California corridor.

3.7 Hazardous Materials and Waste

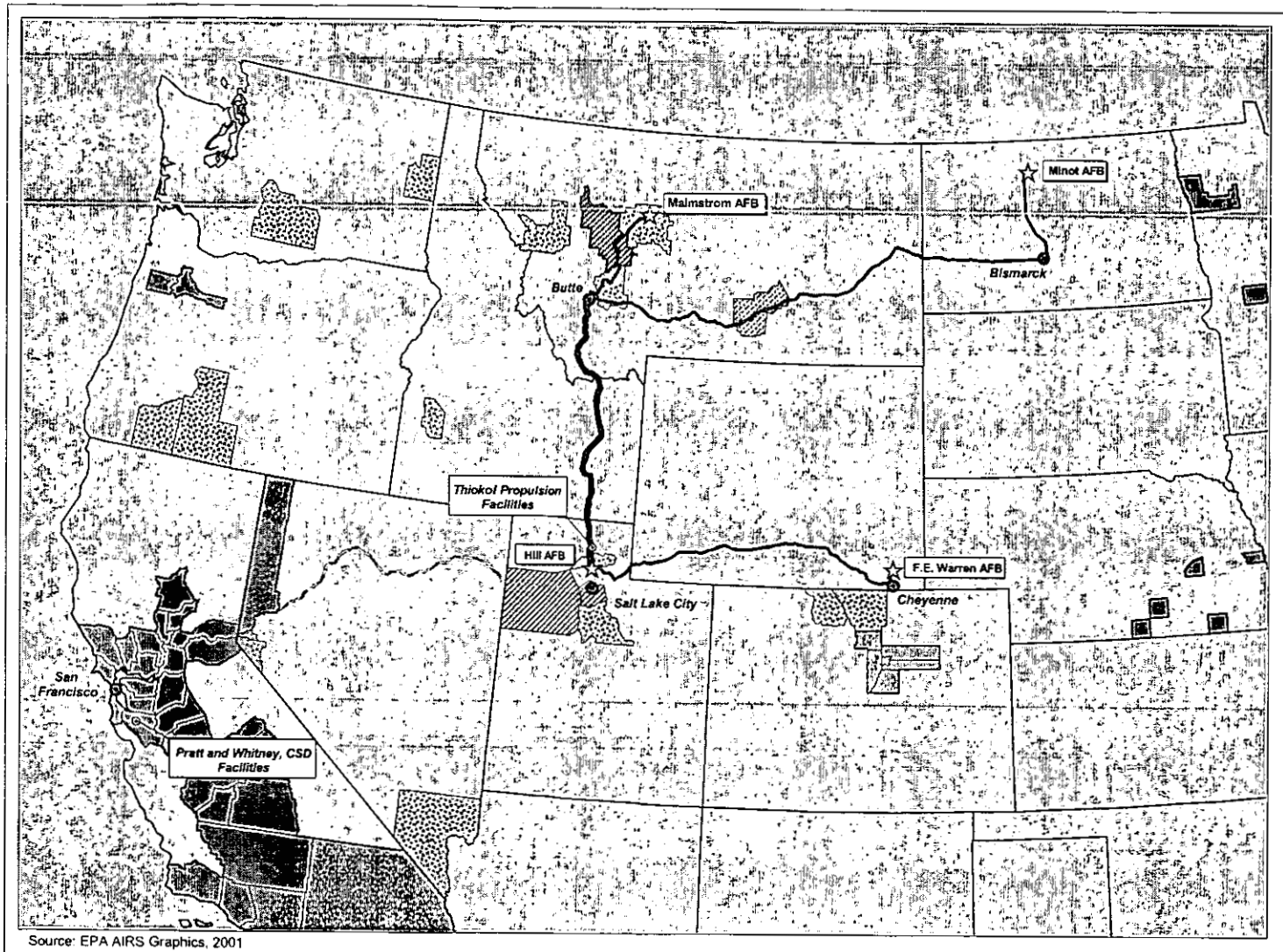
3.7.1 Hill AFB

In the current assembly and disassembly process, waste sealer, waste adhesives, and disposable rags with solvents and isopropyl alcohol are produced. Samples from the waste sealants that are produced in the disassembly process have been collected and analyzed by the Hazardous Waste Control Facility (HWCF). The waste sealant that is non-hazardous is disposed of in non-hazardous waste and the waste sealant that has been found to be hazardous is collected and emptied at the end of each shift into hazardous materials drums provided by the HWCF. After each drum is collected by the HWCF, a representative sample is collected and analyzed by the Hill AFB Laboratory. Dependant upon the sample results, the drum will be disposed of at either a RCRA or non-RCRA disposal facility by Safety Kleen. There is 100 percent analysis completed on all hazardous waste drums containing these wastes from the MAMS area.

After the missile motors are disassembled, the missile flight components and subassemblies are removed with hand tools, and the motor nozzles are checked for cracks with isopropyl alcohol. Cheesecloth rags are used to wipe the isopropyl alcohol over the motor nozzles. The excess alcohol is evaporated in the process and the cheesecloth rags are disposed of in a drum provided by the HWCF and disposed of by Safety Kleen.

The inner stages that are retained at the proposed action area are used for the next missile to be assembled. There are no explosives in the inner stages, and hazardous storage of the inner stages is not required.

The waste materials produced in the re-assembly process are rags that collect waste solvents and waste adhesives. Samples from waste adhesives produced in the assembly process have been collected and analyzed by the HWCF and have been found to be non-hazardous. The rags that collect the waste solvents are collected and deposited into the same hazardous waste drums as the hazardous waste sealant in the disassembly procedure. All hazardous materials used are properly stored in an explosives chemical cabinet.



Nonattainment Pollutants

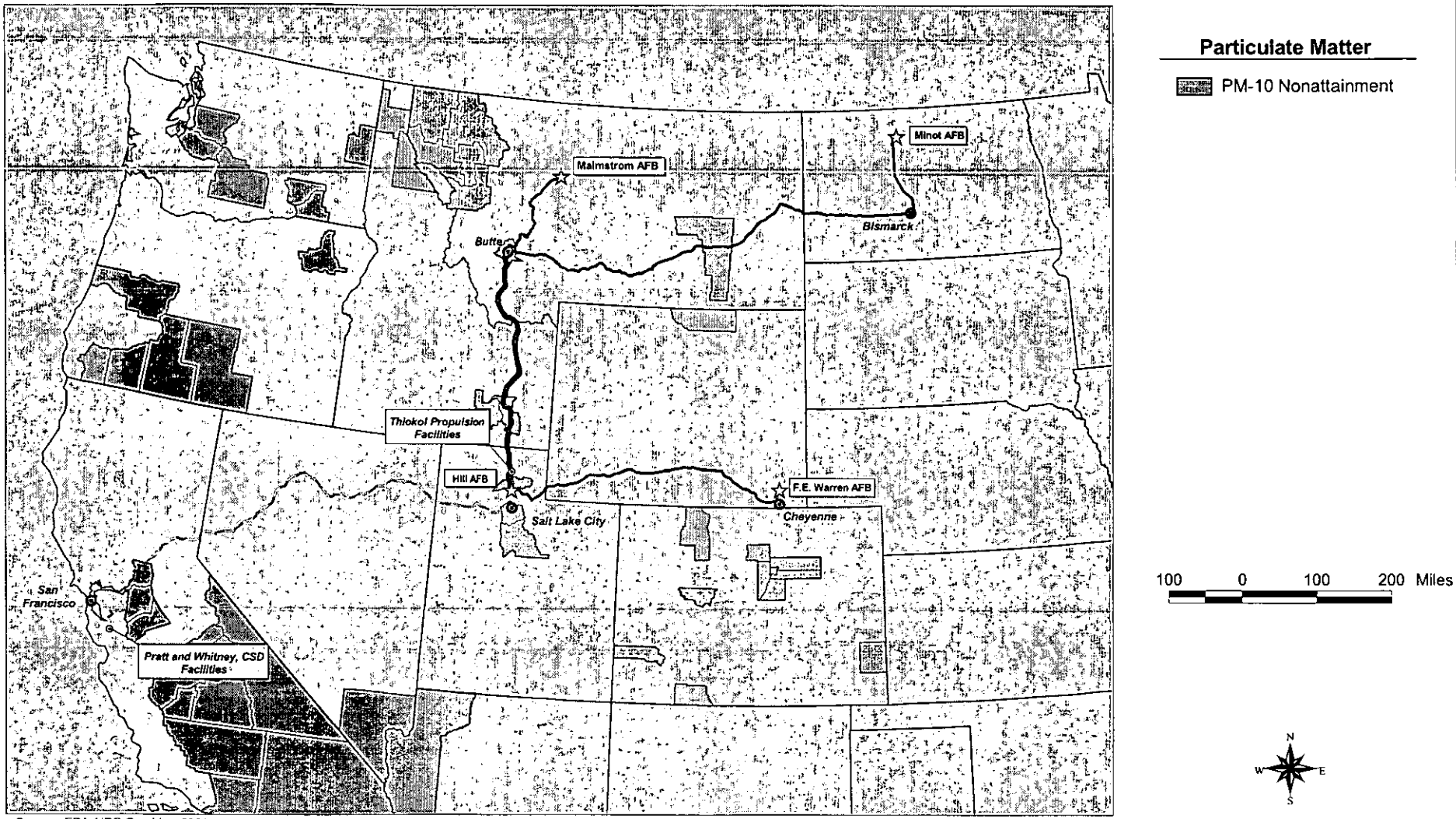
- Carbon Monoxide Nonattainment
- Ozone Nonattainment
- Lead Nonattainment
- Sulfur Dioxide Nonattainment

All Areas are Attaining the Nitrogen Dioxide Standard

100 0 100 200 Miles

N
W E
S

Source: EPA AIRS Graphics, 2001



Source: EPA AIRS Graphics, 2001

For 2000, when there was approximately one missile per month under disassembly in the PRP, there were four drums removed containing waste sealer, waste adhesives, and disposable rags with solvents. Of these four drums, one drum was found to contain RCRA hazardous waste after analysis. All hazardous materials used in the assembly and disassembly process are properly stored in an explosives chemical cabinet.

