

CALIFORNIA COASTAL COMMISSION

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W 8a**STAFF REPORT AND RECOMMENDATION****ON CONSISTENCY DETERMINATION**Consistency Determination No. **CD-059-03**

Staff: MPD-SF

File Date: 6/25/2003

60th Day: 8/24/2003

75th Day: 9/8/2003

Commission Meeting: 8/6/2003

FEDERAL AGENCY: U.S. Air Force**PROJECT**
LOCATION:Vandenberg Air Force Base, Santa Barbara County
(Exhibits 1-3)**PROJECT**
DESCRIPTION:Ground-Based Midcourse Defense (GMD) Initial
Defensive Operations Capability (IDOC) program
(Exhibits 2-4).**EXECUTIVE SUMMARY**

The U.S. Air Force (Air Force), Missile Defense Agency, has submitted a consistency determination for the Ground-Based Midcourse Defense (GMD) Initial Defensive Operations Capability (IDOC) program on Vandenberg Air Force Base (AFB). The program's purpose is to protect the U.S. from a hostile attack by the potential interception of a limited strategic ballistic missile. While related to a larger GMD testing program (the GMD Extended Test Range (ETR))(see Exhibit 8 for schematic), the proposed activity would not involve actual missile tests. Instead, launches would only occur, according to the Air Force: "... in an emergency as an initial defense against a limited long-range ballistic missile attack."

To provide the operational readiness for the program the Air Force proposes retrofitting and infrastructure improvements at up to six existing missile sites on northern Vandenberg AFB (Launch Facility (LF) sites LF-02, LF-03, LF-10, LF-21, LF-23, and LF-24. These launch sites have previously been used for Air Force Peacekeeper and Minuteman missile programs. Infrastructure improvements include interior remodeling at 13 existing buildings, exterior fencing, lighting, and communication lines. Lighting would be controlled to avoid effects outside the existing developed areas. Fencing would not affect wildlife corridors and would be limited to areas immediately surrounding existing buildings. Communication cables would be installed within existing conduits or within existing disturbed areas (such as road rights-of-way and attached to bridges at stream crossings). With these measures avoiding sensitive areas and minimizing the lighting, cable construction, and fencing impacts, and including biological monitoring during construction, the project would avoid adverse effects on marine resources and environmentally sensitive habitat.

The project would not involve beach closures and would avoid visual or other effects on public recreation areas. Water quality effects would be minimal, and the Air Force has agreed to submit its water quality protection plan to the Commission staff for its review and concurrence. Construction activities would be monitored by a qualified archaeologist. The project is consistent with the public access and recreation, marine resource, water quality, environmentally sensitive habitat, and archaeological resource policies (Sections 30210-30212, 30230, 30231, 30240, and 30244) of the Coastal Act.

STAFF SUMMARY AND RECOMMENDATION:

I. Project Description. The Air Force is proposing an operational missile defense program to be located at up to six existing missile sites in northern Vandenberg Air Force Base (VAFB) in Santa Barbara County. The Air Force describes the program as follows:

Description of the Proposed Action

The GMD Joint Program Office within the Missile Defense Agency is responsible for the GMD, which is designed to intercept and destroy long-range threat ballistic missiles during the midcourse (ballistic) phase of their flight using ground-based interceptors (GBIs) before the ballistic missile's reentry into the earth's atmosphere. The Proposed Action is to provide an initial defensive operational capability at Vandenberg AFB. This defensive capability would be achieved by the renovation/modification and use of several existing missile silos and support facilities at Vandenberg AFB.... Renovation would begin during Fiscal Year 2004 and the defensive capabilities would become operational by Fiscal Year 2005.

The GBI intercepts incoming ballistic missiles and destroys them by force of impact. During flight the GBI receives updated information on the location of the incoming ballistic missile that enables the GBI onboard sensor system to identify and home in on the target. The GBI consists of a three-stage solid propellant booster and an exoatmospheric kill vehicle (EKV). The GBI is approximately 54 feet long and weighs

approximately 22.5 to 25 tons. Each interceptor contains approximately 30,000 to 45,000 pounds of solid propellant and each exoatmospheric kill vehicle contains about 2 gallons of liquid fuel and 2 gallons of liquid oxidizer. The liquid fuel and oxidizer tanks would arrive at the site fully fueled. Final assembly of the GBI would occur at Vandenberg AFB. Appropriate explosive safety quantity-distances would be established around facilities where GBIs and ordnance are stored or handled.

The Proposed Action would require the use of several existing facilities on north Vandenberg AFB. Up to five missile silos could be used along with other existing facilities for the following functions: Missile Assembly/EKV/Interceptor Integration Building, Security Response Force Outpost, Readiness Station, Ground-Based Midcourse Defense Fire Control/Communication (GFC/C) components, interceptor storage, administrative/office space, In-Flight Interceptor Communication System Data Terminal site, Peculiar Support Equipment storage, EKV fuel tank storage, EKV Oxidizer Tank Storage, and warehouse/maintenance/storage facilities. ... Construction work for IDOC activities could begin as early as the latter part of calendar year 2003.

The preferred candidate silos for IDOC activities are Launch Facility (LF)-02, LF-03, LF-10, LF-21, LF-23, and LF-24. LF-02 is an active silo currently used by the Peacekeeper missile program. LF-03 is an active silo currently used as a Missile Defense Agency target missile silo. LF-10 is an active silo currently used by the Minuteman III missile program. LF-21, LF-23, and LF-24 are former Minuteman II missile launch sites located on north Vandenberg AFB. LF-21 and LF-23 are currently being used for GMD launches.

Four missile silos would be in an operational state at Vandenberg AFB with GBIs installed, ready to defend the United States against a limited strategic ballistic missile attack. One of the four operational silos may function as both an operational silo and a test launch silo. This dual-use capability would enable the GMD program to utilize the silo, on occasion, for test launches. At all other times, the dual-use silo would be in an operational state.

Modifications and site preparation would be required at the LFs not currently being used for GMD launches. These activities would be similar to those analyzed in the 1999 Booster Verification Tests EA (LF-21) and the 2002 Alternate Boost Vehicle EA (LF-23). Modifications and site preparation would include modifying the existing silo(s) to receive a new prefabricated launch station to accommodate installation of the GBI. An operational launch silo closure mechanism would be installed. Security fencing would be installed around each LF consisting of standard 8-foot chain link fencing laced with 3-strand barbed wire outriggers, mounted sensors, and closed circuit television. Where the existing fence is used as the crash barrier fence, additional posts would need to be installed to support barrier cable. This could result in a disturbance of approximately 2 to 3 feet outside this portion of the fence. Lighting will be provided by pole mounted floodlights using 400-watt high pressure sodium

lamps. The top of the corrosion-proof fixtures will be approximately 23 feet tall. The poles will be spaced approximately 85 feet apart and located 15 feet inside the fence. All lighting will be focused downward in order to illuminate an area 10 feet inside the fence to 25 feet outside the fence and to minimize light spillage out of the area. No lights will be pointed away from the area. All construction staging areas would be located on paved, aggregate, or previously disturbed areas.

