Proposed Final

EA for Proposed Multiple Targets
TS-5, UTTR-South

February 2000

FINDING OF NO SIGNIFICANT IMPACT FOR THE PROPOSED TS-5 MULTIPLE TARGET COMPLEX AT THE SOUTH RANGE OF THE UTAH TEST AND TRAINING RANGE

Description of the Proposed Action

Hill Air Force Base (AFB) proposes to construct and operate a new target complex, designated as TS-5, on Wild Isle in the south range of the Utah Test and Training Range (UTTR-South). The new facilities would allow for testing of Precision Guided Munitions (PGM) with large footprints, such as the Joint Defense Attack Munitions (JDAM) and would also allow for a 360º angle of attack for smaller footprint weapons systems including JDAMs with reduced delivery altitudes or delivery air speeds. Currently, the Department of Defense (DoD) does not have sufficient capability to test large footprint PGM.

Summary of Environmental Impacts of the Proposed Action

Surface Water

Due to the scarcity of surface water in the immediate vicinity of TS-5, no significant impacts on surface water are anticipated as a result of the proposed action.

Groundwater

No impacts to groundwater are expected from the proposed action. A shallow-brine aquifer is located approximately 25 feet beneath the mud flats. Most precipitation to the area quickly evaporates.

Soils

Impacts on soils in the area due to the proposed action would result from construction activities, which would require ground disturbance for the access road, the roads leading to the camera pads, and the target pads. Standard construction practices that could be implemented to minimize potential soil erosion are as follows:

- Minimize the size of the disturbed area associated with the construction site;
- Seed or plant native vegetation in affected areas adjacent to the pads and access routes;
- Stockpile all excavated soils;
- Protect stockpiles from wind and water erosion; and
- Replace or remove stockpiles when construction is complete.

Vegetation

Portions of the vegetation would be disturbed as a result of the proposed action for placement of the target pads, the camera pads, and the associated roads. Seeding or planting native vegetation in affected areas adjacent to pads and access roads would minimize impacts to vegetation. Also, the target pads and roads must be established in such a way that the concentrated known areas of Giant four-wing saltbush are not disturbed both during construction of the required facilities and during routine testing and training operations. The Giant four-wing saltbush has been placed on the State of Utah's Natural Heritage Tracking List. It is also on the U.S. Fish and Wildlife Service (USFW) and the Bureau of Land Management sensitive plant species lists. If the required facilities are placed outside of the sensitive vegetation areas, no significant impacts to vegetation are expected from the proposed action.

Wetlands

The proposed action would have no impact on wetlands. There are no wetlands in the vicinity of the proposed action.

Air Quality

The proposed action would have no significant impact on air quality. Operation of the proposed facilities would not produce any significant changes in air emissions at the UTTR-South. Though new munitions would be tested at the new target complex, they would be similar in their energetic composition to those munitions currently being tested on the range. Also, there is no planned increase in the number of test sorties at UTTR-South as a result of the proposed action. Fugitive dust emissions from roads would be short term, and emissions are not expected to reach property boundaries. The combustion emissions from heavy-duty construction equipment would be short-term and would not exceed any applicable air quality standards.

Wildlife

The proposed action would have no adverse impact on wildlife. No federally listed threatened or endangered species reside at the site.

Archeological and Historical Resources

The target pads and roads on TS-5 would be established in such a way that archaeological sites potentially eligible for inclusion in the National Register of Historic Places (NR), and their safety buffer zones, are not disturbed during construction or routine operation of the required facilities. A professional archaeologist will reinventory the central area of TS-5 and consult with the Utah State Historic Preservation Officer (SHPO) to evaluate the significance of any cultural resources identified prior to construction of testing and training facilities in the central area of TS-5.

No significant impacts to archeological and historical resources are expected from the proposed action provided the following conditions are met:

- Appropriate archaeological inventory surveys are conducted for proposed facility locations that have not yet been inventoried or have been inadequately inventoried, prior to commencing construction activities in those areas;

- All identified archaeological sites are avoided during construction and routine operation of the target complex;

- An archaeologist is on site during all construction activities; and

- Procedures to protect cultural resources during munitions recovery operations are developed and implemented in conjunction with the Hill AFB cultural resource office.

Land Use

Developing the TS-5 target area is consistent with the current military testing and training operations of the UTTR. The new targets would allow for a 360-degree axis complex for PGM with large footprints. Existing targets allow for a maximum of 180-degree attack and could not accommodate the large footprint of the JDAM. Therefore, the proposed alternative would increase the capabilities at UTTR-South and would not adversely impact land use.

Noise

The proposed action would shift some of the existing test sorties from an existing target complex to a new site approximately 10 miles to the west, still within DoD controlled lands. Other than this shift, there would

be no changes to existing operations at Hill AFB or the UTTR-South. Aircraft utilizing UTTR-South would continue to fly the same flight profiles as they are currently. As a result, there would be no significant aircraft noise impacts associated with the utilization of the new target complex.

Construction noise would be removed from near populated areas, occur only during normal working hours, and dissipate rapidly with distance from the source. The noise associated with construction would include engine and heavy machinery noise for the duration of the construction. After completion of the construction activities, no permanent impact by engine noise is anticipated.

Health and Safety

The construction of roads and targets would result in short-term health and safety concerns. Construction safety precautions would be taken, including necessary safety meetings and instructions.

During target testing and training activities, dropped ordnance would be more visible because the targets would be located on high terrain and out of the mudflats. This would facilitate munitions clearance operations and would reduce safety concerns associated with recovery of unexploded ordnance.

All new weapons testing programs undergo a safety review process that considers weapons type, delivery air speed, delivery altitude, footprint, and target location. Any new weapons program will not be approved if there is a potential to exceed range boundaries or to impact manned sites.

Based on the above, no new long-term health and safety hazards are expected from the proposed action.

Transportation

The proposed action would require construction of roads leading to each target and cinetheodolite pad. The proposed roads would provide access to the targets and camera pads, allowing for preparation, repair, and maintenance procedures. Access to TS-5 would be prohibited during testing and training operations utilizing the proposed facilities. The proposed activities would not impact the existing transportation at UTTR-South or the surrounding communities.

Socioeconomics

The proposed action would have no significant adverse impact on the local economy or employment. The facilities at TS-5 would not significantly impact the socioeconomics of the surrounding area. Training and testing operations at UTTR would utilize the proposed facilities. Other than construction activities, the new facilities would not generate new jobs or business opportunities. However, the proposed target complex would provide state of the art test and training facility for range users. By increasing the range's capabilities, it increases the value of Hill AFB as a DoD asset. This may be one of many considerations for any future BRAC evaluations.

Cumulative Impacts

There are no expected adverse cumulative impacts from the proposed action. The number of sorties and testing and training operations are not expected to increase as a result of the proposed action. Therefore, noise and air quality impacts are not expected to increase.

Conclusion

Based on the results of this Environmental Assessment, no significant impacts are expected from the proposed TS-5 target complex on UTTR-South. Therefore, in accordance with Air Force Instruction 32-7061, a Finding of No Significant Impact (FONSI) may be issued. Preparation of an Environmental Impact Statement (EIS) is not necessary.

Hill Air Force Base, Utah

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Authorized Signature Date

RCN: 80082540.03

PROPOSED FINAL
EA FOR PROPOSED MULTIPLE TARGETS
TS-5, UTTR-SOUTH
HILL AIR FORCE BASE, UTAH

February 2000

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AFB	Air Force Base
AFI	Air Force Instruction
AICUZ	Air Installation Compatible Use Zone
ALC	Air Logistics Center
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure Commission
CFR	Code of Federal Regulations
dB	Decibel unit
DNL	Day-night average sound level
DoD	Department of Defense
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
FTS	Flight termination system
FY	Fiscal Year
JDAM	Joint Defense Attack Munitions
L_{dnmr}	Day-night average sound level
NAAQS	National Ambient Air Quality Standards
NCA	Noise Control Act
NEPA	National Environmental Policy Act
non-TSPI	Non-time space position information
NR	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
OT	Operational Testing
PGM	Precision Guided Munitions
SHPO	State Historic Preservation Officer
SO_2	Sulfur dioxide
TS-5	Wild Isle
USAF	United States Air Force
UTTR	Utah Test and Training Range
WAFAF	Wendover Air Force Auxiliary Field
WCMD	Wind corrected munitions dispensing

EXECUTIVE SUMMARY

The existing targets at the Utah Test and Training Range (UTTR) do not accommodate Precision Guided Munitions (PGM) with large footprints because manned sites fall within the footprint range or the footprint falls outside of Department of Defense (DoD) controlled property lines. In addition, there are no DoD facilities in the country that allow a 360-degree attack axis capability in testing large footprint PGM. Therefore, the Air Force proposes to establish a new PGM target complex with a 360-degree attack axis on TS-5 (also known as Wild Isle), in the south range of the UTTR (UTTR-South). The new complex will allow for testing of the Joint Defense Attack Munitions (JDAM), a PGM capable of producing large footprints up to 160,000 feet downrange and 110,000 feet cross range. It will also allow for a 360º angle of attack for smaller footprint weapons systems including JDAMs released at a reduced delivery altitude and/or delivery air speed.

