

## SUMMARY

This environmental assessment (EA) has been prepared by the U.S. Air Force (USAF) in compliance with the National Environmental Policy Act (NEPA) and Executive Order 12114 to determine if significant environmental impacts would result from the Starlab program. The proposed action is to conduct a set of engagements and experiments using electro-optical and laser systems to be installed aboard a Space Shuttle flight. The purpose of these engagements and experiments is to advance the research program of the Strategic Defense Initiative Organization (SDIO), particularly that involving the acquisition, tracking, and pointing capabilities of the Electro-optical and laser systems.

The activities involved in the Starlab program include (1) passive experiments for collecting and analyzing ultraviolet and infrared data to calibrate the Electro-optical systems; (2) experiments using small space test objects deployed from the orbiter to sight the lasers and to demonstrate the capability of rapidly changing from tracking one object to acquiring and tracking a second; (3) ground calibration engagements that locate and actively scan sites on Antigua and Ascension Island with red and green lasers, which are then reflected back to the shuttle; (4) engagements with ground launched rockets (i.e., Starbird vehicles) that actively identify and track Starbird vehicles launched from Cape Canaveral and Wake Island and their plumes using green and red lasers; and (5) a Short Wave Adaptive Technology (SWAT) experiment that actively links the orbiter with the Air Force Maui Optical Station (AMOS) in Hawaii using blue and green lasers from AMOS and red lasers from the Starlab.

The National Aeronautics and Space Administration (NASA) is the mission manager for the proposed action, and the SDIO is the DOD sponsor for the Starlab program. The USAF Space Systems Division and the U.S. Army Strategic Defense Command (USASDC) are the experiment program offices. As mission manager, NASA is responsible for overall operation and coordination of the Space Shuttle. The USAF Space Systems Division is responsible for the Starlab payload in the orbiter and the SWAT experiment. The USASDC is responsible for the construction of the launch sites and the launch of the Starbird vehicles. The USAF Space Division is the lead agency for preparing this EA, and NASA, SDIO, USASDC, and the Department of State are cooperating agencies.

A major issue addressed in this EA is the potential exposure of people and wildlife to laser beams. The USAF has prepared extensive analyses of potential laser effects, which are reviewed and evaluated in this EA. Other issues that are discussed and evaluated in the EA include potential impacts of Starlab activities at Cape Canaveral and Wake Island (Starbird launch sites), and Maui (sites of the SWAT engagement) on land use, ecological resources, endangered and threatened species, and socioeconomic resources.

Detailed safety analyses made in preparing the EA indicate that no significant impact to humans or wildlife would occur from exposure to lasers because of low probability ( $1 \times 10^{-9}$ ) of people or wildlife seeing a pulse of 25 nanoseconds.

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Environmental impacts of construction and operation of the ground calibration sites on Antigua and Ascension Island will be considered in separate environmental review documents prepared in compliance with Air Force Regulations 19-3.

Construction of facilities for Starbird launches at Wake Island and Cape Canaveral Air Force Station (CCAFS) have been completed. Environmental impacts of construction were evaluated in an EA prepared by USASDC in 1987 (U.S. Army 1987). This EA includes an assessment of the changes that have occurred since the USASDC EA was published. The USASDC has recently prepared a Light Management Plan (LMP) for the CCAFS launch site that CCAFS. The U.S. Fish and Wildlife Service (USFWS) has reviewed the LMP and has concurred that sea turtles will not be affected by operational activities at Launch Complex 20. No significant impacts are likely to occur to endangered and threatened species, migrating sea birds, or historic and cultural resources at either Wake Island or CCAFS. Consultation required under the Endangered Species Act and National Historic Preservation Act has been completed for development and use of the Starbird sites.

No construction would occur at the AMOS facility on Maui. Operations for the SWAT experiment have been evaluated and no significant adverse impacts are anticipated. The USFWS has reviewed the project and concurred with the findings of this EA that the project would expected to have little, if any, impact on any federally-listed endangered or threatened species.