SOLAR-A

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Launch Date: August 16, 1991
Projected SC Life/DSN Support: 3 years/2 years

Project Responsibility: Institute of Space and Astronautical Science (ISAS)

Source: Preliminary SIRD September 1990
Sponsor: ISAS

A. MISSION DESCRIPTION

The SOLAR-A spacecraft mission objectives are to investigate high energy phenomena of the Sun using X-ray telescopes and spectrometers during the maximum activity period of the solar cycle. Experiments are being supported by various Universities and Laboratories in Japan, England, and the United States.

B. FLIGHT PROFILE

The spacecraft will be launched from Kagoshima Space Center (KSC) in Uchinoura, Kagoshima Prefecture, Japan into a circular Earth orbit of approximately 500 km altitude and 31 deg inclination by a M3SII launch vehicle resulting in a 97-min orbit duration.

C. COVERAGE

No DSN launch vehicle support is required. The DSN will support the Mission phase only.

1. Coverage Goals

The DSN will record downlink telemetry and transmit the data in real time to ISAS. The project requirement is to support 10 contacts with the spacecraft per day during the first year of the prime mission. Support requirements will be assessed on a yearly basis after the first year. Station viewperiods will be 7 to 10 minutes.

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	P
S-band CMD			
S-band TRK			

NOTE: P = Prime

D. FREQUENCY ASSIGNMENTS

Frequencies are allocated according to the following table:

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

E. SUPPORT PARAMETERS

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

(1) Telemetry

Data Streams	1
Format	PCM(NRZ-S)BiØ/PM or PCM (NRZ-S)PSK/PM
Subcarrier Frequency	524000 Hz
Bit Rates	1024, 4096, and 32768 b/s (Real-time) 131072 coded and 262144 b/s uncoded (Playback)
Coding	Convolutional, K=7 R=1/2
Record	Required

(2) Command

Format	PCM (NRZ-L)/PSK/PM
Subcarrier Frequency	TBS
Bit Rate	4000 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	N/A
Recording	
. Analog	N/A
. Digital	Required

F. TRACKING SUPPORT RESPONSIBILITY

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

Mission Phase	Support Responsibility
Prelaunch	ISAS
Launch	ISAS
Mission	DSN, ISAS

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