
APPENDIX A

2011 Categorical Exclusion for Initial Operational
Test & Evaluation of QF-16s

REQUEST FOR ENVIRONMENTAL IMPACT ANALYSIS			Report Control Symbol RCS: 20110278			
INSTRUCTIONS: Section I to be completed by Proponent; Sections II and III to be completed by Environmental Planning Function. Continue on separate sheets as necessary. Reference appropriate item number(s).						
SECTION I - PROPONENT INFORMATION						
1. TO (Environmental Planning Function) 49 CES/CEAN		2. FROM (Proponent organization and functional address symbol) AAC/EBYA			2a. TELEPHONE NO. DSN 875-3367	
3. TITLE OF PROPOSED ACTION QF-16 Full-Scale Aerial Target IDT/OT Phase						
4. PURPOSE AND NEED FOR ACTION (Identify decision to be made and need date) See Attachment						
5. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES (DOPAA) (Provide sufficient details for evaluation of the total action.) See Attachment 6 AIRCRAFT, 120 SORTIES, 3rd + 4th QTR FY13						
6. PROPONENT APPROVAL (Name and Grade) Kenneth T. Hislop, GS-13		6a. SIGNATURE <i>IS/</i>			6b. DATE 20110602	
SECTION II - PRELIMINARY ENVIRONMENTAL SURVEY. (Check appropriate box and describe potential environmental effects including cumulative effects.) (+ = positive effect; 0 = no effect; - = adverse effect; U = unknown effect)					+	0
7. AIR INSTALLATION COMPATIBLE USE ZONE/LAND USE (Noise, accident potential, encroachment, etc.)					<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. AIR QUALITY (Emissions, attainment status, state implementation plan, etc.) <i>LESS THAN QF-4, IN ATTAINMENT AREA</i>					<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. WATER RESOURCES (Quality, quantity, source, etc.)					<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. SAFETY AND OCCUPATIONAL HEALTH (Asbestos/radiation/chemical exposure, explosives safety quantity-distance, bird/wildlife aircraft hazard, etc.)					<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. HAZARDOUS MATERIALS/WASTE (Use/storage/generation, solid waste, etc.)					<input type="checkbox"/>	<input checked="" type="checkbox"/>
12. BIOLOGICAL RESOURCES (Wetlands/floodplains, threatened or endangered species, etc.)					<input type="checkbox"/>	<input checked="" type="checkbox"/>
13. CULTURAL RESOURCES (Native American burial sites, archaeological, historical, etc.)					<input type="checkbox"/>	<input checked="" type="checkbox"/>
14. GEOLOGY AND SOILS (Topography, minerals, geothermal, Installation Restoration Program, seismicity, etc.)					<input type="checkbox"/>	<input checked="" type="checkbox"/>
15. SOCIOECONOMIC (Employment/population projections, school and local fiscal impacts, etc.) <i>INCREASE IN LOCAL SPENDING</i>					<input type="checkbox"/>	<input checked="" type="checkbox"/>
16. OTHER (Potential impacts not addressed above.)					<input type="checkbox"/>	<input checked="" type="checkbox"/>
SECTION III - ENVIRONMENTAL ANALYSIS DETERMINATION						
17. <input checked="" type="checkbox"/> PROPOSED ACTION QUALIFIES FOR CATEGORICAL EXCLUSION (CATEX) # <i>A2.3.31</i> ; OR <input type="checkbox"/> PROPOSED ACTION DOES NOT QUALIFY FOR A CATEX; FURTHER ENVIRONMENTAL ANALYSIS IS REQUIRED.						
18. REMARKS <i>RELOCATION OF A SMALL NUMBER OF AIRCRAFT TO AN INSTALLATION WITH SIMILAR AIRCRAFT, WITH NO SIGNIFICANT CHANGE IN FLYING HOURS NOR AIRCRAFT OPERATIONS, AND NO CHANGE IN FLIGHT TRACKS NOR PERMANENT PERSONNEL AND LOGISTICS SUPPORT. THIS CLEARANCE APPLIES TO IDT/OT ONLY. @ June 11</i>						
19. ENVIRONMENTAL PLANNING FUNCTION CERTIFICATION (Name and Grade) <i>Michael A. Porto GS-13</i>		19a. SIGNATURE			19b. DATE <i>14 Jun 2011</i>	

Block 4: Purpose and Need for Action The purpose of this AF Form 813 is to initiate the Environmental Impact Analysis Process (EIAP) for all actions required to conduct QF-16 Integrated Developmental/Operational Testing (IDT/OT) at Holloman AFB, NM/White Sands Missile Range (WSMR) for approximately a five month period in the 3rd and 4th quarter of FY13 that will involve up to six (6) QF-16 aircraft (2 each Block 15s, 2 each Block 25s and 2 each Block 30s) and approximately 20 sorties. This testing will occur in existing restricted areas on Holloman AFB and WSMR. The QF-16 will use the same airspace as the current full-scale aerial target (FSAT), QF-4; will utilize the extensive facilities and infrastructure in place at both Holloman AFB and WSMR; and will satisfy the same mission requirements as QF-4. The Description of Proposed Actions and Alternatives (DOPAA) does not direct any modification of facilities or infrastructure.

4.1 Full-Scale Aerial Targets

Title 10 United States Code 2366 requires all new or improved weapons systems to demonstrate their lethality and survivability prior to production. Aerial targets with on-board payloads (i.e. Electronic Counter Countermeasures (ECCM)) are the current mechanisms to support demonstration of these capabilities. The United States Air Force's (USAF) Air Superiority Modernization/Mission Area Plan has identified aerial targets as a capability shortfall. The QF-4 FSAT program's objective currently fulfills this requirement.

There is a critical need to replace the QF-4 aircraft, currently employed as a FSAT, for use in testing of US air-to-air and ground-to-air warfare systems. The QF-4's 3rd generation representation falls short of required aerial targets in virtually all areas: maneuverability and performance, threat signature emulation and multi-service interoperability. In addition projected inventories of serviceable F-4 aircraft at the Aerospace Maintenance and Regeneration Group (AMARG) facility in Tucson, Arizona are rapidly depleting.

The QF-16 program will satisfy the current capability shortfall by supporting the test and evaluation (T&E) of current and future counter-air weapon systems against existing and emerging threat aircraft. The fielded system will be used to provide threat representation in support of Developmental and Operational Testing (DT/OT), Force Development Evaluation (FDE) and other test environments.

4.2 The Need for FSAT

The QF-4 is a remotely controlled, full-scale, supersonic, afterburning aerial target capable of all-attitude, high "g" maneuvering flight. The QF-4 production run of this aircraft is drawing to a close and the inventory of available targets will soon be depleted with target kills averaging approximately 17 per year. Careful management of asset losses will permit live fire/lethality testing to continue, but eventually assets will no longer be available. As the AF contemplated the future of the FSAT, QF-4's technology and programmatic gaps were identified. With the advancement of technology, the QF-4 capabilities do not replicate 4th or 5th generation threat aircraft performance. The AF identified the QF-16 to fill a shortfall by supporting T&E of current and future counter-air weapon systems against existing and emerging threat aircraft beginning in 2015. The QF-16, like its predecessor, is a remotely controlled, full scale, supersonic, after-burning aerial target capable of all-attitude, high "g" maneuvering flight. QF-16 consists of the airborne system (F-16 and Drone peculiar Equipment (DPE)); the ground station

hardware and software; and common support equipment (SE). The airborne element is controlled using a fixed ground control station interfaced via a command telemetry link. The fielded system will be used to provide threat representation in support of DT/OT, FDE and other test environments. The QF-16 will be based out of Tyndall AFB and Holloman AFB and will operate on the Eglin Gulf Test and Training Range (EGTTR) and the WSMR. With the development of QF-16, the warfighter will continue to be given a high degree of confidence in weapon system superiority.

4.3 CONOPS

The QF-16 will provide threat representative presentations for developmental, operational and live-fire tests of US and foreign weapon systems. It will simulate threat 4th generation fighter aircraft agility and performance, as well as infrared and radio frequency (RF) signatures.

The QF-16 will carry Electronic Attack (EA) and ECCM expendable payloads; will be capable of formation flight with other unmanned aircraft; will be equipped with a Flight Termination System (FTS), scoring system, Identification Friend or Foe (IFF); and will have the ability to provide target position, performance and health information via data link as required.

The QF-16 will be based out of Tyndall AFB, FL and Holloman AFB, NM. It will be interoperable with the Eglin Gulf Test and Training Range (EGTTR) and White Sands Missile Range (WSMR) Target Control Systems (TCS) and scoring system ground stations (see Figure 4-1 for QF-16 Range Interface). The QF-16 will have a modular avionics and payload architecture to support future capability increments.

At the organizational level, the QF-16 will be operated by 82 ATRS, Det 1 personnel at Holloman AFB, NM and supported by an O&M contractor. DPE depot level maintenance and supply support will be provided by the QF-16 prime contractor, the Boeing Company, via a warranty or Contractor Logistic Support (CLS) for out-of-warranty repairs.

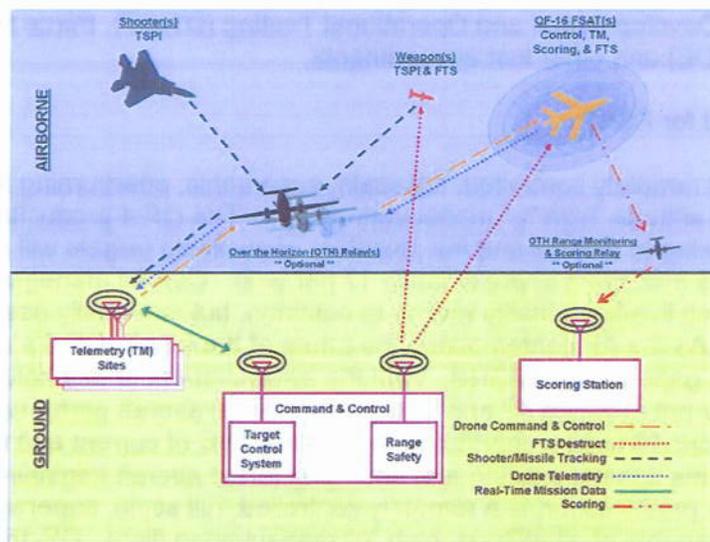


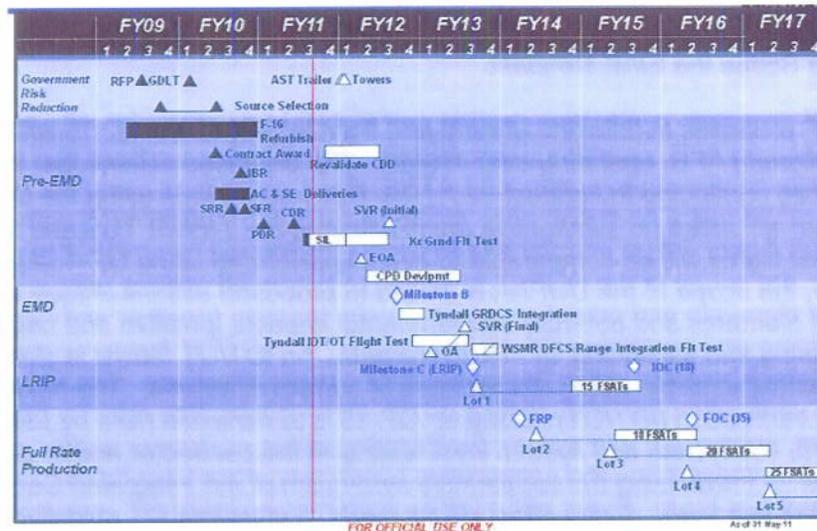
Figure 4-1 QF-16 Range Interface

4.4 Support Concept

The QF-16 program will use a two-level maintenance concept, organizational level and depot level maintenance. During IDT/OT organizational-level maintenance will be performed by the prime contractor, Boeing, at the field locations. There will be no F-16 avionics intermediate shop maintenance capability or jet engine intermediate maintenance capability at the organizational level. OO-ALC will provide depot level support for the basic F-16 airframe. OC-ALC will provide depot level engine refurbishment. Sustainment for the engines will be provided by the nearest Centralized Repair Facility. The QF-16 should not require scheduled or periodic depot maintenance or overhaul. However, depot level support may be required to complete some QF-16 modifications, time-compliance technical orders and component repairs.

4.5 Program Schedule

The following schedule represents the overall program schedule. Range integration and IDT/OT will occur in the 3rd and 4th quarters of FY13.



Block 5: Description of Proposed Actions and Alternatives

5.1 Background

An Integrated Test Team (ITT) was convened IAW AFI 99-103 and will oversee the QF-16 Full Scale Aerial Target (FSAT) test program to integrate all test and evaluation as seamlessly as possible. The ITT is co-chaired by the AAC/EBYA QF-16 program office, Eglin AFB, FL and the Air Force Operational Test and Evaluation Center (AFOTEC) Det 2, Eglin AFB, FL. ITT membership includes representatives from the responsible test organization (RTO), OT organizations, participating test organizations, Director, Developmental Test & Evaluation (DDT&E), Director, Operational Test & Evaluation (DOT&E), Boeing and the acquisition and requirements communities. The ITT will coordinate the overall approach from pre-shipment testing to flight acceptance tests after shipment.

The DT program will include all qualification and verification tests (ground and flight) necessary to demonstrate subsystem and system-level performance and to verify compliance with the requirements of the System Performance Specification (SPS). The T&E process will be a sequential, progressive evaluation of the components, subsystems and the QF-16 system. Laboratory testing of proposed components will be performed to support design trade studies and to verify adequacy of the selected components. Qualification tests to be witnessed by the Government include configuration item functional testing, computer software configuration item (CSCI) testing, hazards of electromagnetic radiation to ordnance testing of the FTS (subsystem-level), environmental testing, electromagnetic compatibility testing, reliability testing (uninstalled, but mechanized at the drone peculiar system-level), a maintainability demonstration and flight testing. All contractor qualification testing will be completed prior to any Government flight testing. The basis for system acceptance will be successful demonstration of the specification requirements when accomplished IAW Government-approved test plans and procedures. Flight tests will be conducted in the user environment with user participation.

5.2 Scope

5.2.1 The Scope the EIAP Request

The USAF proposes conducting ground and flight testing of the QF-16 with 82 ATRS, Det 1, Holloman AFB, operating over WSMR. The proposed actions test the QF-16 targets while continuing to conduct 82 ATRS, Det 1 operations using the QF-4. The QF-16 program will make no substantive modification of the WSMR TCS and facilities. The IDT/OT test flights will be comparable to events performed using QF-4 targets. Therefore, the scope of the DOPAA is limited to proposed actions unique to QF-16 target test elements and potential environmental impacts (positive and negative) relating to maintaining and sustaining QF-16 test targets. An IDT/OT format is planned to the greatest extent possible within the confines of current directives. The objective of seamless verification (IDT/OT) testing on QF-16 is to minimize risks by performing component, subsystem and system level testing at the contractor and/or government facilities while maximizing the cooperative synergism of the integrated Contractor/Government test team. Every effort will be made to complete OT objectives piggy-backed onto DT flights or in conjunction with missile test programs in order to conserve range resources. This DOPAA does not address impacts related to possible piggy-backed DT flights. Dedicated OT missions are planned for both Tyndall AFB and Holloman AFB.

5.2.2 Timeframe

Integration and flight testing with the WSMR TCS will initiate in late FY13 after successful completion of the TCS integration and flight testing at Tyndall AFB. See paragraph 4.5 for program schedule.

5.3 Configuration QF-16 System

Figure 5-1 identifies the major components, interfaces and unique SE requiring test and evaluation to convert a F-16 aircraft into a QF-16 FSAT system:

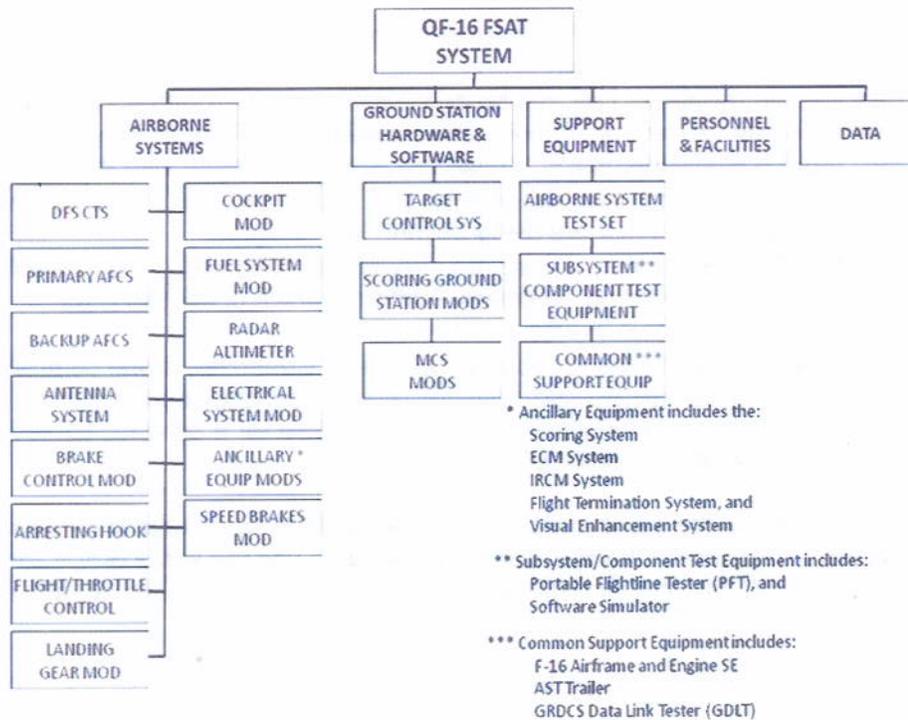


Figure 5-1 Notional Configuration Block Diagram

A number of differently configured F-16 aircraft will ultimately be converted into QF-16s. A single operational flight program (OFP) software package will not support all variants of aircraft. The Blk 15s will use the Z2 OFP and the Blk 25s and 30s the 5.0/5.1 OFP. These OFPs and all the supporting LRUs for each block are supportable. Further analysis will be necessary if additional F-16 configurations become part of the program.

For detailed information on these systems and their function refer to the signed QF-16 Life Cycle Management Plan (LCMP), dated 25 Nov 08.

5.3.1 Target Control System Interface

The QF-16 must interface with TCSs at Tyndall AFB and WSMR using the existing common uplink/downlink message format structure. Ensuring all the components, subsystems, systems and software are integrated, reliably operating and capable of supporting weapon system evaluation are the primary objectives of the IDT/OT flights.

TCS is a ground based computer system that is used to track and control unmanned aerial targets in support of weapons testing and evaluation. The current TCS system has the following major capabilities:

- Track and control four (4) drones. The current drones are the QF-4 and BQM-167A and can be mixed and matched in any combination up to four. Drones can be dynamically deleted and added to the configuration without restarting the software.

- Track four (4) shooters. This can be any aircraft equipped with a TCS data link pod attached under the wing.
- Track four (4) missiles. This can be any missile equipped with a TCS data link compatible unit. A destruct option is also available for flight safety.
- Track four (4) platforms/relays. These are aircraft equipped with a TCS data link unit. They are used for over-the-horizon (OTH) tracking and control of drones and other participants that are flying beyond line of sight.
- Track two (2) other aircraft. These are aircraft equipped with a TCS data link unit. An example is the Airborne Telemetry Platform, which provides range surveillance and telemetry relay.
- Support eight (8) consoles for use by the Master Controller, drone controller(s), range safety, electronic countermeasure control, and engineering monitoring. All consoles are form and functional equivalents. Allow for a dynamic takeover function in case of a console failure.

The TCS at WSMR has the same major capabilities and the same data link message structure as the TCS used by the EGTTR. Both systems use the same drone control algorithms for take-off, landing, and mission presentation, with additions at each range for range specific requirements.

5.3.2 Flight Termination System (FTS)

As with the QF-4 predecessor, the QF-16 shall include a redundant (except for the warhead), fault-tolerant, explosive FTS. The QF-16 FTS shall be designed, developed, integrated and tested to be fully compliant with RCC-319-07. In the event the QF-16 aircraft becomes damaged and unmaneuverable or uncontrollable during NULLO flight, the FTS is used to destroy the aircraft to prevent further flight. The QF-16 FTS is designed to immediately terminate aerodynamic flight upon detonation of the FTS warhead. The primary means for explosive destruct shall be through a UHF flight termination receiver (FTR). The backup means for destruct shall be through the TCS command control uplink. A failure in either path of the explosive FTS shall not inhibit the other flight termination path from operating. The QF-16 FTS also has provisions for an automatic flight termination capability that detonates the warhead autonomously if certain criteria are met. Figure 5-2 illustrates the flight termination installation for unmanned QF-16 configurations. The warhead is an AIM-9 Sidewinder, MK-8 Warhead, NSN 1336-01-020-4946, 10.5 pounds net explosive weight. Should contact with the QF-16 be lost with no potential for regaining control, the target could be totally destroyed through either the manual or automatic sequence. Figure 5-3 depicts the results of a MK-8 Warhead detonated in a F-16. The Static Destruct Test was conducted on 19 Aug 10 and successfully demonstrated the placement of the FTS warhead would terminate aerodynamic flight.

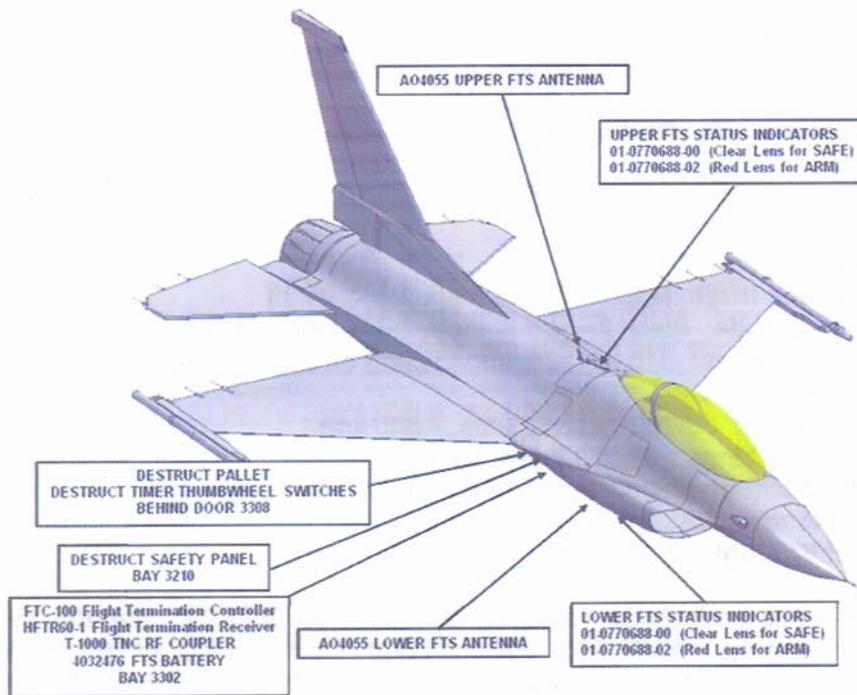


Figure 5-2 Flight Termination Installation for Unmanned QF-16 Configurations



Figure 5-3 QF-16 Static Destruct Test

5.3.3 General characteristics for F-16 Fighting Falcon

- **Length:** 49 ft 5 in (14.8 m)
- **Wingspan:** 32 ft 8 in (9.8 m)
- **Height:** 16 ft (4.8 m)
- **Wing area:** 300 ft² (27.87 m²)
- **Empty weight:** 18,238 lb (8,272 kg)
- **Loaded weight:** 26,463 lb (12,003 kg)

FOR OFFICIAL USE ONLY

- **Max takeoff weight:** 42,300 lb (16,875 kg)
- **Powerplant:** 1× Pratt & Whitney F100-PW-220 afterburning turbofan
 - **Dry thrust:** 14,590 lbf (64.9 kN)
 - **Thrust with afterburner:** 23,770 lbf (105.7 kN)

5.3.4 Performance of F-16 Fighting Falcon

- **Maximum speed:**
 - **At sea level:** Mach 1.2 (915 mph, 1,460 km/h)
 - **At altitude:** Mach 2+ (1,500 mph, 2,414 km/h) at altitude
- **Combat radius:** 340 mi (295 nm, 550 km) on a hi-lo-hi mission with six 1,000 lb (450 kg) bombs
- **Ferry range:** >3,200 mi (2,800 nm, 4,800 km)
- **Service ceiling:** >50,000 ft (15,239 m)
- **Rate of climb:** 50,000 ft/min (254 m/s)
- **Wing loading:** 88.2 lb/ft² (431 kg/m²)
- **Thrust/weight:** F100 0.898; F110 1.095

5.4 The QF-4 Full Scale Aerial Target System is the current FSAT operated by the 82 ATRS Det 1 using the WSMR TCS. For comparison to the proposed QF-16 the following is a description of the physical and performance characteristics of the QF-4.