Several additional facilities would be required for program activities (Buildings 975, 976, 1032, 1768, 1777, 1801, 1819, 1900, 1959, 1978, 6510, 6819, and 8500). Some of these facilities would require interior remodeling and the installation of additional infrastructure (fencing, lighting, communication lines, etc.). Parking lots would need to be extended at Building 1768 and building 1810. Security fencing and lighting methods would be the same as that required at the LFs.

Communication cables would be installed between facilities as required (see Figures in EA). Cables would be installed in existing conduits, where available. If existing conduits are not available, the cable(s) would be installed in new conduits that would be placed in routes designed to avoid sensitive areas and approved by the Vandenberg AFB Environmental Management Office. Trenching for the new communications cable/conduit would have a maximum depth of 3 feet. Other methods of installation such as slant/directional drilling are also being proposed where appropriate as a means of minimizing impacts to sensitive areas. Also, the new communications cable/conduit would be buried along existing roads, or along existing buried communication lines if cross country routes are required.

II. Status of Local Coastal Program. The standard of review for federal consistency determinations is the policies of Chapter 3 of the Coastal Act, and not the Local Coastal Program (LCP) of the affected area. If an LCP that the Commission has certified and incorporated into the California Coastal Management Program (CCMP) provides development standards that are applicable to the project site, the LCP can provide guidance in applying Chapter 3 policies in light of local circumstances. If the Commission has not incorporated the LCP into the CCMP, it cannot guide the Commission's decision, but it can provide background information. The Commission has certified Santa Barbara County's LCP and incorporated it into the CCMP.

III. Federal Agency's Consistency Determination. The U.S. Air Force has determined the project to be consistent to the maximum extent practicable with the California Coastal Management Program.

IV. Staff Recommendation. The staff recommends that the Commission adopt the following motion:

MOTION: I move that the Commission **concur** with consistency determination CD-059-03 that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the California Coastal Management Program (CCMP).

STAFF RECOMMENDATION: Staff recommends a **YES** vote on the motion. Passage of this motion will result in a concurrence with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

RESOLUTION TO CONCUR WITH CONSISTENCY DETERMINATION: The Commission hereby **concurs** with the consistency determination by the U.S. Air Force, on the grounds that the project described therein is fully consistent, and thus is consistent to the maximum extent practicable, with the enforceable policies of the CCMP.

V. Findings and Declarations:

The Commission finds and declares as follows:

A. Marine Resources and Environmentally Sensitive Habitat Areas. The Coastal Act provides for the protection of marine resources and environmentally sensitive habitat areas. Section 30230 of the Coastal Act provides:

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30240 provides:

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on such resources shall be allowed within such areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas, and shall be compatible with the continuance of such habitat areas.

The areas affected by the proposed improvements would be limited to existing developed areas, primarily on northern Vandenberg AFB, and would be located away from environmentally sensitive areas. These sensitive areas, as well as three of the launch sites, are shown on Exhibit 3 (the other three launch sites are adjacent - see Exhibit 2).

Concerning marine mammals and seabirds, the Air Force's consistency determination states:

Existing facilities and launch silos will be used, which are located away from sensitive habitat, particularly pinniped haulout sites and offshore southern sea otter locations as well as nesting locales for the western snowy plover and the California least tern and foraging locations of the California brown pelican. The distance from various launch sites to the shore line ranges from approximately 2,400 ft. from LF-24 to 8,810 feet from LF-03. Construction and operation personnel will be instructed to avoid such areas as well. No threatened and endangered species will be impacted by this program.

The facility perimeter lights will be focused downward in order to illuminate an area 10 feet inside the fence to 25 feet outside the fence and to minimize light spillage out of the area. The maximum light level at the ground will be approximately 8 foot-candles (fc) and the minimum will be 2 fc with an average of approximately 4.5 fc.

Vandenberg AFB submits noise monitoring reports to the National Marine Fisheries Service on a regular basis following every test launch. However, the GMD IDOC program is an operational program and not a testing program. As stated above, launches would only occur in an emergency as an initial defense against a limited long-range ballistic missile attack. The altitude of the missile when it reaches the coastline will be approximately 3,300 feet or greater. Due to the speed of the missile when it leaves the silo, noise associated with a sonic boom occurs at ground level almost instantaneously with the launch. No sonic booms will occur over the coastline or Channel Islands. The GBI is covered by Vandenberg AFB's Programmatic Take Permit with the National Marine Fisheries Service.

Concerning land-based habitats, the Air Force's consistency determination states:

The GMD IDOC program will use existing facilities that are located outside of sensitive habitat areas including coastal dunes and wetlands. ... Parking lot extensions would be located in previously disturbed areas. Site preparation activities and operational launches will not impact sensitive habitat.

Proposed routes for installation of communications conduit, new fence installation and parking lot extension areas will be surveyed by qualified biologists for federally listed species and species of concern (California horned lizard, California legless lizard, loggerhead shrike and western borrowing owl) and for wetlands in some areas. Proposed conduits in the Point Sal area shall be surveyed for the federally endangered

Gaviota tarplant. New conduits and fences will be rerouted or installed in a manner to avoid impacts to these resources. New communications conduit will be drilled under wetlands or attached to bridges to avoid any direct or indirect impacts at Shuman Creek and San Antonio Creek. Biological monitoring of construction activities will be conducted where there is any potential for adverse impacts.

Personnel movement will be restricted to prevent any impacts to sensitive areas. Effects upon air quality and noise are addressed in Sections 30253 and 30230 of this document respectively. All construction staging will be located on paved, aggregate, or previously disturbed areas. No threatened or endangered species will be impacted by this program.

As indicated above, the Air Force regularly monitors noise impacts from launches and submits regular reports to the National Marine Fisheries Service (with copies of reports sent to the Commission staff). Based on past monitoring, launches from the proposed sites (LF-02, LF-03, LF-10, LF-21, LF-23, and LF-24) have not raised particular marine mammal concerns based on noise in recent years (see Exhibit 7 for launch history from these sites). Past concerns over noise impacts from large launch vehicles have occurred at launches from launch sites SLC-2 and 576E (near Purisima Point, approximately 8 miles to the south). In any event, the Air Force is not proposing launches (except on an emergency basis) from this program. The program's construction impacts would occur at already disturbed areas and away from sensitive habitats. Also as stated above, lighting would be controlled to avoid exterior effects outside the existing developed areas. Fencing would not affect wildlife corridors and would be limited to areas immediately surrounding existing buildings. Communication cables would be installed within existing conduits or within existing disturbed areas (such as road rights-of-way and attached to bridges at stream crossings). With these avoidance measures for the lighting, cable construction, and fencing features of the project, and including biological monitoring during construction, the Commission finds that the project will avoid adverse effects on marine resources and environmentally sensitive habitat and be consistent with Sections 30230 and 30240 of the Coastal Act.