3.7.2 Transportation Corridors

All transportation corridors are well-traveled routes. The respective states and DOT regulate the transportation of hazardous wastes on these routes.

3.8 Archaeological, Historical, and Cultural Resources

3.8.1 Hill AFB

Numerous known and unknown archaeological, historical and cultural resources exist at Hill AFB. Cultural resources are continually being identified. However, there are no known cultural resources in the vicinity of the proposed action.

3.8.2 Transportation Corridors

All transportation corridors are well-used travel routes. It is possible that historical or archaeological resources may exist along the routes.

3.9 Land Use

3.9.1 Hill AFB

Facilities that house explosives must be located within a base explosive cloud. All explosive facilities have a radius that determines the area of potential impact of the explosives within the facilities. The outer edges of the arcs of all buildings are summed and the perimeter is called the explosive cloud. Outside of the radius of impact is the Explosive Clear Zone (ECZ). The proposed action is located in the MAMS area, which is located within the base explosive cloud.

3.9.2 Transportation Corridors

The transportation corridors are well-used traffic routes that are either interstates or state routes. As shown in Figure 3-6, land use along the traffic routes varies and includes Bureau of Indian Affairs land, Department of Defense land, Forest Service land, Fish and Wildlife Service land, and National Park Service land. Other land uses are portrayed on Figure 3-6; these land uses include private land, Bureau of Land Management land, Bureau of Reclamation land, and state and local government land (U.S. Department of the Interior, 2001).

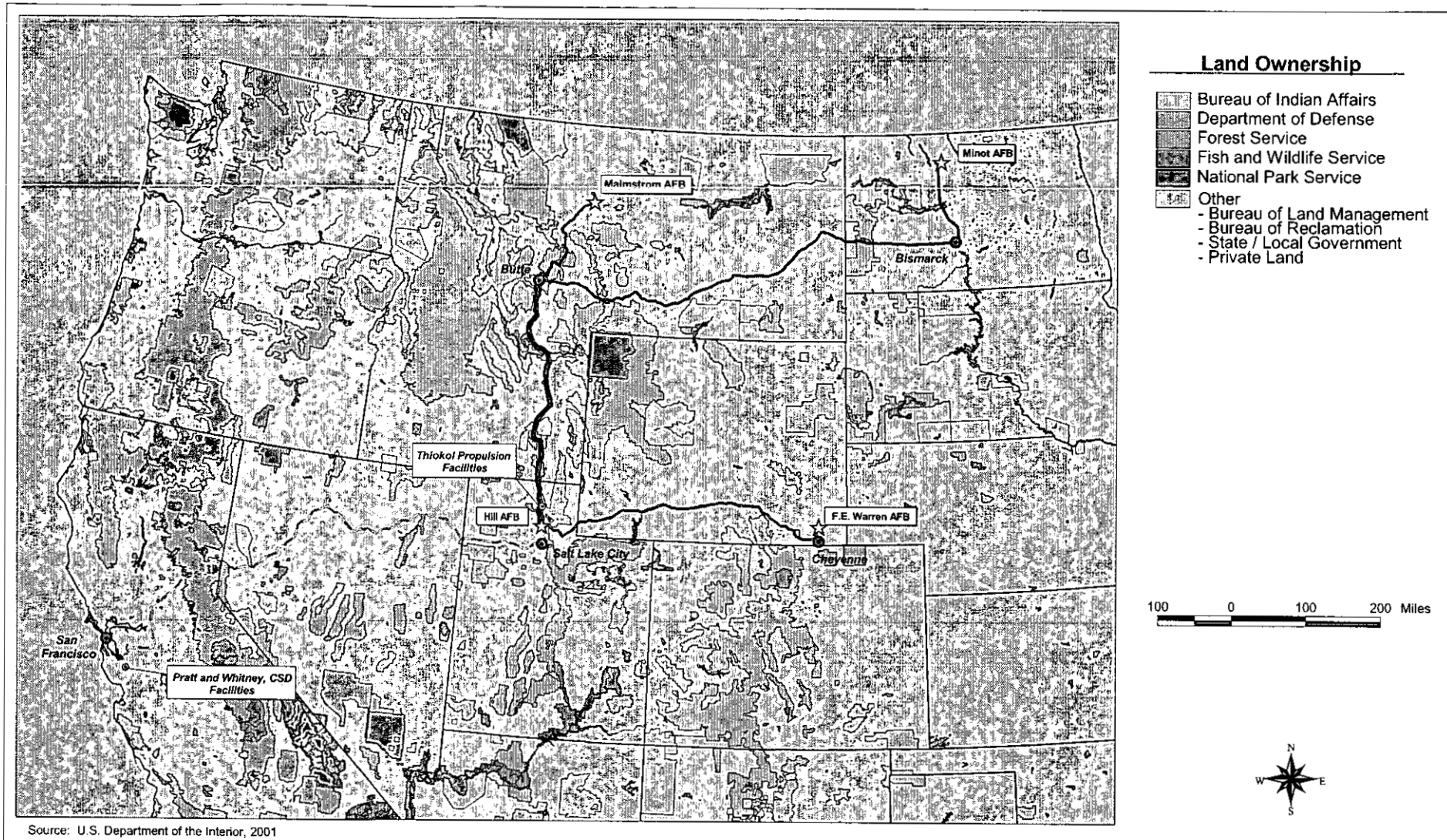
3.10 Noise

3.10.1 Hill AFB

The majority of noise in the proposed action area occurs from aircraft and vehicular transportation. The nearest residential area is approximately 0.25 miles south of the MAMS area.

3.10.2 Transportation Corridors

Traffic noise exists along the proposed traffic corridors. The traffic corridors include interstate highways and state routes. These corridors are high traffic routes and semi-trucks with trailers are common traffic on these routes.



Source: U.S. Department of the Interior, 2001

3.11 Health and Safety

3.11.1 Hill AFB

Safety at Hill AFB is under the directorate of the Ogden Air Logistics Safety Office, which has three divisions: Weapons Safety, Ground Safety, and Systems Safety. The health of personnel at Hill AFB is under Bioenvironmental Engineering Services. The buildings that are included in the proposed action in the MAMS area are Buildings 940, 945, 950, 965, 970, 975, 980, 2407, 2408, and 2409. All of the proposed action buildings are identical and the same people work in these buildings.

A Bioenvironmental Engineering survey was conducted on these buildings from 26 March to 19 April 2001, and is included in Appendix C. The bioenvironmental survey is listed as Building 970; however, the survey includes all of the proposed action buildings. No deficiencies were found during the survey, however in planning a shop survey strategy, a closing conference will be held to discuss findings and recommendations.

Friable and/or non-friable asbestos-containing materials were identified in all of the proposed action buildings with the exception of Buildings 2407, 2408, and 2409. The asbestos-containing materials are in good condition and were deemed not a health hazard. Abatement requirements will be evaluated in the event that the asbestos removal is required.

3.11.2 Transportation Corridors

The health and safety of travel on the transportation corridors is under the jurisdiction of each state's Highway Patrol and Department of Transportation, the federal Department of Transportation, the Department of Defense, Logistics Missile Engineering and Safety (LMES), and Logistical Missile Shipping and Storage (LMSS).

The Air Force has an excellent safety history transporting missile boosters and rocket motors. In a program where the Air Force transported 150 boosters from Grand Forks AFB to Malmstrom AFB from 1995 to 1997, there were no traffic incidences.

Since 1962, there have been three accidents associated with transportation of the MM missile boosters and all were transport truck rollover scenarios. The first two accidents occurred in the late 1970s/early 1980s on a unique military low powered specialty vehicle that transported missile boosters from the silos to the base. These vehicles are no longer in use, minimizing the potentiality of this kind of incident. The third rollover occurred in 1990 when a commercial truck driver traveling at an excessive rate of speed around a corner tipped over the truck and trailer. In all accidents, all Air Force property was safely recovered and there was no damage to the environment or human health.