The QF-4 airborne system consists of a modified F-4, Command Telemetry System (CTS), the Automatic Flight Control System (AFCS), airborne software and ancillary equipment. These changes include modifications to the flight control system, cockpit panels, fuel system, radar altimeter, electrical system, brake controls, speed brakes, drag chute/arrestor hook, flight/throttle control, wing flaps/slats, landing gear, airborne software and ancillary equipment. Ancillary equipment modifications include the scoring system, ECM system, IRCM system, FTS, and visual enhancement (fog oil) system. General information concerning F-4 dimensions, weights, loadings and performance characteristics is provided in sections 5.4.1 and 5.4.2.

5.4.1 General characteristics

- **Length:** 63 ft 0 in (19.2 m)
- **Wingspan:** 38 ft 4.5 in (11.7 m)
- **Height:** 16 ft 6 in (5.0 m)
- **Wing area:** 530.0 ft² (49.2 m²)
- **Empty weight:** 30,328 lb (13,757 kg)
- **Loaded weight:** 41,500 lb (18,825 kg)
- **Max takeoff weight:** 61,795 lb (28,030 kg)
- **Powerplant:** 2× General Electric J79-GE-17A axial compressor turbojets, 17,845 lbf (79.6 kN) each
- **Fuel capacity:** 1,994 US gal (7,549 L) internal, 3,335 US gal (12,627 L) with three external tanks
- **Fuel type:** JP-8
- **Fuel flowrate:** 9,820 lbs/hr
- **Maximum landing weight:** 36,831 lb (16,706 kg)

5.4.2 Performance

- Maximum speed: Mach 2.23 (1,472 mph, 2,370 km/h) at 40,000 ft (12,190 m)
- Cruise speed: 506 knots (585 mph, 940 km/h)
- Combat radius: 367 nm (422 mi, 680 km)
- Ferry range: 1,403 nm (1,615 mi, 2,600 km) with 3 external fuel tanks
- Service ceiling: 60,000 ft (18,300 m)
- Rate of climb: 41,300 ft/min (210 m/s)
- Wing loading: 78 lb/ft² (383 kg/m²)
- Thrust/weight: 0.86
- Lift-to-drag ratio: 8.58
- Takeoff roll: 4,490 ft (1,370 m) at 53,814 lb (24,410 kg)
- Landing roll: 3,680 ft (1,120 m) at 36,831 lb (16,706 kg)

5.5 QF-16 System Description

5.5.1 General Description. The QF-16 is a remotely controlled, full scale, supersonic, after-burning aerial target capable of all-attitude, high "g" maneuvering flight. QF-16 consists of the airborne system (F-16 and DPE); the ground station hardware and software; and aircraft common SE. The airborne element is controlled using a fixed ground control station interfaced via a command telemetry link.

5.5.2 Airborne System. The QF-16 aircraft will consist of surplus F-16 airframes recently retired or currently in storage at AMARG. The aircraft will be regenerated back to flying condition, modified as required and will have engines supplied as Government-Furnished Property (GFP). The modified F-16 aircraft will have the necessary equipment installed to allow operation as a manned or unmanned QF-16 FSAT.

5.5.3 Ground Control System. The existing Target Control System (TCS) software will be updated to provide QF-16 interface/compatibility. Physical modifications to the ground station will be primarily limited to overlays for the display consoles to identify the unique QF-16 system interfaces/implementation. Figure 4-1 illustrates the QF-16 data links at a typical test range and how it interfaces to the range infrastructure.

5.5.4 Support Equipment. The airframe and engine will be supported by common SE provided as GFP. The QF-16 will require Peculiar Support Equipment (PSE) for DPE test and fault isolation:

- Automated System Test Set (ASTS) – a drone unique end-to-end test set to test mission readiness prior to flight and provide failure codes in the event of DPE failure
- Portable Flight-line Tester (PFT) – a laptop capable of testing DPE mission readiness on the flight-line

No new or modifications to existing facilities are planned or expected throughout the IDT/OT period for the QF-16 SE and PSE.

5.5.5 Ground Station Hardware. The ground station hardware consists of the existing TCS fixed control stations and scoring ground stations.

5.6 Refurbishment of QF-16 Aircraft

The QF-16 aircraft will consist of surplus F-16 airframes recently retired or currently in storage at AMARG. The aircraft will be regenerated back to flying condition, modified as required and will have engines supplied as Government-Furnished Property (GFP). The modified F-16 aircraft will have the necessary equipment installed to allow operation as a manned or unmanned QF-16 FSAT. The type of engine installed will determine whether the aircraft can be used for manned flight.

All withdrawn aircraft will be full envelope, manned capable and will be a mix of Block 15s, 25s and 30s (the goal is to minimize the number of Block 15s). All airframes that have a minimum of 50 hours (goal of 300 hours) remaining useful life and compatible avionics software will be considered drone candidates.

Two engine configurations (manned and unmanned flight) are planned for the Block 15 and 25 aircraft to lower costs of the system. F100-PW-200 variant engines without a back-up fuel control unit will be used for unmanned missions and F100-PW-220 engines will be used for manned missions. Block 30 aircraft will be delivered with F110-GE-100B engines which will be used for both manned and unmanned flight.

The Boeing Company is under contract to design, develop and test the drone peculiar equipment (DPE) and integrate the DPE into six (6) government furnished aircraft. The aircraft will be a mix of two (2) each F-16A Block 15s, 2 each F-16C Block 25s and 2 each F-16C Block 30s. The resulting aircraft, designated QF-16, will interface with the TCSs at Tyndall AFB, FL and WSMR. Boeing will conduct contractor ground and flight testing of the integrated system at Cecil Field, Jacksonville, FL prior to IDT/OT at Tyndall AFB and Holloman AFB/WSMR.

5.7 Facilities

No new or modifications to existing facilities are planned or expected throughout the IDT/OT period. The site activation team will assess specific QF-16 requirements and identify needs and impacts related to facilities at both Tyndall AFB and Holloman AFB.

5.8 Environmental Impacts

In this section, AAC/EBYA provides potential impacts based on analysis published in:

- *Finding of No Significant Impact (FONSI) and Environmental Assessment for the Relocation of F-16 Aggressor and Test Aircraft From Nellis Air Force Base, Nevada to Tyndall Air Force Base, Florida, April 1990;*
- *Final Life Cycle Environmental Assessment for the QF-4 Full Scale Aerial Target, 16 November 1994*
- *Environmental Assessment for Proposed Force Structure Change at Shaw Air Force Base, Sumter, South Carolina, March 1996*
- [Placeholder for FONSI issued for Holloman AFB]
- [Placeholder for F-16 Holloman AFB EA (Luke AFB Transition)]

The proposed action is to test the QF-16 while continuing to conduct 82 ATRS, Det 1 operations using the QF-4. As the TCS and facilities will not change, the potential

environmental impacts are related to the differences between the two (2) targets. They are:

- As a program cost reduction initiative, the QF-16 Blocks 15 and 25 will use two (2) versions of the F100 engines for manned operations vs. unmanned operations, creating minimal additional workload for engine personnel. This initiative is deemed as no significant environmental impact.
- The F-16 utilizes hydrazine as a back-up emergency source for power generation, creating a requirement for hydrazine experience, knowledge and training which should already exist within the 49 CES/CEAN based on the relocation of the F-16 training mission from Luke AFB. Hydrazine storage and transportation of containers will be an additional fuels management responsibility, which creates additional workload for maintenance personnel vice the QF-4. This initiative is deemed as no significant environmental impact.
- The F-16 utilizes some graphite composites where the QF-4 did not utilize any. There will not be any composite repair during the IDT/OT period.

USAF	K/e	K/p	B/e	C/BMI	G/BMI	G/e	G/pami	G/pe	G/pimi	C/BMI	C/e	C/pimi	C/thpls	C/pbc	Q/bmi	Q/e	Q/pimi
A-10						X					X						
B-1		X	X			X					X			X	X	X	
B-2	X					X				X	X	X			X	X	
B-52						X											
C-5	X					X											
C-17	X					X					X	X					
C-32A	X										X						
C-37A	X					X					X						
C-38A	X										X						
C-130						X											
F-117	X				X	X	X		X	X			X	X			X
F-15			X			X		X						X	X		
F-16						X								X			
F-22				X	X					X		X	X	X	X		
OV			X								X						
SR-71																	X
T-1A	X																
T-4A						X											

Key for Composite Systems (fiber / matrix):			
K/e = Kevlar / epoxy	G/e = glass / epoxy	C/e = carbon / epoxy	Q/bmi = quartz / bismaleimide
K/p = Kevlar / phenolic	G/pami = glass / polyamide	C/pimi = carbon / polyimide	Q/e = quartz / epoxy
B/e = Boron / epoxy	G/pe = glass / polyester	C/thpls = carbon / thermoplastic	Q/pimi = quartz / polyimide
C/bmi = carbon / bismaleimide	G/pimi = glass / polyimide	C/pbc = carbon / phenolic based carbon	
	G/bmi = glass / bismaleimide	C/bmi = carbon / bismaleimide	

Table 5-1. Composite Systems/USAF Aircraft, Source: TO 00-105E-9 Chapter 3

Any other potential impacts would be in common with the operation of the QF-4 and are identified and analyzed in the referenced document, *Final Life Cycle Environmental Assessment for the QF-4 Full Scale Aerial Target*. Recovery and cleanup of a destroyed/crashed FSAT will be IAW White Sands Test Center/Army requirements.

5.8.1 Air Quality

Air quality in the region is not anticipated to be significantly affected by proposed actions. Air emissions generated due to the proposed project would come primarily from the pre-test patrol, carrier, chase and target aircraft and from missile rocket motors. The chief source of emissions is aircraft flight operations. The QF-16 will utilize the same ECCM payloads as the QF-4.

5.8.1.1 Aircraft Operations Emissions

Various amounts of carbon monoxide (CO), hydrocarbons (HC), nitrous oxides (NOx) of various forms and unburned particulates are discharged during aircraft flight. As this proposal requires replacing the QF-4 with the QF-16, only emissions from the target aircraft will be compared here.

Aircraft Characteristics		
Parameter	QF-16	QF-4
Number of engines	1	2
Engine Type	F100-200 Pratt & Whitney/ F110-100 General Electric	J79-17 GE
Engine Mode	Military Power	Military Power
Time (hrs)	1	1
Fuel Flow (lbs/hr)	8,716	19,640
Fuel Used (lbs)	8,716	19,640

Estimated Emissions Per Flight (Mtons/sortie)					
	CO	NOx	VOC	SOx	PM10
QF-4*	0.036	0.0102	0.0076	0.00196	0.00122
QF-16**	0.00907184	0.00434269	0.00216716	0.00008819	0.00082318
* Based on LCEA Appendix A for the QF-4 Full Scale Aerial Target					
**Based on annual emissions report for 53rd Wing F-16 operations of 108 sorties					

5.8.1.2 Other Emissions

Aircraft Fuel Dispensing

Speciation Factors for JP-8 Fuel Dispensing		
Pollutant	CAS Number	Speciation Factor Weight Percent
ETHYLBENZENE	100414	0.271
TOLUENE	108883	1.143
XYLENE (MIXED)	1330207	1.877
2,2,4-TRIMETHYLPENTANE	540841	0.01
BENZENE	71432	0.613
NAPHTHALENE	91203	0.003
CUMENE	98828	0.33

Fuel Cell Maintenance

To keep aircraft operational, maintenance, repairs and routine inspections on aircraft fuel cells (tanks) must be accomplished. Although the procedures for performing fuel cell maintenance vary depending on the aircraft type, typical procedures include the following:

1. The fuel cell is defueled and the fuel loaded into bowsers and/or approved containers;
2. The fuel cell is purged with fresh air;
3. Oxygen and lower explosive limit (LEL) readings are taken and purging is re-accomplished if oxygen and lower explosion limit levels are not within acceptable limits;
4. The explosion suppression foam (if applicable) is removed from the fuel cell;
5. The fuel cell is depuddled to remove any remaining liquid fuel;
6. The fuel cell is purged again with fresh air;
7. The fuel cell is entered and maintenance performed.

Based on the procedures listed above, there are three (3) potential emission sources associated with fuel cell maintenance:

- Loading of the liquid fuel into bowsers,
- Air purging of the fuel vapors from the tank, and
- Removal/drying of the explosion suppression foam (if applicable).

The emissions of concern from fuel cell maintenance include Volatile Organic Compounds (VOCs) and organic Hazardous Air Pollutants (HAPs) of JP-8.

Non-destructive Inspection

Non-destructive inspection (NDI) of the QF-16 will not be used during IDT/OT.

Jet Engine Testing

Aircraft engines are tested on a routine and as needed basis. Aircraft engine tests were categorized as test stand run-ups, hush house run-ups or trim pad run-ups. Test stand run-ups were conducted with the engine removed from the airframe and mounted to a test stand. Aircraft engines generally remained mounted to the aircraft during hush house and trim pad run-ups.

Combustive emissions from aircraft engine testing operations were based on the number of tests for each engine type. During a test the engine was cycled through several test modes that corresponded to aircraft engine power settings. The fuel type, test mode, engine type/model, and time in test mode were used to calculate emissions from aircraft engine testing. Emissions from each test mode were summed to determine total emissions for an engine test. The following were the most common engine test modes:

- Idle
- Approach
- Intermediate
- Military
- Afterburner

Emissions of concern from aircraft engine testing operations include the criteria pollutants and a variety of HAPs (both organic and inorganic).

Surface Coating

No QF-16 surface coating operations will be performed during IDT/OT.

5.8.2 Hazardous, Toxic Materials and Solid Waste

This section provides a description of hazardous materials usage and hazardous and other wastes that may be generated at Holloman AFB. Hazardous materials for the F-16 have been documented in a database maintained by AMARG. The Boeing Company has documented that the addition of the DPE will not introduce any additional hazardous materials.

5.8.2.1 Hazardous and Toxic Materials and Pollution Prevention

The flying activities and maintenance processes at Holloman AFB require the use of hazardous and toxic materials to support all aerial targets. These are chemicals that the US Environmental Protection Agency (EPA) and the AF have targeted for reduced use due to their toxicity. As with the QF-4, Holloman AFB will be required to store and use moderate amounts of paints, solvents, thinners, adhesives, JP-8 fuel, oils, cleaners, batteries, acids, bases, chlorofluorocarbon refrigerants and compressed gasses. The Contractor for the generation of QF-16 will be required to accomplish environmental, safety and occupational health assessments throughout systems engineering processes to ensure risks are minimized throughout the target system's life cycle. Assessments include human systems integration; environment, safety and occupational health; disposal and demilitarization; and insensitive munitions. The Contractor will support working-level safety meetings, test hazard assessment reviews, and safety review panels/boards and prepare safety data packages and present at system safety review panels/boards. Elevated risks as defined in MIL-STD-882D, System Safety Program Requirements, will require mitigation and risk reduction.

5.8.2.2 Hydrazine

F-16 aircraft use an aqueous mixture of 70 percent hydrazine, CAS No. 302-01-2, known as H-70, for emergency backup power generation in the event primary power is lost due to engine failure. The F-16's Emergency Power Unit (EPU) contains 6.7 gallons. See location in figure 5-4. Hydrazine is identified as an extremely hazardous substance with a threshold planning quantity (TPQ) of 1000 lbs for Emergency Planning Notification IAW Emergency Planning and Community Right-to-Know Act sections 302/303, and reportable quantity of one pound when released into the environment. Stored quantities of hydrazine will never reach the TPQ during testing at Holloman AFB. Emergency responders have Air Force Occupational Safety & Health (AFOSH) and NPFA standards addressing Personal Protection Equipment (PPE) and the spill containment and disposal in the event of H-70 release. See appendices A & B. Extensive efforts have been undertaken in the past to identify less hazardous alternatives but no technically acceptable replacement has been identified. The QF-16 will remove the H-70 from EPU fuel containers in preparation for unmanned flight operations to prevent releases into the environment.

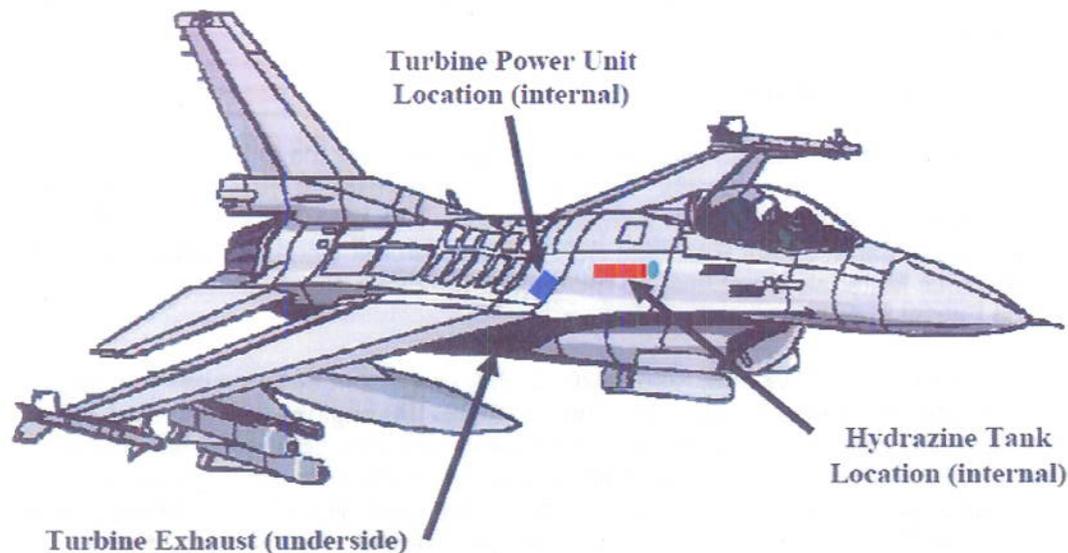


Figure 5-4 F-16 Emergency Power Unit

5.8.2.3 Halon 1301

Halon 1301 is a Class I Ozone Depleting Substance (ODS) and is no longer produced in the US. Halon 1301 is used in the F-16 aircraft as a fuel tank inverter. No technically approved acceptable alternatives have been identified to date, although efforts to identify alternatives continue to be monitored. An ODS waiver allowing the F-16 weapon system to continue to use the Class I ODS was obtained from an AF Senior Acquisition Official. The Defense Logistics Agency (DLA) in Richmond, Virginia has established an ODS Defense Reserve which currently provides Halon 1301 to F-16 units worldwide under this ODS Waiver. The ODS Defense Reserve is projected to have enough Halon 1301 to supply USAF F-16 units until the end of the weapon system mission. As a mitigation measure designed to minimize losses, Halon 1301 is only used during wartime events. The QF-16 program will not require Halon 1301, nor make demands on the F-16 ODS Defense Reserve.

5.8.2.4 Chromium

Chromium compounds are human carcinogens and have been identified by the AF as a high priority substance whose usage are to be reduced to as near zero as feasible. Chromium is used as a corrosion preventative material for metals in coatings (e.g. chromic acid treatment, etch tanks, paints and primers). Chromium is present in F-16 aircraft paints and primers and in corrosion preventative processes during manufacture and maintenance. Most human exposure and hazardous materials/waste occurrences are during production and maintenance of the F-16 aircraft. Extensive efforts have been taken to implement more environmentally acceptable alternatives for these processes. Chromium was successfully eliminated from a sodium dichromate etch process through implementation of a non-chromated etch process. An alternative surface preparation

process (PreKote) has been approved for use on F-16 aircraft, and non-chrome "tie-coat" materials have been approved for use in field scuff and repaint (non-bare metal) primer applications.

5.8.2.5 Radioactive Materials

One notable environmental advantage QF-16 target has over the QF-4 is the near elimination of radioactive materials. According to the Aerospace Emergency Rescue and Mishap Response Information technical manual, T.O. 00-105E-9, the 88 ABW Environmental Management Radiation Safety Office Aircraft Database, and AMARG's F-16 Hazardous Materials Database, no radioactive materials are contained in the F-16 Fighting Falcon airframe.

However, all the F100-PW-100, -200, -220, & -229 propulsion systems have an engine ignition exciter containing Krypton 85. The F110-GE-100 engines (used in the F-16 Block 30s) may contain radioactive magnesium-thorium alloy gearboxes but only 10 percent of the inventory of F110-GE-100 engines are configured with magnesium-thorium alloy gearboxes and they are identified in the Centralized Engine Management System (CEMS). The remainder do not contain this hazard. Furthermore, during IDT/OT the Block 30 aircraft will always be flown manned and will not be engaged in live fire scenarios.

Manned QF-16 aircraft, before final conversion into unmanned drones, carry survival kits. Each kit has a compass containing Tritium. These kits will be removed after conversion to targets.

5.8.2.6 Hazardous and Toxic Materials Personnel

Under the proposed action, quantities of hazardous and toxic materials and solid waste at Holloman AFB would increase slightly from present levels because hydrazine must be used for manned aircraft operations. Use conditions and procedures for these hazardous materials will preclude public exposure to an inadvertent release and impacts are considered insignificant.

5.8.3 Noise

The QF-16 program will not increase the maximum number of flights for FSATs over what is already approved for QF-4 mission activity. In addition, the QF-16 is a single engine aircraft vice the 2 engine QF-4 further reducing noise levels.

5.8.4 Range Cleanup

If a QF-16 crashes or is destroyed on WSMR, site cleanup will be accomplished by, or under the direction of, White Sands Test Center (WSTC)/Army personnel and will be in accordance with WSTC/Army standards including WSMR Regulation 72-8, dated 14 May 02.

Appendix A

[Placeholder for Holloman AFB Operational Inspection Checklist for Hydrazine]

Appendix B

TO 42B1-1-18 General Procedures Handling of H-70 (Hydrazine - Water Fuel)

Note: Click below to open the TO.

TO 42B1-1-18

TECHNICAL MANUAL

GENERAL PROCEDURES HANDLING OF H-70 (HYDRAZINE - WATER FUEL)

IATOS)

F41628-82-1-A287

F41628-87-1-A258

Prepared By: TRI-COR Industries, Inc.

This publication supersedes TO 42B1-1-18, dated 15 August 2002, which will be removed from active files.

DISTRIBUTION STATEMENT A Approved for public release; distribution is unlimited. Requests for this document must be returned to HQ AFPE/AFPTT, 2430 G St, Bldg 70, Area B, Wright-Patterson AFB, OH 45433-7022, PA Case Number AFMC 04-414. Submit recommended changes or problems with this Technical Order to HQ AFPE/AFPTT.

HANDLING AND USE INSTRUCTIONS Handle in compliance with the distribution statement and destroy by any method that will prevent disclosure of the contents or reconstruction of the document.

Published Under Authority of the Secretary of the Air Force

15 JUNE 2007

28 of 55

FOR OFFICIAL USE ONLY

APPENDIX B

Coordination and Consultation

IICEP Letter and Mailing List



**DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
JOINT BASE SAN ANTONIO LACKLAND TEXAS**

8 January 2014

J. Dale Clark, P.E.
Chief, AF NEPA Center
AFCEC/CZN
2261 Hughes Avenue Ste 155
JBSA-Lackland AFB TX 78236-9853

See Distribution List

Dear Sir or Madam:

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) for the Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Holloman Air Force Base (HAFB), NM. Our original correspondence of September 2012 indicated the EA would cover actions at both HAFB and Tyndall AFB, FL. Due to the distinct environmental/geographic differences as well as the delay of the scheduled replacement of the QF-4s at HAFB versus the more immediate need at Tyndall AFB, the USAF decided to proceed with the Tyndall-only action in 2012-2013, and to defer action at HAFB to 2013-2014. In addition, the National Park Service (NPS) requested cooperating agency status for the Holloman AFB action only (granted in late 2013). As a result, the HAFB action is proceeding as a separate EA, with the USAF as the lead agency and the NPS as a cooperating agency.

The EA will assess the potential environmental consequences associated with replacing QF-4 FSAT aircraft with quieter QF-16 FSAT aircraft under the command of Detachment 1 (Det 1), 82 Aerial Target Squadron (ATRS) at HAFB. The 82 ATRS provides target support for the Air Force Weapon System Evaluation Program and Air Force Weapons Instructor Course, and also provides support for the White Sands Missile Range research, development, and test projects.