B. Water Quality. Section 30231 of the Coastal Act provides that:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Because construction activities would be limited to existing developed areas, and cable installation across creeks would occur by attaching them to existing bridges, the Air Force

concludes water quality impacts from the proposed construction would be minimal. Water quality impacts from operational aspects of the program would not differ from previous missile programs occurring at the launch sites or uses at the existing buildings. In addition, the Air Force has committed to preparing a Storm Water Pollution Prevention Plan (SWPPP) to further minimize water quality impacts. At the request of the Commission staff, the Air Force has agreed to submit all water quality plans to the Commission staff for its review and concurrence, prior to the commencement of construction. With the agreement to avoid drilling under streams for cable installation, submit its SWPPP for Commission staff review, and maintain a biological monitor at the construction sites, the Commission finds that the proposed project will protect water quality and be consistent with Section 30231 of the Coastal Act.

C. Public Access and Recreation. Sections 30210 and 30212 of the Coastal Act provide for the maximization of public access and recreational opportunities, except where it would be inconsistent with, among other things, "... public safety, military security needs, or the protection of fragile coastal resources ...". The Air Force's consistency determination states:

The sites would not be visible from the beach. Since the GMD IDOC is an operational program with launches only in the event of an attack, no beach closures are planned. No public access to parks and recreation areas will be restricted by this program.

In reviewing past Air Force proposals (including missile and military launch activities, and snowy plover protection programs), the primary access and recreation issues at Vandenberg AFB have been the need to minimize beach closures, which occur during certain launch conditions, and the need to balance snowy plover protection with public access (primarily at Ocean Beach). The proposed project would not involve the need for beach closures because it does not involve actual launches (except under emergency conditions). In addition, as discussed on page 6, the construction sites are inland of and not located near any publicly accessible areas. The areas affected by the project are already off limits to the public due to military security needs. In addition, none of the proposed modifications at the existing sites would be visible from any publicly accessible areas or from the ocean. The Air Force states that no public access or water-oriented recreational activities would be restricted by this program. The Commission agrees and finds that the project poses no public access burdens and is consistent with the public access and recreation policies (Section 30210-30212) of the Coastal Act.

D. Archaeological Resources. Section 30244 provides for the protection of archaeological resources:

Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

The Air Force states:

Cultural and historic resources will be addressed and protected in accordance with all State Historic Preservation Office requirements. The GMD Joint Program Office would be responsible for the implementation of any required mitigation measures. The measures may include, but are not limited to, having an archaeologist and/or Native American specialist present during site preparation activities, flagging or fencing to protect cultural resources, avoidance of known cultural resources, archaeological testing, data recovery, and report preparation. If previously undocumented cultural resources are discovered during program activities, work would immediately cease. Work would be temporarily suspended within 100 feet of the discovered item until it has been properly evaluated and secured. Any discovery would be reported to the Vandenberg AFB Historic Preservation Officer.

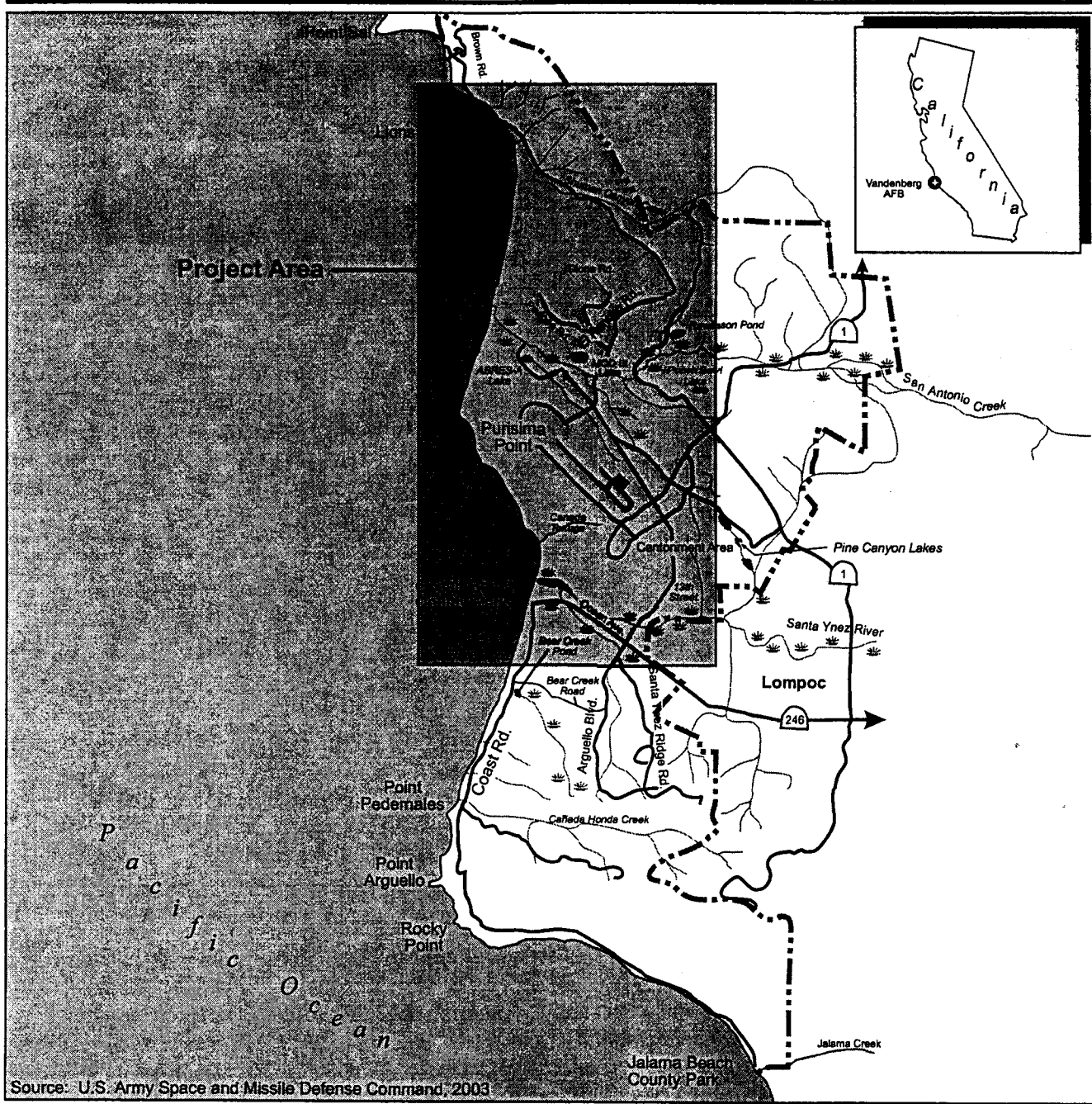
With these proposed monitoring and avoidance measures, the Commission finds the proposed project will protect archaeological and paleontological resources and is consistent with Section 30244 of the Coastal Act.

