LASER GEODYNAMIC SATELLITE (LAGEOS II)

TDS Mgr: M. Traxler
NOPE: T. Howe

Project Mgr: G. Ousley (GSFC)
MOM: C. Portelli, ASI
LV/Range: Shuttle/KSC

Launch Date: August 31, 1992
Projected SC Life/DSN Support: Many years/Launch plus 4-10 days

Project Responsibility: GSFC (Italian Cooperative - CNR)

Source: SIRD Project Documentation
Sponsor: OSO

A. MISSION DESCRIPTION

The Laser Geodynamic Satellite II (LAGEOS II) is nearly identical to the LAGEOS I satellite, which was launched by NASA in 1976. However, LAGEOS II is completely passive, and is equipped with fused silian corner reflectors for ranging with ground-based lasers. The addition of LAGEOS II will provide the GSFC laser network with significantly increased satellite tracking opportunities, because LAGEOS I is at a 110-degree inclination and LAGEOS II will be at a 52-degree inclination.

B. FLIGHT PROFILE

LAGEOS II will be launched from the Kennedy Space Center (KSC) on the Space Transportation system (STS) shuttle. The estimated orbit profile is as follows:

Shuttle: Circular orbit at 296 km.
Inclination at 28.5 degrees.

Transfer Orbit: Elliptical orbit of 300 km by 5900 km.
Inclination at 41 degrees.
(Italian Research Interim Stage (IRIS) will be ignited over Malindi or the Indian Ocean Station.)

Final Orbit: Circular orbit at 5900 km.
Inclination at 52 degrees.
(At first transfer orbit apogee, a MAGE-1 solid rocket motor will circularize the orbit and change the inclination.)

C. COVERAGE

1. Coverage Goals

The coverage will begin at release from shuttle and continue for approximately three days. The IRIS burn coverage station will provide real-time telemetry on the IRIS burn, and Goldstone, Canberra, Hawaii and Guam Station will provide real-time telemetry on the MAGE-1 burn. The DSN 26-m subnet will provide tracking data on the LAGEOS Apogee Stage for a period up to 3 days.

2. Network Support

The support provided by the DSN is indicated in the following table:

System	Goldstone	Canberra	Madrid
	12 14 15 16	42 43 45 46	61 63 66
S-band TLM	P	P	S
S-band TRK (1-way)	P	P	P

NOTE: P = Prime
S = Secondary

D. FREQUENCY ASSIGNMENTS

Frequencies are allocated as shown below:

IRIS Stage = 2227.0 MHz
MAGE-1 Stage = 2280.0 MHz
LAGEOS-2 S/C = NONE

E. SUPPORT PARAMETERS

The support parameters for the Telemetry and Tracking Systems are listed below:

		MAGE-IS Stage	IRIS Stage
(1)	Telemetry		
	Transmitter frequency	2280 MHz	2227.0 MHz
	Format	PSK/PCM/NRZ-L	PSK/PCM/NRZ-L
	Subcarrier frequency	512 kHz	1024 kHz
	Bit rate	2000 b/s	2000 b/s
	Record	Required	Required
(2)	Tracking		
	Transmitter	Beacon, S-band	N/A
	RF signal	0.3 W	5 W
(3)	Support		
	Antenna rate	Earth orbital	Earth Orbital
	Angle data	Required	Required
	Recording	Analog required	Analog Required
	DSN NAV	Required	Required

F. TRACKING SUPPORT RESPONSIBILITY

The allocation of responsibilities for tracking support is listed in the following table:

Mission Phase	Support Responsibility
STS Launch	TDRSS
Transfer and Final Burns Orbit	ESA/DSN/DOD
Final Orbit	DSN
Laser Ranging	GSFC

(This page intentionally left blank.)