The proposed action includes constructing one approximately 1500' x 6000' pad for wind corrected munitions dispensing (WCMD), constructing two approximately 300' x 300' target pads, constructing one non-time space position information (non-TSPI) training target, establishing four cinetheodolite camera pads, constructing compacted roads to each target and camera pad, and constructing a communications shelter to serve as an electrical junction box for all power cables and fiber optics.

Air Force instructions require that Environmental Assessments (EAs) be completed for all proposed Air Force actions with the potential for adverse environmental impacts. Under the proposed action, new target facilities would be constructed within the TS-5 complex to accommodate the JDAM and other large footprint PGM. Under the no-action alternative, a complete target complex would not be constructed. The no-action result would limit operations at TS-5 to the use of the existing target pad TS5-1. Under the no-action alternative, sufficient testing of large footprint PGM, such as the JDAM, would not be possible, thus precluding the complete Operational Testing of the new weapons systems.

Section 1 of this report presents the purpose and need for the proposed action. It also includes background information on the proposed action location.

Section 2 describes the proposed action and the alternative actions that were considered. Selection criteria for evaluating reasonable alternatives are also presented in this section.

Section 3 describes the existing environmental conditions at the site of the proposed action.

Section 4 identifies the anticipated environmental impacts of the proposed action and the no-action alternative.

Section 5 lists the individuals involved in preparing this report. Section 6 lists persons contacted in preparing this report and Section 7 contains a list of references used in report preparation.

Based on the findings of this EA, the proposed action is not expected to have any significant and unavoidable adverse environmental impacts. A Finding of No Significant Impact (FONSI) statement has been prepared and is included at the beginning of this report. Preparation of an Environmental Impact Statement (EIS) is not necessary.

Section 1
PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

The Utah Test and Training Range (UTTR) is located in northwestern Utah, approximately 70 miles west of Salt Lake City. The UTTR is owned and managed by Hill Air Force Base (Hill AFB), and serves a variety of Department of Defense (DoD) customers for training exercises, test functions, and support services. As shown in Figure 1-1, the south range of the UTTR (UTTR-South), also known as the Wendover Air Force Range, covers approximately 580,000 acres and is bordered by Nevada to the west, Dugway Proving Grounds to the south, and I-80 to the north.

The Air Force proposes to establish a new Precision Guided Munitions (PGM) target complex with a 360-degree attack axis on the UTTR-South. The new target complex would allow for testing maximum energy footprints in excess of twenty miles and would allow for a 360º angle of attack for smaller footprint weapons systems. The high-resolution tracking equipment to be installed at the complex would also increase nighttime testing and training capabilities. A footprint encompasses the area a PGM can travel within once it is released, or, if the PGM is destroyed, the area where the debris may fall. Existing targets at UTTR-South allow for a maximum of 180-degree attack axis. Also, they do not allow for large footprints of new PGM's, either because manned sites fall within the necessary footprint range, or because the footprint would fall outside of DoD controlled property borders. This Environmental Assessment (EA) evaluates the impacts to the environment from the proposed construction and operation of the new target complex on the UTTR-South.

1.2 Background

The Wendover Air Force Auxiliary Field (WAFAF) and an adjacent range (now UTTR) were established for bombing and gunnery training during World War II. Prior to 1940, this land was occupied by sparse herds of cattle and sheep. At its peak, the WAFAF and the UTTR combined included 3.5 million acres and represented the largest military reserve in the world (Radian, 1993).

Currently, the entire UTTR, both north and south, consists of almost one million acres. The range now serves a variety of DoD customers for training exercises, test functions, and support services. Training exercises utilize PGM and other munitions from the existing inventory. Testing functions evaluate the performance of both new and existing equipment.

1.3 Need for the Proposed Action

Joint efforts by the Navy and the Air Force to develop the non-rocket-powered Joint Defense Attack Munitions (JDAM) has resulted in production of a PGM capable of producing large footprints up to 160,000 feet downrange and 110,000 feet cross range. The footprint of all non-rocket-powered weapons decreases with decreased delivery altitude and delivery airspeed. To greatly reduce costs, the JDAM was designed without a flight termination system (FTS). FTS, which are required on all rocket-powered weapons, allows for destruction of a weapon when it goes off target. Consequently, if a JDAM malfunctions during operation or goes off target, it can not be destroyed in the air and may impact the ground approximately 20 miles from release. The likelihood of a PGM missing the target by a significant distance is extremely low; however, due to the absence of a FTS and the potential range of the JDAM, testing of the JDAM requires a target complex capable of handling large footprints in unmanned areas within DoD controlled lands.

DoD testing of the JDAM must be done at a location capable of handling large energy footprints without impacting manned sites. UTTR-South is the only DoD range in the country capable of handling the large footprint of the JDAM at 40,000 feet mean sea level (MSL) with minimal restrictions. Due to the remoteness of UTTR-South and its proximity to other DoD facilities, UTTR-South can also accommodate a 360-degree axis target complex for smaller footprint PGMs and low-altitude JDAMs

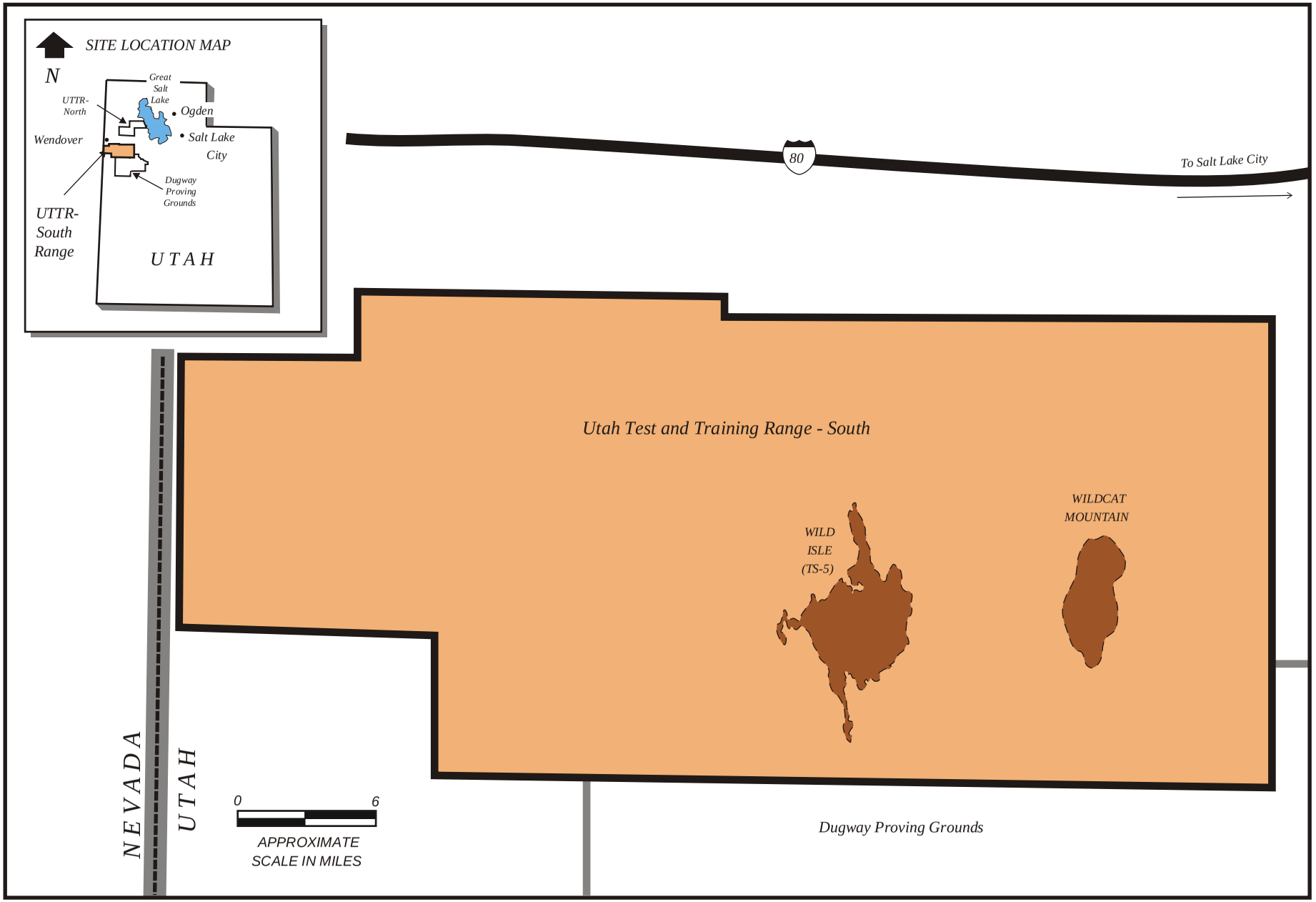

Figure 1-1. Utah Test and Training Range South

within DoD property borders without impacting any manned sites. For these reasons, the DoD proposes to construct and operate a new target complex, designated as TS-5, and test the JDAM within UTTR-South.

The proposed target complex is part of an effort to provide a state of the art test and training facility for range users. The target complex would allow for other weapons to operate without FTS, thus reducing the cost of weapon development. In addition, the UTTR-South training and testing capability would increase with the construction of a target complex capable of night operations for PGM with large footprints. Training and testing operations during the night require higher resolution equipment for tracking the PGM. Current targets at UTTR-South provide limited nighttime testing and training due to the proximity of manned sites.