VI. SUBSTANTIVE FILE DOCUMENTS:

1. Consistency and Negative Determinations for Air Force missile and military launch activities and programs:

- a. ND-42-02 and ND-16-99 (Booster verification tests for the National Missile Defense Program).
- b. CD-6-99 and CD-6-98 (Theater Ballistic Missile (TBM) Targets Program).
- c. CD-49-98 (Evolved Expendable Launch Vehicle (EELV)).
- d. ND-99-93 (Launch of Orbex 7E from SLC-5).
- e. ND-31-92 and CD-71-91 (Modifications to SLC-3E).
- f. CD-64-91 (Modification to Delta II launch vehicle and complex).
- g. CD-28-90 (Conversion of SLC-6 for Titan IV/Centaur launch vehicles).
- h. CD-51-89 (Construction of SLC-7).
- i. CD-3-88 (Space launch vehicle modification).
- j. CD-42-87 (SLC-4 Repairs).
- k. CD-57-87 (Peacekeeper Rail Garrison and Small ICBM Test Program).
- l. CD-45-83 (MX Test Flight Facility).
- m. CD-18-82 and CD-21-82 (Space Shuttle (SLC-6) improvements).

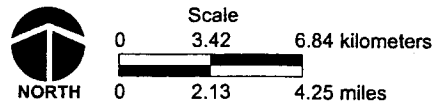
2. Ground-Based Midcourse Defense (GMD) Extended Test Range (ETR) Final Environmental Impact Statement, U.S. Army Space and Missile Defense Command, July 2003.



Source: U.S. Army Space and Missile Defense Command, 2003

EXPLANATION

- Land Area
- Water Area
- Vandenberg Air Force Base Boundary
- Road
- River / Creek
- Wetlands



05-22-03 VAFB

Vandenberg Air Force Base Proposed Target Launch and Support Sites

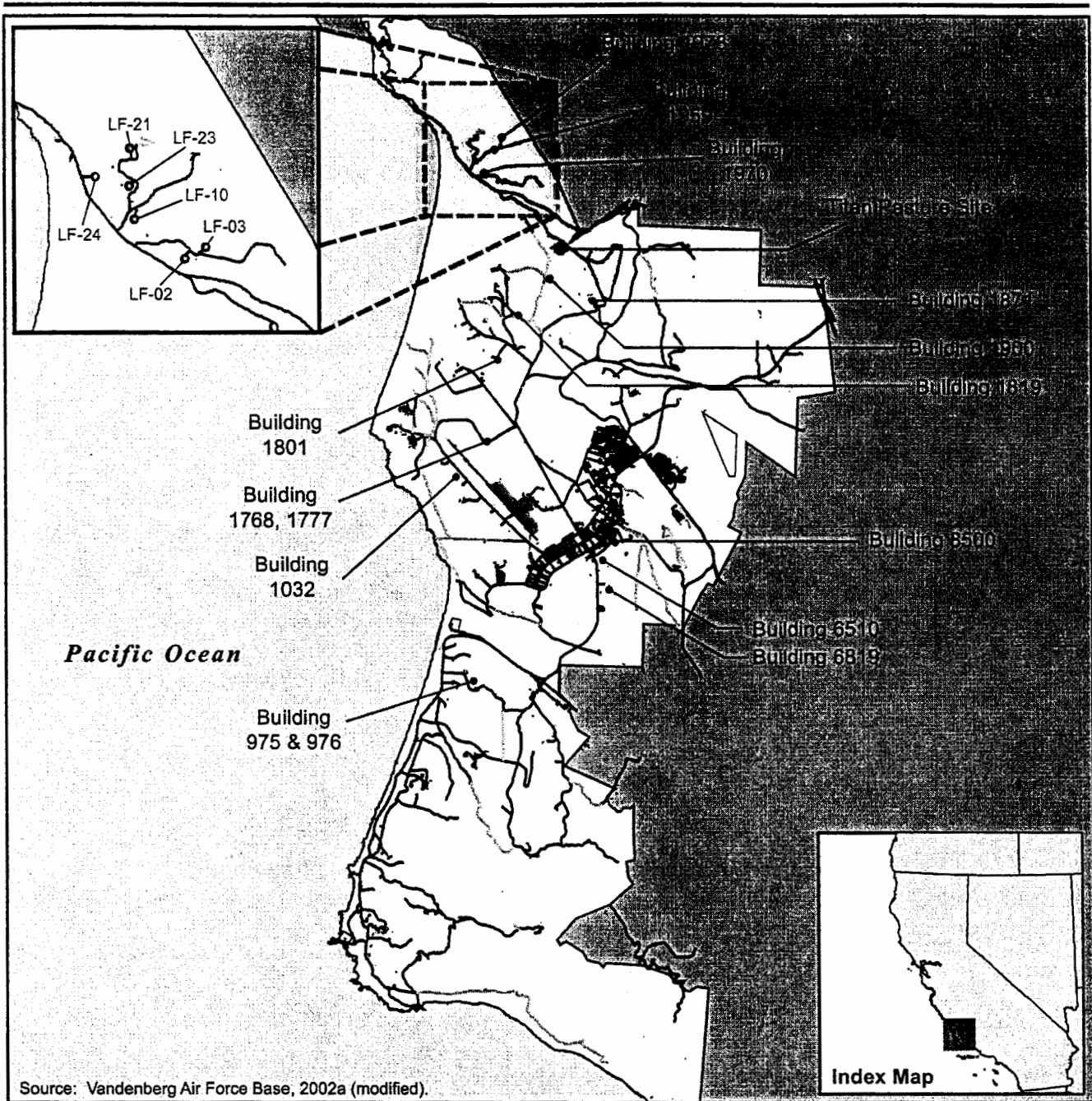
Vandenberg Air Force Base,
California

Figure 1-1

EXHIBIT NO. 1

APPLICATION NO.