3.12 Transportation

3.12.1 Hill AFB

Hill AFB is easily accessible by various highway roads. The Utah north-south Interstate Highway, I-15, bounds Hill AFB on the west. An east-west highway, Route 193, bounds Hill AFB to the south. To the east, Highways 60 and I-84 parallel the eastern edge of the Base. Highway 26 crosses I-15 to the north of Hill AFB.

Entry into Hill AFB can be through one of five gates: the South Gate, South West Gate, West Gate, Roy Gate and the North Gate (currently closed). Once on Hill AFB internal roadways and travel routes are well established. The proposed action site can be accessed by existing paved roads.

3.12.2 Transportation Corridors

The missile booster is an overweight transport item and a permit must be granted by each state DOT before transport. The Air Force coordinates with each state DOT on an on-going basis and has contacts in each office. Most of the preferred transportation routes are on interstate highways, although some state routes may be used.

The transportation corridors for the proposed action are defined on Figure 2-3. The transportation route through the State of California is a proposed route. The route will be determined by the State of California depending on route conditions at the time the California DOT Permit is issued.

The mileage of each transport route is shown below in Table 3-1.

Table 3-1. Mileage of Transport Routes

Route	Estimated Distance (miles)
Minot AFB to Hill AFB	1140
Malmstrom AFB to Hill AFB	545
F.E. Warren AFB to Hill AFB	460
Hill AFB to Thiokol	60
Hill AFB to CSD	800

3.13 Socioeconomics

Hill AFB, located in both Davis and Weber Counties, employs over 20,000 people. In 2000, The combined population of Davis and Weber Counties was 435,527 (U.S. Census Bureau, 2000). These counties encountered a growth rate of approximately 4 percent between 1998 and 2000. Consequently, Hill AFB represents a major employer in this two-county area.

The various MM III programs employ approximately 1,200 military, DoD civilian and contracting personnel from involved installations and contracting facilities. Personnel from various military bases and civilian companies are employed from the MM III programs.

Section 4
ENVIRONMENTAL CONSEQUENCES

This section describes the effects that the two alternatives (the proposed action and the no-action alternative) would have on the existing conditions at Hill AFB and the transportation corridors. The effects or impacts of the alternatives can be beneficial or adverse, and short-term or long-term, as discussed below.

4.1 Surface Water

No surface water bodies or surface water drainage patterns are expected to be impacted by the proposed action. No discharges will occur to surface water as a result of the proposed action, and there will be no disturbances to any surface water bodies. The missile transporter and rocket motor transport trucks remain on interstate highways and state routes while travelling on the transportation corridors, and remain on paved, local roadways while on the bases. There are no anticipated changes or impacts to surface water from either the proposed action or the no-action alternative.

4.2 Groundwater

Groundwater conditions are not expected to be affected by either the proposed action or the no-action alternative. No construction or ground-disturbing actions are required for the proposed action. Additionally, there will be no discharges to groundwater or surface water in the proposed action. Therefore, there are no anticipated impacts to the groundwater from either alternative.

4.3 Geology and Soils

Transport vehicles remain on paved, well-defined roadways while transporting the missile boosters and the rocket motors, and do not disturb local soils or geology. The proposed action and the no-action alternatives do not include any soil disturbing operations and there are no expected effects to either the geology or soils from either alternative.

4.4 Vegetation

Vegetation will not be disturbed by either transport of the missile boosters, transport of the rocket motors, or the assembly, disassembly actions at Hill AFB. The proposed action at Hill AFB remains within established buildings, and the transport trucks remain on established, paved, well-defined roadways. Vegetation would not be disturbed or impacted under the proposed action and the no-action alternative. Therefore, there are no anticipated impacts to vegetation from either alternative.

4.5 Wetlands

There would be no disturbance, changes or impacts to any wetlands under the proposed action and the no-action alternative. There are no anticipated impacts to the local wetlands from either alternative.

4.6 Wildlife

Under the proposed action and the no-action alternative, wildlife habitats, food sources and species would not be impacted. The transport trucks for the movement of the missile boosters and rocket motors remain on well-traveled transport routes. Additionally, the proposed action at Hill AFB occurs in established buildings and no ground-disturbing activities are required. Therefore, there are no anticipated impacts to wildlife from either the proposed action or the no-action alternative.

4.7 Air Quality

As a federal facility in a designated "maintenance" area for ozone, any actions at Hill AFB must undergo review in accordance with the Federal Conformity Rule (40 CFR 93.153).

Hazardous Air Pollutants (HAPS) and Volatile Organic Compounds (VOCs) would be emitted during the assembly/disassembly of the MM III missiles in the MAMS area from the use of cleaning solvents, sealers, primers and adhesives. These products are currently used in regular operations. For CY 2000, the preceding phases of the PRP program disassembled approximately one MM III per month. The HMMS tracked that products issued for these missile assembly and disassembly operations would emit approximately 49 pounds (0.025 ton) VOC emissions and approximately 14 pounds (0.007 ton) HAP emissions. During the FRP phase of PRP, there could be up to twelve MM III assembled and disassembled each month, creating an approximately 12 fold increase in chemical usage from CY 2000. Therefore, the expected emissions from the compounds used on motor assembly/disassembly operations during the FRP would be approximately 588 pounds (0.294 tons) VOC emissions and 168 pounds (0.084 tons) HAP emissions. Comparatively, for Hill AFB for the year 2000, the total VOC emissions were approximately 280 tons and total HAP emissions were approximately 105 tons. Consequently, emissions from the MAMS area missile assembly/disassembly operations are projected to be negligible in comparison to the total emissions at Hill AFB. Incidental use of these compounds would continue with the proposed action, and the continued effect of these emissions is expected to be negligible.

Emissions associated with the proposed action also include the mobile emissions from the diesel trucks transporting the missiles. These mobile emissions from registered diesel trucks should be accounted for in the Transportation Plans of the nonattainment and maintenance areas through which the missile transporter and rocket motor transportation trucks pass. In addition, as specified in 40 CFR 93.153(c)(vii), the requirements of the Federal Conformity Rule do not apply to the routine, recurring transportation of materiel. As a result, there will be no significant air quality impacts from the proposed action.

4.8 Hazardous Materials and Wastes

For CY 2000, when there was approximately one missile per month disassembled for the PRP, there were four drums removed containing waste sealer, waste adhesives, and disposable rags with solvents. Of these four drums, one drum was found to contain RCRA hazardous waste after analysis. During the assembly and disassembly of the missile boosters, all hazardous materials and associated wastes are responsibly managed according to Hill AFB policies and procedures.

When the PRP enters into the proposed action phase of the program, up to 12 MM III missiles may be refurbished each month increasing the PRP process waste by a factor of 12. For the year 2000, Hill AFB disposed of 1.6 million pounds of RCRA hazardous waste. Comparing the increase in the PRP hazardous waste to the Hill AFB total amount of hazardous waste disposed, the increase is negligible. In discussion with the HWCF, there would be no difficulties accepting the increased wastes produced from the FRP phase of the program. The only potential change would be that the size of hazardous waste containers at the Hazardous Waste Collection Points may have to increase from drums to totes to accommodate the increase. The HWCF would ensure that all hazardous and non-hazardous wastes are properly disposed of, in accordance with all state and federal regulations.

4.9 Archaeological, Historical, and Cultural Resources

There are no ground-disturbing activities and existing facilities will be used for the proposed action. Although transport routes may pass through areas of cultural significance, there will be no adverse impact as the truck will remain on well-established roadways. All areas and facilities remain the

same under the no-action alternative. Therefore, no impact would occur to the archaeological, historical and cultural resources under either the proposed action or the no action alternative.

4.10 Land Use

The proposed action area is located in the MAMS area. This area is currently utilized for explosive related activities, is located within the explosive cloud, and is consistent with the current land-use plan. Additionally, all transportation corridors are existing transportation routes. Therefore, the proposed action does not affect the current land use of the transportation corridors or the MAMS facilities. Under the no-action alternative, land use would remain the same and would not be impacted.

4.11 Noise

The noise impacts of the transport trucks on the interstate highways and the state routes used for the transportation corridors would be negligible as these routes are well traveled. The noise level in the MAMS area is not expected to be impacted because missile transport operations are routine. A slight increase in personnel transport to and from the MAMS area may occur, but the noise levels of this traffic would be negligible with regard to the overall noise levels at Hill AFB. Therefore there is no anticipated impact to noise levels from either the proposed action or the no-action alternative.

4.12 Health and Safety

The Air Force has an excellent safety record for the transport of missiles; strict procedures and guidelines are followed. Additionally, all components of the proposed action have explicit and safe policies and guidelines to ensure the health and safety of all involved as well as the health and safety of the general public. All regulations, policies, technical orders and operating instructions are carefully followed and strictly enforced.

In the unlikely event of a transportation accident, emergency guideline procedures are in place to ensure swift and safe resolution. Immediately after an accident, the driver that has the missile in his possession must contact the National Army Operations Center that is manned 24 hrs a day, 7 days a week. The National Army Operations Center will notify the base closest to the accident location. The notified base will activate their Disaster Control Group (DCG). When it is identified that a Logistical Missile (LM) asset is involved, the LM Alert Center (located at Hill AFB) will be contacted. Dedicated personnel are on call 24 hours a day to respond to an accident. It is estimated that within one and a half hours a First Responders Group of personnel from various functional groups such as ICBM System Program Office Safety Organization (OO/ALC/LMES), Transportation, Civil Engineering, Explosives Ordinance Division, Fire Department, Judge Advocate General and Public Affairs could be assembled and in transit to the accident location.

