

# Ground-Based Electro-Optical Deep Space Surveillance (GEODSS) System

## GEODSS Modification Program

### LEGACY



**Description**  
The Ground-based Electro-Optical Deep Space Surveillance (GEODSS) system is an optical system that tracks objects in space from 3000NM to beyond geosynchronous altitudes. The GEODSS system is part of the Space Surveillance Network.

**Mission**  
GEODSS provides timely metric and space object identification (SOI) data to AFSPC in support of the space surveillance mission

**Operator**  
AFSPC, 21st Space Wing

The GEODSS modification allows the system to operate effectively in an environment of up to 12,000 deep space satellites. GMP's mission planning function allows the OC3F to schedule operation of up to twelve GEODSS sensors and is capable of scheduling 2000 plus observations per sensor site per night with a growth capability to schedule 4000 plus observations per sensor site per night.

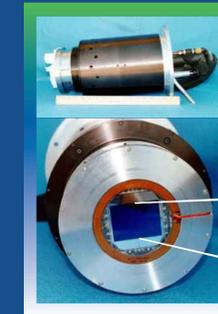
#### Key Parameters

- Upgrade Mission Critical Computer Resources
  - Replace unsupportable H/W with open systems
  - Improve system throughput performance
- Reduce O&M cost by reducing manpower via automation/remote control
  - Optical Command, Control and Communications Facility (OC3F)
- Provide growth capacity and system expandability
  - Support existing and future optical systems
  - Reduces risk to Charge-Coupled Device (CCD) technology and minimizes engineering and manufacturing development impacts to the sensor controller and data processing systems

#### System Performance

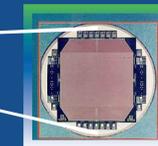
Mission Element	Legacy	GMP Anticipated
• Obs Capacity/8-Hrs	931	1440
• Search Rate (Sq dg/hr)	583	600
• Metric Accuracy (arcsec).		
slow objects	17	9
fast objects	36	32

### FUTURE



#### CCD Cameras

- GMP Sensor controller is prepared for CCD cameras
- Replacement cameras fielded in 2002



Socorro, NM

#### Schedule Non-GEODSS Optical Systems

The OC3F design allows mission planning growth to schedule ...



Diego Garcia, BIOT



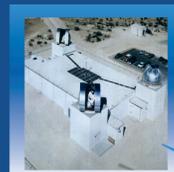
Edwards AFB, CA



GEODSS & Maui Optical, HI



Relocatable Optical Sensors



Socorro, NM



Diego Garcia, BIOT



Maui, HI



CMAS, CO



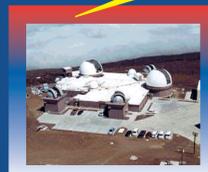
Socorro, NM



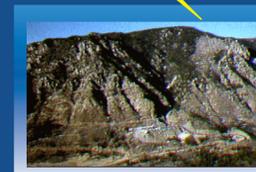
Diego Garcia, BIOT



Edwards AFB, CA



Maui, HI



CMAS, CO

#### OC3F

Optical Dynamic Scheduler optimizes sensors-object tasking to maximize throughput.

#### Sensor Site Upgrades



#### Potential Future Optical Mission

- Near Earth Objects
- Debris
- Planetary Defense

