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Tracking and Data System Support for the Pioneer Project

Pioneers 6-9. Extended Missions: July 1, 1971-July 1, 1972

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PREFACE

This report is one of a series documenting Tracking and Data System support of the Pioneer missions by the Jet Propulsion Laboratory. Pioneer project management, spacecraft systems development, and mission analysis and operations management are located at the Ames Research Center. This report documents a year of extended mission support of Pioneers 6, 7, 8, and 9. Previous volumes of this series covered earlier phases of the missions. Succeeding annual reports will cover the missions until there is no further return of meaningful engineering and scientific data.

ACKNOWLEDGMENT

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ABSTRACT

The Tracking and Data System supported the deep space phases of the Pioneer 6, 7, 8, and 9 missions, with two spacecraft in an inward trajectory and two spacecraft in an outward trajectory from the earth in heliocentric orbits. During the period of this report, scientific instruments aboard each of the spacecraft continued to register information relative to interplanetary particles and fields, and radio metric data generated by the network continued to improve our knowledge of the celestial mechanics of the solar system. In addition to network support activity detail, network performance and special support activities are covered.

I. PIONEER PROJECT HISTORY AND OBJECTIVES

A. First-Generation Missions

The Pioneer Project was initiated in 1958 as part of the U.S. participation in the International Geophysical Year. Approval was received on 27 March 1958, and Spacecraft 1, 2, and 3 of the first Pioneer series organization were launched that year under direction of the U.S. Army.

The Pioneer 1 spacecraft determined the extent of the Earth's radiation bands. The Pioneer 2 mission improved data on flux and energy levels of particles. The second radiation belt near Earth was discovered by the Pioneer 3 spacecraft.

During 1959, the Pioneer 4 spacecraft extended measurements to within 60,000 km of the Moon. The Pioneer 5 spacecraft obtained solar flare and wind data. In closing out the first generation of Pioneer spacecraft, Pioneer 5 remained active in space more than 3 months and was not lost to Earth contact until it was 27.5 million km from Earth: a new record. The Pioneer 4 and 5 missions were under direction of the U.S. Air Force.

B. Second-Generation Missions

Pioneer spacecraft 6 through 9 and E, approved November 9, 1962, were launched during the period 1965 through 1969. They were managed by Ames Research Center (ARC) for NASA and were supported by the Deep Space Network (DSN) All the spacecraft except E, were operable and being supported at the close of the reporting period of this document (30 June 1972). The launch vehicle failed to put the E spacecraft into planetary orbit (August 27, 1969).

The primary objective of the Pioneer 6 through 9 and E missions was to accumulate scientific data from deep space. These missions were designed to provide means to study the magnetic field, spatial plasma, cosmic rays, high-energy particles, electron density, electric fields, and cosmic dust within a region of 0.75 to 1.20 AU from the Sun.

Spacecraft	Launch date	Liftoff GMT	Heliocentric orbit
6	12/16/65	0731:20	Inward
7	8/17/66	1520:17	Outward
8	12/13/67	1408:00	Outward
9	11/8/68	0956:29	Inward

All four spacecraft were launched by thrust-augmented Delta (DSV-3E) rockets. The Pioneer 8 and 9 launch vehicles carried "piggyback" a Manned Space Flight Network (MFSN) test and training satellite, which was separated in Earth orbit and used in command simulation for Apollo station training. Pioneers 6 and 7 carried six scientific instruments each. Pioneers 8 and 9 carried seven instruments each.

1. Status of missions. At the end of the reporting period of this document, the second-generation Pioneer spacecraft were actively orbiting the Sun and continuing to return data on fields and particles of the solar wind and plasma particles originating from the Sun and the galaxy. In addition, they mapped the magnetic field of outer space.

2. Summary of accomplishments. Accomplishments of the longest-lived operational interplanetary spacecraft, Pioneer 6 through 9, were summarized at the close of this reporting period as follows:

(1) Precise determination of the characteristics of the solar atmosphere (heliosphere) was achieved.

(2) Solar cosmic ray and solar wind flow patterns and the magnetic and electric field mechanisms of the heliosphere were determined.

(3) 247 months of operational life were achieved by the spacecraft during their solar orbits. During this time, the DSN collected almost 30 billion bits of scientific and engineering data, which were processed by ARC and analyzed and reported to the scientific community by the principal scientific investigators. Nearly 26,5000 commands had been transmitted to the spacecraft.

(4) The missions used for the first time the signatures of the telecommunications link for the determination of spacecraft spin axis orientation.

(5) Pioneer spacecraft were first in gathering space weather data for operational use.

(6) Pioneer 9 was the first spacecraft that used convolutional coding in the telecommunications subsystem with a sequential decoding computer at the Deep Space Stations. This resulted in a telemetry signal-to-noise improvement of almost 4 dB.

(7) Pioneer 6 and 9 signals had occultations by the solar corona and disk, making possible the measurement of the Faraday rotation as the spacecraft's signal traversed the solar corona. In addition, the spectrum-widening effects of the S-band coherent signal were established.

(8) Pioneer 7 was the first interplanetary spacecraft to have a lunar occultation.

(9) The Pioneer 6 and 7 signals were received by the Goldstone DSCC 64-meter-diameter antenna simultaneously as the two spacecraft were flying within the beam of the single ground antenna.

(10) The Pioneer 6 and 7 missions were the first to establish the radial and spiral characteristics of the solar wind and solar cosmic rays.

(11) Pioneers 6 and 7 were the first interplanetary spacecraft to define the characteristics of the Earth's magnetic tail.

(12) Pioneers 6 and 9 were the first spacecraft to have the capability of a telecommunications range adaptive telemetry system.

Figure 1 is a brief schedule of mission events and their support.

3. Advance of space science. The assigned mission objectives and design lifetime goals were exceeded by the Pioneer 6 through 9 spacecraft as a result of judicious redundancy in the design of the spacecraft and close monitoring of the spacecraft performance by mission control. This longevity of the Pioneer 6, 7, 8, and 9 spacecraft extended the state-of-the-art for deep space mission planning, design, and operations and enabled mission planners to realistically consider such missions as Pioneer Jupiter probes, Viking orbiter/lander, Venus/Mercury probe, grand tour probes, galactic probes, and comet encounter probes. The Pioneer 6 through 9 signals were used to accomplish various specific engineering mission objectives. The effect of charged particles on the accuracy of the tracking doppler data was investigated. Help by Pioneer contributed to network corrections to doppler orbit determination data. Very accurate station location information was obtained not only for the DSN and MSFN but also for large antennas owned by other governments. These results were valuable in support of the Apollo trajectory effort.

C. Third-Generation Missions

Pioneers F and G, approved February 8, 1969, and scheduled for launch in 1972 and 1973, were managed for NASA by ARC and were supported by the DSN.

These were Jupiter flyby missions, with Pioneer F (redesignated Pioneer 10 upon flight) successfully launched March 3, 1972 (GMT).

II. TRACKING AND DATA SYSTEM

A. TDS Organization

The Tracking and Data System (TDS) provided support to the Pioneer 6, 7, 8, and 9 spacecraft for all tracking and data acquisition (TDA) activities required to meet mission objectives. (The TDA function was defined as the acquisition and transmission of information that enabled the determination of space vehicle position, velocity, direction, system, and subsystem performance and experiment measurements — all with respect to a common time base.)

The TDS actually was an operationally unified collection of TDA resources. These required resources were provided for NASA by organizations under the Department of Defense (DOD), Goddard Space Flight Center (GSFC), and the Jet Propulsion Laboratory (JPL) — referred to collectively as the TDA Support Agencies.

Major organizations which provided facilities and support for the TDS were the Air Force Eastern Test Range, the Manned Space Flight Network (MSFN), the Space Tracking and Data Acquisition Network (STADAN), the NASA Communications network (NASCOM), and the Deep Space Network (DSN). (Midway in the reporting period of this document, MSFN and STADAN became the Spaceflight Tracking and Data Network, STDN.)

This report for the period of July 1, 1971 — July 1, 1972, documents TDS activities that were carried out by the DSN. The other facilities — designed mainly as prelaunch, launch, and near-Earth facilities — were not actively involved in Pioneer 6 through 9 spacecraft support during this report period.

B. DSN Facilities

The DSN was operated by the Jet Propulsion Laboratory, a facility managed for NASA by the California Institute of Technology, Pasadena, California. The network capability of two-way communication with spacecraft began at 16,090 kilometers from Earth and extended throughout the solar system. Facilities that made up the network were the Deep Space Instrumentation Facility (DSIF) for data acquisition and transmission, the Ground Communications Facility (GCF) for data transfer, and the Space Flight Operations Center (SFOF)[1] or the JPL control center for data processing. DSN basic systems were tracking, telemetry, command, simulation, monitoring, and operations control.[2] Table 1 lists the DSN stations. Figure 2 is a diagram of the DSN and Pioneer Project systems. Figure 3 is a DSN facility-system matrix.

All the 26-meter-diameter antenna stations supported the Pioneer spacecraft in the deep space flight phase. Support also was given by the 64-meter-diameter antenna station at Goldstone (DSS 14). The DSN objectives were:

(1) Acquire spacecraft engineering and science data via telemetry.

(2) Provide for positive control of spacecraft.

(3) Provide for accurate spacecraft navigation by generating radio metric data.

(4) Provide support for a number of complex missions concurrently.

(5) Provide master data records of validated data in near-real-time.

The DSN was capable of providing 24-hour coverage for spacecraft. This requirement was important for flexibility in planning missions and providing maximum data return and also for immediate detection of spacecraft failure and initiation of recovery procedures. If mission density required two such 24-h coverage networks, then the alternate network provided coverage for a station outage. Station locations were approximately 120 deg apart in longitude and within a band of 35 deg latitude on each side of the equator. This location setup provided continuous coverage of spacecraft in the ecliptic plane in most cases.

The amount of data processing or data compression activity at tracking stations depended greatly on the bandwidth, signal-to-noise quality, and reliability of the ground interstation communications network. The characteristics of ground communications facilities dictated that data processing and compression be available at tracking stations. Ideally, to simplify the deep space station design and reduce station costs, it was desirable to transmit the baseband data directly from the receiver to a central facility where the data would be detected and/or formatted for local use. This required a reliable, continuously available, wideband (<2 mHz) duplex channel between the control center and each station. The situation required that a certain amount of data processing and compression for tracking data formatting, telemetry bit and word detection, and command formatting be used at the stations. The ground communication system could make use of a common carrier to convey this material to the stations, but it was more economical, when standard communication circuits were required for several networks, to have a centralized agency; NASCOM provided this service. Such centralized service provided high-speed data lines (2400 bits/s), voice, limited wideband lines, and teletypewriter circuits via ground or communications satellite facilities.

The control center (SFOF) provided a central processing system and areas dedicated to several spacecraft mission control operations. The control center also provided the control function for operation of the space communication stations, ground communication facilities, and the control center itself.

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[1] As of July 1, 1972, the SFOF was redesignated the Mission Control and Computing Center (MCCC), a multimission control and management element within JPL and no longer a part of the Tracking and Data System.

[2] As of July 1, 1972, the simulation system was redesignated the Test and Training System, and the Monitor and Operations Control systems were combined into one system, the Monitor and Operations Control System.

Since the DSN was called on to support other missions as well as their tests, flexibility was a necessity in support of the Pioneer Project. Thus, at times, Pioneer missions received DSN coverage when schedule restrictions made support seemingly impossible. Gross support was obtained from the MSFN by providing crystals and microwave circuits to the 26-meter-diameter antennas of the MSFN. The microwave circuits connected the MSFN station with a nearby DSN station where mission-dependent equipment and redundant station equipment could be used to transmit the Pioneer data back to mission control while the DSN was tracking another mission. Pretracking and posttracking mission station calibrations were reduced, eliminated, or shared with other projects to reduce the turnaround from one project tracking mission to another. This was done without degrading the spacecraft data.

C. Pioneer Design Concepts

The Pioneer data system was developed to provide (1) a highly efficient telemetry channel compatible with the DSN, (2) a capability for the DSN to generate two-way coherent doppler measurements while the spacecraft was tracked, and (3) an Earth-to-spacecraft command capability to control the spacecraft subsystems and science payload.

1. Spacecraft radio frequency subsystem. The radio frequency subsystem included three antennas (one high-gain and two omnidirectional), a transmitter driver, two redundant traveling-wave-tube (TWT) power amplifiers, two redundant receivers, coaxial switches, filters, and diplexers. Switch position was controlled by ground command. The beam of each of the antennas was axially symmetrical with the spacecraft spin axis, which was perpendicular to the ecliptic plane. The beamwidth of the omnidirectional, or low-gain, antenna was 110 deg, and the beamwidth of the high-gain antenna was 5 deg.

The power output of the spacecraft transmitter exciter was 44 W and could be switched by ground command to the low-gain antenna or used as a driver for the two TWT power amplifiers. Each amplifier had a power output of approximately 7.7 W and could be turned on or off or switched to either the low- or the high-gain antenna by ground command. The auxiliary oscillator was modulated by a 2048-Hz squarewave subcarrier as part of a PCM/PSK/PM telemetry system.

The spacecraft had two partially redundant (redundancy limited by the antenna configurations) phase-lock receivers. Each operated on a different frequency and was powered at all times; the desired receiver was thus selected by the frequency of the ground transmitter.

2. Spacecraft command subsystem. The command subsystem consisted of two redundant decoders and a command distribution unit (CDU). The input signal to both decoders was the demodulated signal from either of the spacecraft receivers. The desired decoder was selected by command address. The command message was a 23-bit word arranged in the following order:

5 bits, preamble
3 bits, decoder address
7 bits, command complement
7 bits, command
1 bit, post-squelch

The command and command complement were compared within the decoder on a bit-by-bit basis, and the command-execute signal from the decoder was inhibited when errors occurred. The ones and zeros within the message were represented by two audio tones. The command carrier was phase-modulated by these tones at the rate of 1 bit/s.

3. Spacecraft telemetry subsystem. The generation of timing and status signals, analog-to-digital conversion, data retrieval and processing for telemetry, and data storage on the spacecraft was accomplished by the digital telemetry unit (DTU), the signal conditioner, and the data storage unit (DSU).

The output of the DTU was a 2048-Hz squarewave which was biphase-modulated with the time-multiplexed PCM bit train using a non-return-to-zero-mark format. This squarewave phase-modulated the transmitted carrier in all modes of operation.

The DSU had a capacity of 15,232 bits. Readout from the memory unit was destructive and, once initiated, could not be temporarily interrupted by ground command without destroying the remaining data in the unit. Furthermore, the unit had to be cleared of any data stored there, either by ground command or by readout of stored data, before a new storage cycle was begun.

By ground command, one of four operating modes and one of five bit rates could be selected for operation of the DTU. The operating modes were (1) real-time, (2) telemetry store, (3) duty cycle store, and (4) memory readout. The bit rates were 512, 256, 64, 16, and 8 bits/s.

Data quality for Pioneer spacecraft was determined by the error-rate printout on the engineering data. In addition, Ames Research Center kept plots of error-rate printout values. An error-rate printout of 0.116 corresponded to one error in 1000 bits of information and was used as a criterion for good data. (If the parity error rate was not less than this value, the bit rate was dropped to the next lower value.) Primary interest was in data for the time interval beginning 3 h prior to the time of maximum spacecraft elevation and extending until 3 h after. Some passes terminated more than 3 h before the spacecraft reached maximum elevation, and parity error rates were calculated from such data as were available.

Varying amounts of data were lost or degraded in locking the receiver in a two-way mode on each pass; the amount varied because of the round-trip light time (RTLT), which increased as the spacecraft's distance from Earth increased. Spacecraft acquisition time also contributed a small portion of lost or bad (degraded) metric data. Receiver-lock was essential for good data recovery.

In the real-time mode, the information was transmitted directly in the format and bit rate selected. In the telemetry-store mode, data

were stored and transmitted simultaneously in the selected format and bit rate. In the duty-cycle-store mode, data were stored intermittently in groups of 224 bits each at a rate of 512 bits/s. The period between groups stored could be selected by ground command to provide partial data coverage for periods up to 19 h. The memory-readout mode provided the capability for retrieving the data stored. When readout was complete, the DTU reverted automatically to the real-time mode in the format and at the bit rate in use prior to the readout.

The spacecraft data word was composed of 7 bits. The first 6 bits transmitted were generally information and the seventh indicated parity. Odd parity was employed by sampling the first, third, and fifth bits.

4. Mission-dependent ground equipment. This equipment consisted of a demodulator/synchronizer, a command encoder, and a computer buffer. A DSN computer was used at the station to:

(1) Provide selected telemetry data for teletype transmission to the SFOF.

(2) Monitor the engineering data for out-of-limit occurrences.

(3) Provide computer typewriter printout of selected data.

(4) Display selected spacecraft parameters as required.

(5) Transmit command messages on instructions from the SFOF.

(6) Check command messages for validity before transmission.

(7) Verify that commands were being transmitted correctly.

(8) Maintain a command accountability list.

The complete data stream was recorded on magnetic tape for subsequent data processing and analysis.

D. Extended Flight Phase Support Requirements

The major elements of the DSN, configured to support the Pioneer missions, were (1) the DSIF, (2) the SFOF, and (3) the Ground Communications Facility (GCF).

1. Deep Space Instrumentation Facility. The DSIF is comprised of the Deep Space Stations. The function of these stations was to obtain angular position, doppler, and telemetry data from the Pioneer spacecraft during postinjection phases of the missions. Data obtained by the Deep Space Stations were to be transmitted to the SFOF in real-time via teletype circuits. In addition, the same data were to be recorded on magnetic tape at each deep space station and dispatched to JPL by air service.

2. Space Flight Operations Facility. The SFOF is a flexible facility in which areas and hardware can be set up and restructured as required to meet the needs of various projects.

3. Ground Communications Facility. The GCF is the means by which the deep space stations communicate with the SFOF. The GCF provides interfacility as well as on-site communications and an overall operational communications complex for flight project support. Communications responsibilities for the Pioneer Project included controlling, operating, and maintaining all circuits, switching, and terminal equipment committed to Pioneer. Goddard Space Flight Center was responsible for technical control of all NASCOM circuits used by the DSN. (Technical control included maintenance of the communication network.) In fulfillment of the responsibility for technical control, GSFC informed JPL of the availability and condition of alternate circuits during periods of use. GSFC did not perform the actual switching without prior approval of JPL, which had responsibility for mission control of the NASCOM circuits used by the DSN. Mission control, by contrast, meant the determination of what traffic would flow, when and to what points traffic would flow, and on what circuits the flow would occur.

E. Advanced Antenna System Facility Description

When the 64-m-diameter advanced antenna system (AAS) was added at Goldstone, California, as DSS 14 (Fig. 4), the DSN range was increased two and a half times. Under limited communications conditions, this system reached to the edge of the solar system. The improved capability provided six and a half times more transmitting power and receiving sensitivity for the DSN than was available with 26-meter-diameter antennas. The 64-m-diameter antenna originally had a gain of approximately 60 dB in transmitting and 62 dB in receiving. The 26-m-diameter antennas had a gain of 51 dB transmitting and 53 dB receiving. The beamwidth was 0.1 deg at DSS 14 and 0.35 deg for 26-m-diameter antennas. (During the period covered by this report, construction continued on new 64-m-diameter antenna stations, DSS 43 in Australia and DSS 63 in Spain.)

The added capability permitted either extension of communication distances in space or acquisition of more data from spacecraft at shorter ranges. Because DSS 14 located more of the complex equipment on the ground, less complex and more reliable communication equipment could be carried by spacecraft. The 64-m antenna, a parabolic reflector with an azimuth-elevation mount, had a specified lifetime of 10 years and an expected lifetime of 20 to 50 years. It was capable of operation 24 h/day, 365 days/year.

The operating and signal-processing techniques used for the 64-m antenna were basically the same as those used for the 26-m antennas. The huge reflector was tuned to collect spacecraft signals coming from such distances that their energy was measured in billionths of a billionth of a watt. These signals were amplified and fed into receivers and the data forwarded to the control center in Pasadena.

The 64-m antenna operated in either of two pointing modes, depending on the nature of the mission being covered. It was pointed so as to track the spacecraft signal automatically, as did the 26-m antennas, or the pointing information

was sent to the 64-m antenna master equatorial reference system, which then designated the path for the antenna.

Like other DSN antennas operated at frequencies of 2100 mHz transmitting and 2300 mHz receiving, the DSS 14 antenna incorporated a Cassegrain cone feed, mounted at the center of the reflector. (During March 1968 an ultracone was installed. This improved the downlink signal strength by some 5 dBm for one-way tracking.) The Cassegrain design was similar to that of an optical telescope. Signals reflected from the main dish hit a subreflector mounted on a truss-type support extending outward from the center of the dish. The subreflector focused the signal into the feed horn in the Cassegrain cone, where it was amplified by a maser.

The maser was capable of accomplishing maximum amplification of the signal while, at the same time, generating a minimum of background noise. Because heat was a major source of noise, the maser was immersed in liquid helium to maintain its temperature at 4.2 K. The spacecraft signal was usually maser-amplified on the order of 40,000 times before it was fed into the receiver, where it was further amplified.

The receiver used four separate channels: two reference (or sum) channels for doppler information, spacecraft telemetry, and TV signals, and two channels carrying angle-tracking data for automatic antenna pointing. The data from all four channels, depending on the information they conveyed, was transmitted to the control center.

Dimensions and weights of the 64-m antenna are given in Table 2. A profile of the antenna is presented in Fig. 5.

F. Antenna Improvements

Two important antenna modifications were made at the Goldstone deep space complex during 1970. A multiple feed cone structure (Cassegrain system) was installed on the 64-m-diameter antenna at DSS 14, and an R&D S-band polarized ultracone (SPU) was installed on the 26-m-diameter antenna at DSS 12. The DSS 12 installation was necessary to continue support of the distant Pioneer 6, 7, and 9 spacecraft during the five weeks required to make the tricone installation at DSS 14. The DSS 12 modification proved so successful in extending the 26-m-diameter antenna capabilities that it has been continued in service.

Another innovation that improved support resulted from a convolutional coding and sequential decoding (CCSD) experiment. This also extended the capabilities of the 26-m-diameter antennas. These improvements are discussed in Appendix A.

A. Special Coverage

Special coverage was given Pioneer 6 through 9 spacecraft during occultations and syzygys; there were analyses of solar events and also investigations of magnetosheath and bow shock. During a solar event of high scientific value, continuous tracking coverage for 30 to 50 h following the event was required for Pioneer spacecraft. Depending upon the location and characteristics of a specific event, coverage was shared by the Pioneers as determined by the Pioneer Project at the time of the event. For magnetosheath and bow shock, on-board plasma and magnetometer instruments needed to be operating and the resultant scientific data received by launch plus 3 to 3-1/2 h or 8 to 10 Earth radii altitude.

The seven scientific instruments that make up the scientific payload for Pioneer spacecraft are as follows: two cosmic ray detectors, two plasma detectors, one magnetometer, and one radio propagation instrument; one additional experiment (celestial mechanics) requires no special instruments aboard the spacecraft. The payload accounts for approximately 25% of the total Pioneer spacecraft weight. The power consumption for the instruments (with one plasma detector operating in its low-power mode) is 9 W. This level doubles when the plasma detector operates in the high-power mode, bringing the overall power consumption of the instruments to 35% of the total spacecraft requirement.

The instruments covered approximately 0.18 m^2 of the spacecraft platform. Approximately 72% of the telemetry data was allocated directly to the scientific instruments when telemetering in the scientific data mode. This mode was used throughout the missions except for rare occasions. Approximately 33% of the command capability was allocated directly to the scientific instruments for controlling the operating conditions.

Power to the scientific instruments was supplied directly from the spacecraft primary bus. Each instrument, therefore, had its own converter. Power to all instruments was turned off by a single ground command. Each instrument could be turned on individually by ground command.

B. Experiments

The experiments, managers, and principal investigators are listed in Table 3.

1. Celestial mechanics investigation (JPL). The three primary objectives of the Pioneer celestial mechanics experiment (PCME) were:

(1) Obtain primary determinations of the masses of the Earth and Moon and the astronomical unit.

(2) Use the tracking data from the whole series of Pioneer probes in a program designed to improve the ephemeris of the Earth.

(3) Investigate the possibility of a test of general relativistic mechanics with the Pioneer orbits.

The experiment made use of the on-board receiver and transmitter equipment in conjunction with DSS equipment to obtain two-way doppler measurements. Pioneer data were appropriate for this experiment because of the absence of midcourse orbit corrections and near-planetary encounters. In addition, solar-radiation pressure effects were slight for the Pioneer configuration.

2. Cosmic ray telescope (University of Chicago). This instrument measured the intensity and energy spectra of protons and alpha particles, electron energy over a limited range, and particle anisotropy. It had three solid-state lithium-drift detectors, a plastic scintillator cylinder designed to exclude particles not confined to the telescope angle of 60 deg, a photomultiplier tube, and associated electronics. Proton and alpha particle energy spectra measurement was divided into these four energy windows: (1) 0.6-13 MeV per nucleon; (2) 13-70 MeV per nucleon; (3) 70-190 MeV per nucleon; and (4) greater than 190 MeV per nucleon. Detection of electron energy spectra was limited to the energy windows of 0.16-1 and 1-20 MeV per nucleon.

3. Cosmic ray anisotropy detector (Southwest Center for Advanced Studies). The anisotropy of low-energy primary and solar cosmic radiation and its variation with energy, time, and nuclear species were measured. The instrument comprised a scintillator crystal, an anticoincidence scintillator, two photomultiplier tubes, and associated electronics. The acceptance cone for the detector was 107 deg. Energy window discrimination was achieved by means of a four-channel, on-board, pulse-height analyzer.

4. Plasma cup detector (Massachusetts Institute of Technology). A detector that used a Faraday cup with an energy-determining grid, a split collector, and associated electronics made up this instrument. The viewing angle was ±20 deg in the plane perpendicular to the spacecraft spin axis and ±60 deg in the plane parallel to the spin axis. Measured were the energy spectrum, flux, and angular distribution of both positive ions and electrons of the interplanetary plasma.

The energy per unit charge of the positive ions was determined in 14 intervals extending from 0.1 to 9.5 kV; the energy of the electrons in four energy bands extending from 0.1 to 1.6 keV, and the flux sensitivity range from 2×10^5 to 2×10^9 particles per cm^2/s.

5. Quadrispherical plasma analyses (Ames Research Center). This instrument, like the plasma cup detector, measured the energy spectrum, flux, and angular distribution of both positive ions and electrons of the interplanetary plasma. The instantaneous viewing angle was approximately 15 deg in the plane perpendicular to the spacecraft spin axis or equatorial plane and ±80 deg in the plane parallel to the spin axis. The latter was divided into eight channels symmetrical

about the equatorial plane and with widths, starting at the equatorial plane, of 15, 15, 20, and 30 deg.

The energy per unit charge of the positive ions was determined in 16 logarithmically spaced bands extending from 0.2 to 10 kV; the energy of the electrons in 8 logarithmically spaced bands extending from 0.002 to 0.5 kV; and the flux sensitivity from 10^5 to 10^9 particles per cm^2/s.

Besides a quadrispherical electrostatic analyzer, 8 separate and contiguous current collectors provided 8 sectors and associated electronics. The current or flux measurement was expressed as a 7-bit word and, together with other information identifying energy levels, positive or negative particles, collector, and equatorial interval, was stored in a core memory. The instrument recorded data concurrently with telemetering data.

6. Magnetometer (Goddard Space Flight Center). The magnetometer, with a range of ±64γ, sequentially measured the magnitude of the three orthogonal components of the interplanetary magnetic field. Capable of four different data recording sequences, the instrument had a single flux gate sensor and associated electronics. A mechanical flip mechanism, which rotated the sensor through 180 deg, permitted detection and elimination of permanent magnetization of the core. The flip mechanism contained 22 small squibs grouped in pairs for redundancy. Each pair of squibs was activated by ground command. (For this experiment, Pioneer 9 used a triaxial fluxgate magnetometer.)

7. Radio propagation (Stanford University). This experiment involved the transmission of two modulated coherent carriers of approximately 49.8 and 423.3 MHz from the ground and the reception of these signals by receivers aboard the spacecraft. The receivers were designed to measure the relative phase of the modulation envelopes of the two carrier frequencies which, since the higher frequency was relatively unaffected by the presence of ionization, provided a value for the integrated electron density. In addition, the rate of change of phase of one carrier with respect to the other was measured, thus accurately determining the time variation of the integrated electron density. Signal strength was also measured.

Instrumentation comprised two ground-based transmitters operating into a 45.72-m (150-ft) parabolic antenna located on the Stanford University campus, a dual-channel, phase-locked-loop receiver aboard the spacecraft, the spacecraft telemetry, and the DSN. All elements of the system operated simultaneously to provide closed loop operation. (Additional scientific experiment information is provided in Appendix B.)

8. Specific objectives. Pioneer spacecraft also had as specific objectives:

(1) Magnetosheath and bow shock definition. To perform this investigation, the Pioneer spacecraft plasma and magnetometer on-board instruments had to be operating and the resultant scientific data received by launch plus 3 to 3.5 h (or 8 to 10 Earth radii altitude). Pioneer spacecraft performed analysis of the magnetosheath of the Earth through December 15, 1967.

(2) Geomagnetospheric tail analysis. To perform this investigation, the Pioneer flight missions required 24-h continuous tracking coverage from syzygy -5 days to syzygy +15 days. Pioneer spacecraft successfully completed this investigation on February 2, 1968.

(3) Solar event analysis. During a solar event of high scientific value (i.e., solar flare, Class III or above), continuous tracking coverage for 30 to 50 h following the event was required for Pioneer spacecraft. Dependent upon the location and characteristics of a specific event, coverage was shared by the Pioneers as determined by the Pioneer Project at the time of the event.

IV. PIONEER 6-9 SUPPORT ACTIVITY: JULY 1, 1971 — JULY 1, 1972

A. General

1. Support particulars. Tracking and data acquisition support of Pioneer 6-9 missions by the DSN during the period July 1, 1971 — July 1, 1972, was on a time-available basis. This restriction was necessitated by heavy demands on the network by Pioneer 10 and Mariner 9, and, to a lesser extent, support of Apollos 15 and 16. As a result, only the Pioneer 6 spacecraft was given tracking time every month of the year of this report (fiscal year 1972). Figure 6 presents the DSN plan of support for all space missions during the period of this report; Fig. 7 is an overall forecast of future TDA support of planetary and interplanetary missions and their support relationship. The forecast was made at the close of this report.

With spacecraft locations varying constantly within a 0.7 to 1.2 AU circular band of the ecliptic plane, the network continued to collect billions of telemetry data bits containing information of fields and particles through the spacecraft instruments. This information further defined the solar environment. Engineering measurements also were made on board the spacecraft. These telemetry data were used to assure that spacecraft equipment operated in compliance with specifications. More than 1000 commands transmitted by the flight operations team controlled the four spacecraft in near-optimum configuration.

2. Tracking activity and telecommunications. Daily tracking activities kept network personnel at an efficient level. Trends toward equipment malfunction were noted and analyzed as required by personnel. Operational plans for correction were developed and executed in a timely manner.

Total tracking time for 348 tracks of Pioneer 6-9 spacecraft was 2532 h. Some 2700 station hours and 32,000 manhours were expended in support activities. Table 4 presents a breakdown of the DSN support by mission. The systematic tracking made possible in-depth evaluation of the spacecraft-DSN telecommunications link. With the spacecraft operating on telemetry bit rates between 8 and 512 bits/s, most of the data received was nearly error-free as the data streams exhibited a bit error rate of no more than 1 error in 1000 bits. Range of the telecommunication links varied between 0.1 and 1.8 AU. Figures 8-11 present information on support passes provided over a period pertinent to this report. A calendar of passes is presented in Appendix C.

3. Tracking priorities. Because full tracking requirements could not be fulfilled for the time allocated Pioneer 6-9, the Project Office in July 1971 established priorities for the time available. Emphasis was requested on daily and short coverage as compared to long and periodic coverage. Daily coverage of at least three hours in length was desired to permit adequate analysis of the solar environment's synoptic (weather-related) characteristics. Priorities set by Project were graded in order as follows:

(1) Pioneer 6 synoptic data.

(2) Pioneer 9 synoptic data.

(3) Pioneer 6/8/9 data in support of Pioneer 10.

(4) Pioneer 7 solar occultation data.

(5) Pioneer 6/9 radial/spiral data.

(6) Pioneer 8 synoptic data.

(7) Pioneer 8/9 radial/spiral data.

(8) Pioneer 7 synoptic data.

4. Engineering tracks. Engineering tracks were initiated for use during inadequate allocation of tracking time. These tracks, which were approximately 30 min in length, assessed the spacecraft health from the engineering data. The tracks were downlink-only operations. Along with a posttrack report no-data package, only the real-time data were required.

5. Non-GOE program. Testing was successfully completed early in July 1971 on a multiple-mission telemetry/multiple-mission command (MMT/MMC) program at DSS 62. The station used Pioneer 6 spacecraft in testing the noncoded program. Offline checkout of the program had started at Goldstone during June.

With the completion of the testing, command capability existed at those deep space stations not equipped with GOE, and two-way capability became available at all the DSN tracking stations. Because of the analog-digital interface, the Pioneer GOE remained the prime preference for telemetry data.

At the end of this reporting period, the DSN was still using the Pioneer GOE at DSS 12 and 14 at Goldstone and DSS 51 at Johannesburg. This equipment was used to demodulate Pioneer telemetry and general commands. Since DSN policy was to not use mission-peculiar equipment, plans were under way to implement compatible software for Pioneer 6-9 for the DSN Telemetry and Command Processing Systems and the SFOF. A configuration similar to that used for Pioneer 10 was sought.

B. Special Event Support

Special events supported during the report period included a solar occultation and radial and spiral alignments. Pioneer 7 began entering into solar occultation in August and exiting in November. During September, Pioneer 7 passes were used to collect polarization data, and the solar occultation entrance was tracked for Faraday rotation data. Because of the solar corona effect that caused high-level solar noise, no usable spacecraft telemetry data were obtained during late October and November. When solar noise would not allow telemetry data lockup, DSS 14 changed configuration to antenna and receiver only along with some R&D equipment. However, attempts to overcome the problem were unsuccessful before Mariner 9 encounter configuration control had to be established in November.

Pioneer 6 was in inferior conjunction during August. In May 1972 a radial alignment

experiment by Pioneer 8 and 9 was completed. The same two spacecraft were then tracked in a spiral alignment experiment over a three-day period during June. Support coverage was provided by DSS 12, which was equipped with the S-band multiple-feed cone (see Appendix A) and GOE. The radial and spiral experiments are illustrated in Figs. 12 and 13. Past experiments and tests are described and illustrated in Appendix B.

C. Pioneer 6 Support

1. Spacecraft position. The Pioneer 6 spacecraft was more than 46 million kilometers from the Earth and 121 million kilometers from the Sun when the report period began July 1, 1971. At the close of the report period, June 30, 1972, the spacecraft was 136 million kilometers from the Earth and more than 129 million kilometers from the Sun. The spacecraft velocity was nearly 10 km/s in relation to Earth orbit at the beginning of the period. At the close of the period, the spacecraft velocity in relation to Earth orbit was more than 24 km/s.

2. Spacecraft status. Status of the Pioneer 6 spacecraft was summed up as follows:

a. Communications. A Receiver 2 (Channel 7) malfunction prevented nominal use of Channel 7 uplink or two-way link. The high-gain antenna/Receiver 2 characteristics had degraded to a level below the low-gain antenna/Receiver 1 performance.

b. Power. The solar array had degraded because of solar particle damage. This was not considered a problem because of orbital characteristics. The battery had been turned off as planned.

c. Orientation. The Type I (A and C) and Type II (B and D) sensors had undergone ultraviolet degradation to the point that they were considered unusable. A gas leak following launch had completely exhausted the gas supply.

3. DSN support and performance. Totals of 2099.5 station hours and 9309 manhours were expended in support of the Pioneer 6 spacecraft during the report period (Pass 2024 through Pass 2389). This was a drop of support time from the previous report period when more than 4200 station hours and 34,000 manhours were expended. The 64-m-diameter antenna station (DSS 14) gave support only during July and August 1971, a total of 12 station hours. There was support of an inferior conjunction during August, and, during February 1972, DSS 61 provided special coverage of Pioneer 6 in order to retrieve telemetry data needed for comparison with Pioneer F (10) experiments. Additional telemetry data are included in Table 5. A chronological list of Pioneer 6 passes is provided in Appendix D.

Station and manhours expended by each station in support of Pioneer 6 from July 1, 1971 to June 30, 1972 were:

DSS	Total passes supported	Station hours	Man-hours
11	16	108	673
12	2	5.5	41
14	7	12	165
41	16	150	1082
42	3	38	343
51	78	903	9693
61	36	322.5	1853
62	57	568.5	4459
Totals	215	3107.5	19,309

4. Engineering operations.

a. Tracking. The Pioneer 6 spacecraft was tracked for a total of 1794 hours and 21 minutes during the report year. The previous year the spacecraft had been tracked a total of 3121 hours and 10 minutes. Tracking information, along with some telemetry and command information, is summarized by month in Table 5.

b. Telemetry. Residual data plots of signal-to-noise ratios (SNR) and downlink (DL) signal levels for the Pioneer 6 spacecraft for the report period are shown in Figs. 14-33. These residual data plots cover the period from July 1, 1971 to June 30, 1972, month by month except for July, August, and September 1971, which period is covered by one plot.

D. Pioneer 7 Support

1. Spacecraft position. The Pioneer 7 spacecraft was more than 318 million km from Earth and more than 168 million km from the Sun when the report period began, July 1, 1971. At the close of the report period, June 30, 1972, the spacecraft was more than 314 million km from the Earth and more than 166 million km from the Sun. The spacecraft velocity in relation to Earth orbit continued at more than 56 km/s during the period.

2. Spacecraft status. The status of the Pioneer 7 spacecraft near the close of the reporting period was summed up as follows:

a. Communications. TWT 1 developed anomalous characteristics shortly after launch, and TWT 2 was selected for normal operation. Coherent operation at 16 bits/s on the 64-m-diameter antenna was standard as the spacecraft was beyond the capability of the 26-m antenna network. Decoder SN 004 address 4 indicated anomalous characteristics when it failed to accept several ground commands. Periodic checkout of the decoder address had not indicated a return of command capability. Consequently, address 3 was used for commanding.

b. Power. The solar array had degraded because of solar particle damage. The MIT plasma instrument power levels had been restricted throughout aphelion passage to reduce demand on the power subsystems. The return to MIT high-power mode on May 7, 1969 after exit of the aphelion period gave indications that the solar array would no longer support this high-power mode at any time. The battery had been turned off as planned.

c. Orientation. Type I (A and C) and Type II (B and D) sensors had undergone

ultraviolet degradation to the point that they were considered nonusable. The N_2 bottle pressure had dropped to 40 psi. The ultraviolet degradation had also raised the illumination triggering threshold of the Sun pulse reference sensor E. No Sun pulse had appeared since it ceased to operate early in 1969.

d. Science. The Earth-spacecraft distance was beyond the range of the radio propagation ground antenna. The on-board instrument had been turned off. As a result of the Sun pulse reference, the on-board science payload was affected as follows:

GSFC magnetometer	No data retrieval; Sun pulse was used to trigger data read and shift to spacecraft
SCAS cosmic ray	Only slightly affected
University of Chicago cosmic ray	Satisfactory; no anisotropy measurements.
MIT plasma	Approximately 20% reduction
ARC plasma	Approximately 20% reduction

With changes to computer reduction programs, the percent of data retrieval had been increased. The limitation of low-power mode had limited the MIT plasma instrument to measurement of solar wind velocities to 700 km/s and below.

3. DSN support and performance. DSS 14 continued to give sole support for the Pioneer 7 spacecraft; this ceased during November 1971 because of requirements by other phases of the Pioneer Project and other projects. Total tracking time was 102 h 22 min, with 19 passes supported: 108.5 station hours and 1517 manhours. For the previous reporting period the station had expended 442 station hours and 5212 manhours in support of the spacecraft.

Because of entrance into a major conjunction as this report period began, Pioneer 6 was in a marginal tracking condition. Requirements of DSS 14 for Mariner 1971 left little time for the Pioneer 6 solar occultation (October) experimentation. Faraday rotation data were sought during September, but the solar corona effect allowed no usable spacecraft telemetry data during the last six tracks in September. Also, passes covered in September yielded no polarization data. The TCP did not lock up, and the receivers were in lock approximately 60% of the time because of the Earth-Sun-spacecraft look angles.

Table 6 and the Pioneer 7 pass chronology in Appendix D contain additional support information. Figure 34 gives residual data plots of SNR and downlink signal levels.

E. Pioneer 8 Support

1. Spacecraft position. The Pioneer 8 spacecraft was more than 181 million km from Earth and more than 160 million km from the Sun when the report period began, July 1, 1971. At the close of the report period, June 30, 1972, the spacecraft was more than 221 million km from the Earth and more than 158 million km from the Sun. The spacecraft velocity in relation to Earth orbit was more than 34 km/s at the beginning of the report period. At the close of the period, the spacecraft velocity in relation to Earth orbit was more than 42 km/s.

2. Spacecraft status. The status of the Pioneer 8 spacecraft near the close of the reporting period was summed up as follows:

a. Communications. Operation was satisfactory at 8 bits/s on the 26-m antenna network with errors not greater than 10^{-2} and at 64 bits/s on the 64-m antenna.

b. Power. The battery had been turned off as planned.

c. Orientation. The Type I (A and C) and Type II (B and D) sensors had undergone ultraviolet degradation to the point that they were considered nonusable. N_2 bottle pressure had remained at 2040 psi.

d. Science. All instruments were operating nominally.

3. DSN support and performance. The Pioneer 8 spacecraft was not supported by the DSN stations from November 1971 until May 1972 because of other commitments. All support given during the period of this document was by DSS 14, the 64-m station, with the exception of one pass during June 1972 by DSS 12 (a Pioneer 8-9 spiral alignment experiment). In all, 179 station hours and 2130 manhours were expended by DSS 14. DSS 12 expended 1.5 station hours and 7.5 manhours in its one track of the spacecraft. Overall, 155 h 32 min were spent in 34 tracks. During the previous report period, more than 4800 station hours and more than 40,000 manhours were expended by the DSN in support of Pioneer 8.

Tracking, telemetry, and command information is presented in Table 7. More complete information is given in the Pioneer 8 pass chronology in Appendix D. Residual data plots of SNR ratios and downlink signal levels for Pioneer 8 spacecraft are shown in Figs. 35-38. These residual data plots cover the period from July 1, 1971 to June 30, 1972, month by month except for July, August, and September 1971, which period is covered by one plot.

F. Pioneer 9 Support

1. Spacecraft position. The Pioneer 9 spacecraft was more than 282 million km from Earth and 134 million km from the Sun when the report period began, July 1, 1971. At the close of the report period, June 30, 1972, the spacecraft was 153 million km from Earth and more than 113 million km from the Sun. The spacecraft velocity in relation to Earth orbit was more than 58 km/s at the beginning of the period. At the close of the period, the spacecraft velocity in relation to Earth orbit was more than 36 km/s.

2. Spacecraft status. The status of the Pioneer 9 spacecraft near the close of the reporting period was summed up as follows:

a. Communications. The Decoder 2 address 2 indicated anomalous characteristics when it failed to accept several ground commands. Occasional use indicated that the decoder remained erratic, and it was not used for normal operations. Operation was satisfactory at 16 bits/s coded on the 64-m antenna.

b. Power. The battery had been turned off as planned. When the spacecraft reached third perihelion, the bus voltage dropped to the lower limits of the expected value. However, it remained within limits and did not require any changes of normal operation. The undervoltage protection was left off to avoid the possibility of inadvertent turnoff of the spacecraft because of low voltage of the third perihelion.

Fifty-four Pioneer 9 passes were supported (315 station hours and 3715 manhours) by two stations of the DSN during the report period of this document. DSS 12 supported 23 passes, expending 165.5 station hours and 1525.5 manhours. DSS 14 supported 31 passes, expending 149.5 station hours and 2189.5 manhours. Tracking time totalled 300 hours. During the previous annual report period, the DSN expended 2047.5 station hours and 23,882.5 manhours in support of Pioneer 9 spacecraft.

Residual data plots of SNR and downlink signal levels for the Pioneer 9 spacecraft are shown in Figs. 39-43. These residual data plots cover the period from July 1, 1971 to June 30, 1972, month by month except for July, August, and September 1971, which period is covered by one plot. Tracking, telemetry, and command information is presented in Table 8. More complete information is available from the Pioneer 9 pass chronology in Appendix D.

Table 1. DSN station designations and locations

Location	Station ID number	Geodetic latitude	Geodetic longitude	Height above mean sea level, m	Geocentric latitude	Geocentric longitude	Geocentric radius, km
Goldstone, Calif. (Pioneer)	11	35.38950N	243.15175E	1037.5	35.20805N	243.15080E	6372.0341
Goldstone, Calif. (Echo)	12	35.29986N	243.19539E	989.5	35.11861N	243.19445E	6372.0176
Goldstone, Calif. (Venus)	13	35.24772N	243.20599E	1213.5	35.06662N	243.20507E	6372.2599
Goldstone, Calif. (Mars)	14	35.42528N	243.12222E	1160	35.24376N	243.12127E	6372.1341
Woomera, Australia	41	31.38314S	136.88614E	144.8	31.21236S	136.88614E	6372.5317
Weemala,* Australia	42	35.40111S	148.98027E	654	35.21962S	148.98027E	6371.6686
Johannesburg, South Africa	51	25.88921S	27.68570E	1398.1	25.73876S	27.68558E	6375.5415
Madrid, Spain, (Robledo)	61	40.429 N	355.751 E	800	40.238 N	355.751 E	6370.0868
Cerebros, Spain	62	–	–	–	–	–	–
Cape Kennedy, Florida	71	28.48713N	279.42315E	4.0	28.32648N	279.42315E	6373.2913
Ascension** Island	72	7.95474S	345.67242E	526.7	7.89991S	345.67362E	6378.2386

* Formerly listed as Canberra or Tidbinbilla
**No longer operated by DSN

Table 2. Goldstone 64-m-diameter antenna dimensions and weights

Antenna dimensions	
Diameter, m	64
Focal length, m	27.109
Focal length/diameter ratio	0.4235
Surface area, m^2	3483
Depth of paraboloid, m	9.45
Pedestal wall thickness, m	1.1
Outside diameter of pedestal, m	25.3
Overall height of instrument tower,[a] m	42.4
Total concrete, m^3	1912
[a]Height of concrete section, 20.8m, including 10.1m below grade.	
Antenna weights, kg	
Overall	7.26×10^6
On elevation bearings	1.14×10^4
On azimuth bearings (including bearings)	2.27×10^6
On soil	7.26×10^6
Total rotating	2.27×10^6
Total tipping	1.135×10^6
Component	
Hyperboloid	1.9×10^3
Feed cone and equipment	28.1×10^3
Quadripod	17.7×10^3
Primary reflector surface	26.3×10^3
Reflector assembly (including reflector, wheels, and elevation counterweight)	1.1×10^6
Alidade and buildings	0.99×10^6
Azimuth bearings	1.8×10^5
Pedestal and foundation	4.54×10^6
Instrument tower (including wind shield)	
Steel	43.6×10^3
Concrete	0.52×10^6

Table 3. Pioneer scientific experiments

	Experiments	Principal Investigator	Pioneer 6	7	8	9
1.	Magnetometer, triaxial	Dr. C. P. Sonett, ARC				X
2.	Magnetometer, single axis	Dr. N. F. Ness, GSFC	X	X	X	
3.	Solar Plasma Detector	Dr. J. H. Wolfe, ARC	X	X	X	X
4.	Solar Plasma Detector	Dr. H. S. Bridge, MIT Dr. A. J. Lazarus, MIT	X	X		
5.	Cosmic Ray Anisotropy Detector	Dr. K. G. McCracken, SCAS	X	X	X	X
6.	Cosmic Ray Gradient Detector	Dr. W. R. Webber, U. of Minn.			X	X
7.	Cosmic Ray Detector	Dr. J. A. Simpson, U. of Chicago	X	X		
8.	Radio Propagation	Dr. V. R. Eshleman, Stanford U.	X	X	X	X
9.	Cosmic Dust Detector	O. Berg, GSFC			X	X
10.	Electric Field Detector	Dr. F. L. Scarf, TRW			X	X
11.	Celestial Mechanics Investigation	Dr. J. D. Anderson, JPL	X	X	X	X

Table 4. DSN support of Pioneer missions, July 1, 1971-July 1, 1972

Spacecraft	Number of Tracks	Tracking Time (Hrs:mins)	Station Hours	Manhours	Number of Commands
6	239	1794:21	2,107.5	19,309	700
7	19	102:22	108.5	1,517	16
8	34	155:39	179	2,139.5	48
9	57	300:01	315	3,715	291
Totals	349	2352:23	2,710.0	36,665.5	1,055

Table 5. Pioneer 6 flight support summary

Month	Supporting Stations	No. of Tracks	Tracking Time (hr:min)	Telemetry Bit Rate (bps)	Average Downlink (dbm)	Commands Transmitted
July	51, 62 / 14	15 / 6	133:30 / 18:14	16, 64	-153.9 / -146.6	42
August	51, 62 / 14	17 / 1	144:54 / 2:31	16, 64	-153.6 / -141.8	56
September	51, 62	15	130:46	64	-154.6	55
October	51, 62	10	81:53	16, 64	-155.2	50
November	11, 51, 61	29	247:32	64	-155.5	91
December	11, 51, 61	32	260:41	64	-154.5	148
January	11, 42, 51, 61	25	216:19	16, 64	-153.6	134
February	42, 51, 61	17	115:34	16, 64	-159.5	96
March	61	7	42:00	64	-155.0	0
April	12, 62	19	97:50	8, 16, 64	-159.5	28
May	41, 62	24	161:56	8	-162.7	0
June	41, 62	22	140:41	8	-164.4	0
	Totals	239	1794:21			696*

*8, 088 commands since launch 16 December 1965

Table 6. Pioneer 7 flight support summary

Month	Supporting Stations	No. of Tracks	Tracking Time (hr:min)	Telemetry Bit Rate (bps)	Average Downlink (dbm)	Commands Transmitted
July	14	2	4:08	16	-165.6	7
August	14	1	3:03	16	-166.2	1
September	14	7	48:00	16	-176	8
October	14	7	38:22	-	-	0
November	14	2	8:49	-	-	0
December	-	-	-	-	-	-
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	-	-	-	-	-	-
May	-	-	-	-	-	-
June	-	-	-	-	-	-
	Totals	19	102:22			16*

*10,314 commands since launch 17 August 1966

Table 7. Pioneer 8 flight support summary

Month	Supporting Stations	No. of Tracks	Tracking Time (hr:min)	Telemetry Bit Rate (bps)	Average Downlink (dbm)	Commands Transmitted
July	14	5	13:34	16	-159.4	4
August	14	12	33:05	16	-159.2	12
September	14	4	12:26	16	-160.4	9
October	14	6	16:05	16	-160.2	4
November	14	1	14:23	16	-159.7	1
December	-	-	-	-	-	-
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	-	-	-	-	-	-
May	14	5	64:18	8, 16	-160.8	18
June	12	1	1:41	8	-169.0	0
	Totals	34	155:32			46*

*9,006 commands since launch 13 December 1967

Table 8. Pioneer 9 flight support summary

Month	Supporting Stations	No. of Tracks	Tracking Time (hr:min)	Telemetry Bit Rate (bps)	Average Downlink (dbm)	Commands Transmitted
July	14	15	55:32	16	-164.4	122
August	14	10	29:43	16	-163.8	71
September	14	6	50:48	16	-164.5	31
October	14	6	21:20	16	-164.0	33
November	14	1	3:13	16	-164.9	7
December	-	-	-	-	-	-
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	12	6	21:17	8	-170.6	2
May	12	9	87:28	8	-168.8	19
June	12	4	30:40	16	-167.5	6
	Totals	57	300:01			281*