The local state authorities are in control of the accident scene until the First Responders Group arrives. When the First Responders Group arrives on the scene, the local authorities have the choice whether or not to allow the military to assist with the accident situation. All local authorities have requested the assistance of the military in past PRP accidents.

When a vehicle carrying a booster tips over on its side; the missile booster will be unsupported in the horizontal position. The missile is weak horizontally and the casing eventually will start to break apart at the inner stage panel joints. In order to remove the booster and right the vehicle, the booster must be disassembled and each stage must be removed by crane. It takes approximately four days to remove the rocket motors and the vehicle from the accident location.

An escort vehicle accompanies the government truck that carries the missile booster during transport. The escort vehicle contains tools and spare tires. The missile booster is never left unattended during the transportation of the booster between bases.

The contracted drivers only transport the rocket motors which have a lower security classification and may be left unattended. However, dual drivers are required to transport the motors, and the drivers normally take turns driving and can arrive in San Jose without an overnight stop. The commercial drivers coordinate their own routes and their own permits.

Under the no-action alternative, age-out of the MM III missile would occur and the missile would not be replaced. This would compromise national security and thus the safety of each and every citizen of the United States.

4.13 Transportation

Traffic may increase on the transportation corridors and to the proposed action area; however, all routes to be used are paved and well used. The maximum number of missiles expected to be refurbished in a month is twelve. The amount of traffic from the PRP is not expected to be disruptive to traffic on the local or national transportation routes. Therefore, no disturbance or impact is expected to occur to the transportation systems under the proposed action or the no-action alternative.

4.14 Socioeconomic Conditions

An increase in workforce required for the FRP phase of the PRP would be required to complete anticipated workload. Up to 50 additional staff are expected to be required to successfully complete the program. These personnel will assist with disassembly, assembly, transportation, maintenance and administration.

The MM III program employs approximately 1,200 personnel. Under the no-action alternative, military, DoD civilian and contractor personnel would be effected by the age-out and eventual loss of the MM III missile and associated programs.

4.15 Environmental Justice

Environmental justice analyses for NEPA documents attempt to determine whether a proposed action disproportionately impacts minority and poor populations. Since the FRP of the PRP would not result in any significant impacts to the surrounding community, no such analysis was conducted.

4.16 Cumulative Impacts

The proposed action would require insignificant workforce growth and expansion to support the continuation of the PRP program. There are no anticipated significantly adverse cumulative impacts expected from the actions required in the PRP program. The traffic created from the additional 50 employees (out of over 20,000 employees base wide) would not contribute significantly to congestion on base. Air emissions from incidental chemical usage would have a negligible impact on regional air quality and the National Ambient Air Quality Standards.

In considering cumulative impacts, future projects that are scheduled for the MAMS area were reviewed. Hill AFB has completed a baseline proposal for a National Missile Defense Storage, Assembly and Test (SAT) complex and an Administrative, Test and Support Area (ATS) complex within the MAMS area. This project is still in the planning stages and details regarding construction and operational parameters are not yet available. Therefore, cumulative impacts of the proposed action in conjunction with the construction and operation of the proposed new complexes are difficult to assess at this time.

However, following Air Force requirements, all explosive quantity distances would be maintained for the new facilities and there should be no significant cumulative impacts to health and safety from the proposed action in conjunction with the new complexes. If construction and demotion were to occur as part of the proposed future complex activities, air, soil, and water impacts would be temporary and would not cause significant cumulative impacts in conjunction with the proposed action activities. Because Hill AFB is well below their allowable base-wide emissions for VOCs and HAPs, it is not anticipated that there would be significant cumulative impacts to air quality as a result of implementing both the proposed action and the potential complexes in the MAMS area. Although traffic and noise within the vicinity of the MAMS area may increase, the roads to the area are well paved and there are no residential areas nearby. Therefore, no significant cumulative impacts to noise and transportation are expected.

4.17 Summary of Impacts

A summary of the impacts described in this section is provided in Table 4-1. It is not anticipated that the proposed action would have significant adverse environmental impacts, however, the no-action alternative would eventually compromise national defense as determined by the National Command Authority.

Table 4-1. Anticipated Environmental Consequences from the FRP of the MM III PRP

Environmental Issues	Proposed Action Alternative Location	No-Action Alternative
Surface Water	No impact.	No impact.
Groundwater	No impact.	No impact.
Geology and Soils	No impact.	No impact.
Vegetation	No impact.	No impact.
Wetlands	No impact.	No impact.
Wildlife	No impact.	No impact.
Air Quality	No significant impact. Negligible emissions from incidental chemical usage.	No impact.
Hazardous Materials and Wastes	No significant impact. Slight increase in existing waste streams.	No impact.
Cultural Resources	No impact.	No impact.
Land Use	No impact.	No impact.
Noise	No significant adverse impact. A slight increase in personnel transport may occur, but the noise levels from this would be negligible.	No impact.
Health and Safety	No anticipated adverse impacts. Regulations, policies, technical orders and operating instructions are in place for missile handling and transport.	National security may be compromised due to the non-replacement of aged-out MM III missiles.
Transportation	No anticipated impacts. Traffic may increase on the transportation corridors and to the proposed action area; however, all routes to be used are paved and well used.	No impact.
Socioeconomics	Insignificant impacts. Up to 50 additional staff may be required.	Early age-out of the MM III would reduce employment levels at pertinent installations and companies.
Environmental Justice	No impact.	No impact.

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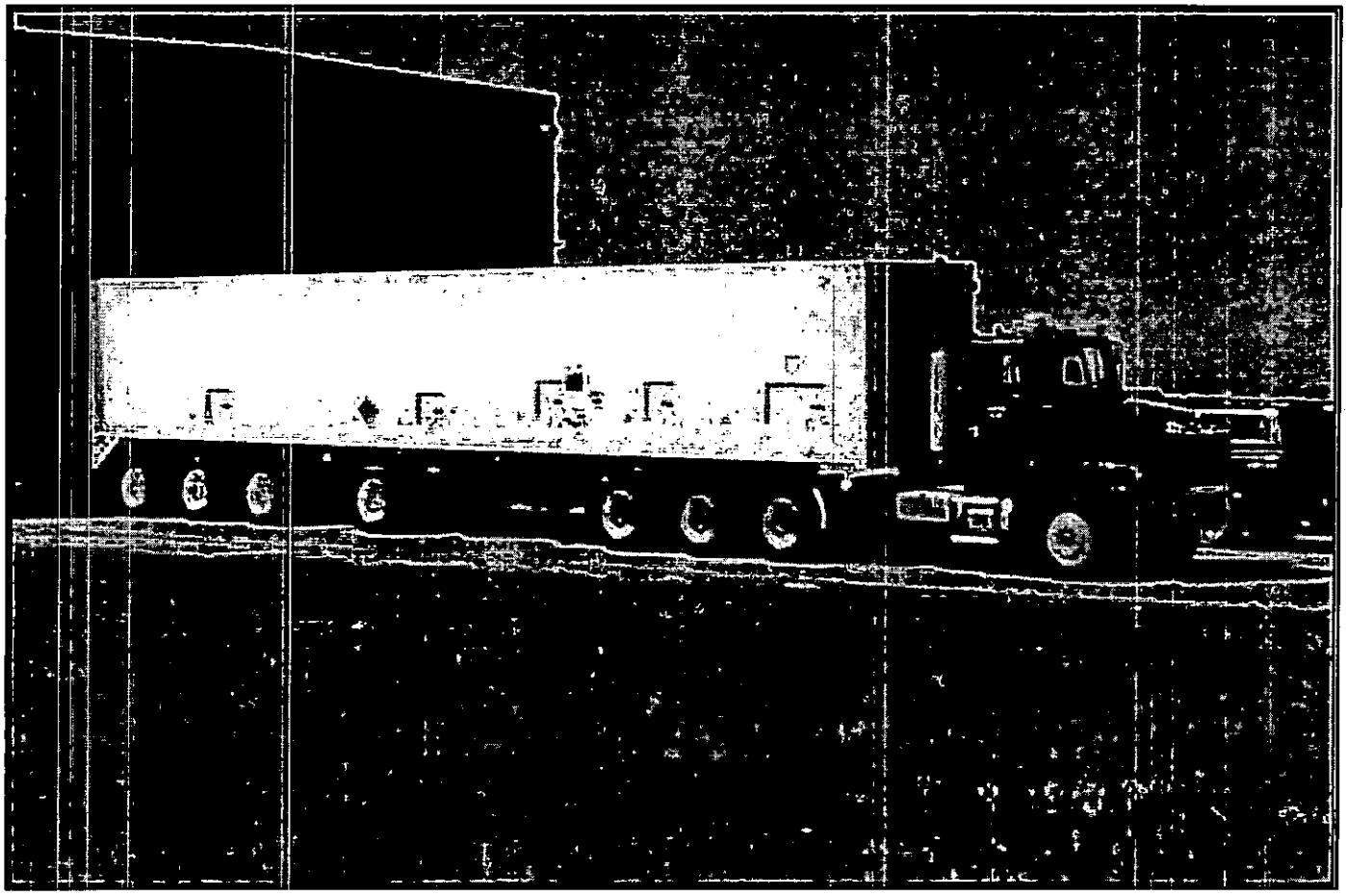
Utah Administrative Code (UAC) R307, Environmental Quality, Air Quality.

