

**Categorical Exclusion Determination
DSS14 Depot Level Maintenance and Life Extension**

Requester/Principle Investigator:

Robert Haroldsson
Phone: (760) 255-8261
Goldstone Deep Space Communication Complex (GDSCC)

Type of Action:

10NEPA06-DSS14 Depot Level Maintenance and Life Extension (DLMLE) Major Antenna Upgrade and Modification

Purpose and Need:

The DSS-14 70 meter (230 feet) antenna at Goldstone is supported by and rotates in the azimuth axis on a hydrostatic bearing (HBA). The HBA has a stationary runner located at the top of the concrete pedestal that supports the antenna and three “pads” that support the rotating structure of the antenna, floating on a film of oil. The runner of the HBA at Goldstone is thinner than the runners on the two other Deep Space Network (DSN) 70m antennas. The result of this is oil leakage through the joints in the runner, leading to increased maintenance time. Additionally, in April 2009 there was a failure in the maintenance procedure and the runner was damaged. These unfavorable conditions could lead to a loss of spacecraft communications. As it is, spacecraft communications are lost a couple of times per year because of these problems; fortunately it has never been during a critical event.

The HBA runner needs to be replaced to reduce maintenance time and labor and to fully repair the damaged area. This replacement requires that the rotating portion of the antenna be lifted 0.2 inches (5.1 millimeters) above the antenna. When the antenna is lifted the load would be supported by three legs, extending from the rotating structure to three concrete caissons that were installed around the antenna pedestal, below grade level, in 1983, when the antenna was previously lifted to repair the top portion of the pedestal. The caissons are within the paved area surrounding the antenna.

Description:

The proposed DSS14 DLMLE would include the hydrostatic bearing replacement, elevation bearing replacement and cable removal and repair. Assorted other smaller tasks (radio frequency (RF) task, facilities task, fire systems task, and heating/ventilation/air conditioning [HVAC] task) would be performed throughout the DLMLE downtime. All the area surrounding and including the construction site is previously disturbed soil and some pavement that is regularly used for maintenance of the DSS14 antenna (see Figure 1). No new undisturbed land would be used for the DLMLE task.

The hydrostatic bearing replacement task would include the draining of the 5000 gallons (18,930 liter) of hydraulic fluid in the bearing reservoir into a ground tank for storage. Scaffolding would be erected from the ground to the top of the pedestal, to provide a work surface. A crane would be brought in to lower the removed runner sections and lift the new sections up. The reservoir walls would be cut and removed from the antenna. The paint in the welding area would be removed using the

approved method for lead paint removal prior to welding. The oil contaminated grout would be removed, put into a roll off bin, and disposed of at a JPL-approved site. The hydraulic oil that is stored in the underground holding tank would be pumped back up into the reservoir.

The elevation bearing task would include the draining of oil out of the 4 elevation bearings into a 50 gallon (189 liter) drum which would be lowered to the ground and then disposed of at a JPL-approved site.

The cabling task would include removing unused cables from the antenna, repairing these cables, and re-running and dressing the cables into the cable trays and wraps of the antenna.

The radio frequency (RF) task would include the draining of the cooling loops for the transmitters and waveguide. The pure water contained within the cooling loop would be drained into the oil water separators. New water would be used to refill the system when all work is completed.

The facilities task would include replacing the swivel joints and hoses in the DSS14 azimuth cable wrap. The water would be pumped into and captured in portable storage tanks. The remaining water in the system would have to be captured in 55 gallon drums and then pumped into the storage tanks. The water in the underground tanks would then be pumped in accordance with all pertinent waste laws and disposed of at a JPL-approved site.

The fire systems tasks would include removing an off-line fire cabinet that formerly held halon cylinders. This fire cabinet will be disposed of at a JPL-approved site.

The HVAC tasks would replace the programmable logic controllers (PLC) modules and power supplies and performing tests of the systems.

A central construction trailer would be located south of the G80 parking area and just west of the antenna tunnel, and is marked HQ on Figure 1-Tentative Site Plan. The area would be leveled and the trailer put in place. Electrical service and administrative LAN would be run above ground. Two post holes would be dug to facilitate the installation of a safety antenna access board.