1.4 Applicable Regulations

There are several regulatory environmental programs that apply to the proposed action. These include the program requirements 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. Air Force Instruction (AFI) 32-7061 describes 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. This EA looks at the environmental impacts of the proposed action and the no-action alternative. Both the AFI 32-7061 guidance and the implementing regulations of NEPA (40 *Code of Federal Regulations* [CFR] 1500) were followed in preparing this EA.

1.4.2 Noise Emission Requirements

Noise pollution is regulated by the *Noise Control Act (NCA) of 1972*. The NCA requires federal facilities to implement measures to reduce noise emissions. Generally, federal agencies whose activities result in increased environmental noise in the surrounding community are responsible for compliance with state and local environmental noise requirements. The State of Utah has no noise control regulations, although Utah Code 10-8-16 gives cities the authority to develop noise control regulations or standards.

1.4.3 Cultural Resource Requirements

Section 106 of the *National Historic Preservation Act (NHPA) of 1996*, as amended, requires federal agencies to evaluate sites containing cultural resources that may be affected by their activities. If a site is determined eligible for listing on the National Register of Historic Places (National Register), it must be protected, to the extent possible, from actions that could adversely affect their significant qualities. Cultural and historic resources are also protected by the *Antiquities Act of 1906*, the *Historic Sites Act of 1935*, and the *Archaeological Resources Protection Act of 1979*.

1.4.4 Natural Resource Requirements

The *Endangered Species Act of 1973* provides for the designation and protection of invertebrates, wildlife, fish, and plant species that are in danger of becoming extinct and conserves the ecosystems on which the species depend. Endangered species are animals or plants listed by regulation as being in danger of extinction. Threatened species are animals or plants that are likely to become endangered within the foreseeable future. Candidate species are animals or plants that have been selected for evaluation for inclusion on the threatened and endangered species lists. Candidate species may be considered for immediate listing if significant parts of their habitat are threatened by human impact.

1.5 Scope and Organization of this Document

The remainder of this document is organized as follows:

- Section 2 provides a description of the selection criteria, the proposed action, and the no-action alternative.
- Section 3 describes the existing environmental conditions at UTTR-South.
- Section 4 identifies the potential environmental consequences associated with implementing 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.
- Section 7 includes a list of references.
- Appendix A contains photographs of the proposed action location.
- Appendix B contains an Air Installation Compatible Use Zone (AICUZ) evaluation that was prepared to determine noise impacts associated with the proposed action.
- Appendix C contains the Air Emission Estimation Methodology.

Section 2
DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This section describes the proposed action and alternatives for construction and operation of a target complex at UTTR-South for testing of PGMs with large footprints and for testing smaller footprint PGMs and low altitude JDAMs with a 360º-attack axis. The selection criteria for site location are presented, and the proposed and alternative actions are described.

2.1 Site Selection Criteria

UTTR-South was selected for construction and operation of a new target complex because of its unique characteristics as discussed in Section 1. The criteria for selecting a target complex site within the UTTR-South are as follows:

- The selected site shall not interfere with the mission of Hill AFB, nor adversely affect DoD facilities or operations;
- The topography of the selected site must provide adequate drainage to minimize wet, muddy conditions that may inhibit access to cameras, and targets;
- The selected site must be on dry terrain (i.e., off of the mudflats) to facilitate recovery of munitions and weapons debris and to provide increased safety for Explosives Ordnance Division (EOD) personnel;
- The location of the selected site must be such that PGM (non-FTS equipped) footprints, up to 160,000 feet downrange and 110,000 feet cross range, fall within DoD property boundaries and away from any manned sites; and
- The location of the selected site must allow for a 360-degree attack axis for smaller footprint weapons systems.

Sites not meeting the above criteria were not considered further. TS-5 (also known as Wild Isle) is the only location within the UTTR-South that meets all the selection criteria. TS-5 is an eleven-mile long island, approximately 5 miles at its widest, located in the central-eastern portion of the UTTR-South. Currently, a 300' x 300 ' target, known as TS-5-1 exists on the northeastern section of TS-5 (Hill AFB, 1998a). A 40 foot wide, 8 statute mile long compacted gravel road exists from the Wildcat Mountain complex to TS-5-1. Fiber optics and power cables are buried along this road.

Figure 2-1 is a topographic map of the TS-5 site location. Photographs are included in Appendix A.

2.2 Description of Alternatives

This section describes the two alternatives considered for this EA. Alternative 1 is the propoed action. It includes construction and operation of the TS-5 target complex. Alternative 2 is the no-action alternative. This alternative assumes no new target construction activities at TS-5. No other alternatives were evaluated as no other sites within UTTR-South met the selection criteria.

Figure 2-1. Location of Proposed Action

2.2.1 Alternative 1 - Proposed Action

The proposed action consists of constructing and operating a 360-degree attack axis target complex for the testing of maximum energy footprints on TS-5, located west of Wildcat Mountain at UTTR-South. The proposed action includes the following:

- Constructing an approximately 1500' x 6000' target pad for wind corrected munitions dispensing (WCMD);
- Constructing two target pads (TS-5-2 and TS-5-3) approximately 300' x 300';
- Constructing a non-time space position information (non-TSPI) training target;
- Establishing four cinetheodolite camera pads;
- Constructing a communications shelter to serve as an electrical junction box for all power cables and fiber optics; and
- Constructing compacted roads to each target pad, camera pad, and the communications shelter.

Figure 2-2 is a topographic map illustrating the proposed locations for the first new target to be constructed (the WCMD) on TS-5 and the cinetheodolite camera pads. The figure also shows the sensitive archaeological and natural resource sites that have been identified on the island. As shown in the figure, the center of the island needs to be re-inventoried for cultural resources due to the relatively small number of sites identified within the area as compared to the surrounding inventoried areas (see Section 3.8 for more detail). The exact locations of the new targets and communications shelter will be determined as funding becomes available for target construction, but they will be located within the island's natural boundaries. They will be situated so as to avoid, to the extent possible, any identified archaeological sites and any areas containing high densities of sensitive plant species. No new construction will take place in the center area of the island until the area has been adequately inventoried for cultural resources. The new roads for the complex will be constructed on high ground, to the extent possible, but will extend over the mudflats to the four new cinetheodolite camera pads. The proposed roads and camera pads will be inventoried by a professional archaeologist prior to and during construction to avoid impacting sensitive areas.

Construction of the target pads includes clearing the ground, compacting the soil, and placing the targets (salvaged vehicles, empty truck trailers, etc.) on the pads. Construction of the camera pads includes grading a road from the target to each pad, burying cable along the road, clearing the pad, and placing gravel. Camera pads are only a few feet wide.

Once the proposed target complex has been constructed, the targets will be used for the Operational Testing (OT) of JDAM and other PGMs, and training of aircrews in the operation of the current inventory of military weapons. OT focuses on weapons delivery and maintenance. The testing and training operations at the proposed target complex will not increase the quantity of aircraft operations over current levels at UTTR-South.

TS-5 fulfills the site selection criteria as follows:

- Use of TS-5 will not interfere with the mission of Hill AFB or the DoD;
- The rise of the island allows for proper drainage, avoiding excessively muddy conditions;

- The higher and relatively dry terrain of the island provides increased visibility and safety for EOD personnel during munitions recovery; and

- The site is approximately 15 miles away from the nearest range boundary and the nearest manned site, allowing for a 360-degree attack axis for the testing of maximum energy footprints. Depending on the weapon being tested, the manned site will be evacuated during testing operations.

The target complex would be considered an extension of the Wildcat/Kittycat Complex.

2.2.2 Alternative 2 – No-Action Alternative

If no action occurs, construction of a 360-degree attack axis target complex at TS-5 would be incomplete. The testing of maximum energy footprint PGM would be limited to TS-5-1, an existing 300' x 300' hardened pad. Proper tracking of the munitions would not be possible because the cinetheodolite camera pads would not be in place. Consequently, the DoD would not have sufficient capability of testing large footprint PGM.

Section 3
DESCRIPTION OF THE EXISTING ENVIRONMENT

This section describes the current environment at UTTR-South in the vicinity of the proposed action with regard to cultural and natural resources, air quality, noise, and physical conditions.

3.1 Surface Water

No perennial springs exist in the area of the proposed action. Most precipitation to the area quickly evaporates. During rapid spring melt-off or after summer thunderstorms, water may pool in the desert valleys and basins; however, very little of this runoff reaches the basin lowland below the consolidated areas (Dames & Moore, 1996).

3.2 Groundwater

Groundwater can be found in the unconsolidated and consolidated rocks beneath UTTR-South. Recharge of the groundwater typically occurs by precipitation falling at higher elevations. Water reaches the groundwater reservoir by seepage from runoff and streams on alluvial slopes. The major groundwater reservoir is more than 1,000 feet thick. A shallow brine aquifer lies beneath the mudflat area of the playas soils and consists of lake bed clay and silt and crystalline salt. Although these sediments extend to a considerable depth, only the upper 25 feet act as an aquifer (EnviroSupport, 1998).

3.3 Geology and Soils

Geology

The UTTR-South is part of the Great Basin Region of the Basin and Range Physiographic Province, which is characterized by fault-block mountain ranges trending north and south, separated by alluvium-filled valleys and closed desert basins. During the late Pleistocene Epoch, Lake Bonneville covered the entire UTTR-South area. Lake Bonneville was a fresh water lake that at its maximum extent covered an area of approximately 50,000 square kilometers and had a depth of more than 330 meters (Flint, 1971).