*8,889 commands since launch 8 November 1968

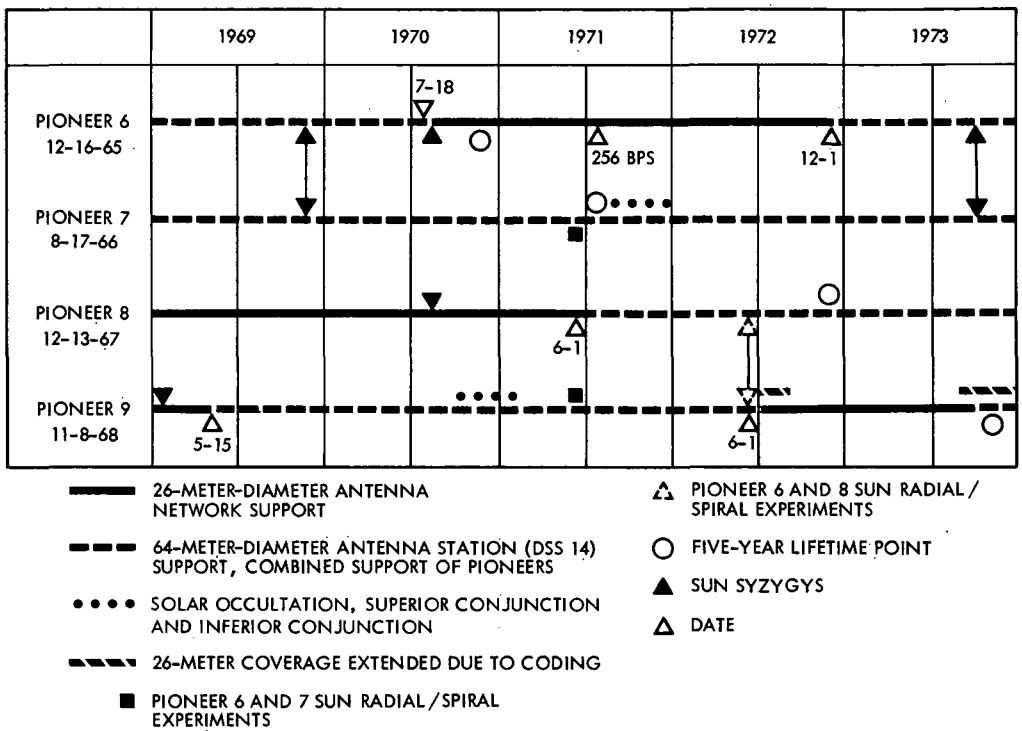


Fig. 1. Support schedule of Pioneer 6, 7, 8, and 9 missions

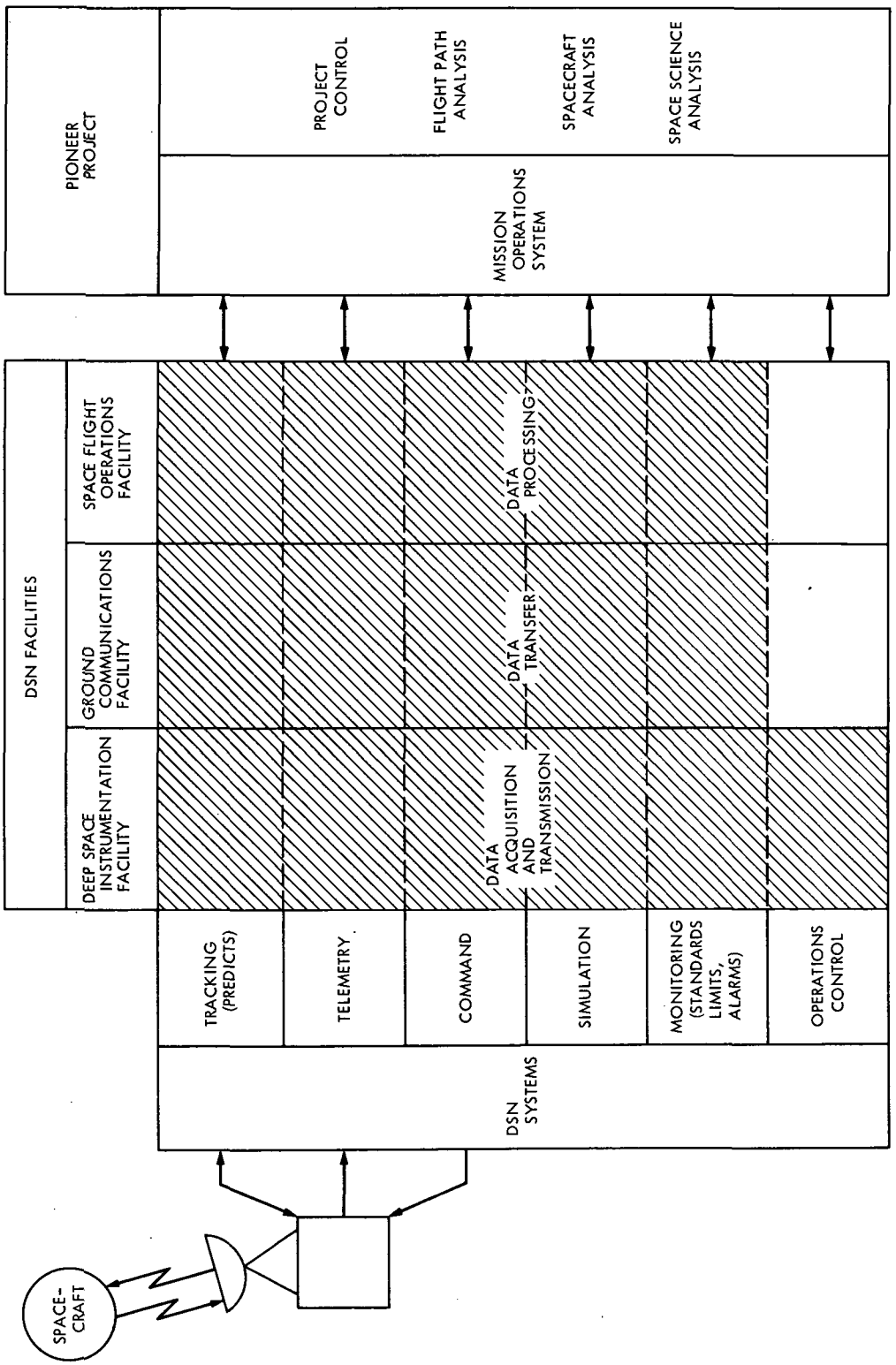


Fig. 2. DSN and Pioneer Project systems diagram

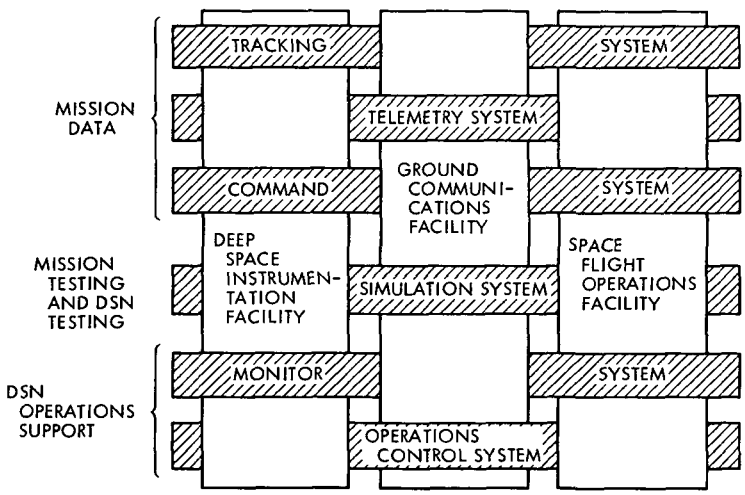


Fig. 3. DSN facility system matrix

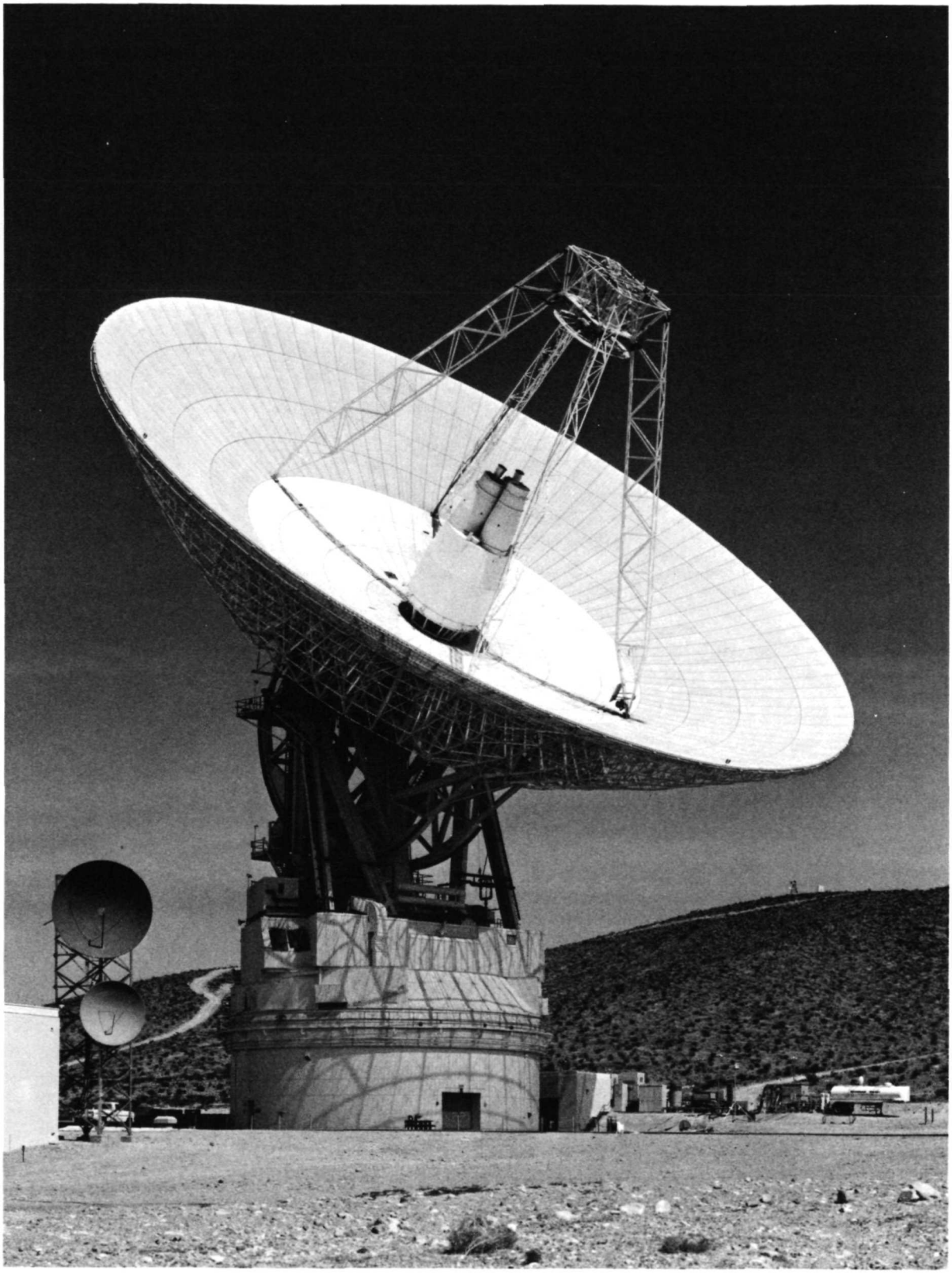


Fig. 4. View of 64-m-diameter antenna

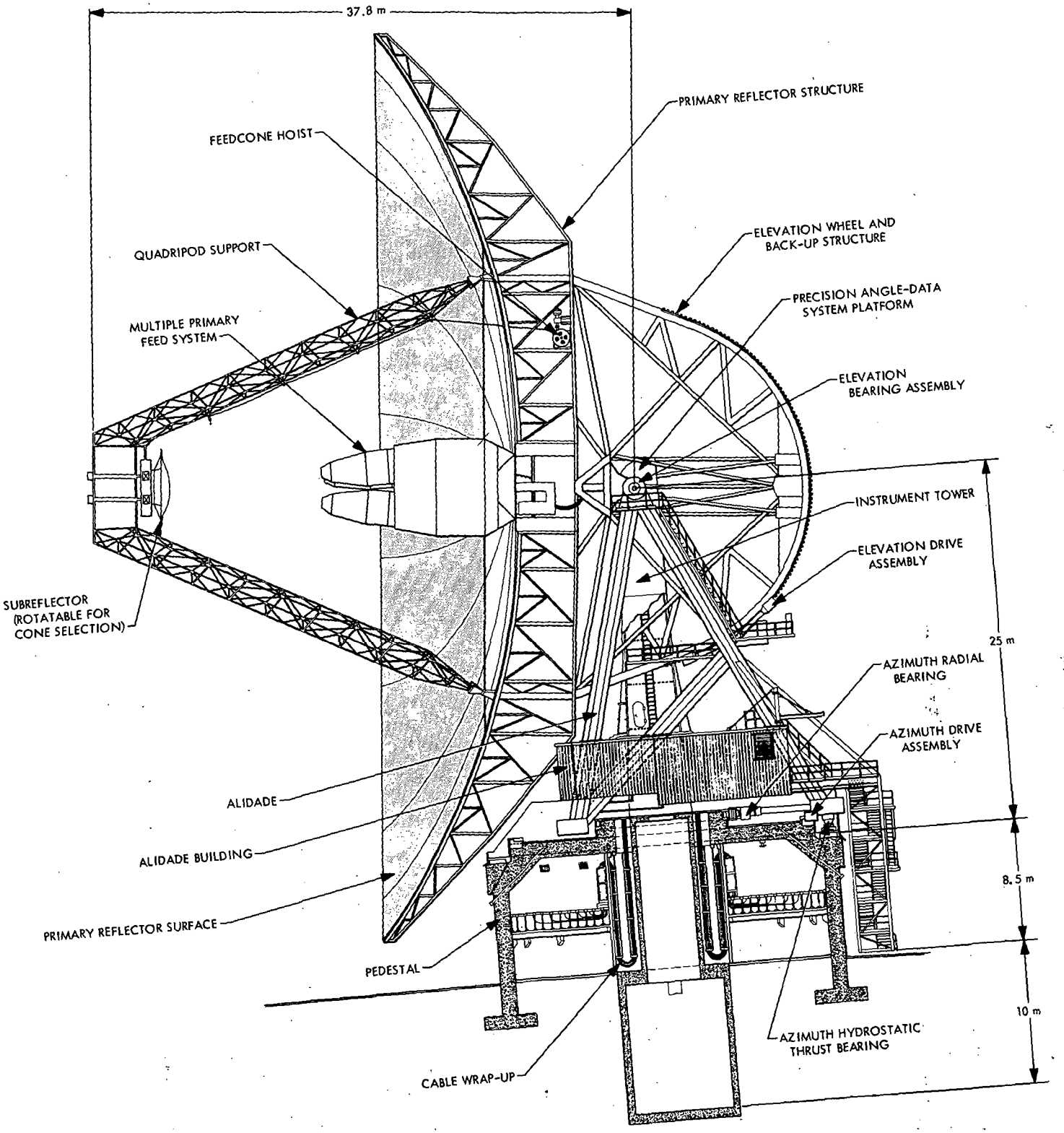


Fig. 5. Profile of 64-m-diameter antenna

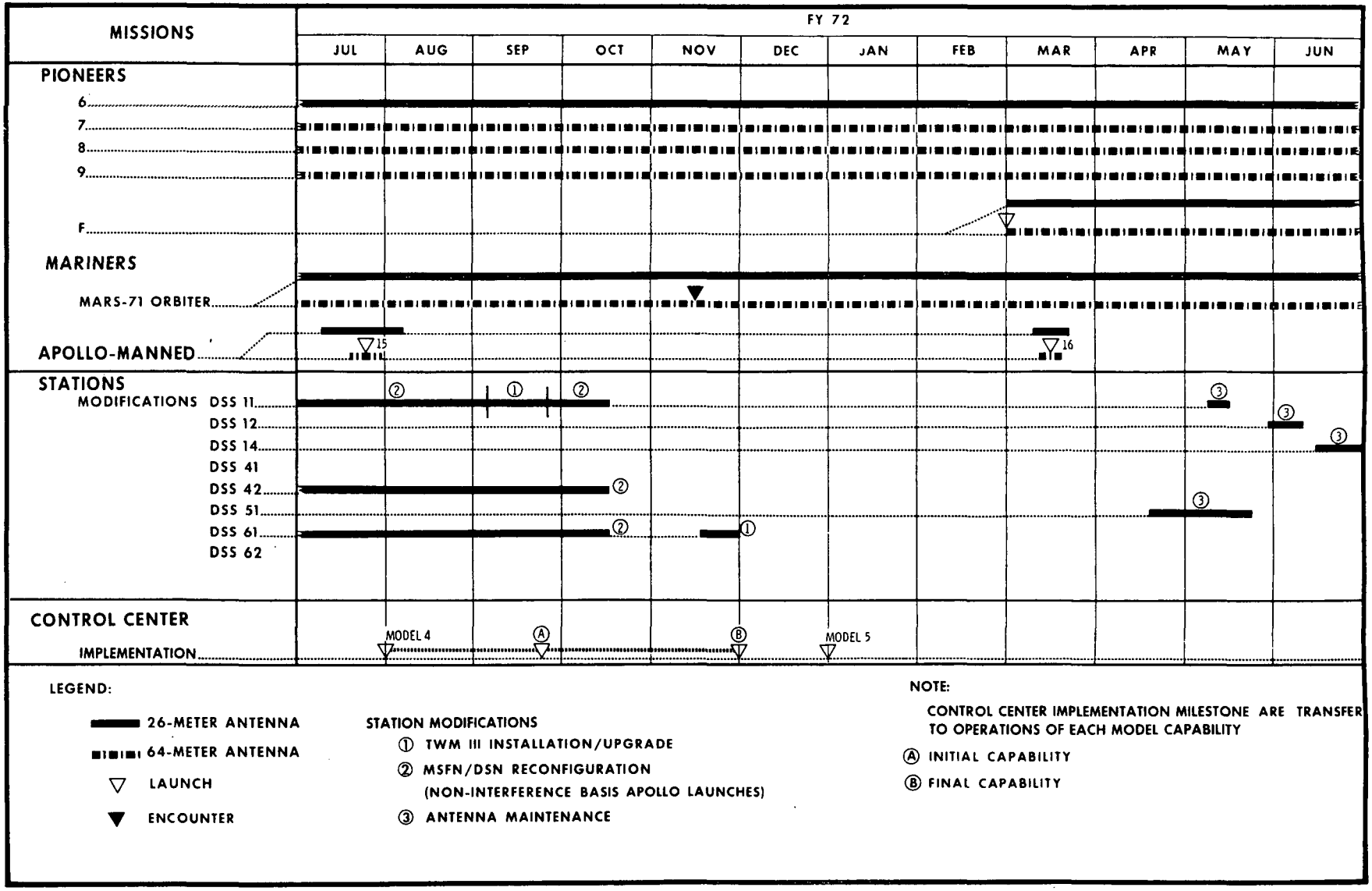


Fig. 6. DSN support for fiscal year 1972, period covered by this report

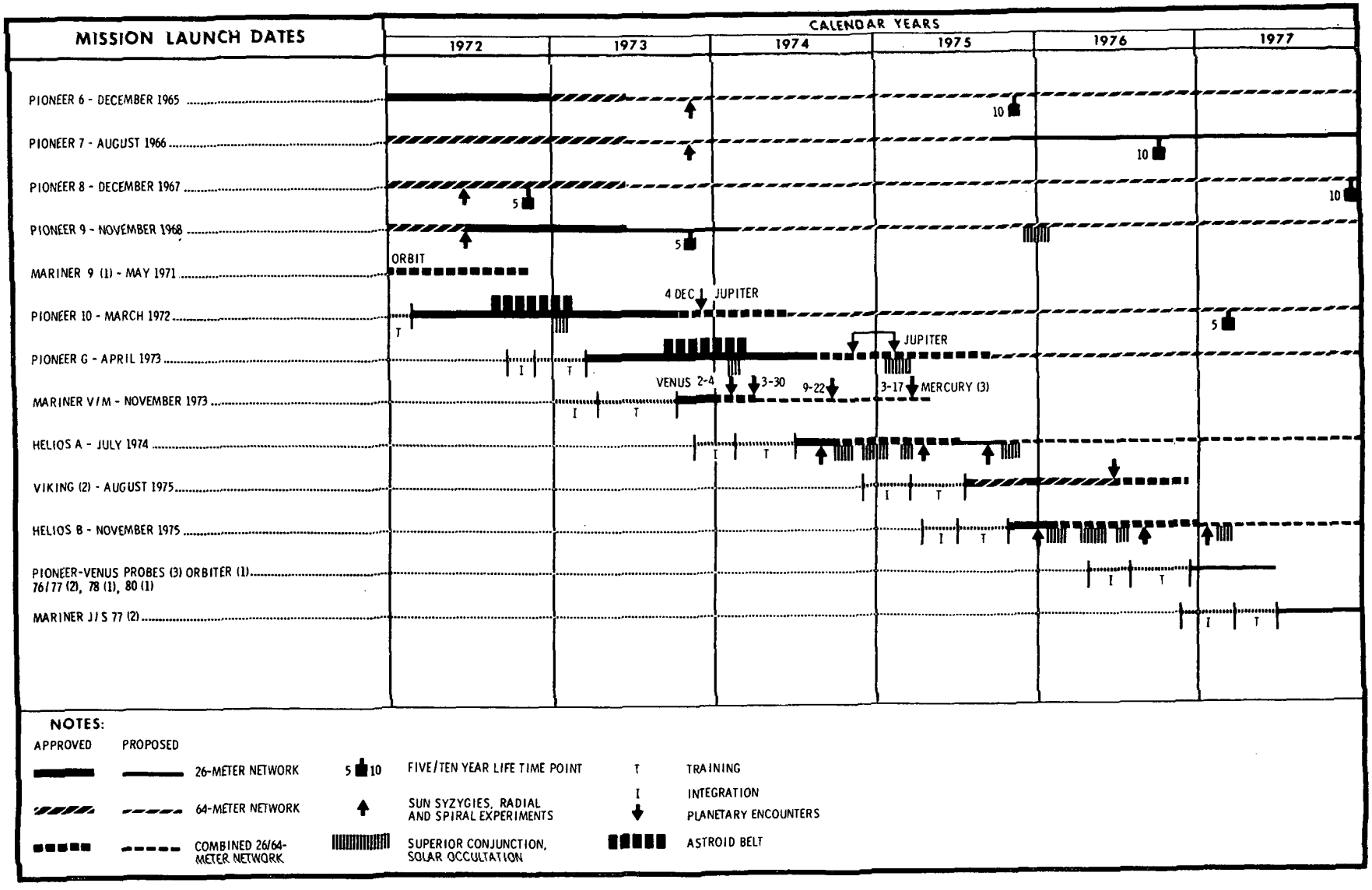


Fig. 7. TDS support of planetary and interplanetary missions as forecast at end of document report period

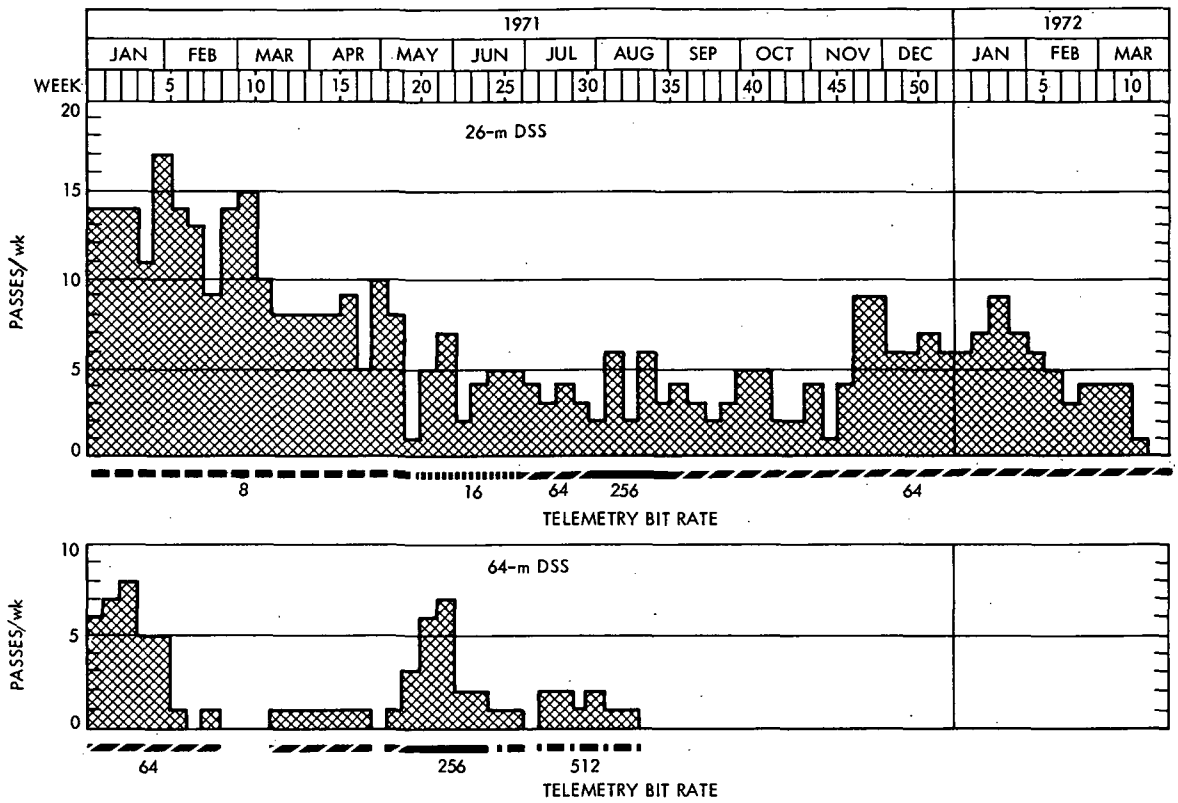


Fig. 8. Pioneer 6 actual DSS passes

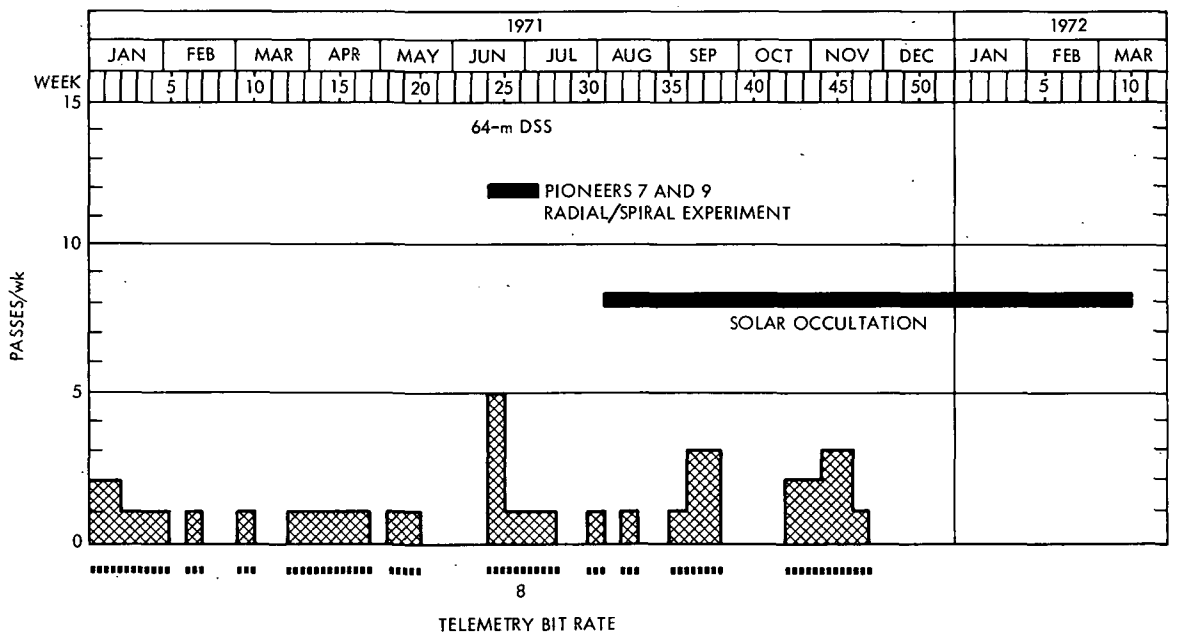


Fig. 9. Pioneer 7 actual DSS passes

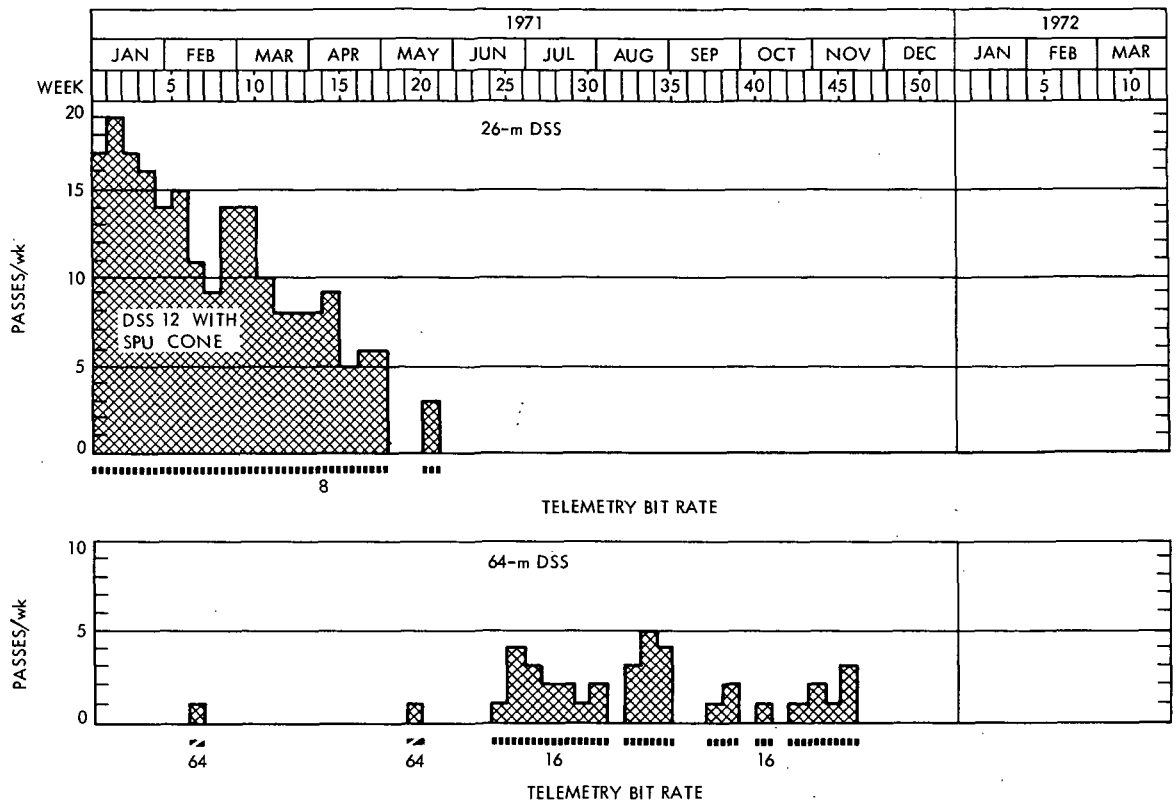


Fig. 10. Pioneer 8 actual DSS passes

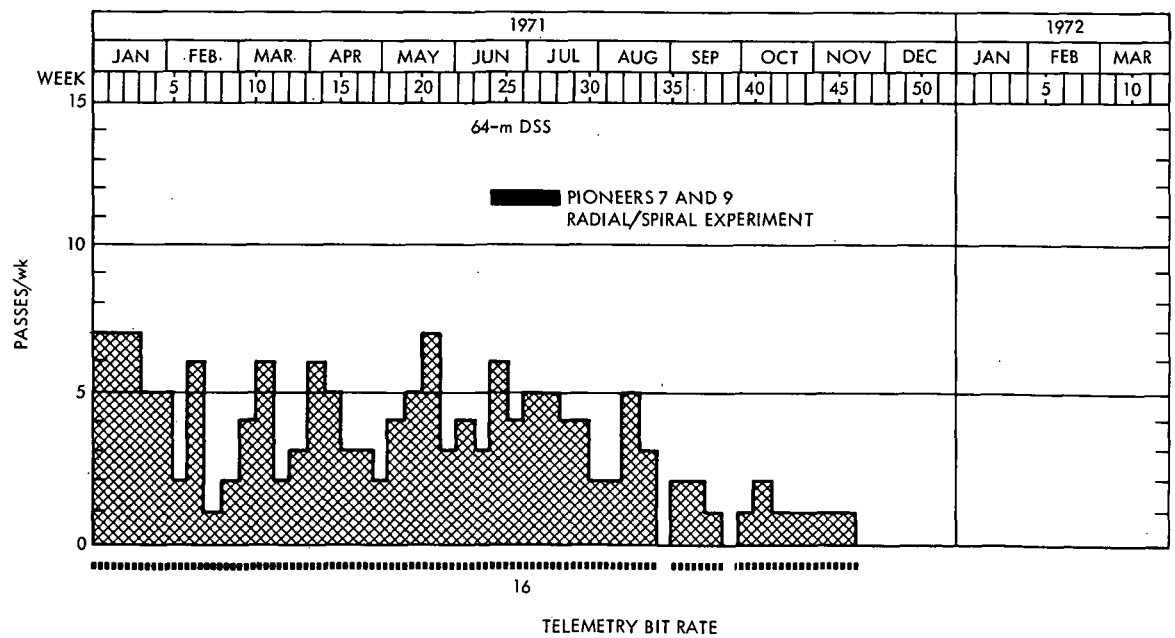
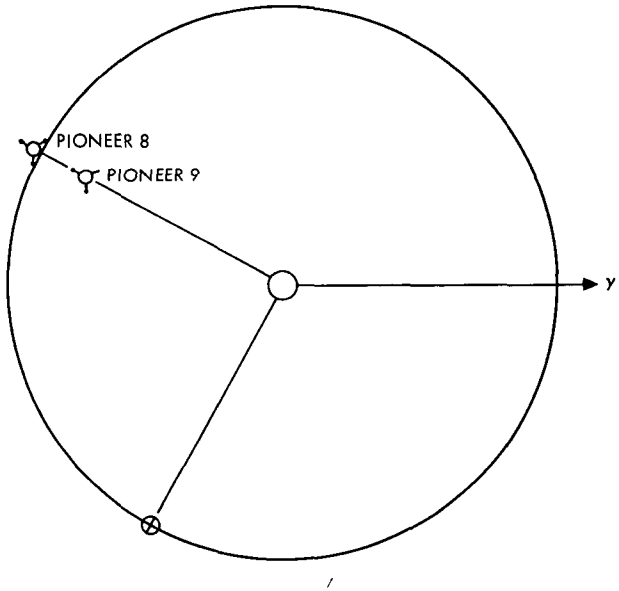
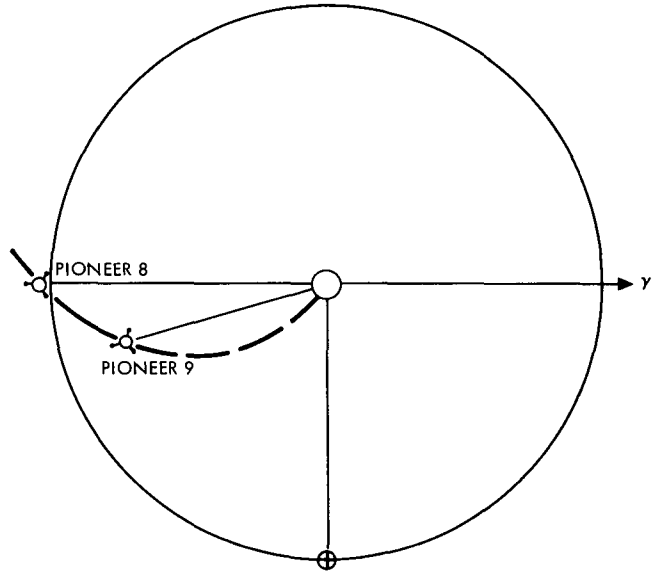


Fig. 11. Pioneer 9 actual DSS passes



- RIGHT ASCENSION OF EARTH = 240.05°
- RIGHT ASCENSION OF PIONEER 8 = 150.72°
- RIGHT ASCENSION OF PIONEER 9 = 150.72°

Fig. 12. Pioneer 8/9 radial alignment, 0800 (GMT), May 21, 1972



- SOLAR WIND VELOCITY = 400 KM/SEC
- RIGHT ASCENSION OF EARTH = 269.88°
- SUN-EARTH DISTANCE = 152.04 MILLION KM
- PIONEER 8:
  - RIGHT ASCENSION = 179.96°
  - SUN-SPACECRAFT DISTANCE = 157.5 MILLION KM
- PIONEER 9:
  - RIGHT ASCENSION = 196.04°
  - SUN-SPACECRAFT DISTANCE = 114.9 MILLION KM

Fig. 13. Pioneer 8/9 spiral alignment, 1300 (GMT), June 21, 1972

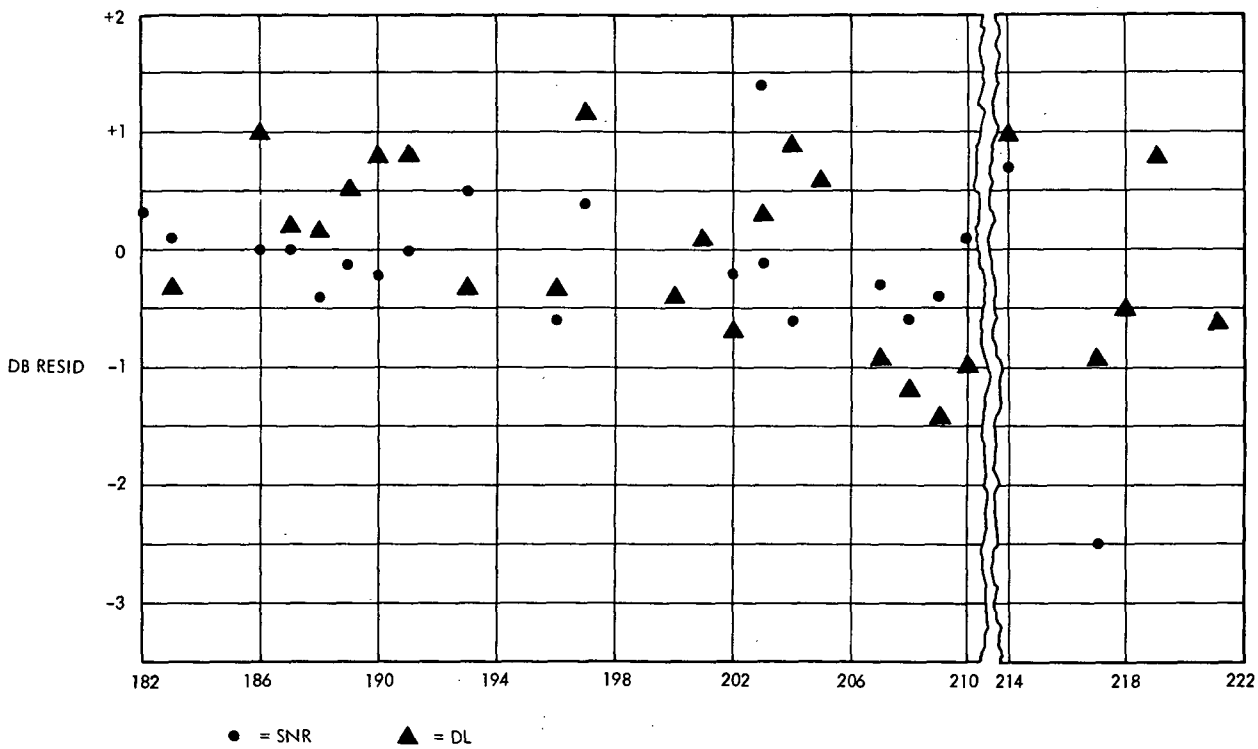


Fig. 14. Residual data plots for Pioneer 6, July 1-September 30, 1971

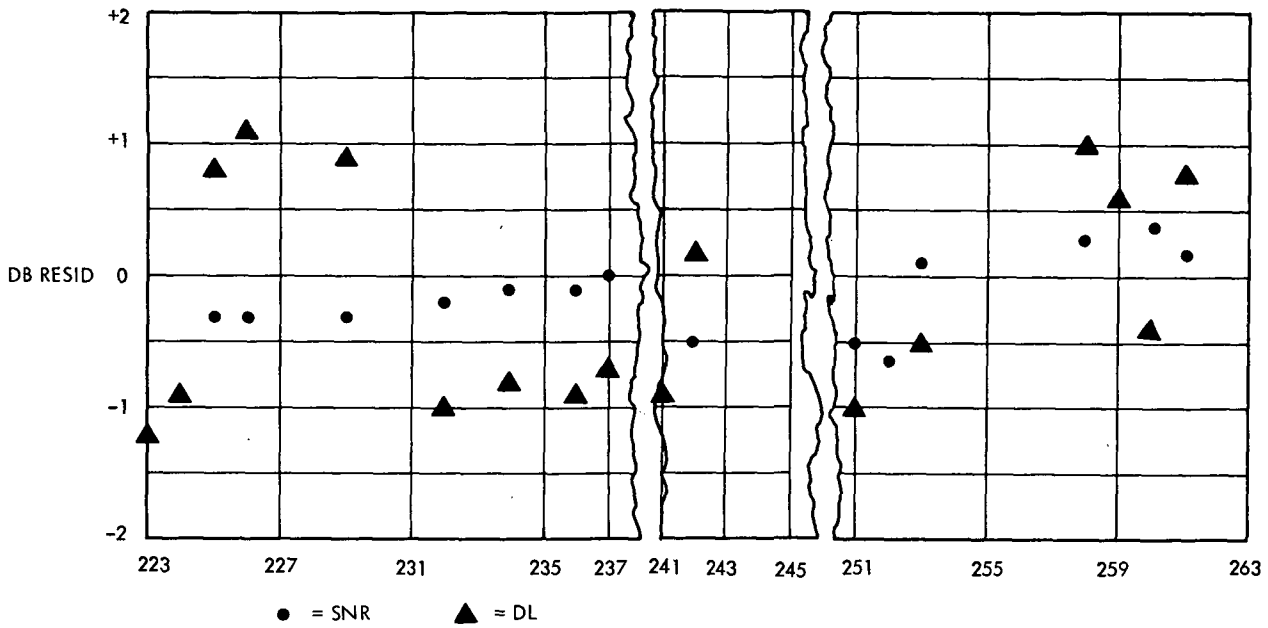


Fig. 14 (contd)

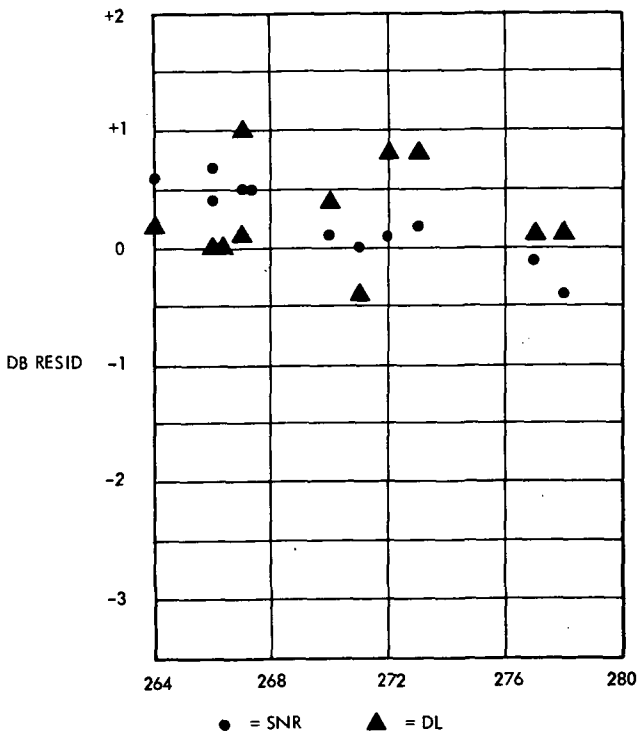


Fig. 14 (contd)