The USAF has developed, tested, and employed manned and unmanned aircraft as target systems for fighter pilot and aircrew training since 1959. Currently, the F-4 serves as the only FSAT used within the Air Force; they are designated QF-4s. In use since the late 1990s, the QF-4 production run has drawn to a close and the current FSAT inventory will eventually be depleted. As a result, replacement FSAT aircraft are needed to support this continuing mission. In addition, pilots and aircrews are facing new combat threats with the transition to more technologically advanced aircraft (such as the F-22 and F-35) and thus need training with more advanced target systems. The USAF seeks to maximize the use of its current assets and capitalize on existing support capabilities. This would be done by replacing QF-4 FSATs with F-16 aircraft, modified for target system training (designated "QF-16" for use as FSATs).

The Proposed Action would replace 35 QF-4 FSATs with QF-16 FSATs at HAFB. The QF-16 would use the same regional airspace (Attachment A) that QF-4s operate in now, at the same number of operations. In addition to use of existing airspace, within the base boundaries, five Operation and Maintenance (O&M) projects are proposed. The O&M projects include repair and upgrades of two buildings, one hangar, and 28,100 square yards of asphalt replacement for the airstrips (Attachment B).

Under the No Action Alternative, the QF-4s would not be replaced with QF-16s and QF-4 operations would continue as currently conducted. The five on-base O&M projects would not be implemented.

The EA will assess the potential environmental consequences associated with this Proposed Action and alternatives. It will also examine the cumulative effects when combined with past, present, and any future proposals. In support of this process, we request your input in identifying general or specific issues or areas of concern you feel should be addressed in the environmental analysis. The USAF will initiate consultations required under Section 106 of the National Historic Preservation Act and Section 7 of the Endangered Species Act in support of this Proposed Action under separate correspondence, as required.

Please forward written issues or concern to Ms. Toni Ristau at The NEPA Center, AFCEC/CZN, 2261 Hughes Avenue Ste 155, Lackland AFB TX 78236-9853 (email: toni.ristau.1@us.af.mil). If you have any questions, please contact Ms. Ristau at (210) 572-9317.

Though we will consider comments received at any time during the environmental process, to the extent possible, we would like to hear from you within 30 days of receipt of this letter. Thank you in advance for your assistance in this effort.

Sincerely,

/S/

J. DALE CLARK, P.E.
Chief, AF NEPA Center

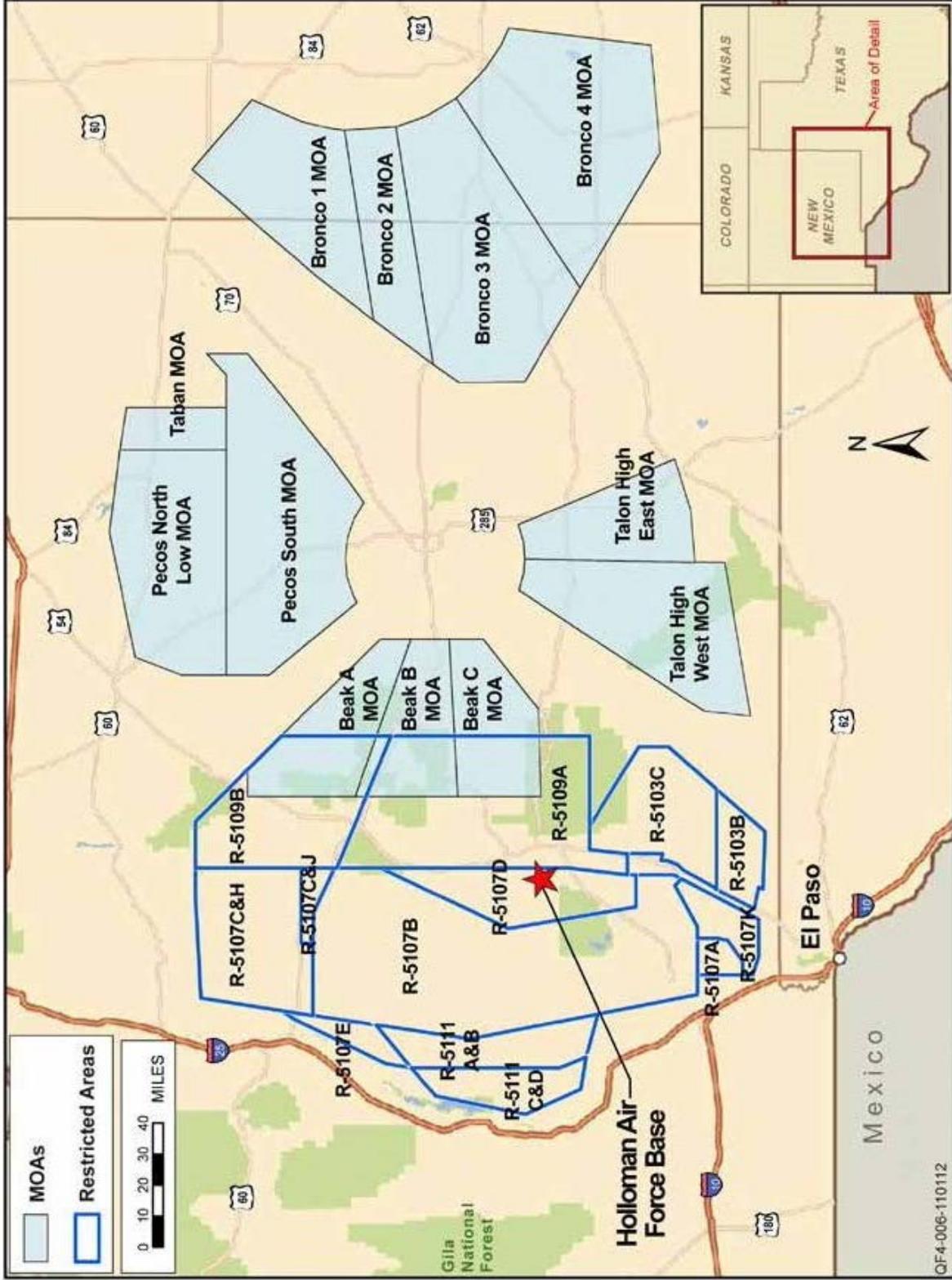
Attachment:

- A. Holloman AFB Primary Airspace
- B. Proposed Areas for Infrastructure Improvements

cc:

Supt. Marie Frias Sauter, NPS, White Sands National Monument

ATTACHMENT A

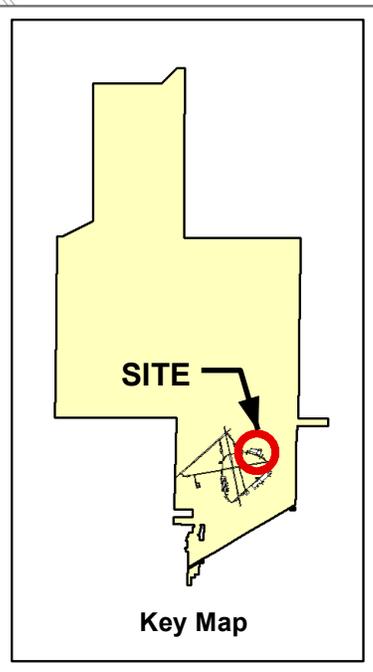


Holloman AFB QF-4 Primary Airspace

ATTACHMENT B



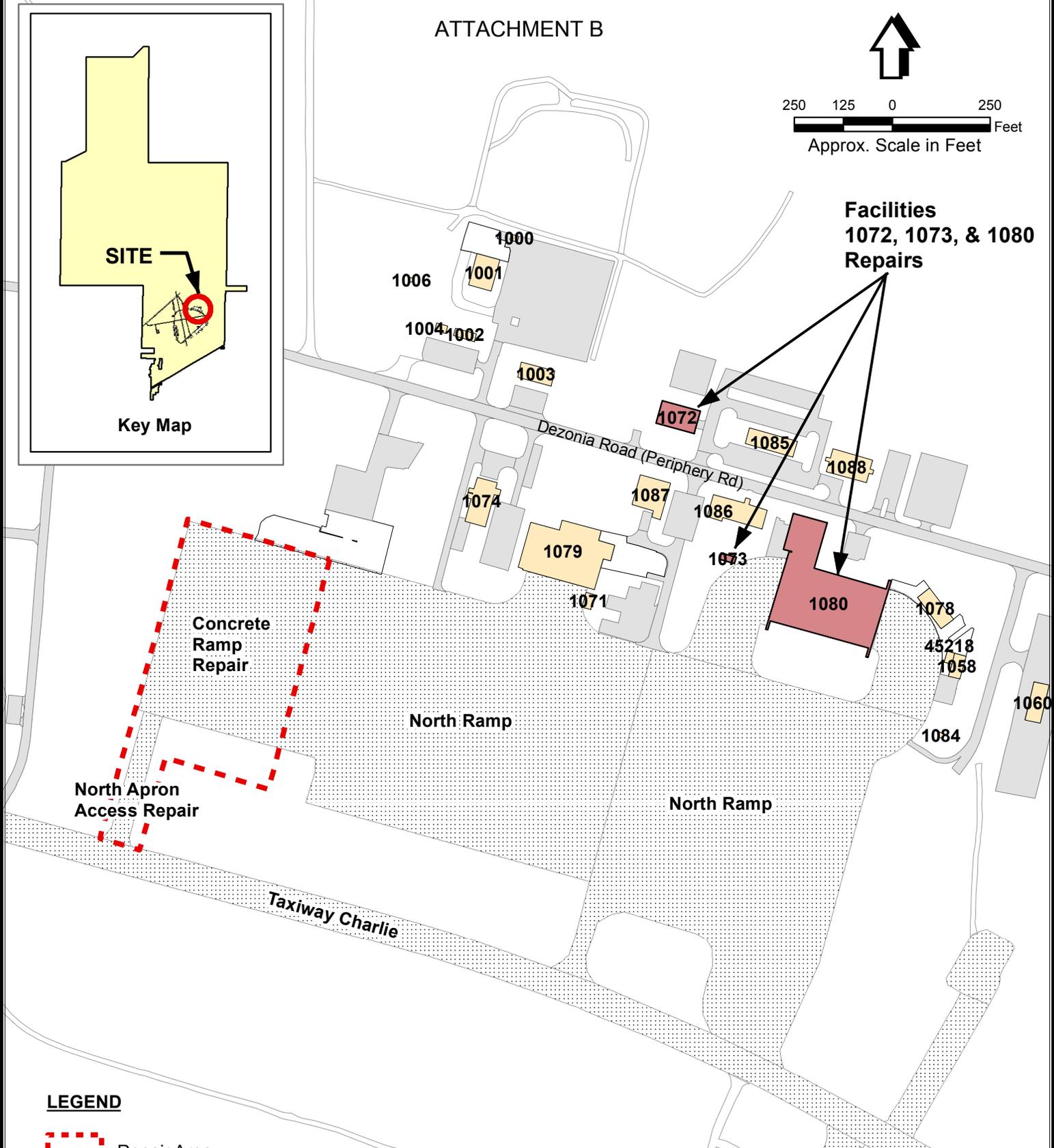
250 125 0 250 Feet
Approx. Scale in Feet



SITE

Key Map

Facilities
1072, 1073, & 1080
Repairs



LEGEND

-  Repair Area
-  Airfield Surface Area
-  Building
-  Road/Pavement

Locations of Proposed Infrastructure Upgrades FY15

Holloman AFB, New Mexico

June 2013

Name	Title	Organization
Frank Paiz	Governor	Ysleta del Sur Pueblo
Arlen P. Quetawki, Sr.	Governor	Zuni Tribal Council
Danny Breuninger, Sr.	President	Mescalero Apache Tribe
Wally Murphy	Field Supervisor	United States Fish and Wildlife Service, New Mexico Ecological Services Field Office (NMESFO)
Dr. Jeff Pappas	State Historic Preservation Officer	New Mexico Historic Preservation Division, New Mexico Office of Cultural Affairs
Holly Houghton	Tribal Historic Preservation Officer	Mescalero Apache Tribe
Marie Frias Sauter	Park Superintendent	White Sands National Monument
Sue Masica	Regional Director, Intermountain Region	United States Department of the Interior National Park Service
The Honorable Martin Heinrich		United States Senate
The Honorable Tom Udall		United States Senate
The Honorable Steve Pearce		U.S. House of Representatives
Tim Tandy		Federal Aviation Administration, Southwest Region
Bill Walker	Acting Regional Director	Bureau of Indian Affairs, Southwest Regional Office
Jesse Juen	State Director	Bureau of Land Management, New Mexico State Office
Jennifer Montoya	Planning & Environmental Coordinator	Bureau of Land Management Las Cruces District Office
Danita Burns	Field Manager	Bureau of Land Management Socorro Field Office
Bob Brennan	Airspace Manager	White Sands Missile Range
Deborah Hartell	NEPA Customer Support Division	Environment and Safety Directorate, White Sands Missile Range
John Barrera	NEPA Program Manager	Fort Bliss
Debra Griffin	Associate Director	Compliance Assurance and Enforcement Division U.S. Environmental Protection Agency, Region 6, 6EN-X
J. Xavier Montoya	State Conservationist	U.S. Department of Agriculture, Natural Resources Conservation Service
Patti Turpin	NEPA Coordinator	Lincoln National Forest, U.S. Forest Service
The Honorable Susana Martinez	Governor	State of New Mexico
Lisa Kirkpatrick	Division Chief	New Mexico Department of Game and Fish Conservation Services Division
Gedi Cibas	Environmental Impact Review Coordinator	New Mexico Environment Department
Mr. Ray Powell	Commissioner	New Mexico State Land Office
The Honorable Susie Galea	Mayor	City of Alamogordo
The Honorable Ray S. Cordova	Mayor	Village of Tularosa
The Honorable Michael Petty	Mayor	Town of Carrizozo
The Honorable William Hignight	Mayor	Village of Corona
The Honorable Gus Raymond Alborn	Mayor	City of Ruidoso
The Honorable Gary Williams	Mayor	City of Ruidoso Downs

Name	Title	Organization
Sue Padilla	County Manager	Doña Ana County
Mark Huntzinger	County Manager	Sierra County
Delilah Walsh	County Manager	Socorro County
Allen R. Sartin	County Manager	Eddy County
Chaves County Commissioners		Chaves County
Jackie Powell	Chairwomen	Lincoln County Commissioners
Ronny Rardin	Chairman	Otero County Commissioners
Randy Hill	Manager	Alamogordo Airport
Alamogordo City Commission		Alamogordo City
Richard Koehler	Chair	Alamogordo Chamber of Commerce

Consultation and Government-to-Government Correspondence



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

A. David Budak
Deputy Base Civil Engineer
550 Tabosa Avenue
Holloman AFB, NM 88330

SEP 04 2014

Dr. Jeff Pappas PhD
New Mexico State Historic Preservation Officer
Historic Preservation Division
407 Galisteo Street, Suite 236
Santa Fe, NM 87501

Re: Findings of Effect and Request for Concurrence in Section 106 Consultation regarding Replacement of QF-4 Full Scale Aerial Targets (FSATs) with QF-16 FSATs at Holloman Air Force Base, New Mexico

Dear Dr. Pappas

We are requesting concurrence from the New Mexico State Historic Preservation Officer that the Proposed Action to replace the current QF-4 FSAT aircraft at Holloman Air Force Base (HAFB) with QF-16 FSAT aircraft will have no effect (no direct or indirect effect) on known or undiscovered/ unevaluated archeological sites or districts and no adverse effect on all other types of historic properties.

The United States Air Force (USAF) is preparing an environmental assessment (EA) for this Proposed Action. The EA will assess the potential environmental consequences associated with replacing QF-4 FSAT aircraft with quieter QF-16 FSAT aircraft under the command of Detachment 1 (Det 1), 82 Aerial Target Squadron (ATRS) at HAFB. The Det 1 aircraft support the Air Force Weapon System Evaluation Program and Air Force Weapons Instructor Course as well as White Sands Missile Range (WSMR) research, development and test projects. The EA will also assess a No Action Alternative where QF-4s would not be replaced with QF-16s and QF-4s would continue operating under current conditions.

The purpose of this letter is to provide you with sufficient information to concur with our determination that this undertaking would result in no effect on known or undiscovered/unevaluated archeological sites or districts, and no adverse effect on historic properties, whichever alternative is selected/implemented.

The following documentation as detailed in Section 800.11(d) is included for your review:

1. Attachment 1: Narrative containing 1) Description of the Undertaking; 2) Description of Area of Potential Effect; 3) Identification of Historic Properties and Traditional Resources in the Area of Potential Effect; and 4) Determination of Potential Effect.
2. Attachments 2 - 8: Figures and tables supporting the analysis in Attachment 1

Pursuant to 36 CFR §800.4 (d) (1), we have determined that this undertaking will have no effect (no direct or indirect effect) on known or undiscovered/unevaluated archeological sites or districts.

No ground-disturbing activities in previously undisturbed or unevaluated areas are contemplated as a part of this undertaking. In the unlikely event archeological deposits are discovered during the implementation of the Proposed Action/Preferred Alternative, activities or work in the vicinity of the discovery would stop and the area would be secured until appropriate measures can be taken. If the “No Action” alternative is implemented, there would be no change to existing facilities, operations, aircraft, or flight patterns and thus no potential for effect.

Regarding indirect effects, pursuant to 36 CFR §800.5 (b), we have determined that this undertaking will have no adverse effect on historic properties:

Any potential effects to historic properties (including Traditional Cultural Properties (TCPs) that may lie within the APE) would be due to noise generated from overflights. Preliminary analyses of the noise effects of this undertaking indicate that if the Proposed Action/Preferred Alternative (phase out of the QF-4 FSATs and phase in the QF-16 FSATs with no increase in the number or general character of overflights) is implemented, there would be a slight decrease in noise impacts (including vibration and overpressure effects) to sensitive resources identified by the National Park Service, as well as to other historic properties in the vicinity of Holloman AFB.

As documented in the *Noise Study for the Holloman AFB QF-4 to QF-16 Replacement Environmental Assessment* (Wyle Labs 2014), the White Sands National Monument Visitor Center would experience noise levels of approximately 54 dB, which is the same as baseline conditions. High Use Visitor Areas within the monument would range from no change to a 2 dB reduction compared to baseline conditions. There would be no change in high or low altitude supersonic operations in the Area of Potential Effect (APE). The White Sands National Monument Visitor Center is well outside of the area exposed to supersonic booms from low altitude supersonic activity; therefore, there would continue to be no adverse effect on the visitor center from supersonic operations.

The historic hangar 1079 at Holloman AFB is within the APE, but is not one of the buildings proposed for infrastructure upgrade/improvements. The Proposed Action would renew but not change the essential appearance of the vicinity, and would not involve any direct effect on hangar 1079.

The proposed QF-16s use of chaff and flares would occur in the same manner as the QF-4, with no anticipated changes; however, it is reasonably expected that flares and chaff would have no, or negligible if any, effect on cultural resources.

Implementation of the No Action Alternative would result in the continuation of the current level of effects to historic properties.

We respectfully request your concurrence with the findings. Please provide your written response within 30 days of your receipt of this request to:

Mr. Andrew Gomolak
49 CES/CEIE
550 Tabosa Avenue
Holloman AFB, 88330-8458

We appreciate your review of the enclosed information. If you have any questions, please contact Mr. Andrew Gomolak at (505)572-3931 or andrew.gomolak@us.af.mil for additional information regarding this proposed undertaking.

Sincerely

/S/

A. DAVID BUDAK
Deputy Base Civil Engineer

cc: National Park Service, White Sands National Monument, Marie Frias Sauter, Superintendent
National Park Service, Intermountain Region, Santa Fe, NM
Mescalero Apache Tribe, Holly Houghten, THPO
Ysleta del Sur Pueblo, Frank Paiz Governor
Zuni Tribal Council, Arlen P. Quetawki, Sr.

Attachments:

- 1 – Narrative/Findings
- 2 - Location Map Showing Holloman AFB QF-4 Main Airspace and APE
- 3 - Locations of Runways and Proposed Infrastructure Upgrades
- 4 - Detailed Map of Proposed Infrastructure Upgrades
- 5 - Topographic Map Showing Proposed Infrastructure Upgrades
- 6 - Map Showing Representative Historic Properties within the APE
- 7 - Summary of Representative Historic Properties Potentially Affected
- 8 - Summary of Effects to Historic Properties

ATTACHMENT 1

Description of Undertaking and Summary of Findings

ATTACHMENT 1

SECTION I. DESCRIPTION OF THE UNDERTAKING

- A. TITLE OF UNDERTAKING: Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Holloman Air Force Base (AFB) in New Mexico
- B. PROPOSED START DATE: Fiscal Year (FY) 16 - FY18
- C. LOCATION: Portions of Holloman AFB and Adjoining Areas (*Attachment 2, Location Map Showing Holloman AFB QF-4 Main Airspace and APE*)

D. DESCRIPTION OF PROPOSED ACTION (PREFERRED ALTERNATIVE):

Holloman AFB is located in south central New Mexico, approximately 5 miles west of Alamogordo, New Mexico. At Holloman AFB, Detachment (Det) 1 of 82 Aerial Target Squadron (ATRS) provides QF-4 aircraft required to support the Air Force Weapons Instructor Course, the Air Force Weapons System Evaluation Program and White Sands Missile Range (WSMR) research, development and test projects.

The QF-4 FSAT has been in use since the late 1990s and the QF-4 production run has drawn to a close. Therefore, the existing FSAT inventory is being depleted, and replacement FSAT aircraft are needed. In addition, pilots and aircrews are facing new combat threats with the transition to more technologically advanced aircraft (such as the F-22 and F-35), and thus need training with more advanced target systems.

To meet those needs, the United States Air Force (USAF) proposes to replace the aging QF-4s with aircraft from the USAF inventory, allowing the USAF to maximize the use of its current assets and capitalize on existing support capabilities. This would be done by replacing QF-4 FSATs with F-16 aircraft, modified for target system use (designated QF-16 FSATs), which also have the advantage of generating less noise than the current QF-4 FSATs. These fourth generation aircraft can support the full-scale target capabilities required for the Weapons System Evaluation Program, Weapons Instructor Course, and WSMR research, development and test missions out of Holloman AFB.

The Proposed Action is described in this section in terms of the following: aircraft replacement, flight operations, defensive countermeasures, facilities, personnel changes, logistics and maintenance, and communications and command/control infrastructure.

Aircraft Replacement. Aircraft replacement of the 35 QF-4s with the QF-16s would occur over two years, starting in FY16. While the inventory of QF-16s may exceed that of the QF-4s, the number of annual operations will remain the same. The QF-16, like its QF-4 predecessor, is a manned or unmanned (remotely-controlled drone), full scale, supersonic-capable aerial target, providing all-attitude, high "g" maneuvering flight. The QF-16 is a modified F-16 that can be flown by a pilot or remotely controlled through the use of Drone Peculiar Equipment (DPE). When airborne, the remotely-controlled drone is flown using a fixed ground control station through a command telemetry link. The QF-16 provides representative threat presentations for developmental, operational and live-fire tests of U.S. and foreign weapon systems. It can simulate fourth generation fighter threats, aircraft agility and performance as well as infrared and radio frequency signatures. It would carry Electronic Attack and Electronic Counter Countermeasures expendable payloads; be capable of formation flight with other unmanned aircraft; be equipped with a Flight Termination System, scoring system and Identification Friend or Foe transmitter; and, be able to provide target position, performance and health information via data link.

Flight Operations. The QF-16 aircraft would use existing runways and operate in a manner essentially similar to the current QF-4 aircraft. The QF-16s would use the same regional airspace that QF-4s operate in now, at the same number of contracted operations annually. As is currently the case with QF-4s, the QF-16s would conduct no airfield operations during environmental nighttime hours between 10 p.m. and 7 a.m. All unmanned (or what is termed NULLO, Not Under Live Local Operation) takeoffs and landings would occur on the same runways currently used for QF-4s. Manned operations would use any of the available runways (*Attachment 3, Locations of Runways and Proposed Infrastructure Upgrades*).

As is currently the case, the majority of QF-16 manned, and all unmanned operations, would occur in restricted airspace that is managed by the Army at WSMR and at Fort Bliss (McGregor Range). Manned QF-16 aircraft could operate in any of the local airspace units; however, operations would not exceed the number or duration conducted by QF-4s under current conditions (*Attachment 2, Location Map Showing Holloman AFB QF-4 Main Airspace and APE*).