Wildcat and Kittycat Mountains are the only exposed rocks on the UTTR-South. These mountains consist of Pennsylvanian dolomite and limestone. Some igneous rocks that are younger than Pennsylvanian are also found in the mountains. Similar exposed rocks are also present just west of the south range and across the Nevada line in the Snoopy Area and in the Lead Mine Hills (EnviroSupport, 1998).

Soils

The majority of the soils on the south range include playas and playas-saltair complex. The playa and playas-saltair soils have low permeability and drain slowly. The playa water capacity is very low, while the playas-saltair water capacity is very low to low. The proposed site for the target is also covered by dynal-tooele, saline complex. The majority of soils on the range are not suitable for livestock grazing, range seeding, or irrigated crops. Only 8 to 9% of soils on the south range are readily suitable for roads and building site development (EnviroSupport, 1998).

3.4 Vegetation

The majority of the UTTR-South is comprised of barren to sparsely vegetated mudflats. On the mudflats and at higher elevations in the area of the proposed action, seven distinctive vegetation types were sampled. Three exotic species and one sensitive species were also observed (Hill AFB, 1998b). These plant species are listed in Table 3-1.

Table 3-1. Plant Species Observed at TS-5
UTTR-South

Common Name	Scientific Name
Greasewood	*Sarcobatus vermiculatus*
Four-wing saltbush	*Atriplex canescens*
Shadscale	*Atriplex confertifolia*
Winterfat	*Ceratoides lanata*
Indian ricegrass	*Stipa hymenoides*
Squirreltail	*Elymus elymoides*
Iodine bush	*Allenrolfea occidentalis*
Cheatgrass	*Bromus tectorum*
Barbed wire russian thistle	*Salsola paulsenii*
Halogeton	*Halogeton glomeratus*
Giant four-wing saltbush	*Atriplex canescens* var. *gigantea*

Vegetation types in the proposed area include shrubs, herbs, and grasses indicative to the shadscale zone (Cronquist et al., 1972). Approximately 75% to 95% of the surface area in the plant communities observed consisted of exposed microbiotic soils. There was a noticeable absence of introduced (exotic) plant species including cheatgrass (*Bromus* spp.), one of the most problematic weeds in desert shrublands. An area of salt desert shrub that does not suffer from an infestation of cheatgrass, such as TS-5, may be worthy of further study. It provides a very unique reference area for other similar terrain that has been altered by direct human activity (Hill AFB, 1998b).One sensitive plant species, *Atriplex canescens* var. *gigantea (g*iant four-wing saltbush), was found on TS-5 (Hill AFB, 1998b). The giant four-wing saltbush has been placed on the State of Utah's Natural Heritage Program Tracking List. It is also on the U.S. Fish and Wildlife Service (USFW) and the Bureau of Land Management sensitive plant species lists. The Hill AFB Natural Resource office is currently working with the USFW to develop a conservation agreement to manage the areas on UTTR-South where this species is present. Adequate management and protection of this species will preclude it from becoming a candidate species for Federal listing under the Endangered Species Act. Figure 2-2 identifies the areas on TS-5 where this natural resource habitat exists.

3.5 Wetlands

The total area of wetlands identified within the UTTR-South was estimated at 22,245 acres (Parsons Engineering Science, 1995). The majority of the identified wetlands occur in the Blue Lake complex area, on the western border of the range, although a small portion of wetlands exist northeast of Wildcat Mountain. No wetlands exist on TS-5.

3.6 Air Quality

Air emissions from bombing activities at the UTTR are based on the number of test sorties and bomb payloads. The emission estimation methodology used to estimate the 1997 emissions from bombing activities at the UTTR shown in Appendix C.

The UTTR-South is located in western Tooele County, which is currently designated as an attainment area for all National Ambient Air Quality Standards (NAAQS). East Tooele County above 5,600 feet is currently nonattainment for sulfur dioxide (SO_2). The maximum elevation of TS-5 is approximately 4,000 feet.

3.7 Wildlife

Surveys were conducted in June 1998 to sample avian (bird), mammal, reptile, and terrestrial invertebrate populations that inhabit TS-5 (Hill AFB, 1998b). Summaries of the study findings are presented below. Table 3-2 presents the avian and mammal species identified on TS-5

Table 3-2. Animal Species Observed at TS-5 UTTR-South

Common Name	Scientific Name
Avian Species:	
Barn Swallow	*Hirundo rustica*
Eared Grebe	*Podiceps nigricollis*
Horned Lark	*Eremophila alpestris*
Loggerhead Shrike	*Lanius lucovicianus*
Prairie falcon	*Falco mexicanus*
Sage Sparrow	*Amphispiza belli*
Sage Thrasher	*Oreoscoptes montanus*
Short-eared Owl	*Asio flammeus*
Mammal Species:	
Deer mouse	*Peromyscus maniculatus*
Grasshopper mouse	*Onychomys leucogaster*
Little pocket mouse	*Perognathus longimembris*
Antelope ground squirrel	*Ammospermophilus leucurus*
Kangaroo rat	*Dipodyms* spp.
Townsend's ground squirrel	*Spermophilus townsendii*
Black-tailed jackrabbits	*Lepus californicus*
Coyote	*Canis latrans*
Kit fox	*Vulpes macrotis*
Badger	*Taxidea taxus*

Birds

Eight species of birds were observed during the study. The Horned Lark accounted for 83% of all birds documented. One Short-eared Owl (*Asio flammeus*), a State-listed avian species of concern due to declining population, was also sited. None of the avian species observed are considered threatened or endangered.

Mammals

The majority of mammals inventoried were deer mice (*Peromyscus maniculatus)*. The presence of black tailed jackrabbits (*Lepus californicus),* coyote (*Canis latrans),* kit fox (*Vulpes macrotis)*, and badger (*Taxidea taxus)* was evident; although, other than the jackrabbits, actual sitings were not obtained during the study. Of the mammals observed, none are considered threatened, endangered, or sensitive.

Reptiles

Only two reptile species, the sagebrush lizard (*Sceloperus graciousus)* and the short-horned lizard (*Phyrnosoma douglasii),* were observed on TS-5. Of the reptiles observed, none are considered threatened, endangered, or sensitive.

Terrestrial Invertebrates

Insect diversity and abundance on TS-5 is low. The majority of insects observed included Diptera (flies), Hymenoptera (bees and wasps), and microhymenoptera (very small parasite wasps). Of the insects observed, none are considered threatened, endangered, or sensitive.

3.8 Archaeology and Historical Resources

Inventories have identified more than 130 archeological sites within 30 miles of the UTTR (Dames & Moore, 1996). On the UTTR, the Air Force has conducted or contracted for archeological inventories of over 125,000 acres, or about 22 percent of the range. Based on these inventories, sites eligible for listing in the National Register of Historic Places (NR) are not typically found on the salt and mudflats (playas) that cover most of the range. Instead, NR-eligible archaeological sites have been found along historical emigrant routes, in the mountains, in active sand dunes, and at locations that were periodically adjacent to shorelines of an enlarged Great Salt Lake. Advances of the Great Salt Lake have occurred historically, with larger, periodic expansions during prehistoric times of about 4,000 to 2,000 years Before Present (B.P.), 10,300 to 9,500 B.P., and during one or more expansions identified by researchers as the ancient Gilbert Shoreline that occupied most of the Great Salt Lake Desert about 11,000 to 10,300 B.P.

Researchers have completed a number of cultural resource inventories on portions of TS-5. The central hatched area in Figure 2-2 represents a 3,955-acre area inventoried in 1996 (Arkush, 1997). Historical Research Associates (HRA) completed the largest (9,515 acres) inventory in the summer of 1998, recording 59 prehistoric archaeological sites (Carter, 1999). The HRA inventory included the areas identified in Figure 2-2 as the East Area, North Area, South Area, and West Area. It did not include the hatched area previously inventoried by Arkush. Two smaller inventories (Carter, 1998; Weder, 1998) each investigated less than 100 acres of the TS-5 landform, observing no cultural resources. These smaller areas were within the HRA inventory area. A recent, small inventory through the central hatched area, along the path of a proposed road to the WCMD target, was conducted in 1999 (Ugan, 1999). One potentially NR-eligible site was identified. This site is now in the process of being recorded and evaluated. Due to the density of sites discovered outside the hatched area and the recent discovery of a new site within this area, the adequacy of the 1996 study, which recorded only two prehistoric archaeological sites, has come into question. Therefore, the hatched area will be re-inventoried by a professional archaeologist prior to any construction activities taking place there.

As a result of the cultural resource inventories, at least 62 prehistoric archaeological sites have been identified within the TS-5 area (Figure 2-2). A large percentage of these sites contain Western Stemmed projectile points and assemblages of other artifacts dating to what researchers term the Early Bonneville Period (between 11,000 and 9,500 B.P.). The most recent archaeological technical report on TS-5 (Carter, 1999) has provided recommendations to the Air Force for 61 of the prehistoric sites. Eight are recommended as NR-eligible and 21 of the sites (including the two sites recorded in 1996) require additional investigation prior to finalizing NR recommendations. Thirty-two sites were recommended as ineligible for listing in the NR due to a lack of integrity caused by long exposure to natural desert processes in a playa setting. Wind, ice, and water on the flat landscape have altered artifacts and sediment locations to the point that their integrity, a factor in determining archaeological site NR-eligibility, has been lost. However, Hill AFB is proactively protecting the potentially ineligible sites at this time, until further testing is conducted to see if any valuable information can be gained.