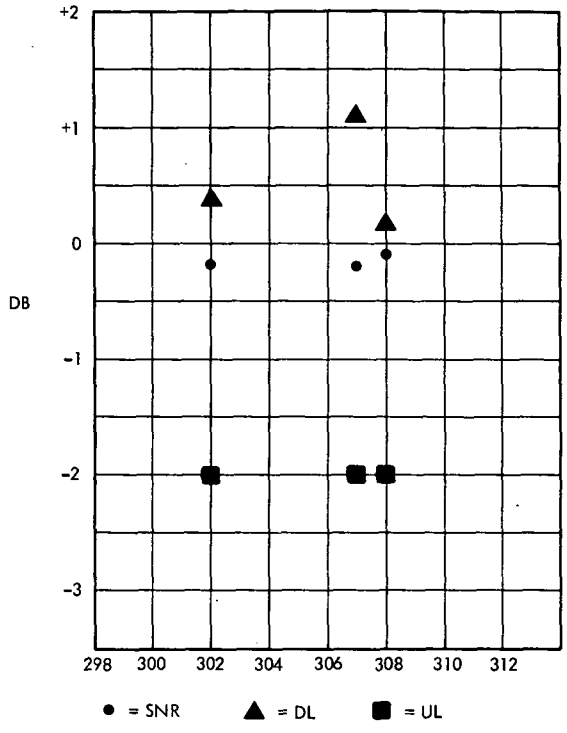


Fig. 15. DSS 51 residual data plots for Pioneer 6, October 1-31, 1971

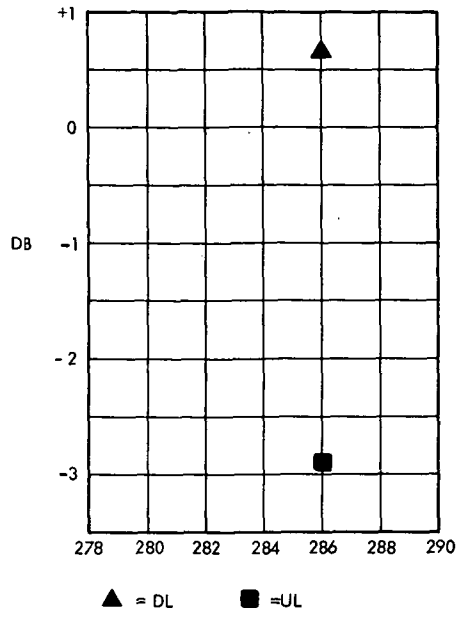


Fig. 16. DSS 61 residual data plots for Pioneer 6, October 1-31, 1971

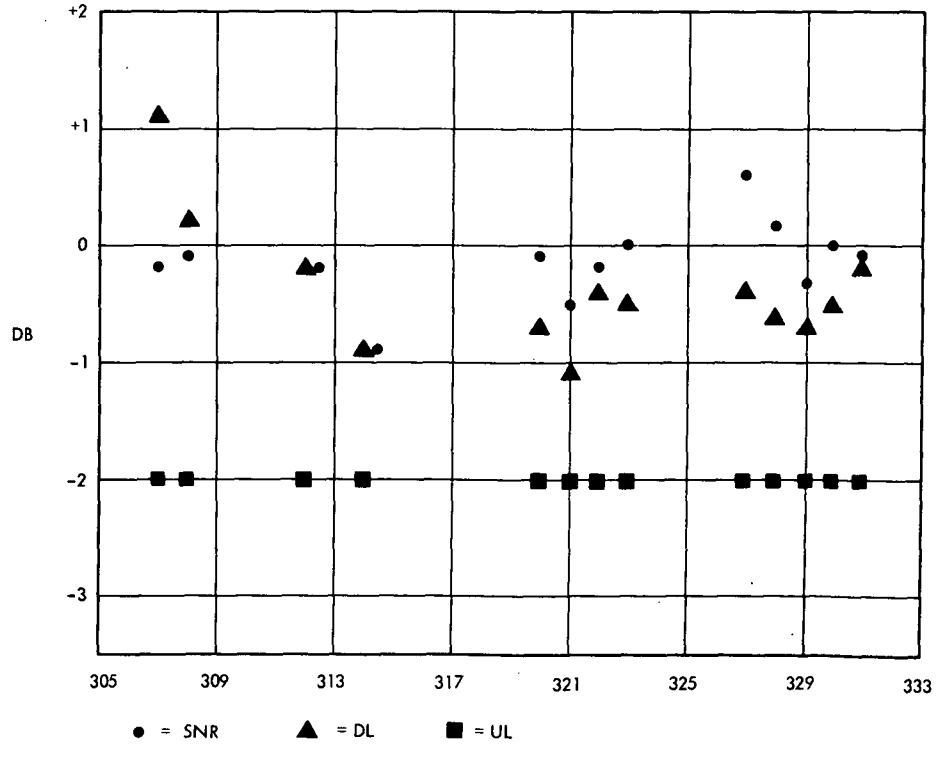


Fig. 17. DSS 51 residual data plots for Pioneer 6, November 1-30, 1971

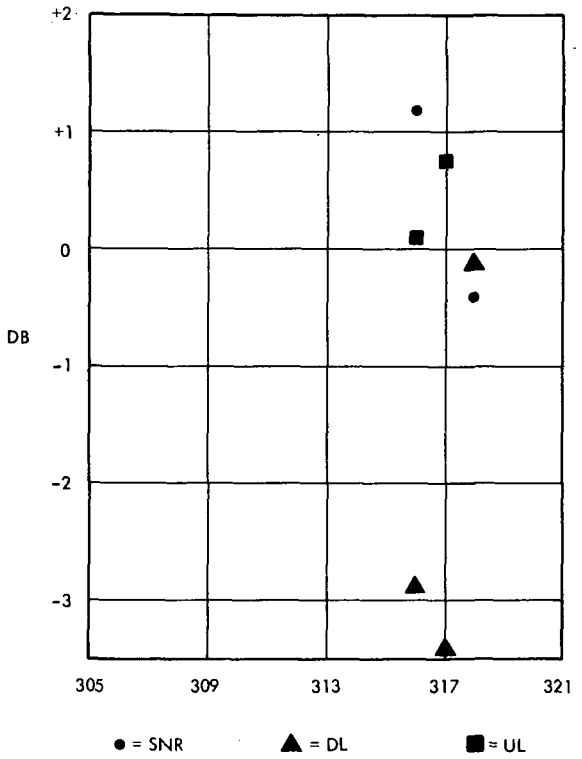


Fig. 18. DSS 61 residual data plots for Pioneer 6, November 1-30, 1971

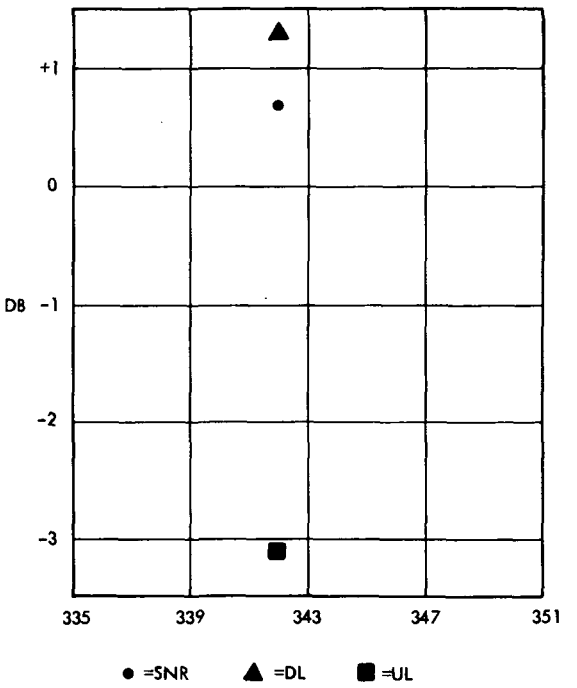


Fig. 20. DSS 11 residual data plots for Pioneer 6, December 1-31, 1971

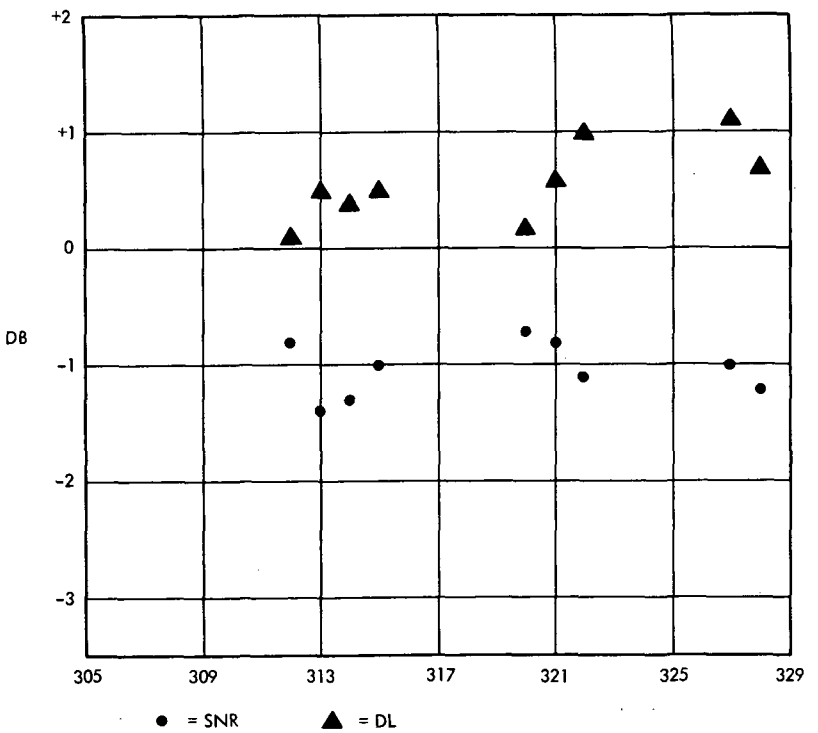


Fig. 19. DSS 11 residual data plots for Pioneer 6, November 1-30, 1971

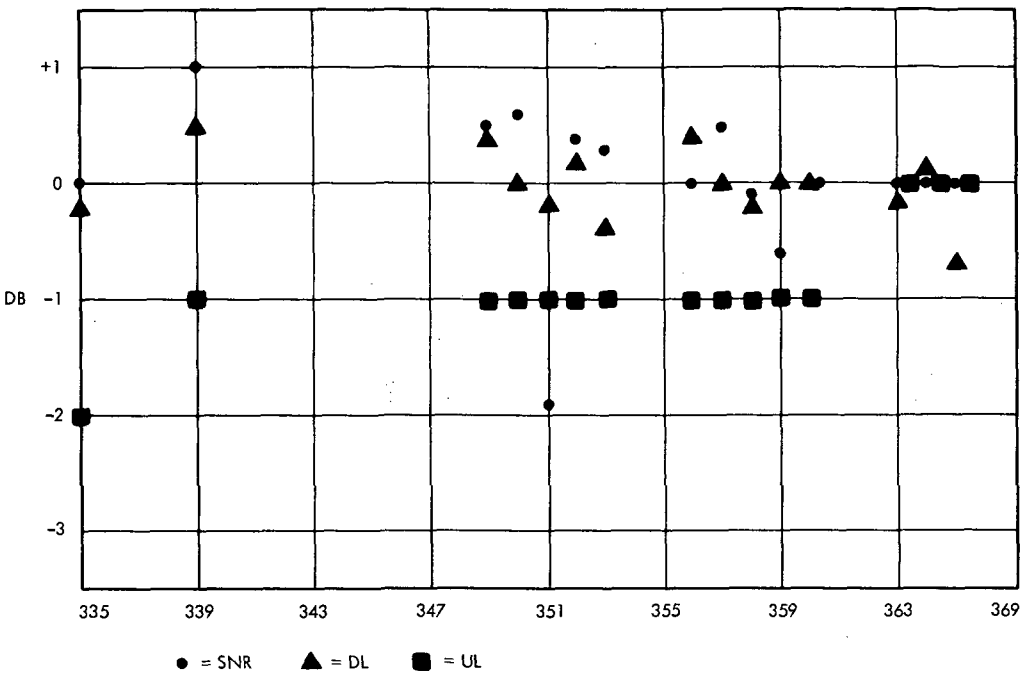


Fig. 21. DSS 51 residual data plots for Pioneer 6, December 1-31, 1971

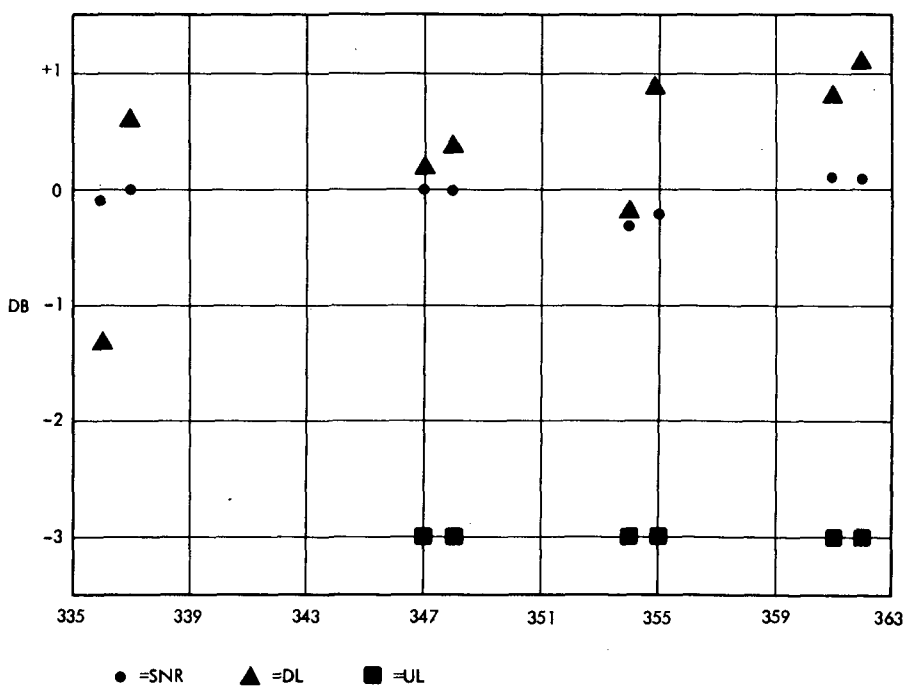


Fig. 22. DSS 61 residual data plots for Pioneer 6, December 1-31, 1971

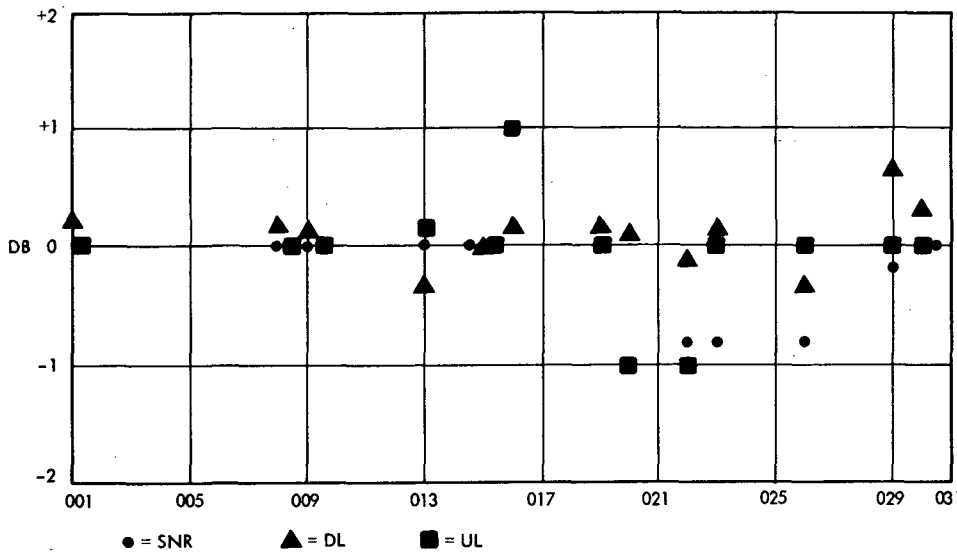


Fig. 23. DSS 51 residual data plots for Pioneer 6, January 1-31, 1972

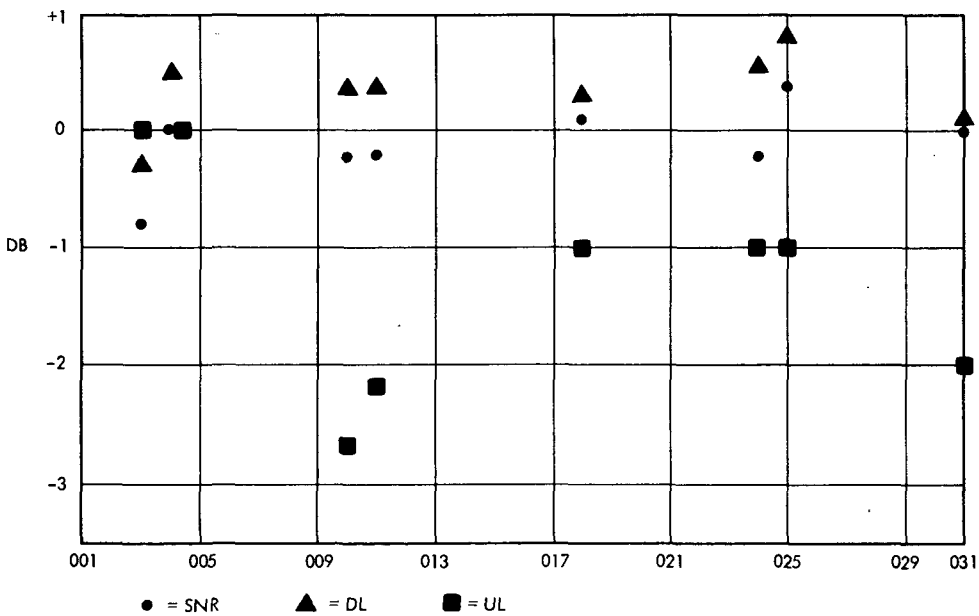


Fig. 24. DSS 61 residual data plots for Pioneer 6, January 1-31, 1972

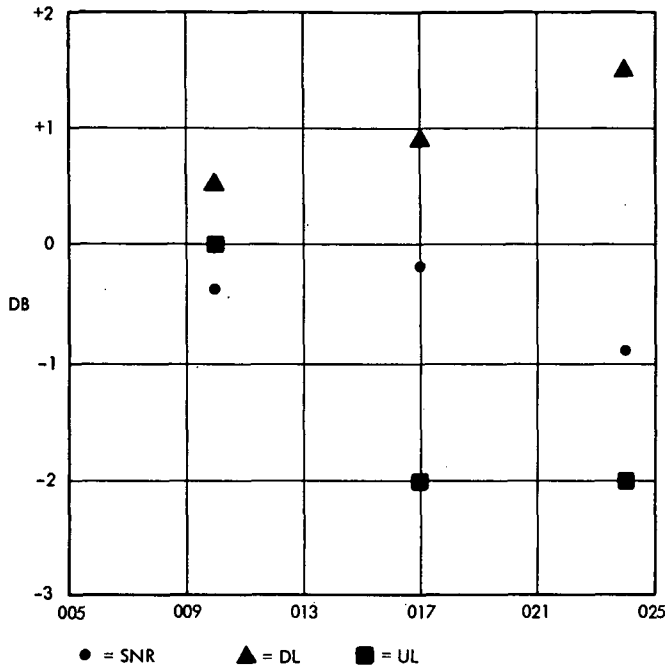


Fig. 25. DSS 11 residual data plots for Pioneer 6, January 1-31, 1972

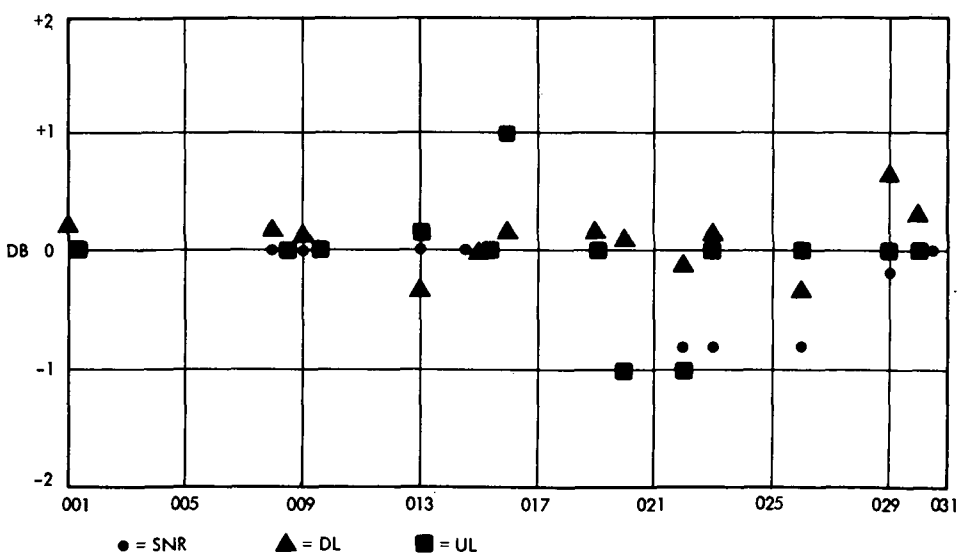


Fig. 26. DSS 51 residual data plots for Pioneer 6, February 1-29, 1972

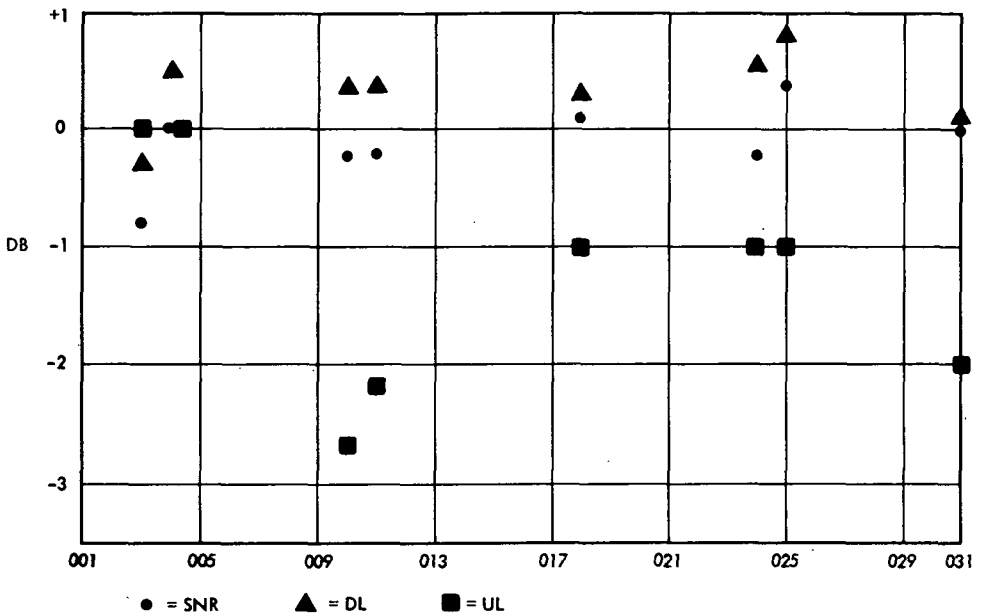


Fig. 27. DSS 61 residual data plots for Pioneer 6, February 1-29, 1972

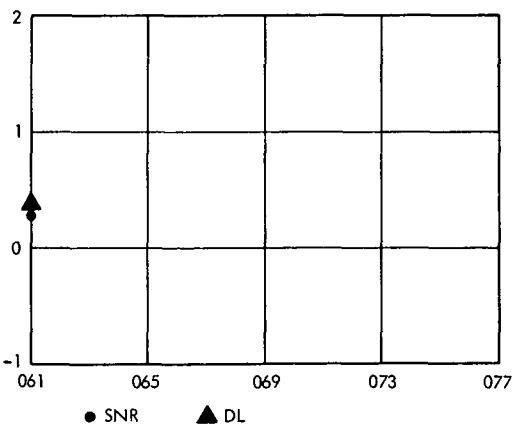


Fig. 28. DSS 61 residual data plots for Pioneer 6, March 1-31, 1972

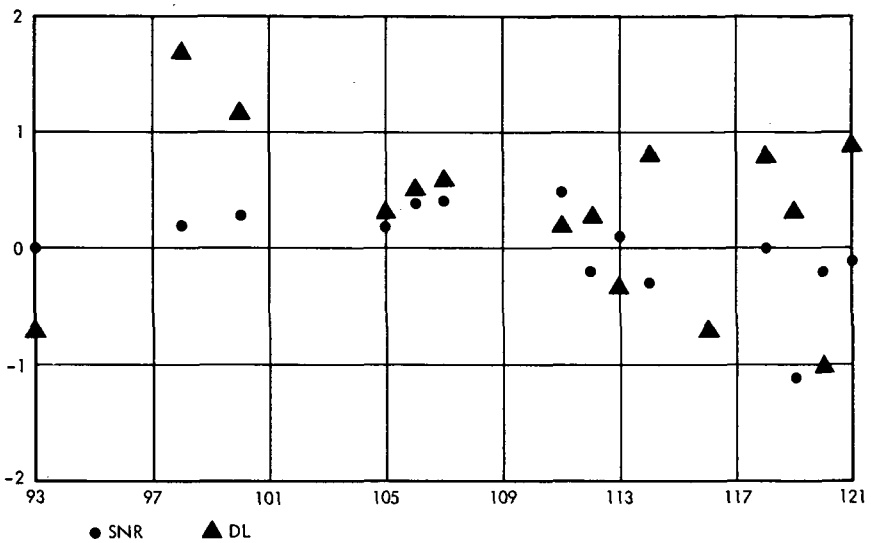


Fig. 29. DSS 62 residual data plots for Pioneer 6, April 1-30, 1972

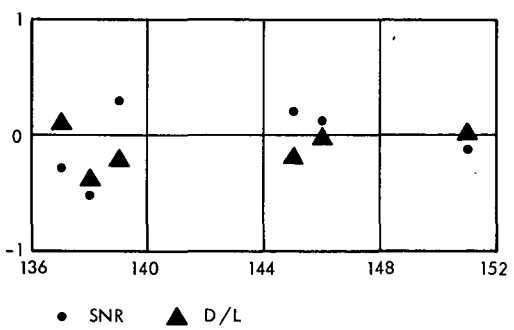


Fig. 30. DSS 41 residual data plots for Pioneer 6

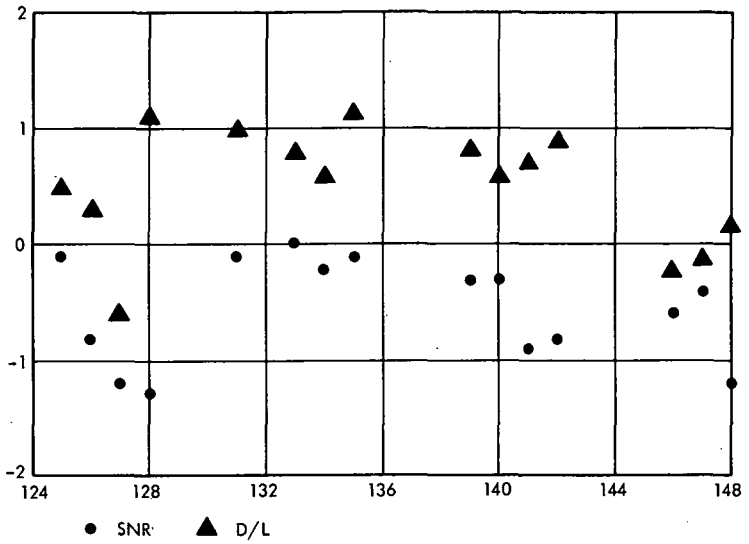


Fig. 31. DSS 62 residual data plots for Pioneer 6, May 1-31, 1972

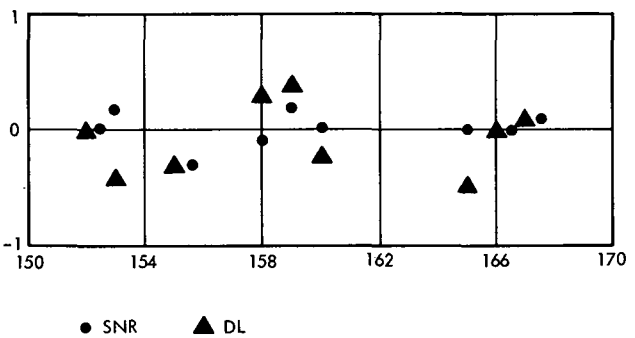


Fig. 32. DSS 41 residual data plots for Pioneer 6, June 1-30, 1972

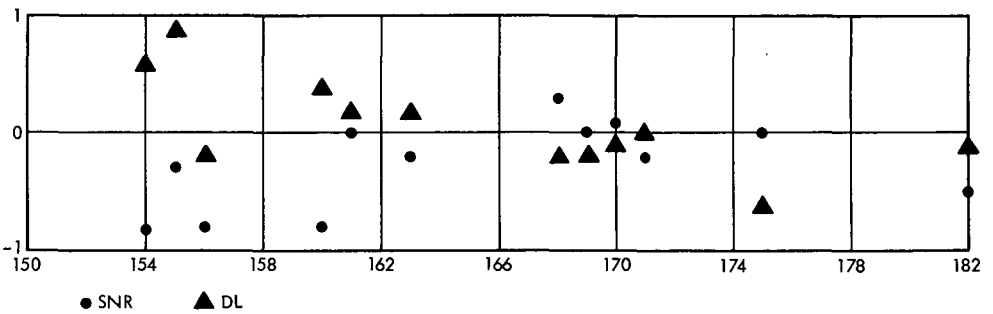


Fig. 33. DSS 62 residual data plots for Pioneer 6, June 1-30, 1972

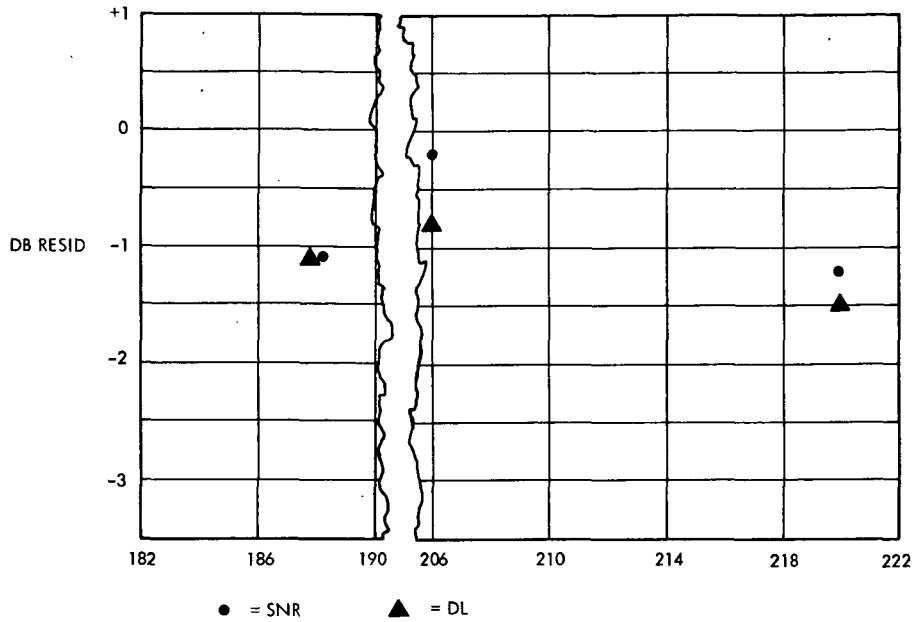


Fig. 34. Residual data plots for Pioneer 7, July 1-September 30, 1971

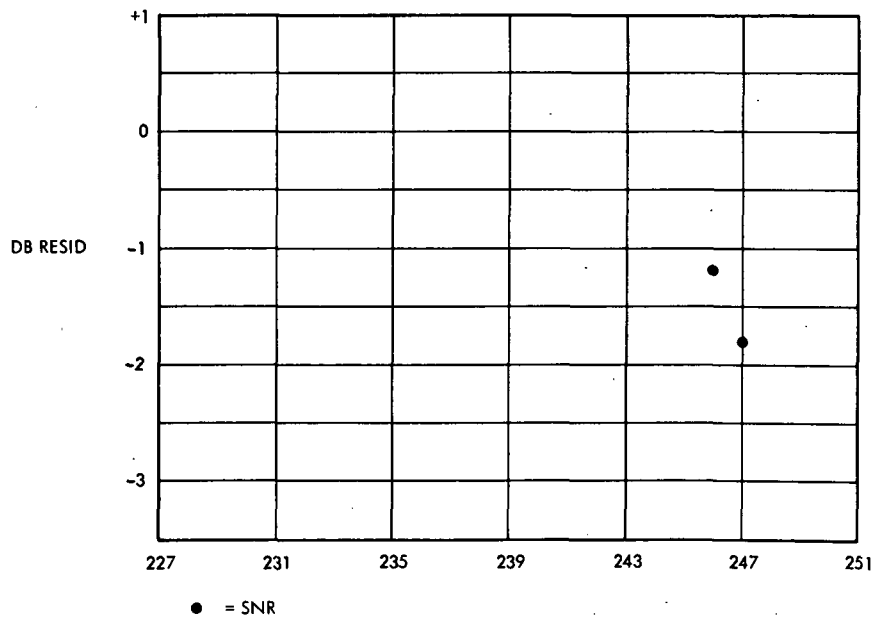


Fig. 34 (contd)

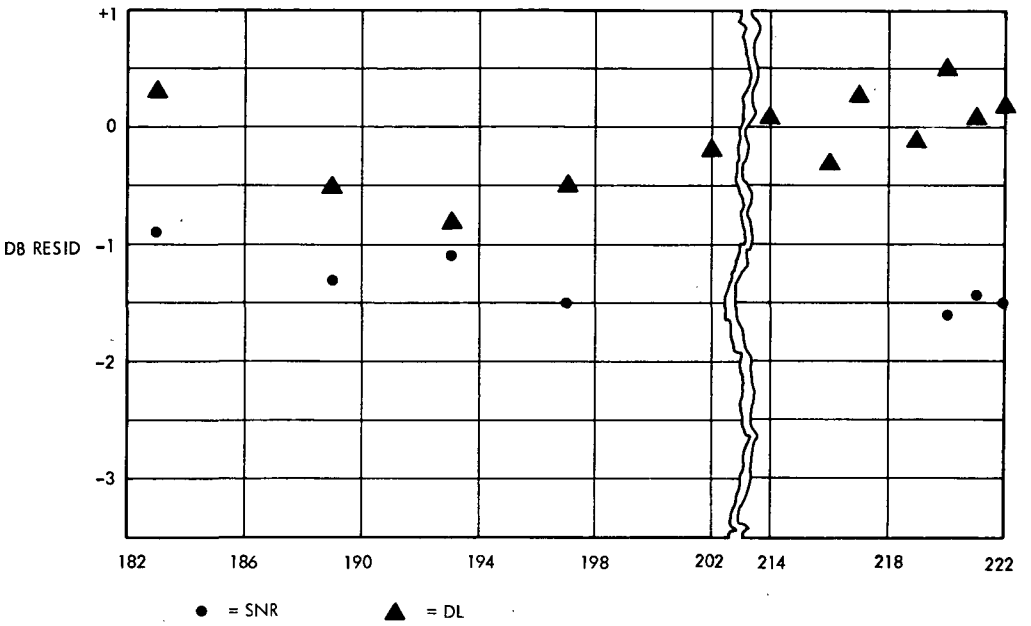


Fig. 35. Residual data plots for Pioneer 8, July 1-September 30, 1971

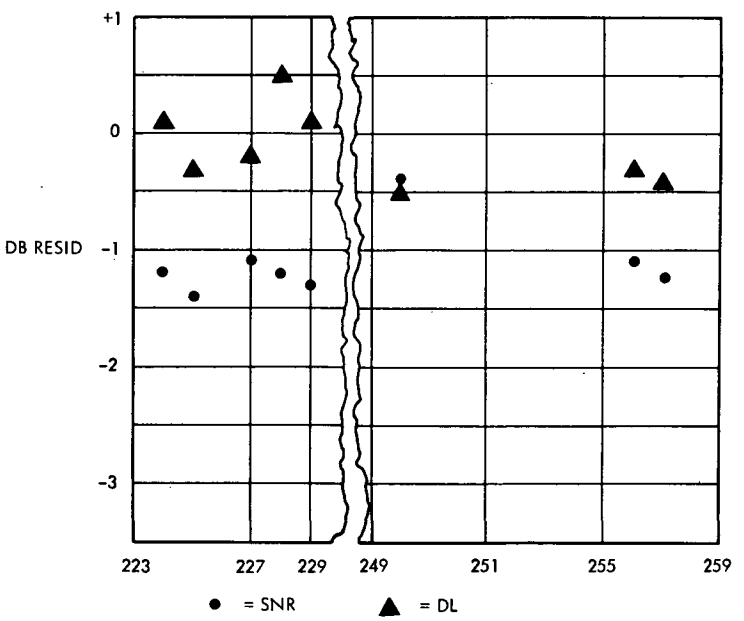


Fig. 35 (contd)

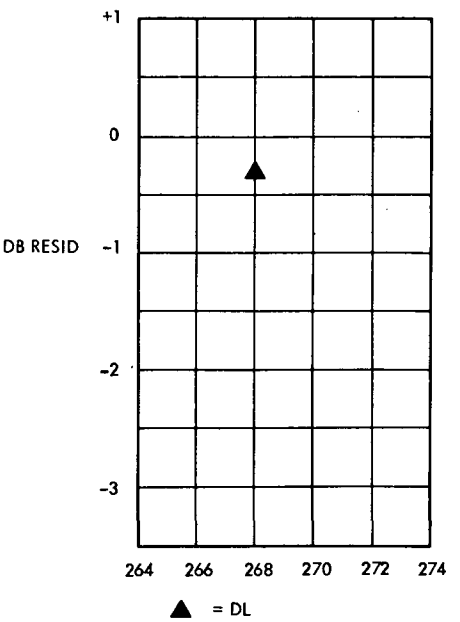


Fig. 35 (contd)

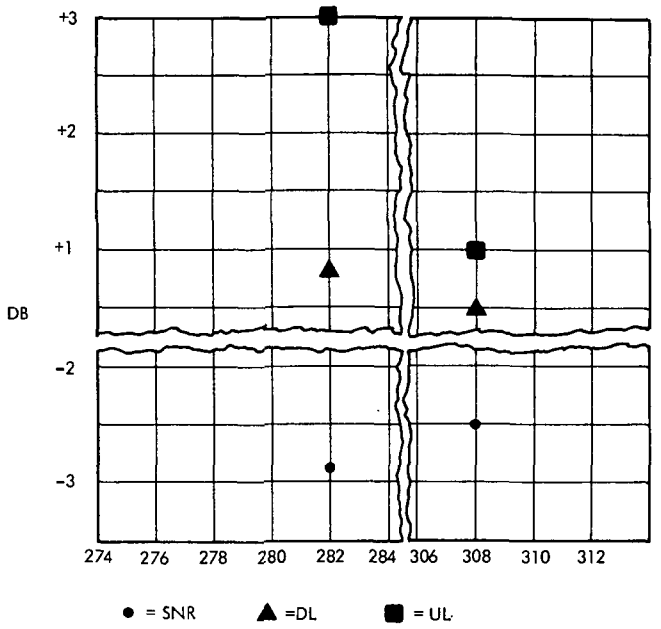


Fig. 36. DSS 14 residual data plots for Pioneer 8, October 1-31, 1971

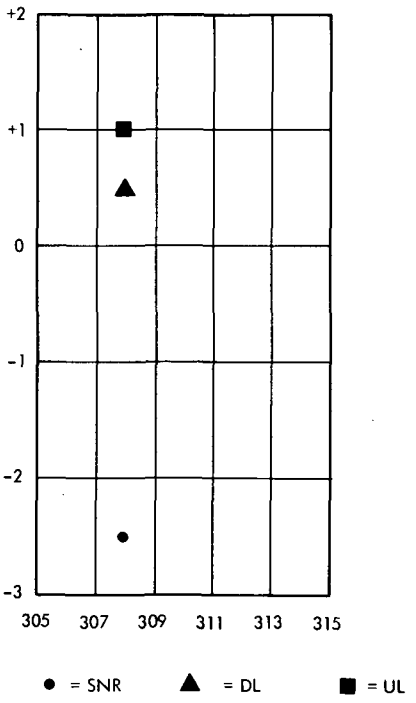


Fig. 37. DSS 14 residual data plots for Pioneer 8, November 1-30, 1971

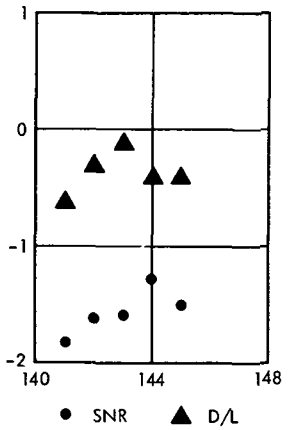


Fig. 38. DSS 14 residual data plots for Pioneer 8, May 1-31, 1972

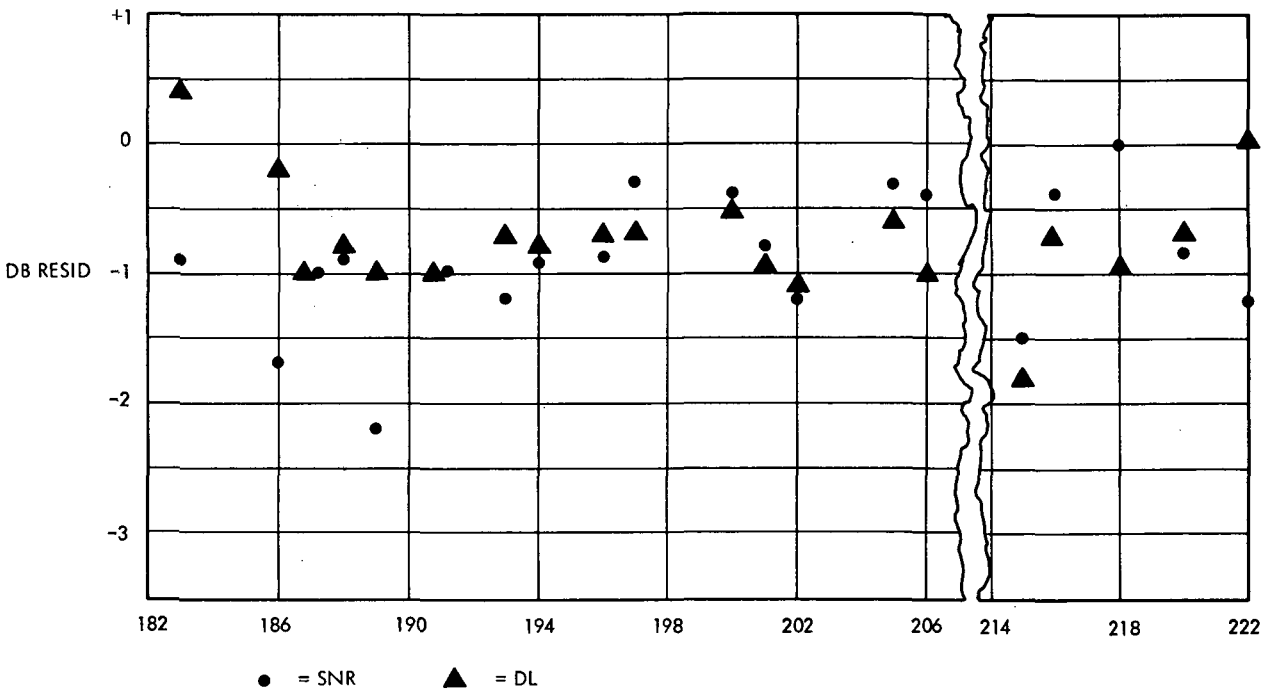


Fig. 39. Residual data plots for Pioneer 9, July 1-September 30, 1971

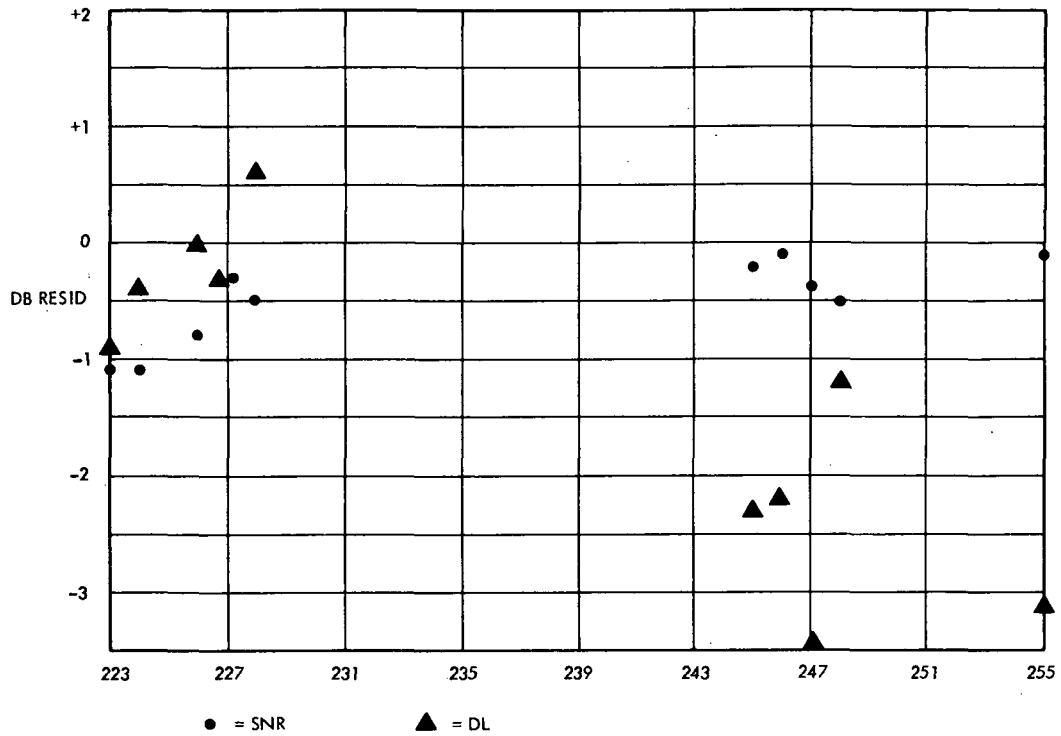


Fig. 39 (contd)

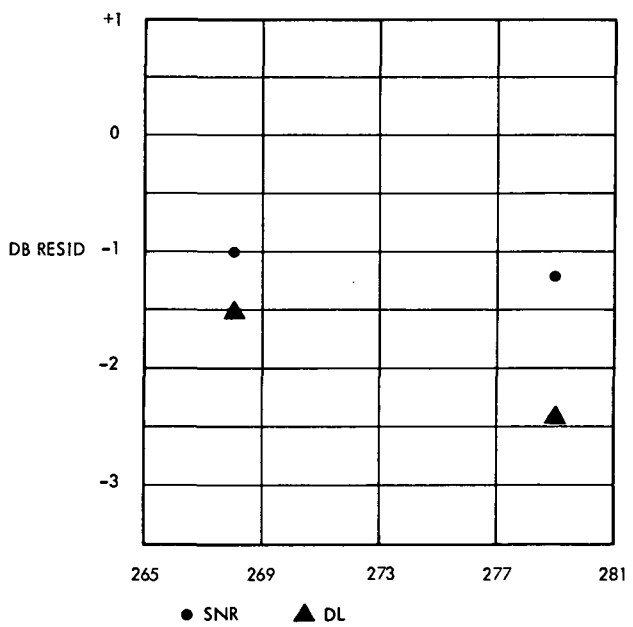


Fig. 39 (contd)

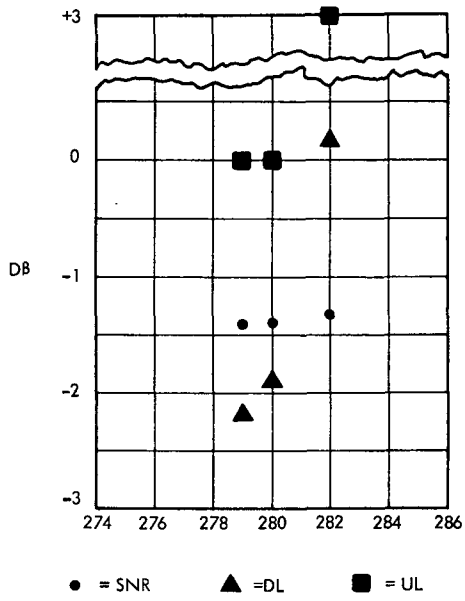


Fig. 40. DSS 14 residual data plots for Pioneer 9, October 1-31, 1971

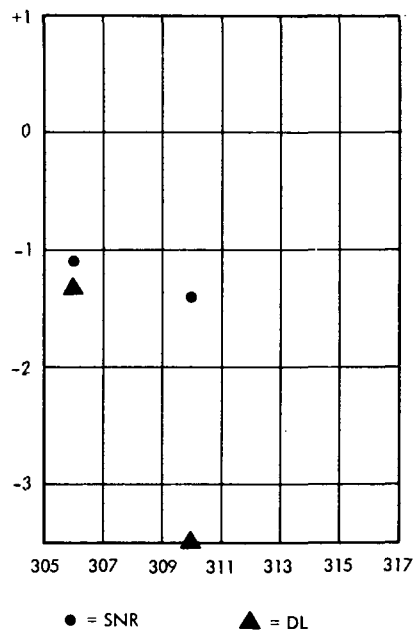


Fig. 41. DSS 14 residual data plots for Pioneer 9, November 1-30, 1971

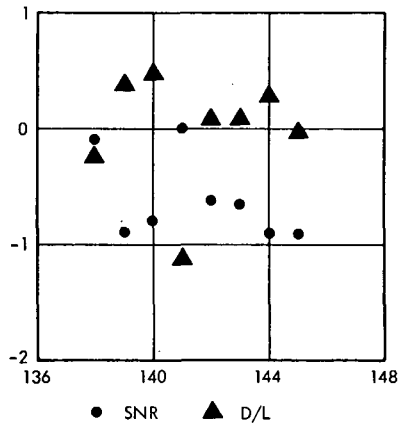


Fig. 42. DSS 12 residual data plots for Pioneer 9, May 1-31, 1972

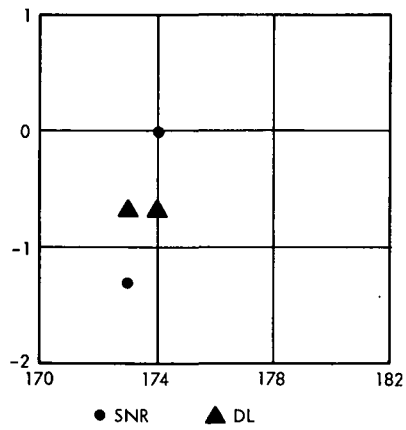


Fig. 43. DSS 12 residual data plots for Pioneer 9, June 1-30, 1972

APPENDIX A
TECHNICAL PROGRESS

A. Antenna Modifications

1. DSS 14 modification. The change of feed systems to a multiple feed cone was made to eliminate the excessive time required (approximately one day) for feed cone replacement. This cone replacement time had made the station inefficient in employing different feed systems for different missions.

The feed cone that had been in use was designed for maximum versatility at S-band so that one cone could be used to satisfy all major S-band mission requirements. (Use of special-purpose cones gave improved performance and also permitted experiments at other frequencies.)

Several feed cone turret configurations designed to permit rapid feed cone changes were examined. The most promising system consisted of three RF feed horns, each mounted separately in standard JPL Cassegrain cones, all mounted on the antenna's feed cone base cylinder and illuminating one hyperboloidal subreflector assembly. The hyperboloid was controlled, and rotation about its own axis selected the desired feed. Assuming perfect alignment of the hyperboloid and the three feed horns, the direction of the RF beam was the same (along the paraboloid axis) for all three RF feed horns. This tricone system permitted a 5-min (or less) change between the three individually mounted operational feed systems.

Installation of the tricone structure began in late January 1970, and the first Pioneer Project use of the antenna after installation was for support of Pioneer 7 on March 3. The tricone provided greater operational versatility and satisfied demands for permanently installed project-peculiar RF feeds with rapid, simple, and safe changeover means.

As the best solution to using a multiple feed cone system, the tricone structural subsystem was designed with fixed feeds combined with a rotating directional subreflector. The DSS 14 20-kW transmitter was used in the tricone to support "turn-on" operations. Three inner-accessible modules supported the three feed cones.

Minor alterations were required on the SPU to allow its use on the DSS 14 tricone equipped antenna. One alteration consisted of a new interlock system to protect equipment and personnel from the new 400-kW transmitter. This required fabrication of a new switch control panel and junction box for the cone. A second alteration included the construction of a new power supply with a synchro indicator to operate the received linear polarization angle system for use with the Pioneer spacecraft. A third alteration was the addition of a polarization indicator to display the transmitted-received signal condition, i.e., right-circular, left-circular, or linear polarization.

Substantial improvements were also made in the X-band cone (MXK), a low-noise antenna feed system designed primarily for use with the DSS 14 antenna tricone system. It was used previously to evaluate the 64-m-diameter antenna structure at higher frequencies for the DSN. The improved MXK cone configuration was considered a logical step from the X-band cone used for the first high-frequency gain measurements on the DSS 14 antenna.

The tricone structure had three main feed cone assemblies. However, during the design stage, it was found possible to stop the subreflector (all motions controlled from the antenna console) in two additional positions over the R&D cone if the individual feedhorns could be mounted on an arc with 48-cm centers. At X-band (7000 MHz) or above, it was possible to mount three separate antenna systems in one cone.

The completed cones consisted of a single-channel X-band feed system, maser, and associated receiver and calibration equipment.

2. DSS 12 modification. Tracking was suspended January 27, 1970, to replace the S-band Cassegrain monopulse feed cone (SCM) at DSS 12 with the SPU. Installation was completed January 29. The SPU provided the Pioneer projects with a 26-m-diameter antenna tracking system capable of providing data in the Goldstone complex longitude during the DSS 14 tricone reconfiguration. (The Mariner Mars 1969 Extended Operations Mission also was supported.) During the three-day reconfiguration period, the hardware was modified and abbreviated system tests were performed.

Modifications to the standard JPL tracking and communications system consisted of (1) replacement of the SCM cone, diplexer, and associated waveguide with an SPU cone, modified switches, and a harmonic filter; (2) replacement of the standard DSIF maser with an R&D-type second-generation maser; (3) minor modifications to the standard microwave switch control assembly; and (4) minor reconfiguration of the cone air-conditioning system. Subsequent to the installation, star tracks and abbreviated system tests were performed which provided the following data: (1) a maser gain of 47 dB vs the normal gain of 35 dB, (2) a system temperature in the diplex mode of 28.8 K vs a normal system temperature of 42.0 K, and a system temperature in the receive-only mode of 17.6 K vs a normal system temperature in this mode of approximately 30.0 K.

At the conclusion of tests the station was committed to the Pioneer projects and Mariner mission on a best-efforts basis. Subsequently, successful tracking was accomplished on Pioneer spacecraft at the following average signal levels: Pioneer 6, -169.1 dBm; Pioneer 7, -171.4 dBm; Pioneer 8, -162.1 dBm; and Pioneer 9, -170.4 dBm.

B. Convolutional Coding and Sequential Decoding

A convolutional coding and sequential decoding (CCSD) experiment was conducted solely by Pioneer 9. The experiment, which required modification of the ground operating equipment as well as change in station data-handling methods, successfully achieved a coding gain of 3 dB. The

code rate for CCSD was one half, and for each bit transmitted a coded parity was also transmitted. Thus, for the 512-bits/s information, the actual transmitted symbol rate was 1024 bits/s. The 512-bits/s information range continued throughout the previously used 256 bits/s, the 256-bits/s range throughout the 64-bits/s range, the 64-bits/s range throughout the 16-bits/s range, and the 16-bit/s range covered the 8-bits/s range.

The CCSD experiment assisted in extending the effective use of the 26-m-diameter antennas for Pioneer 9 to early 1971. Also, the convolutional coding system was credited for the errorless real-time processed telemetry during the inferior conjunction of Earth, spacecraft, and Sun in January 1969 (Appendix C).

The coding scheme involved decoding in two directions on each frame of data (denoted forward and reverse). This two-way approach was used for error detection, since errors committed in decoding in one direction were almost never committed in the opposite direction. Words that disagreed between forward and reverse decoding were deleted.

1. Modifications. Real-time data processing of the received convolutional coding data required use of two SDS 920/TCP computers at the DSS. The GOE modification was implemented by the personnel of the ARC/Pioneer Project. The DSN furnished all necessary test equipment, facilities, and personnel required to implement all modifications, tested each subsystem individually, and integrated the modified ground operating equipment. In addition, the DSN furnished all necessary engineering, planning, testing, training, and implementation support to the Pioneer Project to equip the DSSs with a new software package developed by the Project for coded and uncoded Pioneer/TCP operation.

2. Telemetry command processors. All deep space stations were equipped with two TCP computers. One of these computers served as a backup for the operational unit. Because the Pioneer Project used both computers, with two different computer programs in the convolutional coding mode, a computer failure required an interruption of the tracking and data acquisition support. In such a case, the computer operator reloaded the computer that was still operational with a Pioneer emergency program. This emergency program required the use of only one computer, with limited data processing capabilities. Because of the necessary switching and computer program reloading actions, a 10-min dropout of telemetry data occurred.

During the third quarter of 1969, the Pioneer Project furnished a new Pioneer software package that used the increased 16-kiloword core memory capabilities of the SDS 920 computers: Only one SDS/TCP 920 computer was needed to support the convolutional coding experiment. Since the second computer in the convolutional mode was not required, the second machine provided full backup of the operational unit, thus eliminating prevailing support reliability risk.

Figure A-1 presents a DSS 12 pass with Pioneer 9 operating in the convolutional coded mode.

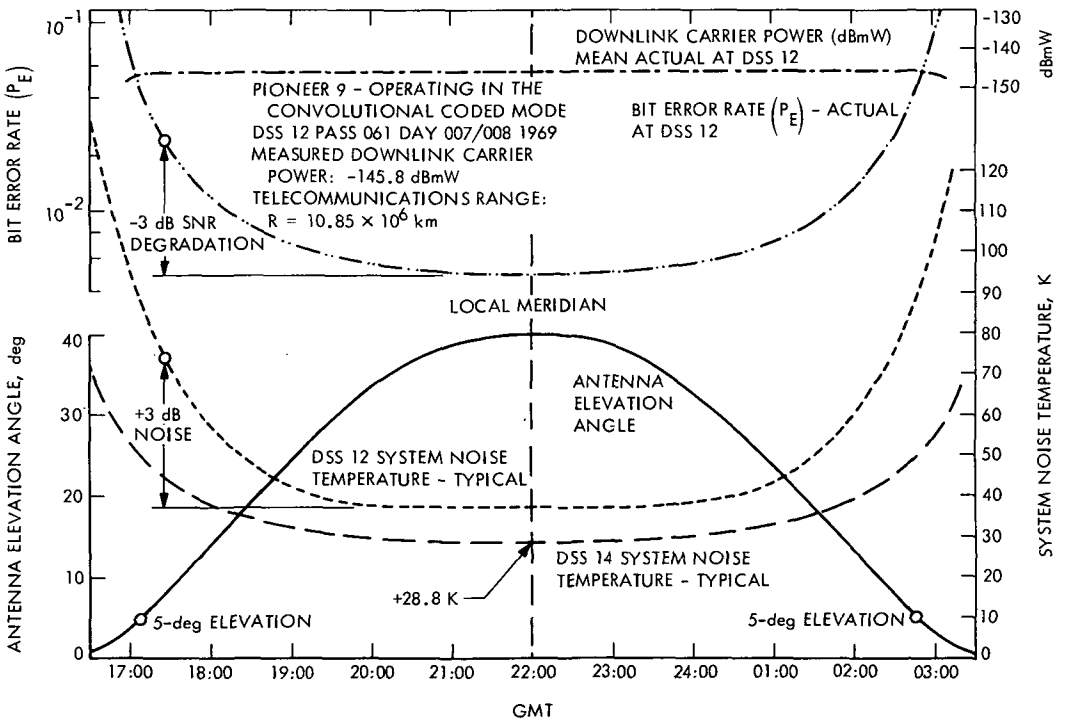


Fig. A-1. DSS 12 pass with Pioneer 9 operating in convolutional coded mode

APPENDIX B
SPECIAL COVERAGE

I. PIONEER 6 SOLAR OCCULTATION, 1968

A. General

Experiments concerning a Pioneer 6 spacecraft solar occultation and full superior conjunction with the Sun were supported by the 64-m-diameter antenna station (DSS 14) capabilities from October 20 to December 20, 1968. The actual solar occultation began November 21 and ended November 25, with the spacecraft probe's orbit resulting in a line of sight from the probe to the Earth that caused the RF signal to pass through the solar corona and to be occulted by the Sun.

The polarization of the spacecraft probe was linear; it was spin-stabilized with respect to the plane of the ecliptic. Measurement was made of the plane of the signal received from the spacecraft. Faraday rotation produced by the interaction of the RF signal with the solar corona was inferred from the measurements.

B. Experiment Chronology

A modified multifrequency cone was reinstalled on the 64-m-diameter antenna at DSS 14 on September 18, 1968. These modifications permitted closed-loop tracking of the angle of the plane of polarization. The initial installation permitted manual positioning of the polarizer and the obtaining of an error signal. Initially, data were taken manually. The plane of polarization was deduced by observing the time-of-error-signal zero crossing for a given position of the polarizer. On October 26, the polarization servo tracking loop was closed and auto-tracking data of the plane of polarization of the signals received from Pioneer 6 were obtained. During this time, the effects of the diurnal variations of the Earth's ionosphere were clearly observed.

On November 4, for a period of 2 h, normal polarization, which was approximately 97 deg (due to the combination of the spacecraft orientation of 90 deg to the plane of the ecliptic and the Earth's ionospheric effects of approximately 7 deg), swung dramatically to approximately 65 deg. This event occurred when the line of sight to the spacecraft was at approximately 10 solar radii from the limb of the Sun. As the line of sight approached the solar limb, a steady-state rotation apparently occurred.

The last signals were obtained as the line of sight approached the Sun on November 17. The solar side lobes caused large increases in system temperature at the same time the solar corona caused spectral broadening. These two effects made it impossible to track any farther. From November 21 to 25, the spacecraft was physically occulted by the Sun. It was not possible to reacquire the space signal until November 29. From November 29 through December 8, the spacecraft was again tracked. The experiment was terminated on December 8, 1968.

C. Trajectory Results

Trajectory results for the solar occultation are summarized in Figs. B-1 and B-2. Figure B-1 plots the Sun-Earth-probe angle vs time during November. The Sun-Earth-probe angle is given in degrees in the trajectory period, but in Fig. B-1 a kind of normalized angle is shown. This angle is the ratio of the Sun-Earth-probe angle to the Sun-Earth-limb of Sun angle. Occultation occurred at the times that the curve crosses the value 1.0. The solar radius and Sun-Earth distance used to determine the Sun-Earth-limb of Sun angle are 0.695×10^6 km and 150×10^6 km, respectively. These result in a solar angular semidiameter of 0.27 deg. (Sun-Earth-limb of Sun angle, solar angular semidiameter at Earth, and angle subtended at Earth by one solar radius are all the same thing.)

In Fig. B-2, the solar occultation of the spacecraft is shown in a more geometric way. The circle represents the disc of the Sun, and the line and time dots represent the progress of the spacecraft into and out of occultation. The point of view is that of an observer at Earth looking toward the Sun along the Sun-Earth line. The quantity plotted radially in Fig. B-2 is essentially the Sun-Earth-probe angle, but again normalized by dividing by the solar angular semidiameter.

The DSN furnished continuous support during the January 30, 1969, inferior conjunction of Pioneer 9 from Deep Space Stations 12, 42, and 61/62 and the MSFN Wing Station at Goldstone. However, the planning forecast had predicted an approximate 20-h radio blackout resulting from the nearness of the Sun to the DSS antenna beam. The forecast was based on signal-to-noise ratio measurements made in 1964 in the close vicinity of the Sun.

Although no telemetry signal was expected during the radio blackout, actual TDA support performance was continuous and there were no signal dropouts (Fig. B-3). The telemetry bit rate used during the closest approach to the Sun was 64 bits/s with a system noise temperature of 780 K. At this closest point, the heliocentric Sun-Earth-spacecraft angle was 0.78 deg. Because of the success of the convolutional coding system (Section II), the real-time processed telemetry was errorless.

Figure B-4 illustrates the increase in system noise temperature and bit error rate for 36 h during the conjunction. The assumption is that resurfacing of the 26-m-diameter antennas improved the sidelobe performance, and the antennas did not pick up as much noise as in 1964 with the old surfaces.

The collection of uninterrupted telemetry and precision two-way tracking data during Sun-spacecraft-Earth syzygy of Pioneer 9 made possible detailed analysis of the fields and particles traveling from the Sun toward the Earth at an approximate distance of 17 million km from the Earth.

Telemetry degradation because of the solar occultation of Pioneer 9 that began in late 1970 is shown by an analysis of data compiled (Figs. B-5 through B-8). Figure B-5 shows the fixed Sun-Earth line trajectory for Pioneer 9, giving the dates and angles concerned (reference: IBM 7094 Trajectory Program Tapes 12309 and 12856).

Figure B-6 shows the degradation of the system temperature (T_s) by noise (or SNT) from approximately ±9 deg of the Sun-Earth probe (SEP) angle related to the day of the year (DOY). There are two actual curves and two predicted curves. The dual curves are the result of the effect of the quadripod structure on the 64-m-diameter antenna at DSS 14, as can be seen in Fig. B-8. After approximately 6 or 7 deg of SEP angle, the effect of the quadripod structure is minimal.

Sheet 1 of Fig. B-7 shows the degradation of the telemetry data by actual and predicted residual signal-to-noise ratio (SNR) curves up to ±9 deg of SEP angles. The predicted curve data was compiled from system temperatures taken during this period. Figure B-7b is a continuation of B-7a, showing the degradation continuing on past 15 deg prior to syzygy.

Figure B-8 is an actual reproduction of the T_s strip chart recording for Pass 760 on December 7, 1970. This graph shows the high peaks resulting from the effect of the quadripod structure (reference: Figs. 2 through 5 of DSN Document 810-5, Revision A, October 1, 1970).

The data in Fig. B-7b are discontinuous from approximately 15 to 18 deg of SEP angle because DSS 14 did not track during this period. After 18 deg, the data are within ±0.5-dB tolerance.

Because of the retrograde motion of Pioneer 9, as can be seen in Fig. B-5, the SEP angle was less than 8.78 deg after March 15, 1971. From then on, the SEP residuals maintained predictions within ±0.5 dB.

The compiled data in Figs. B-6 and B-7 show that the change in system temperature created most of the degradation in the telemetry. Figures B-6 and B-7b do not show why the degradation continued past the time that the system temperature was at its predicted value. Figure B-5 shows that from less than 18 deg prior to syzygy and greater than 9 deg after syzygy the only difference is the distance from the Sun. Therefore, other solar effects influenced the signal besides the change in system temperature.

IV. PIONEERS 6 AND 7 SUN SPIRAL/RADIAL EXPERIMENT 1969-1970

A Sun spiral/radial experiment (Figs. B-9 through B-14) in which DSS 14 tracked Pioneers 6 and 7 on an alternating basis was given successful DSN support during the 1969-1970 report period. The experiment began October 29 and was successfully completed during January 1970. The DSN became officially involved in the experiment on October 20 and continued on with it through January upon request of the Pioneer Project. Pioneers 6 and 7 Earth alignment was November 28 and 29, when both spacecraft were in the DSS 14 0.14-deg beamwidth (uplink beamwidth is 0.15 deg).

Simultaneous tracking was accomplished with the antenna pointing midway between the two spacecraft; Receiver 1 was locked to Pioneer 6 and Receiver 2 to Pioneer 7. Telemetry data from both spacecraft were transmitted in real-time to ARC. Pioneer 6 data were processed at DSS 14; Pioneer 7 data were processed at DSS 12 via the microwave link.

The Pioneer Project expressed appreciation for the amount and quality of DSN support, reporting that the data turnaround time (5 min) before and after alignment was excellent and that the data acquired appeared good.

The telecommunications characteristics were as follows:

(1) DSS 14: 64-m-diameter antenna; system noise temperature, 25 K at meridian; linear polarization.

(2) Pioneer 6: bit rate, 16 bits/s; non-coherent mode (commanded); Channel 6; expected nominal average AGC, -159.5 dBm; downlink frequency, 2292.021400 mHz; round-trip light time, 24 min 8 s.