APPENDIX A

Proposed Action Area Photograph



View of one of the proposed action buildings in the MAMS area with a loaded transport truck.

APPENDIX B

HMMS HAP and VOC Emissions Summary

APPENDIX B
VOC Summary

MSDS Number	Chemical Product Issued	Net Pounds of Material Issued	VOC %	Total VOC Issued (lbs)
6759	TOLUENE,TECHNICAL	0.908	100	0.9083
121319	MA-412, MMM-A-121	0.265	78.30772	0.2072
124827	ADHESIVE, UF-1120	1.168	0	0.0000
137883	PR-1422 B-1/2 PART A	0.668	6.768232	0.0452
141759	3M COATING EC-2241 FUNGUS RESISTANT PAINT	0.403	67.97856	0.2743
146545	ECO SURE BLUE 15044 SEMIGLOSS VOC-COMPLIANT	1.041	57.60447	0.5994
175915	DETERGENT,GENERAL PURPOSE (SPRAY 0N,WIPE OFF)	11.689	4.910627	0.5740
179333	ADHESIVE, UF-1120	1.168	0	0.0000
182564	EPIBOND 1526 B	0.234	1.199041	0.0028
182570	831G057 DS 420HS POLY CTG #17925	0.046	22.93027	0.0106
183382	2006 LACTOL SPIRITS, NAPHTHA, ALIPHATIC	24.868	100	24.8679
183898	SILICONE SEALANT PRIMER	0.097	8.992806	0.0087
184729	M-COAT A POLYURETHANE COATING	0.511	61.32594	0.3137
185127	INORGANIC DICHROMATE SOLUTION PR1422 B1/2 (1422B13) ACCEL	2.875	43.88733	1.2617
185131	PR-1422 B1/2 (BASE COMPOUND)	1.989	8.33164	0.1657
185845	EECY001A EPOXY PRIMER PROTECTIVE COATING	1.418	34.96466	0.4956
185846	EECY001B CATALYST, PROTECTIVE COATING ACTIVATOR	0.886	79.91254	0.7082
185967	EPIBOND 1526 B EPOXY RESIN	0.117	1.199041	0.0014
185986	RITE-LOK EC100-2B ADHESIVE	0.068	93.87132	0.0642
186059	DETERGENT,GENERAL PURPOSE, SPRAY 0N,WIPE OFF(CLEAN)	18.064	5	0.9032
186838	930G017: DES 420HS POLYURETHANE CURING SOLUTION	0.033	49.13081	0.0162
186865	PR-1422 B1/2; ACCELERATOR; INORGANIC DICHROMATE SOLUTION	12.956	43.79192	5.6739
187064	O672D854 ECO SURE BLUE 15044 AEROSOL ENAMEL	0.926	64.67529	0.5988
187501	03GY444CAT, 16251 ALIPHATIC ISOCYANATE	0.002	54.60372	0.0012
187502	03GY444 COMP A, 16251 POLYURETHANE COATING GRAY	0.002	24.16955	0.0005
187778	#35109 BLUE ALKYD; 700L09	1.252	39.16867	0.4905
12879	SEALANT UF1147	9.001	23.98082	2.1586
15638	DS-108 WIPE SOLVENT	1.984	100	1.9841
137884	PR-1422 B-1/2 PART B	3.241	43.79192	1.4192
147933	RAIN DANCE PASTE CAR WAX 02450	0.838	29.99563	0.2513

APPENDIX B
VOC Summary

MSDS Number	Chemical Product Issued	Net Pounds of Material Issued	VOC %	Total VOC Issued (lbs)
175916	DETERGENT, GENERAL PURPOSE (SPRAY-ON, WIPE-OFF)	5.313	4.910627	0.2609
180033	RTV102	0.712	3.947785	0.0281
182358	EPON 815C	0.249	10.8996	0.0272
183897	SILICONE ELASTOMER	0.639	3.078307	0.0197
183966	UF-3342 EROSION RESISTANT ADHESIVE, MINUTEMAN ADHESIVE	0.888	0	0.0000
184664	RE-ENTRY PLUS-4 SOLVENT	2.685	99.96654	2.6843
185966	EPIBOND 1526 A FPC2028 EPOXY RESIN	0.293	0.959233	0.0028
185983	RTV102 SILICONE SEALANT	9.244	3.867472	0.3575
186184	0012M892 SO-SURE FLAT BLACK 37038 (0014-390)	3.549	39.77842	1.4119
187495	44W007CAT - COMP B, EPOXY COATING	0.002	19.42595	0.0004
187499	44W007 COMP A, POLYAMIDE COATING	0.002	22.20688	0.0005
187606	3145 RTV ADHESIVE SEALANT-CLEAR	2.255	4.999572	0.1128
		Total		48.9125

APPENDIX B
HAPs Summary

MSDS Number	Chemical Product Issued	Ingredient Name	Net Pounds of Material Issued	Ingredient %	Pounds HAP Issued
185986	RITE-LOK EC100-2B ADHESIVE	ETHYL CYANOACRYLATE	0.068	100	0.0683
182570	831G057 DS 420HS POLY CTG #17925	METHYL N-PROPYL KETONE	0.046	5	0.0023
185845	EECY001A EPOXY PRIMER PROTECTIVE COATING	TOULENE	1.418	24.9	0.3530
121319	MA-412, MMM-A-121	TOULENE	0.265	18	0.0476
141759	3M COATING EC-2241 FUNGUS RESISTANT PAINT	TOULENE	0.403	30	0.1210
185846	EECY001B CATALYST, PROTECTIVE COATING ACTIVATOR	TOULENE	0.886	25	0.2216
182570	831G057 DS 420HS POLY CTG #17925	TOULENE	0.046	5	0.0023
185131	PR-1422 B1/2 (BASE COMPOUND)	TOULENE	1.989	5	0.0994
186838	930G017: DES 420HS POLYURETHANE CURING SOLUTION	TOULENE	0.033	5	0.0017
6759	TOLUENE,TECHNICAL	TOULENE	0.908	99	0.8992
183382	2006 LACTOL SPIRITS, NAPHTHA, ALIPHATIC	TOULENE	24.868	18	4.4762
187502	03GY444 COMP A, 16251 POLYURETHANE COATING GRAY	2-BUTOXYETHANOL	0.002	0.02	0.0000
175915	DETERGENT,GENERAL PURPOSE (SPRAY 0N,WIPE OFF)	2-BUTOXYETHANOL	11.689	5.3	0.6195
186059	DETERGENT,GENERAL PURPOSE, SPRAY 0N,WIPE OFF(CLEAN)	2-BUTOXYETHANOL	18.064	5.3	0.9574
124827	ADHESIVE, UF-1120	ASBESTOS (BULK), AMPHIBOLE, ASBESTOS FIBER, SERPENTINE	1.168	30	0.3505
179333	ADHESIVE, UF-1120	ASBESTOS (BULK), AMPHIBOLE, ASBESTOS FIBER, SERPENTINE	1.168	30	0.3505
187502	03GY444 COMP A, 16251 POLYURETHANE COATING GRAY	BUTYL CARBITOL ACETATE	0.002	5	0.0001
183898	SILICONE SEALANT PRIMER	EHTYLBENZENE	0.097	2	0.0019
187502	03GY444 COMP A, 16251 POLYURETHANE COATING GRAY	EHTYLBENZENE	0.002	0.02	0.0000
185846	EECY001B CATALYST, PROTECTIVE COATING ACTIVATOR	EHTYLBENZENE	0.886	10	0.0886
184729	M-COAT A POLYURETHANE COATING	EHTYLBENZENE	0.511	9	0.0460
186059	DETERGENT,GENERAL PURPOSE, SPRAY 0N,WIPE OFF(CLEAN)	ETHYLENE GLYCOL	18.064	0.03	0.0054
186838	930G017: DES 420HS POLYURETHANE CURING SOLUTION	HEXAMETHYLENE DIISOCYANATE	0.033	0.08	0.0000
187501	03GY444CAT, 16251 ALIPHATIC ISOCYANATE	HEXAMETHYLENE DIISOCYANATE	0.002	0.06	0.0000
121319	MA-412, MMM-A-121	HEXANE (N-HEXANE)	0.265	50	0.1323
185986	RITE-LOK EC100-2B ADHESIVE	HYDROQUINONE	0.068	0.5	0.0003
186838	930G017: DES 420HS POLYURETHANE CURING SOLUTION	METHYL ETHYL KETONE	0.033	10	0.0033
187064	O672D854 ECO SURE BLUE 15044 AEROSOL ENAMEL	METHYL ISOBUTYL KETONE (SARA III)	0.926	2.92	0.0270
146545	ECO SURE BLUE 15044 SEMIGLOSS VOC-COMPLIANT	METHYL ISOBUTYL KETONE (SARA III)	1.041	2.92	0.0304
185846	EECY001B CATALYST, PROTECTIVE COATING ACTIVATOR	METHYL ISOBUTYL KETONE (SARA III)	0.886	25	0.2216
185845	EECY001A EPOXY PRIMER PROTECTIVE COATING	METHYL ISOBUTYL KETONE (SARA III)	1.418	24.9	0.3530
185967	EPIBOND 1526 B EPOXY RESIN	PHENOL	0.117	30	0.0351
182564	EPIBOND 1526 B	PHENOL	0.234	30	0.0701
184729	M-COAT A POLYURETHANE COATING	XYLENES	0.511	58	0.2967
183898	SILICONE SEALANT PRIMER	XYLENES	0.097	7	0.0068