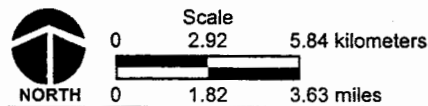
CD-59-03



EXPLANATION

- Pacific Ocean
- Vandenberg Air Force Base
- Land
- GBI Launch Site

LF = Launch Facility



05-22-03 Vberg GBI Fac

Potential Facility Locations

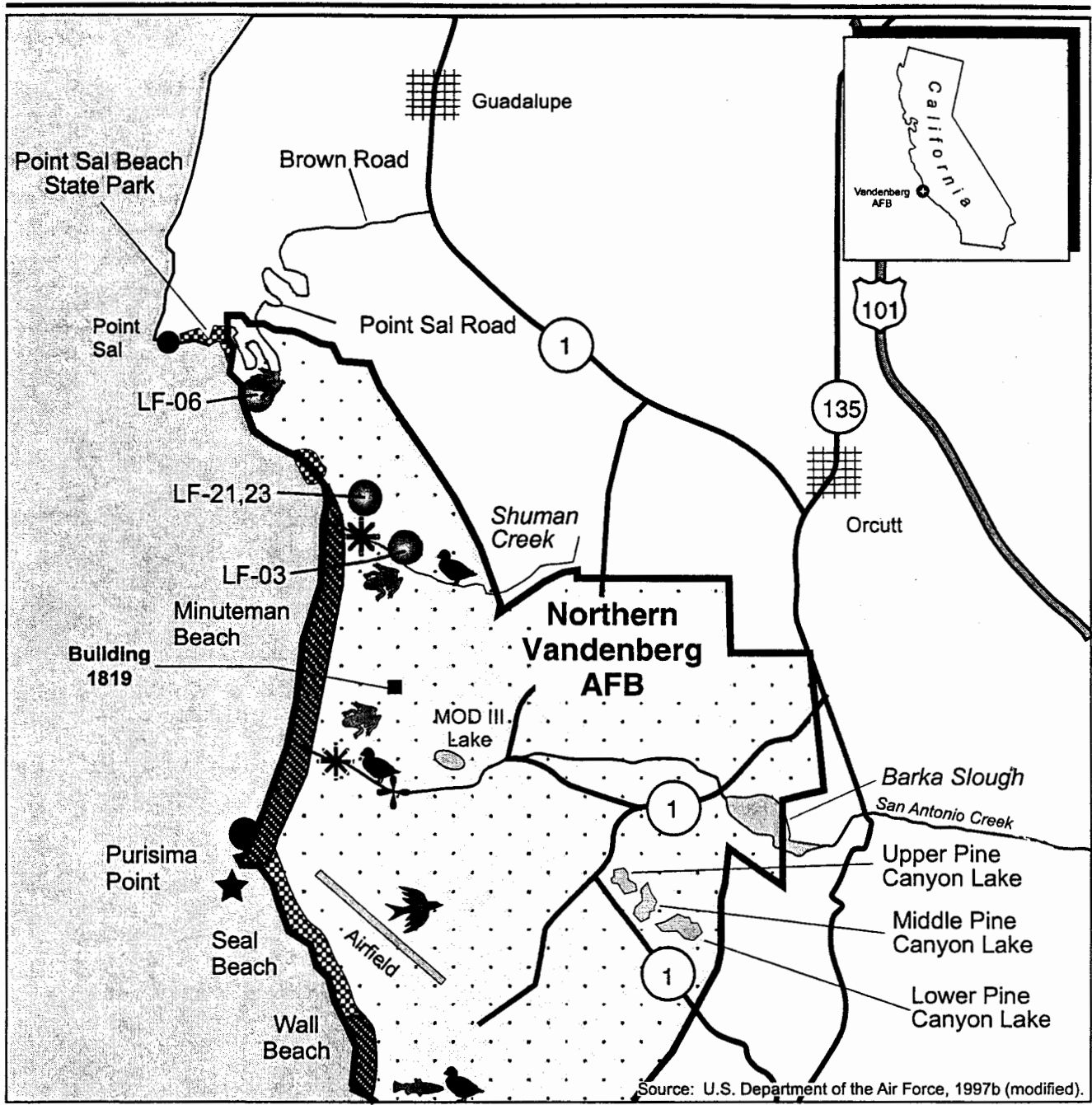
Vandenberg Air Force Base,
California

Figure 2-2

EXHIBIT NO. 2

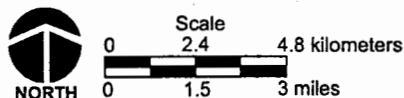
APPLICATION NO.

CD-59-03



EXPLANATION

- | | | |
|--|---|---|
| Nesting Location of California Least Tern/ Western Snowy Plover (Least Terns Have Nested Only at Purisima Point in Recent Years) | Tidewater Goby | California Least Tern Foraging Areas |
| Haulout Location of California Sea Lion, Northern Elephant Seal, and Pacific Harbor Seal | Unarmored Threespined Stickleback | California Red-legged Frog (Wide Distribution Also Includes Ponds and Vernal Pools) |
| Southern Sea Otters | Roosting Location of California Brown Pelican | Steelhead Trout |
| Building | Mountain Plover (Winters Only) | |
| LF = Launch Facility | | |