Defensive Countermeasures. Like the QF-4s, QF-16s would dispense chaff and flares for defensive countermeasures. Defensive countermeasures deployment in Holloman AFB authorized airspace is governed by a series of regulations based on safety, environmental considerations, and defensive countermeasure limitations. These regulations establish procedures governing the use of chaff and flares over ranges, other government-owned and controlled lands, and nongovernment-owned or controlled areas. The use of chaff and flares by the Proposed Action is incorporated within the annual use analyzed by the USAF in the *Recapitalization of the 49th WG Combat Capabilities and Capacities Holloman Air Force Base, New Mexico Environmental Assessment* (2011) which includes 7,680 bundles of RR-188 chaff and the same number of M-206 or MJU-7A/B flares per year.

Facilities. Five Operations and Maintenance (O&M) projects are required to adequately support conversion from QF-4s to QF-16s at Holloman AFB, as shown in the table below. The proposed projects are either repair or upgrades to existing infrastructure and facilities (*Attachment 3, Locations of Runways and Proposed Infrastructure Upgrades; Attachment 4, Detailed Map of Proposed Infrastructure Upgrades; and Attachment 5, Topographic Map Showing Proposed Infrastructure Upgrades*)

All O&M projects would be conducted in accordance with state and local regulations and would utilize an established haul route for equipment delivery and debris removal. All development activities would be performed in accordance with current security and force protection requirements. It is anticipated that construction would occur within an approximately six month timeframe beginning in FY15.

Proposed Operations & Maintenance Projects for QF-16

Project Key and Description	Date of Original Facility Construction	Project Detail
Hangar 1080	1956	Replace roof. Upgrade fire protection, electrical, and heating/air conditioning systems.
Building 1072	1990	Repair backshop and storage area
Building 1073	1965	Repair backshop and storage area
North Ramp	1943-44*	Demolish asphalt and replace with medium load concrete (covering 26,400 square yards)
Apron Access	1943-44*	Demolish asphalt and replace with medium load concrete (covering 1,700 square yards)

*Probably in use since the dates shown; exact initial construction date as well as dates of major maintenance or upgrades is unknown.

Personnel Changes. Personnel changes associated with QF-16 replacement would be negligible. The majority of current QF-4 staff would remain and be retrained on the new QF-16 system.

Logistics and Maintenance. For QF-16s, logistics and maintenance activities would be performed under a fixed price contract, similar to what is provided for QF-4s. Manned QF-16 aircraft would fly with fully functional hydrazine systems that use an aqueous mixture of 70 percent hydrazine (Chemical Abstract Service No. 302-01-2), known as H-70. The hydrazine is used for emergency backup power generation in the event primary power is lost due to engine failure. Hydrazine storage requirements will not be analyzed in this environmental assessment (EA) as the QF-16 mission would leverage the storage provided by the F-16 Formal Training Unit currently flying at Holloman. Hydrazine tanks would be removed from unmanned QF-16 aircraft.

Communications and Command/Control Infrastructure. The QF-16 FSAT would use the same systems now being used for QF-4 FSAT operations. In the event of control system or engine malfunction in NULLO flight, the QF-16 aircraft will be equipped with the ability to be destructed by remote control.

E. DESCRIPTION OF NO ACTION ALTERNATIVE:

The only bases considered for basing QF-16 FSATs were Tyndall AFB and Holloman AFB. Basing the QF-16s at any other location would not meet the Air Force's specific selection criteria. The Air Force completed a separate NEPA analysis in 2013 for basing QF-16 FSATs at Tyndall AFB. That analysis resulted in a Finding of No Significant Impact.

Under the No Action Alternative, QF-4 FSATs would not be replaced at Holloman AFB with QF-16 FSATs and QF-4s would continue operating as described under baseline conditions. However, these third-generation fighter aircraft are reaching the end of their operational life, production has ceased, and no suitable inventory to build more QF-4s exists. If the No Action Alternative is adopted, the inventory of QF-4 FSATs would eventually be depleted and the 82 ATRS would not be able to meet its mission of providing full-scale aerial targets for DoD and Allied Forces research, development and test projects.

SECTION II: DESCRIPTION OF AREA OF POTENTIAL EFFECT

The area of potential effect (APE) for cultural and traditional resources encompasses areas where ground disturbing activities would occur and those areas underlying airspace where noise is generated by aircraft overflights. The ground disturbing APE includes the area of proposed renovation projects on base (*Attachment 4, Detailed Map of Proposed Infrastructure Upgrades*). The flying APE is the same for the preferred alternative and the No Action Alternative including currently approved and utilized airspace at, above, and in the vicinity of Holloman AFB (*Attachment 2, Location Map Showing Holloman AFB QF-4 Main Airspace and APE*). The APE is three dimensional, and includes subsurface, surface, and airspace lying above the potentially affected surface. The APE encompasses the same training airspace and ranges, at the same operational levels, as analyzed by the USAF in the "*Recapitalization of the 49th WG Combat Capabilities and Capacities Holloman Air Force Base, New Mexico*" -- *Environmental Assessment and Finding of No Significant Impact* (July 2011).

SECTION III: IDENTIFICATION OF HISTORIC PROPERTIES AND TRADITIONAL RESOURCES IN THE AREA OF POTENTIAL EFFECT

Historic properties include "... any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register" (16 U.S.C. Section 470(w)(5)). Traditional resources are Native American Indian, Alaskan and Hawaiian material sources, sacred sites or culturally identifiable areas. These resources are variously protected under the National Historic Preservation Act, the Archaeological Resource Protection Act (16 U.S.C. Sections 470aa-19 470mm, PL 96-95 and amendments), the Native American Graves Protection and Repatriation Act (PL 101-20 601; 25 U.S.C. Sections 3001-3013), and the American Indian Religious Freedom Act (PL 95-341, 42 U.S.C. 21 Sections 1996 and 1996a). The National Historic Preservation Act and associated Section 106 also include compliance guidance for American Indian consultation regarding cultural significance of potential

religious and sacred artifacts (16 U.S.C. Sections 470a [a][6][A] and [B]). As per 36 *Code of Federal Regulations* (CFR) §800.4 (b) (1) and (2), the USAF has made a reasonable and good faith effort to carry out appropriate identification efforts, taking into account the magnitude and nature of the undertaking as well as the nature and extent of potential effects on historic properties.

Through a search of the New Mexico Cultural Resources Information System (NMCRIS) database, 25 historic properties were identified as representative properties that may be potentially affected by the Proposed Action (*Attachment 6, Map Showing Representative Historic Properties within the APE* and *Attachment 7, Summary of Representative Historic Properties Potentially Affected*). No NRHP-listed properties exist within the projected 65 dB DNL noise contour. It should be noted that a very small portion of the northeast corner of the White Sands National Monument falls under the 65-70 dB DNL noise contour. The White Sands National Monument Historic District, which is listed on the NRHP, is located in an area that would experience noise levels of approximately 54 dB.

As documented in the *Holloman Air Force Base Cold War-Era Historic Property Survey*, none of the facilities proposed for upgrade or repair are eligible for NRHP as all are too new, too modified, or too insignificant for consideration (ACC 2009, on file at Holloman AFB and NM State Historic Preservation Office). However, one built feature near the facility and ground disturbance portion of the APE is historic hangar 1079. The Proposed Action will renew but not change the essential appearance of the vicinity, and will not involve any direct effect on hangar 1079.

**A. HISTORIC PROPERTIES AND TRADITIONAL RESOURCES WITHIN THE APE
SUBJECTED TO DIRECT EFFECTS FROM THIS UNDERTAKING:**

None (*Attachment 8, Summary of Effects to Historic Properties*).

**B. HISTORIC PROPERTIES AND TRADITIONAL CULTURAL PROPERTIES WITHIN
THE APE SUBJECTED TO INDIRECT EFFECTS FROM THIS UNDERTAKING:**

As part of the July 2011 EA effort, the USAF consulted with the State Historic Preservation Officer (SHPO) in detail regarding impacts of on-base construction and off-base training airspace and range use. That consultation resulted in a concurrence with the USAF's finding of no effect resulting from airspace use. The only change in effects expected to result from implementation of the currently Proposed Action, replacing QF-4s with QF-16s, is a slight decrease in noise from FSAT operations. This is reasonably expected to entail a slight decrease in the possibility of effects on historic properties.

The portion of the APE where indirect effects could occur is the area underlying the airspace where continuing operations would take place and that could be affected by noise. By letter dated 12 October 2012, and in subsequent discussions, the National Park Service has identified historic properties and other sensitive areas within the White Sands National Monument that could be subjected to indirect effects.

Located in the southeastern portion of the National Monument, immediately off US Highway 70, the National Monument Historic District is comprised of ten Pueblo Revival buildings constructed in the late 1930s by Civil Works Administration workers as a Recreation Demonstration and Emergency Conservation Work Project. The centerpiece of the district is the Monument Administration and Museum Building, constructed in 1936-37. This two-story building with patios and portals was beautifully finished inside with exposed viga and latilla ceilings, a corner fireplace, tinwork fixtures, and Colonial Style furnishings created by Civilian Conservation Corps workers and Girl Scouts. Other contributing structures include a comfort station, various utility buildings and several residences. The historic district also includes several non-contributing buildings and features.

Projected noise contours near the White Sands National Monument Visitor Center would be similar to existing conditions, with overflights producing noise at levels less than 65 dB. It should be noted that a very small portion of the northeast corner of the White Sands National Monument dune field would experience noise levels of between 65 and 70 dB.

Previous analyses have considered vibrations from US Highway 70 as possibly including indiscernible short-term change from increased traffic related to construction activities on the base. Upon completion of construction, conditions were expected to revert to the baseline since there would be little change in the number of personnel working, living and flying at Holloman AFB. In this current Proposed Action, construction traffic would not pass by the Monument as there are no economically feasible material sources and paving batch plants in that direction.

In addition to the National Monument Historic District, the National Park Service has identified hearth mounds as a sensitive historic resource/property. Hundreds of hearth mounds are thought to exist throughout the parabolic dunes of the White Sands National Monument, as well as in the dune field outside the boundaries of the National Monument. As documented in a project by Kurota et al. (University of New Mexico, 2012), approximately 250 of these hearth mounds have been recorded within the monument boundaries. Possibly hundreds more have been predicted to exist by analysis of high resolution aerial imagery. The confirmed hearth sites are from nearly flat to 30 feet tall and range in age from 1400 to 6000 years old. They contain artifacts, charcoal and biological remains that can provide scientific information on earlier human and natural history as well as the natural progression of the dune field over time.

Analysis of data from sites documented to date suggests that these hearth sites are remnants of short-term residential camps. Most of the camps appear to have been situated in or near interdune flats along the leading edge of the dune field, where fresher water may have been available. The dunes are aeolian features that are geologically active (moving). The campsites have been progressively engulfed by dunes and then exposed as the dunes continue to advance downwind. Favored camp locations apparently shifted over time as the dune field grew from southwest to northeast, as the older sites identified by the UNM project tend to be located to the west of the dune field front and the sites appear to be progressively younger to the east.

Preliminary studies indicate that the largest influence on hearth mound stability and degradation is related to exposure to natural forces through dune movement and wet-dry cycles over time. The dynamic nature of the dune landscape is such that any given site may have remained buried from the time of occupation until very recently, or remained exposed for much of that time, or may have been buried and re-exposed numerous times.

No other traditional cultural properties or historic properties that could be adversely affected have been identified (*Attachment 8, Summary of Effects to Historic Properties*).

C. HUMAN REMAINS:

As there are no ground operations or ground-disturbing activities proposed in previously undisturbed areas, it is not anticipated that human remains would be encountered. In the unlikely event that human remains are inadvertently discovered, activities or work in the vicinity of the discovery would stop and the USAF would take measures to secure the remains and any associated context.

SECTION IV: DETERMINATION OF POTENTIAL EFFECT

Pursuant to 36 CFR §800.4 (d) (1), we have determined that this undertaking will have **no effect (no direct or indirect effect)** on known or undiscovered/unevaluated archeological sites or districts.

Rationale for finding: No ground-disturbing activities in previously undisturbed or unevaluated areas are contemplated as a part of this undertaking. In the unlikely event archeological deposits are discovered during the implementation of the Proposed Action, as discussed above, activities or work in the vicinity of the discovery would stop and the area would be secured until appropriate measures can be taken. If the No Action Alternative is implemented, there would be no change to existing facilities, operations, aircraft, or flight patterns and thus no potential for effect.

Specifically related to the concerns expressed by the National Park Service regarding the hearth mound sites within the White Sands National Monument boundaries, experience with dune hearths excavated on Holloman AFB indicates they survived decades of test track vibrations, sonic booms and explosive test shock waves (within 100 meters of the track), as well as numerous B-23, B-24, B-29, F-4 and F-15 overflights, before successful data recovery through archaeological excavation. Thus, age and general location of a given site vis-à-vis modern human activity does not appear to be clearly determinative of site integrity. In sum, the slight decrease in aircraft noise (and thus vibrations) expected as a result of replacing QF-4s with QF-16s, coupled with an expected slight decrease in the likelihood of a site or sites being damaged due to accidents or mishaps involving QF-16s, leads to a no effect determination for hearth mound sites located within and beyond the National Monument boundaries.

Regarding indirect effects, pursuant to 36 CFR §800.5 (b), we have determined that this undertaking will have **no adverse effect** on historic properties:

Rationale for finding: Any potential effects to historic properties would be due to noise generated from overflights. Preliminary analyses of the noise effects of this undertaking indicate that if the Proposed Action (changeout of the QF-4 FSATs and substitution of the QF-16s, with no increase in the number or general character/type of overflights) is implemented, there would be a slight decrease in noise impacts (including vibration and overpressure effects) to sensitive resources identified by the National Park Service, as well as to other historic properties in the vicinity of Holloman AFB.

The White Sands National Monument Visitor Center would experience noise levels of approximately 54 dB, which is the same as baseline conditions. Noise conditions in High Use Visitor Areas within the monument would range from no change to a 2 dB reduction compared to baseline conditions. There would be no change in high or low altitude supersonic operations in the APE. The White Sands National Monument Visitor Center is well outside of the area exposed to supersonic booms from low altitude supersonic activity; therefore, there would continue to be no adverse effect on the visitor center from low-altitude supersonic operations. The likelihood of vibration effects to the visitor center from either supersonic or subsonic noise levels generated through QF-16 FSAT operations is very small.

These impacts are based on normal operation under the Proposed Action. While accidents with QF-4s have occurred (including in the recent past), the historic mishap rate for the F-16 is lower than the F-4; therefore, a minor decrease in the probability of mishaps could be anticipated with replacement of QF-4s with QF-16s. Since the exact likelihood and location of a mishap cannot be predicted, and contingency plans are in place to minimize harm from a mishap through emergency response, infrequent mishaps are unlikely to adversely affect historic properties within the APE.

The historic hangar 1079 at Holloman AFB is within the APE, but is not one of the buildings proposed for infrastructure upgrade/improvements. The Proposed Action would renew but not change the essential

appearance of the vicinity, and would not involve any direct effect on hangar 1079. Any ground disturbance associated with these activities would occur in areas that have already been heavily disturbed.

The proposed QF-16s use of chaff and flares would occur in the same manner as the QF-4, with no anticipated changes. Flares are consumed approximately 400 feet from the release altitude, and are completely extinguished prior to reaching the ground surface. Chaff is an inert material consisting of fine segments thinner than a human hair that breaks up quickly. It is reasonably expected that flares and chaff would have no, or negligible if any, affect on cultural resources.

Implementation of the No Action Alternative would result in the continuation of the current level of effects to historic properties.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

A. David Budak
Deputy Base Civil Engineer
550 Tabosa Avenue
Holloman AFB, NM 88330

SEP 04 2014

Ms. Holly Houghten
Tribal Historic Preservation Officer
Mescalero Apache Tribe
PO Box 227, Mescalero, NM 88340

Re: Section 106 Consultation Regarding the Replacement of QF-4 Full Scale Aerial Targets (FSATs) with QF-16 FSATs at Holloman Air Force Base, New Mexico

Dear Ms. Houghten

We are requesting concurrence from the Mescalero Apache Tribe that the effects of replacing the current QF-4 FSATs at Holloman Air Force Base (Holloman AFB) with QF-16 FSATs, will have no effect (no direct or indirect effect) on known or undiscovered/unevaluated archeological sites or districts, and no adverse effect on all other types of historic properties.

The United States Air Force (USAF) is preparing an environmental assessment (EA) for this Proposed Action. The EA will assess the potential environmental consequences associated with replacing QF-4 FSAT aircraft with quieter QF-16 FSAT aircraft under the command of Detachment 1 (Det 1), 82 Aerial Target Squadron (ATRS) at Holloman AFB. The 82 ATRS provides target support for the Air Force Weapon System Evaluation Program and Air Force Weapons Instructor Course. In addition, Det 1 of the 82 ATRS provides support for White Sands Missile Range (WSMR) research, development, and test projects. The EA will also assess the No Action Alternative, under which QF-4 FSATs would not be replaced with QF-16 FSATs; QF-4s would continue operating under current conditions.

The purpose of this letter is to provide you with sufficient information to concur with our determination that this undertaking would result in no effect on known or undiscovered/unevaluated archeological sites or districts, and no adverse effect on historic properties, whichever alternative is selected/implemented.

The following documentation as detailed in Section 800.11(d) is included for your review:

1. Attachment 1: Narrative containing 1) Description of the Undertaking; 2) Description of Area of Potential Effect; 3) Identification of Historic Properties and Traditional Resources in the Area of Potential Effect; and 4) Determination of Potential Effect.
2. Attachments 2 - 8: Figures and tables supporting the analysis in Attachment 1

Pursuant to 36 CFR §800.4 (d) (1), we have determined that this undertaking will have no effect (no direct or indirect effect) on known or undiscovered/unevaluated archeological sites or districts.

No ground-disturbing activities in previously undisturbed or unevaluated areas are contemplated as a part of this undertaking. In the unlikely event archeological deposits are discovered during the implementation of the Proposed Action/Preferred Alternative, as discussed above, activities or work in the vicinity of the discovery would stop and the area would be secured until appropriate measures can be taken. If the "No Action" alternative is implemented, there would be no change to existing facilities, operations, aircraft, or flight patterns and thus no potential for effect.

Regarding indirect effects, pursuant to 36 CFR §800.5 (b), we have determined that this undertaking will have no adverse effect on historic properties:

Any potential effects to historic properties (including Traditional Cultural Properties (TCPs) that may lie within the APE) would be due to noise generated from overflights. Preliminary analyses of the noise effects of this undertaking indicate that if the Proposed Action/Preferred Alternative (changeout of the QF-4 FSATs and substitution of the QF-16s, with no increase in the number or general character/type of overflights) is implemented, there would be a slight decrease in noise impacts (including vibration and overpressure effects) to historic properties in the vicinity of Holloman AFB.

The two NRHP listed historic properties located on the Mescalero Reservation (Wizard's Roost and St. Joseph Apache Mission Church) would experience noise levels similar to baseline conditions. There would be no change in high or low altitude supersonic operations in the Area of Potential Effect (APE). These two sites are outside of the area exposed to supersonic booms from low altitude supersonic activity; therefore, there would continue to be no adverse effect on these sites from supersonic operations.

The proposed QF-16s use of chaff and flares would occur in the same manner as the QF-4, with no anticipated changes; however, it is reasonably expected that flares and chaff would have no, or negligible if any, affect on cultural resources.

Implementation of the No Action Alternative would result in the continuation of the current level of effects to historic properties.

We respectfully request your concurrence with the above findings. Please provide your written response within 30 days of your receipt of this request to:

Mr. Andrew Gomolak
49 CES/CEIE
550 Tabosa Avenue
Holloman AFB, 88330-8458

We appreciate your review of the enclosed information. If you have any questions, please contact Mr. Gomolak at (505)572-3931 or andrew.gomolak@us.af.mil for additional information regarding this proposed undertaking.

Sincerely,

/S/

A. David Budak
Deputy Base Civil Engineer

cc: Ysleta del Sur Pueblo, Frank Paiz Governor
Zuni Tribal Council, Arlen P. Quetawki, Sr.
National Park Service, White Sands National Monument, Marie Frias Sauter
National Park Service, Intermountain Region, Santa Fe, NM
NM SHPO, Dr. Jeff Pappas

Attachments:

- 1 - Narrative
- 2 - Location Map Showing Holloman AFB QF-4 Main Airspace and APE
- 3 - Locations of Runways and Proposed Infrastructure Upgrades
- 4 - Detailed Map of Proposed Infrastructure Upgrades
- 5 - Topographic Map Showing Proposed Infrastructure Upgrades
- 6 - Map Showing Representative Historic Properties within the APE
- 7 - Summary of Representative Historic Properties Potentially Affected
- 8 - Summary of Effects to Historic Properties

ATTACHMENT 1

Description of Undertaking and Summary of Findings

ATTACHMENT 1

SECTION I. DESCRIPTION OF THE UNDERTAKING

- A. TITLE OF UNDERTAKING: Replacement of the QF-4 Full Scale Aerial Target (FSAT) with the QF-16 FSAT at Holloman Air Force Base (AFB) in New Mexico
- B. PROPOSED START DATE: Fiscal Year (FY) 16 - FY18
- C. LOCATION: Portions of Holloman AFB and Adjoining Areas (*Attachment 2, Location Map Showing Holloman AFB QF-4 Main Airspace and APE*)

D. DESCRIPTION OF PROPOSED ACTION (PREFERRED ALTERNATIVE):

Holloman AFB is located in south central New Mexico, approximately 5 miles west of Alamogordo, New Mexico. At Holloman AFB, Detachment (Det) 1 of 82 Aerial Target Squadron (ATRS) provides support for the Air Force Weapons System Evaluation Program and White Sands Missile Range (WSMR) research, development, and test projects. The 82 ATRS provides target support for the Air Force Weapons System Evaluation Program and Air Force Weapons Instructor Course.

The QF-4 FSAT has been in use since the late 1990s, and the QF-4 production run has drawn to a close. Therefore, the existing FSAT inventory is being depleted, and replacement FSAT aircraft are needed. In addition, pilots and aircrews are facing new combat threats with the transition to more technologically advanced aircraft (such as the F-22 and F-35), and thus need training with more advanced target systems. To meet those needs, the United States Air Force (USAF) proposes to replace the aging QF-4s with aircraft from the USAF inventory, allowing the USAF to maximize the use of its current assets and capitalize on existing support capabilities. This would be done by replacing QF-4 FSATs with F-16 aircraft, modified for target system use (designated QF-16 FSATs), which also have the advantage of generating less noise than the current QF-4 FSATs. These fourth generation aircraft can support the full-scale target capabilities required to meet Weapons System Evaluation Program, Weapons Instructor Course, and WSMR research, development, and test missions out of Holloman AFB.

The Proposed Action is described in this section in terms of the following: aircraft replacement, flight operations, defensive countermeasures, facilities, personnel changes, logistics and maintenance, and communications and command/control infrastructure.

Aircraft Replacement. Aircraft replacement of the 35 QF-4s with the QF-16s would occur over two years, starting in FY16. While the inventory of QF-16s may exceed that of the QF-4s, the number of annual operations will remain the same. The QF-16, like its QF-4 predecessor, is a manned and unmanned (remotely-controlled drone), full scale, supersonic-capable, after-burning aerial target, capable of all-attitude, high "g" maneuvering flight. The QF-16 is a modified F-16 that can be flown by a pilot or remotely controlled through the use of Drone Peculiar Equipment (DPE). When airborne, the remotely-controlled drone is flown using a fixed ground control station through a command telemetry link. The QF-16 provides representative threat presentations for developmental, operational, and live-fire tests of U.S. and foreign weapon systems. It can simulate fourth generation fighter threats, aircraft agility, and performance, as well as infrared and radio frequency signatures. It would carry Electronic Attack and Electronic Counter Countermeasures expendable payloads; be capable of formation flight with other unmanned aircraft; be equipped with a Flight Termination System, scoring system, Identification Friend or Foe; and be able to provide target position, performance, and health information via data link.

Flight Operations. The QF-16 aircraft would use existing runways and operate in airspace similar to the way the QF-4 aircraft do today. The QF-16s would use the same regional airspace that QF-4s operate in now, at the same number of contracted operations annually. As is currently the case with QF-4s, QF-16s would conduct no airfield operations during environmental nighttime hours between 10 p.m. and 7 a.m. All unmanned (or what is termed NULLO, Not Under Live Local Operation) takeoffs and landings would occur at the drone runways, which are the same runways currently used for QF-4s. Manned operations would use any of the available runways (*Attachment 3, Locations of Runways and Proposed Infrastructure Upgrades*). As is currently the case, the majority of QF-16 manned, and all unmanned operations, would occur in R-5107 restricted airspace that is managed by the Army at WSMR and at Fort Bliss (McGregor Range). Manned QF-16 aircraft could operate in any of the other local airspace units; however, operations would not exceed the number or duration conducted by QF-4s under current conditions (*Attachment 2, Location Map Showing Holloman AFB QF-4 Main Airspace and APE*).