Of the 30 prehistoric sites which are eligible or potentially eligible for the National Register, 26 contain items suggesting that people were present at these sites before 9,500 B.P., and the same number have the potential for buried cultural materials dating to the Early Archaic Period. To date, very little information is available on how people of the Great Basin—especially people in what is now Utah—lived during these very ancient times. Based on the current research that has been reported from the Great Basin, the TS-5 location represents one of the few, and likely the best, localities with the potential for

buried subsurface deposits that can yield information about the way people lived during the Early Archaic Period.

3.9 Land Use

The UTTR-South is closed to the public and is used for military training and testing missions related to national defense. The primary use of the UTTR-South is for military personnel and weapons systems training and testing exercises. Operations include air-to-air operations, air-to-surface operations, visual and radar bombing, and tactical maneuvers to test equipment and train personnel.

The majority of lands surrounding the UTTR-South are publicly accessible; although, some land in the vicinity is privately owned. Federal lands surrounding the UTTR-South are managed by the DoD and the Bureau of Land Management (BLM). The BLM manages the land for multiple use, including livestock grazing, wildlife management, mining, and recreation.

3.10 Noise

For the purposes of this environmental assessment, noise is defined as "unwanted" sound caused by activities that are not part of the natural setting of a locality and that are heard as such by people and animals. Noise is superimposed on the background (ambient) environment, and combined effects of superimposed noise and ambient noise can be measured by standardized sound level meters that provide a measurement of sound level in *decibel* (dB) units.

Because noise could be continuous, steady or fluctuating, intermittent or impulsive, and because human response to noise is extremely diverse, the Environmental Protection Agency (EPA) examined noise evaluation methods that could be employed for the protection of public health and welfare with a reasonable margin of safety (EPA, 1974). The EPA recommended use of the L_{dn} as a descriptor of the 24-hour daily noise environment. The L_{dn} is the energy-equivalent average A-weighted sound level over a 24-hour period, with a 10 dB penalty added to noise that occurs during the hours of 10:00 p.m. to 7:00 a.m. local time (2200-0700 hours military time). This measurement is used extensively to assess non-impulsive noise environments and has been adopted in various guidelines for land-use compatibility, such as by the EPA, Department of Transportation (DOT), Housing and Urban Development (HUD), and the DoD. Ambient L_{dn} levels in remote uninhabited areas would typically range from 33 dB to 40 dB. The L_{dn} measurement is used extensively to assess the noise environment caused by aircraft operations around civilian and military airfields.

The other developments of L_{dn} are applicable to aircraft noise in other circumstances, such as measuring noise caused by low-level sorties and measuring noise from sonic booms caused by supersonic flights. Noise caused by low-level flying is measured by the onset-rate adjusted monthly day-night average sound levels (L_{dnmr}), which is identical to L_{dn} except that a penalty of up to 5 dB is applied to aircraft noise events that have a more sudden rate of onset (which could induce a surprise effect on humans), and the average daily noise is evaluated for the calendar month with the highest number of low-level overflights. (For more detailed explanation of environmental noise and noise regulations, see Appendix B.)

Aircraft Noise

The Air Force is currently engaged in a number of operations on the UTTR-South including weapons testing, air-to-ground weapons delivery practice, simulated air-to-air combat, and low-altitude tactical navigation training. Noise is generated in the local environs on the UTTR-South from aircraft operations, ordnance explosion, maintenance, and construction.

Almost all of the land under the flight operation area is rural countryside with low background noise levels, but with existing conditions of sporadic overflight by low-level military aircraft. Estimated

L_{dnmr} noise exposures from these current low-level operations range from 50 dB to 64 dB in the overflown valleys and less in the adjacent mountain areas (USAF, 1991).

Noise exposure resulting from operations on the UTTR-South range has been previously evaluated using ROUTEMAP (USAF, 1991), which is computed using number of flights, aircraft types, flight altitudes, speeds, and engine power settings. The L_{dnmr} metric has the same relationship to the percentage of people highly annoyed as the L_{dn} previously discussed. For those calculations, total usage for the UTTR-South range was estimated at 16,512 (USAF, 1991a) for the Fiscal Year (FY) 1991. Current operations for FY1997 totaled 13,827 (USAF, 1997) combined training and test sorties. This represents a 16% decrease in range utilization.

The ROUTEMAP contours previously generated for the UTTR-South indicated noise contours of L_{dnmr} 65 dB predominantly along the eastern boundary of the south range, due to a concentration of flight activity southward toward entries into the few valleys in the UTTR-South. Other occurrences of the L_{dnmr} 65 dB contours are at concentrations of flight activity en route to target areas. The land areas and populations affected by this previous study are shown in Table 3-1.

Table 3-3. Land Area and Population Baseline
UTTR-South

L_{dnmr}	Area (square miles)	Population
55-60	5,831	104
60-65	3,422	76
65-70	1,013	8
70-75	41	0
TOTAL	10,307	188

Source: USAF, 1991

Of the towns and ranches located under the UTTR-South range airspace but outside of Department of Defense (DoD) controlled lands, only three ranches were estimated to have noise exposures of 65 L_{dnmr} or greater due to aircraft operations. Estimates of aircraft noise indicate that the towns of Callao, Trout Creek, Gandy, and Eskdale lie within a range of 60 to 62 dB L_{dnmr}, and the town of Partoun has a L_{dnmr} of 57 dB due to aircraft noise. The number of persons expected to be highly annoyed under the baseline aircraft noise conditions of this previous study was estimated to be 16 residents, of a total of 385 residents located within the UTTR-South airspace (USAF, 1991).

Some supersonic operations are conducted in the UTTR-South airspace. The impacts of supersonic operations were analyzed within the ROUTEMAP analysis for the UTTR-South. In addition to these low-level flight operations, which dominate the noise environment throughout the south range, other subsonic flight activity occurs at altitudes above 9,000 feet mean sea level within restricted airspace's in the UTTR. These operations are generally random in both time and space and do not, in general, generate L_{dnmr} values in excess of 50dB at any specific ground location. The resulting noise impact from these high-altitude flights is, therefore, negligible relative to that of low-level flights.

3.11 Health and Safety

Safety and Occupational Health issues at the UTTR-South include the dangers associated with unexploded ordnance. Due to the historical activity at the UTTR-South, unexploded ordnance (UXO) may exist at any location within the range boundaries. Recovery of UXO from within the mudflat areas

of the range is more hazardous than from the drier regions of the range. This is due to the potential for munitions to get buried in the mud, resulting in reduced visibility and more difficult retrieval.

3.12 Transportation

Ground transportation access at UTTR-South is limited to authorized personnel only. Two roads have been documented on existing maps for the UTTR-South. A jeep trail, barely visible on the ground, enters the northwest corner of UTTR-South and dead ends approximately 12 miles east of the western border. This trail lies entirely on the mudflats and is not passable when wet. A secondary road, approximately 20 miles in length, enters the northeast corner of UTTR-South, provides access to the Wildcat Mountain area, and continues on south to Dugway Proving Grounds. This road is accessible from Interstate Highway 80 and is typically used to prepare target locations and inspect for unexploded ordnance or debris. There is also a road that goes around the west side of Wildcat Mountain and out to TS-5.

3.13 Socioeconomic

The area surrounding the eastern border of the UTTR-South is sparsely populated with no incorporated communities. Wendover, Utah and West Wendover, Nevada are located approximately 40 miles northwest of the proposed TS-5 target complex. Economic conditions in this region are primarily related to gambling activities (Dames and Moore, 1996). The location of the UTTR-South limits its influence on the socioeconomic conditions of any surrounding communities. However, the UTTR is an integral part of operations at Hill AFB and, therefore, has an affect on the socioeconomic condition of the Wasatch Front counties.

Section 4
ENVIRONMENTAL CONSEQUENCES

This section describes the consequences of both the proposed action and the no-action alternative on the environmental conditions discussed in Section 3.

4.1 Surface Water

Proposed Action

No significant impacts on surface water are anticipated as a result of the proposed action. The scarcity of surface water in the immediate vicinity of TS-5 makes adverse impacts unlikely.

No-Action Alternative

The no-action alternative would not result in any impacts to surface water in the area.

4.2 Groundwater

Proposed Action

No impacts to groundwater are expected from the proposed action. A shallow brine aquifer is located approximately 25 feet beneath the mud flats. Most precipitation to the area quickly evaporates.

No-Action Alternative

The no-action alternative would not impact groundwater.

4.3 Geology and Soils

Proposed Action

Impacts on soils in the area due to the proposed action would result from construction activities, which would require ground disturbance for the access road, the roads leading to the camera pads, and the target pads. Standard construction practices that could be implemented to minimize potential soil erosion are as follows:

- Minimize the size of the disturbed area associated with the construction site;
- Seed or plant native vegetation in affected areas and adjacent to the pads and access roads;
- Stockpile all excavated soils;
- Protect stockpiles from wind and water erosion; and
- Replace or remove stockpiles when construction is complete.