APPENDIX B
HAPs Summary

MSDS Number	Chemical Product Issued	Ingredient Name	Net Pounds of Material Issued	Ingredient %	Pounds HAP Issued
187778	#35109 BLUE ALKYD; 700L09	XYLENES	1.252	2	0.0250
185846	EECY001B CATALYST, PROTECTIVE COATING ACTIVATOR	XYLENES	0.886	10	0.0886
187064	O672D854 ECO SURE BLUE 15044 AEROSOL ENAMEL	XYLENES	0.926	21.77	0.2016
182570	831G057 DS 420HS POLY CTG #17925	XYLENES	0.046	5	0.0023
146545	ECO SURE BLUE 15044 SEMIGLOSS VOC-COMPLIANT	XYLENES	1.041	19.84	0.2064
187502	03GY444 COMP A, 16251 POLYURETHANE COATING GRAY	XYLENES	0.002	0.08	0.0000
141759	3M COATING EC-2241 FUNGUS RESISTANT PAINT	XYLENES	0.403	40	0.1614
137883	PR-1422 B-1/2 PART A	(CRCPD) CALCIUM DICHROMATE	0.668	10	0.0668
185127	INORGANIC DICHROMATE SOLUTION PR1422 B1/2 (1422B13) ACCELERA	(CRCPD) CALCIUM DICHROMATE	2.875	20	0.5750
186865	PR-1422 B1/2; ACCELERATOR; INORGANIC DICHROMATE SOLUTION	(CRCPD) CHROMIC ACID	12.956	15	1.9435
185845	EECY001A EPOXY PRIMER PROTECTIVE COATING	(CRCPD) CHROMIUM COMPOUND	1.418	10.97	0.1555
137883	PR-1422 B-1/2 PART A	(CRCPD) MAGNESIUM DICHROMATE	0.668	15	0.1002
141759	3M COATING EC-2241 FUNGUS RESISTANT PAINT	(PBCPD) (2-BUTENEDIOATO(2-))TRIOXOTETRALEAD	0.403	10	0.0403
12879	SEALANT UF1147		NO HAP	NO HAP	NO HAP
15638	DS-108 WIPE SOLVENT		NO HAP	NO HAP	NO HAP
137884	PR-1422 B-1/2 PART B		NO HAP	NO HAP	NO HAP
147933	RAIN DANCE PASTE CAR WAX 02450		NO HAP	NO HAP	NO HAP
175916	DETERGENT, GENERAL PURPOSE (SPRAY-ON, WIPE-OFF)		NO HAP	NO HAP	NO HAP
180033	RTV102		NO HAP	NO HAP	NO HAP
182358	EPON 815C		NO HAP	NO HAP	NO HAP
183897	SILICONE ELASTOMER		NO HAP	NO HAP	NO HAP
183966	UF-3342 EROSION RESISTANT ADHESIVE, MINUTEMAN ADHESIVE		NO HAP	NO HAP	NO HAP
184664	RE-ENTRY PLUS-4 SOLVENT		NO HAP	NO HAP	NO HAP
185966	EPIBOND 1526 A FPC2028 EPOXY RESIN		NO HAP	NO HAP	NO HAP
185983	RTV102 SILICONE SEALANT		NO HAP	NO HAP	NO HAP
186184	0012M892 SO-SURE FLAT BLACK 37038 (0014-390)		NO HAP	NO HAP	NO HAP
187495	44W007CAT - COMP B, EPOXY COATING		NO HAP	NO HAP	NO HAP
187499	44W007 COMP A, POLYAMIDE COATING		NO HAP	NO HAP	NO HAP
187606	3145 RTV ADHESIVE SEALANT-CLEAR		NO HAP	NO HAP	NO HAP
			Total		13.4560

APPENDIX C

Bioenvironmental Engineering Survey

DEPARTMENT OF THE AIR FORCE
75TH AEROSPACE MEDICINE SQUADRON (AFMC)
HILL AIR FORCE BASE UTAH

20 Apr 01

MEMORANDUM FOR LMSMA

FROM: 75 AMDS/SGPB

SUBJECT: Summary of Bioenvironmental Engineering Survey, Missile Assembly Shop, Bldg 970

1. On 26 Mar 01, A1C Blas of Bioenvironmental Engineering Services (BES) held an opening conference with Gary Young to plan the shop survey strategy and discuss any employee concerns. A1C Blas completed the survey on 19 Apr 01. Deficiencies were briefed as they were found; however, a closing conference will be held to further discuss findings and recommendations. The workplace information collected by BES will be reviewed by Public Health and Occupational Medicine, and you will shortly receive their evaluation including training and occupational physical requirements identified by them. Periodic surveys are mandated by AFI 48-101, *Aerospace Medical Operations,* and AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection and Health (AFOSH) Program.*

2. No deficiencies were observed during this survey. Please contact Bioenvironmental Engineering Services at 7-4551 if you have any questions.

MARK H. SMITH, Lt Col, USAF, BSC
Bioenvironmental Engineering Flight Commander

Attachments:
1. Bioenvironmental Engineering Survey Report
2. Training Information

cc:
LM/CC w/o Atch
AFGE 1592 w/o Atch
SEG w/1 Atch
LM Safety rep w/1 Atch

Caring for and about You!

20 Apr 01

BIOENVIRONMENTAL ENGINEERING SURVEY REPORT

1. A Bioenvironmental Engineering survey was conducted of the Missile Assembly shop during the period 26 Mar- 19 Apr 01. A Bioenvironmental Engineering survey examines tasks, materials, processes and procedures that may expose personnel to potential health hazards. The survey also addresses environmental and safety concerns as they are encountered. The results of the survey will be reviewed by the Public Health Flight for training and physical examination requirements. This report summarizes the information obtained or reviewed during the survey, and includes hazard assessments and recommendations for protection of workers. AFI 91-301 requires that this report be maintained in the work area (preferably in the Hazard Communication binder) for a minimum of 10 years. In addition, a copy of this survey report must be posted on the work place bulletin board for a period of 10 days after receipt, to allow workers free access to the findings.

2. Potential Exposure Groups (PEGs): Workers are divided into PEGs based upon the similarity of their work tasks and workplace environment. Workers in the same PEG will have similar exposure to chemical or physical hazards, and will get the same occupational physicals. Your workers have been divided into 3 PEGs. Report any changes of personnel assigned to an exposure group, in writing (electronic or paper), to Julie Mikesell, (75 AMDS/SGPB, fax 7-1050, julie.mikesell@hill.af.mil).

a. **PEG Z122:** Workers in this PEG assemble and disassemble Minuteman and Peacekeeper missiles receiving depot level maintenance. Performing these tasks requires the removal and reinstallation of fasteners, missile flight components and subassemblies, and separation/reconnection of the missile stages. Personnel work in several buildings in the MAMS I area. Potential exposures include hazardous noise (pneumatic tools), cleaning solvents (DS-108, general purpose cleaner, and isopropyl alcohol), sealers, adhesives, and primers. Work processes may also subject workers to the following ergonomic risk factors: excessive force, awkward work positions, and repetitive motions.

(1) **Summary of Hazards:** The following table describes hazards encountered by the workers, and current methods of reducing or eliminating the risk of occupational illness.

