ENGINEERING TEST SATELLITE VI (ETS-VI)

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Launch Date: August 1993
Projected SC Life/DSN Support: 10 years/10 days

Project Responsibility: National Space Development Agency, Japan (NASDA)

Source: SIRD June 1989
Sponsor: NASDA

A. MISSION DESCRIPTION

The Engineering Test Satellite-VI (ETS-VI) is being developed by the National Development Agency of Japan (NASDA) as the third Japanese three-axis stabilized engineering test satellite to establish the 2-ton geostationary operational satellite bus system and to demonstrate the high performance satellite communication technology for future operational satellites. The satellite is to be stationed at 154 deg east longitude. The mission life is expected to be 10 years.

B. FLIGHT PROFILE

The ETS-VI satellite will be launched from Tanegashima Space Center (TaSC) in southern Japan by a type H-II launch vehicle. The mission has been designed to follow the conventional injection sequence into synchronous orbit

via parking orbit, transfer orbit, and drift orbit. The sequence in transfer orbit requires firing the liquid Apogee Engine three times to raise the perigee of the transfer orbit to the geostationary altitude. Attitude maneuvers will be performed to orient the spacecraft to the correct attitude prior to the Apogee Engine Firing (AEF), which will occur at the 2nd, 6th, and 7th apogee. After AEF drift phase orbital and attitude maneuvers will be performed to place the spacecraft at its final geostationary position.

C. COVERAGE

The DSN will support the prelaunch compatibility test, data interface verification testing, and launch rehearsals. The DSN primary support period is from launch through the final AEF plus 1 hour. Contingency support is from final AEF plus 1 hour until launch plus 1 month.

1. Coverage Goals

The coverage will consist of all the 26-m antennas as prime and the 34-m antennas at Madrid and Canberra as backup through this support. Maximum support will consist of two 8-hour tracks per station for a 7-day period, plus the contingency support, if required.

2. Network Support

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

System	Goldstone				Canberra				Madrid			
	12	14	15	16	42	43	45	46	61	63	66	
S-band TLM				P	B			P	B			P
S-band CMD				P	B			P	B			P
S-band TRK				P	B			P	B			P

NOTE: P = Prime
B = Backup

System	Uplink (MHz)	Downlink (MHz)	Polarization
S-band TLM	N/A	2212.000	RCP
S-band CMD	2036.883	N/A	RCP
S-band TRK	2036.883	2212.000	RCP

E. SUPPORT PARAMETERS

The support parameters for the Telemetry, Command, and Support Systems are listed below:

(1) Telemetry

Data Streams	1
Format	PCM (SP-L)/PM
Subcarrier Frequency	TBS
Bit Rates	512 b/s
Coding	N/A
Record	Required

(2) Command

Format	PCM (NRZ-L)/PSK/PM
Subcarrier Waveform	Sine
Subcarrier Frequency	16 kHz
Bit Rate	1000 b/s

(3) Support

Uplink Power	1 to 10 kW
Antenna Rate	Moderate
Antenna Angle Data	Required
Antenna Autotrack	Required (26-m only)
Doppler Rates	Modest
Range Formats	Tone (Prime) (100 kHz Major Tone) DSN Standard (Backup)
Recording	
. Analog	N/A
. Digital	Required

F. TRACKING SUPPORT RESPONSIBILITY

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

Mission Phase	Support Responsibility
Launch	TaSC
Transfer/Drift Orbits	DSN
Geostationary Orbit	TACC (NASDA)
Contingency	DSN (on request)

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