(3) Pioneer 7: bit rate, 16 bits/s; non-coherent mode; Channel 6; expected nominal average AGC, -162.3 dBm; downlink frequency, 2292.050700 mHz; round-trip light time, 27 min 29 s.

(4) Downlink frequency difference, 0.029300 mHz.

Experimental results were as follows:

(1) 28 November 1969

Pioneer 6: Pass 1444, average AGC, -164.6 dBm.

Pioneer 7: Pass 1200, average AGC, -165.3 dBm.

(2) 29 November 1969

Pioneer 6: Pass 1445, average AGC, -162.7 dBm.

Pioneer 7: Pass 1201, average AGC, -163.1 dBm.

V. PIONEERS 6 AND 8 SUN SPIRAL/RADIAL EXPERIMENT, 1970

The Pioneer 6 and 8 spiral/radial alignment on October 10, 1970, was covered simultaneously by DSS 12 and DSS 61 on Pioneer 6 and DSS 51 and DSS 11 on Pioneer 8. Then, on October 30, the Pioneer Project and the JPL control center used a special engineering configuration for tracking the two spacecraft in the same antenna beamwidth for the Earth-spacecraft alignment (Fig. B-15).

Both spacecraft were readily acquired, but the merger was successful only on Pioneer 6; Pioneer 8 data were degraded. The attempt to go in the direction of an uplink was not successful.

Although high points of the Pioneer 6-8 experiment had been completed by the end of October, coverage for the experiment continued through December. However, at that time, tracking emphasis was given the Pioneer 9 solar occultation by the DSN, with DSS 11 and DSS 12 giving simultaneous coverage of Pioneers 6 and 8 for the spiral/radial after tracking Pioneer 9.

Figures B-16 and B-17 present Pioneer 6 and 8 spacecraft spiral/radial positions and dates for Earth alignment. Sun spiral/radial activity involving Pioneers 7 and 9 in May-June 1971 did not receive thorough support because of the heavy commitments of the DSN network at that time. (A Sun spiral/radial experiment in which DSS 14 tracked Pioneers 6 and 7 on an alternate basis during the 1969-1970 report period is described in this Appendix.

General objectives of Sun spiral/radial experiments are:

(1) To determine the cone angle of the cosmic ray emissions from the Sun.

(2) To determine the effect of solar flares on this cone angle.

(3) To measure the travel time of the cosmic rays between Pioneer spacecraft.

(4) To determine the angle of the plasma spiral in the region of the two spacecraft.

(5) To measure the travel time of the plasma between the two spacecraft.

(6) To observe the data from both spacecraft simultaneously as much as possible.

MAGNETOMETER, TRIAXIAL — Ames Research Center (NASA)

Charles P. Sonett, David Coleburn

Pioneer 9

Triaxial Fluxgate Sensor: measures simultaneously the three orthogonal components of the interplanetary magnetic field.

Range: ±200Y with precision of ± 0.2Y.

MAGNETOMETER, SINGLE AXIS — Goddard Space Flight Center (NASA)

Dr. Norman F. Ness, Sergio Cantarano, Charles H. Ehrmann, Clell S. Scearce

Pioneers 6, 7, 8

Single Fluxgate Sensor: measures sequentially the magnitude of the three orthogonal components of the interplanetary magnetic field.

Range: ± 64Y.

COSMIC DUST DETECTOR — Goddard Space Flight Center (NASA)

Otto Berg, Carl S. Nilsson, Luc Secretan

Pioneers 8, 9

Micrometeoriod Sensor: measures the momentum, energy and distribution of minute meteoroids in interplanetary space.

Range: Mass greater than 5×10^{-5} grams.

SOLAR PLASMA DETECTOR — Ames Research Center (NASA)

John H. Wolfe, Richard W. Silva

Pioneers 6, 7

Quadrispherical Electrostatic Analyzer: measures the energy spectrum, flux, and angular distribution of both positive ions and electrons of the interplanetary plasma.

Ranges:	Energy/charge	
	Positive ions	0.2 to 10 kV (16 bands)
	Electrons	0.002 to 0.5 kV (8 bands)
	Flux sensitivity	10^5 to 10^9 particles/cm^2-s

SOLAR PLASMA DETECTOR — Ames Research Center (NASA)

John H. Wolfe, Darrell D. McKibbin

Pioneers 8, 9

Quadrispherical Electrostatic Analyzer: measures the energy spectrum, flux, and angular distribution of both positive ions and electrons of the interplanetary plasma.

Ranges:	Energy/charge	
	Positive ions	0.2 to 15 kV (30 bands)
	Electrons	0.014 to 1 kV (15 bands)
	Flux sensitivity	5×10^4 to 10^8 particles/cm^2-s

SOLAR PLASMA DETECTOR — Massachusetts Institute of Technology

Herbert S. Bridge, Alan J. Lazarus

Pioneers 6, 7

Faraday Cup: measures the energy spectrum, flux, and angular distribution of both positive ions and electrons of the interplanetary plasma.

Ranges:	Energy/charge	
	Positive ions	0.1 to 9.5 kV (14 bands)
	Electrons	0.1 to 1.6 kV (4 bands)
	Flux sensitivity	2×10^5 to 2×10^9 particles/cm^2-s

COSMIC RAY GRADIENT DETECTOR — University of Minnesota

William R. Webber

Pioneers 8, 9

Cosmic Ray Detector: measures the numbers, energy, and gradient of positive particles. Can identify nuclei of elements up to silicon over a wide range of speeds.

Range: 1 MeV to 1 BeV

COSMIC RAY ANISOTROPY DETECTOR — Southwest Center for Advanced Studies

Kenneth G. McCracken, William C. Bartley, Robert Bukata, U. Ramachendra Rao

Pioneers 6 and 7

Cosmic Ray Detector: measures the anisotropy of the low-energy primary and solar cosmic rays.

Ranges:	Energy windows	7.5 to 45, 45 to 90, 150 to 350 MeV/nucleon
	Electrons	7.5 to 13 MeV

COSMIC RAY ANISOTROPY DETECTOR — Southwest Center for Advanced Studies

Kenneth G. McCracken, William C. Bartley, Robert Bukata, U. Ramachendra Rao

Pioneers 8, 9

Cosmic Ray Detector: measures the arrival direction, mass, and energy/speed of both solar and galactic cosmic ray particles.

Ranges:	Protons	5 to 90 MeV
	Alphas	150 to 360 MeV

COSMIC RAY DETECTOR — University of Chicago

John A. Simpson, Chang-Yun Fan, James E. Lamport, Keith R. Pyle, David R. Smith

Pioneers 6 and 7

Cosmic Ray Detector: measures the intensity, energy spectrum, and angular distribution of protons, alphas, and electrons.

Ranges:	Proton and Alphas	0.6 to 13, 13 to 70, 70 to 190 and greater than 190 MeV/nucleon
	Electrons	0.16 to 1 and 1 to 20 MeV

RADIO PROPAGATION — Stanford University

Von R. Eshleman, Owen K. Garreott, H. Tate Howard, Bruce B. Lusignan, Roy A. Long, and Allen M. Peterson

Pioneers 6, 7, 8, 9

RF Communications System: measures the relative phase-modulation relationships between the 49.8- and 423.3-MHz coherent carriers transmitted from the Stanford 45.72-m dish antenna to the experiment receivers, permitting the determination of the value and time variation of the integrated electron density between the Earth and the spacecraft.

ELECTRIC FIELD DETECTOR — TRW Systems

Fredrick L. Scarf, Gaines M. Crook, Ira M. Green

AC Electrometer: measures the electric components of low-frequency radio waves created by density variations in the solar winds.

Range: 100 to 100,000 Hz

CELESTIAL MECHANICS INVESTIGATION — Jet Propulsion Laboratory

John D. Anderson

Pioneers 6, 7, 8, 9

Utilizes spacecraft communications subsystem: measurements of the masses of the Earth and Moon, the astronomical unit, and the osculating elements of the Earth's orbit are accomplished by analysis of Pioneer tracking data and two-way doppler measurements.

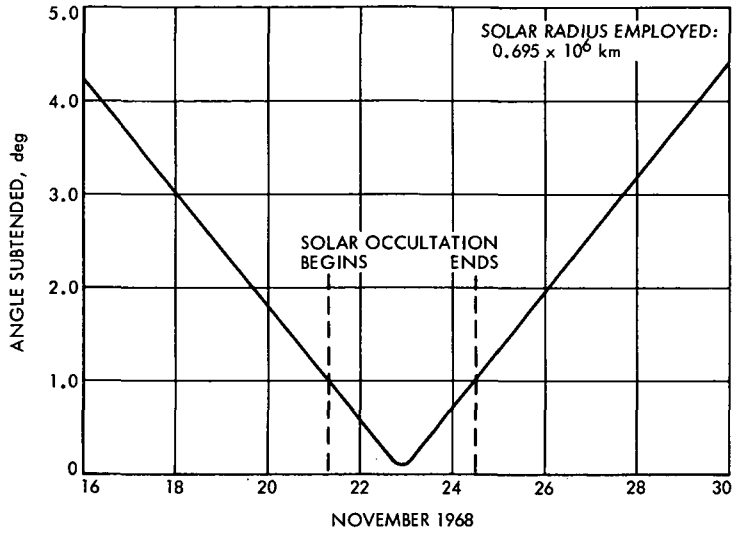


Fig. B-1. Pioneer 6 solar occultation chart, November 1968

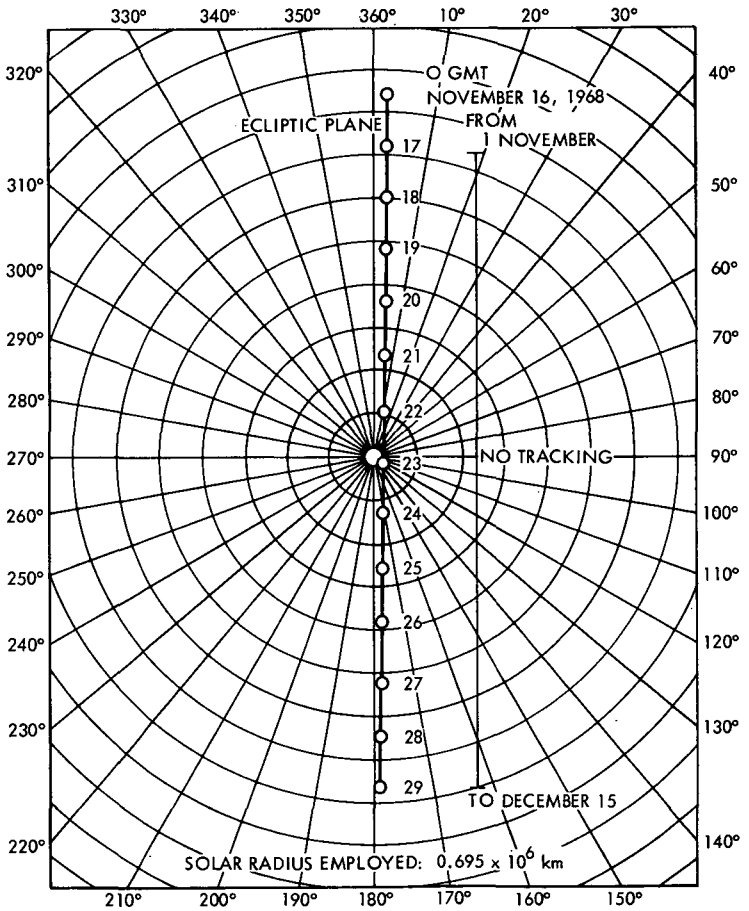


Fig. B-2. Movement of Pioneer 6 behind solar disk during November 1968

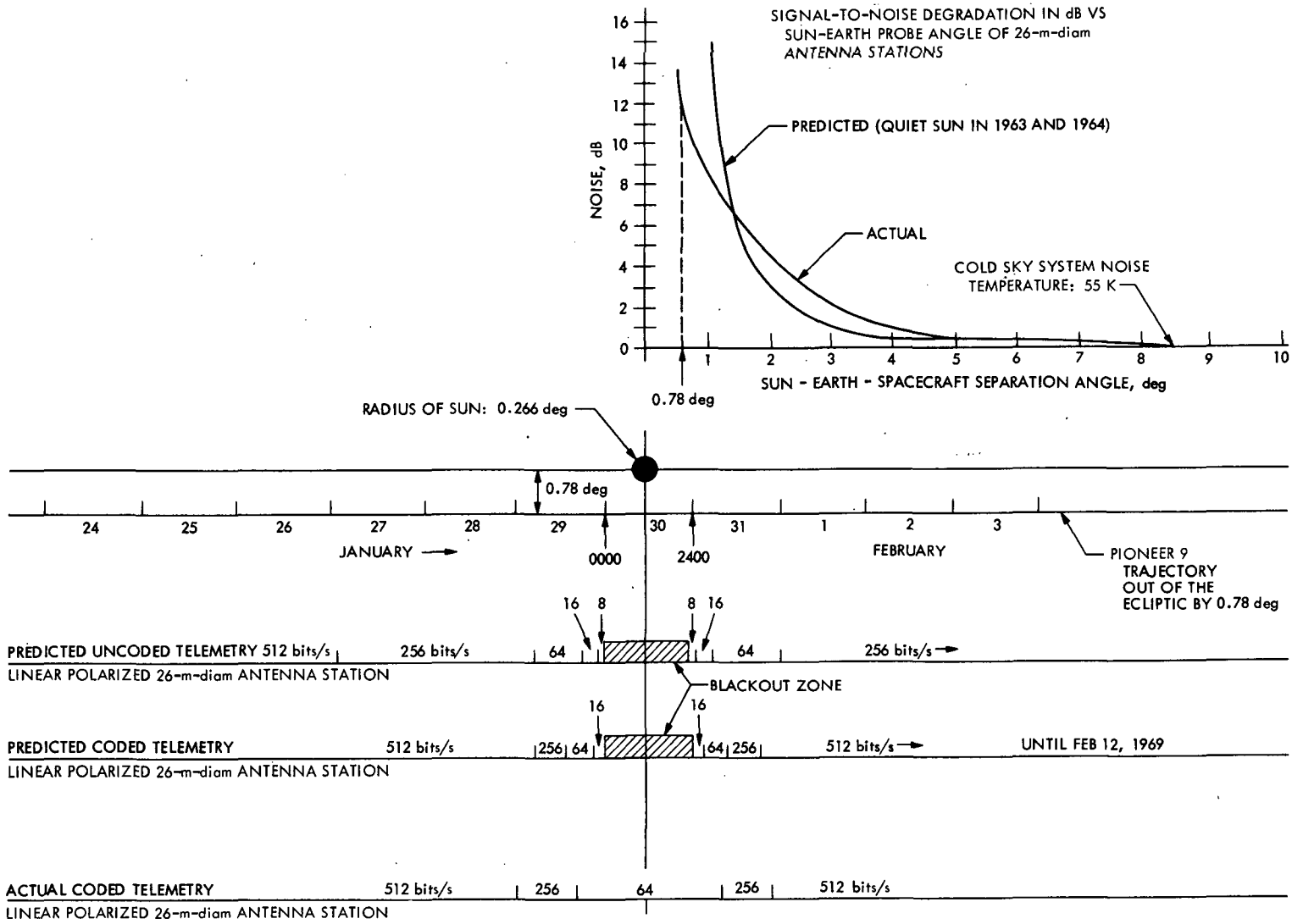


Fig. B-3. Pioneer 9 inferior conjunction, January 30, 1969

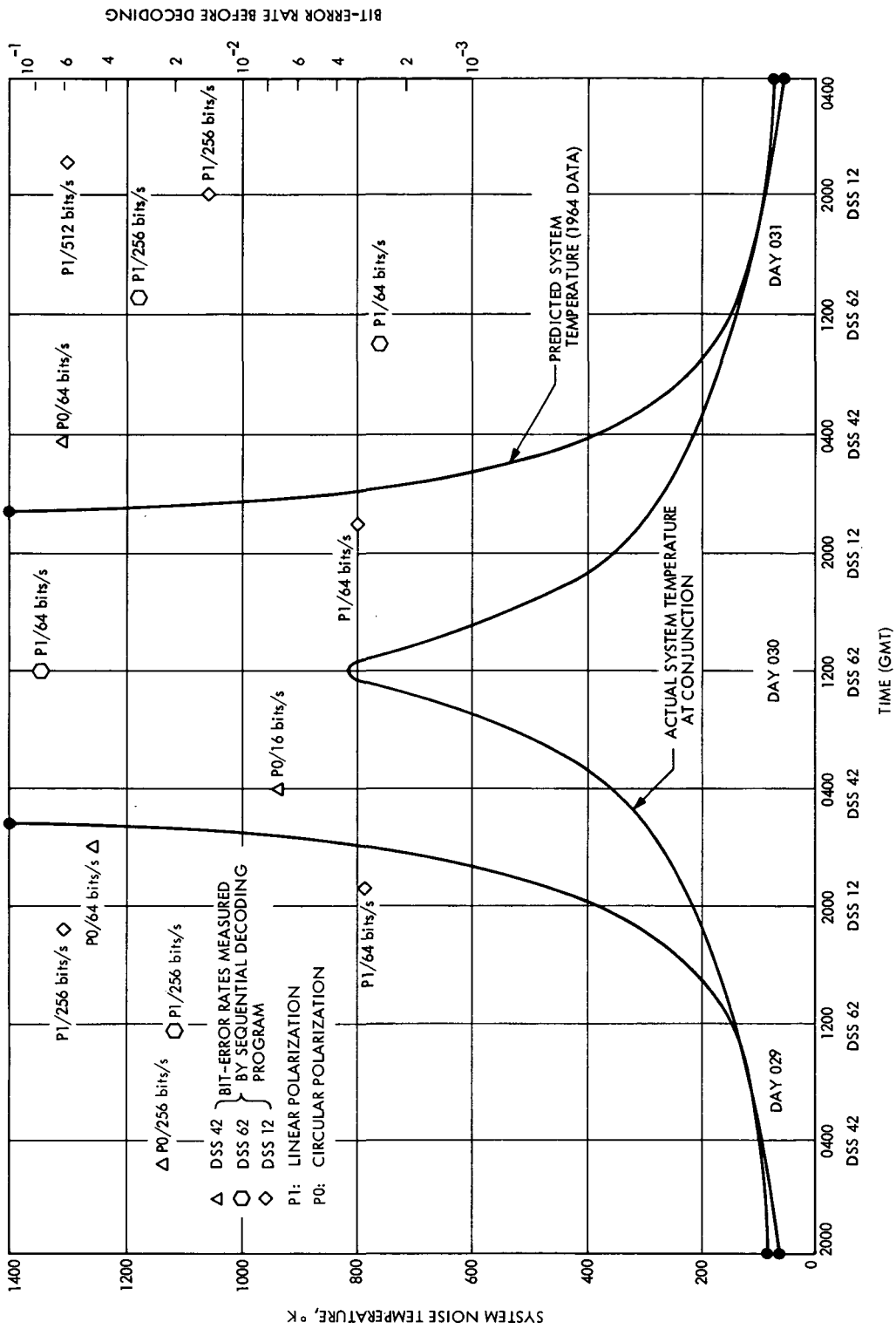


Fig. B-4. System noise temperature and bit error rate before decoding versus time during Pioneer 9 inferior conjunction

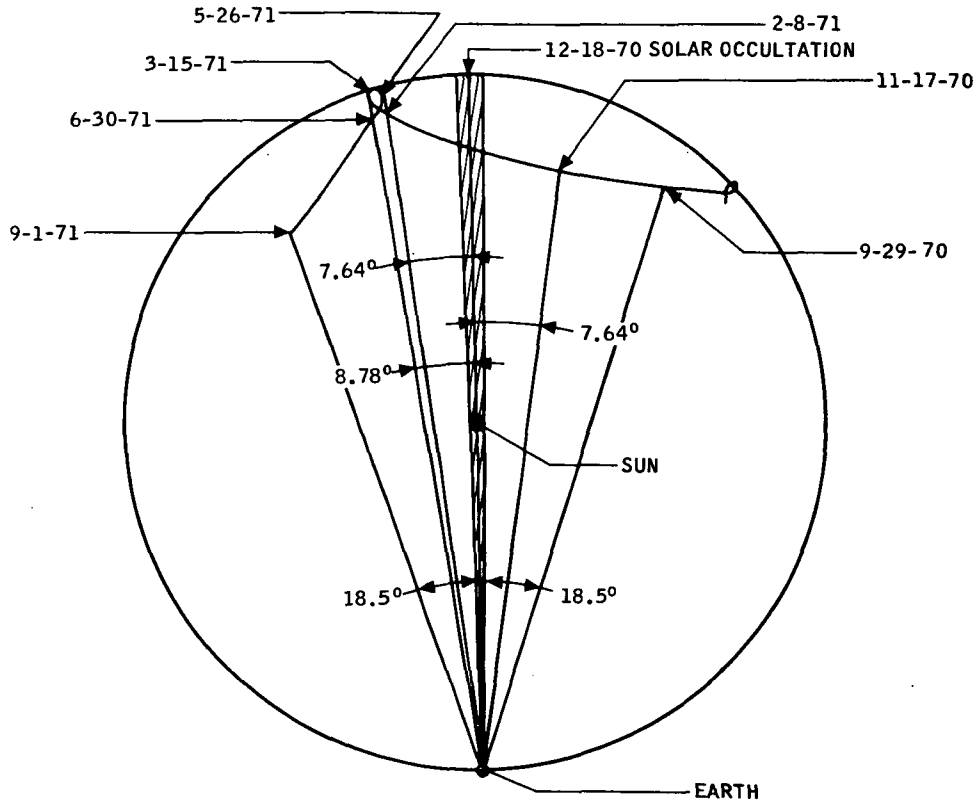


Fig. B-5. Sun-Earth-probe angles for Pioneer 9 near superior conjunction

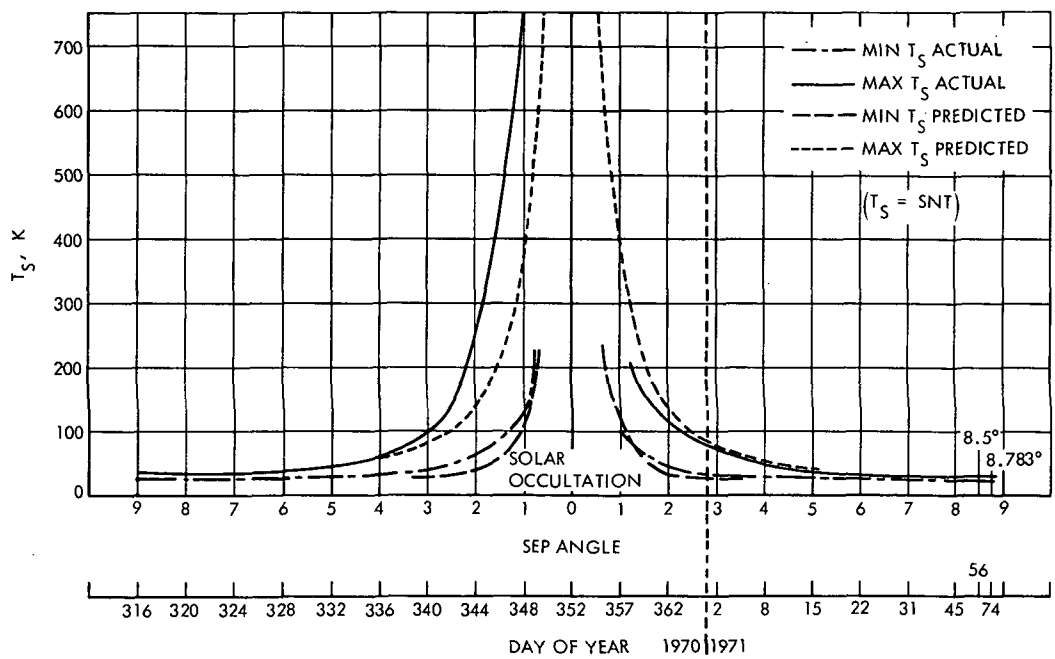


Fig. B-6. DSS 14 actual and predicted system noise temperature versus Sun-Earth-probe angle and day of year for Pioneer 9 occultation

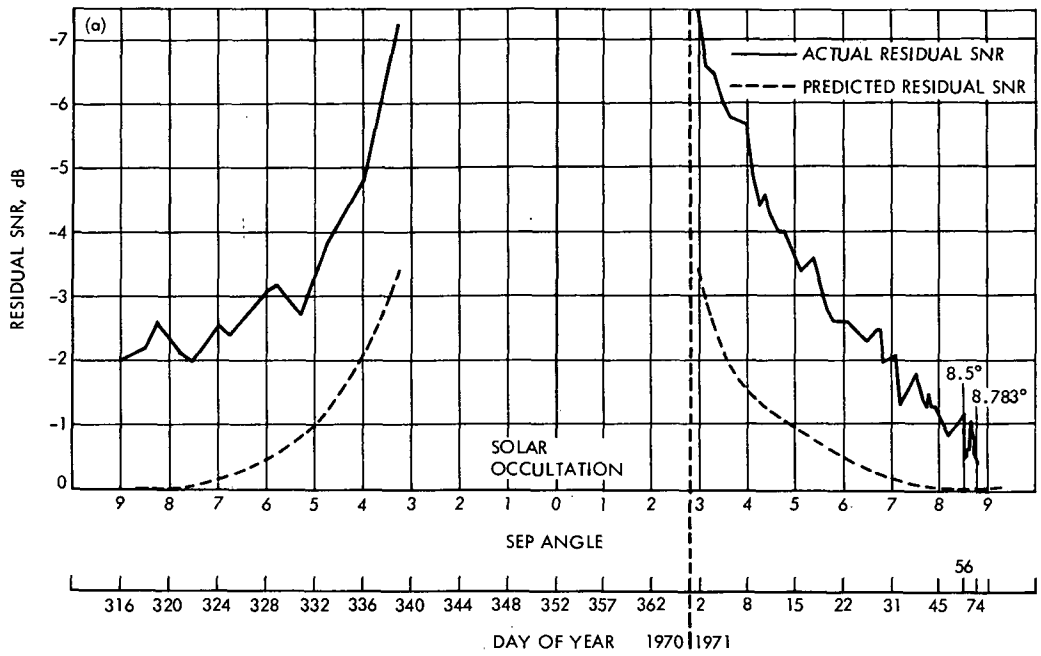


Fig. B-7a. DSS 14 actual and predicted residual signal-to-noise ratio versus Sun-Earth-probe angle and day of year for Pioneer 9 occultation

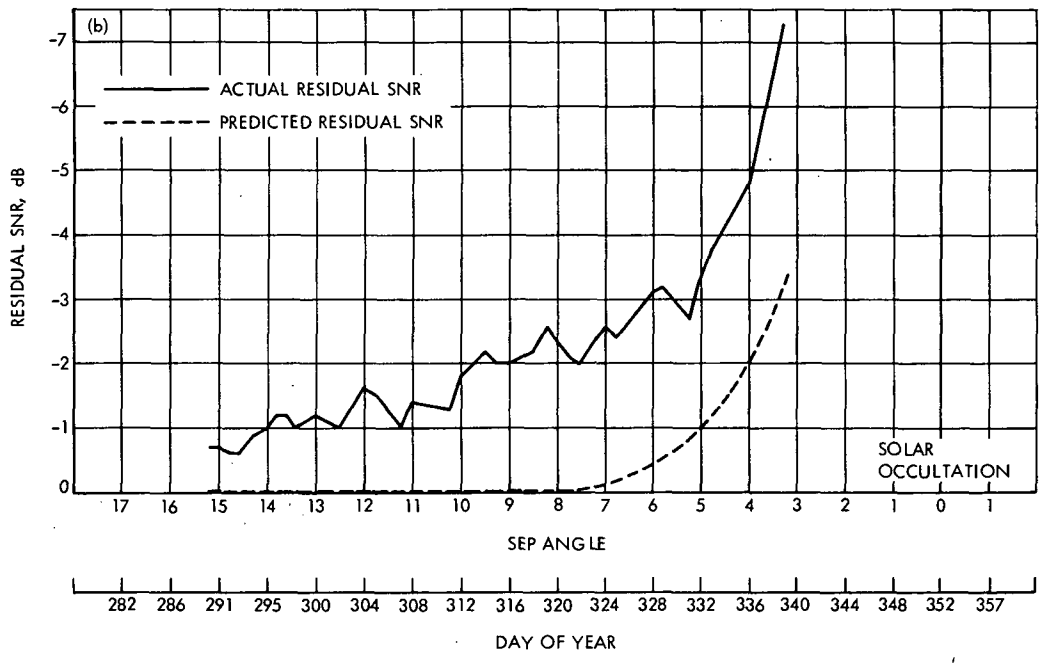


Fig. B-7b. DSS 14 actual and predicted residual signal-to-noise ratio versus Sun-Earth-probe angle and day of year for Pioneer 9 occultation

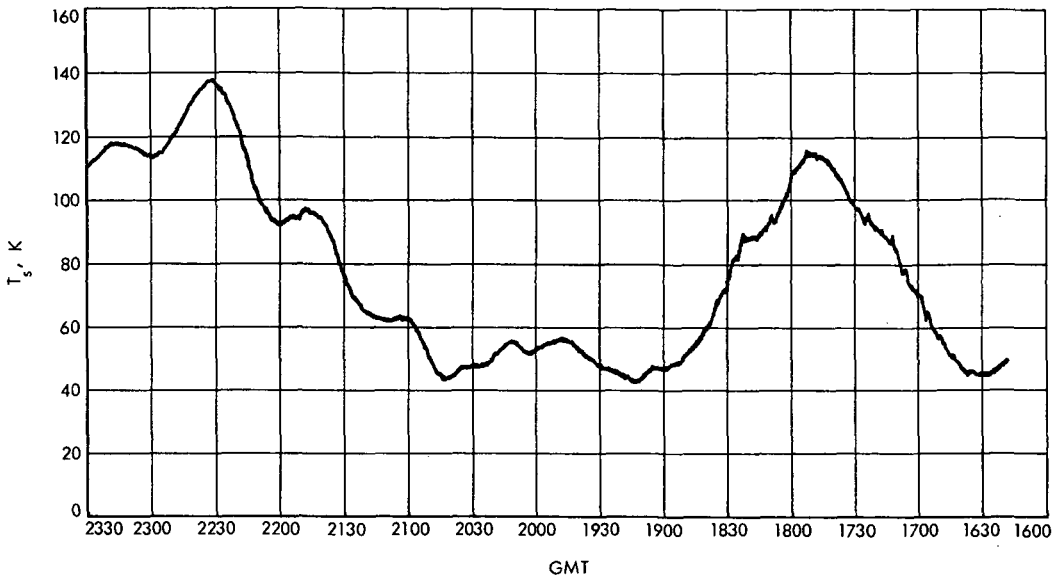


Fig. B-8. Normal system temperature versus GMT plot at DSS 14 during Pioneer 9 occultation period, Pass 760 on Day 341

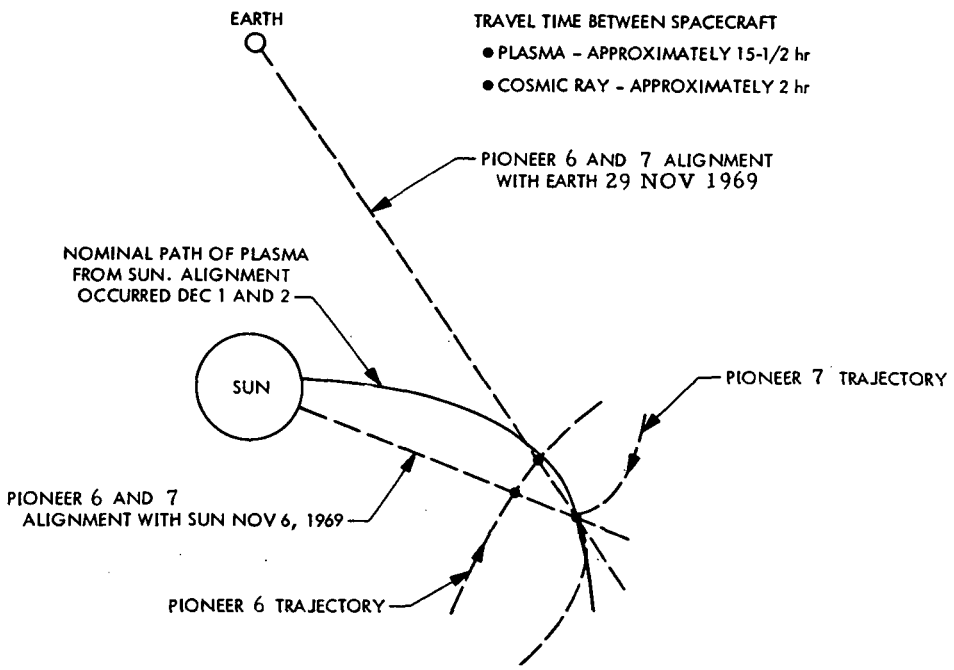


Fig. B-9. Pioneers 6 and 7 sun spiral/radial experiment, 1969

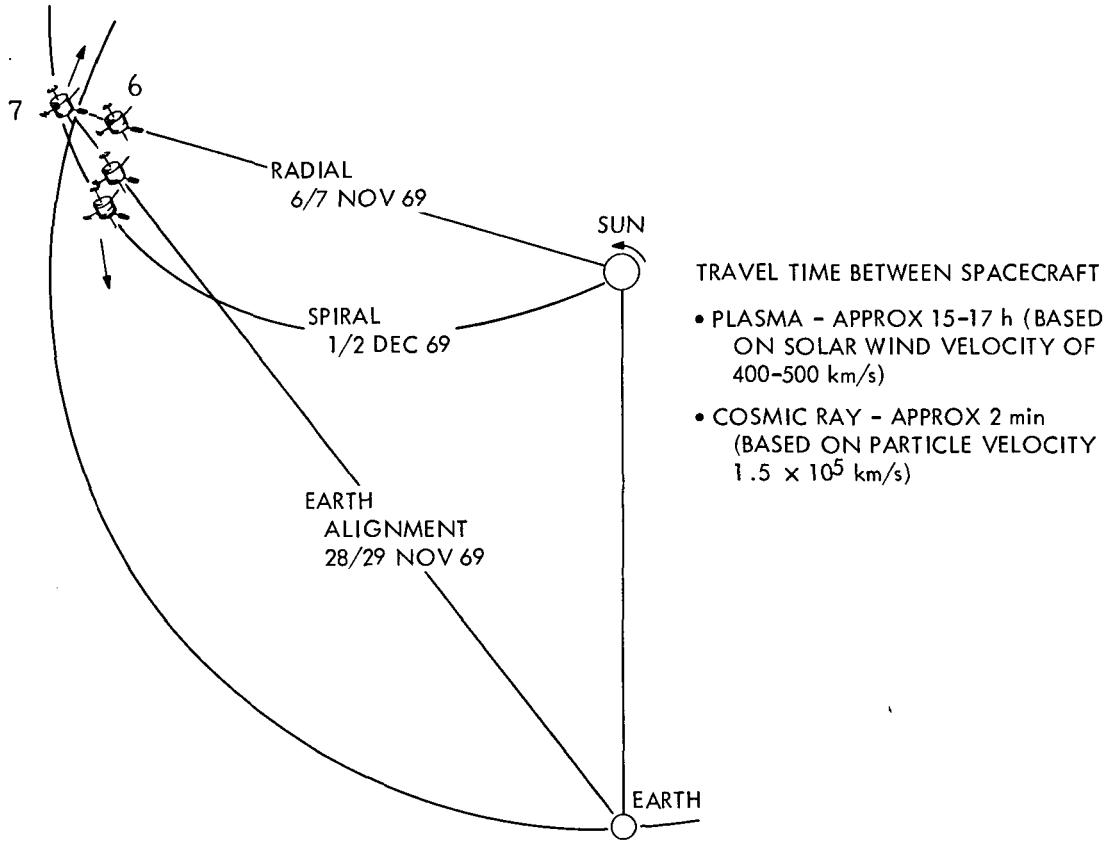


Fig. B-10. Pioneers 6 and 7 positions relative to Earth-Sun line during spiral/radial investigation, 1969

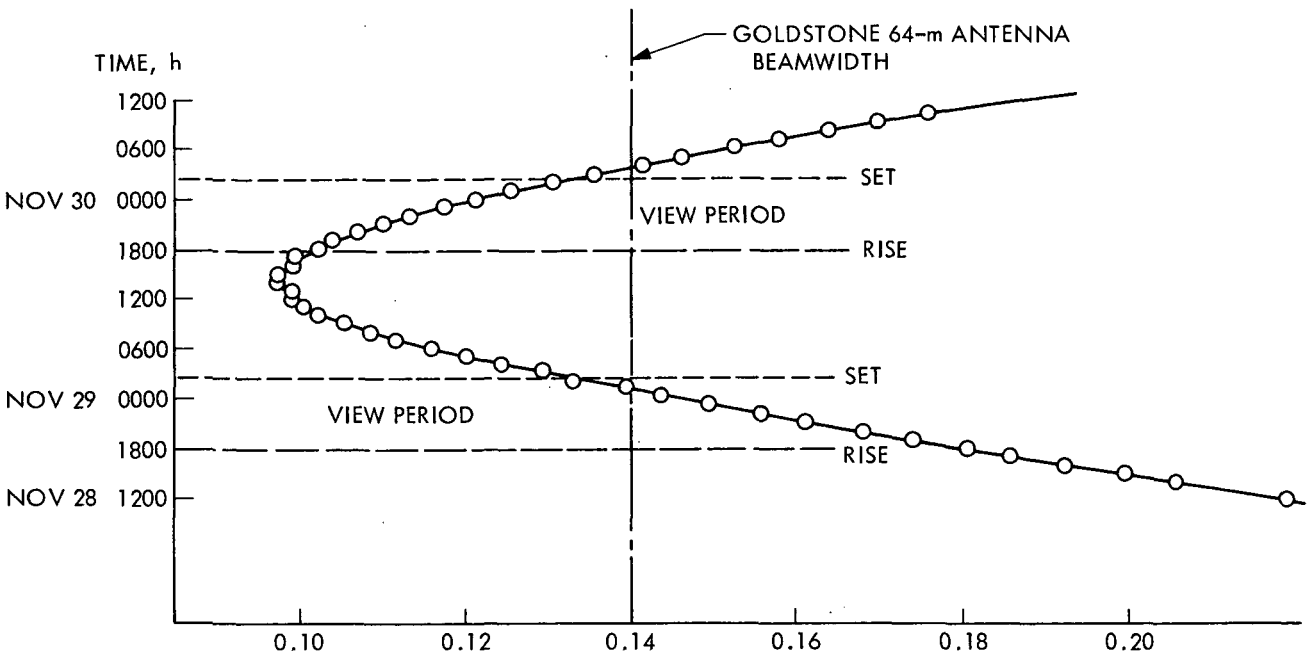


Fig. B-11. Pioneers 6 and 7 angular separation, 1969

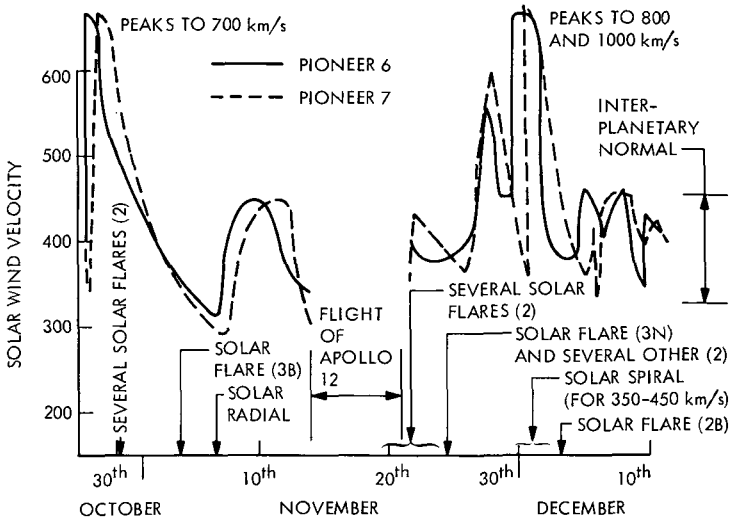


Fig. B-12. Solar wind velocity, 1969

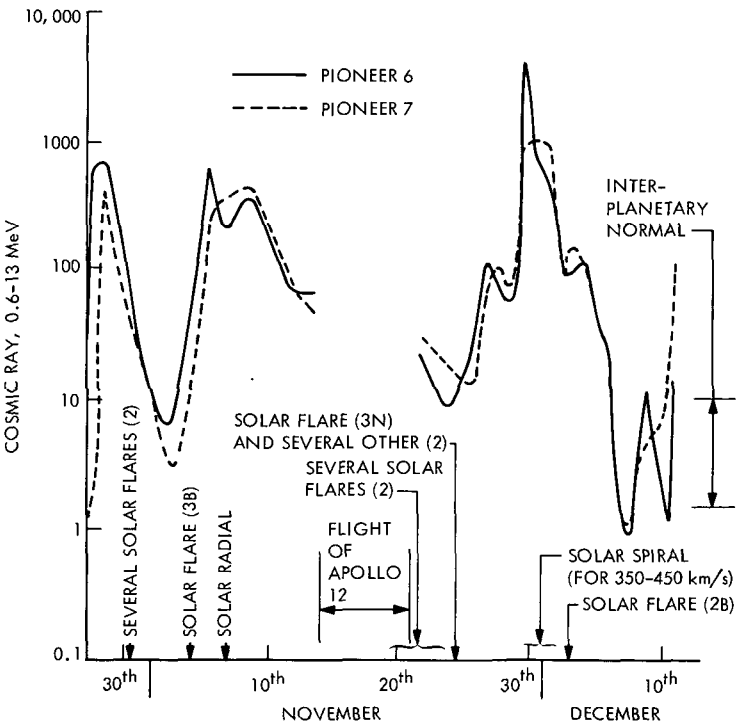


Fig. B-13. Pioneers 6 and 7 cosmic ray energy level, 1969

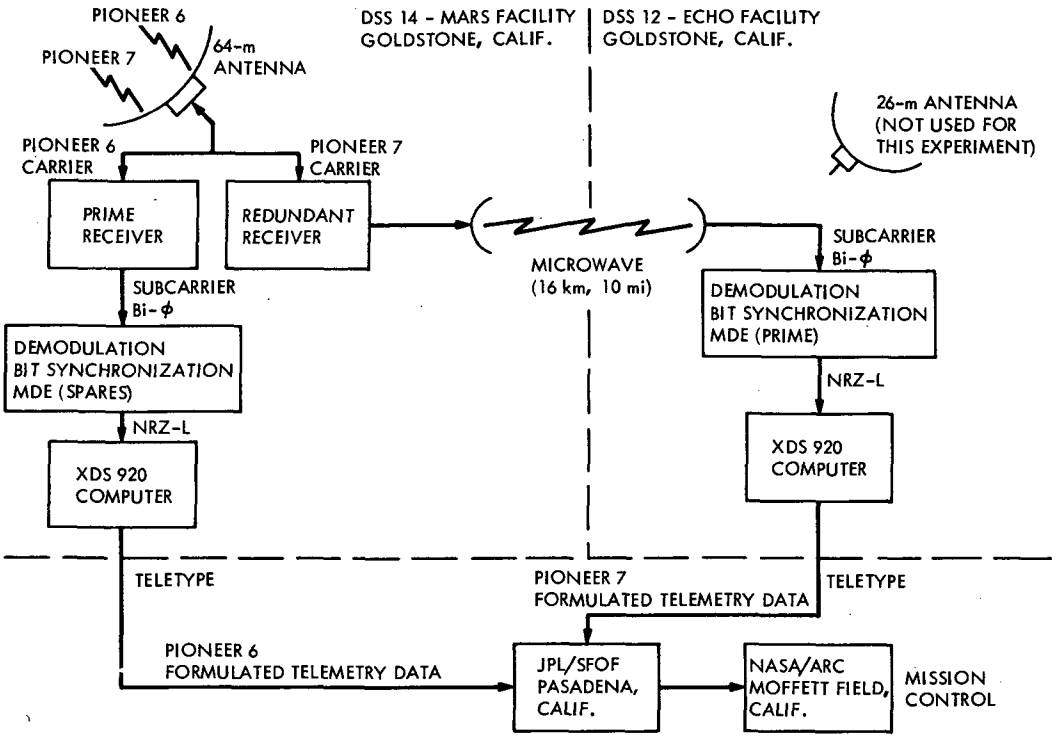


Fig. B-14. Single deep space receiving antenna, two spacecraft, 1969

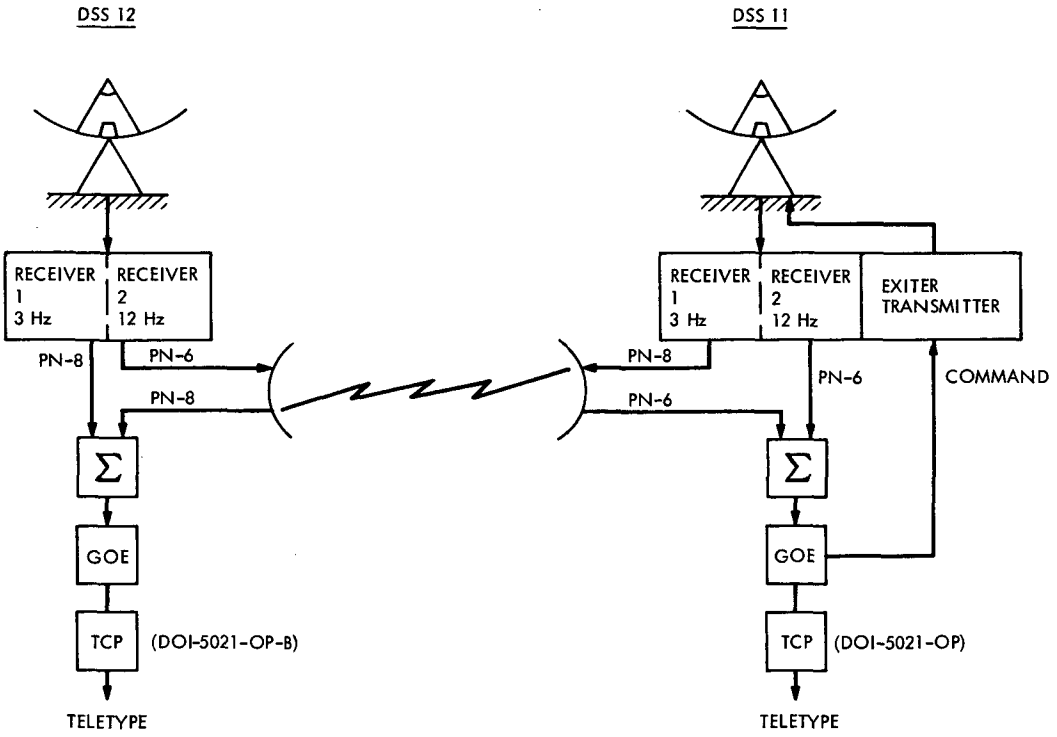


Fig. B-15. Cross-combined telemetry configuration for support of Pioneers 6 and 8 geocentric alignment, October 1970

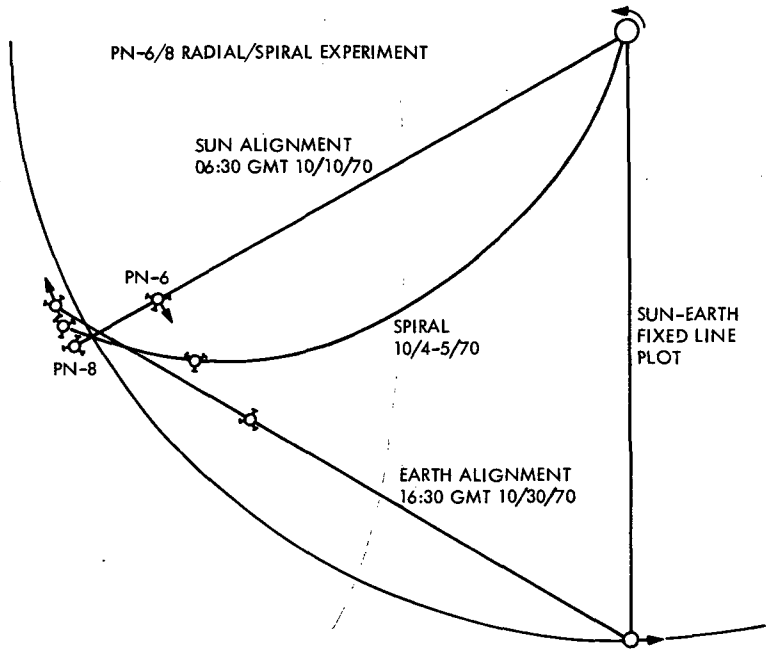


Fig. B-16. Pioneers 6 and 8 sun spiral/radial positions

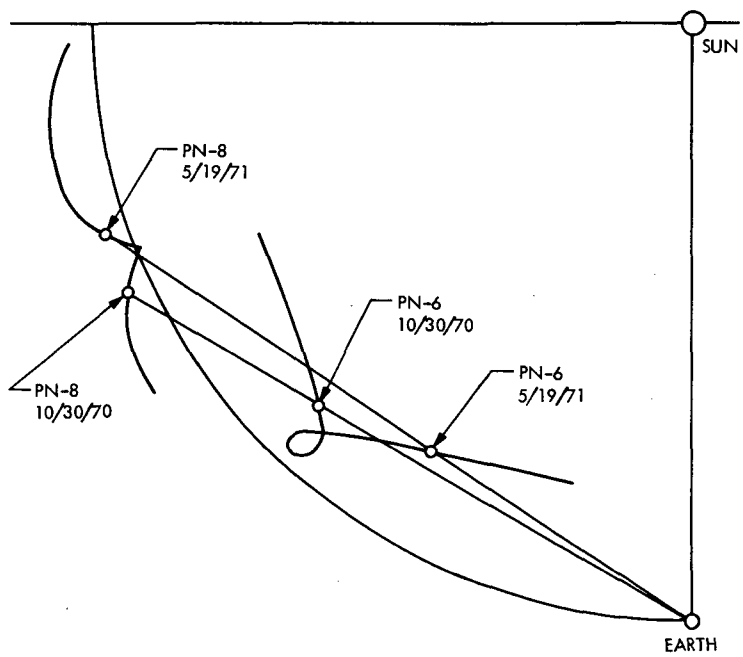


Fig. B-17. **Dates for Pioneers 6 and 8 Earth alignment, one of which occurred as part of Sun spiral/ radial activity**

APPENDIX C
PIONEER PASS CALENDAR
JULY 1971-JULY 1972

PIONEER CALENDAR

July 1971					27 (week no.)							28							29							30					
Calendar Date	Th 1	F 2	S 3	Su 4	M 5	T 6	W 7	Th 8	F 9	S 10	Su 11	M 12	T 13	W 14	Th 15	F 16	S 17	Su 18	M 19	T 20	W 21	Th 22	F 23	S 24	Su 25	M 26	T 27	W 28	Th 29	F 30	S 31
Day of Year	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212
Pioneer 6 Pass	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
Pn 6 DSS 41 & 42											2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
Pioneer 7 Pass	1780	1781	1782	1783	1784	1785	1786	1787	1788	1789	1790	1791	1792	1793	1794	1795	1796	1797	1798	1799	1800	1801	1802	1803	1804	1805	1806	1807	1808	1809	1810
Pioneer 8 Pass	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327
Pioneer 9 Pass	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996

August 1971	31							32							33							34							35		
Calendar Date	Su 1	M 2	T 3	W 4	Th 5	F 6	S 7	Su 8	M 9	T 10	W 11	Th 12	F 13	S 14	Su 15	M 16	T 17	W 18	Th 19	F 20	S 21	Su 22	M 23	T 24	W 25	Th 26	F 27	S 28	Su 29	M 30	T 31
Day of Year	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243
Pioneer 6 Pass	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085
Pn 6 DSS 41 & 42	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086
Pioneer 7 Pass	1811	1812	1813	1814	1815	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	1829	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841
Pioneer 8 Pass	1328	1329	1330	1331	1332	1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358
Pioneer 9 Pass	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027

September 1971						36							37							38							39				
Calendar Date	W 1	Th 2	F 3	S 4	Su 5	M 6	T 7	W 8	Th 9	F 10	S 11	Su 12	M 13	T 14	W 15	Th 16	F 17	S 18	Su 19	M 20	T 21	W 22	Th 23	F 24	S 25	Su 26	M 27	T 28	W 29	Th 30	
Day of Year	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	
Pioneer 6 Pass	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	
Pn 6 DSS 41 & 42	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	
Pioneer 7 Pass	1842	1843	1844	1845	1846	1847	1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870	1871	
Pioneer 8 Pass	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368	1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380	1381	1382	1383	1384	1385	1386	1387	1388	
Pioneer 9 Pass	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	

October 1971				40							41							42							43						
Calendar Date	F 1	S 2	Su 3	M 4	T 5	W 6	Th 7	F 8	S 9	Su 10	M 11	T 12	W 13	Th 14	F 15	S 16	Su 17	M 18	T 19	W 20	Th 21	F 22	S 23	Su 24	M 25	T 26	W 27	Th 28	F 29	S 30	Su 31
Day of Year	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304
Pioneer 6 Pass	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146
Pn 6 DSS 41 & 42	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147
Pioneer 7 Pass	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902
Pioneer 8 Pass	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413	1414	1415	1416	1417	1418	1419
Pioneer 9 Pass	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088

November 1971	44							45							46							47							48		
Calendar Date	M 1	T 2	W 3	Th 4	F 5	S 6	Su 7	M 8	T 9	W 10	Th 11	F 12	S 13	Su 14	M 15	T 16	W 17	Th 18	F 19	S 20	Su 21	M 22	T 23	W 24	Th 25	F 26	S 27	Su 28	M 29	T 30	
Day of Year	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	
Pioneer 6 Pass	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	
Pn 6 DSS 41 & 42	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	
Pioneer 7 Pass	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	
Pioneer 8 Pass	1420	1421	1422	1423	1424	1425	1426	1427	1428	1429	1430	1431	1432	1433	1434	1435	1436	1437	1438	1439	1440	1441	1442	1443	1444	1445	1446	1447	1448	1449	
Pioneer 9 Pass	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	

December 1971						49							50							51							52				
Calendar Date	W 1	Th 2	F 3	S 4	Su 5	M 6	T 7	W 8	Th 9	F 10	S 11	Su 12	M 13	T 14	W 15	Th 16	F 17	S 18	Su 19	M 20	T 21	W 22	Th 23	F 24	S 25	Su 26	M 27	T 28	W 29	Th 30	F 31
Day of Year	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365
Pioneer 6 Pass	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207
Pn 6 DSS 41 & 42	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208
Pioneer 7 Pass	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Pioneer 8 Pass	1450	1451	1452	1453	1454	1455	1456	1457	1458	1459	1460	1461	1462	1463	1464	1465	1466	1467	1468	1469	1470	1471	1472	1473	1474	1475	1476	1477	1478	1479	1480
Pioneer 9 Pass	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149

PIONEER CALENDAR

January 1972	1 (week no.)									2								3							4							5
Calendar Date	S 1	Su 2	M 3	T 4	W 5	Th 6	F 7	S 8	Su 9	M 10	T 11	W 12	Th 13	F 14	S 15	Su 16	M 17	T 18	W 19	Th 20	F 21	S 22	Su 23	M 24	T 25	W 26	Th 27	F 28	S 29	Su 30	M 31
Day of Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Pioneer 6 Pass	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238
Pn 6 DSS 41, 42, 51	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239
Pioneer 7 Pass	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Pioneer 8 Pass	1481	1482	1483	1484	1485	1486	1487	1488	1489	1490	1491	1492	1493	1494	1495	1496	1497	1498	1499	1500	1501	1502	1503	1504	1505	1506	1507	1508	1509	1510	1511
Pioneer 9 Pass	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180

February 1972							6							7							8							9			
Calendar Date	T 1	W 2	Th 3	F 4	S 5	Su 6	M 7	T 8	W 9	Th 10	F 11	S 12	Su 13	M 14	T 15	W 16	Th 17	F 18	S 19	Su 20	M 21	T 22	W 23	Th 24	F 25	S 26	Su 27	M 28	T 29		
Day of Year	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60		
Pioneer 6 Pass	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267		
Pn 6 DSS 41, 42, 51	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268		
Pioneer 7 Pass	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		
Pioneer 8 Pass	1512	1513	1514	1515	1516	1517	1518	1519	1520	1521	1522	1523	1524	1525	1526	1527	1528	1529	1530	1531	1532	1533	1534	1535	1536	1537	1538	1539	1540		
Pioneer 9 Pass	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209		

March 1972						10							11							12							13				
Calendar Date	W 1	Th 2	F 3	S 4	Su 5	M 6	T 7	W 8	Th 9	F 10	S 11	Su 12	M 13	T 14	W 15	Th 16	F 17	S 18	Su 19	M 20	T 21	W 22	Th 23	F 24	S 25	Su 26	M 27	T 28	W 29	Th 30	F 31
Day of Year	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91
Pioneer 6 Pass	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298
Pn 6 DSS 41, 42, 51	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299
Pioneer 7 Pass	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054
Pioneer 8 Pass	1541	1542	1543	1544	1545	1546	1547	1548	1549	1550	1551	1552	1553	1554	1555	1556	1557	1558	1559	1560	1561	1562	1563	1564	1565	1566	1567	1568	1569	1570	1571
Pioneer 9 Pass	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224	1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236	1237	1238	1239	1240

April 1972			14							15							16							17							
Calendar Date	S 1	Su 2	M 3	T 4	W 5	Th 6	F 7	S 8	Su 9	M 10	T 11	W 12	Th 13	F 14	S 15	Su 16	M 17	T 18	W 19	Th 20	F 21	S 22	Su 23	M 24	T 25	W 26	Th 27	F 28	S 29	Su 30	
Day of Year	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	
Pioneer 6 Pass	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	
Pn 6 DSS 41, 42, 51	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	
Pioneer 7 Pass	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	
Pioneer 8 Pass	1572	1573	1574	1575	1576	1577	1578	1579	1580	1581	1582	1583	1584	1585	1586	1587	1588	1589	1590	1591	1592	1593	1594	1595	1596	1597	1598	1599	1600	1601	
Pioneer 9 Pass	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260	1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	

May 1972	18							19							20							21							22			
Calendar Date	M 1	T 2	W 3	Th 4	F 5	S 6	Su 7	M 8	T 9	W 10	Th 11	F 12	S 13	Su 14	M 15	T 16	W 17	Th 18	F 19	S 20	Su 21	M 22	T 23	W 24	Th 25	F 26	S 27	Su 28	M 29	T 30	W 31
Day of Year	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152
Pioneer 6 Pass	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359
Pn 6 DSS 41, 42, 51	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360
Pioneer 7 Pass	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115
Pioneer 8 Pass	1602	1603	1604	1605	1606	1607	1608	1609	1610	1611	1612	1613	1614	1615	1616	1617	1618	1619	1620	1621	1622	1623	1624	1625	1626	1627	1628	1629	1630	1631	1632
Pioneer 9 Pass	1271	1272	1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296	1297	1298	1299	1300	1301

June 1972					23							24							25							26					
Calendar Date	Th 1	F 2	S 3	Su 4	M 5	T 6	W 7	Th 8	F 9	S 10	Su 11	M 12	T 13	W 14	Th 15	F 16	S 17	Su 18	M 19	T 20	W 21	Th 22	F 23	S 24	Su 25	M 26	T 27	W 28	Th 29	F 30	
Day of Year	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	
Pioneer 6 Pass	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	
Pn 6 DSS 41, 42, 51	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	
Pioneer 7 Pass	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	
Pioneer 8 Pass	1633	1634	1635	1636	1637	1638	1639	1640	1641	1642	1643	1644	1645	1646	1647	1648	1649	1650	1651	1652	1653	1654	1655	1656	1657	1658	1659	1660	1661	1662	
Pioneer 9 Pass	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	

APPENDIX D
PASS CHRONOLOGIES

APPENDIX D
PASS CHRONOLOGIES

A. CHRONOLOGY INFORMATION.

1. Introduction.

The chronologies are presented in three different formats because a new computerized format was being evolved during the report period.