No-Action Alternative

The no-action alternative would result in no impacts to geology and soils in the area.

4.4 Vegetation

Proposed Action

Vegetation will be disturbed as a result of the proposed action for placement of target pads, camera pads, and the associated roads. Seeding or planting native vegetation in affected areas and adjacent to the pads and access roads will minimize impacts to vegetation. In addition, consistent with

the conservation agreement being developed by the Hill AFB Natural Resource office, the pads and roads must be established in such a way that the known areas of dense Giant four-wing saltbush concentrations on the east side of the island (shown in Figure 2-2) are not disturbed both during construction of the required facilities and during testing and training operations. If the required facilities are placed so as to avoid these sensitive areas, no significant impacts to vegetation are expected from the proposed action.

No-Action Alternative
The no-action alternative will have no impact on vegetation.

4.5 Wetlands

Proposed Action
The proposed action does not involve sites on or adjacent to any wetland area. Therefore, no adverse environmental impacts to wetlands are expected.

No-Action Alternative
The no-action alternative would have no impact on wetlands.

4.6 Air Quality

Proposed Action
There will be no significant increase in air emissions from the proposed action. Consequently, operation of the proposed facilities will not produce any significant changes in air emissions at the UTTR-South. Though new munitions would be tested at the new target complex, they would be similar in their energetic composition to those munitions currently being tested on the range. There is no planned increase in the number of test sorties at UTTR-South as a result of the proposed action. Air emissions from bombing activities are based on the number of test sorties.

Fugitive dust emissions from vehicular traffic on the dirt roads leading to the target may exceed 20% opacity. However, because of the distance to facility boundaries and the low number of vehicles traveling these roads, these emissions are not expected to leave DoD property or to have a significant impact on air quality in the area.

Construction of the proposed facilities would result in minor construction activity and some land disturbance. However, the proposed action is located in an attainment area for all criteria pollutants, and a federal conformity analysis is not required. Therefore, the proposed action would have no significant impact on air quality.

No-Action Alternative
The no-action alternative would have no impact on air quality.

4.7 Wildlife

Proposed Action
No federally protected species or habitats are known to exist on TS-5. Although the state-listed Short-eared Owl (*Asio flammeus*) has been observed on the island, the area does not provide suitable nesting habitat for raptor species. Consequently, no significant adverse impacts to wildlife are expected from the proposed action.

No-Action Alternative
The no-action alternative would have no impact on wildlife.

4.8 Archaeological and Historical Resources

Proposed Action

As discussed in Section 2.2.1, all significant archaeological sites will be avoided during target and road construction activities. Shaded areas for each site in Figure 2-2 represent the site location and a safety buffer zone, designed to prevent direct and indirect effects during construction and operation of the testing and training facilities covered in this EA. Sites recommended in the technical cultural resource inventory report for TS-5 (Carter, 1999) as ineligible for inclusion in the NR also will be avoided by construction and operation activities pending the final Hill AFB Cultural Resource office and Utah State Historic Preservation Officer (SHPO) determinations of significance and NR-eligibility. Determinations are proceeding concurrently with this EA.

Figure 2-2 also illustrates, with hatching, the central section of TS-5 that has not been adequately inventoried for cultural resources. Prior to construction of testing and training facilities in the central area of TS-5, the area will be re-inventoried by a professional archaeologist who meets Secretary of the Interior Standards and Guidelines. Furthermore, any newly recorded cultural resources will be evaluated for NR-eligibility and both the Utah SHPO and appropriate Native American representatives will be consulted as per Section 106, CFR 800.

By inventorying where necessary and avoiding all identified cultural resource sites during construction activities, routine target complex operations will not impact potential NR-eligible archaeological resources. However, use of the TS-5 facilities will increase general access to TS-5 archaeological sites and may result occasionally in munitions going off target. These activities could create unplanned direct, indirect, and cumulative impacts to NR-eligible archaeological resources. Therefore, the Hill AFB Cultural Resource office will work with the range operations personnel to identify procedures to protect significant sites during routine and emergency munitions recovery operations. This could include posting signs around the sites to be avoided, educating all range personnel on the fragile nature of the sites, and incorporating instructions and/or site location maps into the on-scene commander's written procedures.

No-Action Alternative

The no-action alternative would have no impact on archaeological sites.

4.9 Land Use

Proposed Action

Land on the UTTR-South is typically used for military testing and training purposes. Developing a new target at TS-5 is consistent with the operations of the UTTR. The new targets will allow for a 360-degree axis complex for PGM with large footprints. Existing targets allow for a maximum of 180-degree attack and could not accommodate the large footprint of the JDAM. Therefore, the proposed alternative would increase the capabilities at UTTR-South and would not adversely impact land use.

No-Action Alternative

The no-action alternative would have no impact on current land use at the UTTR-South.

4.10 Noise

Proposed Action

The noise impacts associated with existing conditions at UTTR-South are described in Section 3 of this EA. The proposed action would shift some of the existing test sorties from an existing target complex to a new site approximately 10 miles to the west, still within DoD controlled lands. Other than this shift, there will be no changes to existing operations at Hill AFB or the UTTR-South. Aircraft

utilizing UTTR-South will continue to fly the same flight profiles as they are currently. As a result, there will be no significant aircraft noise impacts associated with the utilization of the new target complex.

Construction noise would be removed from populated areas, occur only during normal working hours, and dissipate rapidly with distance from the source. The noise associated with construction would include engine and heavy machinery noise for the duration of the construction. After completion of the construction activities, no permanent impact by engine noise is anticipated.

No-Action Alternative

The no-action alternative would have no adverse noise impacts.

4.11 Health and Safety

Proposed Action

Prior to implementation, all new weapons testing programs undergo a safety review process that considers weapons type, delivery air speed, delivery altitude, footprint, and target location. A new weapons program will not be approved if there is a potential to exceed range boundaries or to impact manned sites. In addition, locating the new target complex off of the mudflats on dry terrain results in safer UXO recovery operations. Therefore, no new long-term health and safety hazards are expected from the proposed action.

No-Action Alternative

The no-action alternative would result in no significant impacts to health and safety at UTTR-South.

4.12 Transportation

Proposed Action

The proposed action would require construction of roads leading to each target and cinetheodolite pad. The proposed roads would provide access to the targets and camera pads, allowing for preparation of the targets and repair and maintenance of the cameras. Access to TS-5 would be prohibited during testing and training operations utilizing the proposed facilities. The proposed transportation activities would not adversely impact the existing transportation at UTTR-South.

No-Action Alternative

The no-action alternative would not impact transportation at UTTR-South.

4.13 Socioeconomics

Proposed Action

The facilities at TS-5 would not significantly impact the socioeconomics of the surrounding area. Training and testing operations at the UTTR would utilize the proposed TS-5 facilities. Other than construction activities, the new facilities would not generate new jobs or business opportunities. However, the proposed target complex would provide state of the art test and training facility for range users. By increasing the range's capabilities, the value of Hill AFB is increased as a DoD asset. This may be one of many considerations for any future BRAC evaluations.

No-Action Alternative

The no-action alternative would not impact the socioeconomic conditions at UTTR-South.

4.14 Environmental Justice

Environmental justice analyses for NEPA documents attempt to determine whether a proposed action disproportionately impacts minority and poor populations. However, because the UTTR-South is not located adjacent to such groups, and because the proposed actions do not result in significant environmental adverse impacts, no such analysis was conducted.

4.15 Cumulative Impacts

The impacts from the proposed facilities for TS-5 are summarized in Table 4-1. There are no expected adverse cumulative impacts from the proposed action. The number of sorties and testing and training operations are not expected to increase as a result of the proposed action. Therefore, noise and air quality impacts are not expected to increase.

The no-action alternative would have no adverse impacts on the environment. However, it could impact national defense because the DoD would have no capability to test large footprint PGM.

Table 4-1. Anticipated Environmental Consequences

Environmental Issues	Impacts from Proposed Action	Impacts from No-Action Alternative
Surface Water	No anticipated impact	No impact.
Groundwater	No anticipated impact.	No impact.
Geology and Soils	No anticipated impact.	No impact.
Vegetation	No significant impact provided areas identified as containing significant concentrations of the Giant four-wing salt bush are avoided during construction and operation of the target complex facilities.	No impact.
Wetlands	No anticipated impact.	No impact.
Air Quality	No anticipated impact. The number of sorties, operations, and munitions drops are not expected to increase as a result of the proposed action.	No impact.
Wildlife	No anticipated impact.	No impact.
Archaeological, Historical, and Cultural Resources	No significant impact provided: 1) proper archaeological inventories are completed prior to construction of the target facilities in areas needing to be re-inventoried; 2) all identified cultural sites are avoided during construction and routine operation of the target complex; 3) an archaeologist is on site during all construction activities; and 4) procedures to protect cultural resources during munitions recovery operations are developed and implemented.	No impact.
Land Use	No adverse impact. Target capabilities at UTTR-South would increase.	No impact.
Noise	No anticipated impact. Noise levels are expected to remain fairly constant as the number of sorties is not expected to increase.	No impact.
Health and Safety	No anticipated impact.	No impact.
Transportation	No adverse impact. New roads would allow for easier access to TS-5.	No impact.
Socioeconomic Conditions	No adverse impact. The operational capabilities of UTTR-South would increase resulting in increased importance of the range to DoD and consequently, increased value of Hill AFB.	No impact.
Environmental Justice	No anticipated impact.	No impact.