PROCESSES OR TASKS	HAZARD	CURRENT CONTROLS
MISSILE DISASSEMBLY:		
Remove bolts and fasteners to separate motor inner stages	-Inhalation and ingestion hazards from heavy dusts (i.e. cadmium, lead, iron oxide, etc.) -Hazardous noise from nut runner and rivet gun -Ergonomic risk factors (i.e. repetitive motions, excessive force, awkward work positions, and vibration)	-Nitrile gloves, face shield, coveralls, good personal hygiene, and natural dilution ventilation -E.A.R. Classic ear plugs or Peltor H6 B/v muffs -Ergonomics training, stands, task rotation, and work breaks
Remove sealer	-Inhalation, ingestion, and contact hazards from cured sealers	-Nitrile gloves, coveralls, no sanding or grinding on cured areas, good personal hygiene, and natural dilution ventilation
Remove missile flight components and subassemblies	-Ergonomic risk factors (i.e. repetitive motions, awkward work positions, and excessive force) from using hand tools	-Ergonomic training, stands, task rotation, and work breaks
Check rocket motor nozzles for cracks	-Inhalation, ingestion, and contact hazards from isopropyl alcohol	-Nitrile gloves, coveralls, small amounts used, good personal hygiene, and natural dilution ventilation
MISSILE ASSEMBLY:		
Mount flight components	-Ergonomic risk factors (i.e. repetitive	-Ergonomics training, stands, task

PROCESSES OR TASKS	HAZARD	CURRENT CONTROLS
and subassemblies to form missile stages	motions, awkward work positions, and excessive force) from using hand tools	rotation, and work breaks
Connect stages and inter stage panels	-Hazardous noise from nut runner -Ergonomic risk factors (i.e. repetitive motions, excessive force, awkward work positions, and vibration)	-E.A.R. Classic ear plugs -Ergonomics training, stands, task rotation, and work breaks
Clean fastener areas	-Inhalation, ingestion, and contact hazards from DS 104 (isoparaffinic hydrocarbons)	-Nitrile gloves, natural dilution ventilation, good personal hygiene, and coveralls
Apply sealer to raceway cover fasteners	-Inhalation, ingestion, and contact hazards from 90-006 sealer (iron oxide, dibutylin dilaurate, chromic oxide)	-Nitrile gloves, natural dilution ventilation, good personal hygiene, and coveralls
Repair damaged cork insulation	-Inhalation, ingestion, and absorption hazards from epoxy, cork mix (epichlorohydrin, n-butyl glycidyl ether), and p-nitrophenol	-Nitrile gloves, coveralls, small areas (less than 1 square inch) sanded by hand, good personal hygiene, and natural dilution ventilation
GENERAL PROCESSES:		
Miscellaneous sealer applications	-Inhalation, ingestion, and contact hazards from RTV 102 (methyltriacetoxysilane), RTV 3145 (methoxysilane), and Ablebond 3341 (tungsten)	-Nitrile gloves, coveralls, good personal hygiene, and natural dilution ventilation
Apply primer	-Inhalation, ingestion, and contact hazards from SS4004 Primer (n-butyl alcohol, acetone, isopropyl alcohol, toluene)	-Nitrile gloves, coveralls, small amounts applied by brush, good personal hygiene, and natural dilution ventilation

All the controls listed above adequately control exposures to chemical and physical hazards in this shop.

(2) **Evaluation of Chemical Exposure Hazards:** Our evaluation of current processes showed no need for air sampling.

(a) **Specific Hazards Requirements:** Exposure to certain chemicals at levels above the action level (AL), i.e., one-half the occupational exposure limit (OEL), requires specific actions. These are chemicals that are known human carcinogens as listed by the International Agency for Research on Cancer (IARC), or have specific programs prescribed by OSHA. Exposure to these materials should be kept as low as reasonably achievable. Use of these materials should not pose a health hazard when proper controls are used. OSHA requires specific actions upon exposure to certain chemicals, regardless of exposure level. These actions include worker notification, training, and medical surveillance. The following materials have been identified in your work area.

PROCESS	ITEM DESCRIPTION	CHEMICAL
-Application of sealer to raceway cover fasteners	-8030000572354/56921, Sealing Compound	-Chromic acid
-Application of alodine 1200 to prevent scratches from mating surfaces of missile.	-8030000572354/84063, Alodine 1200S Chromic acid mixture; 8030008113723/84063, Alodine 1200 Chemical conversion coating	-Chromic acid

(b) Since cadmium and lead are suspected carcinogens and may be present on various missile surfaces, workers expressed concern that cadmium particles were being generated when removing fasteners and missile skin panels. However, air samples collected 2 years ago, during a missile disassembly, proved that airborne concentrations of lead were well below the cadmium action level. These materials should not pose a health hazard as long as personnel continue to follow the controls identified in this report.

(3) **Personal Protective Equipment (PPE)(29 CFR 1910.132-138, AFOSH Stds 91-31, 48-137):** We inspected the PPE listed in paragraph 2.a.1 for proper use, condition and availability. All PPE meets the requirements of the standards and was readily available and properly maintained. A1C Blas certifies that the PPE provided is adequate for the shop processes. We reviewed your AFF 55; all workers who use PPE have been trained and the training has been documented.

PROTECTIVE EQUIPMENT TYPE	EQUIPMENT LIMITATIONS
Nitrile Gloves	Minimal heat and tear resistance
Faceshield	No respiratory protection (no protection from caustic or poisonous gases or vapors)
Coveralls	Provides protection from particulates, but no protection from chemical vapors
E.A.R. Classic Ear Plugs (NRR-20)	Alone not sufficient for flightline noise; not to be used around hazardous noise levels greater than 105 dBA
Peltor H6 B/v Ear Muffs (NRR-9)	Alone not sufficient for flightline noise; not to be used around hazardous noise levels greater than 94 dBA

b. **PEG 970A1:** Workers in this PEG include the supervisors and team leaders for missile assembly/ disassembly personnel. These individuals may receive secondary exposure to the hazards identified in PEG Z122.

c. **PEG 970A2:** This PEG is a sub-set of Z122. Personnel assemble/ disassemble missiles at depot and go TDY to install missile ordinance items for various types of missiles (i.e. Minute, Peacekeeper, and others as required). Exposures to hazardous materials are consistent with PEG Z122. Special physicals are determined by TDY locations.

3. **Workplace evaluation applicable to all PEGs:**

a. **Eyewash/Shower Units (AFOSH Std 91-32):** This shop has 2 eyewash units and 1 shower unit. Eye wash units are required to be on hand to provide immediate first aid to flush chemicals and foreign objects from the eye. Shower units are required to be on hand to provide immediate first aid to flush chemicals off the body and clothes. We inspected these units for cleanliness, location, operation and documentation of operational checks. Units in the shop do meet the requirements of the standard. Refer to Attachment 2 for further eyewash/shower unit guidance.

b. **Hazardous Noise (AFOSH Std 48-19):** The equipment listed in the table below generates hazardous noise. Equipment producing hazardous noise was properly labeled with warning signs. Area and equipment noise hazard signs are Air Force Visual Aids (AFVA) 48-101 for work areas and 48-103 and 48-105 for different sizes of equipment. Personnel working within the 85 dBA line must wear Air Force approved hearing protection when that piece of equipment is being operated. The following table provides a reference of hazardous noise sources and their required hearing protection:

HAZARDOUS NOISE SOURCE	MEASURED dBA LEVEL	85 dBA LINE	MFG/MODEL AVAIL PROTECTION	NOISE REDUCTION IN dBA	ADEQUATE?
Nut Runner	93	12 feet	-E.A.R. Classic Ear Plugs (NRR-20) -Peltor H6 B/v muffs (NRR-9)	73 84	Yes Yes
Rivet Gun	102	Entire missile work platform	-E.A.R. Classic Ear Plugs (NRR-20) -Peltor H6 B/v muffs (NRR-9)	82 93	Yes No

c. **Hearing Losses:** Two people in PEG 970A2 had hearing threshold shifts at the last hearing test. This indicates that personnel may not be using their hearing protection in hazardous noise areas. The supervisor must encourage and enforce the use of hearing protection to prevent additional hearing shifts in this shop.

d. **Ergonomics:** Ergonomic risk factors are present in work processes in this shop. A review of the Accident/Injury Log data and other information for this shop does not show a repetitive motion injury trend. Workers have been trained and should continue to vary tasks as much as possible and take breaks when necessary. Our observations of the shop process and/or the ergonomic injury trend does not indicate further analysis is required.

ERGONOMIC RISK FACTOR	RECOMMENDED CONTROLS
-Awkward work positions when performing missile maintenance activities. Also, repetitive motions, excessive force, and vibration when using pneumatic and hand tools, etc.	-Ergonomics training, stands, task rotation, and work breaks.

4. **General Workplace Hygiene (AFOSH Std 91-68) and other considerations:**

a. Personnel do not eat or drink in the work area where hazardous materials are present.

b. **Asbestos Containing Building Materials (AFI 32-1052, para 2.1 and 2.3 and 29 CFR 1926.1101):** Asbestos containing materials (ACM) were identified in this work area. Friable and/or non-friable asbestos is located in the Transite roofing and in buildings 940, 945, 950, 965, 970, 975, 980, 2401, and 2403.

(1) ACM is in good condition. Materials that are in good condition are not a health hazard. EPA recommends leaving in place all ACM that is in good condition. Our office will evaluate abatement requirements and inform you of the action you must take if the asbestos needs to be removed.

(2) Floor tile, ceiling tile and other building materials often contain asbestos. **Do not initiate self-help or any renovations or demolition work without thoroughly identifying to SGPB all materials that may be removed or disturbed.** The correct procedure is to route a work request form (AF Form 332 or AFMC Form 299) fully describing all intended self-help or contracted work through SGPB and Environmental Management.

