FINDING OF NO SIGNIFICANT IMPACT (FONSI)
TITAN SOLID PROPELLANT ROCKET MOTOR TESTS
EDWARDS AIR FORCE BASE, CALIFORNIA

DESCRIPTION OF THE PROPOSED ACTION

INTRODUCTION

To support the U.S. Department of Defense (DOD) Space Program, and to ensure access to space through the continued use of Titan solid propellant rocket motors, the U.S. Air Force (USAF) proposes to test fire Titan rocket motors at Test Stand IC, located at the Rocket Propulsion Laboratory (RPL), Edwards Air Force Base (AFB), California, during the period of February to December 1987.

PROPOSED ACTION

The proposed action calls for the renovation of an existing rocket motor test stand (Test Stand IC) located on Leuhman Ridge at RPL to conduct the static test firings. Test Stand IC was used to test F-1 liquid rocket engines until the early 1970s. Test stand renovation includes refurbishment and changes in structural, mechanical, and electrical systems, addition of a heat shield to protect the steel deflector plate, water collection basin improvements, and addition of instrumentation, control, and monitoring equipment.

Following renovation of the test stand facilities, one 5-1/2-segment and possibly one 2-segment Titan solid propellant rocket motor will be test-fired. In addition, up to six short-burn 2-segment tests will be conducted. The tests will be conducted to:

1. Evaluate revised launch criteria.

2. Monitor the structural dynamics of the motors during each test firing.

SUMMARY OF ENVIRONMENTAL IMPACTS

NATURAL ENVIRONMENT

Air Quality

The proposed Titan rocket motor test firings will not significantly impact air quality at Edwards AFB or surrounding areas. Primary constituents of the rocket exhaust emissions will be aluminum oxide

(Al_2O_3), hydrogen chloride (HCl), carbon monoxide (CO), and oxides of nitrogen (NO_x). Afterburning in the atmosphere oxidizes some of these constituents, particularly CO. Modeling of the Titan motor exhausts indicates that the general population will not be exposed to HCl concentrations greater than the National Academy of Sciences recommended limit for short-term public exposure (limit of 3 parts per million HCl in a 10-minute average). Maximum downwind concentrations of Al_2O_3 (as suspended particulates), CO, and NO_x will be within applicable federal and state standards.

The maximum downwind concentration of particulate matter less than 10 microns in diameter (PM_{10}) from the test firings will be significantly less than the state standard of 50 micrograms per cubic meter. However, ambient air quality data indicate some exceedences of the state standard occurred in 1985.

Soils

Implementation of the Titan testing program involves lowering of the water containment berm by 5 feet at Test Stand IC. Neither the lowering of the berm or the subsequent Titan tests will significantly affect the soils at Edwards AFB or the surrounding area.

Hydrology

No significant impacts to groundwater or surface water hydrology will result from the Titan motor tests. All water used for the Titan tests will come from the municipal groundwater supplies. Most of the deluge (cooling) water used in the tests will be conditioned with a carbonate buffer to mitigate the effects of HCl absorption and low pH. Some deluge water will precipitate as acid mist (pH of about 3) from the exhaust plume and exhaust cloud onto the ground surface. The amount of precipitation is estimated to be 0.01 inch in the test stand vicinity. The remainder of the deluge water not entrained into the exhaust gas stream will be collected and recycled or evaporated in concrete-lined channels and a basin located near Test Stand IC.

Water Quality

No impacts on water quality will result from the Titan tests. All deluge water contained in the channels and basin will be recycled and/or evaporated. The amount of mist that will precipitate from the exhaust onto the rocks and soil nearby is limited and will evaporate within about 1 hour, leaving inert nonhazardous compounds (mostly aluminum oxide and sodium chloride) on the ground surface. These compounds will become part of the desert soil. The amount of HCl deposition will be small and have no significant impact on ground or surface waters.

Biota

No significant impacts on the biota of Edwards AFB or surrounding areas are expected as a result of the Titan motor tests. Vegetation and habitat impacts from acidic mist will be extremely limited. No critical habitat for threatened or endangered species will be lost due to the Titan test program. Aquatic organisms will not be impacted. Limited ground animals in this area will be unaffected by the mist fallout. Birds will leave the area when the rocket is fired.

MAN-MADE ENVIRONMENT

Population

The renovation of Test Stand IC and the subsequent test program of the Titan rocket motors will have no significant impacts on population and housing at Edwards AFB or within surrounding communities. The Titan test program will utilize existing personnel at RPL and Edwards AFB. Temporary staff from the USAF Space Division, United Technologies-Chemical Systems Division, and their contractors will be on-site during renovation work and motor testing periods.

Socioeconomics

Test Stand IC was constructed in 1965. The proposed Titan test program is compatible with the surrounding land use, will require no land purchase and no construction work beyond the boundaries of the test stand area, and will not require new utility services, new transportation access, or additional employment. No significant impacts on the socioeconomics of Edwards AFB or Kern County California, are anticipated.

Safety

All regulatory agency safety procedures and guidelines will be followed. Safety monitoring will be conducted during the tests. For the large 2-minute test firings, a protective clear zone of about 1 mile will be established around the test stand and no one will be allowed into the immediate downwind area (approximately 10 miles downwind). A wind corridor has been established to minimize the chances of the exhaust cloud proceeding over housing areas. Essential test personnel will be located in a protected concrete bunker near the test stand. Exhaust cloud monitoring will be conducted.

Noise

Noise levels associated with the Titan test program will not significantly affect the general public due to the distance between the test site and the nearest unregulated area (3 miles). Noise produced during the test firings will be of short duration (2 minutes or less for each event), and at worst, will be a nuisance on two occasions. Portions of the RPL will be evacuated to minimize noise impacts on site.

Archaeology and Cultural Resources

The Test Stand IC area contains no unique archaeological or historic resources. As a result, the Titan test program will have no effect on archaeological or cultural resources.

FINDINGS

Based on the above, a finding of no significant impact is made. Copies of an Environmental Assessment of the proposed action, dated December 1986, can be obtained from:

HQ Space Division
Post Office Box 92960
Worldway Postal Center
Los Angeles, California 90009
ATTENTION: Mr. Robert C. Mason, SD/DEV