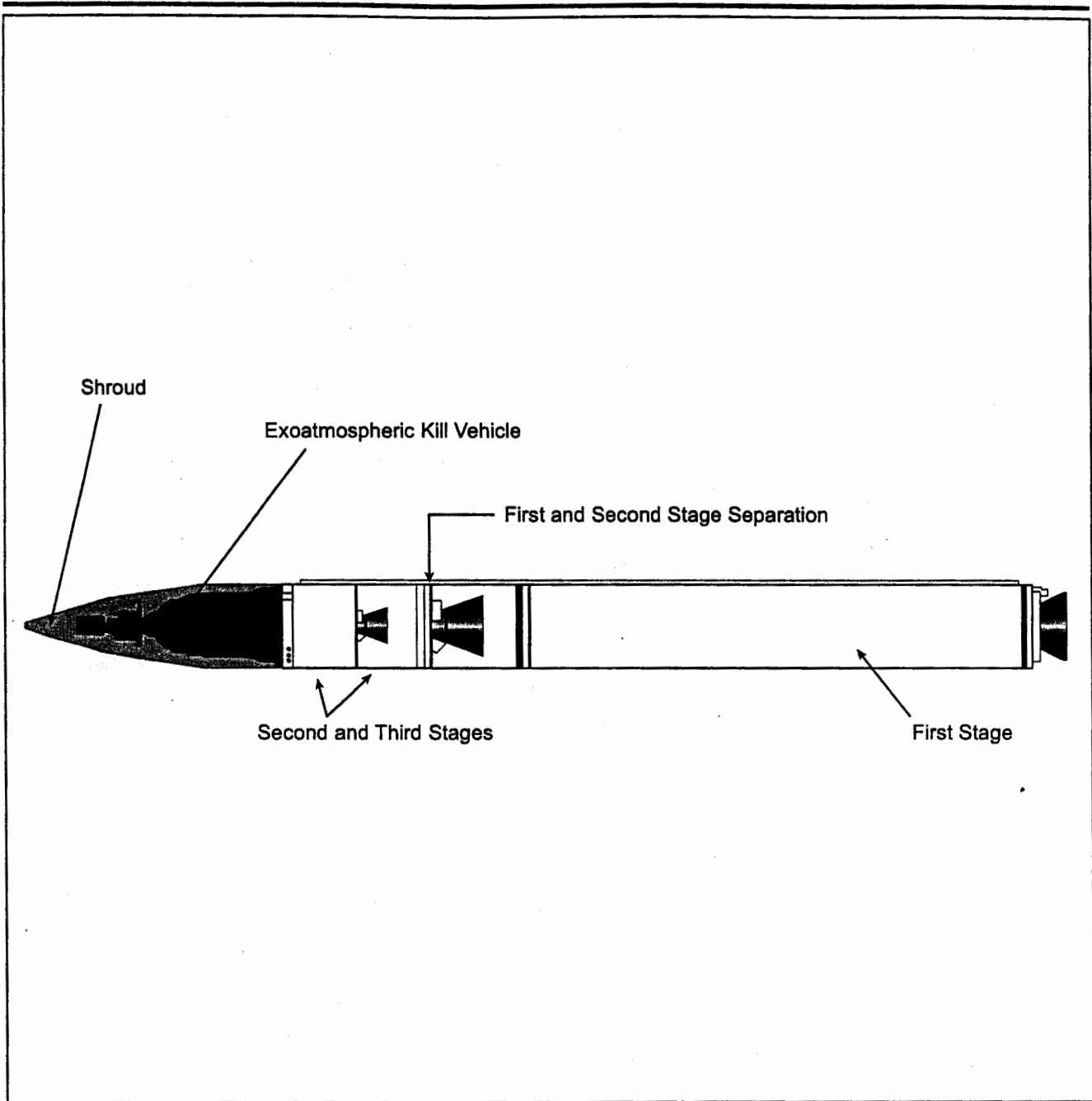
05-22-03 Sensitive Habitat ABV

Sensitive Habitat for Listed Wildlife Species on Vandenberg AFB

Northern Vandenberg Air Force Base, California

Fi:

EXHIBIT NO. 3
APPLICATION NO.
CD-59-03



EXPLANATION

Conceptual
Ground-Based
Interceptor

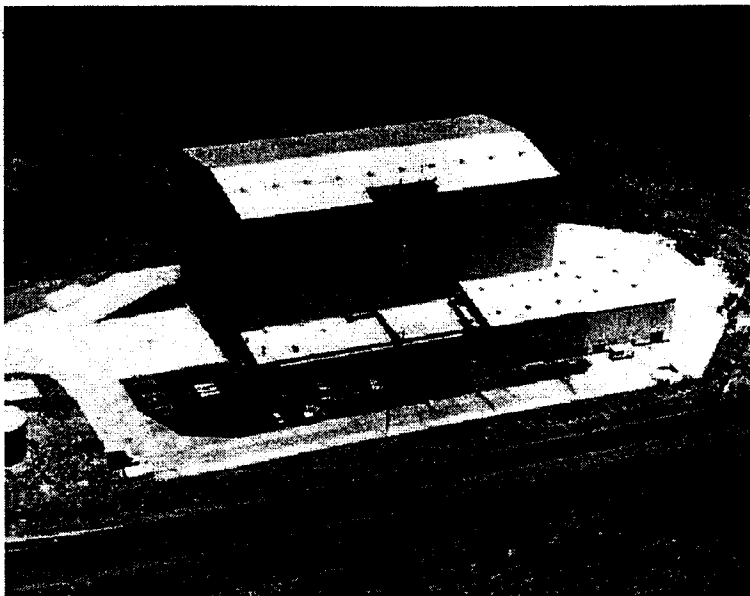
Not to Scale

05-22-03 GBI Missile

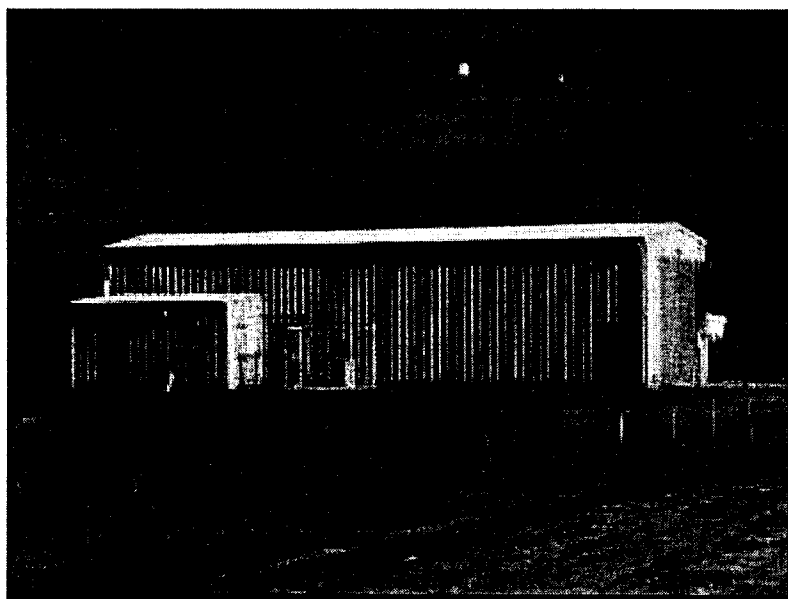
2-2

Figure 2-1

| |
|-----------------|
| EXHIBIT NO. 4 |
| APPLICATION NO. |
| CD-59-03 |
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Building 1819