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Figure A-1
View from Wild Isle Facing North

Figure A-2
View from Wild Isle Facing East

Figure A-3
View from Wild Isle Facing South

Figure A-4
View from Wild Isle Facing West

Figure A-5
View of Kittycat Mountain (left) and Wildcat Mountain (right) from Wild Isle

Figure A-6
View of Playas on Wild Isle

Appendix B
Noise Analysis

Noise Regulations

The Noise Control Act (NCA) requires federal facilities to implement measures to reduce noise emissions. Generally, federal agencies whose activities result in increased environmental noise in the surrounding community are responsible for compliance with state and local environmental noise requirements. The operating federal agency is responsible for conducting studies necessary to determine the impact of environmental noise on the surrounding community and for making the community aware of these impacts. The Aviation Safety and Noise Abatement Act (ASNAA) is intended to provide assistance to those preparing and implementing noise compatibility programs under the NCA. The State of Utah has no noise control regulations, although State Code 10-8-16 gives cities the authority to develop noise control regulations or standards. The Tooele County Planning Division has performance standards that regulate the sound pressure level radiated by facilities in the county.

The NCA exempts military weapons or equipment designed for combat use from environmental noise requirements. Most military aircraft are exempt from the NCA. Thus, the ASNAA is not applicable at UTTR.

Definition of Environmental Noise

For the purposes of this environmental assessment, noise is defined as "unwanted" sound caused by activities that are not part of the natural setting of a locality and that are heard as such by people and animals. Noise is superimposed on the background (ambient) environment, and combined effects of superimposed noise and ambient noise can be measured by standardized sound level meters that provide a measurement of sound level in *decibel* (dB) units.

For most environmental assessment purposes, the measurement of noise is computed using the *A-weighted sound level* scale, expressed in dB (A) units. The A-weighted sound level is a single number measure of a noise event. A-weighted sound pressure level is a sound pressure level that has been filtered or weighted to reduce the influence of the low and high frequency extremes in order to correlate better with human assessment of the loudness of sound. Table B-1 list typical decibel values for noises encountered in daily life. For impulsive noise such as that from gunfire, explosions, or sonic booms (from supersonic aircraft), the measure of noise is expressed *in C-weighted sound level* units, dB(C), which is nearly unweighted except at very low frequencies and very high frequencies and retains the impulsive characteristics of such sounds.

Because noise could be continuous, steady or fluctuating, intermittent or impulsive, and because human response to noise is extremely diverse, the Environmental Protection Agency (EPA) examined noise evaluation methods that could be employed for the protection of public health and welfare with a reasonable margin of safety (EPA, 1974). The EPA recommended use of the L_{dn} as a descriptor of the 24-hour daily noise environment. The L_{dn} is the energy-equivalent average A-weighted sound level over a 24-hour period with a 10 dB penalty added to noise that occurs during the hours of 10:00 p.m. to 7:00 a.m. local time (2200-0700 hours military time). This measurement is used extensively to assess non-impulsive noise environments and has been adopted in various guidelines for land-use compatibility, such as by the EPA, Department of Transportation (DOT), HUD, and Department of Defense (DoD). Ambient L_{dn} levels in remote uninhabited areas, would typically range from 33 dB to 40 dB. The L_{dn} measurement is used extensively to assess the noise environment caused by aircraft operations around civilian and military airfields.

Table B-1. Typical Decibel [dB(A)] Values Encountered in Daily Life and Industry

	dBs
Rustling leaves	20
Room in a quite dwelling at midnight	32
Soft whispers at 5 feet	34
Men's clothing department of large store	53
Window air conditioner	55
Conversational speech	60
Household department of large store	62
Busy restaurant	65
Evaporative swamp cooler	65
Typing pool (9 typewriters in use)	65
Vacuum cleaner in private residence (9 feet)	69
Ringing alarm clock (at 2 feet)	80
Loudly reproduced orchestral music in large room	82
Beginning of hearing damage if prolonged exposure of 85 dB(A)	
Printing press plant	86
Heavy city traffic	92
Heavy diesel-propelled vehicle (about 25 feet away)	92
Air grinder	95
Cut-off saw	97
Home lawn mower	98
Turbine condenser	98
150 cubic foot air compressor	100
Banging of steel plate	104
Air hammer	107
Jet airliner (500 feet overhead)	115
F-15 aircraft (500 feet overhead, afterburner power)	123

When distances are not specified, sound levels are the values at the typical location of the machine operators.
Source: Newman and Beattie, 1985

The other developments of L_{dn} are applicable to aircraft noise in other circumstances such as measuring noise caused by low-level sorties and measuring noise from sonic booms caused by supersonic sorties. Noise caused by low-level flying is measured by the onset-rate adjusted monthly day-night average sound levels (L_{dnmr}), which is identical to L_{dn} except that a penalty of up to 5 dB is applied to aircraft noise events that have a more sudden rate of onset (which could induce a surprise effect on humans), and the average daily noise is evaluated for the calendar month with the highest number of low-level overflights. For this EA, the L_{dnmr} is used for the South Utah Test and Training Range (UTTR). However, it should be noted that both L_{dn} and L_{dnmr} are daily and monthly averages, respectively, albeit with penalties. Thus, those values hide the range of noise variation that occurs during flyovers, for example, and do not reflect how loud airplane noise is in a quiet environment such as the UTTR. Because the loud noise lasts for such a short time it does not alter the average values to a degree commensurate with the disturbance it causes.

There are many methods to measure noise, including those that measure single event noise levels. The L_{dn} measurement and its variation can be easily related to land-use compatibility such as for civilian airport environments and military airfields and to estimate the percentage of people who would be highly annoyed when exposed to a specific L_{dn} noise level, as illustrated in Figure B-1. The highly annoyed categorization was derived from studies that examined noise levels and degrees of annoyance. From these studies a mathematical formula was derived to predict the percentage of population expected to be highly annoyed by various noise levels. The formula also facilitated a comparison between the percentage of populace expected to be highly annoyed under a current noise levels and the percentage of populace expected to be highly annoyed as a result of noise levels generated by the proposed action. Additional mathematical computations are used to compute the acreage of land areas within L_{dn} or it's variation noise contours of 65, 70, and 75 dB.

Methodologies are available for the prediction of L_{dn} and L_{dnmr} via the computer programs NOISEMAP and ROUTEMAP. NOISEMAP and ROUTEMAP are the only methodologies officially sanctioned by the Air Force for use in this EA.

Existing Noise Environment

Aircraft Noise

UTTR-South: The Air Force is currently engaged in a number of operations on the UTTR including weapons testing, air-to-ground weapons delivery practice, simulated air-to-air combat, and low-altitude tactical navigation training. Noise is generated in the local environs on the UTTR from aircraft operations, ordnance explosion, maintenance, and construction.

Almost all of the land under the flight operation area is rural countryside with low background noise levels, but with existing conditions of sporadic overflight by low-level military aircraft. Estimated L_{dnmr} noise exposures from these current low-level operations range from 50 dB to 64 dB in the overflown valleys, and less in the adjacent mountain areas (USAF, 1991).

Some supersonic operations are conducted in the Gandy MOA and some airspace in the UTTR. The impacts of supersonic operations were analyzed within the ROUTEMAP analysis for the UTTR. In addition to these low-level flight operations, which dominate the noise environment throughout the South Range, other subsonic flight activity occurs at altitudes above 9,000 feet mean sea level in the Sevier A and Gandy MOAs and within restricted airspace's in the UTTR. These operations are generally random in both time and space and do not, in general, generate L_{dnmr} values in excess of 50dB at any specific ground location. The resulting noise impact from these high-altitude flights is, therefore, negligible relative to that of low-level flights.

Noise exposure resulting from operations on the UTTR South range has been previously evaluated using ROUTEMAP (USAF, 1991), which is computed using number of flights, aircraft types, flight altitudes, speeds, and engine power settings. The L_{dnmr} metric has the same relationship to the percentage of people highly annoyed as the L_{dn} previously discussed. For those calculations, total usage for the UTTR South range was estimated at 16,512 (USAF,1991a) for the Fiscal Year (FY) 1991. Current operations for FY1997 totaled 13,827 (USAF,1997) combined training and test sorties. This represents a 16% decrease in range utilization.

The ROUTEMAP contours previously generated for the **UTTR-South** indicated noise contours of L_{dnmr} 65 dB predominantly along the eastern boundary of the South Range due to a

concentration of flight activity southward toward entries into the few valleys in the South UTTR. Other occurrences of the L_{dnmr} 65 dB contours are at concentrations of flight activity en route to target areas. The land areas and populations affected by this previous study are shown in Table 2.

Table 2. Land Area and Population Baseline
UTTR-South

L_{dnmr}	Area (square Miles)	Population
55-60	5,831	104
60-65	3,422	76
65-70	1,013	8
70-75	41	0
TOTAL	10,307	188

Source: USAF, 1991

Of the towns and ranches located under the South Range airspace but outside of Department of Defense (DoD) controlled lands, only three ranches were estimated to have noise exposures of 65 L_{dnmr} or greater due to aircraft operations. Estimates of aircraft noise indicate that the towns of Callao, Trout Creek, Gandy, and Eskdale lie within a range of 60 to 62 dB L_{dnmr}, and the town of Partoun has an L_{dnmr} of 57 dB due to aircraft noise. The number of persons expected to be highly annoyed under the baseline aircraft noise conditions of this previous study was estimated to be 16 residents of a total of 385 residents located within the South Range airspace (USAF, 1991).