Defensive Countermeasures. QF-16s would dispense chaff and flares for defensive countermeasures like the QF-4s use. Defensive countermeasures deployment in Holloman AFB authorized airspace is governed by a series of regulations based on safety, environmental considerations, and defensive countermeasure limitations. These regulations establish procedures governing the use of chaff and flares over ranges, other government-owned and controlled lands, and nongovernment-owned or controlled areas. The use of chaff and flares by the Proposed Action is incorporated within the annual use analyzed by the USAF in the *Recapitalization of the 49th WG Combat Capabilities and Capacities Holloman Air Force Base, New Mexico Environmental Assessment* (2011) which includes 7,680 bundles of RR-188 type chaff and the same number of M-206 or MJU-7A/B flares per year.

Facilities. Five Operations and Maintenance (O&M) projects are required to adequately support conversion from QF-4s to QF-16s at Holloman AFB, as shown in the table below. The proposed projects are either repair or upgrades to existing infrastructure and facilities (*Attachment 3, Locations of Runways and Proposed Infrastructure Upgrades; Attachment 4, Detailed Map of Proposed Infrastructure Upgrades; and Attachment 5, Topographic Map Showing Proposed Infrastructure Upgrades*)

All O&M projects would be conducted in accordance with state and local regulations and would utilize an established haul route for equipment delivery and debris removal. All development activities would be performed in accordance with current security and force protection requirements. It is anticipated that construction would occur within an approximately six month timeframe beginning in FY15.

Proposed Operations & Maintenance Projects for QF-16

Project Key and Description	Date of Original Facility Construction	Project Detail
Hangar 1080	1956	Replace roof. Upgrade fire protection, electrical, and heating/air conditioning systems.
Building 1072	1990	Repair backshop and storage area
Building 1073	1965	Repair backshop and storage area
North Ramp	1943-44*	Demolish asphalt and replace with medium load concrete (covering 26,400 square yards)
Apron Access	1943-44*	Demolish asphalt and replace with medium load concrete (covering 1,700 square yards)

*Probably in use since the dates shown; exact initial construction date as well as dates of major maintenance or upgrades is unknown.

Personnel Changes. Personnel changes associated with QF-16 replacement would be negligible. The majority of current QF-4 staff would remain and be retrained on the new QF-16 system.

Logistics and Maintenance. For QF-16s, logistics and maintenance activities would be performed under a fixed price contract, similar to what is provided for QF-4s. Manned QF-16 aircraft would fly with fully functional hydrazine systems which use an aqueous mixture of 70 percent hydrazine (Chemical Abstract Service No. 302-01-2), known as H-70. The hydrazine is used for emergency backup power generation in the event primary power is lost due to engine failure. Hydrazine storage requirements will not be analyzed in this environmental assessment (EA) as the QF-16 mission would leverage the storage provided by the F-16 Formal Training Unit through a Memorandum of Understanding or Agreement (MOU/MOA). Hydrazine tanks would be removed from unmanned QF-16 aircraft. In the event of engine failure during flight, the unmanned QF-16 aircraft would be equipped with the ability to be safely destructed by remote control.

Communications and Command/Control Infrastructure. The QF-16 FSAT would use the same systems now being used for QF-4 FSAT operations.

E. DESCRIPTION OF NO ACTION ALTERNATIVE:

The only bases considered for basing QF-16 FSATs were Tyndall AFB and Holloman AFB. Basing the QF-16s at any other location would not meet the Air Force's specific selection criteria. The Air Force completed a separate NEPA analysis for basing QF-16 FSATs at Tyndall AFB, resulting in a Finding of No Significant Impact, in 2013.

Under the No Action Alternative, QF-4 FSATs would not be replaced at Holloman AFB with QF-16 FSATs; QF-4s would continue operating as described under baseline conditions. However, these third-generation fighter aircraft are reaching the end of their operational life, production has ceased, and they cannot be replaced. If this alternative were adopted, the inventory of QF-4 FSATs would eventually be depleted and the 82 ATRS would no longer be able to meet its mission of providing full-scale aerial targets for DoD and Allied Forces for research, development, and test projects.

SECTION II: DESCRIPTION OF AREA OF POTENTIAL EFFECT

The area of potential effect (APE) for cultural and traditional resources encompasses areas where ground disturbing activities would occur and those areas underlying airspace where noise is generated by aircraft overflights. The APE is the same for the Preferred Alternative and the No Action Alternative. The APE includes areas on base (for proposed O&M projects) (*Attachment 4, Detailed Map of Proposed Infrastructure Upgrades*) and currently approved and utilized airspace at, above, and in the vicinity of Holloman AFB (*Attachment 2, Location Map Showing Holloman AFB QF-4 Main Airspace and APE*). The APE is three dimensional, and includes subsurface, surface, and airspace lying above the potentially affected surface. The APE encompasses the same training airspace and training ranges, at the same operational levels, analyzed by the USAF in the *Recapitalization of the 49th WG Combat Capabilities and Capacities Holloman Air Force Base, New Mexico Environmental Assessment* (July 2011).

SECTION III: IDENTIFICATION OF HISTORIC PROPERTIES AND TRADITIONAL RESOURCES IN THE AREA OF POTENTIAL EFFECT

"Historic properties" include "... any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register (16 U.S.C. Section 470(w)(5))."

Traditional resources are associated with specific Indian traditional resources, sacred sites, or areas. These resources are protected under the Archaeological Resource Protection Act (16 U.S.C. Sections 470aa-19 470mm, PL 96-95 and amendments), the Native American Graves Protection and Repatriation Act (PL 101-20 601; 25 U.S.C. Sections 3001-3013), and the American Indian Religious Freedom Act (PL 95-341, 42 U.S.C. 21 Sections 1996 and 1996a). The National Historic Preservation Act and associated Section 106 compliance also include guidance for American Indian consultation regarding

cultural significance of potential religious and sacred artifacts (16 U.S.C. Sections 470a [a][6][A] and [B]).

Per 36 *Code of Federal Regulations* (CFR) §800.4 (b) (1) and (2), the USAF has made a reasonable and good faith effort to carry out appropriate identification efforts, taking into account the magnitude and nature of the undertaking as well as the nature and extent of potential effects on historic properties.

Through a search of the New Mexico Cultural Resources Information System (NMCRIS) database, 25 historic properties were identified as representative properties that may be potentially affected by the Proposed Action (*Attachment 6, Map Showing Representative Historic Properties within the APE* and *Attachment 7, Summary of Representative Historic Properties Potentially Affected*). No NRHP-listed properties exist within the projected 65 dB DNL noise contour. It should be noted that a very small portion of the northeast corner of the White Sands National Monument dune field falls under the 65-70 dB DNL noise contour; none of the properties identified within reservation boundaries as representative fall within the 65-70 dB DNL noise contour. The National Park Service has identified the White Sands National Monument Historic District, which is listed on the NRHP, as a sensitive resource, but the district is located in an area that would experience noise levels of approximately 54 dB.

As documented in the *Holloman Air Force Base Cold War-Era Historic Property Survey*, none of the facilities proposed for upgrade or repair are eligible for NRHP as all are too young, too modified, or too insignificant for consideration (ACC 2009, on file at Holloman AFB and NM State Historic Preservation Office). However, one of the built features in the APE is historic hangar 1079. The Proposed Action will renew but not change the essential appearance of the vicinity, and will not involve any direct effect on hangar 1079.

**A. HISTORIC PROPERTIES AND TRADITIONAL RESOURCES WITHIN THE APE
SUBJECTED TO DIRECT EFFECTS FROM THIS UNDERTAKING:**

None (*Attachment 8, Summary of Effects to Historic Properties*).

**B. HISTORIC PROPERTIES AND TRADITIONAL CULTURAL PROPERTIES WITHIN
THE APE SUBJECTED TO INDIRECT EFFECTS FROM THIS UNDERTAKING:**

As part of the July 2011 EA effort, the USAF consulted with the State Historic Preservation Officer (SHPO) in detail regarding impacts to each specific training airspace and training range, which resulted in a concurrence in the USAF's finding of no effect. The only change from the 2011 EA expected from implementation of the Proposed Action currently under consideration, replacing QF-4s with QF-16s, is a slight decrease in noise from FSAT operations. Thus, the portion of the APE where indirect effects could occur is the area underlying the airspace where continuing operations would take place and that could be affected by noise. By letter dated 12 October 2012, and in subsequent discussions, the National Park Service has identified historic properties and other sensitive areas within the White Sands National Monument that could be subjected to indirect effects.

The National Park Service has identified hearth mounds as a sensitive historic resource/property. Hundreds of hearth mounds exist throughout the parabolic dunes of the White Sands National Monument, as well as in dunes lying outside the boundaries of the National Monument. As documented in a 2012 survey by Kurota et al., approximately 250 of these hearth mounds have been recorded within the monument boundaries, and possibly hundreds more have been predicted to exist by analysis of high resolution aerial imagery, both within and outside the National Monument. Disclosure of site location data is restricted per Section 304 of the National Historic Preservation Act [16 U.S.C. 470w-3]. The confirmed hearth mounds are from 2 to 40 feet tall and range in age from 1400 to 6000 years old. They contain artifacts and charcoal and plant fibers that

can provide scientific information on earlier human and natural history, as well as on the natural progression/ recession of the dunes over time.

Analysis of data from sites documented to date suggests that the hearth mounds are remnants of short-term residential camps. Most of the camps appear to have been situated in interdune flats near the leading edge of the dune field, where fresh water was available. The dunes are aeolian features that are geologically active (moving), and the campsites have been progressively engulfed by dunes and then exposed as the dunes continue to advance and recede. Because the favored camp locations shifted over time as the dunes advanced (generally from west to east), the older sites generally tend to be located to the west, and the sites appear to be progressively younger to the east.

Preliminary studies indicate that the largest influence on hearth mound stability and degradation is related to exposure to natural forces through dune movement over time. The dynamic nature of the dune landscape is such that any given site may have remained buried from the time of occupation until very recently, or remained exposed for much of that time, or it may have been buried and re-exposed numerous times.

No other traditional cultural properties or historic properties that could be adversely affected have been identified (*Attachment 8, Summary of Effects to Historic Properties*).

C. HUMAN REMAINS:

As there are no ground operations or ground-disturbing activities proposed in previously undisturbed areas, it is not anticipated that human remains would be encountered. In the unlikely event that human remains are inadvertently discovered, activities or work in the vicinity of the discovery would stop and the USAF would take measures to secure the remains and any associated context.

SECTION IV: DETERMINATION OF POTENTIAL EFFECT

Pursuant to 36 CFR §800.4 (d) (1), we have determined that this undertaking will have **no effect (no direct or indirect effect)** on known or undiscovered/unevaluated archeological sites or districts.

Rationale for finding: No ground-disturbing activities in previously undisturbed or unevaluated areas are contemplated as a part of this undertaking. In the unlikely event archeological deposits are discovered during the implementation of the Proposed Action, as discussed above, activities or work in the vicinity of the discovery would stop and the area would be secured until appropriate measures can be taken. If the No Action Alternative is implemented, there would be no change to existing facilities, operations, aircraft, or flight patterns and thus no potential for effect.

Specifically related to the hearth mound sites, experience with dune hearths excavated on Holloman AFB indicates they survived decades of test track vibrations, sonic booms and explosive test shock waves (within 100 meters of the track), as well as numerous B-23, B-24, B-29, F-4 and F-15 overflights, before successful data recovery through archaeological excavation. Thus, age and general location of a given site vis-à-vis modern human activity does not appear to be clearly determinative of site integrity. In sum, the slight decrease in aircraft noise (and thus vibrations) expected as a result of replacing QF-4s with QF-16s, coupled with an expected slight decrease in the likelihood of a site or sites being damaged due to accidents or mishaps involving QF-16s, leads to a no effect determination for hearth mound sites located within and beyond the National Monument boundaries.

Regarding indirect effects, pursuant to 36 CFR §800.5 (b), we have determined that this undertaking will have **no adverse effect** on historic properties:

Rationale for finding: Any potential effects to historic properties would be due to noise generated from overflights. Preliminary analyses of the noise effects of this undertaking indicate that if the Proposed Action (changeout of the QF-4 FSATs and substitution of the QF-16s, with no increase in the number or general character/type of overflights) is implemented, there would be a slight decrease in noise impacts (including vibration and overpressure effects) to sensitive resources identified by the National Park Service, as well as to other historic properties in the vicinity of Holloman AFB.

The sensitive resources within the White Sands National Monument would be expected to show the greatest effect, due to their location in relatively close proximity to the existing operations. However, the analyses project that the White Sands Visitor Center would experience noise levels of approximately 54 dB, which is the same as baseline conditions. Noise conditions in High Use Visitor Areas within the monument would range from no change to a 2 dB reduction compared to baseline conditions. There would be no change in high or low altitude supersonic operations in the APE. The White Sands National Monument Visitor Center is well outside of the area exposed to supersonic booms from low altitude supersonic activity; therefore, there would continue to be no adverse effect on the visitor center from supersonic operations. The likelihood of vibration effects to the visitor center from either supersonic or subsonic noise levels generated through QF-16 FSAT operations is very small. Similarly, the potential for adverse effects to historic properties located at a greater distance (including historic properties located within reservation boundaries) are very small.

These impacts are based on normal operation under the Proposed Action. While accidents with QF-4s have been known to occur (including in the recent past), the historic mishap rate for the F-16 is lower than the F-4; therefore, a minor decrease in the probability of mishaps could be anticipated with replacement of QF-4s with QF-16s. Since the exact likelihood and location of a mishap cannot be predicted, and contingency plans are in place to minimize harm from a mishap through emergency response, infrequent mishaps are unlikely to adversely affect historic properties within the APE.

The historic hangar 1079 at Holloman AFB is within the APE, but is not one of the buildings proposed for infrastructure upgrade/improvements. The Proposed Action would renew but not change the essential appearance of the vicinity, and would not involve any direct effect on hangar 1079. Any ground disturbance associated with these activities would occur in areas that have already been heavily disturbed.

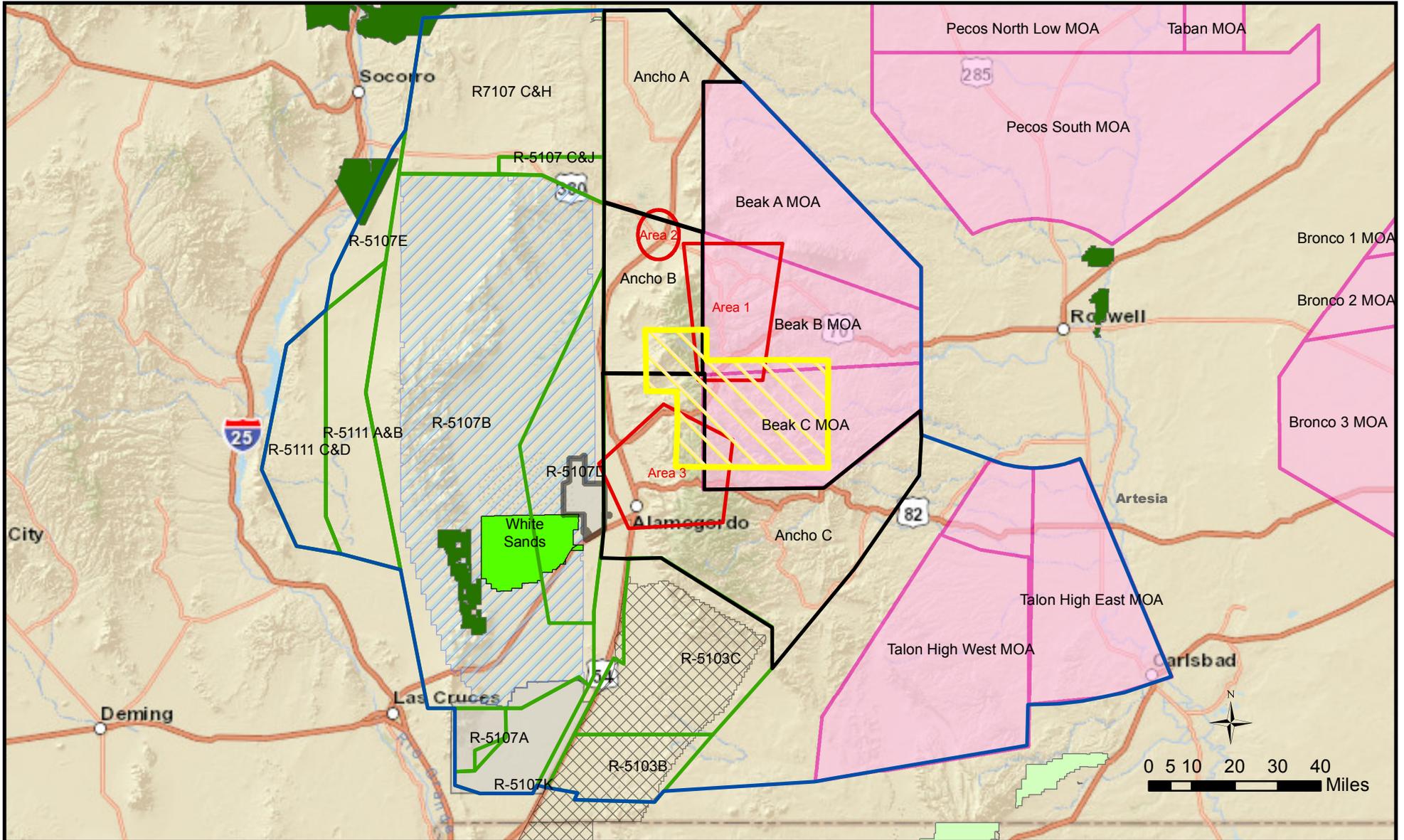
The proposed QF-16s use of chaff and flares would occur in the same manner as the QF-4, with no anticipated changes. Flares are consumed approximately 400 feet from the release altitude, and are completely extinguished prior to reaching the ground surface. Chaff is an inert material consisting of fine segments thinner than a human hair that breaks up quickly. It is reasonably expected that flares and chaff would have no, or negligible if any, affect on cultural resources.

Implementation of the No Action Alternative would result in the continuation of the current level of effects to historic properties.

ATTACHMENTS 2-8: Supporting Documents for Section 106 Consultation

**Location Map Showing Holloman AFB QF-4 Main Airspace and APE
Locations of Runways and Proposed Infrastructure Upgrades
Detailed Map of Proposed Infrastructure Upgrades
Topographic Map Showing Proposed Infrastructure Upgrades
Map Showing Representative Historic Properties within the APE
Summary of Representative Historic Properties Potentially Affected
Summary of Effects to Historic Properties**

Attachment 2



Legend

- Ancho Air Traffic Control Assigned Area
- Supersonic Restriction Areas
- Area of Potential Effect (APE)
- Restricted Air Space
- Military Operations Area (MOA)
- Holloman Air Force Base
- Mescalero Apache Reservation
- National Park Service (NPS)
- White Sands National Monument - NPS
- Fish and Wildlife Service Wildlife Refuge
- Fort Bliss
- White Sands Missile Range
- Dona Ana Range

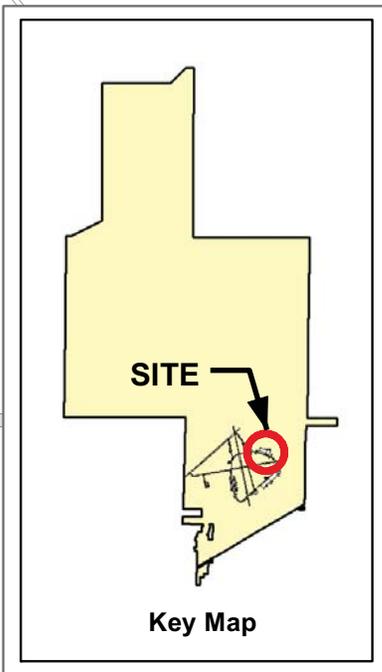
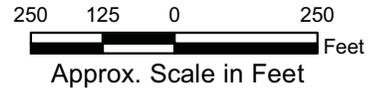


Holloman AFB QF-4 Main Airspace and APE

Attachment 3



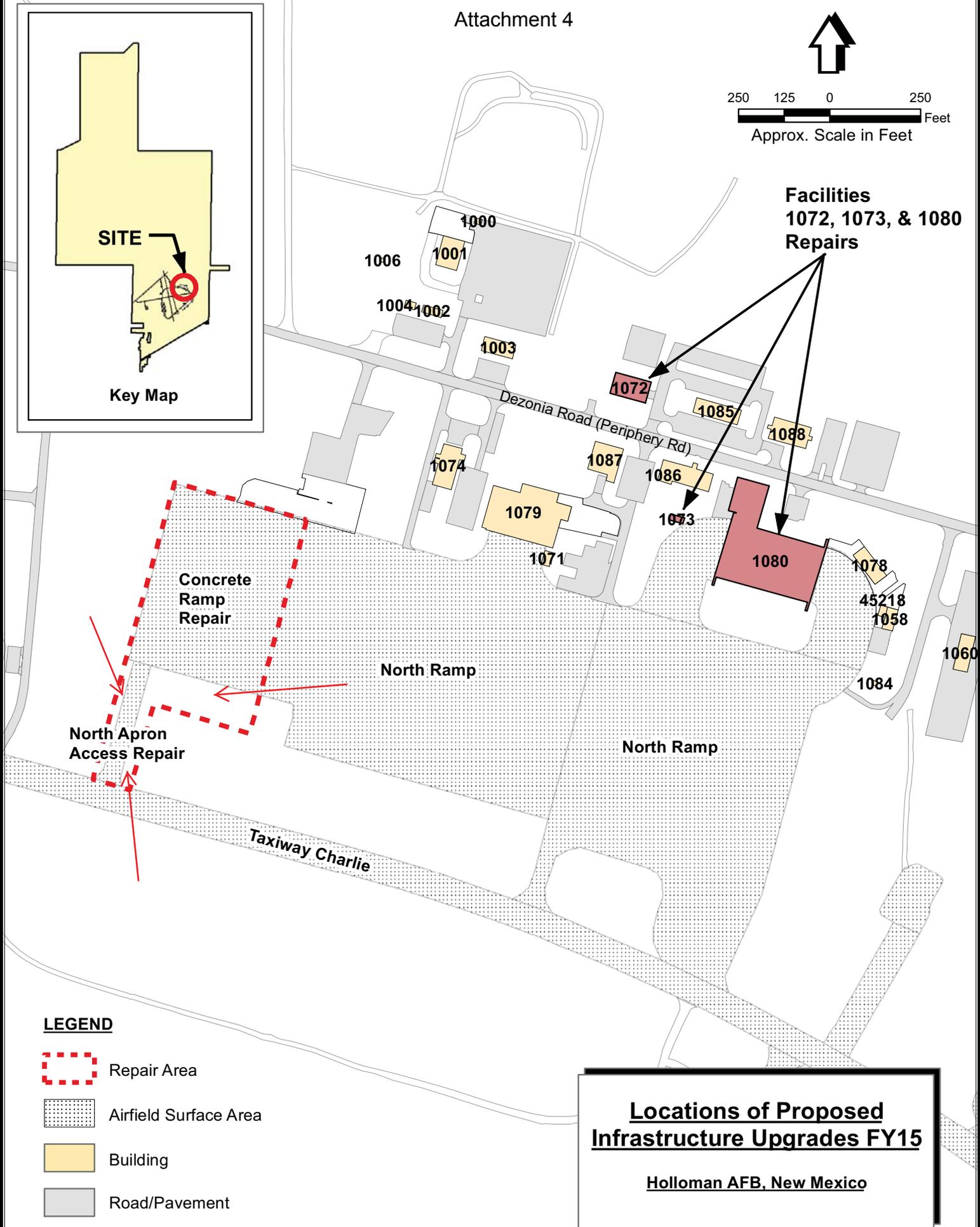
Locations of Runways and Proposed Infrastructure Upgrades