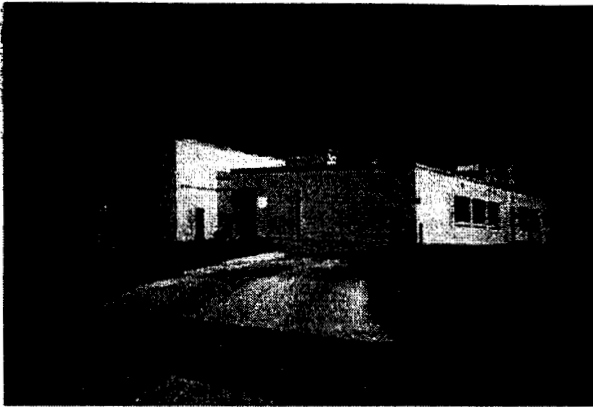
Building 1970

**Potential Support
Facilities**

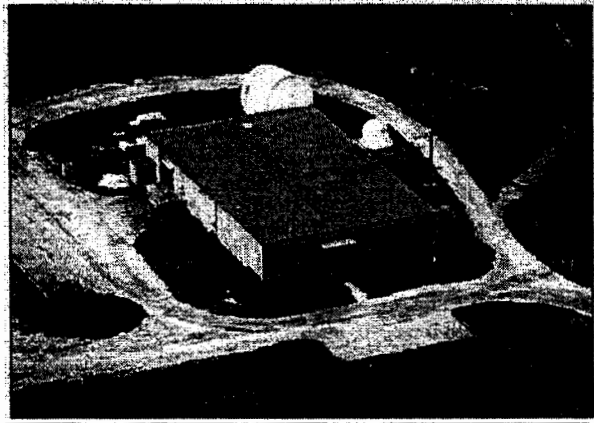
Vandenberg Air Force Base,
California

Figure 2-7

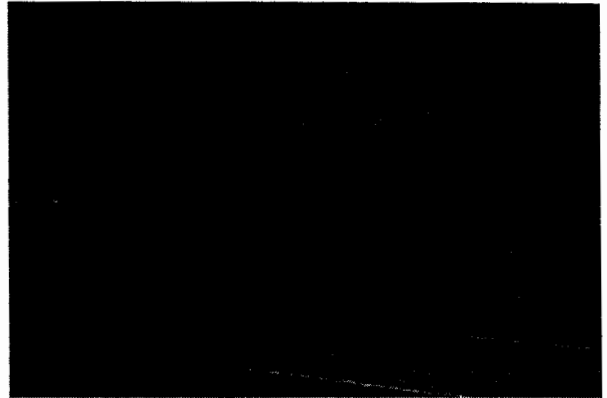
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| EXHIBIT NO. 5 |
| APPLICATION NO. |
| CD-59-03 |
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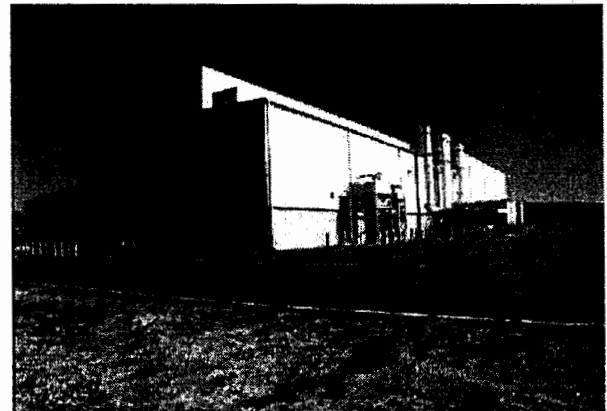
Building 1978



Building 1801



Building 1768



Building 1900 (Integrated Refurbishment Facility)

Potential Support Facilities

Vandenberg Air Force Base,
California

Figure 2-6

EXHIBIT NO. 6

APPLICATION NO.