Anticipated Noise Impacts

Aircraft Noise

The noise impacts associated with existing conditions at Hill AFB and the South Range are described in Section 3 of this EA. The proposed action would shift some of the existing test sorties from an existing target complex to a new site approximately **10 miles** to the west, still within DoD controlled lands. Other than this shift, there will be no changes to existing operations at Hill AFB or the South Range. Aircraft utilizing the South Range will continue to fly the same flight profiles as they are currently. As a result of the noise analysis that was described in Section 3, it was determined that there will be no significant aircraft noise impacts associated with the construction of and utilization of the new target complex.

Construction Noise

Construction noise would be removed from near populated areas, occur only during normal working hours, and dissipate rapidly with distance from the source. The noise associated with construction would be include engine and heavy machinery noise for the duration of the construction. After completion of the construction activities, no permanent impact by engine noise is anticipated. Therefore, per NEPA guidelines, noise associated with construction was not further evaluated.

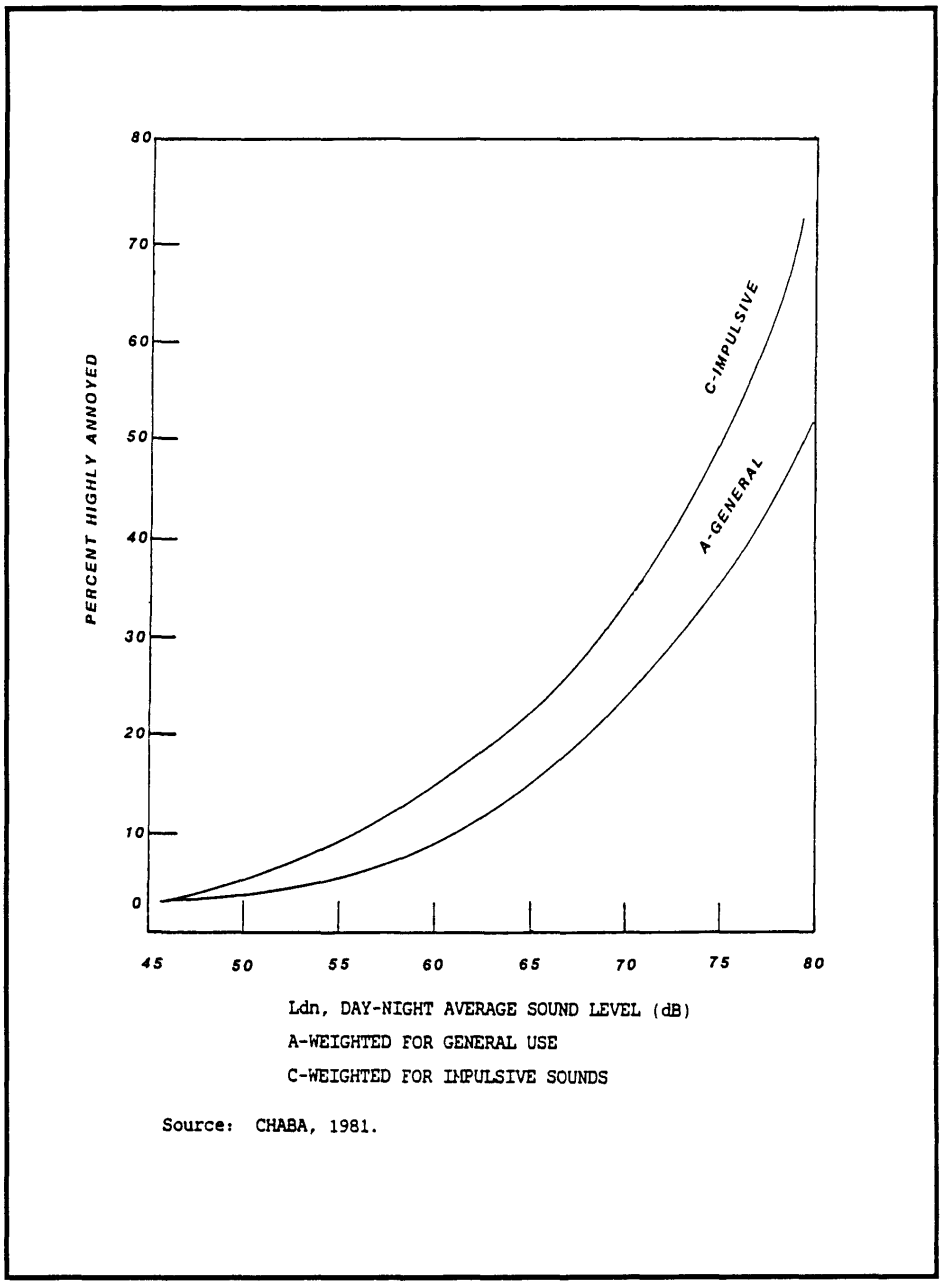

Figure B-1 Recommended Relationships for Predicting Community Response to Noise

References

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USAF, 1991a. South Range Activity Report for FY91, 388 Range Squadron, Hill Air Force Base, Utah.

USAF, 1997. South Range Activity Report for FY97, 388 Range Squadron, Hill Air Force Base, Utah.

Records of communication / contacts

Mr. Jet Trainer, 388 RANS/AM, 14 July 1998. Discussed range utilization, noise abatement procedures, and range airspace structure. Obtained FY97 utilization numbers for South Range, and a copy of the Hill Supplement to AFI 13-212, Weapons Ranges.

Ms. Kay Winn, 388 CES/EMP, 14 July 1998. Discussed previous EAs that were accomplished. Obtained a copy of Sonic Boom/Animal Disturbance Studies conducted for Hill AFB, February 1992.

Mr. Darrin Wray, 388 RANS/EM, 14 July 1998. Discussed range management. Obtained a copy of Range Management Plan and Environmental Assessment for the Hill Air Force Range and Wendover Air Force Range, January 1997.

Mr. Jet Trainer, 388 RANS/AM, 5 August 1998. Provided South Range utilization numbers

APPENDIX C

AIR EMISSION ESTIMATION METHODOLOGY

Bomb Dropping Activities

The UTTR operates several bomb training areas used by all branches of the service. Aircraft fly over target areas and drop inert or 'live' bombs. An average bomb payload was estimated for bomber and fighter aircraft types. Net Explosive Weight is assumed to be 50% of the Bomb Weight. Bomb drops were assumed to be 80 percent inert and 20 percent live. Sorties were assumed to carry an average bomb payload of 25 percent maximum.

[Emissions] = [Live NEW] x [Live EF]'+ [Inert Load] x [Inert EF]]x [1 ton/2,000 lb]

Estimated bomb loads:

	Number of Sorties (1997)	Operational Bomb Payload (lb)	Annual Bomb Drops (lb)	Live Bomb Payload (lb)	Live NEW (lb)	Inert Bomb Payload (lb)
Fighter Aircraft	11,677	6,000	1.752×10^{-7}	3.503×10^{-4}	1.752×10^{-4}	1.401×10^{-7}
Bomber Aircraft	1,450	52,000	1.885×10^{-7}	3.770×10^{-4}	1.885×10^{-4}	1.508×10^{-7}
TOTALS	13,127	N/A	3.637×10^{-7}	7.273×10^{-4}	3.637×10^{-4}	2.909×10^{-7}

Emission factors: PM_{10} emissions were assumed to be 35 percent of PM emissions.

Table 3-1
Emission Factors for Bomb Dropping Activities

		Emission Factors[1]	
CAS	Constituent	Live (lb/lb)	Inert (lb/lb)
CO	CO	0.00012	
NO_x	NO_x	5.70E-04	
1344281	Aluminum Oxide	0.3425	
PM	PM	0.3425	0.005
PM_{10}	PM_{10}	0.1199	0.0018

Example: Bomb Training and Strafing Activities

Source ID: 33022

PM_{10} emissions = $[(3.637 \times 10^{-4}$ lb/yr) x (0.1199 lb/lb) + $(2.909 \times 10^{-7}$ lb/yr) x (0.0018 lb/lb)] x (1 ton/2,000 lb)

= **244 ton/yr**

NO_x $.00057 (3.637 \times 10^{-4}) / 2000 = .0037$

CO $.00012 (3.637 \times 10^{-4}) / 2000 = 0.218$

Notes:

1. Emission factors used for live bomb drops were obtained from the miscellaneous open detonation emission factors, reported by UTTR to the UDAQ on January 26, 1995 ('Summary of Unserviceable Explosives Disposed at the Hill Range Complex in Connection with Variance During Calendar Year 1994'). PM_{10} emission factors were assumed to be 35% of the PM emission factors.

   Inert bomb drops were assumed to have PM and PM_{10} emissions from smoke flares and ground impact. Each flare emits approximately 4 lb of smoke which was assumed to be particulate matter. Ground impact was conservatively assumed to contribute 1 lb of particulate per bomb. An emission factor of 5 lb per 1,000 lb bomb was assumed (0.005) for both TSP and PM_{10}.

2. NEW stands for Net Explosive Weight.