2. Format Abbreviations.

Definitions of common abbreviations are:

AOS	Acquisition of Signal
APS	Antenna Pointing System
ARC	Ames Research Center
CP	Communications Processor
DIS	Digital Instrumentation Subsystem
DR	Discrepancy Report
EOT	End of Track
GCF	Ground Communications Facility
GOE	Ground Operational Equipment
HSD	High Speed Data
LOS	Loss of Signal
MDE	Mission Dependent Equipment
MG	Motor Generator
MMT	Multimission Telemetry
OPS-X	Operational Teletype Message (nondata)
PF	Pass Folder
SFOF	Space Flight Operations Facility or Control Center (JPL)
SNR	Signal-to-Noise Ratio

SNT	Signal Noise Temperature
ST XFR	Station Transfer
TCP	Telemetry and Command Processor Assembly
TDH	Tracking Data Handling Subsystem
TFR	Traveler/Failure Report (DSIF)
TTY	Teletype

3. Code and Header Explanation.

Configuration codes used were defined in the DSN Equipment Configuration Dictionary prepared and distributed by the DSN Scheduling Office. Using the codes J000, S40J, and T012 as an example, J indicates DSS 51 support, and 000 is defined as standard DSN Multiple-Mission Telemetry (MMT) tracking configuration described in Volume VI of the DSN operations plan for the project specified in title. The letter S represents the DSN/GCF, 40 indicates the standard DSN communication support configuration of four TTY circuits, one 4800 bps high-speed data (HSD) circuit, and one voice circuit, configured per JPL Document 610-80, DSN Operations Plan for MM'71, Volume IV, GCF Operating Procedures and Communication Configurations, Figure 2A-6. J again relates communications circuits to DSS 51. The letter T represents the DSN/SFOF, and 012 indicates DSN flight operations support including one 360/75 computer system configured for tracking, telemetry, and command support and DSS and GCF interface.

Beginning with Pioneer 6 pass 2177, Pioneer 8 pass 1621, and Pioneer 9 pass 1257, the format is broken into headers which provide the following information:

(1) Pass Num(ber). Self-explanatory. In conjunction with the pass number and preceding it is a mission sequence number composed of alpha/numeric characters, i.e., PN6CAZ64794. This mission sequence number reads:

(a) PN6 - Project Pioneer

(b) C - Calendar year 1972 (will change to D for 1973, etc.)

(c) A - Month identifier for January. Letters A through M (I is omitted) will be used to represent January through December.

(d) Z - Internal DSN report generation identifier.

(e) 64794 - Mission ODC sequence number. This number is assigned to the spacecraft, source, and GMT combination. Since this combination is fixed, the traceability and Reporting Program can list all information relative to that specific combination.

(2) GMT-Start. Indicates the year, day, hour, and minute of station AOS.

(3) GMT-End. Indicates the year, day, hour, and minute of station LOS.

(4) Data Day. Indicates the time period commencing with Australia rise time and ending with Goldstone set time.

(5) Comments. Provides data on station configuration, subsystem operation, anomalies, and discrepancy reports.

B. PIONEER 6.

Pass 2024, July 1, 1971 (Day 182)

DSS 62 AOS 182/1200; LOS 182/2100.
MMT pass.

Pass 2025, July 2, 1971 (Day 183)

DSS 62 AOS 183/1206; LOS 183/2100.
MMT pass.

Pass 2028, July 5, 1971 (Day 186)

DSS 14 AOS 186/1839; LOS 186/2200.
GOE pass with 5 commands transmitted.

Pass 2029, July 6, 1971 (Day 187)

DSS 14 AOS 187/1937; LOS 187/2200.
GOE pass with 3 commands transmitted.

Pass 2030, July 7, 1971 (Day 188)

DSS 62 AOS 188/1209; LOS 188/2100.
MMT pass.

Pass 2031, July 8, 1971 (Day 189)

DSS 62 AOS 189/1155; LOS 189/2100.
MMT pass.

Pass 2032, July 9, 1971 (Day 190)

DSS 62 AOS 190/1159; LOS 190/2100.
MMT pass.

Pass 2033, July 10, 1971 (Day 191)

DSS 14 AOS 191/1933; LOS 191/2200.
GOE pass with 3 commands transmitted.

Pass 2035, July 12, 1971 (Day 193)

DSS 62 AOS 193/1204; LOS 193/2100.
MMT pass. At 1252, Maser 1 gain drifted and flow decreased; switched to Maser 2 (Ref. TFR A52856).

Pass 2038, July 15, 1971 (Day 196)

DSS 62 AOS 196/1158; LOS 196/2100.
MMT pass.

Pass 2039, July 16, 1971 (Day 197)

DSS 62 AOS 197/1202; LOS 197/2100.
MMT pass.

Pass 2042, July 19, 1971 (Day 200)

DSS 14 AOS 200/1818; LOS 200/2000.
GOE pass with 1 command transmitted. Heat exchanger kicked off the transmitter at 1842 while tuning for best lock frequency (Ref. TFR-59772, DR-01305).

Pass 2043, July 20, 1971 (Day 201)

DSS 14 AOS 201/1710; LOS 201/2000.
GOE pass with 5 commands transmitted.

Pass 2044, July 21, 1971 (Day 202)

DSS 62 AOS 202/1101; LOS 202/2030.
MMT pass.

Pass 2045, July 22, 1971 (Day 203)

DSS 62 AOS 203/1112; LOS 203/2030.
MMT pass with 15 commands transmitted. Demonstration MMT-MMC track using new TCP Program DOI-5033-OP.

Pass 2046, July 23, 1971 (Day 204)

DSS 62 AOS 204/1100; LOS 204/2030.
MMT pass.

Pass 2047, July 24, 1971 (Day 205)

DSS 14 AOS 205/1740; LOS 205/2000.
GOE pass with 5 commands transmitted.

Pass 2049, July 26, 1971 (Day 207)

DSS 51 AOS 207/0728; LOS 207/1600.
GOE pass with 2 commands transmitted.

Pass 2050, July 27, 1971 (Day 208)

DSS 51 AOS 208/0700; LOS 208/1605.
GOE pass with 1 command transmitted. FR 1400A Recorder Track 3 not recording 0840 to 0855; connector replaced (Ref. TFR A50293).

Pass 2051, July 28, 1971 (Day 209)

DSS 51 AOS 209/0654; LOS 209/1600.
GOE pass with 1 command transmitted.

Pass 2052, July 29, 1971 (Day 210)

DSS 51 AOS 210/0655; LOS 210/1600.
GOE pass with 1 command transmitted.

Pass 2055, August 1, 1971 (Day 213)

DSS 14 AOS 213/2230; LOS 214/0101.
GOE pass with 7 commands transmitted. At 2315, command 034 to address 3 did not start clocking out, command transmitted 1 minute late (Ref. DR-01325).

Pass 2056, August 2, 1971 (Day 214)

DSS 62 AOS 214/0930; LOS 214/1830.
MMT pass with 2 commands transmitted. MMC demonstration pass.

Pass 2059, August 5, 1971 (Day 217)

DSS 51 AOS 217/0644; LOS 217/1345.
GOE pass with 1 command transmitted. Station power trip off 1345 to 1405 (Ref. TFR-A50301). LJLA circuit failure from 0731-0852 due to faulty switch.

Pass 2060, August 6, 1971 (Day 218)

DSS 51 AOS 218/0648; LOS 218/1500.
GOE pass with 3 commands transmitted. Bad PER throughout pass. Attempted to switch demod at 0803Z, second demod would not lockup, switched back to prime (RCVR 1) at 0819Z (Ref. TFR-5030). All GCF circuits were lost at 1014Z (cause unknown). GCF circuits restored at 1020Z. Six minutes of real-time data were lost.

Pass 2061, August 7, 1971 (Day 219)

DSS 62 AOS 219/0949; LOS 219/1830.
MMT pass with 1 command transmitted.

Pass 2063, August 9, 1971 (Day 221)

DSS 51 AOS 221/0600; LOS 221/1400.
GOE pass with 3 commands transmitted.

Pass 2064, August 10, 1971 (Day 222)

DSS 51 AOS 222/0500; LOS 222/1400.
GOE pass with 1 command transmitted.

Pass 2065, August 11, 1971 (Day 223)

DSS 51 AOS 223/0540; LOS 223/1400.
GOE pass with 1 command transmitted. TDH was garbled from 0707Z to 0755Z. Station held TDH (Ref. DR-3095). Engineering data lost from 1111Z to 1114Z due to Goddard CP swap (Ref. DR-3097).

Pass 2066, August 12, 1971 (Day 224)

DSS 51 AOS 224/0545; LOS 224/1345.
GOE pass with 1 command transmitted. Goddard CP down 1114Z to 1123Z, station held data (no loss) (Ref. DR-3103). SNR drop at 1200Z due to faulty antenna HA drive (Ref. DR-01343).

Pass 2067, August 13, 1971 (Day 225)

DSS 62 AOS 225/0830; LOS 225/1730.
MMT pass with 1 command transmitted.

Pass 2068, August 14, 1971 (Day 226)

DSS 62 AOS 226/0830; LOS 226/1730.
MMT pass with 1 command transmitted.

Pass 2071, August 17, 1971 (Day 229)

DSS 62 AOS 229/0530; LOS 229/1600.
MMT pass with 1 command transmitted.

Pass 2074, August 20, 1971 (Day 232)

DSS 51 AOS 232/0445; LOS 232/1200.
GOE pass with 1 command transmitted.

Pass 2076, August 22, 1971 (Day 234)

DSS 51 AOS 234/0452; LOS 234/1300.
GOE pass with 1 command transmitted.

Pass 2078, August 24, 1971 (Day 236)

DSS 51 AOS 236/0318; LOS 236/1200.
GOE pass with 1 command transmitted.

Pass 2079, August 25, 1971 (Day 237)

DSS 51 AOS 237/0313; LOS 237/1200.
GOE pass with 1 command transmitted. Time code problem in telemetry data, 0945-1004Z (Ref. DR-01366).

Pass 2084, August 30, 1971 (Day 242)

DSS 51 AOS 242/0444; LOS 242/1131.
GOE pass with 3 commands transmitted.

Pass 2085, August 31, 1971 (Day 243)

DSS 51 AOS 243/0240; LOS 243/1130.
GOE pass with 5 commands transmitted.

Pass 2086, September 1, 1971 (Day 244)

DSS 62 AOS 244/0500; LOS 244/1500.
MMT pass with 6 commands transmitted. Suspected TCP program problem resulted in random reload from 0543 to 0550Z.

Pass 2093, September 8, 1971 (Day 251)

DSS 51 AOS 251/0300; LOS 251/1100.
GOE pass with 4 commands transmitted. A 3 volt ripple in -15 volt power supply distorted command modulation (Ref. TFR 50333, DR-1395).

Pass 2094, September 9, 1971 (Day 252)

DSS 51 AOS 252/0203; LOS 252/1059.
GOE pass with 4 commands transmitted. Signal level 4 dbm lower than predicted (Ref. DR-0277).

Pass 2095, September 10, 1971 (Day 253)

DSS 62 AOS 253/0427; LOS 253/1500.
MMT pass with 5 commands transmitted. Command modulation assembly B aborted command 006 three times (abort code 001). Hardware under investigation (Ref. TFR A52992, DR-1393).

Pass 2100, September 15, 1971 (Day 258)

DSS 62 AOS 258/0200; LOS 258/1100.
MMT pass with 5 commands transmitted. Between 0310 and 0315 command 3 address 006 aborted twice, switched to CMA-B for commanding. Cause unknown but under investigation (Ref. DR-1401).

Pass 2101, September 16, 1971 (Day 259)

DSS 62 AOS 259/0200; LOS 259/1100.
MMT pass with 5 commands transmitted. Erroneous ground RCV signal level (biased by plus 2.5 dB) during two samples, caused by oscillating RCV isolation amp (TFR A53009).

Pass 2102, September 17, 1971 (Day 260)

DSS 51 AOS 260/0414; LOS 260/1102.
GOE pass with 5 commands transmitted.

Pass 2103, September 18, 1971 (Day 261)

DSS 51 AOS 261/0203; LOS 261/1100.
GOE pass with 5 commands transmitted. Transmitter switched off at track's request at 0211 due to complete teletype outage until approximately 0300.

Pass 2105, September 20, 1971 (Day 263)

DSS 51 AOS 263/0329; LOS 263/1030.
GOE pass with 5 commands transmitted. First demonstration at DSS 51 of TCP program DOI-503OP. Four test commands were attempted and all aborted on a bit-by-bit verification. GOE was used to send commands.

Pass 2106, September 21, 1971 (Day 264)

DSS 51 AOS 264/0130; LOS 264/1030.
GOE pass with 6 commands transmitted. This was to have been a Pioneer MMC/MMT demonstration pass (program DOI-5033-OP). The program, however, would not accept commands during countdown and station reconfigured to GOE.

Pass 2108, September 23, 1971 (Day 266)

DSS 51 AOS 266/0255; LOS 266/1030.
GOE pass with 5 commands transmitted.

Pass 2109, September 24, 1971 (Day 267)

DSS 51 AOS 267/0130; LOS 267/1030.
GOE pass with 5 commands transmitted.

Pass 2112, September 27, 1971 (Day 270)

DSS 51 AOS 270/0317; LOS 270/1030.
GOE pass with 5 commands transmitted.

Pass 2113, September 28, 1971 (Day 271)

DSS 51 AOS 271/0125; LOS 271/1030.
GOE pass with 5 commands transmitted.

Pass 2114, September 29, 1971 (Day 272)

DSS 51 AOS 272/0130; LOS 272/1030.
GOE pass with 5 commands transmitted. Station unable to get TCP-A or TCP-B lock on data format generator at 0130 (AOS). Station also unable to command using GOE; configured to MMT/MMC Mode. Problem was dislocated pin on GOE computer buffer cables (DR-1430).

Pass 2115, September 30, 1971 (Day 273)

DSS 51 AOS 273/0108; LOS 273/1030.
GOE pass with 5 commands transmitted.

Pass 2119, October 4, 1971 (Day 277)

DSS 51 AOS 277/0253; LOS 277/1000.
GOE pass with 5 commands transmitted.

Pass 2120, October 5, 1971 (Day 278)

DSS 51 AOS 278/0255; LOS 278/1000.
GOE pass with 5 commands transmitted.

Pass 2123, October 8, 1971 (Day 281)

DSS 62 AOS 281/0300; LOS 281/1200.
MMT pass with 5 commands transmitted.

Pass 2128, October 13, 1971 (Day 286)

DSS 61 AOS 286/0105; LOS 286/0959.
MMT pass with 5 commands. MMT demonstration pass.

Pass 2133, October 18, 1971 (Day 291)

DSS 51 AOS 291/0150; LOS 291/1000.
GOE pass with 5 commands.

Pass 2134, October 19, 1971 (Day 292)

DSS 62 AOS 292/0316; LOS 292/1000.
MMT pass with 5 commands transmitted.

Pass 2135, October 20, 1971 (Day 293)

DSS 51 AOS 293/0226; LOS 293/1000.
GOE pass with 5 commands transmitted.

Pass 2136, October 21, 1971 (Day 294)

DSS 51 AOS 294/0050; LOS 294/1000.
GOE pass with 5 commands transmitted.

Pass 2143, October 28, 1971 (Day 301)

DSS 51 AOS 301/0054; LOS 301/1000.
GOE pass with 5 commands transmitted.

Pass 2144, October 29, 1971 (Day 302)

DSS 51 AOS 302/0058; LOS 302/1000.
GOE pass with 5 commands transmitted.

Pass 2147, November 1, 1971 (Day 305)

DSS 51 AOS 305/0200; LOS 305/1000.
GOE pass with 5 commands transmitted.

Pass 2149, November 3, 1971 (Day 307)

DSS 51 AOS 307/0102; LOS 307/0900.
GOE pass with 5 commands transmitted.

Pass 2150, November 4, 1971 (Day 308)

DSS 51 AOS 308/0059; LOS 308/0900.
GOE pass with 5 commands transmitted.

Pass 2152, November 6, 1971 (Day 310)

DSS 61 AOS 310/0105; LOS 310/0958.
MMT/MMC pass with 5 commands transmitted.

Pass 2154, November 7, 1971 (Day 312)

DSS 11 AOS 312/0954; LOS 312/1800.
MMT/MMC Demo pass with 2 commands transmitted.

Pass 2154, November 7, 1971 (Day 312)

DSS 51 AOS 312/0057; LOS 312/1002.
GOE pass with 3 commands transmitted.

Pass 2155, November 9, 1971 (Day 313)

DSS 51 AOS 313/0049; LOS 313/1009.
GOE pass with 3 commands transmitted.

Pass 2155, November 9, 1971 (Day 313)

DSS 11 AOS 313/0950; LOS 313/1800.
MMT/MMC pass with 2 commands transmitted.

Pass 2156, November 10, 1971 (Day 314)

DSS 51 AOS 314/0131; LOS 314/1005.
GOE pass with 3 commands transmitted.

Pass 2156, November 10, 1971 (Day 314)

DSS 11 AOS 314/0906; LOS 314/1800.
MMT/MMC pass with 2 commands transmitted.

Pass 2157, November 11, 1971 (Day 315)

DSS 51 AOS 315/0055; LOS 315/1005.
GOE pass with 3 commands transmitted.

Pass 2157, November 11, 1971 (Day 315)

DSS 11 AOS 315/0919; LOS 315/1400.
MMT/MMC pass with 2 commands transmitted.

Pass 2158, November 12, 1971 (Day 316)

DSS 61 AOS 316/0132; LOS 316/1000.
MMT/MMC pass with 5 commands transmitted.

Pass 2159, November 13, 1971 (Day 317)

DSS 61 AOS 317/0129; LOS 317/1000.
MMT/MMC pass with 5 commands transmitted.

Pass 2160, November 14, 1971 (Day 318)

DSS 61 AOS 318/0130; LOS 318/1000.
MMT/MMC pass with 5 commands transmitted.

Pass 2162, November 16, 1971 (Day 320)

DSS 51 AOS 320/0052; LOS 320/1000.
GOE pass with 3 commands transmitted.

Pass 2162, November 16, 1971 (Day 320)

DSS 11 AOS 320/0952; LOS 320/1800.
MMT/MMC pass with 2 commands transmitted.

Pass 2163, November 17, 1971 (Day 321)

DSS 51 AOS 321/0057; LOS 321/1000.
GOE pass with 3 commands transmitted.

Pass 2163, November 17, 1971 (Day 321)

DSS 11 AOS 321/0930; LOS 321/1800.
MMT/MMC pass with 2 commands transmitted.

Pass 2164, November 18, 1971 (Day 322)

DSS 51 AOS 322/0056; LOS 322/1000.
GOE pass with 3 commands transmitted.

Pass 2164, November 18, 1971 (Day 322)

DSS 11 AOS 322/0930; LOS 322/1800.
MMT/MMC pass with 2 commands transmitted.

Pass 2165, November 19, 1971 (Day 323)

DSS 51 AOS 323/0057; LOS 323/1000.
GOE pass with 5 commands transmitted.

Pass 2169, November 23, 1971 (Day 327)

DSS 51 AOS 327/0056; LOS 327/1003.
GOE pass with 3 commands transmitted.

Pass 2169, November 23, 1971 (Day 327)

DSS 11 AOS 327/0930; LOS 327/1800.
MMT/MMC pass with 2 commands transmitted.

Pass 2170, November 24, 1971 (Day 328)

DSS 51 AOS 328/0048; LOS 328/1000.
GOE pass with 3 commands transmitted.

Pass 2170, November 24, 1971 (Day 328)

DSS 11 AOS 328/0930; Los 328/1800.
MMT/MMC pass with 2 commands transmitted.

Pass 2171, November 25, 1971 (Day 329)

DSS 51 AOS 329/0100; LOS 329/1000.
GOE pass with 5 commands transmitted.

Pass 2172, November 26, 1971 (Day 330)

DSS 51 AOS 330/0048; LOS 330/1000.
GOE pass with 5 commands transmitted.

Pass 2175, November 29, 1971 (Day 333)

DSS 51 AOS 333/0230; LOS 333/1000.
GOE pass with 5 commands transmitted.

Pass 2176, November 30, 1971 (Day 334)

DSS 11 AOS 334/0930; LOS 334/1138.
GOE pass with 1 command transmitted. Pass terminated at 1138 due to inability to process 16 BPS telemetry data (Ref. DR-1580).

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
PN68MZ64625							
2177	713350051	713351000	AM	PF	2177	B01	AM CONFIG AOS DOY-335 LOS DOY-335 TOTAL
2177						B02	AM DSS J200CTD B-1/3SCHEDUL 0100Z SCHEDUL 1000Z SCHEDUL 9H00M
2177						B03	AM GCF S20JCLA 00331ACTUAL 0051Z ACTUAL 1000Z ACTUAL 10H09M
2177						B04	AM CPS T010 ST.XFR N/R Z RELEASE 1000Z DSS TIM 10H09M
2177						B05	AM COMMAND TOT 3 AUTO 3 MANU 0 ABORT 0
2177						B06	AM OCC TEN N/R TEX N/R Z
2177		(AM = DSS 51)				B07	AM TELEM PWR 10KW PREDICT 10KW BIT 64 BPS MMT
2177						B08	AM RX 1 AGC RX.2 AGC TCP- A SNR TCP- B SNR
2177						B09	AM ACTUAL-155.4DBM NIL DBM 8.4 NIL
2177						B10	AM PREDIC-155.2DBM NIL DBM 8.3 NIL
2177						B11	AM DIFFER -0.2 DB NIL DB -0.1 NIL
2177						B12	AM TRACKING
2177						B13	AM TRACK.MD 1/2WAY RANGING N/A BIAS N/A RU NOISE N/A RU
2177						B14	AM DO.BIAS N/A HZ C.NS N/A HZ EXP N/A HZ
2177						B15	AM MONITOR LGWR LGER BLRC BLER
2177						B16	AM DIS- N/R N/R N/R N/R
2177						B17	AM TCP- N/R N/R N/R N/R
2177						B18	AM 0802-1006Z-SFOF CP DOWN FOR SCHED. MAINT. (POWER MODIFICA-
2177						B19	AM TION)-NO LS TTY
2177						B20	AM LAST TWO HOURS OF PSEUDO/RESIDUALS LOST DUE TO CP OUTAGE
PN68MZ64628							
2177	713350921	713351800	AA	PF	2177	B01	AA CONFIG AOS DOY-335 LOS DOY-335 TOTAL
2177						B02	AA DSS A000CTD B-1/3SCHEDUL 0930Z SCHEDUL 1800Z SCHEDUL 8H30M
2177						B03	AA GCF S21ACLA 00332ACTUAL 0921Z ACTUAL 1800Z ACTUAL 8H39M
2177						B04	AA CPS T010 ST.XFR N/A Z RELEASE 1800Z DSS TIM 8H39M
2177						B05	AA COMMAND TOT 2 AUTO 0 MANU 1 ABORT 0
2177						B06	AA OCC TEN NIL TEX NIL Z
2177						B07	AA TELEM PWR 10KW PREDICT 10KW BIT 64BPS MMT
2177		(AA = DSS 11)				B08	AA RX 1AGC RX.2 AGC TCP- B SNR TCP- A SNR
2177						B09	AA ACTUAL-155.3DBM NIL DBM 10.4 NIL
2177						B10	AA PREDIC-155.2DBM NIL DBM 9.4 NIL
2177						B11	AA DIFFER-0.1 DB NIL DB -1.0 NIL
2177						B12	AA TRACKING
2177						B13	AA TRACK.MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
2177						B14	AA DO.BIAS N/R HZ C.NS N/RHZ EXP N/R HZ
2177						B15	AA MONITOR LGWR LGER BLRC BLER
2177						B16	AA DIS- N/R N/R N/R N/R
2177						B17	AA TCP- N/R N/R N/R N/R
PN68MZ64631							
2178	713360110	713361000	AO	PF	2178	B01	AO CONFIG AOS DOY-336 LOS DOY-336 TOTAL
2178						B02	AO DSS K000CTD B-1/3SCHEDUL 0100Z SCHEDUL 1000Z SCHEDUL 9H00M
2178						B03	AO GCF S21KCLA 00332ACTUAL 0110Z ACTUAL 1000Z ACTUAL 8H50M
2178		(AO = DSS 61)				B04	AO CPS T010 ST.XFR N/A Z RELEASE 1000Z DSS TIM 9H00M

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2178	713360110	713361000	AO	PF	2178	B05	AO COMMAND TOT 8 AUTO 0 MANU 8 ABORT 0
2178						B06	AO OCC TEN N/A TEX N/A Z
2178						B07	AO TELEM PWR 10 KW PREDICT 10 KW BIT 64KBPS MMT
2178						B08	AO RX 1 AGC RX.2 AGC TCP- A SNR TCP- B SNR
2178						B09	AO ACTUAL-156.4DBM NIL DBM 10.2 NIL
2178						B10	AO PREDIC-155.0DBM NIL DBM 10.3 NIL
2178		(AO = DSS 61)				B11	AO DIFFER -1.4 DB NIL DB -0.1 NIL
2178						B12	AO TRACKING
2178						B13	AO TRACK.MD N/AWAY RANGING N/A BIAS N/A RU NOISE N/A RU
2178						B14	AO DO.BIAS N/A HZ C.NS N/AHZ EXP N/A HZ
2178						B15	AO MONITOR LGWR LGER BLRC BLER
2178						B16	AO DIS- N/R N/R N/R N/R
2178						B17	AO TCP- N/R N/R N/R N/R
PN68MZ64633							
2178	713360925	713361800	AA	PF	2178	B01	AA CONFIG AOS DOY-336 LOS DOY-336 TOTAL
2178						B02	AA DSS A000CTD 8-1/3 SCHEDUL 0930Z SCHEDUL 1800Z SCHEDUL 8H30M
2178						B03	AA GCF S21ACLA 00332 ACTUAL 0925Z ACTUAL 1800Z ACTUAL 8H35M
2178						B04	AA CPS T010 ST.XFR 0900Z RELEASE 1800Z DSS TIM 9H00M
2178						B05	AA COMMAND TOT 2 AUTO 0 MANU 2 ABORT 0
2178						B06	AA OCC TEN N/A TEX N/A Z
2178		(AA = DSS 11)				B07	AA TELEM PWR 10 KW PREDICT 10 KW BIT 64 MMT
2178						B08	AA RX 1 AGC RX.2 AGC TCP- A SNR TCP- B SNR
2178						B09	AA ACTUAL-155.0DBM N/A DBM 9.6 N/A
2178						B10	AA PREDIC-155.0DBM N/A DBM 10.0 N/A
2178						B11	AA DIFFER 0.0 DB N/A DB -0.4 N/A
2178						B12	AA TRACKING
2178						B13	AA TRACK.MD N/AWAY RANGING N/A BIAS N/A RU NOISE N/A RU
2178						B14	AA DO.BIAS N/A HZ C.NS N/AHZ EXP N/A HZ
2178						B15	AA MONITOR LGWR LGER BLRC BLER
2178						B16	AA DIS- N/A N/A N/A N/A
2178						B17	AA TCP- N/A N/A N/A N/A
PN68MZ64643							
2180	713380100	713381000	AO	PF	2180	B01	AO CONFIG AOS DOY-338 LOS DOY-338 TOTAL
2180						B02	AO DSS K000CTD 8-1/3 SCHEDUL 0100Z SCHEDUL 1000Z SCHEDUL 9H00M
2180						B03	AO GCF S21KCLA 00332 ACTUAL 0100Z ACTUAL 1000Z ACTUAL 9H00M
2180						B04	AO CPS T010 ST.XFR N/A Z RELEASE 1000Z DSS TIM 9H00M
2180						B05	AO COMMAND TOT 7 AUTO 0 MANU 7 ABORT 0
2180						B06	AO OCC TEN N/R TEX N/R Z
2180						B07	AO TELEM PWR 10 KW PREDICT 10 KW BIT 64 MMT
2180						B08	AO RX 1 AGC RX 2 AGC TCP- A SNR TCP- B SNR
2180						B09	AO ACTUAL-154.2DBM N/A DBM 10.5 N/A
2180						B10	AO PREDIC-155.0DBM N/A DBM 10.3 N/A
2180						B11	AO DIFFER +0.8 DB N/A DB +0.2 N/A
2180						B12	AO TRACKING
2180						B13	AO TRACK.MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
2180						B14	AO DO.BIAS N/R HZ C.NS N/R HZ EXP N/R HZ

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2180	713380100	713381000	AO	PF	2180	B15	AO MONITOR LGWR LGER BLRC BLER
2180						B16	AO DIS- N/R N/R N/R N/R
2180						B17	AO TCP- N/R N/R N/R N/R
PN68MZ64648							
2180	713390057	713391000	AM	PF	2180	B01	AM CONFIG AOS DOY-339 LOS DOY 339 TOTAL
2180						B02	AM DSS J200CTD D-1 SCHEDUL 0100Z SCHEDUL 1000Z SCHEDUL 9H00M
2180						B03	AM GCF S20JCL8 N/A ACTUAL 0057Z ACTUAL 1000Z ACTUAL 9H03M
2180						B04	AM CPS N/A ST.XFR NIL Z RELEASE 1000Z DSS TIM 9H03M
2180						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2180						B06	AM OCC TEN N/S TEX N/A Z
2180						B07	AM TELEM PWR 10 KW PREDICT 10 KW BIT 16/64KBPS GOE
2180		(AM = DSS 51)				B08	AM RX 1 AGC RX 2 AGC TCP- A SNR TCP- B SNR
2180						B09	AM ACTUAL-155.4DBM NIL DBM 8.4 NIL
2180						B10	AM PREDIC-155.8DBM NIL DBM 9.0 NIL
2180						B11	AM DIFFER +0.4 DB NIL DB +0.6 NIL
2180						B12	AM TRACKING
2180						B13	AM TRACK.MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2180						B14	AM DO.BIAS 0.251HZ C.NS 0.0015HZ EXP 0.002 HZ
2180						B15	AM MONITOR LGWR LGER BLRC BLER
2180						B16	AM DIS- N/R N/R N/R N/R
2180						B17	AM TCP- N/R N/R N/R N/R
PN68MZ64655							
2182	713400130	713400958	AO	PF	2182	B01	AO CONFIG AOS DOY-340 LOS DOY-340 TOTAL
2182						B02	AO DSS K000CTD 8-1/3 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2182						B03	AO GCF S21KCLA 00332 ACTUAL 0130Z ACTUAL 0958Z ACTUAL 8H28M
2182						B04	AO CPS N/A ST.XFR N/A Z RELEASE 0958Z DSS TIM 8H28M
2182						B05	AO COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2182		(AO = DSS 61)				B06	AO OCC TEN N/A TEX N/A Z
2182						B07	AO TELEM PWR 10 KW PREDICT 10 KW BIT 64 BPS MMT
2182						B08	AO RX 1 AGC RX 2 AGC TCP- A SNR TCP- B SNR
2182						B09	AO ACTUAL-155.1DBM N/A DBM 10.3 N/A
2182						B10	AO PREDIC-155.0DBM N/A DBM 10.3 N/A
2182						B11	AO DIFFER +0.9 DB N/A DB 0.0 N/A
2182						B12	AO TRACKING
2182						B13	AO TRACK.MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
2182						B14	AO DO.BIAS N/R HZ C.NS N/RHZ EXP N/R HZ
2182						B15	AO MONITOR LGWR LGER BLRC BLER
2182						B16	AO DIS- N/R N/R N/R N/R
2182						B17	AO TCP- N/R N/R N/R N/R
PN68MZ64664							
2183	713410130	713410959	AO	PF	2183	B01	AO CONFIG AOS DOY-341 LOS DOY-341 TOTAL
2183						B02	AO DSS K000CTD 8-1/3 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2183						B03	AO GCF S21KCLA 00332 ACTUAL 0130Z ACTUAL 0959Z ACTUAL 8H29M
2183						B04	AO CPS N/A ST.XFR N/A Z RELEASE 0959Z DSS TIM 8H29M

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2183	713410130	713410959	AO	PF	2183	B05	AO COMMAND TOT 0 AUTO 0 MANU 0 ABORT 0
2183						B06	AO OCC TEN N/A TEX N/A Z
2183						B07	AO TELEM PWR 10 KW PREDICT 10 KW BIT 16/64 BPS MMT
2183						B08	AO RX 1 AGC RX.2 AGC TCP- A SNR TCP- B SNR
2183						B09	AO ACTUAL-153.8DBM N/A DBM 10.9 N/A
2183						B10	AO PREDIC-154.8DBM N/A DBM 10.5 N/A
2183						B11	AO DIFFER +1.0 DB N/A DB +0.4 N/A
2183		(AO = DSS 61)				B12	AO TRACKING
2183						B13	AO TRACK.MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
2183						B14	AO DO.BIAS N/R HZ C.NS N/PHZ EXP N/R HZ
2183						B15	AO MONITOR LGWR LGER BLRC BLER
2183						B16	AO DIS- N/R N/R N/R N/R
2183						B17	AO TCP- N/R N/R N/R N/R
PN6BMZ64670							
2185	713430123	713431000	AM	PF	2185	B01	AM CONFIG AOS DOY-343 LOS DOY-343 TOTAL
2185						B02	AM DSS J200CTD 8-1/3SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2185						B03	AM GCF S20JCLA 00331ACTUAL 0123Z ACTUAL 1000Z ACTUAL 8H37M
2185						B04	AM CPS NIL ST. XFR N/A Z RELEASE 1000Z DSS TIM 8H37M
2185						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2185						B06	AM OCC TEN N/A TEX N/A Z
2185						B07	AM TELEM PWR 10 KW PREDICT 10KW BIT 64 BPS MMT
2185		(AM = DSS 51)				B08	AM RX 1 AGC RX 2 AGC TCP- A SNR TCP- B SNR
2185						B09	AM ACTUAL-154.8DBM NIL DBM 8.9 7.5
2185						B10	AM PREDIC-154.8DBM NIL DBM 9.1 6.6
2185						B11	AM DIFFER 0.0 DB NIL DB +0.2 +0.9
2185						B12	AM TRACKING
2185						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2185						B14	AM DO BIAS 0.250HZ C.NS 0.003 HZ EXP 0.002 HZ
2185						B15	AM MONITOR LGWR LGER BLRC BLER
2185						B16	AM DIS- N/R N/R N/R N/R
2185						B17	AM TCP- N/R N/R N/R N/R
2185						B18	AM 0655Z DSS 51 DOWN-HYDROLIC TROUBLE-DR1596
PN6BMZ64675							
2186	713440119	713441000	AM	PF	2186	B01	AM CONFIG AOS DOY-344 LOS DOY-344 TOTAL
2186						B02	AM DSS J200CTD 8-1/3SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2186						B03	AM GCF S20JCLA 00331ACTUAL 0119Z ACTUAL 0955Z ACTUAL 8H36M
2186						B04	AM CPS N/A ST XFR N/A Z RELEASE 0955Z DSS TIM 8H36M
2186						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2186						B06	AM OCC TEN N/R TEX N/R Z
2186						B07	AM TELEM PWR 10 KW PREDICT 10KW BIT 64 B
2186						B08	AM RX 1 AGC PX 2 AGC TCP- A SNR TCP- B SNR
2186						B09	AM ACTUAL-154.3DBM N/A DBM 8.9 N/A
2186						B10	AM PREDIC-154.8DBM N/A DBM 8.9 N/A
2186						B11	AM DIFFER +0.5 DB N/A DB 0.0 N/A
2186						B12	AM TRACKING
2186						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2186	713440119	713441000	AM	PF	2186	B14	AM DO BIAS 0.308HZ C.NS 0.002 HZ EXP 0.002 HZ
2186						B15	AM MONITOR LGWR LGER BLRC BLER
2186						B16	AM DIS- N/R N/R N/R N/R
2186						B17	AM TCP- N/R N/R N/R N/R
2186						B18	AM 0943Z LOS LOST ALL CKTS TO DSS 51, DUE TO SYSTEMS FAILURE
2186		(AM = DSS 51)				B19	AM BETWEEN CAPETOWN AND ASCENSION-DR4193
2186						B20	AM 0146Z LOST UPLINK ;DOWNLINK GLITCHED DUE TO DEC ANGLE DRIVE
2186						B21	AM OFF 1/2 DEGREE DR1598
2186						B22	AM 2-WAY 0137-0955Z
PN68MZ64689							
2189	713470122	713471000	AO	PF	2189	B01	AO CONFIG AOS DOY-347 LOS DOY-347 TOTAL
2189						B02	AO DSS K000CTD 8-1/3SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2189						B03	AO GCF S21KCLA 00332ACTUAL 0122Z ACTUAL 1000Z ACTUAL 8H38M
2189						B04	AO CPS NIL ST.XFR N/R Z RELEASE 1000Z DSS TIM 0H00M
2189						B05	AO COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2189						B06	AO OCC TEN N/R TEX N/R Z
2189		(AO = DSS 61)				B07	AO TELEM PWR N/A KW PREDICT N/AKW BIT N/A GOE
2189						B08	AO RX 1 AGC RX 2 AGC TCP- A SNR TCP- B SNR
2189						B09	AO ACTUAL- N/A DBM N/A DBM N/A N/A
2189						B10	AO PREDIC- N/A DBM N/A DBM N/A N/A
2189						B11	AO DIFFER N/A DB N/A DB N/A N/A
2189						B12	AO TRACKING
2189						B13	AO TRACK.MD N/PWAY RANGING N/A BIAS N/A RU NOISE N/A RU
2189						B14	AO DO.BIAS N/A HZ C.NS N/AHZ EXP N/A HZ
2189						B15	AO MONITOR LGWR LGER BLRC BLER
2189						B16	AO DIS- N/R N/R N/R N/R
2189						B17	AO TCP- N/R N/R N/R N/R
PN68MZ64695							
2190	713480130	713481000	AO	PF	2190	B01	AO CONFIG AOS DOY-348 LOS DOY-348 TOTAL
2190						B02	AO DSS K000CTD 8-1/3SCHEDUL 0130Z SCHEDUL 1030Z SCHEDUL 9H00M
2190						B03	AO GCF S21KCLA 00332ACTUAL 0130Z ACTUAL 1000Z ACTUAL 8H30M
2190						B04	AO CPS N/A ST.XFR N/R Z RELEASE 1000Z DSS TIM 0H00M
2190						B05	AO COMMAND TOT 4 AUTO 0 MANU 4 ABORT 0
2190						B06	AO OCC TEN N/R TEX N/R Z
2190						B07	AO TELEM PWR 10 KW PREDICT 10 KW BIT 64 BPS MMT
2190						B08	AO RX 1 AGC RX 2 AGC TCP- A SNR TCP- B SNR
2190						B09	AO ACTUAL-154.2DBM N/A DBM 10.7 N/A
2190						B10	AO PREDIC-154.6DBM N/A DBM 10.7 N/A
2190						B11	AO DIFFER +0.4 DB N/A DB N/A N/A
2190						B12	AO TRACKING
2190						B13	AO TRACK.MD N/AWAY RANGING N/A BIAS N/A RU NOISE N/A RU
2190						B14	AO DO.BIAS N/A HZ C.NS N/AHZ EXP N/A HZ
2190						B15	AO MONITOR LGWR LGER BLRC BLER
2190						B16	AO DIS- N/R N/R N/R N/R
2190						B17	AO TCP- N/R N/R N/R N/R

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
PN68MZ64700							
2191	713490128	713491000	AM	PF	2191	801	AM CONFIG AOS DOY-349 LOS DOY-349 TOTAL
2191						802	AM DSS J200CTD B-1/3 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2191						803	AM GCF S20JCLA 00331 ACTUAL 0128Z ACTUAL 1000Z ACTUAL 8H30M
2191						804	AM CPS N/A ST.XFR N/R Z RELEASE 1000Z DSS TIM 0H00M
2191						805	AM COMMAND TOT 7 AUTO 0 MANU 7 ABORT 0
2191						806	AM OCC TEN N/R TEX N/R Z
2191						807	AM TELEM PWR 10 KW PREDICT 10 KW BIT 64 BPS GOE
2191						808	AM RX 1 AGC RX.2 AGC TCP- A SNR TCP- B SNR
2191		(AM = DSS 51)				809	AM ACTUAL-154.2DBM N/A DBM 10.0 N/A
2191						810	AM PREDIC-154.6DBM N/A DBM 9.5 N/A
2191						811	AM DIFFER +0.4 DB N/A DB +0.5 N/A
2191						812	AM TRACKING
2191						813	AM TRACK.MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2191						814	AM DO.BIAS+0.210HZ C.NS .007 HZ EXP .003 HZ
2191						815	AM MONITOR LGWR LGER BLRC BLER
2191						816	AM DIS- N/R N/R N/R N/R
2191						817	AM TCP- N/R N/R N/R N/R
2191						818	AM 0215-0217Z DSS 51 COMM DOWN-DR4236
2191						819	AM 0222-0223Z DSS 51 COMM DOWN-DR4237
PN68MZ64705							
2192	713500119	713501000	AM	PF	2192	801	AM CONFIG AOS DOY 350 LOS DOY 350 TOTAL
2192						802	AM DSS J200CTD B-1 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2192						803	AM GCF S20JCLA N/A ACTUAL 0119Z ACTUAL 1000Z ACTUAL 8H41M
2192						804	AM CPS N/A ST XFR N/R Z RELEASE 1000Z DSS TIM 0H00M
2192						805	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2192						806	AM OCC TEN N/R TEX N/R Z
2192						807	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS GOE
2192						808	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2192						809	AM ACTUAL-154.6DBM N/A DBM 9.9 NIL
2192						810	AM PREDIC-154.6DBM N/A DBM 9.3 NIL
2192						811	AM DIFFER -0.0 DB N/A DB +0.6 NIL
2192						812	AM TRACKING
2192						813	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2192						814	AM DO BIAS+0.409HZ C NS .002 HZ EXP .003 HZ
2192						815	AM MONITOR LGWR LGER BLRC BLER
2192						816	AM DIS N/R N/R N/R N/R
2192						817	AM TCP N/R N/R N/R N/R
PN68MZ64710							
2193	713510121	713511000	AM	PF	2193	801	AM CONFIG AOS DOY 351 LOS DOY 351 TOTAL
2193						802	AM DSS J200CTD B-1 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2193						803	AM GCF S20JCLA N/A ACTUAL 0121Z ACTUAL 1000Z ACTUAL 8H39M
2193						804	AM CPS N/A ST XFR N/R Z RELEASE 1000Z DSS TIM 8H39M
2193						805	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2193	713510121	713511000	AM	PF	2193	806	AM OCC TEN N/A TEX N/A Z
2193						807	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS GOE
2193						808	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2193						809	AM ACTUAL-154.6DBM N/A DBM 7.7 N/A
2193						810	AM PREDIC-154.2DBM N/A DBM 9.6 N/A
2193		(AM = DSS 51)				811	AM DIFFER -0.2 DB N/A DB -1.9 N/A
2193						812	AM TRACKING
2193						813	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2193						814	AM DO BIAS +.427HZ C NS .002 HZ EXP .003 HZ
2193						815	AM MONITOR LGWR LGER BLRC BLER
2193						816	AM DIS N/R N/R N/R N/R
2193						817	AM TCP N/R N/R N/R N/R
2193						818	AM EXCESSIVE PER DURING ENTIRE PASS T-42
PN6RMZ64716							
2194	713520119	713521000	AM	PF	2194	801	AM CONFIG AOS DOY 352 LOS DOY 352 TOTAL
2194						802	AM DSS J200CTD 8-1 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2194						803	AM GCF S20JCLA N/A ACTUAL 0119Z ACTUAL 1000Z ACTUAL 8H41M
2194						804	AM CPS N/A ST XFR N/A Z RELEASE 1000Z DSS TIM 8H41M
2194						805	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2194						806	AM OCC TEN N/A TEX N/A Z
2194						807	AM TELEM PWR 10KW PREDIC 10KW BIT 64 BPS GOE
2194						808	AM RX AGC RX 2 AGC TCP A SNR TCP B SNR
2194						809	AM ACTUAL-154.2DBM N/A DBM 9.6 NIL
2194						810	AM PREDIC-154.4DBM N/A DBM 9.2 NIL
2194						811	AM DIFFER +0.2 DB N/A DB +0.4 NIL
2194						812	AM TRACKING
2194						813	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2194						814	AM DO BIAS 0.300HZ C NS 0.002HZ EXP NIL HZ
2194						815	AM MONITOR LGWR LGER BLRC BLER
2194						816	AM DIS N/R N/R N/R N/R
2194						817	AM TCP N/R N/R N/R N/R
PN68MZ64727							
2196	713540130	713540730	AO	PF	2196	801	AO CONFIG AOS DOY 354 LOS DOY 354 TOTAL
2196						802	AO DSS K000CTD 8-1 SCHEDUL 0130Z SCHEDUL 0730Z SCHEDUL 7H00M
2196						803	AO GCF S21KCLA N/A ACTUAL 0130Z ACTUAL 0730Z ACTUAL 7H00M
2196						804	AO CPS N/A ST XFR N/A Z RELEASE 0730Z DSS TIM 7H00M
2196						805	AO COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2196		(AO = DSS 61)				806	AO OCC TEN N/R TEX NR Z
2196						807	AO TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS MMT
2196						808	AO RX 1 AGC RX 2 AGC TCP B SNR TCP A SNR
2196						809	AO ACTUAL-154.5DBM NA DBM 10.5 NA
2196						810	AO PREDIC-154.3DBM NA DBM 11.0 NA
2196						811	AO DIFFER -0.2 DB NA DB -0.5 NA
2196						812	AO TRACKING
2196						813	AO TRACK MD NR WAY RANGING NR BIAS NR RU NOISE NR RU
2196						814	AO DO BIAS NR HZ C NS NR HZ EXP NR HZ

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2196	713540130	713540730	AO	PF	2196	B15	AO MONITOR LGWR LGER BLRC BLER
2196						B16	AO DIS NR NR NR NR
2196						B17	AO TCP NR NR NR NR
2196						B18	AO 0200-0206Z-COMMAND 3-006 NOT XMTD AT 020000Z-INTERMITTENT
2196		(AO = DSS 61)				B19	AO CONTACT OF FAULTY CONNECTOR J-9 ON CMA A ANALOG EQUIPMENT
2196						B20	AO ASSEMBLY-CHANGED TO CMA B STREAM-CONNECTOR REPAIR-TFR NBR
						B21	AO A00549-DR NBR T-1717
PN6BMZ64734							
2197	713550130	713550730	AO	PF	2197	B01	AO CONFIG AOS DOY 355 LOS DOY 355 TOTAL
2197						B02	AO DSS K000CTD B-1/3SCHEDUL 0130Z SCHEDUL 0730Z SCHEDUL 6H00M
2197						B03	AO GCF S21KCLA 00332ACTUAL 0130Z ACTUAL 0730Z ACTUAL 6H00M
2197						B04	AO CPS T010 ST XFR NA Z RELEASE 0730Z DSS TIM 6H00M
2197						B05	AO COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2197						B06	AO OCC TEN NA TEX NA Z
2197						B07	AO TELEM PWR 10 KW PREDIC 10 KW BIT 64BPS MMT
2197						B08	AO RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2197						B09	AO ACTUAL-153.4DBM NA DBM 10.5 NA
2197						B10	AO PREDIC-154.3DBM NA DBM 10.9 NA
2197						B11	AO DIFFER +0.9 DB NA DB -0.4 NA
2197						B12	AO TRACKING
2197						B13	AO TRACK MD NR WAY RANGING NR BIAS NR RU NOISE NR RU
2197						B14	AO DO BIAS NR HZ C NS NR HZ EXP NR HZ
2197						B15	AO MONITOR LGWR LGER BLRC BLER
2197						B16	AO DIS NR NR NR NR
2197						B17	AO TCP NR NR NR NR
PN6BMZ64741							
2198	713560129	713561000	AM	PF	2198	B01	AM CONFIG AOS DOY 356 LOS DOY 356 TOTAL
2198						B02	AM DSS J200CTD B-1/3SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2198						B03	AM GCF S20JCLA 00331ACTUAL 0129Z ACTUAL 1000Z ACTUAL 8H31M
2198						B04	AM CPS T010 ST XFR N/A Z RELEASE 1000Z DSS TIM 8H31M
2198		(AM = DSS 51)				B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2198						B06	AM OCC TEN NR TEX NR Z
2198						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64BPS GOE
2198						B08	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2198						B09	AM ACTUAL-153.2DBM NA DBM 9.7 NA
2198						B10	AM PREDIC-154.3DBM NA DBM 9.7 NA
2198						B11	AM DIFFER +0.4 DB NA DB 0.0 NA
2198						B12	AM TRACKING
2198						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2198						B14	AM DO BIAS 0.36 HZ C NS 0.0015HZ EXP 0.002 HZ
2198						B15	AM MONITOR LGWR LGER BLRC BLER
2198						B16	AM DIS NR NR NR NR
2198						B17	AM TCP NR NR NR NR
2198						B18	AM TRANSMISSION OF SCT AND ENG DATA DELAYED DUE TO PATCHING OF
2198						B19	AM ERROR IN TCP-COMMS AREA-DR T-1725.