SITE

Key Map

Facilities
1072, 1073, & 1080
Repairs



LEGEND

-  Repair Area
-  Airfield Surface Area
-  Building
-  Road/Pavement

**Locations of Proposed
Infrastructure Upgrades FY15**

Holloman AFB, New Mexico

Attachment 5

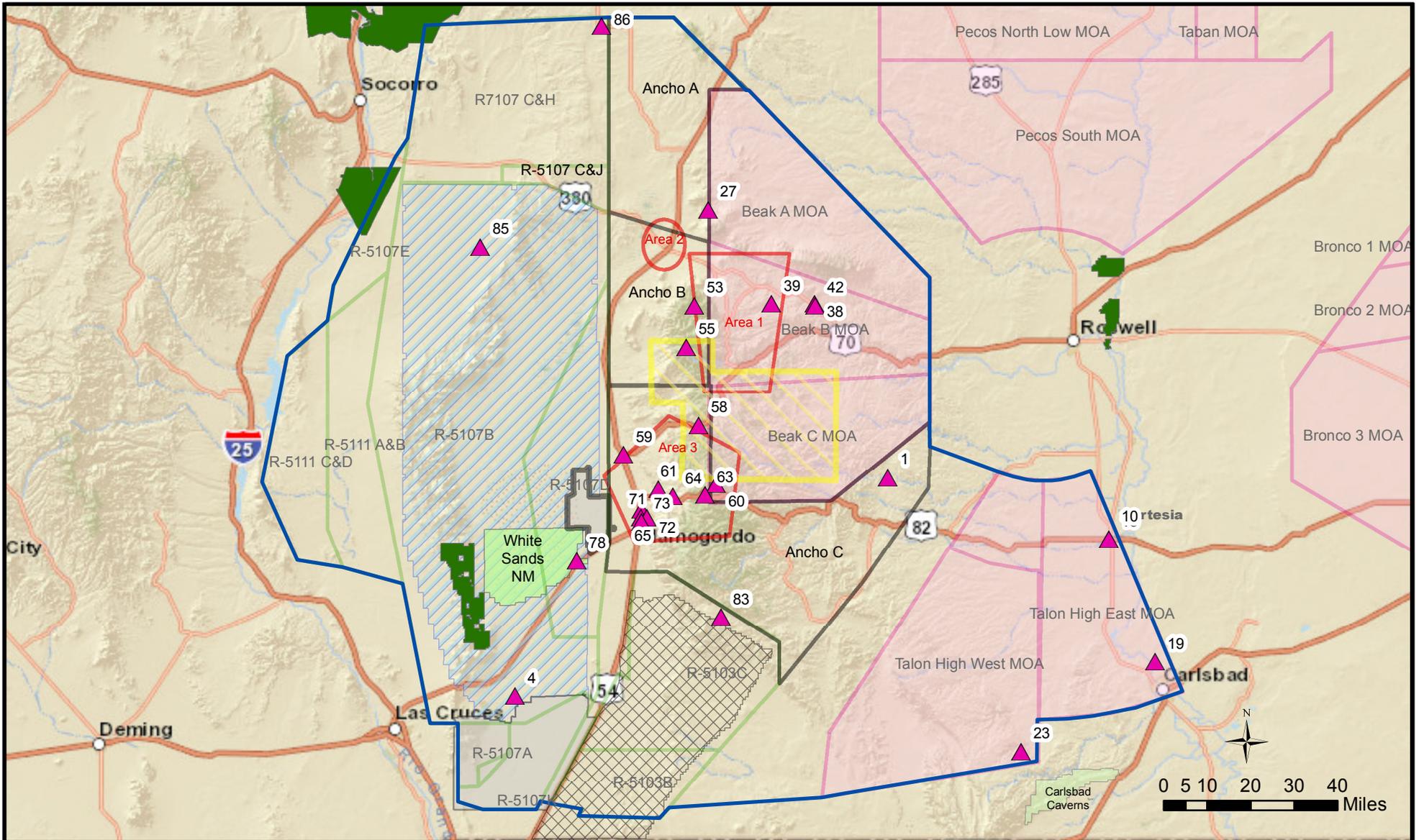


Holloman 7.5 Minute USGS Quadrangle, 1982
Otero County, New Mexico



Topographic Map showing Proposed Infrastructure Upgrades

Attachment 6



Legend

- | | | |
|---|---|--|
| National Register of Historic Places | Restricted Air Space | National Park Service (NPS) |
| Area of Potential Effect (APE) | Military Operations Area (MOA) | White Sands National Monument (NM) - NPS |
| Mescalero Apache Reservation | Holloman Air Force Base | Fort Bliss |
| Ancho Air Traffic Control Assigned Area | Fish and Wildlife Service Wildlife Refuge | Dona Ana Range |
| Supersonic Restriction Areas | White Sands Missile Range | |



Representative Historic Properties within the APE

For Official Use Only

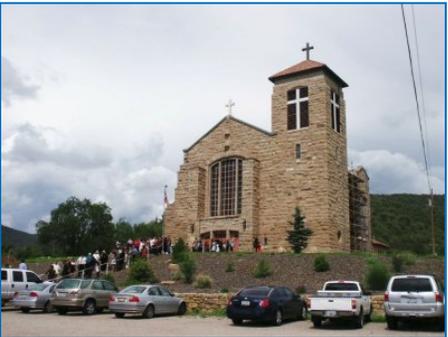
Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace^	Features	Photographs*
White Sands National Monument Historic District (White Sands National Monument Headquarters Area)	Off US 70/82, near Alamogordo, Otero County/78	Historic District	88000751	R5107 D	The White Sands National Monument historic district includes the National Park Service (NPS) visitor center and 9 adjacent buildings including the comfort station, various utility buildings, and 3 residences, all built between 1936 and 1940. The buildings were built in the Pueblo-Revival architectural style, and the walls were constructed of adobe mud bricks. The centerpiece of the district is the Monument Administration and Museum Building, constructed in 1936-37. This site is important because of its architecture and its association with the history of the NPS, particularly the NPS emphasis on use of local materials and rustic styles in construction of park buildings.	 <p><i>For more detailed information, see the National Park Service link for White Sands National Monument at: www.nps.gov/whsa.</i></p>
Salinas Pueblo Missions National Monument (Gran Quivira)	Gran Quivira portion of Salinas Pueblo Missions, about 7.5 mi NW of Claunch, Socorro and Torrance Counties/86	Structures, Archaeological Sites, Ruins, National Monument ; National Historic Landmark	66000494	R5107 C/H	The Gran Quivira portion of the Salinas Pueblo Missions National Monument, established in 1909, was a vast city with multiple pueblos and kivas prior to contact with the Spaniards. Mound 7, a 226-room structure from the Pueblo IV period (A.D.1275/1300-1600), is the largest and only fully excavated pueblo at the site. Artifacts found include whole pots, water jugs, animal effigies, and stone tools. The Spaniards built churches here, including the Inglesia de San Isidro and the San Buenaventura, in the 1600's.	 <p style="text-align: center;">Gran Quivira kivas</p>

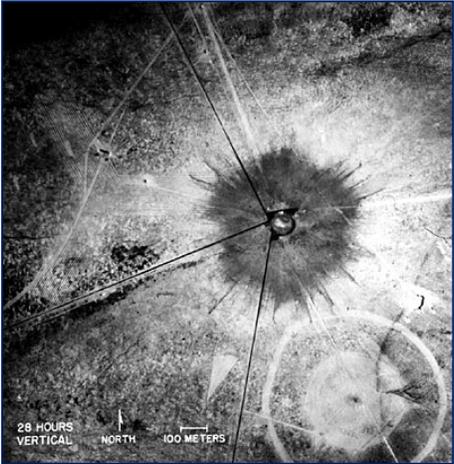
Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace^	Features	Photographs*
Wizard's Roost	On Mesca- lero Reserva- tion near Ruidoso, Lincoln County/55	Archaeo- logical Site	82004841	Ancho B	The Wizard's Roost is an archeoastronomy solstice observatory dating from approximately 100 BCE to 900 AD. Stones are aligned to the solstices.	Address/location restricted; no photo available
St. Joseph Apache Mission Church	626 Mission Trail, Mescalero Reservation, Otero County/58	Structure	04001588	Ancho C	This church was designed by the architect William C. Stanton in the Late Gothic Revival architecture. It was constructed in 1920 and replaced the existing adobe structure in order to serve the Apache people. The mission is laid out in the form of a cross and all material used was native to the locality. Improvements have been made through the years, including replacing the windows and tile roof, installing a radiant heat system, and adding artwork.	
V-2 Rocket Launch Site, also known as Launch Complex 33	White Sands Missile Range, NE of Las Cruces, Dona Ana County/4	Structures, Site; National Historic Landmark	85003541	R5107 B	Currently listed as an educational/research facility, the V-2 Launching Site also remains an active missile site. The historic significance is its association with U.S. testing of the German V-2 rocket, the origins of the American rocket program and the leadership of Dr. Werner von Braun. The V-2 Gantry Crane (1946) and Army Blockhouse (1945) represent the first generation of rocket testing facilities that would lead to U.S. exploration of space. The Army Blockhouse was primarily used as an observation point and laboratory in the pioneer development of the V-2 rocket. The Gantry Crane was used to launch the V-2 and Viking rockets.	

Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace^	Features	Photographs*
Trinity Site	S of US 380, near Bingham (within White Sands Missile Range), Socorro County/85	Site; National Historic Landmark	66000493	R5107 B	The Trinity site is located within the White Sands Missile Range. It is where the first atomic bomb, using an implosion-design plutonium device, was tested July 16, 1945. The Trinity test, which was the culmination of the Manhattan Project, marked the beginning of the atomic age. The landmark includes base camp, where the scientists and support group lived; ground zero, where the bomb was placed for the explosion; and the McDonald ranch house, where the plutonium core to the bomb was assembled. The detonation of the 2nd and 3rd atomic bombs over Japan led to the surrendering of the Japanese and the end of World War II.	 <p style="text-align: center;">Ground Zero 28 hours after the explosion</p>
Carlsbad Irrigation District (Carlsbad Reclamation Project, Irrigation System of the Pecos)	Off Hwy 285 about 5 mi N of Carlsbad, Eddy County/19	Structures; National Historic Landmark	66000476	Talon High East	The Carlsbad Irrigation District is an extensive reclamation system consisting of dams, reservoirs, and irrigation canals constructed in the late 1800s and early 1900s. Located in the Pecos River Valley near Carlsbad, it is comprised of 8 buildings and 22 structures, including two major structures (McMillan Dam and the Pecos River Flume). In addition to the project's well-reserved examples of early reclamation engineering and design, the project is a significant representation of the historical progression of western reclamation practice.	 <p style="text-align: center;">Pecos River Flume</p>

Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace^	Features	Photographs*
Lincoln Historic District	US 380, Lincoln, Lincoln County/38	Historic District; National Historic Landmark	66000477	Beak B	Lincoln is one of the best preserved cowtowns from the cattleman's frontier in the years following the U.S. Civil War. Disputes over water, government beef contracts, and grazing rights led to the armed conflict known as the Lincoln County War of 1878, which ended in a three-day gun battle in the streets of Lincoln that involved William (Billy the Kid) Bonney. The buildings are threatened by highway speed vibrations.	 <p style="text-align: center;">Lincoln courthouse and jail</p>
Fort Stanton Historic District	7 mi SE of Capitan, off US 380, Capitan, Lincoln County/39	Historic District	73001142 99001679	Beak B; within Supersonic Restricted Area 1	Fort Stanton was built in 1855 to serve as a base of operations against the Mescalero Apache Indians, and served as a military fortification through 1896. The fort was seized by Confederate forces in 1861 and later abandoned. The fort was abandoned by the Army in 1899, but has had other uses since, including a tuberculosis hospital, a Civilian Conservation Corps (CCC) work camp, and an internment camp for German prisoners and Japanese internees during World War II.	 <p style="text-align: center;">Officers Quarters</p>

Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace^	Features	Photographs*
NM School for the Visually Handicapped Administration, Infirmary, Central Receiving, and Auditorium and Recreation Buildings	1900 N White Sands Blvd, Alamogordo, Otero County/65	Structures	88001567	Ancho C; within Supersonic restricted Area 3	These four buildings have historically and are currently being used as a School for the blind and visually impaired. They were constructed between 1918 and 1935.	 <p>Administration Building</p>
Artesia Residential Historic District	Bounded by W Main St, W Missouri Ave, S 2nd St & S 10th St, Eddy County/10	District	09001267	Talon High East	The Artesia residential historic district is comprised of 300 resources, 206 of which are considered contributing to the historic significance of the district. The houses were built in the early 1900's in the Mission/Spanish Revival and Queen Anne styles.	 <p>House within the Artesia Historic District</p>
Hopeful Lode/Parsons Mine	Lincoln National Forest. FR 108, N of Bonito Lake, Lincoln County/53	Historic Archaeological Site	95001014	Ancho B; within Supersonic Restricted Area 1	The Parsons Mine, discovered in the 1880's, was the most well-known mine in the Nogal Mining District of the Lincoln National Forest. It produced a significant amount of gold. Following its peak around the turn of century, the mine operated intermittently until around 1920. Artifacts, rusted boilers, and concrete foundations remain.	No photo available
Sitting Bull Falls Recreation Area Dam and picnic shelters	Lincoln National Forest, 45 mi WSW of Carlsbad, off	Structures, sites	93001419 93001420 93001418	Talon High West	The dam, Group Picnic Shelter, and picnic shelter at Sitting Bull Falls Recreation Area are associated with the Depression Era, CCC efforts on public lands within the Lincoln National Forest from 1933 to 1942. The picnic shelters are typical of	

Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace^	Features	Photographs*
	NM 137, Eddy County/23				the CCC "rustic" style of architecture, constructed of local materials that would fit well into the environment. The formation of the CCC and the public works they created (including recreational facilities and water control measures such as dams), are considered significant because they marked a change in Forest Service philosophy from conserving to managing resources.	 <p style="text-align: center;">Picnic Shelter</p>
Prehistoric domestic multiple dwellings and agricultural fields	Near Lincoln, Lincoln County/42	Archaeological Sites	88001507 88001508 88001509 88001510 88001511 88001512 88001513 88001514 88001516 88001515	Beak B	The prehistoric domestic multiple dwellings and agricultural fields have a Jomada Mogollon cultural affiliation with a period of significance of 1499-1000 AD. Sites include pueblos, sherd and flake scatter, artifact scatter, and/or historic habitation.	Address/locations restricted; no photo available

Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace^	Features	Photographs*
<p>The following historic properties are representative sites of similarly grouped sites within the Project Area, or Area of Potential Effect (APE)</p>						
La Luz Pottery Factory	Approx 2 mi E of La Luz, Otero County/61	Structures	79001544	Ancho C and Supersonic restricted Area 3 (R5107 B, Talon High East, Beak A, Beak B, Ancho B, Ancho C)	The La Luz Pottery Factory is one of 12 historic sites within the APE that was constructed as a public or commercial building. It was built in 1930 and produced Spanish-style red barrel Mission tiles that were used throughout the region, including on the St. Joseph's Apache Mission church in Mescalero. The property, which contains extensive clay pits, is now owned by the Tularosa Basin Historical Society.	
US Post Office--Alamogordo (Alamogordo Federal Building)	1101 New York Ave, Alamogordo, Otero County/71	Structure	00000510	Ancho C and Supersonic restricted Area 3 (R5107 B, Talon High East, Beak A, Beak B, Ancho B, Ancho C)	The Alamogordo Federal Building is one of 12 historic sites within the APE that was constructed as a public or commercial building. The pueblo style building was constructed in 1938 as a Works Progress Administration project and originally housed the Alamogordo Main Post Office. The main entrance portico features frescoes by Peter Hurd completed in 1942. The Post Office moved out in 1961, and the building, known as the Federal Building, was used by a succession of Federal agencies.	

Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace^	Features	Photographs*
Tularosa Original Townsite District	Junction 54/70, Tularosa, Otero County/59	Historic District	79001545	Ancho C and Supersonic restricted Area 3 (Ancho A, Ancho C)	The Tularosa Original Townsite District is one of three historic districts in the APE. The Village of Tularosa was settled in 1863 by Hispanic farmers. The Tularosa Original Townsite District consists of the original 49 blocks on 1400 acres, including 182 buildings. The architectural classification is Pueblo and California bungalow. The original acequia (ditch irrigation system) remains virtually unchanged and provides the water for the trees lining the streets, private gardens, and landscaping.	
Jackson House	1700 Ninth St, Alamogordo, Otero County/72	Structure	03001511	Ancho C and Supersonic restricted Area 3 (Talon High East)	The Jackson house is one of four historic single family houses in the APE that was constructed at the turn of the last century. It is a classic Victorian Queen Anne-style house built in 1902 by A.P. Jackson, a local lumber dealer. The house was used as a tuberculosis hospice briefly during the 1920s.	
Las Acequias	S part of Alamogordo, Otero County/73	Structures/ Features	08000697	Ancho C and Supersonic restricted Area 3 (Beak B)	Las Acequias is one of two water supply systems in the APE that were important in the successful settlement of the area. It is an irrigation system that consists of a network of ditches through which water flows solely by gravity. The system was introduced by Spanish colonists but was similar to the systems that the indigenous people used. There is a main ditch, or acequia madre, and lateral ditches branch off from it. Lateral ditches are controlled with manually operated slice gates to regulate the division of flow.	

Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace^	Features	Photographs*
Mexican Canyon Trestle (Cloudcroft Railroad Trestle)	Off NM 83, NW of Cloudcroft, Otero County/63	Structure	79001543	Ancho C and Supersonic restricted Area 3 (Ancho C)	The Mexican Canyon Trestle is one of four historic structures associated with the railroad logging industry in the Lincoln National Forest in the late 1800's and early 1900's. The trestle, constructed in 1899, allowed access to timber resources for the railroad industry and tourism, and is an important symbol of the Southern Sacramento Mountains railroad logging history. The railroad, dubbed the Cloud-Climbing Railroad, headed west into the Lincoln National Forest to the new town of Cloudcroft. At completion, it was the highest standard-gauge track in the world, and climbed to 8,600 feet. In 2011, the Trestle was restored and a Vista was constructed to allow viewing the Trestle from the road.	
Fresnal Shelter	Near High Rolls, Otero County/64	Archaeological Site	98000315	Ancho C and Supersonic restricted Area 3 (R5103 B/C)	The Fresnal Shelter is one of two rock shelter sites in the APE used by indigenous people. It consists of the overhang of a limestone in Fresnal Canyon within Lincoln National Forest, used for shade and shelter by hunter-gatherers in the Archaic Period (approximately 1600 BC to 250 AD). It was used to store food, maize, beans, grasses, salt crystals, and feather-wrapped twine. Associated artifacts include projectile points, small end scrapers, choppers, and coiled and twilled basketry bags and sandals.	Address/location restricted; no photo available

Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace^	Features	Photographs*
Wofford Lookout Complex	Lincoln National Forest, NE of Cloudcroft, Otero County/60	Buildings/ Structures	87002484	Beak C (Beak B, Ancho C, R5107 D)	The Wofford Lookout Complex is one of six historic fire lookout towers in the APE constructed in and around the Lincoln National Forest by the National Forest Service. It was erected in 1933 by the Civilian Conservation Corps. The observer's cabin and shed were restored and are ready to be put into the Forest Service's rental program, although the 7' x 7' cab on top needs to be restored as well.	
Flying H Ranch	Off US 70 between Hope and Elk area, Chaves County/1	Buildings/ Structures	85003633	Ancho C (Ancho B, Ancho C, R5103 B/C)	The Flying H Ranch is one of four historic ranches or homesteads in the APE that are significant for their association with early ranching and the agricultural period of the area dating from about 1875 to 1900. A dugout structure was built in 1869 and John Tunstall built a four room adobe house in 1878. Tunstall gained notoriety by opening a store in Lincoln that was in competition with a store run by Messrs. Murphy and Dolan. Tunstall was killed by a legally deputized posse on February 18, 1878, while enroute to Lincoln. This murder was the "trigger" event that started the bitter feud in Lincoln County. William H. Bonney (Billy the Kid) was employed by Tunstall on the ranch and later used the dugout on the ranch for a hideout.	No photo available

Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace^	Features	Photographs*
Ring Midden Sites	Lincoln National Forest, Otero County/83	Archaeological Site	95001479 98000278 95001319	Ancho C, R5103 B/C, Talon High West	The Ring Midden Sites of the Guadalupe Mountains describe a significant and unique feature associated with food processing between 700 AD and 1900. Groups known to have inhabited the area during this time were the Jornada Mogollon and later, the Mescalero Apache. The ring midden generally consisted of burned limestone cobbles mixed with ash and dirt usually in the form of a circle with a depressed center. Many appear to be used primarily for roasting agave (or mescal), but some were used as human burial sites. Approximately 850 ring middens have been recorded in the Guadalupe Mountains.	Address/locations restricted; no photo available
Corona Phase Village sites	Near White Oaks, Lincoln County/27	Archaeological Sites	90001252 90001251 900015319 000153290 001533 74001198 90001250	Beak A, Beak B, Ancho A	Corona Phase village sites are significant examples of communities formed during a transitional phase in the cultural development in the Sierra Blanca Region of the Jornada Mogollon. They are characterized by upright slab outlines of scattered one to three room structures. Corona Phase villages are thought to date between AD 1000 and 1200.	Address/locations restricted; no photo available
Other Sensitive Resources						
Hearth Mounds	Address Restricted	Archaeological Sites		R5107 D	Hundreds (perhaps thousands) of hearth mounds exist throughout the parabolic dunes of the White Sands National Monument, as well as in the dunes that lie outside the National Monument. The hearth mounds have been created by the action of thermal/ chemical/hydraulic forces, resulting in mounds where a portion of the dune is cemented in place after the use of that particular hearth has been discontinued.	Address/locations restricted

Attachment 7

Summary of Representative Historic Properties Potentially Affected

Property Name	Address / Number on Attachment C Figure	Type	National Register Number	Airspace [^]	Features	Photographs*
					Originally, the hearths would have been at grade level, but the natural procession/ recession of the dune fronts over time have resulted in the hearths, together with the naturally cemented areas around/ under the mounds, being exposed (others are likely still engulfed within the dunes). The hearths mounds that are exposed can be 2 to 40 feet tall and range in age from 1400 to 6000 years old. They contain artifacts, charcoal and plant fibers that can provide scientific information on earlier human history, as well as dune migration patterns. Once exposed to the action of natural forces such as wind, precipitation, and the continuing effects of dune migration, the hearth mounds undergo fairly rapid degradation/ disintegration, until they are once again a collection of the more durable artifacts at grade (unless they are re-engulfed by the dunes).	

[^] Airspaces within parentheses are for the other properties within the similarly grouped sites.

* Photographs are either publically available and are not copyrighted, or are reproduced as “fair use” from Wikimedia Commons, a freely licensed media file repository. To the extent that photographs were prepared/ published by private individuals/entities, republication in this document does not constitute an endorsement by the photographer of the information presented herein.

Attachment 8

Summary of Effects to Historic Properties

Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
White Sands National Monument Historic District (White Sands National Monument Headquarters Area and Visitor Center)	Off US 70/82, near Alamogordo, Otero County/78	Historic District	88000751	The White Sands National Monument historic district includes the National Park Service (NPS) visitor center and 7 adjacent buildings, all built between 1936 and 1940. The buildings were built in the Pueblo-Revival architectural style, and the walls were constructed of abode mud bricks. The centerpiece of the district is the Monument Administration and Museum Building, constructed in 1936-37. This site is important because of its architecture and its association with the history of the NPS, particularly the NPS emphasis on use of local materials and rustic styles in construction of park buildings.	The visitor center would not be impacted by the proposed action. QF-16 FSAT training activities would operate in the same airspace at the same number of operations as the QF-4 FSATs. There would be no change in the number of annual airfield operations with the transition to QF-16s. Existing flight restrictions would prohibit QF-16s from flying within 1 nautical mile of the visitor center unless the aircraft is more than 1500 feet above ground level (AGL). QF-16s would continue to avoid conducting airfield operations during environmental nighttime hours of 10 p.m. and 7 a.m. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. The visitor center is well outside of the area exposed to supersonic booms from low altitude supersonic activity. The probability of damage to the visitor center due to the proposed action is approximately one chance in 2 million, similar to baseline conditions. There would be no changes in the use of chaff and flares. Subsonic noise levels would remain the same as baseline conditions. Adverse effects resulting from any operational noise would not be expected.
Salinas Pueblo Missions National Monument (Gran Quivira)	Gran Quivira portion of Salinas Pueblo Missions, about 7.5 mi NW of Claunch, Socorro and	Structures, Archaeological Sites, Ruins, National Monument; National Historic	66000494	The Gran Quivira portion of the Salinas Pueblo Missions National Monument, established in 1909, was a vast city with multiple pueblos and kivas prior to contact with the Spaniards. Mound 7, a 226-room structure from the Pueblo IV period (A.D.1275/1300-1600), is the largest	This site would not be impacted by the proposed action. QF-16 FSAT training activities would operate in the same airspace at the same number of operations as the QF-4 FSATs. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. Noise levels would remain the same with the transition

Attachment 8

Summary of Effects to Historic Properties

Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
	Torrance Counties/86	Landmark		and only fully excavated pueblo at the site. Artifacts found include whole pots, water jugs, animal effigies, and stone tools. The Spaniards built churches here, including the Inglesia de San Isidro and the San Buenaventura, in the 1600's.	to the newer QF-16s. Adverse effects resulting from any operational noise would not be expected.
Wizard's Roost	On Mescalero Reservation near Ruidoso, Lincoln County/55	Archaeo- logical Site	82004841	The Wizard's Roost is an archeoastronomy solstice observatory dating from approximately 100 BCE to 900 AD. Stones are aligned to the solstices.	This site would not be impacted by the proposed action. QF-16 FSAT training activities would operate in the same airspace at the same number of operations as the QF-4 FSATs. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. Noise levels would remain the same with the transition to the newer QF-16s.
St. Joseph Apache Mission Church	626 Mission Trail, Mescalero Reservation, Otero County/58	Structure	04001588	This church was designed by the architect William C. Stanton in the Late Gothic Revival architecture. It was constructed in 1920 and replaced the existing adobe structure in order to serve the Apache people. The mission is laid out in the form of a cross and all material used was native to the locality. Improvements have been made through the years, including replacing the windows and tile roof, installing a radiant heat system, and adding artwork.	This site would not be impacted by the proposed action. QF-16 FSAT training activities would operate in the same airspace at the same number of operations as the QF-4 FSATs. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. Noise levels would remain the same with the transition to the newer QF-16s. Adverse effects resulting from any operational noise would not be expected.