All access to the antenna will be coordinated through the DLM Coordinator. Any large truck traffic would be directed to the runner and sole plate staging area. The expected large equipment traffic includes runner delivery trucks, sole plate delivery trucks, pad pickup and delivery trucks, heavy forklift, Condor man lift, and large crane movement. A large majority of regular vehicle traffic would be limited to the paved areas. The main paved area lies to the south and south west of the antenna, with a road going around the north of the antenna (Figure 1).

Sea van staging would be along the east fence line. The sea vans are from the shipping of the columns for the antenna and some equipment/tooling sea vans for the DLMLE task. All the equipment used for the task would be staged to the west of the antenna. Air Toxic Control Measure (ATCM) regulations would be followed

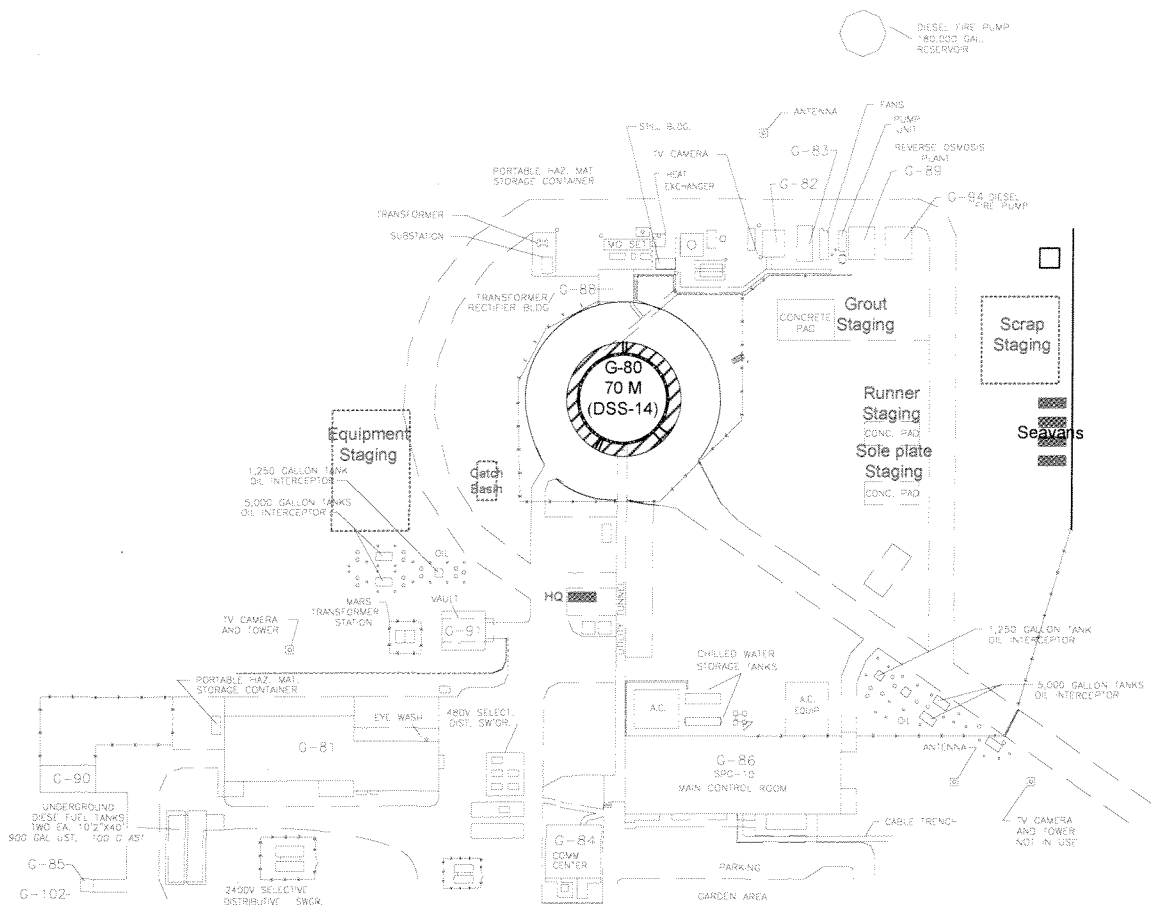


Figure 1: Tentative Site Plan for the proposed Depot Level Maintenance and Life Extension (DLMLE) Major Antenna Upgrade and Modification, Mars Site, GDSCC.