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
PN6BMZ64747							
2199	713570115	713571000	AM	PF	2199	B01	AM CONFIG AOS DOY 357 LOS DOY 357 TOTAL
2199						B02	AM DSS J200CTD B-1/3SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2199						B03	AM GCF S20JCLA 00331ACTUAL 0115Z ACTUAL 1000Z ACTUAL 8H45M
2199						B04	AM CPS T010 ST XFR NA Z RELEASE 1000Z DSS TIM 8H45M
2199						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2199						B06	AM OCC TEN NA TEX NA Z
2199		(AM = DSS 51)				B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS GOE
2199						B08	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2199						B09	AM ACTUAL-154.30BM NA DBM 9.8 NA
2199						B10	AM PREDIC-154.30BM NA DBM 9.3 NA
2199						B11	AM DIFFER 0.0 DB NA DB +0.5 NA
2199						B12	AM TRACKING
2199						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2199						B14	AM DO BIAS +.289HZ C NS .001 HZ EXP .003 HZ
2199						B15	AM MONITOR LGWR LGER BLRC BLER
2199						B16	AM DIS NR NR NR NR
2199						B17	AM TCP NR NR NR NR
2199						B18	AM TYDIP REJECTING TDH DATA-BLANK CHAR'S UNABLE TO PROCESS IN
2199						B19	AM REAL TIME DR0339
PN6BMZ64752							
2200	713580120	713581000	AM	PF	2200	B01	AM CONFIG AOS DOY 358 LOS DOY 358 TOTAL
2200						B02	AM DSS J200CTD B-1/3SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2200						B03	AM GCF S20JCLA 00331ACTUAL 0120Z ACTUAL 1000Z ACTUAL 8H 0M
2200						B04	AM CPS T010 ST XFR N/A Z RELEASE 1000Z DSS TIM 8H50M
2200						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2200						B06	AM OCC TEN NR TEX NR Z
2200						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS GOE
2200						B08	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2200						B09	AM ACTUAL-154.40BM NA DBM 9.9 NA
2200						B10	AM PREDIC-154.20BM NA DBM 10.0 NA
2200						B11	AM DIFFER -0.2 DB NA DB -0.1 NA
2200						B12	AM TRACKING
2200						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2200						B14	AM DO BIAS +.51 HZ C NS 0.001 HZ EXP 0.003 HZ
2200						B15	AM MONITOR LGWR LGER BLRC BLER
2200						B16	AM DIS N/R N/R N/R N/R
2200						B17	AM TCP N/R N/R N/R N/R
PN6BMZ64757							
2201	713590127	713591000	AM	PF	2201	B01	AM CONFIG AOS DOY 359 LOS DOY 359 TOTAL
2201						B02	AM DSS J200CTD B-1/3SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2201						B03	AM GCF S20JCLA 00331ACTUAL 0127Z ACTUAL 1000Z ACTUAL 8H33M
2201						B04	AM CPS T010 ST XFR N/R Z RELEASE 1000Z DSS TIM 8H33M
2201						B05	AM COMMAND TOT 3 AUTO 0 MANU 3 ABORT 0

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2201	713590127	713591000	AM	PF	2201	B06	AM OCC TEN N/R TEX N/R Z
2201						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS MMT
2201						B08	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2201						B09	AM ACTUAL-154.1DBM N/A DBM 9.9 N/A
2201		(AM = DSS 51)				B10	AM PREDIC-154.2DBM N/A DBM 10.0 N/A
2201						B11	AM DIFFER +0.1 DB N/A DB -0.1 N/A
2201						B12	AM TRACKING
2201						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2201						B14	AM DO BIAS .30 HZ C NS 0.002 HZ EXP 0.002 HZ
2201						B15	AM MONITOR LGWR LGER BLRC BLER
2201						B16	AM DTS NR NR NR NR
2201						B17	AM TCP NR NR NR NR
PN68MZ64762							
2202	713600122	713601000	AM	PF	2202	B01	AM CONFIG AOS DOY 360 LOS DOY 360 TOTAL
2202						B02	AM DSS J20OCTD D-1 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2202						B03	AM GCF S20JCLA N/A ACTUAL 0122Z ACTUAL 1000Z ACTUAL 8H38M
2202						B04	AM CPS N/A ST XFR N/R Z RELEASE 1000Z DSS TIM 8H38M
2202						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2202						B06	AM OCC TEN N/R TEX N/R Z
2202						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS GOE
2202						B08	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2202						B09	AM ACTUAL-154.2DBM N/A DBM 10.1 N/A
2202						B10	AM PREDIC-154.2DBM N/A DBM 10.0 N/A
2202						B11	AM DIFFER 0.0 DB N/A DB +0.1 N/A
2202						B12	AM TRACKING
2202						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2202						B14	AM DO BIAS .30 HZ C NS 0.002 HZ EXP 0.002 HZ
2202						B15	AM MONITOR LGWR LGER BLRC BLER
2202						B16	AM DTS N/R N/R N/R N/R
2202						B17	AM TCP N/R N/R N/R N/R
PN68MZ64770							
2203	713610130	713610730	AO	PF	2203	B01	AO CONFIG AOS DOY 361 LOS DOY 361 TOTAL
2203						B02	AO DSS K000CTD 8-1/3SCHEDUL 0130Z SCHEDUL 0730Z SCHEDUL 6H00M
2203						B03	AO GCF S21KCLA 00332ACTUAL 0130Z ACTUAL 0730Z ACTUAL 6H00M
2203						B04	AO CPS N/A ST XFR N/R Z RELEASE 0730Z DSS TIM 6H00M
2203						B05	AO COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2203		(AO = DSS 61)				B06	AO OCC TEN NR TEX NR Z
2203						B07	AO TELEM PWR 10 KW PREDIC 10 KW BIT N/A MMT
2203						B08	AO RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2203						B09	AO ACTUAL-153.3DBM N/R DBM 11.1 NA
2203						B10	AO PREDIC-154.1DBM N/R DBM 11.0 NA
2203						B11	AO DIFFER +0.8 DB N/R DB +0.1 NA
2203						B12	AO TRACKING
2203						B13	AO TRACK MD NR WAY RANGING NR BIAS NR RU NOISE NR RU
2203						B14	AO DO BIAS NR HZ C NS NRHZ EXP NR HZ
2203						B15	AO MONITOR LGWR LGER BLRC BLER

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2203	713610130	713610730	AO	PF	2203	B16	AO DTS NR NR NR NR
2203						B17	AO TCP NR NR NR NR
PN68MZ64778							
2204	713620130	713620730	AO	PF	2204	B01	AO CONFIG AOS DOY 362 LOS DOY 362 TOTAL
2204						B02	AO DSS K000CTD B-1/3 SCHEDUL 0130Z SCHEDUL 0730Z SCHEDUL 6H00M
2204						B03	AO GCF 21K0CLA 00332 ACTUAL 0130Z ACTUAL 0730Z ACTUAL 6H00M
2204						B04	AO CPS NA ST XFR NR Z RELEASE 0730Z DSS TIM 6H00M
2204						B05	AO COMMAND TOT 10 AUTO 10 MANU 0 ABORT 0
2204		(AO = DSS 61)				B06	AO OCC TEN NR TEX NR Z
2204						B07	AO TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS MMT
2204						B08	AO RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2204						B09	AO ACTUAL-153.0DBM NA DBM 11.1 NA
2204						B10	AO PREDIC-154.1DBM NA DBM 11.0 NA
2204						B11	AO DIFFER +1.1 DB NA DB +0.1 NA
2204						B12	AO TRACKING
2204						B13	AO TRACK MD NR WAY RANGING NR BIAS NR RU NOISE NR RU
2204						B14	AO DO BIAS NR HZ C NS NRHZ EXP NR HZ
2204						B15	AO MONITOR LGWR LGER BLRC BLER
2204						B16	AO DTS NR NR NR NR
2204						B17	AO TCP NR NR NR NR
PN68MZ64779							
2205	713630217	713632205	AM	PF	2205	B01	AM CONFIG AOS DOY 363 LOS DOY 363 TOTAL
2205						B02	AM DSS J200CTD B-1/3 SCHEDUL 0130Z SCHEDUL 1030Z SCHEDUL 8H30M
2205						B03	AM GCF S20JCLA 00331 ACTUAL 0217Z ACTUAL 1000Z ACTUAL 7H43M
2205						B04	AM CPS NA ST XFR N/R Z RELEASE 1000Z DSS TIM 7H43M
2205						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2205		(AM = DSS 51)				B06	AM OCC TEN N/A TEX N/A Z
2205						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS GDE
2205						B08	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2205						B09	AM ACTUAL-154.2DBM N/A DBM 9.8 N/A
2205						B10	AM PREDIC-154.1DBM N/A DBM 9.9 N/A
2205						B11	AM DIFFER -0.1 DB N/A DB -0.1 N/A
2205						B12	AM TRACKING
2205						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2205						B14	AM DO BIAS 0.30 HZ C NS 0.002 HZ EXP 0.002 HZ
2205						B15	AM MONITOR LGWR LGER BLRC BLER
2205						B16	AM DTS N/R N/R N/R N/R
2205						B17	AM TCP N/R N/R N/R N/R
PN68MZ64784							
2206	713640119	713641000	AM	PF	2206	B01	AM CONFIG AOS DOY 364 LOS DOY 364 TOTAL
2206						B02	AM DSS J200CTD B-1/3 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2206						B03	AM GCF S20JCLA 00331 ACTUAL 0119Z ACTUAL 1000Z ACTUAL 8H41M
2206						B04	AM CPS NIL ST XFR N/R Z RELEASE 1000Z DSS TIM 8H41M
2206						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2206	713640119	713641000	AM	PF	2206	B06	AM OCC TEN N/A TEX N/A Z
2206						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS GOE
2206						B08	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2206						B09	AM ACTUAL-154.3DBM N/A DBM 10.1 N/A
2206						B10	AM PREDIC-154.1DBM N/A DBM 10.0 N/A
2206						B11	AM DIFFER -0.2 DB N/A DB +0.1 N/A
2206		(AM = DSS 51)				B12	AM TRACKING
2206						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2206						B14	AM DO BIAS +0.30HZ C NS 0.002 HZ EXP 0.002 HZ
2206						B15	AM MONITOR LGWR LGER BLRC BLER
2206						B16	AM DIS N/R N/R N/R N/R
2206						B17	AM TCP N/R N/R N/R N/R
PN6RMZ64789							
2206	713650139	713651000	AM	PF	2206	B01	AM CONFIG AOS DOY 365 LOS DOY 365 TOTAL
2206						B02	AM DSS J200CTD 8-1/3SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2206						B03	AM GCF S20JCL8 00331ACTUAL 0134Z ACTUAL 1000Z ACTUAL 7H21M
2206						B04	AM CPS NIL ST XFR NR Z RELEASE 1000Z DSS TIM 7H21M
2206						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2206						B06	AM OCC TEN NR TEX NR Z
2206						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS GOE
2206						B08	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2206						B09	AM ACTUAL-154.3DBM NA DBM 9.9 NA
2206						B10	AM PREDIC-154.0DBM NA DBM 10.1 NA
2206						B11	AM DIFFER -0.3 DB NA DB -0.2 NA
2206						B12	AM TRACKING
2206						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2206						B14	AM DO BIAS +0.30HZ C NS 0.002 HZ EXP 0.002 HZ
2206						B15	AM MONITOR LGWR LGER BLRC BLER
2206						B16	AM DIS NR NR NR NR
2206						B17	AM TCP NR NR NR NR

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
PN6CAZ64794							
2208	720010118	720010957	AM	PF	2208	B01	AM CONFIG AOS DOY 001 LOS DOY 001 TOTAL
2208						B02	AM DSS J200CTD 8-1/3 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2208						B03	AM GCF S20JCLA 00331 ACTUAL 0118Z ACTUAL 0957Z ACTUAL 8H39M
2208						B04	AM CPS N/A ST XFR N/A Z RELEASE 0957Z DSS TIM 8H39M
2208						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2208		(AM = DSS 51)				B06	AM OCC TEN NR TEX NR Z
2208						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS GOE
2208						B08	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2208						B09	AM ACTUAL-153.9DBM N/A DBM 10.5 N/A
2208						B10	AM PREDIC-153.9DBM N/A DBM 10.4 N/A
2208						B11	AM DIFFER 0.0 DB N/A DB +0.1 N/A
2208						B12	AM TRACKING
2208						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2208						B14	AM DO BIAS 0.42 HZ C NS 0.0015HZ EXP HZ
2208						B15	AM MONITOR LGWR LGER BLRC BLER
2208						B16	AM DIS N/R N/R N/R N/R
2208						B17	AM TCP N/R N/R N/R N/R
PN6CAZ64799							
2209	720020129	720021000	AM	PF	2209	B01	AM CONFIG AOS DOY 002 LOS DOY 002 TOTAL
2209						B02	AM DSS J200CTD 8-1/3 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2209						B03	AM GCF S20JCLA 00331 ACTUAL 0129Z ACTUAL 1000Z ACTUAL 8H31M
2209						B04	AM CPS N/A ST XFR N/A Z RELEASE 1000Z DSS TIM 8H31M
2209						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2209						B06	AM OCC TEN N/A TEX N/A Z
2209						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS GOE
2209						B08	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2209						B09	AM ACTUAL-154.1DBM N/A DBM 10.1 N/A
2209						B10	AM PREDIC-153.9DBM N/A DBM 10.3 N/A
2209						B11	AM DIFFER -0.2 DB N/A DB -0.2 N/A
2209						B12	AM TRACKING
2209						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2209						B14	AM DO BIAS 0.634HZ C NS 0.0015HZ EXP 0.002 HZ
2209						B15	AM MONITOR LGWR LGER BLRC BLER
2209						B16	AM DIS N/R N/R N/R N/R
2209						B17	AM TCP N/R N/R N/R N/R
PN6CAZ64804							
2210	720030136	720030730	AO	PF	2210	B01	AO CONFIG AOS DOY 003 LOS DOY 003 TOTAL
2210						B02	AO DSS K000CTD 8-1/3 SCHEDUL 0130Z SCHEDUL 0730Z SCHEDUL 6H00M
2210						B03	AO GCF S21KCLA 00332 ACTUAL 0136Z ACTUAL 0730Z ACTUAL 5H54M
2210						B04	AO CPS N/A ST XFR N/A Z RELEASE 0730Z DSS TIM 5H54M
2210						B05	AO COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2210		(AO = DSS 61)				B06	AO OCC TEN NR TEX NR Z
2210						B07	AO TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS MMT

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2210	720030136	720030730	AO	PF	2210	B08	AO RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2210						B09	AO ACTUAL-154.2DBM N/A DBM 10.3 N/A
2210						B10	AO PREDIC-153.9DBM N/A DBM 11.1 N/A
2210						B11	AO DIFFER -0.3 DB N/A DB -0.8 N/A
2210		(AO = DSS 61)				B12	AO TRACKING
2210						B13	AO TRACK MD NR WAY RANGING NR BIAS NR RU NOISE NR RU
2210						B14	AO DO BIAS NR HZ C NS NR HZ EXP NR HZ
2210						B15	AO MONITOR LGWR LGER BLRC BLER
2210						B16	AO DIS NR NR NR NR
2210						B17	AO TCP NR NR NR NR
PN6CAZ64810							
2211	720040136	720040730	AO	PF	2211	B01	AO CONFIG AOS DOY 004 LOS DOY 004 TOTAL
2211						B02	AO DSS K000CTD B-1/3 SCHEDUL 0130Z SCHEDUL 0730Z SCHEDUL 6H00M
2211						B03	AO GCF S21KCLA 00332 ACTUAL 0136Z ACTUAL 0730Z ACTUAL 5H54M
2211						B04	AO CPS N/A ST XFR N/A Z RELEASE 0730Z DSS TIM 5H54M
2211						B05	AO COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2211						B06	AO OCC TEN N/A TEX N/A Z
2211						B07	AO TELEM PWR 10 KW PREDIC 10 KW BIT 648PS MMT
2211						B08	AO RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2211						B09	AO ACTUAL-153.4DBM N/A DBM 11.1 N/A
2211						B10	AO PREDIC-153.9DBM N/A DBM 11.1 N/A
2211						B11	AO DIFFER +0.5 DB N/A DB 0.0 N/A
2211						B12	AO TRACKING
2211						B13	AO TRACK MD NR WAY RANGING NR BIAS NR RU NOISE NR RU
2211						B14	AO DO BIAS NR HZ C NS NR HZ EXP NR HZ
2211						B15	AO MONITOR LGWR LGER BLRC BLER
2211						B16	AO DIS NR NR NR NR
2211						B17	AO TCP NR NR NR NR
PN6CAZ64816							
2212	720050129	720051000	AM	PF	2212	B01	AM CONFIG AOS DOY 005 LOS DOY 005 TOTAL
2212						B02	AM DSS J200CTD B-1/3 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2212						B03	AM GCF S20JCLA 00331 ACTUAL 0129Z ACTUAL 1000Z ACTUAL 8H31M
2212						B04	AM CPS N/A ST XFR N/A Z RELEASE 1000Z DSS TIM 8H31M
2212						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2212		(AM = DSS 51)				B06	AM OCC TEN N/R TEX N/R Z
2212						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS GOE
2212						B08	AM RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2212						B09	AM ACTUAL-153.9DBM N/A DBM 10.0 N/A
2212						B10	AM PREDIC-153.9DBM N/A DBM 10.3 N/A
2212						B11	AM DIFFER 0.0 DB N/A DB -0.3 N/A
2212						B12	AM TRACKING
2212						B13	AM TRACK MD 2 WAY RANGING NIL BIAS NIL RU NOISE NIL RU
2212						B14	AM DO BIAS 0.639HZ C NS 0.001 HZ EXP 0.002 HZ
2212						B15	AM MONITOR LGWR LGER BLRC BLER
2212						B16	AM DIS N/R N/R N/R N/R
2212						B17	AM TCP N/R N/R N/R N/R

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	CATA DAY	LINE NO	COMMENTS			
FN6CAZ64E26										
2214	720070119	720071000	AM	PF	2214	801	AM CONFIG	AOS DOY-007	LOS DOY-007	TOTAL
2214						802	AM DSS-J200CTD-8-1	SCHEDUL-0130Z	SCHEDUL-1000Z	SCHEDUL- 8H30M
2214						803	AM GCF-S20JCLA-N/A	ACTUAL -0119Z	ACTUAL -1000Z	ACTUAL - 8H41M
2214						804	AM CPS N/A	ST.XFR -N/A Z	RELEASE-1000Z	DSS TIM- 8H41M
2214						805	AM COMMAND TOT-5	AUTO- 0	MANU-5	ABORT-0
2214		(AM = DSS 51)				806	AM OCC TEN- N/A	TEX- N/A Z		
2214						807	AM TELEM PWR- 10 KW	PREDICT- 10KW	BIT- 64BPS	GOE
2214						808	AM RX-/ AGC	RX 2 AGC	TCP- A SNR	TCP- B SNR
2214						809	AM ACTUAL-153.8DBM	N/A DBM	10.3	N/A
2214						810	AM PREDIC-153.8DBM	N/A DBM	10.3	N/A
2214						811	AM DIFFER N/A DB	N/A DB	0.0	N/A
2214						812	AM TRACKING			
2214						813	AM TRACK.MD- 2 WAY	RANGING NIL	BIAS NIL RU	NOISE NIL RU
2214						814	AM DO.BIAS 0.634HZ	C.NS 0.001 HZ		EXP 0.002 HZ
2214						815	AM MONITOR LGWR	LGER	BLRC	BLER
2214						816	AM DIS- N/R	N/R	N/R	N/R
2214						817	AM TCP- N/R	N/R	N/R	N/R
FN6CAZ64E32										
2215	720080123	720081000	AM	PF	2215	801	AM CONFIG	AOS DOY-008	LOS DOY-008	TOTAL
2215						802	AM DSS-J200CTD-8-1	SCHEDUL-0130Z	SCHEDUL-1000Z	SCHEDUL- 8H30M
2215						803	AM GCF-S20JCLA-N/A	ACTUAL -0123Z	ACTUAL -1000Z	ACTUAL - 8H37M
2215						804	AM CPS N/A	ST.XFR -N/R Z	RELEASE-1000Z	DSS TIM- 8H37M
2215						805	AM COMMAND TOT-5	AUTO-0	MANU-5	ABORT-0
2215						806	AM OCC TEN- N/A	TEX- N/A Z		
2215						807	AM TELEM PWR- 10 KW	PREDICT-10 KW	BIT- 64 BPS	GOE
2215						808	AM RX-1 AGC	RX.2 AGC	TCP- A SNR	TCP- B SNR
2215						809	AM ACTUAL-153.7DBM	N/A DBM	10.7	N/A
2215						810	AM PREDIC 153.8DBM	N/A DBM	10.7	N/A
2215						811	AM DIFFER- +0.1 DB	N/A DB	0.0	N/A
2215						812	AM TRACKING			
2215						813	AM TRACK.MD- 2 WAY	RANGING N/A	BIAS N/A RU	NOISE N/A RU
2215						814	AM DO.BIAS N/A HZ	C.NS N/AHZ		EXP N/A HZ
2215						815	AM MONITOR LGWR	LGER	BLRC	BLER
2215						816	AM DIS- N/R	N/R	N/R	N/R
2215						817	AM TCP- N/R	N/R	N/R	N/R
PN6CAZ64837										
2216	72C090125	720090917	AM	PF	2216	801	AM CONFIG	AOS DOY-009	LOS DOY-009	TOTAL
2216						802	AM DSS-J200CTD- 8-1	SCHEDUL-0130Z	SCHEDUL-1000Z	SCHEDUL- 8H30M
2216						803	AM GCF-S20JCLA- N/A	ACTUAL -0125Z	ACTUAL -0917Z	ACTUAL - 7H52M
2216						804	AM CPS/N/A	ST.XFR -N/R Z	RELEASE-0917Z	DSS TIM- 7H52M
2216						805	AM COMMAND TOT- 5	AUTO- 0	MANU- 5	ABORT- 0
2216						806	AM OCC TEN- N/A	TEX- N/A Z		
2216						807	AM TELEM PWR- 10 KW	PREDICT- 10KW	BIT- 64BPS	

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2216	720090125	720090917	AM	PF	2216	B08	AM RX-1 AGC RX 2 AGC TCP- A/ SNR TCP- B SNR
2216						B09	AM ACTUAL-153.8DBM N/ADBM N/A N/A
2216						B10	AM PREDIC-153.8DBM N/ADBM N/A N/A
2216						B11	AM DIFFER 0 DB N/A DB N/A N/A
2216		(AM = DSS 51)				B12	AM TRACKING
2216						B13	AM TRACK.MD-2 WAY RANGING-NIL BIAS NIL RU NOISE NIL RU
2216						B14	AM DO.BIAS .626 HZ C.NS .002HZ EXP .005 HZ
2216						B15	AM MONITOR LGWR LGER BLRC BLER
2216						B16	AM DIS- N/R N/R N/R N/R
2216						B17	AM TCP- N/R N/R N/R N/R
PN6CAZ64842							
2217	720100158	720100730	AO	PF	2217	B01	AO CONFIG AOS DOY-010 LOS DOY-010 TOTAL
2217						B02	AO DSS K000CTD B-1 SCHEDUL 0130Z SCHEDUL 0730Z SCHEDUL 6H00M
2217						B03	AO GCF S21KCLA N/A ACTUAL 0158Z ACTUAL 0730Z ACTUAL 5H32M
2217						B04	AO CPS N/A ST XFR N/R Z RELEASE 0730Z DSS TIM 5H37M
2217						B05	AO COMMAND TOT 3 AUTO 0 MANU 3 ABORT 0
2217						B06	AO OCC TEN N/A TEX N/A Z
2217		(AO = DSS 61)				B07	AO TELEM PWR 10 KW PREDIC 10 KW BIT 64 BPS MMT
2217						B08	AO RX 1 AGC RX B AGC TCP A SNR TCP B SNR
2217						B09	AO ACTUAL-153.6DBM N/A DBM 10.9 N/A
2217						B10	AO PREDIC-153.8DBM N/A DBM 11.1 N/A
2217						B11	AO DIFFER +0.4 DB N/A DB -0.2 N/A
2217						B12	AO TRACKING
2217						B13	AO TRACK MD NR WAY RANGING NR BIAS NR RU NOISE NR RU
2217						B14	AO DO BIAS NR HZ C NS NR HZ EXP NR HZ
2217						B15	AO MONITOR LGWR LGER BLRC BLER
2217						B16	AO DIS N/A N/A N/A N/A
2217						B17	AO TCP N/A N/A N/A N/A
PN6CAZ64845							
2217	720100957	720101500	AA	PF	2217	B01	AA CONFIG AOS DOY-010 LOS DOY-010 TOTAL
2217						B02	AA DSS A000CTD B-1 SCHEDUL 1000Z SCHEDUL 1500Z SCHEDUL 5H00M
2217						B03	AA GCF S21ACLA N/A ACTUAL 0957Z ACTUAL 1500Z ACTUAL 5H03M
2217						B04	AA CPS N/A ST XFR N/R Z RELEASE 1500Z DSS TIM 5H03M
2217						B05	AA COMMAND TOT 3 AUTO 0 MANU 3 ABORT 0
2217						B06	AA OCC TEN N/A TEX N/A Z
2217		(AA = DSS 11)				B07	AA TELEM PWR 10 KW PREDIC 10 KW BIT 64BPS MMT
2217						B08	AA RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2217						B09	AA ACTUAL-153.3DBM N/A DBM 10.6 N/A
2217						B10	AA PREDIC-153.8DBM N/A DBM 11.0 N/A
2217						B11	AA DIFFER +0.5 DB N/A DB -0.4 N/A
2217						B12	AA TRACKING
2217						B13	AA TRACK MD NR WAY RANGING NR BIAS NR RU NOISE NR RU
2217						B14	AA DO BIAS NR HZ C NS NR HZ EXP NR HZ
2217						B15	AA MONITOR LGWR LGER BLRC BLER
2217						B16	AA DIS N/A N/A N/A N/A
2217						B17	AA TCP N/A N/A N/A N/A

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
PN6CAZ64E49							
2218	720110201	720110730	AO	PF	2218	B01	AO CONFIG AOS DOY-011 LOS DOY-012 TOTAL
2218						B02	AO DSS K000CTD 8-1/3 SCHEDUL 0130Z SCHEDUL 0730Z SCHEDUL 6H00M
2218						B03	AO GCF S21KCLA 00332 ACTUAL 0201Z ACTUAL 0730Z ACTUAL 5H29M
2218						B04	AO CPS T010 ST XFR N/R Z RELEASE 0730Z DSS TIM 5H29M
2218						B05	AO COMMAND TOT 4 AUTO 0 MANU 4 ABORT 0
2218						B06	AO OCC TEN N/A TEX N/A Z
2218						B07	AO TELEM PWR 10 KW PREDIC 10 KW BIT 64BPS MMT
2218						B08	AO RX 1 AGC RX 2 AGC TCP A SNR TCP B SNR
2218		(AO = DSS 61)				B09	AO ACTUAL-153.4DBM N/A DBM 11.1 N/A
2218						B10	AO PREDIC-153.7DBM N/A DBM 11.4 N/A
2218						B11	AO DIFFER +0.3 DB N/A CB -0.3 N/A
2218						B12	AO TRACKING
2218						B13	AO TRACK MD NA WAY RANGING NA BIAS NA RU NOISE NA RU
2218						B14	AO DO BIAS NA HZ C NS NA HZ EXP NA HZ
2218						B15	AO MONITOR LGWR LGER BLRC BLER
2218						B16	AO DIS N/A N/A N/A N/A
2218						B17	AO TCP N/A N/A N/A N/A
PN6CAZ64E51							
2218	720110930	720111800	AA	PF	2218	B01	AA CONFIG AOS DOY-011 LOS DOY-011 TOTAL
2218						B02	AA DSS-A000CTD-8-1/3 SCHEDUL-0930Z SCHEDUL-1800Z SCHEDUL- 8H30M
2218						B03	AA GCF-S21ACLA-00332 ACTUAL -0930Z ACTUAL -1800Z ACTUAL - 8H30M
2218						B04	AA CPS-T010 ST.XFR -N/A Z RELEASE-1800Z DSS TIM- 8H30M
2218						B05	AA COMMAND TOT-3 AUTO-0 MANU-3 ABORT-0
2218						B06	AA OCC TEN- N/A TEX- N/A Z
2218		(AA = DSS 11)				B07	AA TELEM PWR- 10 KW PREDICT-10 KW BIT- 64BPS MMT
2218						B08	AA RX-1 AGC RX.2 AGC TCP- A SNR TCP- B SNR
2218						B09	AA ACTUAL-153.2DBM N/ADBM 10.0 N/A
2218						B10	AA PREDIC-153.7DBM N/ADBM 10.3 N/A
2218						B11	AA DIFFER +0.5 DB N/A CB +0.3 N/A
2218						B12	AA TRACKING
2218						B13	AA TRACK.MD-N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
2218						B14	AA DO.BIAS N/R HZ C.NS N/RHZ EXP N/R HZ
2218						B15	AA MONITOR LGWR LGER BLRC BLER
2218						B16	AA DIS- N/R N/R N/R N/R
2218						B17	AA TCP- N/R N/R N/R N/R
2218						B18	AA UPDATE REQ-POST TRK RPT
PN6CAZ64E65							
2220	720130114	720131000	AM	PF	2220	B01	AM CONFIG AOS DOY 013 LOS DOY 013 TOTAL
2220						B02	AM DSSJ200 CTD 8-1 SCHEDUL0130 Z SCHEDUL 1000Z SCHEDUL 8H30M
2220						B03	AM GCFS20J CLA300331 ACTUAL 1140 Z ACTUAL 1000Z ACTUAL 8H20M
2220						B04	AM CPST010 ST XFR N/R Z RELEASE 1000Z DSS TIM 8H22M
2220		(AM = DSS 51)				B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2220						B06	AM OCC TEN N/A TEX N/A Z

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2220	720130114	720131000	AM	PF	2220	B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 GOE
2220						B08	AM RX 1 AGC RX 2 AGC TCP 1 SNR TCP 2 SNR
2220						B09	AM ACTUAL-154.0DBM N/A DBM 11.0
2220						B10	AM PREDIC-153.7DBM N/A DBM 11.0
2220						B11	AM DIFFER -0.3 DB N/A DB 0
2220						B12	AM TRACKING
2220		(AM = DSS 51)				B13	AM TRACK MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU
2220						B14	AM DO BIAS .595 HZ C NS .002 HZ EXP .002 HZ
2220						B15	AM MONITOR LGWR LGER BLRC BLER
2220						B16	AM DIS N/A N/A N/A N/A
2220						B17	AM TCP N/A N/A N/A N/A
PN6CAZ64E76							
2222	720150125	720151000	AM	PF	2222	B01	AM CONFIG AOS DOY 015 LOS DOY 015 TOTAL
2222						B02	AM DSSJ200 CTD B-1 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2222						B03	AM GCFS20J CLA300331 ACTUAL 0125Z ACTUAL 1000Z ACTUAL 8H35M
2222						B04	AM CPSTO10 ST XFR N/R Z RELEASE 1006Z DSS TIM 8H44M
2222						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2222						B06	AM OCC TEN N/A TEX N/A Z
2222						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 GOE
2222						B08	AM RX 1 AGC RXN/AAGC TCPB ENGSNR TCP N/A SNR
2222						B09	AM ACTUAL-153.7DBM N/A DBM 710 N/A
2222						B10	AM PREDIC-153.7DBM N/A DBM 10.8 N/A
2222						B11	AM DIFFER 0 DB N/A DB N/A
2222						B12	AM TRACKING
2222						B13	AM TRACK MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU
2222						B14	AM DO BIAS +0.2 HZ C NS 0.003HZ EXP 0.002HZ
2222						B15	AM MONITOR LGWR LGER BLRC BLER
2222						B16	AM DIS N/R N/R N/R N/R
2222						B17	AM TCP N/R N/R N/R N/R
FN6CAZ64882							
2223	720160059	720161000	AM	PF	2223	B01	AM CONFIG AOS DOY 016 LOS DOY 016 TOTAL
2223						B02	AM DSSJ200 CTD B-1 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2223						B03	AM GCFS20J CLA ACTUAL 0059Z ACTUAL 1000Z ACTUAL 9H01M
2223						B04	AM CPS ST XFR N/R Z RELEASE 1000Z DSS TIM 9H01M
2223						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2223						B06	AM OCC TEN N/A TEX N/A Z
2223						B07	AM TELEM PWR 10 KW PREDIC 10 KW BIT 64 GOE
2223						B08	AM RX 1 AGC RXN/AAGC TCP B SNR TCP N/A SNR
2223						B09	AM ACTUAL-153.7DBM N/A DBM 10.8 N/A
2223						B10	AM PREDIC-153.7DBM N/A DBM 710.0 N/A
2223						B11	AM DIFFER 0 DB N/A DB N/A
2223						B12	AM TRACKING
2223						B13	AM TRACK MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU
2223						B14	AM DO BIAS +0.3 HZ C NS 0.0002HZ EXP 0.0002HZ
2223						B15	AM MONITOR LGWR LGER BLRC BLER
2223						B16	AM DIS N/R N/R N/R N/R

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2223	720160059	720161000	AM	PF	2223	B17	AM TCP N/R N/R N/R N/R
PN6CAZ64888		(AM = DSS 51)					
2224	720170226	720170700	AO	PF	2224	B01	AO CONFIG AUS DOY 017 LOS DOY 017 TOTAL
2224						B02	AO DSSK000 CTD B-1 SCHEDUL0130 Z SCHEDUL 0700Z SCHEDUL 5H30M
2224						B03	AO GCFS21K CLA303324 ACTUAL 0226 Z ACTUAL 0700Z ACTUAL 4H34M
2224						B04	AO CPS ST XFR Z RELEASE 0700Z DSS TIM 4H34M
2224						B05	AO COMMAND TOT 3 AUTO 0 MANU 3 ABORT 0
2224		(AO = DSS 61)				B06	AO OCC TEN TEX Z
2224						B07	AO TELEM PWR 10 KW PREDIC 10 KW BIT 64 PMT
2224						B08	AO RX 1 AGC RXNILAGC TCP A SNR TCP NIL SNR
2224						B09	AO ACTUAL-153.8DBM NIL DBM 9.0 NIL
2224						B10	AO PREDIC-153.7DBM NIL DBM 10.3 NIL
2224						B11	AO DIFFER -0.1 DB NIL DB -1.3 NIL
2224						B12	AO TRACKING
2224						B13	AO TRACK MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU
2224						B14	AO DO BIAS N/A HZ C NS N/A HZ EXP N/A HZ
2224						B15	AO MONITOR LGWR LGER BLRC BLER
2224						B16	AO DIS N/R N/R N/R N/R
2224						B17	AO TCP N/R N/R N/R N/R
2224						B18	AO USED MASER 2, DR T-52 UN SNOW SNR-1.3 DB PROX
FN6CAZ64889							
2224	720171000	720171500	AA	PF	2224	B01	AA CONFIG AUS DOY 017 LOS DOY 017 TOTAL
2224						B02	AA DSS A000CTD B-1 SCHEDUL 1000Z SCHEDUL 1500Z SCHEDUL 5H00M
2224						B03	AA GCF S21ACLA303324 ACTUAL 1000Z ACTUAL 1500Z ACTUAL 5H00M
2224						B04	AA CPS ST XFR Z RELEASE 1500Z DSS TIM 5H00M
2224						B05	AA COMMAND TOT N/R AUTO N/R MANU N/R ABORT N/R
2224		(AA = DSS 11)				B06	AA OCC TEN N/A TEX N/A Z
2224						B07	AA TELEM PWR 10 KW PREDIC 10 KW BIT 64 MMT
2224						B08	AA RX 1 AGC RXNILAGC TCPA ENGSNR TCP NIL SNR
2224						B09	AA ACTUAL-153.0DBM NIL DBM 10.6 NIL
2224						B10	AA PREDIC-153.7DBM NIL DBM 10.8 NIL
2224						B11	AA DIFFER +0.7 DB NIL DB -0.2 NIL
2224						B12	AA TRACKING
2224						B13	AA TRACK MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
2224						B14	AA DO BIAS N/R HZ C NS N/R HZ EXP N/R HZ
2224						B15	AA MONITOR LGWR LGER BLRC BLER
2224						B16	AA DIS N/R N/R N/R N/R
2224						B17	AA TCP N/R N/R N/R N/R
PN6CAZ64895							
2225	720180229	720180730	AO	PF	2225	B01	AO CONFIG AOS DOY 018 LOS DOY 018 TOTAL
2225						B02	AO DSSK000 CTD B-1 SCHEDUL 0130Z SCHEDUL 0730Z SCHEDUL 6H00M
2225						B03	AO GCFS21K CLA303324 ACTUAL 0229Z ACTUAL 0730Z ACTUAL 5H01M
2225						B04	AO CPS ST XFR N/R Z RELEASE 0730Z DSS TIM 5H01M
2225						B05	AO COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2225	720180229	720180730	AO	PF	2225	B06	AO OCC TEN N/A TEX N/A Z
2225						B07	AO TELEM PWR 10 KW PREDIC 10 KW BIT €4 MMT
2225						B08	AO RX 1 AGC RX AGC TCPA SNR TCP SNR
2225						B09	AO ACTUAL-153.6DBM DBM 10.3
2225		(AO = DSS 61)				B10	AO PREDIC-153.7DBM DBM 10.2
2225						B11	AO DIFFER +0.1 DB DB +0.1
2225						B12	AO TRACKING
2225						B13	AO TRACK MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
2225						B14	AO DO BIAS N/R HZ C NS N/R HZ EXP N/R HZ
2225						B15	AO MONITOR LGWR LGER BLRC BLER
2225						B16	AO DIS N/R N/R N/R N/R
2225						B17	AO TCP N/R N/R N/R N/R
PN6CAZ64902							
2226	720190112	720190700	AM	PF	2226	B01	AM CONFIG AOS DOY 019 LOS DOY 019 TOTAL
2226						B02	AM DSS5200 CTD 8-1 SCHEDUL0130 Z SCHEDUL0700 Z SCHEDUL 5H30M
2226						B03	AM GCFS20J CLA303314 ACTUAL 0112 Z ACTUAL 0700 Z ACTUAL 5H48M
2226						B04	AM CPS ST XFR N/A Z RELEASE0700 Z DSS TIM 5H48M
2226						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2226		(AM = DSS 51)				B06	AM OCC TEN N/A TEX N/A Z
2226						B07	AM TELEM PWR 10 KW PREDIC 10KW BIT €4 GOE
2226						B08	AM RX 1 AGC RXN/AAGC TCPB-ENGSNR TCP N/A SNR
2226						B09	AM ACTUAL-153.5DBM N/ADBM 710 N/A
2226						B10	AM PREDIC-153.7DBM N/ADBM 11.0 N/A
2226						B11	AM DIFFER +0.2 DB N/A DB N/A N/A
2226						B12	AM TRACKING
2226						B13	AM TRACK MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU
2226						B14	AM DO BIAS 0.527HZ C NS 0.001HZ EXP 0.002HZ
2226						B15	AM MONITOR LGWR LGER BLRC BLER
2226						B16	AM DIS N/R N/R N/R N/R
2226						B17	AM TCP N/R N/R N/R N/R
PN6CAZ64910							
2227	720200119	720201000	AM	PF	2227	B01	AM CONFIG AOS DOY 020 LOS DOY 020 TOTAL
2227						B02	AM DSS5200 CTD 8-1 SCHEDUL0130 Z SCHEDUL1000 Z SCHEDUL 8H30M
2227						B03	AM GCFS20J CLA303314 ACTUAL 0119 Z ACTUAL 1000 Z ACTUAL 8H41M
2227						B04	AM CPS N/A ST XFR N/A Z RELEASE1000 Z DSS TIM 8H41M
2227						B05	AM COMMAND TOT 4 AUTO 0 MANU 4 ABORT 0
2227						B06	AM OCC TEN N/R TEX N/R Z
2227						B07	AM TELEM PWR 10KW PREDIC 10KW BIT €4 GOE
2227						B08	AM RX 1AGC RXN/AAGC TCPA-ENGSNR TCP SNR
2227						B09	AM ACTUAL-153.7DBM N/ADBM 710 N/A
2227						B10	AM PREDIC-153.7DBM N/ADBM 10.7 N/A
2227						B11	AM DIFFER 0 DB N/A DB N/A N/A
2227						B12	AM TRACKING
2227						B13	AM TRACK MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU
2227						B14	AM DO BIAS +0.5HZ C NS 0.002HZ EXP 0.002HZ
2227						B15	AM MONITOR LGWR LGER BLRC BLER

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2227	720200119	720201000	AM	PF	2227	B16	AM DIS N/R N/R N/R N/R
2227						B17	AM TCP N/R N/R N/R N/R
PN6CAA64915							
2228	720201716	720210133	AJ	AA	2228	B01	AJ RUPT PATCH BOARD. STILL HAD ABORT 0001. INSTALLED NEW
2228						B02	AJ INTERRUPT PATCH BOARD. HAD ONE ABORT 0001 THEN THE SYSTEM
2228						B03	AJ CAME GOOD.START 1825Z END 1940Z. DRT-1783 APPLIES. PROBLEM
2228						B04	AJ UNDER INVESTIGATION.
2228		(AJ = DSS 42)				B05	AJ B. AT 0045Z TCP BETA HAD MEMORY PARITY CAUSING ALL DATA TO
2228						B06	AJ STOP. 0046Z RELOAD CARRIED OUT. AT 0056Z RELOAD COMPLETED.
2228						B07	AJ NO EXPLANATION FOR FAULT AT THIS TIME. DRT-1784 REFERS.
PN6CAZ64915							
2228				PF	2228	B01	AJ CONFIG AOS DOY 020 LOS DOY 021 TOTAL
2228						B02	AJ DSSG000 CTD B-1 SCHEDUL 1730Z SCHEDUL 0130Z SCHEDUL 8H00M
2228						B03	AJ GCFS21G CLA303324 ACTUAL 1716Z ACTUAL 0133Z ACTUAL 8H17M
2228						B04	AJ CPSN/A ST XFR N/R Z RELEASE 0133Z DSS TIM 8H17M
2228						B05	AJ COMMAND TOT 9 AUTO 0 MANU 9 ABORT 0
2228						B06	AJ OCC TEN N/A TEX N/A Z
2228						B07	AJ TELEM PWR 10KW PREDIC 10KW BIT 64 MMT
2228						B08	AJ RX 1 AGC RX 2 AGC TCP A1 SNR TCPB 2 SNR
2228						B09	AJ ACTUAL-153.1DBM N/A DBM 12.5 N/A
2228						B10	AJ PREDIC-153.7DBM N/A DBM 11.9 N/A
2228						B11	AJ DIFFER +.6 DB N/A DB +.6 N/A
2228						B12	AJ TRACKING
2228						B13	AJ TRACK MDN/R WAY RANGING N/R BIAS N/R RU NOISE N/R RU
2228						B14	AJ DO BIAS N/R HZ C NS N/R HZ EXP N/R HZ
2228						B15	AJ MONITOR LGWR LGER BLRC BLER
2228						B16	AJ DIS N/R N/R N/R N/R
2228						B17	AJ TCP N/R N/R N/R N/R
PN6CAZ64924							
2229	720220122	720221000	AM	PF	2229	B01	AM CONFIG AOS LOS TOTAL
2229						B02	AM DSS J200CTD B-1 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2229						B03	AM GCF S20JCLA303314 ACTUAL 0122Z ACTUAL 1000Z ACTUAL 8H38M
2229						B04	AM CPS ST.XFR N/R Z RELEASE N/R Z DSS TIMN/AH M
2229		(AM = DSS 51)				B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2229						B06	AM OCC TEN N/A TEX N/A Z
2229						B07	AM TELEM PWR 10KW PREDICT 10KW BIT 64 GOE
2229						B08	AM RX 1 AGC RX.2 AGC TCP-AENGSNR TCP-B SNR
2229						B09	AM ACTUAL-154.0DBM N/A DBM 10.0 N/A
2229						B10	AM PREDIC 153.8DBM N/A DBM 10.6 N/A
2229						B11	AM DIFFER- -0.2 DB N/A DB -0.6 N/A
2229						B12	AM TRACKING
2229						B13	AM TRACK.MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU
2229						B14	AM DO.BIAS 0.5HZ C.NS 0.002HZ EXP 0.002HZ
2229						B15	AM MONITOR LGWR LGER BLRC BLER

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2229	720220122	720221000	AM	PF	2229	B16	AM DIS- N/R N/R N/R N/R
2229						B17	AM TCP- N/R N/R N/R N/R
PN6CAZ64929							
2230	720230114	720231000	AM	PF	2230	B01	AM CONFIG AOS 023 LOS 023 TOTAL
2230						B02	AM DSS J200CTD 8-1 SCHEDUL 0130Z SCHEDUL 1000Z SCHEDUL 8H30M
2230						B03	AM GCF S20JCLA303314 ACTUAL 1395Z ACTUAL 1000Z ACTUAL 8H21M
2230						B04	AM CPS ST.XFR N/A Z RELEASE N/A Z DSS TIMN/AH M
2230						B05	AM COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0
2230		(AM = DSS 51)				B06	AM OCC TEN N/A TEX N/A Z
2230						B07	AM TELEM PWR 10KW PREDICT 10KW BIT 64 GOE
2230						B08	AM RX 1AGC RX.2 AGC TCPA-ENGSNR TCP-B SNR
2230						B09	AM ACTUAL-153.9DBM N/A DBM 7.0 N/A
2230						B10	AM PREDIC-153.8DBM N/A DBM 10.7 N/A
2230						B11	AM DIFFER- -0.1 DB N/A DB 0.0 N/A
2230						B12	AM TRACKING
2230						B13	AM TRACK.MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU
2230						B14	AM DO.BIAS +0.5HZ C.NS 0.001HZ EXP 0.002HZ
2230						B15	AM MONITOR LGWR LGER BLRC BLER
2230						B16	AM DIS- N/R N/R N/R N/R
2230						B17	AM TCP- N/R N/R N/R N/R
PN6CAZ64935							
2231	720240248	720240730	AO	PF	2231	B01	AM CONFIG AOS LOS TOTAL
2231						B02	AM DSS-K000CTD-8-1 SCHEDUL-0130Z SCHEDUL-0730Z SCHEDUL- 6H00M
2231						B03	AM GCF-S21KCLA300324 ACTUAL -0248Z ACTUAL -0730Z ACTUAL - 4H42M
2231						B04	AM CPS N/A ST.XFR -N/R Z RELEASE-N/A Z DSS TIMN/AH M
2231						B05	AM COMMAND TOT-4 AUTO- 0 MANU- 4 ABORT- 0
2231		(AO = DSS 61)				B06	AM OCC TEN- N/A TEX- N/A Z
2231						B07	AM TELEM PWR-N/A KW PREDICT-N/AKW BIT- N/A
2231						B08	AM RX-1 AGC RX. AGC TCP-N/A SNR TCP-N/A SNR
2231						B09	AM ACTUAL-N/A DBM N/ADBM N/A N/A
2231						B10	AM PREDIC N/A DBM N/ADBM N/A N/A
2231						B11	AM DIFFER-N/A DB N/A DB N/A N/A
2231						B12	AM TRACKING
2231						B13	AM TRACK.MD-N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
2231						B14	AM DO.BIAS N/R HZ C.NS N/R HZ N/R EXP N/R HZ
2231						B15	AM MONITOR LGWR LGER BLRC BLER
2231						B16	AM DIS- N/R N/R N/R N/R
2231						B17	AM TCP- N/R N/R N/R N/R
PN6CAA64937							
2231	720241106	720241500	AA	AA	2231	B01	AA TXR WAS IN WATER LOAD-OPERATOR ERROR. 1233-1241Z DR 1790
2231						B02	AA DESC. EXCESSIVE TIME TAKEN TO LOCK RCVR IN TWO WAY MODE-
2231						B03	AA OPERATOR ERROR. THROUGHOUT PASS DR A0024 SIGNAL LEVEL AND
2231		(AA = DSS 11)				B04	AA SNR OUT OF TOLERANCE.

