PIONEER 6 THROUGH 8

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Launch Date: Dec. 16, 1965 - Aug. 17, 1966 - Dec. 13, 1967
Projected SC Life/DSN Support: 10 years/through 1993

Project Responsibility: Ames Research Center (ARC)

Source: SIRD September 1983/NSP June 1984
Sponsor: OSO

A.   MISSION DESCRIPTION

The primary objective of the Pioneer 6 through 8 missions is to collect scientific data relative to interplanetary phenomena within a range of approximately 0.8 to 1.2 astronomical units (AUs) from the sun. Phenomena of particular interest include the characteristics of electric and magnetic fields, electron density along the Earth-spacecraft path, and temporal and spatial distribution of plasma, cosmic rays, high-energy particles, and cosmic dust.

B.   FLIGHT PROFILE

Each of the Pioneer spacecraft were launched into heliocentric orbit by Delta launch vehicles. Following injection, each spacecraft was oriented with its spin axis normal to the ecliptic plane so that the solar panels would be fully illuminated and the high-gain antenna pattern would be aligned with Earth's orbit.

C.   COVERAGE

   1.   Coverage Goals

      No routine coverage is planned. Special events of scientific
interest are supported when time is available.

   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	B P	B P	B P
S-band CMD	B P	B P	B P
S-band TRK	B P	B P	B P

   NOTE: P = Prime; DSSs 12, 42, and 61 are able to provide support during
          certain orbital periods.
          B = Backup

D.   FREQUENCY ASSIGNMENTS

   Frequencies are allocated according to the table below.

System	Uplink (MHz)	Downlink (MHz)	Polarization
S-band TLM	–	2292.407407 2292.407407	Linear
S-band CMD	2110.925154/ 2110.584105	–	Linear
S-band TRK	2110.925154/ 2110.584105	2292.407407/ 2292.037037	Linear

   Note: Pioneer 6: 2292.037037 and 2110.584105, only

E.   SUPPORT PARAMETERS

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

(1)   Telemetry

Data Streams	1
Format	PCM(NRZ-L)/PSK/PM
Subcarrier Frequency	2048 Hz
Bit Rates	8, 16, 64, 256, 512 b/s
Record	Required
Coding	Convolutional, K = 25, R = 1/2

(2)   Command

Format	PCM/FSK/PM
Bit Rate	1 b/s
Subcarrier Frequency	150 and 240 Hz

(3)   Support

Uplink Power	20 kW
Antenna Rate	Sidereal
Antenna Angle Data	Not required
Antenna Auto Track	Not required
Doppler Rates	Moderate
Range Format	Not applicable
Recording	
. Analog	Not required
. Digital	Required

F.   TRACKING SUPPORT RESPONSIBILITY

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

Mission Phase	Support Responsibility
Planetary	DSN

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