Determination:

This proposed action has been reviewed against the National Environmental Policy Act, the implementing regulations of the Council of Environmental Quality, and the implementing regulation of NASA. Following my review of the proposed action, I have determined that the proposed action may be categorically excluded from further environmental impact analysis pursuant to 14 CFR 1216.305(d). My signature on this document constitutes a written record of this decision.

Signed: Peter Robles, Jr.
 Peter Robles, Jr.
 NASA JPL Manager, Environmental,
 Safety and Health

Signed: Peter Hames
 Peter Hames,
 JPL DSN Antenna and Facilities Manager

Date: 7 Dec 09

Date: 12/1/09

JET PROPULSION LABORATORY
ENVIRONMENTAL EVALUATION CHECKLIST
 (For EAPO use only)

EAPO PROJECT ID NUMBER: 10NEPA06

PROPOSED ACTION: DSS14 Depot Level Maintenance and Life Extension (DLMLE) Major Antenna Upgrade and Modification

Instructions: For each of the resources listed on the left, please mark an "X" in one of the columns on the right to indicate the effect from the proposed project on that resource. Explain all positive "+", negative "-", and unknown "u" effects in the "REMARKS" section in the "REMARKS" section at the end of the checklist.

"+" = positive effect
 "o" = no effect
 "-" = adverse effect
 "u" = effect unknown

EARTH	+	o	-	u
Erosion (wind/water)		X		
Surface stability		X		
Agricultural lands		X		
WATER	+	o	-	u
Aquatic life		X		
Flow variation		X		
Aquifer yield		X		
Aesthetic properties and potential use of water		X		
Natural streams		X		
Chemical quality (wastewater, stormwater, run-off) (ph, DS, heavy metals, organics, etc.)		X		
Physical quality (wastewater, stormwater, run-off) (ss, oil, temp)		X		
AIR	+	o	-	u
Odors		X		
Toxic substances		X		
Particulates		X		
Air movement		X		
Permitting		X		

Other (S _{ox} , N _{ox} , CO, hydrocarbons, photochemical oxidants)		X		
NATURAL RESOURCES	+	o	-	u
Undisturbed natural areas		X		
Game animals and fish		X		
Threatened and endangered species				X ¹
Species balance		X		
Migratory Birds		X		
ENERGY RESOURCES	+	o	-	u
Fuel resource, consumption/conservation		X		
Water consumption/conservation		X		
Energy consumption/conservation		X		
RADIATION	+	o	-	u
Ionizing radiation		X		
Electromagnetic		X		
Ultraviolet		X		
Lasers		X		
ACTIVITY/SYSTEMS	+	o	-	u
Transportation/supply/demand		X		
Sanitary sewer		X		
Wastewater permitting (EPA categorical)		X		
Storm drainage (NPDES permitting)		X		
LAND USE	+	o	-	u
Flood plain/wetlands		X		
Off-Lab land use		X		
On-Lab land use		X		
Aesthetics		X		
Access to Minerals		X		
SOCIO-ECONOMICS	+	o	-	u
Population		X		

Housing supply/demand		X		
Employment		X		
Commercial activities		X		
Industrial activities		X		
Cultural patterns		X		
Potential Low Income and Minority Populations		X		
CULTURAL RESOURCES	+	o	-	u
Potential Historic Landmarks		X		
Known Historic Landmarks		X		
Potential Archeological Areas				X ²
NOISE	+	o	-	u
On-Lab levels		X		
Off-Lab levels		X		
OTHER	+	o	-	u
Historical pits and sumps		X		
Superfund wells		X		
Health & Safety				X ³
Potential wild fire hazard		X		
Cumulative Effects (impacts to approved future projects)		X		
Hazardous waste generation		X		
Impact to Superfund Program		X		

REMARKS

1. **NATURAL RESOURCES** - Threatened and endangered species

The Endangered Species Critical Habitat Identification Map was reviewed (Figure 2) and it was determined that the project activities would not be performed within critical habitat areas (Lane Mountain Milk Vetch and the Desert Tortoise) on the GDSCC Facility Mars Site. Moreover, Goldstone Road, the road used to transport equipment to and from the 70 meter antenna site, at no point crosses over critical habitat areas (Lane Mountain Milk Vetch and the Desert Tortoise). GDSCC personnel would provide on-site monitoring for the inadvertent presence and protection of the endangered species. Under the U.S. Fish and Wildlife Service Programmatic Biological Opinion (PBO) for the GDSCC the

designated Ft. Irwin authorized biologist and/or the designated GDSCC environmental monitor and/or qualified representatives under the supervision/direction of the authorized biologist or environmental monitor would oversee the proper identification and handling of endangered species at the areas where activities are being performed as a result of the project (Biologists, 1997).