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	CATA DAY	LINE NO	COMMENTS
PN6CAZ64942							
2232	720250251	720250730	AO	PF	2232	B01	AO CONFIG AOS 025 LOS 025 TOTAL
2232						B02	AO DSS-K000CTD-B-1 SCHEDUL-0130Z SCHEDUL-0730Z SCHEDUL- 6H00M
2232						B03	AO GCF-S21KCLA300324 ACTUAL -0251Z ACTUAL -0730Z ACTUAL - 4H39M
2232						B04	AO CPS ST.XFR -N/R Z RELEASE-0730Z DSS TIM- 4H39M
2232						B05	AO COMMAND TOT- 5 AUTO- 0 MANU- 5 ABORT- 3
2232						B06	AO OCC TEN- N/A TEX- N/A Z
2232						B07	AO TELEM PWR- 10KW PREDICT- 10KW BIT-16.2K/64 MMT
2232		(AO = DSS 61)				B08	AO RX- 1AGC RX.2 AGC TCPB-ENGSNR TCPB-SCISNR
2232						B09	AO ACTUAL-153.0DBM N/A DBM 11.6 15.9
2232						B10	AO PREDIC 153.7DBM N/A DBM 11.2 15.6
2232						B11	AO DIFFER- +0.7 DB N/A DB +0.4 +0.3
2232						B12	AO TRACKING
2232						B13	AO TRACK.MD-N/AWAY RANGING N/A BIAS N/A RU NOISE N/A RU
2232						B14	AO DO.BIAS N/A HZ C.NS N/A HZ EXP N/A HZ
2232						B15	AO MONITOR LGWR LGER BLRC BLER
2232						B16	AO DIS- N/A N/A N/A N/A
2232						B17	AO TCP- N/A N/A N/A N/A
2232						B18	AO CMDS ABORTED BUT RESENT ABORTS DUE TO BIT VERIFY FAILURES ON
2232						B19	AO TCP A OR T-1793
PN6CAZ64946							
2233	720260120	720260800	AM	PF	2233	B01	AM CONFIG AOS 026 LOS 026 TOTAL
2233						B02	AM DSS-J200CTD-B-1 SCHEDUL-0130Z SCHEDUL-0800Z SCHEDUL- 6H30M
2233						B03	AM GCF-S20JCLA300314 ACTUAL -0120Z ACTUAL -0800Z ACTUAL - 6H40M
2233						B04	AM CPS ST.XFR -N/R Z RELEASE-N/R Z DSS TIMN/AM M
2233						B05	AM COMMAND TOT- 4 AUTO- 0 MANU- 4 ABORT- 0
2233		(AM = DSS 51)				B06	AM OCC TEN- N/A TEX- N/A Z
2233						B07	AM TELEM PWR- 10KW PREDICT- 10KW BIT- 64 GOE
2233						B08	AM RX- 1AGC RX.2 AGC TCPA-ENGSNR TCP-B SNR
2233						B09	AM ACTUAL-154.1DBM N/A DBM 10.1 N/A
2233						B10	AM PREDIC 153.8DBM N/A DBM 10.8 N/A
2233						B11	AM DIFFER- -0.3 DB N/A DB -0.7 N/A
2233						B12	AM TRACKING
2233						B13	AM TRACK.MD- 2 WAY RANGINGNONE BIAS N/A RU NOISE N/A RU
2233						B14	AM DO.BIAS +.396HZ C.NS 0.002HZ EXP 0.002HZ
2233						B15	AM MONITOR LGWR LGER BLRC BLER
2233						B16	AM DIS- N/R N/R N/R N/R
2233						B17	AM TCP- N/R N/R N/R N/R
PN6CAZ64951							
2234	720271728	720280132	AJ	PF	2234	B01	AJ CONFIG AOS 026 LOS 027 TOTAL
2234						B02	AJ DSS-G000CTD-B-1 SCHEDUL-1730Z SCHEDUL-0130Z SCHEDUL- 8H00M
2234						B03	AJ GCF-S21GCLA300324 ACTUAL -1728Z ACTUAL -0130Z ACTUAL - 8H02M
2234						B04	AJ CPS ST.XFR -N/A Z RELEASE-0135Z DSS TIM- 8H07M
2234		(AJ = DSS 42)				B05	AJ COMMAND TOT- 1 AUTO- 0 MANU- 1 ABORT- 1

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2234	720271728	720280132	AJ	PF	2234	B06	AJ OCC TEN- N/A TEX- N/A Z
2234						B07	AJ TELEM PWR- 10KW PREDICT- 10KW BIT- 64 MMT
2234						B08	AJ RX- 1AGC RXN/AAGC TCPA-ENGSNR TCPB SNR
2234						B09	AJ ACTUAL-154.5DBM N/ADBM 12.3 N/A
2234		(AJ = DSS 42)				B10	AJ PREDIC 153.8DBM N/ADBM 11.8 N/A
2234						B11	AJ DIFFER- -0.7 DB N/A DB +0.5 N/A
2234						B12	AJ TRACKING
2234						B13	AJ TRACK.MD-N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
2234						B14	AJ DC.BIAS N/R HZ C.NS N/R HZ EXP N/R HZ
2234						B15	AJ MONITOR LGWR LGER BLRC BLER
2234						B16	AJ DIS- N/A N/A N/A N/A
2234						B17	AJ TCP- N/A N/A N/A N/A
2234						B18	AJ POST TRACK-STA. UNABLE TO SEND CMDS WITH EITHER TCP-A OR B
2234						B19	AJ CMDS ABORTED WITH ABORT CODE 0001 REF DR 1783
PN6CAZ64570							
2236	720290358	720291000	AM	PF	2236	B01	AM CONFIG AOS DOY 029 LOS DOY 029 TOTAL
2236						B02	AM DSS-J20OCTD-B-1 SCHEDUL-0400Z SCHEDUL-1000Z SCHEDUL- 6H00M
2236						B03	AM GCF-S20JCLA- ACTUAL -0358Z ACTUAL -1000Z ACTUAL - 6H02M
2236						B04	AM CPS N/A ST.XFR -N/A Z RELEASE-1000Z DSS TIM- 6H02M
2236						B05	AM COMMAND TOT- 5 AUTO- 0 MANU- 5 ABORT- 0
2236		(AM = DSS 51)				B06	AM OCC TEN- N/A TEX- N/A Z
2236						B07	AM TELEM PWR- 10KW PREDICT- 10KW BIT- 64 GDE
2236						B08	AM RX- 1AGC RX 2 AGC TCPA-ENGSNR TCPB-SCISNR
2236						B09	AM ACTUAL-153.4DBM N/A DBM 9.6 N/A
2236						B10	AM PREDIC 153.9DBM N/A DBM 9.6 N/A
2236						B11	AM DIFFER- +0.5 DB N/A DB 0.0 N/A
2236						B12	AM TRACKING
2236						B13	AM TRACK.MD- 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU
2236						B14	AM DO.BIAS +.33HZ C.NS .003HZ EXP .002HZ
2236						B15	AM MONITOR LGWR LGER BLRC BLER
2236						B16	AM DIS- N/R N/R N/R N/R
2236						B17	AM TCP- N/R N/R N/R N/R
PN6CAZ64580							
2238	720310315	720310730	AO	PF	2238	B01	AO CONFIG AOS DOY 031 LOS DOY 031 TOTAL
2238						B02	AO DSS-K000CTD-B-1 SCHEDUL-0130Z SCHEDUL-0730Z SCHEDUL- 6H00M
2238						B03	AO GCF-S21KCLA- ACTUAL -0315Z ACTUAL -0730Z ACTUAL - 4H15M
2238						B04	AO CPS ST.XFR -N/A Z RELEASE-0730Z DSS TIM- 4H15M
2238		(AO = DSS 61)				B05	AO COMMAND TOT- 5 AUTO- 0 MANU- 5 ABORT- 0
2238						B06	AO OCC TEN- N/A TEX- N/A Z
2238						B07	AO TELEM PWR- 10KW PREDICT- 10KW BIT-16/64 MMT
2238						B08	AO RX- 1AGC RX 2 AGC TCPA-ENGSNR TCPA-ENGSNR
2238						B09	AO ACTUAL-154.0DBM N/ADBM 14.6 10.8
2238						B10	AO PREDIC 153.5DBM N/ADBM 14.4 10.7
2238						B11	AO DIFFER- +.5DB N/A DB +0.2 +0.1
2238						B12	AO TRACKING
2238						B13	AO TRACK.MD-N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU

PASS NUM.	GMT-START	GMT-END	ORIG CODE	TYPE CODE	DATA DAY	LINE NO	COMMENTS
2238	720310315	720310730	AO	PF	2238	B14	AO DO.BIAS N/R HZ C.NS N/R HZ EXP N/R HZ
2238						B15	AO MONITOR LGWR LGER BLRC BLER
2238						B16	AO DIS- N/R N/R N/R N/R
2238						B17	AO TCP- N/R N/R N/R N/R
2238		(AO = DSS 61)				B18	AO SCHEDULING ERROR, S/C RISE TIME 031256Z

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PASS  GMT-START      GMT-END      ORIG  TYPE  DATA
NO.                               CODE  CODE  DAY
```

PIONEER 6 S/C 06

PN6CBZ65139

720560900 720561000 AO PF (AO = DSS 61)

CONFIG	AOS DOY 056	LOS DOY 056	TOTAL
DSSK600 CTD B	SCHEDUL0900 Z	SCHEDUL 1000Z	SCHEDUL 1HOOM
GCFS2*K CLA303324	ACTUAL 0900 Z	ACTUAL 1000Z	ACTUAL 1HOOM
CPS N/A	ST XFR N/R Z	RELEASE 1000Z	DSS TIM 1HOOM
COMMAND TOT 1	AUTO 0	MANU 1	ABORT 0
OCC TEN N/A	TEX N/A Z		
TELEM PWR 10KW	PREDIC 10KW	BIT 16/64 MMT	

	RX 1 AGC	RX 2 AGC	TCP A SNR	TCP N/A SNR
ACTUAL	-155.6DBM	N/A DBM	13.9	N/A
PREDIC	-156.0DBM	N/A DBM	13.9	N/A
DIFFER	-0.4 DB	N/A DB	13.9	N/A

TRACKING

TRACK MD N/RWAY	RANGING N/R	BIAS N/R	RU NOISE N/R	RU
DO BIAS N/R HZ	C NS N/R HZ		EXP N/R	HZ

MONITOR	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

0924:36Z-1000:00Z 2 WAY

PN6CBZ64986

2240 720320320 720320730 AO PF 2240

CONFIG	AOS 032	LOS 032	TOTAL
DSS-K000CTD-B-1	SCHEDUL-0130Z	SCHEDUL-0730Z	SCHEDUL- 6H00M
GCF-S21KCLA303324	ACTUAL -0320Z	ACTUAL -0730Z	ACTUAL - 4H10M
CPS T010	ST.XFR -N/A Z	RELEASE-0730Z	DSS TIM- 4H10M
COMMAND TOT- 7	AUTO- 0	MANU- 7	ABORT- 0
OCC TEN- N/A	TEX- N/A Z		
TELEM PWR- 10KW	PREDICT- 10KW	BIT-16/64	MMT

	RX- 1AGC	RX 2 AGC	TCPA-ENGSNR	TCPA-ENGSNR
ACTUAL	-153.4DBM	N/A DBM	13.3	9.9
PREDIC	154.1DBM	N/A DBM	14.4	10.5
DIFFER-	+0.7 DB	N/A DB	1.1	0.6

TRACKING

TRACK.MD- 2 WAY	RANGING NONE	BIAS N/A	RU NOISE N/A	RU

```
PASS  GMT-START      GMT-END      ORIG  TYPE  DATA
NO.                               CODE  CODE  DAY
```

PIONEER 6 S/C 06

2240 720320320 720320730 AO PF 2240 (AO = DSS 61)
DO.BIAS N/A HZ C.NS N/A HZ EXP N/A HZ

MONITOR	LGWR	LGER	BLRC	BLER
DIS-	N/R	N/R	N/R	N/R
TCP-	N/R	N/R	N/R	N/R

PN6CBZ64996

2242 720340059 720341000 AM PF 2242 (AM = DSS 51)
CONFIG AOS DOY 034 LOS DOY 034 TOTAL

DSSJ200 CTD B-1 SCHEDUL 0000Z SCHEDUL 1000Z SCHEDUL 9H00M
GCFS20J CLA303314ACTUAL 0059Z ACTUAL 1000Z ACTUAL 9H01M
CPST010 ST XFR N/A Z RELEASE 1010Z DSS TIM 9H11M
COMMAND TOT 7 AUTO 0 MANU 7 ABORT 0
OCC TEN N/A TEX N/A Z
TELEM PWR 10KW PREDIC 10KW BIT 64 GOE

	RX 1 AGC	RX 2 AGC	TCPA-ENGSNR	TCPB-SCISNR
ACTUAL	-152.5DBM	N/A DBM	8.7	N/A
PREDIC	-154.1DBM	N/A DBM	10.4	N/A
DIFFER	+1.6 DB	N/A DB	-1.7	N/A

TRACKING
TRACK MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU
DO BIAS +.209HZ C NS .002HZ EXP .002HZ

MONITOR	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

APS IS OUT, STA. TO MANUEL TRACK; CANNOT AUTO TRACK; SNR AND D/L OFF PREDICTS DR T-1812 DR N-0048/T-59

PN6CBZ64999

2242 720341725 720350130 AJ PF 2242 (AJ = DSS 42)
CONFIG AOS DOY 034 LOS DOY 035 TOTAL

DSSG000 CTD B-1 SCHEDUL 1730Z SCHEDUL 0130Z SCHEDUL 8H00M
GCFS21G CLA303324ACTUAL 1725Z ACTUAL 0130Z ACTUAL 8H05M
CPST010 ST XFR N/R Z RELEASE 0130Z DSS TIM 8H05M
COMMAND TOT 4 AUTO 0 MANU 4 ABORT 0
OCC TEN N/A TEX N/A Z
TELEM PWR 10KW PREDIC 10KW BIT 64 GOE

	RX 1 AGC	RX 2 AGC	TCPB-SCISNR	TCPA-ENGSNR

```
PASS  GMT-START      GMT-END      ORIG  TYPE  DATA
NO.                               CODE  CODE  DAY
```

PICNFER 6 S/C 06

2242 720341725 720350130 AJ PF 2242 (AJ = DSS 42)

ACTUAL-152.6DBM	N/A DBM	11.9	N/A	
PREDIC-154.2DBM	N/A DBM	11.6	N/A	
DIFFER +1.6 DB	N/A DB	+0.6	N/A	

TRACKING

TRACK MDN/R WAY RANGING N/R		BIAS N/R	RU NOISE N/R		RU
DO BIAS N/R HZ C NS N/R HZ			EXP N/R		HZ
MONITOR	LGWR	LGER	BLRC	BLER	
DIS	N/R	N/R	N/R	N/R	
TCP	N/R	N/R	N/R	N/R	

NONE

PN6CBZ65003

2242 720350054 720351000 AM PF 2242 (AM = DSS 51)

CONFIG	AOS	LOS	TOTAL
DSSJ200 CTDB-1	SCHEDUL 0100Z	SCHEDUL 1000Z	SCHEDUL 9H00M
GCFS20J CLA303314	ACTUAL 0054Z	ACTUAL 1000Z	ACTUAL 9H06M
CPST010	ST XFR N/A Z	RELEASE 1000Z	DSS TIM 9H06M

COMMAND TOT 6 AUTO 0 MANU 6 ABORT 0

OCC TEN N/A TEX N/A Z

TELEM PWR 10KW PREDIC KW BIT 64 GOE

	RX 1AGC	RX 2 AGC	TCPA-SCISNR	TCPB-ENGSNR
ACTUAL-154.1DBM	N/A DBM		10.3	N/A
PREDIC-154.2DBM	N/A DBM		10.2	N/A
DIFFER +0.1 DB	N/A DB		+0.1	N/A

TRACKING

TRACK MD 2 WAY RANGING NONE		BIAS N/A	RU NOISE N/A		RU
DO BIAS N/A HZ C NS 0.002HZ			EXP 0.002HZ		
MONITOR	LGWR	LGER	BLRC	BLER	
DIS	N/R	N/R	N/R	N/R	
TCP	N/R	N/R	N/R	N/R	

NONE

PN6CBZ65009

2243 720360051 720361000 AM PF 2243

CONFIG	AOS	LOS	TOTAL
DSSJ200 CTD B-1	SCHEDUL 0100Z	SCHEDUL 1000Z	SCHEDUL 9H00M
GCFS20J CLA303314	ACTUAL 0051Z	ACTUAL 1000Z	ACTUAL 9H09M

```
PASS  GMT-START     GMT-END     ORIG  TYPE  DATA
NO.                             CODE  CODE  DAY
```

PIONEER 6 S/C 06

2242 720350054 720351000 AM PF 2242 (AM = DSS 51)

CPST010 ST XFR N/R Z RELEASE 1000Z DSS TIM 9H09M

COMMAND TOT 2 AUTO 2 MANU 0 ABORT 0

OCC TEN N/A TEX N/A Z

TELEM PWR 10KW PREDIC 10KW BIT 64 GOE

	RX 1 AGC	RX 2 AGC	TCPA-ENGSNR	TCPB-SCTSNR
ACTUAL	-154.2DBM	N/A DBM	N/A	>10
PREDIC	-154.3DBM	N/A DBM	N/A	10.2
DIFFER	+0.1 DB	N/A DB	N/A	N/A

TRACKING

TRACK MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU

DO BIAS .159HZ C NS .002HZ EXP .002HZ

MONITOR	LGWR	LGER	BLRC	BLER
DIS	N/A	N/A	N/A	N/A
TCP	N/A	N/A	N/A	N/A

NONE

PN6CBZ65014

2244 720370055 720371000 AM PF 2244

CONFIG AOS DOY 037 LOS DOY 037 TOTAL

DSSJ200 CTD NONE SCHEDUL 0100Z SCHEDUL 1000Z SCHEDUL 9H00M

GCFS20J CLA ACTUAL 0055Z ACTUAL 1000Z ACTUAL 9H05M

CPSN/A ST XFR N/R Z RELEASE 1000Z DSS TIM 9H05M

COMMAND TOT 4 AUTO 4 MANU 0 ABORT 0

OCC TEN N/A TEX N/A Z

TELEM PWR 10KW PREDIC 10KW BIT 64 GOE

	RX 1 AGC	RX 2 AGC	TCPA-ENGSNR	TCPB-SCTSNR
ACTUAL	-154.5DBM	N/A DBM	10.1	N/A
PREDIC	-154.4DBM	N/A DBM	10.3	N/A
DIFFER	-0.1 DB	N/A DB	-0.2	N/A

TRACKING

TRACK MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU

DO BIAS .128HZ C NS 0.002HZ EXP 0.002HZ

MONITOR	LGWR	LGER	BLRC	BLER
DIS	N/A	N/A	N/A	N/A
TCP	N/A	N/A	N/A	N/A

NONE

```
PASS  GMT-START      GMT-END      ORIG  TYPE  DATA
NO.                               CODE  CODE  DAY
```

PIONEER 6 S/C 06

PN6CBZ65051 (AM = DSS 51)

```
2250  720430055    720431000    AM  PF  2250
      CONFIG            AOS  DOY 043  LOS  DOY 043  TOTAL
      DSSJ200 CTD B-1   SCHEDUL 0100Z SCHEDUL 1000Z SCHEDUL  9H00M
      GCFS20J CLA       ACTUAL  0055Z ACTUAL  1000Z ACTUAL   9H05M
      CPS               ST XFR  N/A Z RELEASE 1000Z DSS TIM  9H05M
      COMMAND TOT  7    AUTO   0      MANU   7      ABORT 0
      OCC TEN  N/A      TEX  N/A   Z
      TELEM PWR   10KW PREDIC   10KW BIT 16/64     GOE
              RX 1 AGC RX 2 AGC      TCP8-ENGSNR   TCPA-SCISNR
       ACTUAL-154.5DBM  N/A DBM         9.6            N/A
       PREDIC-154.8DBM  N/A DBM         9.8            N/A
       DIFFER  +0.3 DB  N/A  DB        -0.2            N/A
      TRACKING
       TRACK MD  2 WAY RANGING NONE  BIAS  N/A  RU NOISE  N/A  RU
       DO BIAS  -0.1HZ C NS  0.002HZ                EXP   0.002HZ
      MONITOR  LGWR     LGER          BLRC          BLER
       DIS      N/R       N/R           N/R           N/R
       TCP      N/R       N/R           N/R           N/R
      0736Z-1000Z LOST ALL COMM LINES, REASON UNKNOWN, STILL DOWN
      AT LOS, REF DR 4780
```

PN6CBZ65056

```
2251  720440048    720441000    AM  PF  2251
      CONFIG            AOS  DOY 044  LOS  DOY 044  TOTAL
      DSSJ200 CTD B-1   SCHEDUL 0100Z SCHEDUL 1000Z SCHEDUL  9H00M
      GCFS20J CLA       ACTUAL  0048Z ACTUAL  1000Z ACTUAL   9H12M
      CPS               ST XFR      Z RELEASE 1000Z DSS TIM  9H12M
      COMMAND TOT  7    AUTO   0      MANU   7      ABORT  0
      OCC TEN  N/A      TEX  N/A   Z
      TELEM PWR   10KW PREDIC   10KW BIT 64       GOE
              RX 1 AGC RX 2 AGC      TCP8-ENGSNR   TCP8-SCISNR
       ACTUAL-154.5DBM  N/A DBM         9.2            N/A
       PREDIC-154.8DBM  N/A DBM         9.7            N/A
       DIFFER  +0.3 DB  N/A  DB        -0.5            N/A
```

```
PASS  GMT-START     GMT-END     ORIG  TYPE  DATA
NO.                             CODE  CODE  DAY
```

PIONEER 6 S/C 06

2250 720430055 720431000 AM PF 2250 (AM = DSS 51)

TRACKING

TRACK MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU

DO BIAS -0.02HZ C NS 0.002HZ EXP 0.002HZ

MONITOR	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

2-WAY TRK 0110-1000Z CMDS 0130-0955Z

PN6CBZ65062

2252 720450500 720450930 AO PF 2252 (AO = DSS 61)

CONFIG AOS DOY 045 LOS DOY 045 TOTAL

DSSK000 CTD B-1 SCHEDUL 0500Z SCHEDUL 0930Z SCHEDUL 4H30M

GCFS21K CLA ACTUAL 0500Z ACTUAL 0930Z ACTUAL 4H30M

CPS ST XFR N/A Z RELEASE 0930Z DSS TIM 4H30M

COMMAND TOT 7 AUTO 0 MANU 7 ABORT 1

OCC TEN N/A TEX N/A Z

TELEM PWR 10KW PREDTC KW BIT 16/64 MMT

	RX 1 AGC	RX 2 AGC	TCPB-ENGSNR	TCPA-SCISNR
ACTUAL	-154.9DBM	N/A DBM	10.2	N/A
PREDIC	-155.0DBM	N/A DBM	10.1	N/A
DIFFER	+0.1 DB	N/A DB	+0.1	N/A

TRACKING

TRACK MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU

DO BIAS N/R HZ C NS N/R HZ EXP N/R HZ

MONITOR	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

POST TRACK 0535Z-0539Z CMD 3-006 ABORTED, DATA QUALITY OUT OF LIMITS, SWITCHED TO CMA B, CMD DELAYED 10 MINUS, REF OR T-1840

0547Z-0557Z RCVR 1 AGC 180-AMP OSCILLATING, BAD AGC OUTPUT READINGS, CHANGED TFR 05237 REFERS

2 WAY TRK 0510Z-0930Z CMDS XMTD 0530Z-0927Z

PN6CBZ65102

2258 720510056 720511000 AM PF 2258 (AM = DSS 51)

CONFIG AOS DOY 051 LOS DOY 051 TOTAL

```
PASS  GMT-START      GMT-END      ORIG  TYPE  DATA
NO.                               CODE  CODE  DAY
```

PIONEER 6 S/C 06

2258 720510056 720511000 AM PF 2258 (AM = DSS 51)

DSS J200CTD B-1 SCHEDUL 0100Z SCHEDUL 1000Z SCHEDUL 9H00M

GCF S20JCLA303314ACTUAL 0056Z ACTUAL 1000Z ACTUAL 9H04M

CPS N/A ST XFR Z RELEASE 1000Z DSS TIM 9H04M

COMMAND TOT 5 AUTO 0 MANU 5 ABORT 0

OCC TEN N/A TEX N/A Z

TELEM PWR 10KW PREDIC KW BIT 64 GOF

	RX 1 AGC	RX 2 AGC	TCP A SNR	TCP B SNR
ACTUAL	-155.4DBM	N/A DBM	8.1	N/A
PREDIC	-155.4DBM	N/A DBM	9.0	N/A
DIFFER	0.0 DB	N/A DB	-0.9	N/A

TRACKING

TRACK MD 2 WAY RANGING NONE BIAS N/A RU NOISE N/A RU

DO BIAS -1.7 HZ C NS 0.002HZ EXP 0.002 HZ

MONITOR	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

PN6CBZ6510R

2259 720520500 720521100 AO PF 2259 (AO = DSS 61)

CONFIG AOS DOY 052 LOS DOY 052 TOTAL

DSSK000 CTD B-1 SCHEDUL 0500Z SCHEDUL 1100Z SCHEDUL 5H00M

GCFS21K CL8303324ACTUAL 0500Z ACTUAL 1 00Z ACTUAL 5H00M

CPS N/A ST XFR N/R Z RELEASE 1100Z DSS TIM 5H00M

COMMAND TOT 2 AUTO 0 MANU 2 ABORT 0

OCC TEN N/A TEX N/A Z

TELEM PWR 10 KW PREDIC 10KW BIT 16 MMT

	RX 1 AGC	RX 2 AGC	TCPA SNR	TCPB- SNR
ACTUAL	-155.0DBM	N/A DBM	14.0	N/A
PREDIC	-155.6DBM	N/A DBM	14.6	N/A
DIFFER	+0.6 DB	N/A DB	-0.6	N/A

TRACKING

TRACK MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU

DO BIAS N/R HZ C NS N/R HZ EXP N/R HZ

MONITOR	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R

```
PASS  GMT-START      GMT-END      ORIG  TYPE  DATA
NO.                               CODE  CODE  DAY
```

PIONEER 6 S/C 06

2259 720520500 720521100 AO PF 2259 (AO = DSS 61)
TCP N/R N/R N/R N/R

0518Z-0659Z 2 WAY

0545Z-0655Z 2 CMDS

PN6CCZ65171

2268 720610600 720611200 AC PF 2268
DSS 61 PASS 2268 CL B-B CTDN 303324 GCF S6*K CPS N/A DSS K000

CONFIG

ACS DOY 061 LCS DOY 061 TOTAL

SCHEDULED 0600Z SCHEDULED 1200Z SCHEDULED 4H 00M

ACTUAL 0600Z ACTUAL 1200Z ACTUAL 4H 00M

ST XFR NONEZ RELEASE 1200Z DSS TIME 4H 00M

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY

POWER 1 KW BIT RATES 64 MMT

	RX 1	RX 2	TCP A SNR	TCP B SNR
ACTUAL	156.1	N/A	8.5	N/A
PREDIC	156.5	NIL	8.2	N/A
RESID	+0.4	N/A	+0.3	N/A

TRACKING

TRACK MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU

DOP BIAS N/A HZ C NOS N/A HZ EXP N/A HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/A	N/A	N/A	N/A

COMMENTS

1 WAY PASS

PN6CCZ65232

2276 720690600 720691200 AC PF 2276
DSS 61 PASS 2276 CL B-B CTDN 303324 GCF N/A CPS N/A DSS K000

CONFIG

ACS DOY 069 LCS DOY 069 TOTAL

SCHEDULED 0600Z SCHEDULED 1200Z SCHEDULED 6H 00M

```
PASS  GMT-START     GMT-END     ORIG  TYPE  DATA
NO.                             CODE  CODE  DAY
-------------------------------------------------------------------

      PIONEER 6 S/C 06

2276  72069C600     72069120O     AC  PF  2276
                    ACTUAL    N/A Z ACTUAL    N/A Z ACTUAL  N/A H   M

                    ST XFR    N/A Z RELEASE   N/A Z DSS TIMEN/A H   M

        COMMAND     ----------------------------------------------

                    TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A

        TELEMETRY   ----------------------------------------------

                    POWER N/AKW  BIT RATES  N/A

                           RX 1   RX 2  TCP        TCP

                    ACTUAL  N/A    N/A      N/A        N/A

                    PREDIC  N/A    N/A      N/A        N/A

                    RESID   N/A    N/A      N/A        N/A

        TRACKING    ----------------------------------------------

                    TRACK MD N/AWAY RANGING N/A BIAS  N/ARU NOISE N/A RU

                    DOP BIAS  N/A   HZ C NCS  N/A HZ EXP  N/A HZ

        MONITOR     ----------------------------------------------

                         LOWR  LOER  BLRC  ELER

                    DIS   N/A   N/A   N/A   N/A

                    TCP   N/A   N/A   N/A   N/A


        COMMENTS    ----------------------------------------------

        1102Z-1116Z 36CA DOWN, RESTART REQUIRED DR 3259

        RECORD ONLY

 FN6CC265241

2277  72067CC6CC    72067012      AO  PF  2277
        DSS 61 PASS 2277 CL A-B CTDN N/A    GCF S21K CPS KOOO DSS

        CONFIG      ----------------------------------------------

                    AOS DOY C7C  LOS DOY C7O        TOTAL

                    SCHEDULED C600Z SCHEDULED 1200Z SCHEDULED  6H OOM

                    ACTUAL    N/A Z ACTUAL    N/A Z ACTUAL   N/AH   M

                    ST XFR    N/A Z RELEASE   N/A Z DSS TIME N/AH   M

        COMMAND     ----------------------------------------------

                    TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A

        TELEMETRY   ----------------------------------------------

                    POWER N/AKW  BIT RATES  N/A

                           RX 1   RX 2  TCP A      TCP B
```

```
PASS  GMT-START      GMT-END      ORIG  TYPE  DATA
NO.                               CODE  CODE  DAY
```

PIONEER 6 S/C 06

2277 7207006C0 7207012 AO PF 2277

ACTUAL	N/A	N/A	N/A	N/A
PREDIC	N/A	N/A	N/A	N/A
RESID	N/A	N/A	N/A	N/A

TRACKING

TRACK MDN/A WAY RANGING N/A BIAS N/A RU NOISE N/A RU

DOP BIAS N/A HZ C NOS N/A HZ EXP N/A HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/A	N/A	N/A	N/A
TCP	N/A	N/A	N/A	N/A

COMMENTS

RECORD ONLY

PN6CDZ65401

2307 720990800 720991300 2307

DSS 62 PASS 2307 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG

AOS DOY 099		LOS DOY 099		TOTAL	
SCHEDULED	0800Z	SCHEDULED	1300Z	SCHEDULED	5H 00M
ACTUAL	N/AZ	ACTUAL	N/AZ	ACTUAL	0H 00M
ST XFR	N/AZ	RELEASE	N/AZ	DSS TIME	0H 00M

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY

POWER 10KW BIT RATES 16 MMT

	RX 1	RX 2	TCP A	TCP B
ACTUAL	-159.7	N/A	9.7	N/A
PREDIC	-161.0	N/A	9.4	N/A
RESID	+1.3	N/A	+.3	N/A

TRACKING

TRACK MD N/RWAY RANGING N/R BIAS N/RRU NOISE N/RRU

DOP BIAS N/RHZ C NOS N/RHZ EXP N/RHZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS

PN6CDZ65406

2308 721000800 721001300 2308

DSS 62 PASS 2308 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG

AOS DOY 100		LOS DOY 100		TOTAL	
SCHEDULED	0800Z	SCHEDULED	1300Z	SCHEDULED	5H 00M
ACTUAL	0800Z	ACTUAL	1300Z	ACTUAL	5H 00M
ST XFR	0711Z	RELEASE	1300Z	DSS TIME	5H 49M

COMMAND

TOTAL N/R AUTO N/R MANUAL N/R ABORT N/R

```
PASS  GMT-START     GMT-END         DATA
NO.                                 DAY
```

TELEMETRY

```
                POWER  0 KW  BIT RATES      16 MMT
                       RX 1   RX 2  TCP A     TCP B
                ACTUAL-160.1    N/A   9.3       N/A
                PREDIC-161.2    N/A   9.2       N/A
                RESID   +1.1    N/A   +.1       N/A
```

TRACKING

```
                TRACK MD N/AWAY RANGING N/A BIAS  N/ARU NOISE  N/ARU
                DOP BIAS      N/AHZ C NOS   N/AHZ EXP   N/AHZ
```

MONITOR

```
                     LGWR  LGER  BLRC  BLER
                DIS   N/R   N/R   N/R   N/R
                TCP   N/R   N/R   N/R   N/R
```

COMMENTS

PN6CDZ65439

2314 721070730 721071300 2314

DSS 62 PASS 2315 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG

```
                AOS DOY 107  LOS DOY 107         TOTAL
                SCHEDULED 0800Z SCHEDULED 1300Z SCHEDULED  5H 00M
                ACTUAL    0731Z ACTUAL    1300Z ACTUAL     5H 29M
                ST XFR    NONEZ RELEASE   1305Z DSS TIME   5H 34M
```

COMMAND

```
                TOTAL  0   AUTO  0   MANUAL  0   ABORT  0
```

TELEMETRY

```
                POWER N/AKW  BIT RATES 16  MMT
                       RX 1   RX 2  TCP A     TCP B
                ACTUAL 161.3   N/A     9.0       N/A
                PREDIC 162.0   N/A     8.5       N/A
                RESID   +0.7   N/A    +0.5       N/A
```

TRACKING

```
                TRACK MD N/AWAY RANGING N/A BIAS N/A RU NOISE N/A RU
                DOP BIAS  N/A   HZ C NOS   N/AHZ EXP  N/A HZ
```

MONITOR

```
                     LGWR  LGER  BLRC  BLER
                DIS  N/R    N/R   N/R    N/R
                TCP  N/R    N/R   N/R    N/R
```

COMMENTS

PN6CEZ65529

2332 721250800 721251340 2332

DSS 62 PASS 2332 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG

```
                AOS DOY 125  LOS DOY 125         TOTAL
                SCHEDULED 0800Z SCHEDULED 1340Z SCHEDULED  5H 40M
                ACTUAL    0800Z ACTUAL    1340Z ACTUAL     5H 40M
                ST XFR     N/RZ RELEASE   1342Z DSS TIME   5H 42M
```

COMMAND

```
                TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
```

TELEMETRY

```
                POWER  0 KW  BIT RATES  8 MMT
                       RX 1   RX 2  TCP A     TCP B
                ACTUAL 160.5    N/A   11.3      N/A
                PREDIC 160.8    N/A   11.5      N/A
                RESID   +0.3    N/A   -0.2      N/A
```

TRACKING

```
                TRACK MD N/AWAY RANGING N/A BIAS N/A RU NOISE N/A RU
                DOP BIAS      N/AHZ C NOS  N/A HZ EXP  N/A HZ
```

MONITOR

```
                     LGWR  LGER  BLRC  BLER
                DIS   N/A   N/A   N/A   N/A
                TCP   N/A   N/A   N/A   N/A
```

COMMENTS

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
```

PN6CEZ65533

2333 721260800   721261340   2333
DSS 62 PASS 2333 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG
```
AOS DOY 126  LOS DOY 126          TOTAL
SCHEDULED 0800Z SCHEDULED 1340Z SCHEDULED  5H 40M
ACTUAL    0800Z ACTUAL    1340Z ACTUAL     5H 40M
ST XFR     N/RZ RELEASE   1342Z DSS TIME   5H 42M
```
COMMAND
```
TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
```
TELEMETRY
```
POWER  0 KW  BIT RATES  8  MMT
       RX 1   RX 2  TCP A     TCP B
ACTUAL 160.2    N/A   11.3      N/A
PREDIC 160.9    N/A   11.4      N/A
RESID   +0.7    N/A   -0.1      N/A
```
TRACKING
```
TRACK MD N/AWAY RANGING N/A BIAS N/A RU NOISE N/A RU
DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
```
MONITOR
```
     LGWR  LGER  BLRC  BLER
DIS   N/A   N/A   N/A   N/A
TCP   N/A   N/A   N/A   N/A
```
COMMENTS
1315Z-1329Z 360/75 DOWN 2260'S LOCKED OUT DR 3521 REFERS.

PN6CEZ65538

2334 721270730   721271340   2334
DSS 62 PASS 2334 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG
```
AOS DOY 127  LOS DOY 127          TOTAL
SCHEDULED 0730Z SCHEDULED 1340Z SCHEDULED  6H 10M
ACTUAL    0730Z ACTUAL    1340Z ACTUAL     6H 10M
ST XFR     N/AZ RELEASE   1343Z DSS TIME   6H 13M
```
COMMAND
```
TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
```
TELEMETRY
```
POWER N/AKW  BIT RATES  8  MMT
       RX 1   RX 2  TCP A     TCP B
ACTUAL  N/A  161.2   N/A       11.1
PREDIC  N/A  161.0   N/A       12.3
RESID   N/A   -0.2   N/A       -1.2
```
TRACKING
```
TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
```
MONITOR
```
     LGWR  LGER  BLRC  BLER
DIS   N/R   N/R   N/R   N/R
TCP   N/R   N/R   N/R   N/R
```
COMMENTS
1-WAY RECORD ONLY TK

PN6CEZ65543

2335 721280730   721281340   2335
DSS 62 PASS 2335 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG
```
AOS DOY 128  LOS DOY 128          TOTAL
SCHEDULED 0730Z SCHEDULED 1340Z SCHEDULED  6H 10M
ACTUAL    0730Z ACTUAL    1340Z ACTUAL     6H 10M
ST XFR    NONEZ RELEASE   1345Z DSS TIME   6H 15M
```
COMMAND
```
TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
```

```
PASS   GMT-START     GMT-END        DATA
NO.                                 DAY
```

TELEMETRY

POWER N/AKW	BIT RATES 8 MMT			
	RX 1	RX 2	TCP A	TCP B
ACTUAL	160.1	N/A	11.0	N/A
PREDIC	161.1	N/A	12.2	N/A
RESID	+1.0	N/A	-1.2	N/A

TRACKING

TRACK MD 1 WAY RANGING N/A BIAS N/A RU NOISE N/A RU
DOP BIAS N/A HZ C NOS N/A HZ EXP N/A HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS

0851Z-0856Z, 360/75B DOWN FOR SKED. STRING SWAP.
0907Z-0912Z, 360/75A DOWN, INTERRUPTS ON TLM PROC; WARM IPL RESTART, DR 3523.

PN6CEZ65555

2338 721310800 721311345 2338
DSS 62 PASS 2338 CL B-A CTDN 303344 GCF S00L CPS N/A DSS L000

CONFIG

AOS DOY 131	LOS DOY 131	TOTAL	
SCHEDULED	0800Z SCHEDULED	1345Z SCHEDULED	5H 45M
ACTUAL	0800Z ACTUAL	1345Z ACTUAL	5H 45M
ST XFR	N/RZ RELEASE	1348Z DSS TIME	5H 48M

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY

POWER 0 KW	BIT RATES 8 MMT			
	RX 1	RX 2	TCP A	TCP B
ACTUAL	160.5	N/A	11.8	N/A
PREDIC	161.4	N/A	11.9	N/A
RESID	+0.9	N/A	-0.1	N/A

TRACKING

TRACK MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
DOP BIAS N/R HZ C NOS N/R HZ EXP N/R HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS

PN6CEZ65565

2340 721330800 721331345 2340
DSS 62 PASS 2340 CL B-A CTDN 303344 GCF S00L CPS N/A DSS L000

CONFIG

AOS DOY 133	LOS DOY 133	TOTAL	
SCHEDULED	0800Z SCHEDULED	1345Z SCHEDULED	5H 45M
ACTUAL	0800Z ACTUAL	1345Z ACTUAL	5H 45M
ST XFR	N/AZ RELEASE	1350Z DSS TIME	5H 50M

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY

POWER N/AKW	BIT RATES 8 MMT			
	RX 1	RX 2	TCP A	TCP B
ACTUAL	161.1	N/A	11.7	N/A
PREDIC	161.5	N/A	11.8	N/A
RESID	+0.4	N/A	-0.1	N/A

TRACKING

TRACK MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
DOP BIAS N/R HZ C NOS N/R HZ EXP N/R HZ

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------------

          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
          1 WAY TRACK

 PN6CEZ65570

2341  721340730    721341345    2341
          DSS 62 PASS 2341 CL B-A CTDN 303344 GCF SOOL CPS  N/A DSS L000
          CONFIG    ---------------------------------------------------
                    AOS DOY 134  LOS DOY 134         TOTAL
                    SCHEDULED 0730Z SCHEDULED 1345Z SCHEDULED  6H 15M
                    ACTUAL    0730Z ACTUAL    1345Z ACTUAL     6H 15M
                    ST XFR    NONEZ RELEASE   1350Z DSS TIME   6H 20M
          COMMAND   ---------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW  BIT RATES  8  MMT
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL 161.1    N/A   11.7      N/A
                    PREDIC 161.6    N/A   11.7      N/A
                    RESID   +0.5    N/A    0.0      N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
          1-WAY TRK

 PN6CEZ65575

2342  721350730    721351345    2342
          DSS 62 PASS 2342 CL B-A CTDN 303344 GCF SOOL CPS  N/A DSS L000
          CONFIG    ---------------------------------------------------
                    AOS DOY 135  LOS DOY 135         TOTAL
                    SCHEDULED 0730Z SCHEDULED 1345Z SCHEDULED  6H 15M
                    ACTUAL    0730Z ACTUAL    1345Z ACTUAL     6H 15M
                    ST XFR    NONEZ RELEASE   1350Z DSS TIME   6H 20M
          COMMAND   ---------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW  BIT RATES  8  MMT
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL 160.9    N/A   11.5      N/A
                    PREDIC 161.7    N/A   11.6      N/A
                    RESID   +0.8    N/A   -0.1      N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
          1-WAY TRK
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------------

 PN6CEZ65590

2345  721371855     721380300     2345
        DSS 41 PASS 2345 CL F-B CTDN 202244 GCF S00F CPS  N/A DSS F000
        CONFIG  ---------------------------------------------------------
                AOS DOY 137  LOS DOY 138          TOTAL
                SCHEDULED 1900Z SCHEDULED 0300Z SCHEDULED  8H 00M
                ACTUAL    1855Z ACTUAL    0300Z ACTUAL     8H 05M
                ST XFR     N/RZ RELEASE   0300Z DSS TIME   8H 05M
        COMMAND ---------------------------------------------------------
                TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
        TELEMETRY -------------------------------------------------------
                POWER N/AKW  BIT RATES  8
                       RX 1   RX 2  TCP A     TCP B
                ACTUAL 162.1    N/A   11.4      N/A
                PREDIC 161.9    N/A   11.6      N/A
                RESID   -0.2    N/A   -0.2      N/A
        TRACKING --------------------------------------------------------
                TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                DOP BIAS   -49.0HZ C NOS  N/A HZ EXP 0.004HZ
        MONITOR ---------------------------------------------------------
                     LGWR  LGER  BLRC  BLER
                DIS   N/A   N/A   N/A   N/A
                TCP   N/A   N/A   N/A   N/A

        COMMENTS --------------------------------------------------------
        DR N-0199 RAISED AGAINST PROJECT FOR THE INABILITY OF PROGRAM
        5033 OP-A TO PROCESS DATA TYPE 61.
        0000Z - TCP "A" FAILED DR T-2049 REFERS.

 PN6CEZ65600

2346  721381857     721390300     2346
        DSS 41 PASS 2346 CL B-B CTDN 303344 GCF S00F CPS  N/A DSS F000
        CONFIG  ---------------------------------------------------------
                AOS DOY 138  LOS DOY 139          TOTAL
                SCHEDULED 1900Z SCHEDULED 0300Z SCHEDULED  8H 00M
                ACTUAL    1857Z ACTUAL    0300Z ACTUAL     8H 03M
                ST XFR    1857Z RELEASE   0319Z DSS TIME   8H 22M
        COMMAND ---------------------------------------------------------
                TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A
        TELEMETRY -------------------------------------------------------
                POWER N/AKW  BIT RATES  8  MMT
                       RX 1   RX 2  TCP A     TCP B
                ACTUAL 162.5    N/A   11.0      N/A
                PREDIC 162.0    N/A   11.5      N/A
                RESID   -0.5    N/A   -0.5      N/A
        TRACKING --------------------------------------------------------
                TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                DOP BIAS   -59.0HZ C NOS 0.081HZ EXP   0.1HZ
        MONITOR ---------------------------------------------------------
                     LGWR  LGER  BLRC  BLER
                DIS   N/A   N/A   N/A   N/A
                TCP   N/A   N/A   N/A   N/A

        COMMENTS --------------------------------------------------------
        2117Z-2122Z 360 B DOWN RESTART DR 3571
        1904Z-1934Z 360 B DOWN RESTART DR 3567
        2154Z-2205Z 360 B DOWN RESTART DR 3572
        0103Z-0113Z 360 B DOWN WARM IPL DR 3567
        0134Z-0155Z 360 B DOWN RESTART R.T. JOB STEP DR 3574

 PN6CEZ65604

2346  721390802     721391400     2346
        DSS 62 PASS 2346 CL B-A CTDN 303344 GCF S00L CPS  N/A DSS L000
        CONFIG  ---------------------------------------------------------
                AOS DOY 139  LOS DOY 139          TOTAL
                SCHEDULED 0800Z SCHEDULED 1400Z SCHEDULED  6H 00M
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------------

                    ACTUAL     0802Z ACTUAL     1400Z ACTUAL      5H 58M
                    ST XFR     NONEZ RELEASE    1405Z DSS TIME    6H 03M
          COMMAND   ---------------------------------------------------
                    TOTAL  0   AUTO  0   MANUAL  0   ABORT  0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW   BIT RATES  8  MMT
                          RX 1    RX 2  TCP A      TCP B
                    ACTUAL 161.4     N/A   11.0       N/A
                    PREDIC 162.0     N/A   11.3       N/A
                    RESID   +0.6     N/A   -0.3       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/R RU NOISE N/R RU
                    DOP BIAS    N/R HZ C NOS  N/R HZ EXP  N/R HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------

 PN6CEZ65608

2347  721391854     721400300     2347
          DSS 41 PASS 2347 CL B-B CTDN 303344 GCF S00F CPS  N/A DSS F000
          CONFIG    ---------------------------------------------------
                    AOS DOY 139  LOS DOY 140          TOTAL
                    SCHEDULED 1960Z SCHEDULED 0300Z SCHEDULED  8H 00M
                    ACTUAL    1854Z ACTUAL    0300Z ACTUAL     8H 06M
                    ST XFR     N/AZ RELEASE   0440Z DSS TIME   9H 46M
          COMMAND   ---------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW   BIT RATES  8  MMT
                          RX 1    RX 2  TCP A      TCP B
                    ACTUAL 167.3     N/A   11.6       N/A
                    PREDIC 162.0     N/A   11.4       N/A
                    RESID   -0.2     N/A   +0.2       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS   -71.0HZ C NOS 0.080HZ EXP 0.100HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
          2313Z-2326Z 360 DOWN DR 3580
          0230Z-0243Z 360 DOWN DR 3581

 PN6CEZ65612

2347  721400800     721401400     2347
          DSS 62 PASS 2347 CL B-A CTDN 303344 GCF S00L CPS  N/A DSS L000
          CONFIG    ---------------------------------------------------
                    AOS DOY 140  LOS DOY 140          TOTAL
                    SCHEDULED 0800Z SCHEDULED 1400Z SCHEDULED  6H 00M
                    ACTUAL    0800Z ACTUAL    1400Z ACTUAL     6H 00M
                    ST XFR    NONEZ RELEASE   1405Z DSS TIME   6H 05M
          COMMAND   ---------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW   BIT RATES  8  MMT
                          RX 1    RX 2  TCP A      TCP B
                    ACTUAL 161.8     N/A   10.2       N/A
                    PREDIC 162.1     N/A   11.2       N/A
                    RESID   +0.3     N/A   -1.0       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------

          MONITOR   ---------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------
          TTY L/S DOWN 1305Z-1307Z NTF.

 PN6CEZ65624

2348  721410800    721411400    2348
          DSS 62 PASS 2348 CL B-A CTDN 303344 GCF S00L CPS  N/A DSS L000
          CONFIG    ---------------------------------------------
                    AOS DOY 141  LOS DOY 141         TOTAL
                    SCHEDULED 0800Z SCHEDULED 1400Z SCHEDULED  6H 00M
                    ACTUAL    0800Z ACTUAL    1400Z ACTUAL     6H 00M
                    ST XFR    NONEZ RELEASE   1403Z DSS TIME   6H 03M
          COMMAND   ---------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ---------------------------------------------
                    POWER N/AKW  BIT RATES  8  MMT
                          RX 1   RX 2  TCP A     TCP B
                    ACTUAL 162.0    N/A   10.1      N/A
                    PREDIC 162.2    N/A   10.9      N/A
                    RESID   +0.2    N/A   -0.8      N/A
          TRACKING  ---------------------------------------------
                    TRACK MD   1WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------

 PN6CEZ65631

2349  721420800    721421400    2349
          DSS 62 PASS 2349 CL B-A CTDN 303344 GCF S00L CPS  N/A DSS L000
          CONFIG    ---------------------------------------------
                    AOS DOY 142  LOS DOY 142         TOTAL
                    SCHEDULED 0800Z SCHEDULED 1400Z SCHEDULED  6H 00M
                    ACTUAL    0800Z ACTUAL    1400Z ACTUAL     6H 00M
                    ST XFR    NONEZ RELEASE   1410Z DSS TIME   6H 10M
          COMMAND   ---------------------------------------------
                    TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A
          TELEMETRY ---------------------------------------------
                    POWER N/AKW  BIT RATES  8  MMT
                          RX 1   RX 2  TCP A     TCP B
                    ACTUAL 162.0    N/A   10.0      N/A
                    PREDIC 162.3    N/A   10.8      N/A
                    RESID   +0.3    N/A   -0.8      N/A
          TRACKING  ---------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------

 PN6CEZ65653

2353  721451849    721460300    2353
          DSS 41 PASS 2353 CL F-B CTDN    N/A GCF S00F CPS  N/A DSS F000
          CONFIG    ---------------------------------------------
                    AOS DOY 145  LOS DOY 146         TOTAL
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------------

                    SCHEDULED 1900Z SCHEDULED 0300Z SCHEDULED  8H 00M
                    ACTUAL    1849Z ACTUAL    0300Z ACTUAL     8H 11M
                    ST XFR    NONEZ RELEASE   0305Z DSS TIME   8H 16M
          COMMAND   ------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ------------------------------------------------
                    POWER N/AKW  BIT RATES  8        MMT
                          RX 1   RX 2  TCP A     TCP B
                    ACTUAL 162.9    N/A   11.0     N/A
                    PREDIC 162.5    N/A   10.9     N/A
                    RESID   -0.4    N/A   +0.1     N/A
          TRACKING  ------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS -158.00HZ C NOS   N/AHZ EXP   N/AHZ
          MONITOR   ------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ------------------------------------------------

 PN6CEZ65663

2353  721460800    721461415    2353
          DSS 62 PASS 2353 CL B-A CTDN 303344 GCF SOOL CPS  N/A DSS L000
          CONFIG    ------------------------------------------------
                    AOS DOY 146  LOS DOY 146        TOTAL
                    SCHEDULED 0800Z SCHEDULED 1415Z SCHEDULED  6H 15M
                    ACTUAL    0800Z ACTUAL    1415Z ACTUAL     6H 15M
                    ST XFR    NONEZ RELEASE   1417Z DSS TIME   6H 17M
          COMMAND   ------------------------------------------------
                    TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A
          TELEMETRY ------------------------------------------------
                    POWER  0 KW  BIT RATES            8  MMT
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL 162.8    N/A   N/A      9.7
                    PREDIC 162.6    N/A   N/A     10.5
                    RESID   -0.2    N/A   N/A     -0.8
          TRACKING  ------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS -165.00HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ------------------------------------------------

 PN6CEZ65666

2354  721461859    721470300    2354
          DSS 41 PASS 2354 CL B-B CTDN 303344 GCF SOOF CPS  N/A DSS F000
          CONFIG    ------------------------------------------------
                    AOS DOY 146  LOS DOY 147        TOTAL
                    SCHEDULED 1900Z SCHEDULED 0300Z SCHEDULED  8H 00M
                    ACTUAL    1859Z ACTUAL    0300Z ACTUAL     8H 01M
                    ST XFR    NONEZ RELEASE   0315Z DSS TIME   8H 16M
          COMMAND   ------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ------------------------------------------------
                    POWER N/AKW  BIT RATES  8  MMT
                          RX 1   RX 2  TCP A     TCP B
                    ACTUAL 162.8    N/A   10.9     N/A
                    PREDIC 162.7    N/A   10.7     N/A
                    RESID   -0.1    N/A   +0.2     N/A
          TRACKING  ------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS  -168.0HZ C NOS  N/A HZ EXP  N/A HZ
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------

          MONITOR   ---------------------------------------------------
                        LGWR  LGER  BLRC  BLER
                    DIS  N/R   N/R   N/R   N/R
                    TCP  N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
          0014Z-0017Z L/S TTY STOPPED; PROBLEM BETWEEN CANBERRA/GODDARD,
          NO DATA LOST.

 PN6CEZ65669

2354  721470800     721471415     2354
          DSS 62 PASS 2354 CL B-A CTDN 303344 GCF SOOL CPS  N/A DSS LOOO
          CONFIG    ---------------------------------------------------
                    AOS DOY 147  LOS DOY 147          TOTAL
                    SCHEDULED 0800Z SCHEDULED 1415Z SCHEDULED  6H 15M
                    ACTUAL    0800Z ACTUAL    1415Z ACTUAL     6H 15M
                    ST XFR     N/RZ RELEASE   1415Z DSS TIME   6H 15M
          COMMAND   ---------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW  BIT RATES  8
                           RX 1   RX 2  TCP A      TCP B
                    ACTUAL 163.0    N/A   10.0       N/A
                    PREDIC 162.7    N/A   10.4       N/A
                    RESID   -0.3    N/A   -0.4       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS  -175.0HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------------
                        LGWR  LGER  BLRC  BLER
                    DIS  N/R   N/R   N/R   N/R
                    TCP  N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
          1-WAY MMT

 PN6CEZ65674

2355  721480800     721481415     2355
          DSS 62 PASS 2355 CL B-A CTDN 303344 GCF SOOL CPS  N/A DSS LOOO
          CONFIG    ---------------------------------------------------
                    AOS DOY 148  LOS DOY 148          TOTAL
                    SCHEDULED 0800Z SCHEDULED 1415Z SCHEDULED  6H 15M
                    ACTUAL    0800Z ACTUAL    1415Z ACTUAL     6H 15M
                    ST XFR     N/RZ RELEASE   1415Z DSS TIME   6H 15M
          COMMAND   ---------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW  BIT RATES 8
                           RX 1   RX 2  TCP A      TCP B
                    ACTUAL 162.6    N/A   9.3        N/A
                    PREDIC 162.8    N/A  10.5        N/A
                    RESID   +0.2    N/A  -1.2        N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
                    DOP BIAS    N/R HZ C NOS  N/R HZ EXP  N/R HZ
          MONITOR   ---------------------------------------------------
                        LGWR  LGER  BLRC  BLER
                    DIS  N/R   N/R   N/R   N/R
                    TCP  N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
          1-WAY TRACK
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------------

 PN6CEZ65679

2356  721490800     721491415     2356
          DSS 62 PASS 2356 CL B-A CTDN 303344 GCF S00L CPS  N/A DSS L000
          CONFIG    ---------------------------------------------------
                    AOS DOY 149  LOS DOY 149          TOTAL
                    SCHEDULED 0800Z SCHEDULED 1415Z SCHEDULED  6H 15M
                    ACTUAL    0800Z ACTUAL    1415Z ACTUAL     6H 15M
                    ST XFR     N/RZ RELEASE   1415Z DSS TIME   6H 15M
          COMMAND   ---------------------------------------------------
                    TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW  BIT RATES              8
                          RX 1   RX 2  TCP A      TCP B
                    ACTUAL 162.3   N/A   N/A       9.9
                    PREDIC 162.8   N/A   N/A      10.6
                    RESID   +0.5   N/A   N/A      -0.7
          TRACKING  ---------------------------------------------------
                    TRACK MD N/AWAY RANGING N/A BIAS N/A RU NOISE N/A RU
                    DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------

 PN6CEZ65691

2359  721511900     721520300     2359
          DSS 41 PASS 2359 CL F-B CTDN 202244 GCF S21F CPS  N/A DSS F000
          CONFIG    ---------------------------------------------------
                    AOS DOY 151  LOS DOY 152          TOTAL
                    SCHEDULED 1900Z SCHEDULED 0300Z SCHEDULED  8H 00M
                    ACTUAL    1900Z ACTUAL    0300Z ACTUAL     8H 00M
                    ST XFR    NONEZ RELEASE   0310Z DSS TIME   8H 10M
          COMMAND   ---------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW  BIT RATES  8
                          RX 1   RX 2  TCP A      TCP B
                    ACTUAL 163.2   N/A   10.5      N/A
                    PREDIC 163.0   N/A   10.4      N/A
                    RESID   -0.2   N/A   +0.1      N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------

 PN6CEZ65697

2360  721521856     721530300     2360
          DSS 41 PASS 2360 CL B-B CTDN 303344 GCF S21F CPS  N/A DSS F000
          CONFIG    ---------------------------------------------------
                    AOS DOY 152  LOS DOY 153          TOTAL
                    SCHEDULED 1900Z SCHEDULED 0300Z SCHEDULED  8H 00M
                    ACTUAL    1856Z ACTUAL    0300Z ACTUAL     8H 04M
                    ST XFR    NONEZ RELEASE   0305Z DSS TIME   8H 06M
          COMMAND   ---------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW  BIT RATES N/A MMT
                          RX 1   RX 2  TCP A      TCP B
                    ACTUAL 163.2   N/A   10.4      N/A
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
                    PREDIC 163.1     N/A    10.3       N/A
                    RESID   -0.1     N/A    +0.1       N/A
          TRACKING  ------------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS-272.386HZ C NOS 0.080HZ EXP  N/A HZ
          MONITOR   ------------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ------------------------------------------------------
          ONE WAY NO COMMANDS

 PN6CF265695

2360  721530800    721531415    2360
          DSS 62 PASS 2360 CL B-A CTDN 303344 GCF S21L CPS  N/A DSS L000
          CONFIG    ------------------------------------------------------
                    AOS DOY 153  LOS DOY 153          TOTAL
                    SCHEDULED 0800Z SCHEDULED 1415Z SCHEDULED  6H 15M
                    ACTUAL    0800Z ACTUAL    1415Z ACTUAL     6H 15M
                    ST XFR     N/RZ RELEASE   1415Z DSS TIME   6H 15M
          COMMAND   ------------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ------------------------------------------------------
                    POWER N/AKW  BIT RATES  8 MMT
                          RX 1   RX 2  TCP A     TCP B
                    ACTUAL 162.5    N/A   9.5       N/A
                    PREDIC 163.1    N/A  10.4       N/A
                    RESID   +0.6    N/A  -0.9       N/A
          TRACKING  ------------------------------------------------------
                    TRACK MD N/AWAY RANGING N/A BIAS N/A RU NOISE N/A RU
                    DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ------------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ------------------------------------------------------
          NONE

 PN6CF265703

2361  721531850    721540330    2361
          DSS 41 PASS 2361 CL B-B CTDN 303344 GCF S21F CPS  N/A DSS F000
          CONFIG    ------------------------------------------------------
                    AOS DOY 153  LOS DOY 154          TOTAL
                    SCHEDULED 1900Z SCHEDULED 0300Z SCHEDULED  8H 00M
                    ACTUAL    1850Z ACTUAL    0300Z ACTUAL     8H 10M
                    ST XFR    NONEZ RELEASE   0305Z DSS TIME   8H 05M
          COMMAND   ------------------------------------------------------
                    TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY ------------------------------------------------------
                    POWER N/AKW  BIT RATES  8  MMT
                          RX 1   RX 2  TCP A     TCP B
                    ACTUAL 163.5    N/A   10.4      N/A
                    PREDIC 163.2    N/A   10.2      N/A
                    RESID   -0.3    N/A   +0.2      N/A
          TRACKING  ------------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS-290.199HZ C NOS 0.070HZ EXP 0.200HZ
          MONITOR   ------------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ------------------------------------------------------
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------

 PN6CFZ65705

2361  721540800     721541415     2361
          DSS 62 PASS 2361 CL B-A CTDN 303344 GCF S21L CPS  N/A DSS L000
          CONFIG   ---------------------------------------------------
                   AOS DOY 154  LOS DOY 154          TOTAL
                   SCHEDULED 0800Z SCHEDULED 1415Z SCHEDULED  6H 15M
                   ACTUAL    0800Z ACTUAL    1415Z ACTUAL     6H 15M
                   ST XFR     N/RZ RELEASE   1415Z DSS TIME   6H 15M
          COMMAND  ---------------------------------------------------
                   TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A
          TELEMETRY ---------------------------------------------------
                   POWER N/AKW  BIT RATES  8
                          RX 1   RX 2  TCP A     TCP B
                   ACTUAL 162.6    N/A   9.6       N/A
                   PREDIC 163.2    N/A  10.3       N/A
                   RESID   +0.6    N/A  -0.7       N/A
          TRACKING ---------------------------------------------------
                   TRACK MD N/AWAY RANGING N/A BIAS N/A RU NOISE N/A RU
                   DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR  ---------------------------------------------------
                        LGWR  LGER  BLRC  BLER
                   DIS   N/A   N/A   N/A   N/A
                   TCP   N/A   N/A   N/A   N/A

          COMMENTS ---------------------------------------------------
          MONITOR AND TRACKING DATA NOT AVAILABLE

 PN6CFZ65710

2362  721550800     721551415     2362
          DSS 62 PASS 2362 CL B-A CTDN 303344 GCF S21L CPS  N/A DSS L000
          CONFIG   ---------------------------------------------------
                   AOS DOY 155  LOS DOY 155          TOTAL
                   SCHEDULED 0800Z SCHEDULED 1415Z SCHEDULED  6H 15M
                   ACTUAL    0800Z ACTUAL    1415Z ACTUAL     6H 15M
                   ST XFR     N/AZ RELEASE   1425Z DSS TIME   6H 25M
          COMMAND  ---------------------------------------------------
                   TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A
          TELEMETRY ---------------------------------------------------
                   POWER N/AKW  BIT RATES  8  MMT
                          RX 1   RX 2  TCP A     TCP B
                   ACTUAL 162.9    N/A   9.5       N/A
                   PREDIC 163.2    N/A  10.0       N/A
                   RESID   +0.3    N/A  -0.5       N/A
          TRACKING ---------------------------------------------------
                   TRACK MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
                   DOP BIAS    N/R HZ C NOS  N/R HZ EXP  N/R HZ
          MONITOR  ---------------------------------------------------
                        LGWR  LGER  BLRC  BLER
                   DIS   N/A   N/A   N/A   N/A
                   TCP   N/A   N/A   N/A   N/A

          COMMENTS ---------------------------------------------------
          0925Z-1341Z NUMEROUS 360 OUTAGES DR 3630.