Attachment 8

Summary of Effects to Historic Properties

Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
V-2 Rocket Launch Site, also known as Launch Complex 33	White Sands Missile Range, NE of Las Cruces, Dona Ana County/4	Structures, Site; National Historic Landmark	85003541	Currently listed as an educational/research facility, the V-2 Launching Site also remains an active missile site. The historic significance is its association with U.S. testing of the German V-2 rocket, the origins of the American rocket program and the leadership of Dr. Werner von Braun. The V-2 Gantry Crane (1946) and Army Blockhouse (1945) here represent the first generation of rocket testing facilities that would lead to U.S. exploration of space. The Army Blockhouse was primarily used as an observation point and laboratory in the pioneer development of the V-2 rocket. The Gantry Crane was used to launch the V-2 and Viking rockets.	This site would not be impacted by the proposed action. QF-16 FSAT training activities would operate in the same airspace and conduct similar missions as the QF-4 FSATs. Multiple flights already occur on a daily basis at the White Sand Missile Range. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. Noise levels would remain the same with the transition to the newer QF-16s.
Trinity Site	S of US 380, near Bingham (within White Sands Missile Range), Socorro County/85	Site; National Historic Landmark	66000493	The Trinity site is located within the White Sands Missile Range. It is where the first atomic bomb, using an implosion-design plutonium device, was tested July 16, 1945. The Trinity test, which was the culmination of the Manhattan Project, marked the beginning of the atomic age. The landmark includes base camp, where the scientists and support group lived; ground zero, where the bomb was placed for the explosion; and the McDonald ranch house, where the plutonium core to	This site would not be affected by the proposed action. QF-16 FSAT training activities would operate in the same airspace and conduct similar missions as the QF-4 FSATs. Multiple flights already occur on a daily basis at the White Sand Missile Range. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. Noise levels would be reduced by 1 dBA with the transition to the newer QF-16s.

Attachment 8

Summary of Effects to Historic Properties

Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
				the bomb was assembled. The detonation of the 2nd and 3rd atomic bombs over Japan led to the surrendering of the Japanese and the end of World War II.	
Carlsbad Irrigation District (Carlsbad Reclamation Project, Irrigation System of the Pecos)	Off Hwy 285 about 5 mi N of Carlsbad, Eddy County/19	Structures; National Historic Landmark	66000476	The Carlsbad Irrigation District is an extensive reclamation system consisting of dams, reservoirs, and irrigation canals constructed in the late 1800s and early 1900s. Located in the Pecos River Valley near Carlsbad, it is comprised of 8 buildings and 22 structures, including two major structures (McMillan Dam and the Pecos River Flume). In addition to the project's well-reserved examples of early reclamation engineering and design, the project is a significant representation of the historical progression of western reclamation practice.	These structures would not be affected by the proposed action. No changes to existing flight operations, patterns or restrictions are proposed. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. Noise levels would remain less than 45 dBA with the transition to the newer QF-16s. Adverse effects resulting from any operational noise would not be expected.
Lincoln Historic District	US 380, Lincoln, Lincoln County/38	Historic District; National Historic Landmark	66000477	Lincoln is one of best preserved cowtowns from the cattleman's frontier in the years following the U.S. Civil War. Disputes over water, government beef contracts, and grazing rights led to the armed conflict known as the Lincoln County War of 1878, which ended in a three-day gun battle in the streets of	This historic district would not be affected by the proposed action. QF-16 FSAT training activities would operate in the same airspace at the same number of operations as the QF-4 FSATs. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. Noise levels would remain less than 45 dBA with the transition to the newer QF-16s. Adverse effects

Attachment 8

Summary of Effects to Historic Properties

Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
				Lincoln that involved William (Billy the Kid) Bonney. The buildings are threatened by highway speed vibrations.	resulting from any operational noise would not be expected.
Fort Stanton Historic District	7 mi SE of Capitan, off US 380, Capitan, Lincoln County/39	Historic District	73001142 99001679	Fort Stanton was built in 1855 to serve as a base of operations against the Mescalero Apache Indians, and served as a military fortification through 1896. The fort was seized by Confederate forces in 1861 and later abandoned. The fort was abandoned by the Army in 1899, but has had other uses since, including a tuberculosis hospital, a CCC work camp, and an internment camp for German prisoners and Japanese internees during World War II.	This historic district would not be impacted by the proposed action. QF-16 FSAT training activities would operate in the same airspace and conduct similar missions as the QF-4 FSATs. The historic district is located within a sonic boom avoidance area; therefore, there would continue to be no impacts from supersonic operations. There would be no changes in the use of chaff and flares. Noise levels would remain less than 45 dBA with the transition to the newer QF-16s. Adverse effects resulting from any operational noise would not be expected.
NM School for the Visually Handicapped- Administration, Infirmity, Central Receiving, and Auditorium and Recreation Buildings	1900 N White Sands Blvd, Alamogordo, Otero County/65	Structures	88001567	These four buildings have historically and are currently being used as a School for the blind and visually impaired. They were constructed between 1918 and 1935.	These buildings would not be affected by the proposed action. QF-16 FSAT training activities would operate in the same airspace and conduct similar missions as the QF-4 FSATs. These buildings are in an area with supersonic flight restrictions. Supersonic, non-maneuvering (no transition from subsonic to supersonic) flight is allowed only above 23,000 ft MSL. Noise levels would remain the same with the transition to the newer QF-16s. Adverse effects resulting from any operational noise would not be expected.
Artesia Residential Historic District	Bounded by W Main St, W	District	09001267	The Artesia residential historic district is comprised of 300	This historic district would not be impacted by the proposed action. QF-16 FSAT training activities

Attachment 8

Summary of Effects to Historic Properties

Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
	Missouri Ave, S 2nd St & S 10th St, Eddy County/10			resources, 206 of which are considered contributing to the historic significance of the district. The houses were built in the early 1900's in the Mission/Spanish Revival and Queen Anne styles.	would operate in the same airspace and conduct similar missions as the QF-4 FSATs. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. Noise levels would remain less than 45 dBA with the transition to the newer QF-16s.
Hopeful Lode/Parsons Mine	Lincoln National Forest. FR 108, N of Bonito Lake, Lincoln County/53	Historic Archaeo- logical Site	95001014	The Parsons Mine, discovered in the 1880's, was the most well-known mine in the Nogal Mining District of the Lincoln National Forest. It produced a significant amount of gold. Following its peak around the turn of century, the mine operated intermittently until around 1920. Artifacts, rusted boilers, and numerous concrete foundations remain.	This site would not be affected by the proposed action. No changes to existing flight operations, patterns or restrictions are proposed. This site is located within a sonic boom avoidance area; therefore, there would continue to be no impacts from supersonic operations. There would be no changes in the use of chaff and flares. No effects from the proposed action are anticipated.
Sitting Bull Falls Recreation Area Dam and picnic shelters	Lincoln National Forest, 45 mi WSW of Carlsbad, off NM 137, Eddy County/23	Structures, sites	93001419 93001420 93001418	The dam, Group Picnic Shelter, and picnic shelter at Sitting Bull Falls Recreation Area are associated with the Depression Era, CCC efforts on public lands within the Lincoln National Forest from 1933 to 1942. The picnic shelters are typical of the CCC "rustic" style of architecture, constructed of local materials so that they would fit well into the environment. The formation of the CCC and the public works they created (including recreational	These structures would not be impacted by the proposed action. No changes to existing flight operations, patterns or restrictions are proposed. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. Noise levels would remain less than 45 dBA with the transition to the newer QF-16s. Adverse effects resulting from any operational noise would not be expected.

Attachment 8

Summary of Effects to Historic Properties

Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
				facilities and water control measures such as dams), are considered significant because they marked a change in Forest Service philosophy from conserving to managing resources.	
Prehistoric domestic multiple dwellings and agricultural fields	Near Lincoln, Lincoln County/42	Archaeo-logical Sites	88001507 88001508 88001509 88001509 88001510 88001511 88001512 88001513 88001514 88001516 88001515	The prehistoric domestic multiple dwellings and agricultural fields have a Jomada Mogollon cultural affiliation with a period of significance of 1499-1000 AD. Sites include pueblos, sherd and flake scatter, artifact scatter, and/or historic habitation.	These sites would not be affected by the proposed action. No changes to existing flight operations, patterns or restrictions are proposed. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. No effects are anticipated from the proposed action.

Attachment 8

Summary of Effects to Historic Properties

The following historic properties are representative sites of similarly grouped sites within the Project Area, or Area of Potential Effect (APE)					
Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
La Luz Pottery Factory	Approx 2 mi E of La Luz, Otero County/61	Structures	79001544	The La Luz pottery factory was built in 1930 and produced Spanish-style red barrel Mission tiles that were used throughout the region, including on the St. Joseph's Apache Mission church in Mescalero. The property, which contains extensive clay pits, is now owned by the Tularosa Basin Historical Society.	This site would not be affected by the proposed action. QF-16 FSAT training activities would operate in the same airspace at the same number of operations as the QF-4 FSATs. No changes to existing flight operations, patterns or restrictions are proposed. This site is in an area with supersonic flight restrictions. Supersonic, non-maneuvering (no transition from subsonic to supersonic) flight is allowed only above 23,000 ft MSL. There would be no changes in the use of chaff and flares. No effects are anticipated from the proposed action.
US Post Office-- Alamogordo (Alamogordo Federal Building)	1101 New York Ave, Alamogordo, Otero County/71	Structure	00000510	The pueblo style building was constructed in 1938 as a Works Progress Administration project and originally housed the Alamogordo Main Post Office. The main entrance portico features frescoes by Peter Hurd completed in 1942. The Post Office moved out in 1961, and the building, known as the Federal Building, was used by a succession of Federal agencies.	This building would not be affected by the proposed action. No changes to existing flight operations, patterns or restrictions are proposed. This site is in an area with supersonic flight restrictions. Supersonic, non-maneuvering (no transition from subsonic to supersonic) flight is allowed only above 23,000 ft MSL. There would be no changes in the use of chaff and flares. No effects are anticipated from the proposed action.

Attachment 8

Summary of Effects to Historic Properties

The following historic properties are representative sites of similarly grouped sites within the Project Area, or Area of Potential Effect (APE)					
Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
Tularosa Original Townsite District	Junction 54/70, Tularosa, Otero County/59	Historic District	79001545	The Village of Tularosa was settled in 1863 by Hispanic farmers. The Tularosa Original Townsite District consists of the original 49 blocks on 1400 acres, including 182 buildings. The architectural classification is Pueblo and California bungalow. The original acequia (ditch irrigation system) remains virtually unchanged and provides the water for the trees lining the streets, private gardens, and landscaping.	This historic district would not be affected by the proposed action. No changes to existing flight operations, patterns or restrictions are proposed. This site is in an area with supersonic flight restrictions. Supersonic, non-maneuvering (no transition from subsonic to supersonic) flight is allowed only above 23,000 ft MSL. There would be no changes in the use of chaff and flares. No effects are anticipated.
Jackson House	1700 Ninth St, Alamogordo, Otero County/72	Structure	03001511	The Jackson house is a classic Victorian Queen Anne-style house built in 1902 by A.P. Jackson, a local lumber dealer. The house was used as a tuberculosis hospice briefly during the 1920s.	This house would not be impacted by the proposed action. QF-16 FSAT training activities would operate in the same airspace and conduct similar missions as the QF-4 FSATs. This site is in an area with supersonic flight restrictions. Supersonic, non-maneuvering (no transition from subsonic to supersonic) flight is allowed only above 23,000 ft MSL. There would be no changes in the use of chaff and flares. Noise levels would remain the same with the transition to the newer QF-16s.
Las Acequias	S part of Alamogordo, Otero County/73	Structures/ Features	08000697	Las Acequias is an irrigation system that consists of a network of ditches through which water flows solely by gravity. The system was introduced by Spanish colonists but was very similar to the system that the	These structures would not be affected by the proposed action. No changes to existing flight operations, patterns or restrictions are proposed. This site is in an area with supersonic flight restrictions. Supersonic, non-maneuvering (no transition from subsonic to supersonic) flight is

Attachment 8

Summary of Effects to Historic Properties

The following historic properties are representative sites of similarly grouped sites within the Project Area, or Area of Potential Effect (APE)					
Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
				indigenous people used. The network begins with a main ditch, or acequia madre, and lateral ditches branch off from it. Lateral ditches are controlled with manually operated slice gates to regulate the division of flow.	allowed only above 23,000 ft MSL. There would be no changes in the use of chaff and flares. No effects from the proposed action are anticipated.
Mexican Canyon Trestle (Cloudcroft Railroad Trestle)	Off NM 83, NW of Cloudcroft, Otero County/63	Structure	79001543	The Mexican Canyon Trestle, constructed in 1899 to access timber for the railroad industry and to provide tourism, is an important local symbol of the Southern Sacramento Mountains railroad logging history. The railroad, dubbed the Cloud-Climbing Railroad, headed west into the Lincoln National Forest to the new town of Cloudcroft. At the time of its completion, it was the highest standard-gauge track in the world, and climbed to 8,600 feet. In 2011 the Trestle was fully restored and a Vista was constructed to safely view the Trestle from the road.	This site would not be impacted by the proposed action. QF-16 FSAT training activities would operate in the same airspace and conduct similar missions as the QF-4 FSATs, which includes remaining at least 3000 ft above ground level in the Cloudcroft/High Rolls area if possible. This site is in an area with supersonic flight restrictions. Supersonic, non-maneuvering (no transition from subsonic to supersonic) flight is allowed only above 23,000 ft MSL. There would be no changes in the use of chaff and flares. Noise levels would remain less than 45 dBA with the transition to the newer QF-16s.
Fresnal Shelter	Near High Rolls, Otero County/64	Archaeo-logical Site	98000315	The Fresnal Shelter is the overhang of a limestone cliff in Fresnal Canyon within Lincoln National Forest. The cave was used for shade and shelter by hunter-gatherers in the Archaic	This site would not be affected by the proposed action. No changes to existing flight patterns or restrictions are proposed. This site is in an area with supersonic flight restrictions. Supersonic, non-maneuvering (no transition from subsonic to

Attachment 8

Summary of Effects to Historic Properties

The following historic properties are representative sites of similarly grouped sites within the Project Area, or Area of Potential Effect (APE)					
Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
				Period from approximately 1600 BC to 250 AD. It was used to store food and items such as maize, beans, grasses, salt crystals, and feather-wrapped twine. Artifacts found include projectile points, small end scrapers, choppers, and coiled and twilled basketry bags and sandals.	supersonic) flight is allowed only above 23,000 ft MSL. There would be no changes in the use of chaff and flares. No effects from the proposed action are anticipated.
Wofford Lookout Complex	Lincoln National Forest, NE of Cloudcroft, Otero County/60	Buildings/ Structures	87002484	Erected in 1933 by the CCC, the Wofford Lookout Tower was one of many fire lookouts built in and around the Lincoln National Forest. The observer's cabin and shed were restored and are ready to be put into the Forest Service's rental program, although the 7' x 7' cab on top needs to be restored as well.	This site would not be impacted by the proposed action. QF-16 FSAT training activities would operate in the same airspace and conduct similar missions as the QF-4 FSATs. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. Noise levels would remain the same with the transition to the newer QF-16s. Adverse effects resulting from any operational noise would not be expected.
Flying H Ranch	Off US 70 between Hope and Elk area, Chaves County/1	Buildings/ Structures	85003633	The Flying H Ranch is significant for its association with early ranching and the agricultural period of the area dating from about 1875 to 1900. A dugout structure was built in 1869 and John Tunstall built a four room adobe house in 1878. Tunstall gained notoriety by opening a store in Lincoln that was in competition with a store run by Messrs. Murphy	This site would not be affected by the proposed action. No changes to existing flight operations, patterns or restrictions are proposed. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. Noise levels would remain the same with the transition to the newer QF-16s. Adverse effects resulting from any operational noise would not be expected.

Attachment 8

Summary of Effects to Historic Properties

The following historic properties are representative sites of similarly grouped sites within the Project Area, or Area of Potential Effect (APE)					
Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
				and Dolan. Tunstall was killed by a legally deputized posse on February 18, 1878, while enroute to Lincoln. This murder was the "trigger" event that started the bitter feud in Lincoln County. William H. Bonney (Billy the Kid) was employed by Tunstall on the ranch and later used the dugout on the ranch for a hideout.	
Ring Midden Sites	Lincoln National Forest, Otero County/83	Archaeo-logical Site	95001479 98000278 95001319	The Ring Midden Sites of the Guadalupe Mountains describe a significant and unique feature associated with food processing between 700 AD and 1900. Groups known to have inhabited the area during this time were the Jornada Mogollon and later, the Mescalero Apache. The ring midden generally consisted of burned limestone cobbles mixed with ash and dirt usually in the form of circle with a depressed center. Many appear to be used primarily for roasting agave (or mescal), but some were used as human burial sites. Approximately 850 ring middens have been recorded in the Guadalupe Mountains.	These sites would not be affected by the proposed action. No changes to existing flight operations, patterns or restrictions are proposed. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. No effects are anticipated from the proposed action.

Attachment 8

Summary of Effects to Historic Properties

The following historic properties are representative sites of similarly grouped sites within the Project Area, or Area of Potential Effect (APE)					
Property Name	Address/ Number on Attachment C Figure	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
Corona Phase Village sites	Near White Oaks, Lincoln County/27	Archaeo-logical Sites	90001252 90001251 90001531 90001532 90001533 74001198 90001250	Corona Phase village sites are significant examples of communities formed during a transitional phase in the cultural development in the Sierra Blanca Region of the Jornada Mogollon. They are characterized by upright slab outlines of scattered one to three room structures. Corona Phase villages are thought to date between AD1000 and 1200.	These sites would not be affected by the proposed action. No changes to existing flight operations, patterns or restrictions are proposed. There would be no changes to supersonic operations, which occur at a minimum of 5,500 feet AGL. There would be no changes in the use of chaff and flares. No effects are anticipated from the proposed action.

Attachment 8

Summary of Effects to Historic Properties

Other Sensitive/Eligible Resources					
Description	Location	Type	National Register Number	Features	Summary of Effects and Factors/ Restrictions Minimizing Effects
Hearth Mounds	Address Restricted; at the dune fronts throughout the White Sands	Archaeo-logical Sites	None	<p>Hundreds (perhaps thousands) of hearth mounds exist throughout the parabolic dunes of the White Sands National Monument, as well as in the dunes that lie outside the National Monument. The hearth mounds have been created by the action of thermal/ chemical/hydraulic forces, resulting in mounds where a portion of the dune is cemented in place after the use of that particular hearth has been discontinued.</p> <p>Originally, the hearths would have been at grade level, but the natural procession/ recession of the dune fronts over time have resulted in the hearths, together with the naturally cemented areas around/ under the mounds, being exposed (others are likely still engulfed within the dunes). The hearths mounds that are exposed can be 2 to 40 feet tall and range in age from 1400 to 6000 years old. They contain artifacts, charcoal and plant fibers that can provide scientific information on earlier human history, as well as dune migration patterns. Once exposed to the action of natural forces such as wind, precipitation, and the continuing effects of dune migration, the hearth mounds undergo fairly rapid degradation/ disintegration, until they are once again a collection of the more durable artifacts at grade (unless they are re-engulfed by the dunes).</p>	<p>These sites would not be impacted by the proposed action. QF-16 FSAT training activities would operate in the same airspace and conduct similar missions as the QF-4 FSATs. Multiple flights already occur on a daily basis at the White Sand Missile Range. There would be no changes to supersonic operations in the areas where the hearth mounds may be present. There would be no changes in the use of chaff and flares. Noise levels would remain the same with the transition to the newer QF-16s.</p>



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

Colonel Robert E. Kiebler, U.S. Air Force
49th Wing Commander
490 First Street, Suite 1700
Holloman AFB, NM 88310-8277

Wally Murphy
US Fish and Wildlife Service
New Mexico Ecological Services Field Office (NMESFO)
2105 Osuna Road NE
Albuquerque, NM 87113

Subject: Informal Consultation Regarding the Replacement of QF-4 Full Scale Aerial Targets (FSATs) with QF-16 FSATs at Holloman Air Force Base, New Mexico

Dear Mr. Murphy:

We are requesting concurrence from the U.S. Fish and Wildlife Service (USFWS) that replacing the current QF-4 FSATs at Holloman Air Force Base (HAFB) with quieter QF-16 FSATs *will not affect* the federally-listed species occurring within Otero County (location of HAFB) and the four other counties under the airspace (Socorro, Sierra, Doña Ana and Lincoln).

The United States Air Force (USAF) is preparing an environmental assessment (EA) for this Proposed Action. The EA will assess the potential environmental consequences associated with replacing QF-4 FSAT aircraft with QF-16 FSATs under the command of Detachment 1 (Det 1), 82 Aerial Target Squadron (ATRS) at HAFB. The 82 ATRS provides target support for the Air Force Weapons System Evaluation Program and the Air Force Weapons Instructor Course. In addition, Det 1, 82 ATRS provides necessary support for White Sands Missile Range (WSMR) national priority research, development and test programs.

The USAF has developed, tested and employed manned and unmanned aircraft as target systems for fighter pilot and aircrew training since 1959. Currently, modified F-4 aircraft, designated QF-4, serve as the only FSAT for the Air Force. In use since the late 1990s, the QF-4 production run has drawn to a close and the current FSAT inventory will eventually be depleted. Replacement FSAT aircraft are needed to support this continuing mission. In addition, pilots and aircrews are facing new combat threats with the transition to more technologically advanced aircraft such as the Sukhoi T-50 and Chengdu J-20 and thus need training with more advanced target systems. The USAF seeks to maximize the use of current assets and capitalize on existing support capabilities by replacing QF-4s with retired F-16 aircraft, modified for target system use and designated QF-16.

The Proposed Action would replace 35 QF-4 FSATs with QF-16 FSATs at HAFB to support USAF and WSMR programs. The QF-16s would use the same restricted airspace (Attachment 1) as the QF-4s at the same number of annual operations and would dispense chaff and flares in

airspace units where use of such materials is currently permitted. Within the base boundaries, proposed infrastructure improvement projects include renovation of two support buildings, one hangar, and 28,100 square yards of North Ramp asphalt paving (Attachment 2). Under the No Action Alternative, the QF-16s would not replace the QF-4s and current QF-4 operations would continue until the existing inventory of FSATs is depleted.

The USAF accessed the USFWS Information, Planning and Conservation Online system (<http://ecos.fws.gov/ipac/>) on 3 June 2014 to determine if any federally-listed species potentially occur in the vicinity of the Proposed Action. The following species are federally listed in Socorro, Sierra, Doña Ana, Lincoln and Otero Counties (Table 1) and may potentially occur on Holloman AFB or under the main airspace (R-5107, WSMR). Also included in the list are the state ranks for the species in each county.