2. **CULTURAL RESOURCES - Potential Archeological Areas**

Archaeological areas have been previously identified within the GDSCC Facility. Fort Irwin (U.W. Army) is the responsible agency for the maintenance/protection/reporting of archaeological areas within the GDSCC Facility. GDSCC ITT personnel would immediately contact the appropriate Fort Irwin personnel should an inadvertent discovery of a potential archaeological resource occur.

3. **OTHER - Health & Safety**

The proposed effort to conduct major antenna upgrade including the hydrostatic bearing replacement, elevation bearing replacement and cable removal and repair and assorted other smaller tasks would involve activities that are hazardous to human health. However, the contractor will prepare a site specific safety plan in coordination with the Goldstone/JPL Safety office. This safety plan would document the health and safety precautions the workers would undertake to prevent any injuries. Also, safety tailgate meetings would occur at the start of each workday. Thus, the proposed effort to conduct major antenna upgrade including the hydrostatic bearing replacement, elevation bearing replacement and cable removal and repair and assorted other smaller task would not pose a substantial risk to worker health and safety.

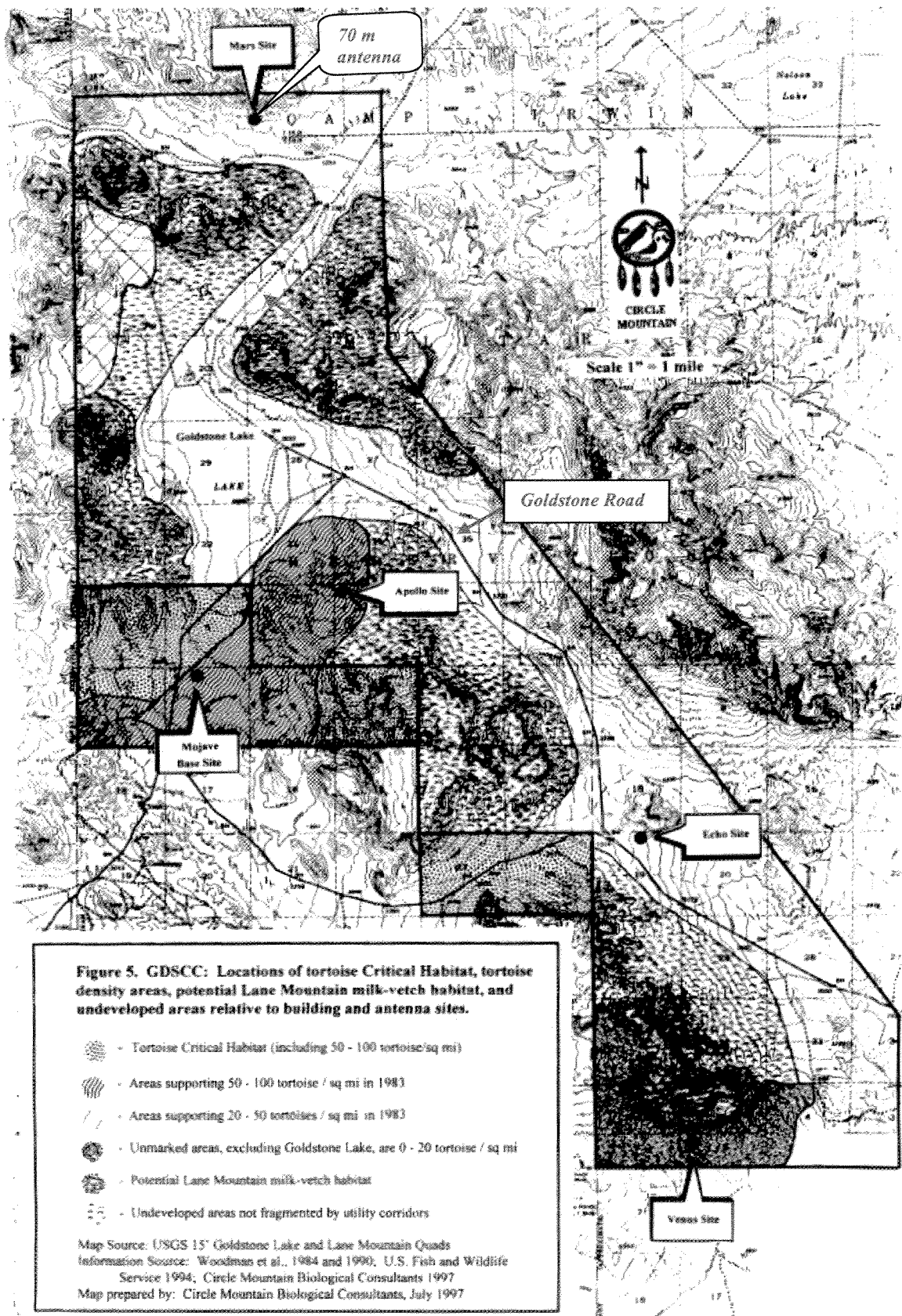


Figure 2-Location of Desert Tortoise Critical Habitat and Lane Mountain Milk-Vetch habitat



Record of Environmental Consideration

1. Description and location of proposed action: –

The proposed Depot Level Maintenance and Life Extension (DLMLE) Major Antenna Upgrade and Modification (DSS14 DLMLE) would take place at the Mars Site within NASA’s Goldstone Deep Space Communication Complex (GDSCC) in Barstow, California (Figure 1). The task would include hydrostatic bearing replacement, elevation bearing replacement and cable removal and repair. Assorted other smaller tasks (radio frequency (RF) task, facilities task, fire systems task, and heating/ventilation/air conditioning [HVAC] task) would also be performed throughout the DLMLE downtime. All the area surrounding and including the construction site is previously disturbed soil and some pavement that is regularly used for maintenance of the DSS14 antenna (see Figure 1). No new undisturbed land is to be used for the DLMLE task.

2. Project Administrator: Robert Haroldsson 3. Extension: (760) 255-8261