5. **Hazard Communication/Worker's Right-to-Know Programs (AFOSH Std 161-21, OO-ALC-HAFBI 32-7001):** We reviewed designated portions of your Right-to-Know book and HAZCOM program to determine compliance with the regulations. Workers had access to AFOSH Std 161-21 and the Hill AFB HAZCOM program. The written compliance program did include a list of all non-routine tasks and a list of hazardous materials kept in the shop. All containers of hazardous materials were adequately labeled with manufacturer and tracking labels. A review of the Air Force Forms 55 shows workers have received HAZCOM training.

6. Your workplace was free of the following potential hazards:

Confined space	Heat or Cold stress	Non-ionizing radiation
Methylene Chloride	Formaldehyde	Methylene dianiline
Benzene	Ionizing radiation	Teratogens
Organic vapors		

7. **Conclusion:** This report must be posted on the workplace bulletin board for a period of 10 days after receipt to allow workers free access to the findings. It must be maintained in the workplace for at least 10 years. If anyone desires further information regarding this report, please contact William Woods at 7-9036, or come to building 249. If there are any specific occupational health concerns not addressed here or if you would like help regarding these issues during health or safety training, please call—we would be happy to help. Thank you for your cooperation.

William W. Woods
Industrial Hygienist

TRAINING INFORMATION

Attachment 2

Ergonomics

Performing certain operations in an environment not designed for production work, administrative work areas not designed for comfortable working, working with tools that are hard to handle or produce high vibration, lifting heavy weights, or performing certain tasks often enough can lead to ergonomic disorders. Some of the more common disorders include; back strains, carpal tunnel syndrome, rotator cuff injury, and other repetitive motion disorders. A properly designed work area with ergonomically designed tools is ideal and will effectively reduce body stresses. Also, using two man lifts and proper lifting techniques (lift with your legs, not your back), will reduce stress on the back. It should be noted that weight belts may serve to keep your back in a good posture when lifting, but are not considered a control and will not protect the backs of your workers.

Asbestos in the Facility

1. Asbestos Containing Building Materials (AFI 32-1052, paras 2.1 and 2.3 and 29 CFR 1926.1101). During our Bioenvironmental Engineering surveys, we will survey your facility to locate, identify and assess the condition of asbestos containing materials (ACM). ACM may be classified as friable (easily pulverized such as pipe insulation) or non-friable (hard matrix which is not easily pulverized such as floor tile). Friable ACM (with intact protective jacket or covering) or non-friable ACM in good condition is normally not considered a health hazard. Sanding, drilling, sawing, smashing, or disturbing any ACM can cause these materials to be rendered into poor condition, creating a potential inhalation hazard by becoming airborne.

2. Floor tile, ceiling tile, gasket materials, and other building materials often contain asbestos. Do not initiate self-help, any renovations, or demolition work without prior authorization obtained through Bioenvironmental Engineering. The correct procedure is to route a work request form (AF Form 332 or AFMC Form 299) fully describing all intended self-help or contracted work through SGPB and Environmental Management.

Emergency Eyewash/Shower Units

Eyewash/Shower Units (AFOSH Std 91-32): The following information pertains to the installation, maintenance and testing requirements of emergency shower and eyewash units.

1. Emergency showers and eyewash units must be free of obstacles, within 100 feet of the operation, and require no more than ten seconds to reach. Try to locate the units as close to the hazard as possible without causing an additional hazard. The unit must be marked and easy to identify.

2. Perform and document service checks monthly on all permanently installed units to verify proper operation. The service check should verify adequate pressure, volume of water, and free flowing openings. Should fluid outlets become clogged, clean or replace them. Units in unoccupied or infrequently used areas are exempt from monthly checks; however, they must have service checks prior to the start-up of any operations that could expose personnel to hazardous materials. Documentation can be kept in a log, put in the computer or affixed to the equipment by tag or label. Include the name of the person doing the check and the date.

3. Document performance specification/installation checks every six months. These are performed in accordance with AFOSH Std 91-32, Emergency Shower and Eyewash Units, paragraph 3 and involve measuring the height of portions of the unit, actuating devices, actual spray patterns, etc. Refer to AFOSH Std 91-32, paragraph 3 for these inspection requirements.

4. Self-contained units may be used if approved by the base ground safety manager and Bioenvironmental Engineer under these conditions:

a. As an interim fix, prior to installing a permanent unit.

b. If the hazardous substance would not damage the eye.

c. In locations where permanent installation would not be feasible.

d. In field operations with no source of potable water.

e. These units shall be constructed of non-corrosive materials, shall provide a minimum of 15 minute continuous flow and the stored fluid shall be protected against contaminants and temperature extremes. These units may be filled with potable water or a solution approved by either the manufacturer or the installation medical services. Instructions and expiration dates shall be permanently affixed to the unit.

f. Units shall be tested, refilled and maintained according to manufacturer's instructions or at least quarterly. Check fluid level monthly. Attach tags or labels to the unit or adjacent to it showing fluid change schedule.

5. Eyewash bottles:

a. Eyewash bottles are not a substitute for other type units. They can be kept in the immediate vicinity where employees are working on extremely hazardous operations. They supply immediate flushing while proceeding to a permanently installed or self-contained unit.

b. Eyewash bottles are handy in remote areas where hazardous substances pose an irritant hazard, but can not cause permanent eye injury. Vehicles supporting such operations should be equipped with eyewash bottles or other means of flushing the eyes.

c. Eyewash bottles should be tested, refilled, maintained, and disposed of according to manufacturer's instructions. Watch for expiration dates.

Hazard Communication

1. Hazard Communication (AFOSH 161-21/OO-ALC-HAFBI 32-7001): While this section may duplicate some of the Administrative Controls Appendix, it specifically applies to the Hazard Communication Program and may be slightly different.

2. Written Program. Any workplace that works with hazardous materials must keep a written Hazard Communication Program. This program must include six things:

a. The base written Hazard Communication Program.

b. OO-ALC-HAFBI 32-7001 (the base written program is a separate document written by our office, current date is April 1993).

c. A copy of AFOSH Std 161-21 or reference to its location.

d. A list of the shop's hazardous materials and corresponding Material Safety Data Sheets for each item (or their location).

e. A list of non-routine tasks that your workers might do which involve hazardous materials.

f. Copies of all previous Bioenvironmental Engineering Survey Reports (annual or special evaluations).

3. Labeling. As a minimum, all containers of hazardous materials must be labeled with the base HMMS tracking label. If the manufacturer's label is present, it must be legible and not covered by other labels. Some materials are transferred to containers labeled only with an HMMS yellow or rainbow tracking label. The MSDS number on this label refers back to the MSDS from the manufacturer. If you put hazardous material into another container for use during your shift, label the container with the name of the material.

4. Training. Supervisors must ensure all workers attend the basic hazard communication training course. In addition, the supervisor must provide training in the following:

a. Hazards of all materials used in the PEG.

b. Hazards of all new materials introduced to the PEG.

c. Hazards of all materials needed to perform non-routine tasks.

d. The supervisor must document all Hazard Communication training on the worker's AF Form 55.

5. Availability. The shop supervisor must ensure this program is maintained and available to all workers. We suggest you keep all information about safety and health in one binder. The shop supervisor shall:

a. Ensure that a Hazard Communication/Workers Right to Know Program notebook is maintained and kept current.

b. Maintain all copies of Bioenvironmental Engineering surveys.

c. Inform their employees and TDY personnel of the information contained in Bioenvironmental Engineering surveys (PPE, ventilation systems, radiation hazards, etc.).

6. Responsibilities. The shop supervisor will be responsible for:

a. Adherence to all procedures outlined in the Confined Space Program.

b. Notification of the Base Radiation Safety Officer (RSO) of any changes to and additional sources of non-ionizing and ionizing radiation within the shop.

c. Enforcement of general workplace hygiene standards.

d. Notifying Bioenvironmental Engineering of personnel changes, reassignment of personnel for overtime purposes, and of changes in work processes and chemicals used.

Hazardous Noise

Hazardous Noise (AFOSH Std 48-19): Hazardous noise is common in most industrial shops. Workers who don't wear required hearing protection may succumb to occupational noise induced hearing loss, an irreversible occupational illness (once your hearing deteriorates, it's not going to get better with time). Bioenvironmental Engineering evaluates hazardous noise during our surveys and will perform initial surveys to identify hazardous noise sources and, if needed, noise dosimetry to identify workers who are potentially overexposed to hazardous noise. Those workers found to be occupationally exposed to hazardous noise will be monitored on the Hearing Conservation Program; provided annual audiometric evaluations as part of their occupational physicals. Shop supervisors must:

1. Post identified hazardous noise areas or specific hazardous noise sources. You may use Air Force Visual Aids (AFVA) 48-101, 48-103 and 48-105 for these signs. (AFVA 48-101 for work areas and 48-103 and 48-105 for different sizes of equipment).

2. Make ear plugs and/or muffs available when needed.

3. Assure only Air Force approved hearing protection is provided.

4. Enforce the use of hearing protection when working with identified hazardous noise sources or within posted hazardous noise areas. Different hazardous noise levels warrant more stringent hearing protection. Ensure workers wear prescribed hearing protection (plugs or muffs, plugs and muffs, or plugs and muffs with a time limit).

5. Identify any new hazardous noise sources or possible hazardous noise operations to Bioenvironmental Engineering for further evaluation.