Table 1. Federally Listed, Proposed and Candidate Species Known to or That May Occur on Holloman AFB or under the Main Airspace

Common Name	Scientific Name	Federal Listing	State Listing	County
Fish				
Gila trout	<i>Oncorhynchus gilae</i>	T	T	Sierra
Rio Grande silvery minnow	<i>Hybognathus amarus</i>	E	E	Sierra, Socorro ¹
Rio Grande cutthroat trout	<i>Oncorhynchus clarki virginalis</i>	C	S	Lincoln, Otero, Sierra
Invertebrates				
Alamosa springsnail	<i>Psuedotryonia alamosae</i>	E	E	Socorro
Chupadera springsnail	<i>Pyrgulopsis chupaderae</i>	E	E	Socorro ¹
Socorro isopod	<i>Thermosphaeroma thermophilum</i>	E	E	Socorro
Socorro springsnail	<i>Pyrgulopsis neomexicana</i>	E	E	Socorro
Amphibians				
Chiricahua leopard frog	<i>Rana chiricahuensis</i>	T	-	Sierra ¹ , Socorro ¹
Reptiles				
Narrow-headed garter snake	<i>Thamnophis rufipunctatus</i>	PT	T	Sierra ²
Birds				
Least tern (Interior Population)	<i>Sterna antillarum</i>	E	E	Doña Ana, Otero, Socorro
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T	-	Lincoln ¹ , Otero ¹ , Sierra ¹ , Socorro ¹
Northern aplomado falcon	<i>Falco femoralis septentrionalis</i>	Ex NS	E	Doña Ana, Lincoln, Otero, Sierra, Socorro
Piping plover	<i>Charadrius melodus</i>	T	T	Socorro
Sprague's pipit	<i>Anthus spragueii</i>	C	-	Doña Ana, Otero, Sierra, Socorro
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	E	Lincoln, Sierra, Socorro ¹
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	PT	-	Doña Ana, Sierra, Socorro
Mammals				
Gray wolf (Mexican Gray Wolf)	<i>Canis lupus baileyi</i>	Ex NS	E	Sierra

Common Name	Scientific Name	Federal Listing	State Listing	County
Penasco (Least) chipmunk	<i>Tamias minimus atristriatus</i>	C	E	Lincoln, Otero
New Mexican meadow jumping mouse	<i>Zapus hudsonius luteus</i>	PE	E	Otero ² , Socorro ²
Plants				
Kuenzler's hedgehog cactus	<i>Echinocereus fendleri</i> var. <i>kuenzleri</i> <i>Escobaria</i> (= <i>Coryphantha</i>)	E	E	Lincoln, Otero
Pecos sunflower	<i>Helianthus paradoxus</i>	T	E	Socorro
Sacramento Mountains thistle	<i>Cirsium vinaceum</i>	T	E	Otero
Sacramento prickly poppy	<i>Argemone pleiacantha</i> spp. <i>pinnatisecta</i>	E	E	Otero
Sneed pincushion cactus	<i>Coryphantha sneedii</i> var. <i>sneedii</i>	E	E	Doña Ana
Todsen's pennyroyal	<i>Hedeoma todsenii</i>	E	E	Otero, Sierra ¹
Wright's marsh thistle	<i>Cirsium wrightii</i>	C	E	Otero, Socorro

C = Candidate

E = Endangered

Ex NS = experimental non-essential population

PT = Proposed threatened

¹ Designated critical habitat in the county

PE = Proposed endangered

S = Sensitive

T = Threatened

² Proposed critical habitat in county

All proposed infrastructure upgrade and improvement projects would occur in developed portions of HAFB and no new direct or long-term impacts to vegetation and wildlife are anticipated. One fish species is federally listed in Otero County but not on HAFB, it and two more are in the Rio Grande and Gila River drainages west of the airspace used by the FSATs. Only the Tularosa Basin, the San Andres and Oscura mountains are under the FSAT airspace that would be used by the Proposed Action or the No Action Alternative.

Currently, ground-disturbing military activities are not allowed within the specific areas containing Todsen's pennyroyal (*Hedeoma todsenii*) populations (none of these areas are within HAFB boundaries). Eight known Todsen's pennyroyal populations lie beneath Yonder airspace (R5107B over WSMR). Portions of Yonder are already used for live-fire air-to-air activities. The use of Yonder Impact Area by the Air Force was addressed previously in a biological assessment which determined that developing new test and training capabilities at the installation would have no adverse effect on Todsen's pennyroyal or critical habitat. Similar overflights and training activities (e.g. use of flares and chaff) as previously analyzed would occur under the Proposed Action; therefore no impacts to the Todsen's pennyroyal are expected.

Habitat for the four other plant species, listed in Otero County where ground disturbance would occur, is not found on HAFB. Three of the species are located in the Sacramento Mountains piñon-juniper woodlands east of the airspace used by the QF aircraft, where the potential impacts from QF-16 chaff and flare use would not occur. The fourth species is found only in wetland areas, very sparsely distributed across the airspace landscape, where flares and chaff would have a very low probability of impacting vegetation. Therefore impacts to these species are not anticipated.

In addition to the Todsen's pennyroyal, five other species have critical habitat designated in the counties where the Proposed Action would occur. Critical habitat for the Mexican spotted owl (*Strix occidentalis lucida*) occurs in Otero County, east of HAFB in the Lincoln National Forest, other critical habitat for this owl lies west of Holloman airspace; neither are under the restricted airspace where the QF aircraft operate. Critical habitat defined for the Rio Grande silvery minnow (*Hybognathus amarus*) in the Rio Grande River, the Southwestern willow flycatcher (*Empidonax traillii extimus*) in riparian areas along the Rio Grande and the Chiricahua leopard frog (*Rana chiricahuensis*) in smaller streams, are not known under the airspace where the FSATs operate. Habitat for the Chupadera springsnail (*Pyrgulopsis chupaderae*) is localized and found only in Willow Spring where no ground disturbance would occur. Therefore, the USAF anticipates that none of these species or their critical habitat would be affected by the Proposed Action or the No Action Alternative.

Avian species that occur under the project airspace have been exposed to past and ongoing military overflights similar to those being proposed for this project. Flying operations would not increase under the Proposed Action and chaff and flares are currently used in operations from HAFB in the flight ranges. Federally-listed avian species at sensitive life stages (such as during breeding season) could possibly be affected by overflights and noise. Although potential effects during these sensitive life stages already may occur under the existing conditions (No Action Alternative), potential impacts from overflights under the Proposed Action for each species are addressed further below. These impacts are based on normal operations under the Proposed Action. While accidents with QF-4s have been known to occur, the historic mishap rate for the F-16 is lower than the F-4; therefore, a minor decrease in the probability of mishaps could be anticipated with replacement of QF-4s with QF-16s and such infrequent mishaps are not expected to affect listed species.

The least tern (*Sterna antillarum*) nests in colonies in unvegetated alluvial sand, gravel bars or islands near water. The closest known nesting population is at Bitter Lakes National Wildlife Refuge, approximately 15 miles from the Roswell International Air Center far beyond the eastern extent of the airspace for the Proposed Action. No impacts from the No Action Alternative or the Proposed Action are expected since the FSAT flights do not occur near the tern colony.

The Mexican spotted owl prefers to nest and roost in closed-canopy, old growth, coniferous forests or rocky canyons; scarce habitat under the QF airspace. Overflight impacts have been studied specifically for this species. Neither the operations that would occur if the Proposed Action were to be implemented, nor if the No Action Alternative is chosen, would result in an increase in effects already occurring.

The Northern aplomado falcon (*Falco femoralis septentrionalis*) is a reintroduced (experimental, non-essential population) species in the open grasslands of south central New Mexico. Population numbers are low in the area for the species and, as no change in the number or characteristics of operations under either the Proposed Action or the No Action Alternative would occur, no increases in wildlife-aircraft conflicts or impacts are anticipated.

Piping plovers (*Charadrius melodus*) nest on pebbly mud found near interior alkali lakes, ponds, and wetlands adjacent to sparsely vegetated areas. These migrants have been recorded

only a few times in New Mexico and are not considered a breeding species in the state. No effects to this migratory species are expected under either alternative.

The Southwestern willow flycatcher (*Empidonax traillii extimus*) may occur under the airspace during breeding season where it chooses dense, riparian habitats within a few scattered drainages in New Mexico. Impacts to this species from the Proposed Action would be similar to those described for the other bird species since there would be a minimal departure from the existing conditions, which have already been found to have no adverse effect.

Yellow-billed cuckoos (*Coccyzus americanus*) are migrants that prefer open woodland with clearings and thick, scrubby undergrowth along watercourses. Yellow-billed cuckoos may occur on WSMR during migration, but have not been recorded nesting there. The species is apparently very localized and scattered throughout the airspace area. The Sprague’s pipit (*Anthus spragueii*) prefers grasslands and may be found during the fall and winter in the counties under the airspace.

The change to QF-16 FSATs would result in almost imperceptible differences from existing conditions for species under the airspace as those species are currently exposed to overflights, chaff, flares and noise with no discernible adverse effect. The QF-16s would be slightly quieter than the existing QF-4s, so no noise impacts beyond those that already occur are anticipated as a result of implementation of either the Proposed Action or No Action Alternative.

In addition to the list of federally designated species, the list of the following thirty-one (31) state-designated species known or suspected to occur in Socorro, Sierra, Doña Ana, Lincoln, and Otero Counties was reviewed (Table 2).

Table 2. State-Listed Species Known to or That May Occur on Holloman AFB or under the Main Airspace

Common Name	Scientific Name	State Status	Preferred Habitat
White Sands pup fish	<i>Cyprinodon tularosa</i>	Threatened	Streams
Arctic peregrine falcon	<i>Falco peregrinus tundrius</i>	Threatened	Migrant
Bald eagle	<i>Haliaeetus leucocephalus alascanus</i>	Threatened	Migrant – rivers and lakes
Baird’s sparrow	<i>Ammodramus bairdii</i>	Threatened	Grasslands
Bell’s vireo	<i>Vireo bellii arizonae</i> and <i>V.b. medius</i>	Threatened	Dense shrubs or woods along lowland streams
Black hawk	<i>Buteogallus anthracinus anthracinus</i>	Threatened	Obligate riparian-breeding species associated with mature, streamside gallery forests
Boreal owl	<i>Aegolius funereus</i>	Threatened	High elevation, mature and old-growth spruce-fir forests
Broad-billed hummingbird	<i>Cynanthus latirostris magicus</i>	Threatened	Riparian woodland and adjacent dryland habitats
Brown pelican	<i>Pelecanus occidentalis carolinensis</i>	Endangered	Marine habitats – rarity in state near water sources
Buff-colored nightjar	<i>Caprimulgus ridgwayi ridgwayi</i>	Endangered	Arid shrublands and woodlands – generally in canyons and washes

For Official Use Only

Common Name	Scientific Name	State Status	Preferred Habitat
Colorado Organ Mountain chipmunk	<i>Neotamias quadrivittatus australis</i>	Threatened	Mixed coniferous forests and wooded habitat in Organ Mountains
Colorado Oscura Mountain chipmunk	<i>Neotamias quadrivittatus oscuraensis</i>	Threatened	Oscura Mountains mixed coniferous forests
Common ground dove	<i>Columbina passerine pallescens</i>	Endangered	River bottom woodlands, desert scrub and washes, and xeric riparian area
Costa's hummingbird	<i>Calypte costae</i>	Threatened	Desert scrub – San Andres Mountains and Guadalupe Canyon
Doña Ana talussnail	<i>Sonorella todseni</i>	Threatened	Ingeous rock talus in Doña Ana Mountains
Elegant trogon	<i>Trogon elegans canescens</i>	Endangered	Riparian habitats in Montane canyons
Gray viereo	<i>Vireo vicinior</i>	Threatened	Desert scrub/rocky slopes and juniper savannahs near Montane regions
Headwater chub	<i>Gila nigra</i>	Endangered	Gila National Forest
Lucifer hummingbird	<i>Calothorax lucifer</i>	Threatened	Canyons
Mineral Creek mountainsnail	<i>Oreohelix pilsbryi</i>	Threatened	Rock outcrops along Mineral Creek
Neotropic cormorant	<i>Phalacrocorax brasilianus</i>	Threatened	Wetlands
Ovate vertigo snail	<i>Vertigo ovata</i>	Threatened	Marshy or spring-brook areas at low elevations
Peregrine falcon	<i>Falco peregrinus anatum</i>	Threatened	Breeding-cliffs/rocks, foraging-forests, wetlands and lowland habitats
Rock mottled rattlesnake	<i>Crotalus lepidus lepidus</i>	Threatened	Primarily mountain dweller with boulders, rocks, and talus slopes
Sacramento Mountain salamander	<i>Aneides hardii</i>	Threatened	Coniferous forests at high elevations
Spotted bat	<i>Euderma maculatum</i>	Threatened	Rock crevices-forage over water
Thick-billed kingbird	<i>Tyrannus crassirostris</i>	Endangered	Riparian habitats
Varied bunting	<i>Passerina versicolor versicolor</i>	Threatened	Dense stands of mesquite and associated growth in canyon bottoms, riparian
Violet-crowned hummingbird	<i>Amazilia violiceps ellioti</i>	Threatened	Riparian woodlands at low to moderate elevations
White-eared hummingbird	<i>Hylocharis leucotis borealis</i>	Threatened	Transient in areas of desert scrub/rocky slopes, juniper Savannah, pinon/juniper woodland, and Ponderosa/oak forests near Montane regions
Yellow-eyed junco	<i>Junco phaeonotus palliates</i>	Threatened	Coniferous forests and pines or oaks that are relatively open

White sands pupfish (*Cyprinodon tularosa*) are endemic only to the Tularosa Basin. The Lost River pupfish population on HAFB is distributed between three stream segments connected by water only at times of heavy rains or heavy runoff from canyons on the western slope of the Sacramento Mountains. Proposed modifications to the buildings and pavements would not affect these stream segments. In addition, the Cooperative Agreement for Protection and Maintenance of White Sands Pupfish between U.S. Army – White Sands Missile Range, U.S. Air Force – Holloman Air Force Base, National Park Service – White Sands National Monument, U.S. Fish and Wildlife Service and New Mexico Department of Game and Fish (2006) provides measures to ensure protection of the species.

Other species listed above by the State of New Mexico have not been observed within the existing developed area where the infrastructure improvement projects would occur under the Proposed Action and as no changes would occur under the No Action Alternative, no impacts are anticipated in either case. Migrant species occasionally pass through various limited habitat areas under the airspace, but there is no preferred habitat for these species on or near the area affected by the construction projects on HAFB; again, no effects are anticipated. No increase in the annual number of flight operations would occur under the Proposed Action and therefore the USAF does not expect the Proposed Action to affect migratory bird species.

Consideration for the unique species found in the gypsum dune fields including portions within the White Sands National Monument will be addressed in the EA. Several organisms have adapted coloration to match the white sands including the Plains (Apache) pocket mouse (*Perognathus flavescens*), common lesser earless lizard (*Holbrookia maculate*), Cowles prairie lizard (*Sceloporus undulates cowlesi*), white sand wood rat (*Neotoma micropus leucophaea*), and camel cricket (*Ammobaenetes arenicolus*); several of these species are endemic subspecies unique to the White Sand dune fields. The Proposed Action infrastructure improvement projects would not occur within the dune fields, nor would these species be differently affected by QF-16 overflights as these areas currently experience similar exposure without apparent impacts.

For these reasons, we conclude that the effects related to the implementation of the Proposed Action (the replacement of the current QF-4 FSATs at HAFB with QF-16 FSATs), *will not affect*, the federally-listed species occurring within Socorro, Sierra, Doña Ana, Lincoln, and Otero Counties, nor the 31 state-listed species. Similarly, as no changes from the current conditions would occur if the “No Action” alternative were to be selected, we anticipate that implementation of the “No Action” alternative *will not affect* federally- or state-listed species.

We request your concurrence with our determination(s). When complete, copies of the draft EA and the draft Finding of No Significant Impact (FONSI) will be forwarded for your review. Please provide written comments, concurrence, or other information regarding the action at your convenience, within 30 days, if possible, from receipt of this letter. Please forward your written response to Mr. Andrew Gomolak, EIAP Project Manager, 49 CES/CEIE, 550 Tabosa Avenue, Holloman AFB, NM 88330-8458.

For further information contact Mr. Gomolak at (505)572-6647 or andrew.gomolak @ us.af.mil.

Sincerely

/S/

ROBERT E. KIEBLER
Colonel, USAF
Commander

2 Attachments:

1. Holloman AFB Airspace
2. Proposed Areas for Infrastructure Improvements



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 49TH WING (ACC)
HOLLOMAN AIR FORCE BASE NEW MEXICO

9986A

A. David Budak
Deputy Base Civil Engineer
550 Tabosa Avenue
Holloman AFB, NM 88330

SEP 04 2014

RECEIVED

Bob

SEP 05 2014

HISTORIC PRESERVATION DIVISION

Dr. Jeff Pappas PhD
New Mexico State Historic Preservation Officer
Historic Preservation Division
407 Galisteo Street, Suite 236
Santa Fe, NM 87501

Re: Findings of Effect and Request for Concurrence in Section 106 Consultation regarding Replacement of QF-4 Full Scale Aerial Targets (FSATs) with QF-16 FSATs at Holloman Air Force Base, New Mexico

Dear Dr. Pappas

We are requesting concurrence from the New Mexico State Historic Preservation Officer that the Proposed Action to replace the current QF-4 FSAT aircraft at Holloman Air Force Base (HAFB) with QF-16 FSAT aircraft will have no effect (no direct or indirect effect) on known or undiscovered/ unevaluated archeological sites or districts and no adverse effect on all other types of historic properties.

The United States Air Force (USAF) is preparing an environmental assessment (EA) for this Proposed Action. The EA will assess the potential environmental consequences associated with replacing QF-4 FSAT aircraft with quieter QF-16 FSAT aircraft under the command of Detachment 1 (Det 1), 82 Aerial Target Squadron (ATRS) at HAFB. The Det 1 aircraft support the Air Force Weapon System Evaluation Program and Air Force Weapons Instructor Course as well as White Sands Missile Range (WSMR) research, development and test projects. The EA will also assess a No Action Alternative where QF-4s would not be replaced with QF-16s and QF-4s would continue operating under current conditions.

The purpose of this letter is to provide you with sufficient information to concur with our determination that this undertaking would result in no effect on known or undiscovered/unevaluated archeological sites or districts, and no adverse effect on historic properties, whichever alternative is selected/implemented.

The following documentation as detailed in Section 800.11(d) is included for your review:

1. Attachment 1: Narrative containing 1) Description of the Undertaking; 2) Description of Area of Potential Effect; 3) Identification of Historic Properties and Traditional Resources in the Area of Potential Effect; and 4) Determination of Potential Effect.
2. Attachments 2 - 8: Figures and tables supporting the analysis in Attachment 1

Pursuant to 36 CFR §800.4 (d) (1), we have determined that this undertaking will have no effect (no direct or indirect effect) on known or undiscovered/unevaluated archeological sites or districts.

No ground-disturbing activities in previously undisturbed or unevaluated areas are contemplated as a part of this undertaking. In the unlikely event archeological deposits are discovered during the implementation of the Proposed Action/Preferred Alternative, activities or work in the vicinity of the discovery would stop and the area would be secured until appropriate measures can be taken. If the "No Action" alternative is implemented, there would be no change to existing facilities, operations, aircraft, or flight patterns and thus no potential for effect.

Regarding indirect effects, pursuant to 36 CFR §800.5 (b), we have determined that this undertaking will have no adverse effect on historic properties:

Any potential effects to historic properties (including Traditional Cultural Properties (TCPs) that may lie within the APE) would be due to noise generated from overflights. Preliminary analyses of the noise effects of this undertaking indicate that if the Proposed Action/Preferred Alternative (phase out of the QF-4 FSATs and phase in the QF-16 FSATs with no increase in the number or general character of overflights) is implemented, there would be a slight decrease in noise impacts (including vibration and overpressure effects) to sensitive resources identified by the National Park Service, as well as to other historic properties in the vicinity of Holloman AFB.

As documented in the *Noise Study for the Holloman AFB QF-4 to QF-16 Replacement Environmental Assessment* (Wyle Labs 2014), the White Sands National Monument Visitor Center would experience noise levels of approximately 54 dB, which is the same as baseline conditions. High Use Visitor Areas within the monument would range from no change to a 2 dB reduction compared to baseline conditions. There would be no change in high or low altitude supersonic operations in the Area of Potential Effect (APE). The White Sands National Monument Visitor Center is well outside of the area exposed to supersonic booms from low altitude supersonic activity; therefore, there would continue to be no adverse effect on the visitor center from supersonic operations.

The historic hangar 1079 at Holloman AFB is within the APE, but is not one of the buildings proposed for infrastructure upgrade/improvements. The Proposed Action would renew but not change the essential appearance of the vicinity, and would not involve any direct effect on hangar 1079.

The proposed QF-16s use of chaff and flares would occur in the same manner as the QF-4, with no anticipated changes; however, it is reasonably expected that flares and chaff would have no, or negligible if any, effect on cultural resources.

Implementation of the No Action Alternative would result in the continuation of the current level of effects to historic properties.

We respectfully request your concurrence with the findings. Please provide your written response within 30 days of your receipt of this request to:

Mr. Andrew Gomolak
49 CES/CEIE
550 Tabosa Avenue
Holloman AFB, 88330-8458

We appreciate your review of the enclosed information. If you have any questions, please contact Mr. Andrew Gomolak at (505)572-3931 or andrew.gomolak @ us.af.mil for additional information regarding this proposed undertaking.

Sincerely

/S/

A. DAVID BUDAK
Deputy Base Civil Engineer

cc: National Park Service, White Sands National Monument, Marie Frias Sauter, Superintendent
National Park Service, Intermountain Region, Santa Fe, NM
Mescalero Apache Tribe, Holly Houghten, THPO
Ysleta del Sur Pueblo, Frank Paiz Governor
Zuni Tribal Council, Arlen P. Quetawki, Sr.

Attachments:

- 1 - Narrative/Findings
- 2 - Location Map Showing Holloman AFB QF-4 Main Airspace and APE
- 3 - Locations of Runways and Proposed Infrastructure Upgrades
- 4 - Detailed Map of Proposed Infrastructure Upgrades
- 5 - Topographic Map Showing Proposed Infrastructure Upgrades
- 6 - Map Showing Representative Historic Properties within the APE
- 7 - Summary of Representative Historic Properties Potentially Affected
- 8 - Summary of Effects to Historic Properties

No Historic Properties Affected.

/S/

Sept 17, 2014
for NM State Historic Preservation Office

APPENDIX C

Notice of Availability

PUBLIC NOTICE

**NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT AND
PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR
REPLACEMENT OF QF-4 FULL-SCALE AERIAL TARGETS (FSATs) WITH QF-16 FSATs AT
HOLLOMAN AIR FORCE BASE (AFB), NEW MEXICO**

In cooperation with the National Park Service (NPS), an Environmental Assessment (EA) has been prepared by the Air Force as lead agency, to analyze the impacts of the replacement of QF-4 FSATs with QF-16 FSATs at Holloman AFB. The purpose of this project is to field a high-performance and readily available FSAT for land-based pilot and aircrew training using more technologically advanced aircraft as a replacement for the QF-4 FSATs currently being used.

The EA, prepared in accordance with the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations, and Air Force instructions implementing NEPA, evaluates potential impacts of the alternative actions on the environment including the No Action Alternative. Based on this analysis, the Air Force has prepared a proposed Finding of No Significant Impact (FONSI).

The Draft EA and proposed FONSI, dated September 2014, are available for review at the following locations:

Alamogordo Public Library
920 Oregon Ave
Alamogordo, NM 88310
(575) 439-4140

Thomas Branigan Memorial Library
200 E. Picacho Ave
Las Cruces, NM 88001
(575) 528-4000

El Paso Public Library
501 N. Oregon
El Paso, TX 79901
(915) 543-5433

Electronic copies of the documents can also be found on the Holloman AFB Website at <http://www.holloman.af.mil/environmentalinformation.asp>.

You are encouraged to submit written comments through October 7, 2014. Comments should be provided to Public Affairs, 49th Wing Public Affairs, 490 – 1st Street, Bldg 29 Suite 1520, Holloman AFB, NM 88330, or email 49WG.PAOffice@us.af.mil.

PRIVACY ADVISORY NOTICE

Public comments on this Draft EA are requested pursuant to NEPA, 42 United States Code 4321, et seq. All written comments received during the comment period will be made available to the public and considered during the final EA preparation. Providing private address information with your comment is voluntary and such personal information will be kept confidential unless release is required by law. However, address information will be used to compile the project mailing list and failure to provide it will result in your name not being included on the mailing list.