4. Mail Stop: Goldstone Deep Space Communication Complex (GDSCC)

5. ID Number: 10NEPA06

6. Anticipated date and duration of proposed action: February 2010 – October 2010

7. It has been determined that the above action:

a. X Qualifies for Categorical Exclusion pursuant to 14 CFR 1216.305(d) and the existing NASA Policy Requirement (NPR) which suggests no need for an Environmental Assessment (EA) or Environmental Impact Statement (EIS).

b. ___ Is exempt from NEPA requirements under the provisions of the (cite superseding law):

c. Will require the preparation of an: ___ Environmental Assessment (EA) ___ Environmental Impact Statement (EIS)

d. Has no environmental impact as indicated by the results of: ___ Environmental Evaluation Checklist ___ Environmental Analysis

Supporting documentation (Environmental Checklist or Environmental Analysis) for this assessment is provided as attachment to this letter.

8. **Comments**

All the area surrounding and including the construction site is previously disturbed soil and some pavement that is regularly used for maintenance of the DSS14 antenna (see Figure 1). No new undisturbed land would be used for the DLMLE task.

The Endangered Species Critical Habitat Identification Map (Figure 2) was reviewed and it was determined that the project activities would not be performed within critical habitat areas (Lane Mountain Milk Vetch and the Desert Tortoise) on the GDSCC Facility Mars Site. Moreover, Goldstone Road, the road used to transport equipment to and from the 70 meter antenna site, at no point crosses over critical habitat areas (Lane Mountain Milk Vetch and the Desert Tortoise). GDSCC personnel would provide on-site monitoring for the inadvertent presence and protection of the endangered species. Under the U.S. Fish and Wildlife Service Programmatic Biological Opinion (PBO) for the GDSCC the designated Ft. Irwin authorized biologist and/or the designated GDSCC environmental monitor and/or qualified representatives under the supervision/direction of the authorized biologist or environmental monitor would oversee the proper identification and handling of endangered species at the areas where activities are being performed as a result of the project (Biologists, 1997).

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Signed:



(EAPO NEPA Coordinator)

Date:

12/7/09