

**FINDING OF NO SIGNIFICANT IMPACT (FONSI)
RELAY MIRROR EXPERIMENT
MAUI, HAWAII**

INTRODUCTION

As part of the Strategic Defense Initiative, the Relay Mirror Experiment (RME) is being proposed by the U.S. Air Force (USAF) to (1) demonstrate the ability to transmit a laser over a distance of up to 1,000 kilometers by reflecting it off a satellite-based mirror and directing it accurately to a ground-based receiving station, (2) control the satellite-based mirror angle via beacon beams from the ground, and (3) measure the effects of atmosphere turbulence and refraction on the relay laser.

PROPOSED ACTION

The U.S. Air Force RME is a short-term (approximately 6 months) technical experiment designed to demonstrate and evaluate the ability to transmit a low-power laser beam over long distances, point it accurately at a mirror mounted on a satellite, and reflect the laser beam precisely to a receiving station on the ground. Ground facilities required to support the RME include a transmitting station, or laser source system (LSS), and a temporary receiving station, also known as the Experiment Scoring and Control Center (ESCC). These two facilities must be located approximately 12 to 24 miles apart and have predominantly clear weather conditions.

The LSS would include the relay laser source, a beacon laser source, laser control equipment, and laser beam director. The beam director would aim the relay and the beacon beams from the ground to the orbiting satellite. The relay beam would then be reflected to the ESCC.

The LSS requires close proximity to a facility with existing laser beam tracking capabilities. The beam director would be located in existing facilities, or require only minor additions to existing facilities.

The ESCC site would support the following RME functions: administration, communication, experiment calibration, experiment operation, and weather/atmospheric observations. Each function requires a separate facility which would consist of reinforced concrete block structures or temporary structures. The facilities and parking lot would require approximately three to four acres of land. Operation of the ESCC would create 12 new temporary jobs and require approximately 30 additional highly trained employees. In the event that a second operating shift were required, and additional 30 highly trained employees would be needed. Operation of the LSS would require no new employees.

The proposed location for the RME LSS is the Air Force Maui Optical Station (AMOS) on top of Mount Haleakala, Maui, Hawaii. The ESCC site is proposed to be constructed on land currently planned for the antenna farm of the Maui Research and Technology Park near Kihei, Maui, Hawaii. The alternatives to the proposed action are either (1) one of two alternative ESCC sites on Maui (the Old Maui Airport or the Puunene AVCO site) or (2) an alternative LSS and ESCC site located in Florida. The alternative LSS would be located at the U.S. Air Force Malabar Tracking Station, and the associated ESCC site would be at Patrick AFB.

SUMMARY OF ENVIRONMENTAL IMPACTS

Geology and Soils

There would be no serious soil or erosion consequences to siting the RME laser source system at the AMOS facility since construction would occur in previously disturbed areas.

Construction RME facilities would not significantly impact geology or soils at the Kihei ESCC site. Because soils at this site are susceptible to erosion, measures would be taken to minimize water erosion hazards.

Water Resources

Siting the LSS at AMOS would not involve additional grading or major land disturbance activities. No additional use of water or discharge is associated with operation of the RME at AMOS. There would therefore be no impact to surface or ground water quality.

Recommendations of the Maui County grading ordinance are incorporated in the proposal to site ESCC facilities at the Kihei site. These measures reduce potential erosion and runoff impacts to insignificant levels. Disposal of waste water through a septic and leach-field system is not expected to have adverse impacts on surface or ground water.

Air Quality

The proposed RME program would not significantly impact air quality on Maui. A short-term, temporary increase in fugitive emissions would result from construction activities at the AMOS and Kihei sites. Since no stationary emission sources are proposed for the RME, the only project emissions would be from vehicular traffic to and from the site during the six-month operational period of the experiment.

Biological Resources

Very unlikely but potential impacts on state and federally protected bird species have been identified for the proposed action. A biological assessment, in compliance with section 7 of the Endangered Species Act, which supports a no jeopardy opinion, has been prepared and submitted to the U.S. Fish and Wildlife Service for their action. Construction at AMOS would take place within a previously disturbed area. Loss of 3 to 4 acres of Kiawe forest at the Kihei site would be a long-term but insignificant impact. Impacts on biological resources from construction and operation of the RME are anticipated to be insignificant.

Noise

Noise produced during construction at both at LSS and ESCC sites would be well within acceptable limits established by the Federal Highway Administration. There would be no significant noise-related impacts from operation of the RME.

Land Use

The proposed modifications to AMOS are consistent with the existing observation, tracking, communications, and scientific uses at the summit of Mount Haleakala.

The ESCC facility at Kihei would be the initial phase of a recently approved antenna farm east of the Maui R & T Park and would be consistent with the uses of the park. Construction of roads and utilities needed for the site would not place a burden on public agencies.

Visual Resources

Proposed modifications at AMOS would create only minor changes to the existing facility profile as viewed from national park facilities at the summit of Mount Haleakala. No additions or modifications to external lighting, parking spaces, access roads, or utilities are proposed.

The ESCC site at Kihei would not be visible from the Kihei school, from the adjacent residential area, from Lipoa Street, or from the Piilani Highway except for a section approximately 1.2 miles north of Lipoa Street when traveling south. The Piilani Highway is not designed as a scenic highway and the visual impact would not be significant.

Cultural Resources

Due to past construction disturbances, the absence of visible cultural remains, and the minimal nature of the proposed project, the proposed action at AMOS would not affect cultural resources.

An archaeological surface survey at the Kihei site revealed no cultural resources. Sedimentary and geomorphological conditions suggest that no subsurface remains are likely to be present. The RME would have no effect on archaeological or cultural resources.

Socioeconomics

There would be no adverse impacts related to housing on Maui since there would be enough housing to adequately serve the minor influx of residents. Minor beneficial impacts on employment are expected in Maui due to newly created temporary jobs.

Health and Safety

Safety aspects of the RME have been specifically addressed in a recent study (included as an Appendix in the Environmental Assessment). The principle RME-related health and safety concerns are the potential effects of the direct and reflected laser beams and the radio frequency field. Safety procedures currently in use at AMOS and proposed for use at Kihei would reduce potential health hazards to insignificant levels.

FINDINGS

Based upon the above, a Finding of No Significant Impact is made. An Environmental Assessment for the proposed action, dated October 1987, is on file at:

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