CD-59-03

SELECT MINUTEMAN AND PEACEKEEPER LAUNCH FACILITY HISTORY

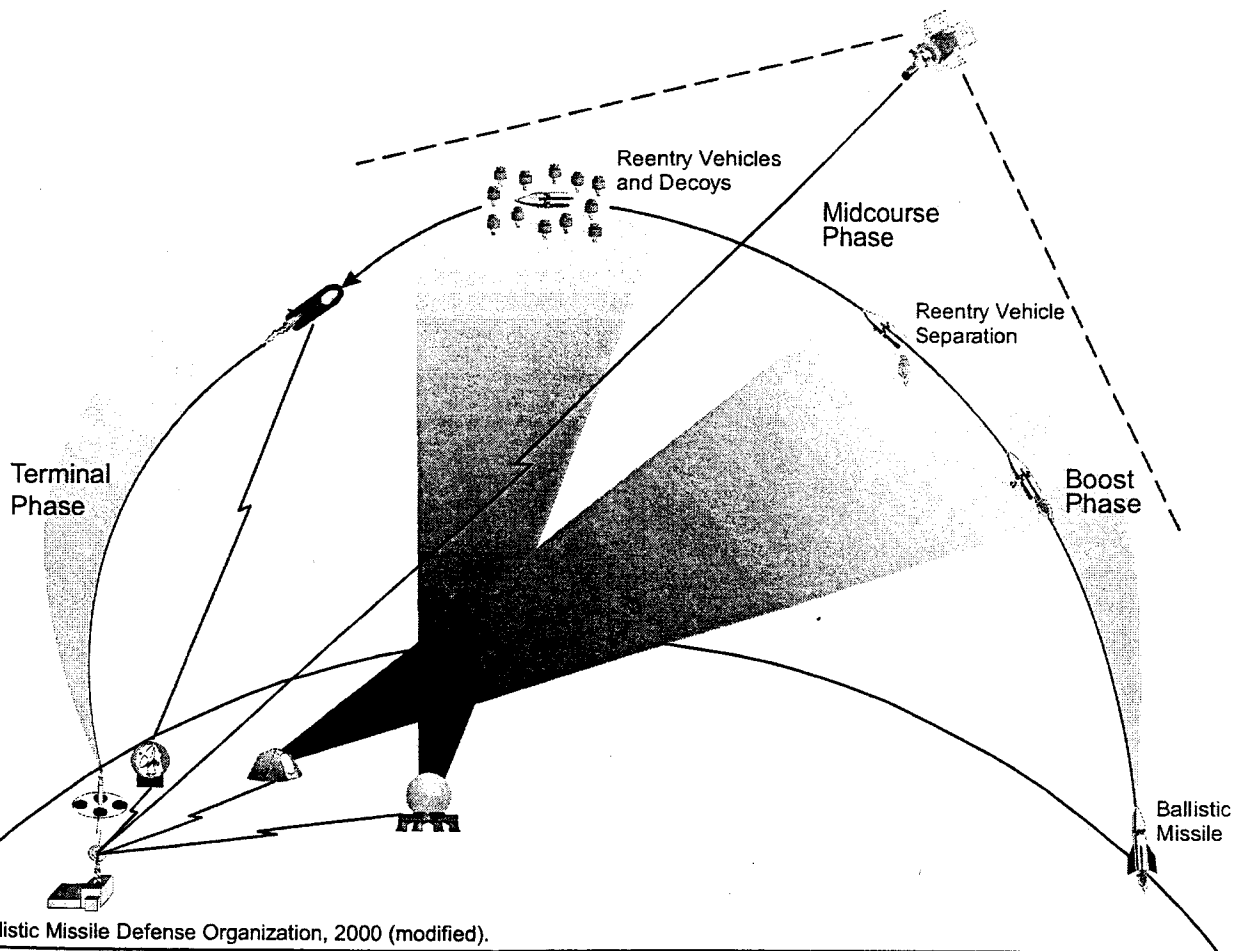
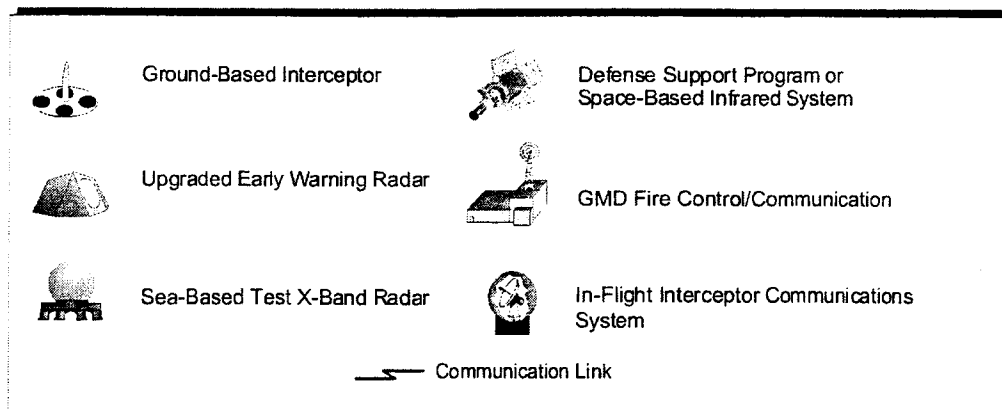
| DATE | PROGRAM/NICKNAME | FACILITY | VEHICLE | PROGRAM |
|-----------|--------------------|----------|-------------|-------------|
| 22 May 85 | IPA-2 | LF-03 | MINUTEMAN B | RSLP |
| 17 Mar 86 | IPA-3 | LF-03 | MINUTEMAN B | RSLP |
| 23 Aug 86 | FTM-15 | LF-02 | PEACEKEEPER | OT&E |
| 5 Dec 86 | FTM-14 | LF-02 | PEACEKEEPER | OT&E |
| 20 Jan 87 | SENT-1 | LF-03 | MINUTEMAN B | SENT |
| 12 Jul 87 | GLORY TRIP 123GM-1 | LF-10 | MINUTEMAN G | OT PHASE II |
| 1 Sep 87 | IPMS | LF-06 | MINUTEMAN G | IPMS |
| 21 Sep 87 | SENT-2 | LF-03 | MINUTEMAN B | SENT |
| 18 Jan 88 | TD MARV | LF-03 | MINUTEMAN B | RSLP |
| 27 Oct 88 | GLORY TRIP 130GM | LF-10 | MINUTEMAN G | OT PHASE II |
| 7 Mar 89 | GLORY TRIP 133GM | LF-10 | MINUTEMAN G | OT PHASE II |
| 14 Sep 89 | GLORY TRIP 01PA | LF-02 | PEACEKEEPER | PHASE I |
| 6 Nov 89 | GLORY TRIP 136GM | LF-10 | MINUTEMAN G | OT PHASE II |
| 14 Feb 90 | MaST | LF-03 | MINUTEMAN B | RSLP |
| 28 Jan 91 | GBI-1 | LF-03 | MINUTEMAN B | RSLP |
| 12 Mar 91 | GLORY TRIP 05PA | LF-02 | PEACEKEEPER | OT PHASE I |
| 11 May 91 | GBI-2 | LF-03 | MINUTEMAN B | RSLP |
| 20 Jun 91 | AST | LF-03 | MINUTEMAN B | RSLP |
| 2 Jul 91 | GLORY TRIP 143GM | LF-10 | MINUTEMAN G | OT PHASE II |
| 17 Sep 91 | GLORY TRIP 07PA | LF-02 | PEACEKEEPER | OT PHASE I |
| 13 Mar 92 | GBI-2B | LF-03 | MINUTEMAN B | RSLP |
| 5 May 92 | GLORY TRIP 147GM-1 | LF-10 | MINUTEMAN G | OT PHASE II |
| 30 Jun 92 | GLORY TRIP 09PA | LF-02 | PEACEKEEPER | OT PHASE I |
| 24 Oct 92 | AST - DT 2 | LF-03 | MINUTEMAN B | RSLP |
| 4 Mar 93 | GLORY TRIP 11PA | LF-02 | PEACEKEEPER | OT PHASE II |
| 15 Jun 93 | TDT-1 | LF-03 | MINUTEMAN B | RSLP |
| 15 Sep 93 | GLORY TRIP 13PA | LF-02 | PEACEKEEPER | OT PHASE II |
| 17 May 94 | GLORY TRIP 15PA | LF-02 | PEACEKEEPER | OT PHASE II |
| 19 Jan 95 | GLORY TRIP 17PA | LF-02 | PEACEKEEPER | OT PHASE II |
| 30 Aug 95 | GLORY TRIP 19PA | LF-02 | PEACEKEEPER | OT PHASE II |
| 30 May 96 | GLORY TRIP 21PA | LF-02 | PEACEKEEPER | OT PHASE II |
| 26 Jun 96 | GLORY TRIP 162GM | LF-10 | MINUTEMAN G | OT PHASE II |
| 27 Sep 96 | IFT (DEMO FLIGHT) | LF-03 | MINUTEMAN F | MSLS |
| 6 Nov 96 | GLORY TRIP 23PA | LF-02 | PEACEKEEPER | OT PHASE II |
| 16 Jan 97 | IFT-1 | LF-03 | MINUTEMAN F | MDA MSLS |
| 18 Jun 97 | GLORY TRIP 165GM | LF-10 | MINUTEMAN G | OT PHASE II |
| 23 Jun 97 | IFT-1A | LF-03 | MINUTEMAN F | MDA MSLS |
| 5 Nov 97 | GLORY TRIP 26PA | LF-02 | PEACEKEEPER | FDE |
| 15 Jan 98 | IFT-2 | LF-03 | MINUTEMAN F | MDA MSLS |
| 24 Jun 98 | GLORY TRIP 168GM | LF-10 | MINUTEMAN G | |
| 10 Mar 99 | GLORY TRIP 28PA | LF-02 | PEACEKEEPER | |
| 20 Aug 99 | GLORY TRIP 170GM-1 | LF-10 | MINUTEMAN G | |

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|-----------|------------------|-------|---------------|-----------|
| 2 Oct 99 | ITF-3 | LF-03 | MINUTEMAN F | GMD MSLS |
| 18 Jan 00 | IFT-4 | LF-03 | MINUTEMAN F | GMD MSLS |
| 9 Jun 00 | GLORY TRIP 172GM | LF-10 | MINUTEMAN G | FDE |
| 7 Jul 00 | IFT-5 | LF-03 | MINUTEMAN F | GMD MSLS |
| 7 Feb 01 | GLORY TRIP 175GM | LF-10 | MINUTEMAN G | FDE |
| 14 Jul 01 | IFT-6 | LF-03 | MINUTEMAN F | GMD MSLS |
| 27 Jul 01 | GLORY TRIP 30PA | LF-02 | PEACEKEEPER | FDE |
| 31 Aug 01 | BVT-2 | LF-21 | BOOST VEHICLE | GMD Demo. |
| 13 Dec 01 | BVT-3 | LF-21 | BOOST VEHICLE | GMD Demo. |
| 8 Apr 02 | GLORY TRIP 178GM | LF-10 | MINUTEMAN G | FDE |
| 3 Jun 02 | GLORY TRIP 31PA | LF-02 | PEACEKEEPER | FDE |
| 12 Mar 03 | GLORY TRIP 32PA | LF-02 | PEACEKEEPER | FDE |



EXPLANATION

Note: Locations in this figure are for illustrative purposes only and are notional

GMD Element Architecture

Schematic of GMD Extended Test Range

Figure

Not to Scale

06-09-03 Phase in Flight

GMD ETR Final EIS

EXHIBIT NO. 8

APPLICATION NO.

CD-59-03