 PN6CFZ65715

2363  721560800     721561415     2363
          DSS 62 PASS 2363 CL B-A CTDN 303344 GCF S21L CPS  N/A DSS L000
          CONFIG   ---------------------------------------------------
                   AOS DOY 156  LOS DOY 156          TOTAL
                   SCHEDULED 0800Z SCHEDULED 1415Z SCHEDULED  6H 15M
                   ACTUAL    0800Z ACTUAL    1415Z ACTUAL     6H 15M
                   ST XFR     N/AZ RELEASE   1420Z DSS TIME   6H 20M
          COMMAND  ---------------------------------------------------
                   TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A
          TELEMETRY ---------------------------------------------------
                   POWER N/AKW  BIT RATES  8
                          RX 1   RX 2  TCP A     TCP B
```

```
PASS  GMT-START    GMT-END        DATA
NO.                               DAY
                   ACTUAL 162.9     N/A    9.4        N/A
                   PREDIC 163.3     N/A    9.9        N/A
                   RESID   +0.4     N/A   -0.5        N/A
          TRACKING ------------------------------------------------
                   TRACK MD N/RWAY RANGING N/R BIAS N/R RU NOISE N/R RU
                   DOP BIAS     N/R HZ C NOS  N/R HZ EXP  N/R HZ
          MONITOR  ------------------------------------------------
                        LGWR  LGER  BLRC  BLER
                   DIS   N/A   N/A   N/A   N/A
                   TCP   N/A   N/A   N/A   N/A

          COMMENTS ------------------------------------------------

 PN6CFZ65725

2366  721581848    721590300    2366
          DSS 41 PASS 2366 CL F-B CTDN 202244 GCF S21F CPS . N/A DSS F000
          CONFIG   ------------------------------------------------
                   AOS DOY 158  LOS DOY 159         TOTAL
                   SCHEDULED 1900Z SCHEDULED 0300Z SCHEDULED  8H 00M
                   ACTUAL    1848Z ACTUAL    0300Z ACTUAL     8H 12M
                   ST XFR     N/AZ RELEASE   0300Z DSS TIME   8H 12M
          COMMAND  ------------------------------------------------
                   TOTAL    0  AUTO    0  MANUAL    0  ABORT    0
          TELEMETRY ----------------------------------------------
                   POWER N/AKW  BIT RATES  8  MMT
                         RX 1    RX 2  TCP A      TCP B
                   ACTUAL 163.3     N/A    9.8        N/A
                   PREDIC 163.5     N/A    9.7        N/A
                   RESID   +0.2     N/A   +0.1        N/A
          TRACKING ------------------------------------------------
                   TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                   DOP BIAS -99.085HZ C NOS 0.070HZ EXP 0.050HZ
          MONITOR  ------------------------------------------------
                        LGWR  LGER  BLRC  BLER
                   DIS   N/R   N/R   N/R   N/R
                   TCP   N/R   N/R   N/R   N/R

          COMMENTS ------------------------------------------------
          2255Z-2304Z, 360 DOWN, DR 3641
          NO COMMANS 1-WAY

 PN6CFZ65732

2367  721591852    721600300    2367
          DSS 41 PASS 2367 CL B-B CTDN 303344 GCF S21F CPS  N/A DSS F000
          CONFIG   ------------------------------------------------
                   AOS DOY 159  LOS DOY 160         TOTAL
                   SCHEDULED 1900Z SCHEDULED 0300Z SCHEDULED  8H 00M
                   ACTUAL    1892Z ACTUAL    0300Z ACTUAL     8H 08M
                   ST XFR     N/RZ RELEASE   0300Z DSS TIME   8H 08M
          COMMAND  ------------------------------------------------
                   TOTAL    0  AUTO    0  MANUAL    0  ABORT    0
          TELEMETRY ----------------------------------------------
                   POWER N/AKW  BIT RATES  8
                         RX 1    RX 2  TCP A      TCP B
                   ACTUAL   N/A     N/A   10.1        N/A
                   PREDIC 163.6     N/A    9.9        N/A
                   RESID    N/A     N/A   +0.2        N/A
          TRACKING ------------------------------------------------
                   TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                   DOP BIAS     N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR  ------------------------------------------------
                        LGWR  LGER  BLRC  BLER
                   DIS   N/A   N/A   N/A   N/A
                   TCP   N/A   N/A   N/A   N/A

          COMMENTS ------------------------------------------------
          1852Z-0300Z MASER GAIN CHANGED DURING TRACK CAUSED FAILURE OF
          TEMPERATURE CONTROLLER. TFR-B01266 REFERS.
```

```
PASS  GMT-START     GMT-END       DATA
NO.                               DAY
```

PN6CFZ65744

2367 721600800 721601430 2367

DSS 62 PASS 2367 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG

AOS DOY 160	LOS DOY 160	TOTAL
SCHEDULED 0800Z	SCHEDULED 1430Z	SCHEDULED 6H 30M
ACTUAL 0800Z	ACTUAL 1430Z	ACTUAL 6H 30M
ST XFR N/AZ	RELEASE 1431Z	DSS TIME 6H 31M

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY

POWER N/AKW BIT RATES 8

	RX 1	RX 2	TCP A	TCP B
ACTUAL	163.5	N/A	8.7	N/A
PREDIC	163.6	N/A	9.8	N/A
RESID	+0.1	N/A	-1.1	N/A

TRACKING

TRACK MD 1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
DOP BIAS N/A HZ C NOS N/A HZ EXP N/A HZ

MONITOR

	LOWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS

1-WAY TRACK.

PN6CFZ65748

2368 721601854 721610300 2368

DSS 41 PASS 2368 CL B-B CTDN 303344 GCF S21F CPS N/A DSS F000

CONFIG

AOS DOY 160	LOS DOY 161	TOTAL
SCHEDULED 1900Z	SCHEDULED 0300Z	SCHEDULED 8H 00M
ACTUAL 1854Z	ACTUAL 0300Z	ACTUAL 8H 06M
ST XFR N/RZ	RELEASE 0304Z	DSS TIME 8H 10M

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY

POWER N/AKW BIT RATES 8

	RX 1	RX 2	TCP A	TCP B
ACTUAL	163.8	N/A	9.9	N/A
PREDIC	163.6	N/A	9.9	N/A
RESID	-0.2	N/A	0	N/A

TRACKING

TRACK MD 1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
DOP BIAS N/A HZ C NOS N/A HZ EXP 0.004HZ

MONITOR

	LOWR	LGER	BLRC	BLER
DIS	N/A	N/A	N/A	N/A
TCP	N/A	N/A	N/A	N/A

COMMENTS

PN6CFZ65740

2368 721610630 721611100 2368

DSS 62 PASS 2368 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG

AOS DOY 161	LOS DOY 161	TOTAL
SCHEDULED 0630Z	SCHEDULED 1100Z	SCHEDULED 4H 30M
ACTUAL 0630Z	ACTUAL 1200Z	ACTUAL 4H 30M
ST XFR N/R Z	RELEASE 1105Z	DSS TIME 4H 35M

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY

POWER N/AKW BIT RATES 8 MMT

	RX 1	RX 2	TCP A	TCP B

```
PASS  GMT-START     GMT-END         DATA
NO.                                 DAY
-------------------------------------------------------------------------------

                    ACTUAL 163.4     N/A    10.0       N/A
                    PREDIC 163.6     N/A    10.0       N/A
                    RESID   +0.2     N/A     0.0       N/A
          TRACKING  ---------------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS  -156.0HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------------------
                         LOWR  LOER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------------

 PN6CFZ65746

2369  721620300     721621430     2369
          DSS 62 PASS 2369 CL B-A CTDN 303344 GCF S21L CPS  N/A DSS L000
          CONFIG    ---------------------------------------------------------
                    AOS DOY 162  LOS DOY 162          TOTAL
                    SCHEDULED 0800Z SCHEDULED 1430Z SCHEDULED  6H 30M
                    ACTUAL    0800Z ACTUAL    1430Z ACTUAL     6H 30M
                    ST XFR    N/R Z RELEASE   1435Z DSS TIME   6H 35M
          COMMAND   ---------------------------------------------------------
                    TOTAL    0  AUTO    0  MANUAL    0  ABORT    0
          TELEMETRY ---------------------------------------------------------
                    POWER N/AKW  BIT RATES              8  MMT
                          RX 1    RX 2  TCP A      TCP B
                    ACTUAL   N/A  163.7   N/A        9.5
                    PREDIC   N/A  163.7   N/A        9.6
                    RESID    N/A    0.0   N/A       -0.1
          TRACKING  ---------------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------------------
                         LOWR  LOER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------------

 PN6CFZ65751

2370  721630300     721631430     2370
          DSS 62 PASS 2370 CL B-A CTDN 303344 GCF S21L CPS  N/A DSS L000
          CONFIG    ---------------------------------------------------------
                    AOS DOY 163  LOS DOY 163          TOTAL
                    SCHEDULED 0800Z SCHEDULED 1430Z SCHEDULED  6H 307
                    ACTUAL    0800Z ACTUAL    1430Z ACTUAL     6H 30M
                    ST XFR    N/R Z RELEASE   1435Z DSS TIME   6H 35M
          COMMAND   ---------------------------------------------------------
                    TOTAL    0  AUTO    0  MANUAL    0  ABORT    0
          TELEMETRY ---------------------------------------------------------
                    POWER N/AKW  BIT RATES              8  MMT
                          RX 1    RX 2  TCP A      TCP B
                    ACTUAL   N/A  163.o   N/A        9.3
                    PREDIC   N/A  163.8   N/A        9.5
                    RESID    N/A   +0.2   N/A       -0.2
          TRACKING  ---------------------------------------------------------
                    TRACK MD  1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS    N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------------------
                         LOWR  LOER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------------
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
```

PN6CFZ65757

2371 721640630 721641045 2371
DSS 62 PASS 2371 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG

AOS DOY 164	LOS DOY 164	TOTAL
SCHEDULED 0630Z	SCHEDULED 1045Z	SCHEDULED 4H 15M
ACTUAL 0630Z	ACTUAL 1045Z	ACTUAL 4H 15M
ST XFR N/R Z	RELEASE 1050Z	DSS TIME 4H 20M

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY

POWER N/AKW	BIT RATES			8 MMT
	RX 1	RX 2	TCP A	TCP B
ACTUAL	N/A	163.5	N/A	10.0
PREDIC	N/A	163.8	N/A	9.8
RESID	N/A	+0.3	N/A	+0.2

TRACKING

TRACK MD 1 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
DOP BIAS N/A HZ C NOS N/A HZ EXP N/A HZ

MONITOR

	LOWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS

PN6CFZ65763

2373 721651853 721660300 2373
DSS 41 PASS 2373 CL F-B CTDN 20224 GCF S21F CPS N/A DSS F000

CONFIG

AOS DOY 165	LOS DOY 166	TOTAL
SCHEDULED 1900Z	SCHEDULED 0300Z	SCHEDULED 8H 00M
ACTUAL 1853Z	ACTUAL 0300Z	ACTUAL 8H 07M
ST XFR N/RZ	RELEASE 0300Z	DSS TIME 8H 07M

COMMAND

TOTAL N/A AUTO N/A MANUAL N/A ABORT N/A

TELEMETRY

POWER N/AKW	BIT RATES		8	MMT
	RX 1	RX 2	TCP A	TCP B
ACTUAL	164.5	N/A	9.5	N/A
PREDIC	163.9	N/A	9.4	N/A
RESID	-0.6	N/A	+0.1	N/A

TRACKING

TRACK MD 1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
DOP BIAS -102.5 HZ C NOS N/A HZ EXP N/A HZ

MONITOR

	LOWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS

UNABLE TO ASSIGN NIL SET 6141 TO DSS 41 SC 06 DATA STREAM
TRK DR 0256
NO CMDS

PN6CFZ65767

2374 721661849 721670300 2374
DSS 41 PASS 7374 CL B-B CTDN 303344 GCF S21F CPS N/A DSS F000

CONFIG

AOS DOY 166	LOS DOY 167	TOTAL
SCHEDULED 1900Z	SCHEDULED 0300Z	SCHEDULED 8H 00M
ACTUAL 1849Z	ACTUAL 0300Z	ACTUAL 8H 11M
ST XFR NONEZ	RELEASE 0308Z	DSS TIME 8H 19M

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

```
PASS   GMT-START     GMT-END        DATA
NO.                                 DAY
-------------------------------------------------------------------------

          TELEMETRY ---------------------------------------------------
                    POWER N/AKW   BIT RATES   8  MMT
                          RX 1    RX 2  TCP       TCP B
                    ACTUAL 164.1   N/A    9.4       N/A
                    PREDIC 163.9   N/A    9.4       N/A
                    RESID   -0.2   N/A    0.0       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
                    DOP BIAS  -124  HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------------
                         LOWR  LOER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------

 PN6CFZ65774

2375  721671848    721680300    2375
          DSS 41 PASS 2375 CL B-B CTDN 303344 GCF S21F CPS N/A  DSS F000
          CONFIG    ---------------------------------------------------
                    AOS DOY 167  LOS DOY 168         TOTAL
                    SCHEDULED 1900Z SCHEDULED 0300Z SCHEDULED  8H 00M
                    ACTUAL    1848Z ACTUAL    0300Z ACTUAL     8H 12M
                    ST XFR    N/R Z RELEASE   0308Z DSS TIME   8H 20M
          COMMAND   ---------------------------------------------------
                    TOTAL  0   AUTO  0   MANUAL  0   ABORT  0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW  BIT RATES   8   MMT
                          RX 1   RX 2  TCP A     TCP B
                    ACTUAL 164.1  N/A     9.3      N/A
                    PREDIC 164.0  N/A     9.2      N/A
                    RESID   -0.1  N/A    +0.1      N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
                    DOP BIAS  -152  HZ C NOS N/A  HZ EXP N/A  HZ
          MONITOR   ---------------------------------------------------
                         LOWR  LOER  BLRC  BLER
                    DIS  N/A   N/A   N/A   N/A
                    TCP  N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------

 PN6CFZ65779

2375  721680630    721681045    2375
          DSS 62 PASS 2375 CL B-A CTDN 303344 GCF S21L CPS N/A  DSS L000
          CONFIG    ---------------------------------------------------
                    ACS DOY 168  LOS DOY 168         TOTAL
                    SCHEDULED 0630Z SCHEDULED 1045Z SCHEDULED  4H 15M
                    ACTUAL    0630Z ACTUAL    1045Z ACTUAL     4H 15M
                    ST XFR    NONEZ RELEASE   1050Z DSS TIME   4H 50M
          COMMAND   ---------------------------------------------------
                    TOTAL  0   AUTO  0   MANUAL  0   ABORT  0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW  BIT RATES   8   MMT
                          RX 1   RX 2  TCP A     TCP B
                    ACTUAL 164.3  N/A     N/A      9.6
                    PREDIC 164.0  N/A     N/A      9.6
                    RESID   -0.3  N/A     N/A      0.0
          TRACKING  ---------------------------------------------------
                    TRACK MD  1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
                    DOP BIAS  N/A   HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------------
                         LOWR  LOER  BLRC  BLER
                    DIS  N/R   N/R   N/R   N/R
                    TCP  N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------------------

 PN6CFZ65784

2376  721690800     721691430     2376
          DSS 62 PASS 2376 CL B-A CTDN 303344 GCF S21L CPS N/A  DSS L000
          CONFIG  ---------------------------------------------------
                  AOS DOY 169  LOS DOY 169          TOTAL
                  SCHEDULED 0800Z SCHEDULED 1430Z SCHEDULED  6H 30M
                  ACTUAL    0800Z ACTUAL    1430Z ACTUAL     6H 30M
                  ST XFR    N/R Z RELEASE   1431Z DSS TIME   6H 31M
          COMMAND ---------------------------------------------------
                  TOTAL  0   AUTO  0   MANUAL  0   ABORT  0
          TELEMETRY -------------------------------------------------
                  POWER N/AKW  BIT RATES   8   MMT
                        RX 1   RX 2  TCP A     TCP B
                  ACTUAL 164.7  N/A     9.0       N/A
                  PREDIC 164.1  N/A     9.2       N/A
                  RESID   -0.6  N/A    -0.2       N/A
          TRACKING --------------------------------------------------
                  TRACK MD  1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
                  DOP BIAS N/A    HZ C NOS N/A  HZ EXP N/A  HZ
          MONITOR ---------------------------------------------------
                       LGWR  LGER  BLRC  BLER
                  DIS  N/A   N/A   N/A   N/A
                  TCP  N/A   N/A   N/A   N/A

          COMMENTS --------------------------------------------------

 PN6CFZ65789

2377  721700800     721701430     2377
          DSS 62 PASS 2377 CL B-A CTDN 303344 GCF S21L CPS N/A  DSS L000
          CONFIG  ---------------------------------------------------
                  AOS DOY 170  LOS DOY 170          TOTAL
                  SCHEDULED 0800Z SCHEDULED 1430Z SCHEDULED  6H 30M
                  ACTUAL    0800Z ACTUAL    1430Z ACTUAL     6H 30M
                  S  XFR    N/R Z RELEASE   1430Z DSS TIME   6H 30M
          COMMAND ---------------------------------------------------
                  TOTAL  0   AUTO  0   MANUAL  0   ABORT  0
          TELEMETRY -------------------------------------------------
                  POWER N/AKW  BIT RATES   8   MMT
                        RX 1   RX 2  TCP B     TCP A
                  ACTUAL N/A    164.7   9.0       N/A
                  PREDIC N/A    164.2   9.1       N/A
                  RESID  N/A     -0.5  -0.1       N/A
          TRACKING --------------------------------------------------
                  TRACK MD  1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
                  DOP BIAS N/A    HZ C NOS N/A  HZ EXP N/A  HZ
          MONITOR ---------------------------------------------------
                       LGWR  LGER  BLRC  BLER
                  DIS  N/R   N/R   N/R   N/R
                  TCP  N/R   N/R   N/R   N/R

          COMMENTS --------------------------------------------------
          NO COMMANDS          1 WAY

 PN6CFZ65795

2378  721710630     721711045     2378
          DSS 62 PASS 2378 CL B-A CTDN 303344 GCF S21L CPS N/A  DSS L000
          CONFIG  ---------------------------------------------------
                  AOS DOY 171  LOS DOY 171          TOTAL
                  SCHEDULED 0630Z SCHEDULED 1045Z SCHEDULED  4H 15M
                  ACTUAL    0630Z ACTUAL    1045Z ACTUAL     4H 15M
                  ST XFR    N/R Z RELEASE   1045Z DSS TIME   4H 15M
          COMMAND ---------------------------------------------------
                  TOTAL  0   AUTO  0   MANUAL  0   ABORT  0
          TELEMETRY -------------------------------------------------
                  POWER N/AKW  BIT RATES   8   MMT
                        RX 1   RX 2  TCP B     TCP A
```

```
PASS  GMT-START     GMT-END         DATA
NO.                                 DAY
-------------------------------------------------------------------------

                    ACTUAL 164.4  N/A      9.5        N/A
                    PREDIC 164.2  N/A      9.5        N/A
                    RESID   -0.2  N/A      0.0        N/A
          TRACKING  -------------------------------------------------------
                    TRACK MD  1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
                    DOP BIAS  -88.0 HZ C NOS N/A  HZ EXP N/A  HZ
          MONITOR   -------------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS  N/A   N/A   N/A   N/A
                    TCP  N/A   N/A   N/A   N/A

          COMMENTS  -------------------------------------------------------

 PN6CFZ65816

2382  721750630     721751045     2382
          DSS 62 PASS 2382 CL B-A CTDN 303344 GCF S21L CPS N/A  DSS L000
          CONFIG    -------------------------------------------------------
                    AOS DOY 175  LOS DOY 175          TOTAL
                    SCHEDULED 0630Z SCHEDULED 1045Z SCHEDULED  4H 15M
                    ACTUAL    0630Z ACTUAL    1045Z ACTUAL     4H 15M
                    ST XFR    N/R Z RELEASE   1047Z DSS TIME   4H 17M
          COMMAND   -------------------------------------------------------
                    TOTAL  0   AUTO  0   MANUAL  0   ABORT  0
          TELEMETRY -------------------------------------------------------
                    POWER N/AKW  BIT RATES   8   MMT
                          RX 1   RX 2  TCP A     TCP B
                    ACTUAL N/A    165.0   N/A       9.4
                    PREDIC N/A    164.4   N/A       9.3
                    RESID  N/A     -0.6   N/A      +0.1
          TRACKING  -------------------------------------------------------
                    TRACK MD  1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
                    DOP BIAS  -200  HZ C NOS N/A  HZ EXP N/A  HZ
          MONITOR   -------------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS  N/A   N/A   N/A   N/A
                    TCP  N/A   N/A   N/A   N/A

          COMMENTS  -------------------------------------------------------

 PN6CFZ65825

2383  721760800     721761430     2383
          DSS 62 PASS 2383 CL B-A CTDN 303344 GCF S21L CPS N/A  DSS L000
          CONFIG    -------------------------------------------------------
                    AOS DOY 176  LOS DOY 176          TOTAL
                    SCHEDULED 0800Z SCHEDULED 1430Z SCHEDULED  6H 30M
                    ACTUAL    0800Z ACTUAL    1430Z ACTUAL     6H 30M
                    ST XFR    N/R Z RELEASE   1430Z DSS TIME   6H 30M
          COMMAND   -------------------------------------------------------
                    TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A
          TELEMETRY -------------------------------------------------------
                    POWER N/AKW  BIT RATES   8   MMT
                          RX 1   RX 2  TCP A     TCP B
                    ACTUAL N/A    165.3   N/A       8.6
                    PREDIC N/A    164.5   N/A       9.0
                    RESID  N/A     -0.8   N/A      -0.4
          TRACKING  -------------------------------------------------------
                    TRACK MD  1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
                    DOP BIAS N/A     HZ C NOS N/A  HZ EXP N/A  HZ
          MONITOR   -------------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS  N/A   N/A   N/A   N/A
                    TCP  N/A   N/A   N/A   N/A

          COMMENTS  -------------------------------------------------------
```

PASS NO.	GMT-START	GMT-END	DATA DAY

PN6CFZ65831

2384 721770800 721771430 2384

DSS 62 PASS 2384 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG

AOS DOY 177	LOS DOY 177		TOTAL	
SCHEDULED 0800Z	SCHEDULED 1430Z	SCHEDULED	6H 30M	
ACTUAL 0800Z	ACTUAL 1430Z	ACTUAL	6H 30M	
ST XFR N/R Z	RELEASE 1430Z	DSS TIME	6H 30M	

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY

POWER N/AKW BIT RATES 8 MMT

	RX 1	RX 2	TCP A	TCP B
ACTUAL	N/A	165.4	N/A	8.6
PREDIC	N/A	164.5	N/A	9.0
RESID	N/A	-0.9	N/A	-0.4

TRACKING

TRACK MD 1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
DOP BIAS -261 HZ C NOS N/A HZ EXP N/A HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS

PN6CFZ65853

2389 721820630 721821030 2389

DSS 62 PASS 2389 CL B-A CTDN 303344 GCF S21L CPS N/A DSS L000

CONFIG

AOS DOY 182	LOS DOY 182		TOTAL	
SCHEDULED 0630Z	SCHEDULED 1030Z	SCHEDULED	4H 00M	
ACTUAL 0630Z	ACTUAL 1030Z	ACTUAL	4H 00M	
ST XFR N/R Z	RELEASE 1030Z	DSS TIME	4H 00M	

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY

POWER N/AKW BIT RATES 8 MMT

	RX 1	RX 2	TCP A	TCP B
ACTUAL	N/A	165.2	N/A	8.6
PREDIC	N/A	164.8	N/A	8.9
RESID	N/A	-0.4	N/A	-0.3

TRACKING

TRACK MD 1 WAY RANGING N/A BIAS N/A RU NOISE N/A RU
DOP BIAS N/A HZ C NOS N/A HZ EXP N/A HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS

0728Z-0736Z 360 DOWN REF DR'S. D-0273 AND 3732.

C. PIONEER 7.

Pass 1786, July 7, 1971 (Day 188)

DSS 14 AOS 188/1522; LOS 188/1830.
GOE pass with 7 commands transmitted.

Pass 1804, July 25, 1971 (Day 206)

DSS 14 AOS 206/1420; LOS 206/1520.
GOE pass.

Pass 1817, August 7, 1971 (Day 219)

DSS 14 AOS 219/2227; LOS 220/0130.
GOE pass with 1 command transmitted. No solid TCP lock throughout pass.

Pass 1842, September 1, 1971 (Day 244)

DSS 14 AOS 244/2319; LOS 245/0020.
GOE pass. Signal very noisy, no TCP lock throughout pass (solar occultation).

Pass 1844, September 3, 1971 (Day 246)

DSS 14 AOS 246/2034; LOS 246/2230.
GOE pass. Receiver in lock for 75 percent of the pass (solar occultation).

Pass 1845, September 4, 1971 (Day 247)

DSS 14 AOS 247/2007; LOS 248/0030.
GOE pass. Receiver in lock 60 to 70 percent of the pass (solar occultation).

Pass 1846, September 5, 1971 (Day 248)

DSS 14 AOS 248/2055; LOS 249/0141.
GOE pass. Receiver in lock 70 percent of the pass. No telemetry data sent in real time (solar occultation).

Pass 1852, September 11, 1971 (Day 254)

DSS 14 AOS 254/1821; LOS 254/2315.
Polarization data pass for solar occultation. No telemetry data.

Pass 1853, September 12, 1971 (Day 255)

DSS 14 AOS 255/1930; LOS 255/2215.
Polarization data pass for solar occultation. No telemetry data.

Pass 1854, September 13, 1971 (Day 256)

DSS 14 AOS 255/1930; LOS 256/2345.
Polarization data pass for solar occultation. No telemetry data.

Pass 1889, October 18, 1971 (Day 291)

DSS 14 AOS 291/1749; LOS 291/1900.
GOE pass with no commands. Unable to acquire spacecraft due to high SNT from the sun.

Pass 1891, October 20, 1971 (Day 293)

DSS 14 AOS 293/1628; LOS 293/2330.
GOE pass with no commands. Superior conjunction with sun. No receiver lock and no telemetry data on Faraday Rotation experiment.

Pass 1893, October 22, 1971 (Day 295)

DSS 14 AOS 295/1830; LOS 296/0000.
GOE pass with no commands. Faraday Rotation experiment.

Pass 1898, October 27, 1971 (Day 300)

DSS 14 AOS 300/1443; LOS 300/2030.
GOE pass with no commands. Faraday Rotation experiment.

Pass 1900, October 29, 1971 (Day 302)

DSS 14 AOS 302/1827; LOS 302/2230.
GOE pass with no commands.

Pass 1907, November 5, 1971 (Day 309)

DSS 14 AOS 309/1745; LOS 309/2230.
GOE pass with no commands transmitted. Station unable to get RCV lock due to high system temperature.

D. PIONEER 8.

Pass 1298, July 2, 1971 (Day 183)

DSS 14 AOS 183/1900; LOS 183/2200.
GOE pass with 1 command transmitted. Doppler counter was periodically resetting itself (Ref. DR-01288).

Pass 1304, July 8, 1971 (Day 189)

DSS 14 AOS 189/1835; LOS 189/2200.
GOE pass with 1 command transmitted.

Pass 1308, July 12, 1971 (Day 193)

DSS 14 AOS 193/1751; LOS 193/2100.
GOE pass with 1 command transmitted.

Pass 1312, July 16, 1971 (Day 197)

DSS 14 AOS 197/1751; LOS 197/2100.
GOE pass with 1 command transmitted.

Pass 1317, July 21, 1971 (Day 202)

DSS 14 AOS 202/1909; LOS 202/2000.
GOE pass.

Pass 1328, August 2, 1971 (Day 214)

DSS 14 AOS 214/0105; LOS 214/0400.
GOE pass with 1 command transmitted.

Pass 1330, August 4, 1971 (Day 216)

DSS 14 AOS 216/0109; LOS 216/0400.
GOE pass with 1 command transmitted.

Pass 1331, August 5, 1971 (Day 217)

DSS 14 AOS 217/0106; LOS 217/0400.
GOE pass with 1 command transmitted.

Pass 1333, August 7, 1971 (Day 219)

DSS 14 AOS 219/0104; LOS 219/0400.
GOE pass with 1 command transmitted.

Pass 1334, August 8, 1971 (Day 220)

DSS 14 AOS 220/0157; LOS 220/0400.
GOE pass with 1 command transmitted.

Pass 1335, August 9, 1971 (Day 221)

DSS 14 AOS 221/0133; LOS 221/0400.
GOE pass with 1 command transmitted.

Pass 1336, August 10, 1971 (Day 222)

DSS 14 AOS 222/0046; LOS 222/0400.
GOE pass with 1 command transmitted.

Pass 1338, August 12, 1971 (Day 224)

DSS 14 AOS 224/0145; LOS 224/0400.
GOE pass with 1 command transmitted.

Pass 1339, August 13, 1971 (Day 225)

DSS 14 AOS 225/0139; LOS 225/0402.
GOE pass with 1 command transmitted.

Pass 1341, August 15, 1971 (Day 227)

DSS 14 AOS 227/0040; LOS 227/0400.
GOE pass with 1 command transmitted.

Pass 1342, August 16, 1971 (Day 228)

DSS 14 AOS 228/0034; LOS 228/0400.
GOE pass with 1 command transmitted.

Pass 1343, August 17, 1971 (Day 229)

DSS 14 AOS 229/0139; LOS 229/0400.
GOE pass with 1 command transmitted.

Pass 1362, September 5, 1971 (Day 248)

DSS 14 AOS 248/0036; LOS 248/0358.
GOE pass with 4 commands transmitted.

Pass 1370, September 12, 1971 (Day 255)

DSS 14 AOS 255/2307; LOS 256/0100.
GOE pass with 1 command transmitted.

Pass 1371, September 14, 1971 (Day 257)

DSS 14 AOS 257/0015; LOS 257/0346.
GOE pass with 3 commands transmitted. Doppler resolver not counting properly (Ref. DR-1398).

Pass 1383, September 25, 1971 (Day 268)

DSS 14 AOS 268/2220; LOS 269/0200.
GOE pass with 1 command transmitted. Numerous TCP glitches and excessive TCP I/O lock throughout pass (DR-1423).

Pass 1397, October 9, 1971 (Day 282)

DSS 14 AOS 282/2217; LOS 283/0200.
GOE pass with 1 command transmitted. SNR residual exceeded allowable tolerance of ± 1.0 db (Ref. DR T-15).

Pass 1406, October 18, 1971 (Day 291)

DSS 14 AOS 291/2240; LOS 292/0200.
GOE pass with 1 command transmitted.

Pass 1408, October 20, 1971 (Day 293)

DSS 14 AOS 293/2338; LOS 294/0200.
GOE pass with 1 command transmitted.

Pass 1410, October 22, 1971 (Day 295)

DSS 14 AOS 295/0030; LOS 295/0200.
GOE pass with no commands transmitted.

Pass 1423, November 4, 1971 (Day 308)

DSS 14 AOS 308/2135; LOS 309/0100.
GOE pass with 1 command transmitted.

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------------

 PN8CEZ65617

1621  721421723     721430530     1621
          DSS 14 PASS 1621 CL H-A CTDN 282214 GCF S20D CPS  N/A DSS D200
          CONFIG    ---------------------------------------------------
                    AOS DOY 141  LOS DOY 142         TOTAL
                    SCHEDULED 1723Z SCHEDULED 0537Z SCHEDULED 12H 14M
                    ACTUAL    1723Z ACTUAL    0530Z ACTUAL    12H 07M
                    ST XFR     N/AZ RELEASE   0530Z DSS TIME  12H 07M
          COMMAND   ---------------------------------------------------
                    TOTAL   7  AUTO   0  MANUAL   7  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES 8  GOE
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL 161.4    N/A   8.6       N/A
                    PREDIC 160.4    N/A  10.2       N/A
                    RESID   -1.0    N/A  -1.6       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS  -0.130HZ C NOS 0.003HZ EXP 0.004HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------

 PN8CEZ65618

1622  721421627     721430530     1622
          DSS 14 PASS 1622 CL E-A CTDN 202214 GCF S20D CPS  N/A DSS D200
          CONFIG    ---------------------------------------------------
                    AOS DOY 142  LOS DOY 143         TOTAL
                    SCHEDULED 1623Z SCHEDULED 0536Z SCHEDULED 13H 13M
                    ACTUAL    1627Z ACTUAL    0530Z ACTUAL    13H 03M
                    ST XFR     N/AZ RELEASE   0600Z DSS TIME  13H 33M
          COMMAND   ---------------------------------------------------
                    TOTAL   3  AUTO   0  MANUAL   3  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES 16 GOE
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL 160.9    N/A   8.8       N/A
                    PREDIC 160.4    N/A  10.2       N/A
                    RESID   -0.5    N/A  -1.4       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS  -0.149HZ C NOS 0.004HZ EXP 0.004HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------
          1642Z-1702Z DSS 14'S TRANSMITTER DOWN, CABLE PROBLEM. DR T-2064

 PN8CEZ65637

1623  721441637     721450530     1623
          DSS 14 PASS 1623 CL F-A CTDN 382214 GCF S20D CPS  N/A DSS D200
          CONFIG    ---------------------------------------------------
                    AOS DOY 143  LOS DOY 144         TOTAL
                    SCHEDULED 1624Z SCHEDULED 0536Z SCHEDULED 13H 12M
                    ACTUAL    1637Z ACTUAL    0530Z ACTUAL    12H 53M
                    ST XFR     N/AZ RELEASE   0530Z DSS TIME  12H 53M
          COMMAND   ---------------------------------------------------
                    TOTAL   3  AUTO   0  MANUAL   3  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES 16 GOE
                           RX 1   RX 2  TCP A     TCP B
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------------

                    ACTUAL 160.5     N/A     8.7       N/A
                    PREDIC 160.4     N/A    10.0       N/A
                    RESID   -0.1     N/A    -1.3       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS  -0.148HZ C NOS 0.003HZ EXP 0.005HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
          1750Z-1808Z TRACKING MM9
          1940Z-1956Z TRACKING MM9

 PN8CEZ65648

1624  721441626     721450530     1624
          DSS 14 PASS 1624 CL E-A CTDN 202214 GCF S20D CPS  N/A DSS D200
          CONFIG    ---------------------------------------------------
                    AOS DOY 144  LOS DOY 145          TOTAL
                    SCHEDULED 1625Z SCHEDULED 0536Z SCHEDULED 10H 11M
                    ACTUAL    1626Z ACTUAL    0530Z ACTUAL    13H 04M
                    ST XFR     N/AZ RELEASE   0530Z DSS TIME  13H 04M
          COMMAND   ---------------------------------------------------
                    TOTAL   2  AUTO   0  MANUAL   2  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES  16  GDE
                           RX 1    RX 2  TCP A     TCP B
                    ACTUAL 160.9     N/A   8.8       N/A
                    PREDIC 160.4     N/A   9.8       N/A
                    RESID   -0.5     N/A  -1.0       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS  -0.163HZ C NOS 0.003HZ EXP 0.005HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------
          2034Z-2048Z 360 DOWN DR 3594

 PN8CEZ65657

1625  721461626     721470536     1625
          DSS 14 PASS 1625 CL E-A CTDN 382214 GCF S40D CPS  N/A DSS D200
          CONFIG    ---------------------------------------------------
                    AOS DOY 145  LOS DOY 146          TOTAL
                    SCHEDULED 1625Z SCHEDULED 0536Z SCHEDULED 13H 11M
                    ACTUAL    1625Z ACTUAL    0536Z ACTUAL    13H 11M
                    ST XFR    NONEZ RELEASE   0541Z DSS TIME  13H 16M
          COMMAND   ---------------------------------------------------
                    TOTAL   3  AUTO   0  MANUAL   3  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES 16
                           RX 1    RX 2  TCP A     TCP B
                    ACTUAL 160.8     N/A   9/3       N/A
                    PREDIC 160.4     N/A  10.1       N/A
                    RESID   -0.4     N/A  -0.8       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS   -0.16HZ C NOS 0.004HZ EXP 0.005HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
          TWO WAY 1705Z-0531Z. COMMANDS AT 1712Z.
```

PASS NO.	GMT-START	GMT-END	DATA DAY

PN8CFZ65814

1653 721740349 721740430 1653

DSS 12 PASS 1653 CL N/A CTDN N/A GCF N/A CPS N/A DSS N/A

CONFIG

	AOS DOY 174	LOS DOY 174	TOTAL	
	SCHEDULED R/T Z	SCHEDULED R/T Z	SCHEDULED	H M
	ACTUAL 0349Z	ACTUAL 0430Z	ACTUAL	1H 41M
	ST XFR NONEZ	RELEASE 0440Z	DSS TIME	1H 51M

COMMAND

TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY

POWER N/AKW BIT RATES 8 GDE

	RX 1	RX 2	TCP A	TCP B
ACTUAL	169.0	N/A	N/A	N/A
PREDIC	168.7	N/A	5.2	N/A
RESID	-0.3	N/A	N/A	N/A

TRACKING

TRACK MD 1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
DOP BIAS N/A HZ C NOS N/A HZ EXP N/A HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS

REAL TIME TURN AROUND FROM PN-10
NO VALID SNR
TWO N FRAMES OF DATA RETRIEVED

E. PIONEER 9.

Pass 967, July 2, 1971 (Day 183)

DSS 14 AOS 183/1523; LOS 183/1830.
GOE pass with 8 commands transmitted.

Pass 970, July 5, 1971 (Day 186)

DSS 14 AOS 186/1525; LOS 186/1830.
GOE pass with 2 commands transmitted.

Pass 971, July 6, 1971 (Day 187)

DSS 14 AOS 187/1520; LOS 187/1930.
GOE pass with 19 commands transmitted. Comm processor faulted twice, 1648 to 1654 and 1855 to 1908, real-time data loss (Ref. DR-2836); doppler counter was resetting and resolver repeating, open DRs on both.

Pass 972, July 7, 1971 (Day 188)

DSS 14 AOS 188/1834; LOS 188/2200.
GOE pass with 6 commands transmitted. Comm processor B faulted at 2138; switched to comm processor A; real-time loss of 7 minutes of engineering and 12 minutes of science telemetry (Ref. DR-2851).

Pass 973, July 8, 1971 (Day 189)

DSS 14 AOS 189/1520; LOS 189/1830.
GOE pass with 5 commands transmitted. Bit error rate high throughout the pass.

Pass 975, July 10, 1971 (Day 191)

DSS 14 AOS 191/1533; LOS 191/1930.
GOE pass with 15 commands transmitted.

Pass 977, July 12, 1971 (Day 193)

DSS 14 AOS 193/1429; LOS 193/1730.
GOE pass with 8 commands transmitted.

Pass 978, July 13, 1971 (Day 194)

DSS 14 AOS 194/1544; LOS 194/2100.
GOE pass with 13 commands transmitted.

Pass 980, July 15, 1971 (Day 196)

DSS 14 AOS 196/1531; LOS 196/2100.
GOE pass with 14 commands transmitted.

Pass 981, July 16, 1971 (Day 197)

DSS 14 AOS 197/1424; LOS 197/1730.
GOE pass with 2 commands transmitted. TDH was bad from 1425 to 1730; WS-178 was removed while performing data condition verification test causing data condition code to appear bad (Ref. DR-01302).

Pass 984, July 19, 1971 (Day 200)

DSS 14 AOS 200/1421; LOS 200/1808.
GOE pass with 5 commands transmitted.

Pass 985, July 20, 1971 (Day 201)

DSS 14 AOS 201/1419; LOS 201/1700.
GOE pass with 2 commands transmitted.

Pass 986, July 21, 1971 (Day 202)

DSS 14 AOS 202/1442; LOS 202/1900.
GOE pass with 2 commands transmitted.

Pass 989, July 24, 1971 (Day 205)

DSS 14 AOS 206/1425; LOS 205/1750.
GOE pass with 9 commands transmitted.

Pass 990, July 25, 1971 (Day 206)

DSS 14 AOS 206/1526; LOS 206/2000.
GOE pass with 12 commands transmitted.

Pass 999, August 3, 1971 (Day 215)

DSS 14 AOS 215/2228; LOS 216/0100.
GOE pass with 6 commands transmitted.

Pass 1000, August 4, 1971 (Day 216)

DSS 14 AOS 216/2226; LOS 217/0100.
GOE pass with 4 commands transmitted.

Pass 1002, August 6, 1971 (Day 218)

DSS 14 AOS 218/2230; LOS 219/0100.
GOE pass with 8 commands transmitted.

Pass 1004, August 8, 1971 (Day 220)

DSS 14 AOS 220/2229; LOS 221/0100.
GOE pass with 5 commands transmitted.

Pass 1005, August 9, 1971 (Day 221)

DSS 14 AOS 221/2130; LOS 222/0030.
GOE pass with 7 commands transmitted. Command error in GOE at 2329Z. The five subsequent commands were delayed 3 minutes each (Ref. DR-01337).

Pass 1007, August 11, 1971 (Day 223)

DSS 14 AOS 223/2128; LOS 224/0130.
GOE pass with 8 commands transmitted. Numerous receiver glitches and dynamic AGC fluctuating, reason unknown (Ref. DR-1341). Cable on BCD line from DTS shorted to ground stopping TDH sampling (Ref. DR-1342).

Pass 1008, August 12, 1971 (Day 224)

DSS 14 AOS 224/2115; LOS 225/0130.
GOE pass with 11 commands transmitted. Station experienced receiver glitching from 2245 to 2250 because of 3 Hertz filter problems (Ref. DR-1344). Approximately 5 minutes of data lost. Command 104 aborted at 0006, retransmitted successfully at 0008, cause not determined in real time (Ref. DR-1345).

Pass 1010, August 14, 1971 (Day 226)

DSS 14 AOS 226/2125; LOS 227/0030.
GOE pass with 7 commands transmitted.

Pass 1011, August 15, 1971 (Day 227)

DSS 14 AOS 227/2119; LOS 228/0030.
GOE pass with 5 commands transmitted.

Pass 1012, August 16, 1971 (Day 228)

DSS 14 AOS 228/2125; LOS 229/0130.
GOE pass with 10 commands transmitted. Doppler reset at 0126, station dropped lock (Ref. DR-01350).

Pass 1028, September 1, 1971 (Day 244)

DSS 14 AOS 244/0027; LOS 244/0200.
GOE pass.

Pass 1029, September 2, 1971 (Day 245)

DSS 14 AOS 245/1531; LOS 246/0146.
GOE pass with 9 commands transmitted. Signal level down to -168 dbm at 1720Z, corrected .080 deg offset in elevation, (Ref. DR-0272). Low signal level throughout pass due to quick call up for solar flare coverage (Ref. DR-0273). Track broken from 1930 to 2017Z to track Pioneer 7.

Pass 1030, September 3, 1971 (Day 246)

DSS 14 AOS 246/1526; LOS 247/0230.
GOE pass with 14 commands transmitted. Track broken to track Pioneer 7 from 2030 to 2235Z.

Pass 1031, September 4, 1971 (Day 247)

DSS 14 AOS 247/1528; LOS 247/2000.
GOE pass with 2 commands transmitted.

Pass 1038, September 12, 1971 (Day 255)

DSS 14 AOS 255/0002; LOS 255/0222.
GOE pass with 4 commands transmitted.

Pass 1052, September 25, 1971 (Day 268)

DSS 14 AOS 268/1900; LOS 268/2215.
GOE pass with 2 commands transmitted.

Pass 1063, October 6, 1971 (Day 279)

DSS 14 AOS 279/1919; LOS 279/2400.
GOE pass with 5 commands transmitted. AOS delayed by GOE problem. Unable to lock on 16 bit coded data until 1940, problem in MDE patchboard (Ref. DR-01454). Lost transmitter at 2211 due to power failure. Motor generators and transmitter backup at 2225 (Ref. DR-01457).

Pass 1064, October 7, 1971 (Day 280)

DSS 14 AOS 280/1857; LOS 281/0000.
GOE pass with 2 commands transmitted.

Pass 1066, October 9, 1971 (Day 282)

DSS 14 AOS 282/1859; LOS 282/2215.
GOE pass with 7 commands transmitted.

Pass 1075, October 18, 1971 (Day 291)

DSS 14 AOS 291/1910; LOS 291/2230.
GOE pass with 7 commands transmitted. Station was unable to lock TCPs to S/C or format generator. Computer buffer change corrected the problem (Ref. DR-1492).

Pass 1084, October 27, 1971 (Day 300)

DSS 14 AOS 300/2059; LOS 300/2245.
GOE pass with 2 commands transmitted.

Pass 1089, November 1, 1971 (Day 305)

DSS 14 AOS 305/2140; LOS 306/0100.
GOE pass with 7 commands transmitted. No pseudo residuals after 2254 due to all queued messages being sent at one time. Word frame synch synchronization problem possible due to demodulator cable. TCP reloaded (Ref. DR-1511).

Pass 1093, November 5, 1971 (Day 309)

DSS 14 AOS 309/2247; LOS 310/0200.
GOE pass with 7 commands transmitted. Signal to noise ratio and downlink residuals exceeded allowable tolerance of ±1.0 dB (DR T-29). TCP would not maintain lock from 2259 to 2332. (Hanged computer buffer at GOE to maintain lock for remainder of pass (Ref. DR-1523)).

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------------------

 PN9CDZ65447

1257  721090100     721090352     1257
          DSS 12 PASS 1257 CL B-  CTDN    N/A GCF S20B CPS  N/A DSS B200
          CONFIG  ---------------------------------------------------------
                  AOS DOY 109  LOS DOY 109          TOTAL
                  SCHEDULED 0100Z SCHEDULED 0430Z SCHEDULED  3H 30M
                  ACTUAL    0100Z ACTUAL    0352Z ACTUAL     2H 52M
                  ST XFR     N/RZ RELEASE   0352Z DSS TIME   2H 52M
          COMMAND ---------------------------------------------------------
                  TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY -------------------------------------------------------
                  POWER   OKW  BIT RATES      8 CODED GOE
                        RX 1   RX 2  TCP B     TCP A
                  ACTUAL   N/A -172.7  OFFCHART  N/A
                  PREDIC   N/A -169.5  N/A       N/A
                  RESID    N/A - -2.7  N/A       N/A
          TRACKING --------------------------------------------------------
                  TRACK MD  1 WAY RANGING NIL BIAS  N/ARU NOISE  N/ARU
                  DOP BIAS     N/AHZ C NOS   N/AHZ EXP  .006HZ
          MONITOR ---------------------------------------------------------
                       LGWR  LGER  BLRC  BLER
                  DIS   N/A   N/A   N/A   N/A
                  TCP   N/A   N/A   N/A   N/A

          COMMENTS --------------------------------------------------------

 PN9CDZ65452

1258  721100100     721100324     1258
          DSS 12 PASS 1258 CL B-  CTDN    N/A GCF S20B CPS  N/A DSS B200
          CONFIG  ---------------------------------------------------------
                  AOS DOY 110  LOS DOY 110          TOTAL
                  SCHEDULED 0100Z SCHEDULED 0430Z SCHEDULED  3H 30M
                  ACTUAL    0100Z ACTUAL    0324Z ACTUAL     2H 24M
                  ST XFR     N/RZ RELEASE   0324Z DSS TIME   2H 24M
          COMMAND ---------------------------------------------------------
                  TOTAL   0  AUTO   0  MANUAL   0  ABORT   0
          TELEMETRY -------------------------------------------------------
                  POWER   OKW  BIT RATES      8
                        RX 1   RX 2  TCP A     TCP B
                  ACTUAL   N/A    N/A   N/A      N/A
                  PREDIC   N/A    N/A   N/A      N/A
                  RESID    N/A    N/A   N/A      N/A
          TRACKING --------------------------------------------------------
                  TRACK MD   1WAY RANGING NIL BIAS  N/ARU NOISE  N/ARU
                  DOP BIAS     N/AHZ C NOS   N/AHZ EXP  .006HZ
          MONITOR ---------------------------------------------------------
                       LGWR  LGER  BLRC  BLER
                  DIS   N/A   N/A   N/A   N/A
                  TCP   N/A   N/A   N/A   N/A

          COMMENTS --------------------------------------------------------

 PN9CEZ65573

1283  721350020     721350300     1283
          DSS 12 PASS 1283 CL B-  CTDN 303314 GCF S20B CPS  N/A DSS B200
          CONFIG  ---------------------------------------------------------
                  AOS DOY 134  LOS DOY 134          TOTAL
                  SCHEDULED 0001Z SCHEDULED 0300Z SCHEDULED  3H 00M
                  ACTUAL     N/AZ ACTUAL    0300Z ACTUAL    N/AH   M
                  ST XFR     N/RZ RELEASE   0300Z DSS TIME  03H 00M
          COMMAND ---------------------------------------------------------
                  TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A
          TELEMETRY -------------------------------------------------------
                  POWER  10KW  BIT RATES  8
                        RX 1   RX 2  TCP A     TCP B
```

```
PASS  GMT-START     GMT-END          DATA
NO.                                  DAY
-------------------------------------------------------------------------

                    ACTUAL   N/A     N/A    N/A        N/A
                    PREDIC 169.4     N/A    2.1        N/A
                    RESID    N/A     N/A    N/A        N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD 1,2WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS     N/A HZ C NOS  N/A HZ EXP 0.004HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------
          CABLE PROBLEM ON TCP "A" CAUSED INABILITY TO OBTAIN LOCK.
          DR T-2044. REFERS.

 PN9CEZ65580

1284  721350000    721350300    1284
          DSS 12 PASS 1284 CL B-  CTDN 303314 GCF S20B CPS  N/A DSS B200
          CONFIG    ---------------------------------------------------
                    AOS DOY 135  LOS DOY 135          TOTAL
                    SCHEDULED 0000Z SCHEDULED 0300Z SCHEDULED  3H   M
                    ACTUAL      N/AZ ACTUAL     N/AZ ACTUAL      H   M
                    ST XFR      N/AZ RELEASE   0110Z DSS TIME   0H 10M
          COMMAND   ---------------------------------------------------
                    TOTAL N/A  AUTO N/A  MANUAL N/A  ABORT N/A
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW  BIT RATES N/A
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL   N/A    N/A   N/A       N/A
                    PREDIC   N/A    N/A   N/A       N/A
                    RESID    N/A    N/A   N/A       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD N/AWAY RANGING N/A BIAS N/A RU NOISE N/A RU
                    DOP BIAS     N/A HZ C NOS  N/A HZ EXP  N/A HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------
          0110Z STATION RELEASED TO ALLOW CORRECT. OF MASER CONTAMINATION
          DR T-2046 REFERS.

 PN9CEZ65593

1286  721380001    721380300    1286
          DSS 12 PASS 1286 CL B-  CTDN 303314 GCF S20B CPS  N/A DSS B200
          CONFIG    ---------------------------------------------------
                    AOS DOY 138  LOS DOY 138          TOTAL
                    SCHEDULED 0000Z SCHEDULED 0300Z SCHEDULED  3H 00M
                    ACTUAL    0001Z ACTUAL    0300Z ACTUAL     2H 59M
                    ST XFR      N/RZ RELEASE  0300Z DSS TIME   2H 59M
          COMMAND   ---------------------------------------------------
                    TOTAL   1  AUTO   0  MANUAL   1  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES  8
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL   N/A  169.6   N/A       1.0
                    PREDIC   N/A  169.3   N/A       1.7
                    RESID    N/A   -0.3   N/A      -0.7
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS     N/A HZ C NOS  N/A HZ EXP 0.004HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
```

COMMENTS
0001Z-0016Z UNABLE TO LOCK UP TCP "B" DR T-2051 REFERS

PN9CEZ65602

1287 721382350 721390300 1287
DSS 12 PASS 1287 CL B- CTDN 303444 GCF S20B CPS N/A DSS B200

CONFIG

	AOS DOY 139	LOS DOY 140	TOTAL
SCHEDULED	0000Z	SCHEDULED 0300Z	SCHEDULED 3H 00M
ACTUAL	2350Z	ACTUAL 0300Z	ACTUAL 3H 10M
ST XFR	2350Z	RELEASE 0300Z	DSS TIME 3H 10M

COMMAND

TOTAL 1 AUTO 0 MANUAL 1 ABORT 0

TELEMETRY

POWER 10KW	BIT RATES 8	CODED GOE	
	RX 1	RX 2 TCP A	TCP B
ACTUAL	169.4	N/A 0.6	N/A
PREDIC	169.3	N/A 1.7	N/A
RESID	-0.1	N/A -1.1	N/A

TRACKING

TRACK MD 2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
DOP BIAS -0.6HZ C NOS 0.011HZ EXP 0.004HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/A	N/A	N/A	N/A
TCP	N/A	N/A	N/A	N/A

COMMENTS
0103Z-0113Z 360 "B" DOWN, WARM IPL DR 3567
0134Z-0155Z 360 "B" DOWN, RESTART R.T. JOB STEP DR 3574

PN9CEZ65609

1288 721392152 721400450 1288
DSS 12 PASS 1288 CL B-B CTDN 303314 GCF S20B CPS N/A DSS B200

CONFIG

	AOS DOY 139	LOS DOY 140	TOTAL
SCHEDULED	2200Z	SCHEDULED 0500Z	SCHEDULED 7H 00M
ACTUAL	2152Z	ACTUAL 0450Z	ACTUAL 6H 56M
ST XFR	N/AZ	RELEASE 0455Z	DSS TIME 7H 01M

COMMAND

TOTAL 1 AUTO 0 MANUAL 1 ABORT 0

TELEMETRY

POWER 10KW	BIT RATES 8	CODED GOE	
	RX 1	RX 2 TCP A	TCP B
ACTUAL	169.1	N/A 1.8	N/A
PREDIC	169.2	N/A N/G	N/A
RESID	+0.1	N/A N/A	N/A

TRACKING

TRACK MD 2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
DOP BIAS -0.69HZ C NOS 0.006HZ EXP 0.005HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS
2313Z-2326Z 360 DOWN DR 3580
0230Z-0243Z 360 DOWN DR 3581

PN9CEZ65616

1289 721401702 721410457 1289
DSS 12 PASS 1289 CL B-B CTDN 303314 GCF S20B CPS N/A DSS B200

CONFIG

	AOS DOY 140	LOS DOY 141	TOTAL
SCHEDULED	1600Z	SCHEDULED 0500Z	SCHEDULED 13H 00M
ACTUAL	1702Z	ACTUAL 0457Z	ACTUAL 11H 55M
ST XFR	N/AZ	RELEASE 0457Z	DSS TIME 11H 55M

```
PASS  GMT-START     GMT-END       DATA
NO.                               DAY
-------------------------------------------------------------------------

          COMMAND   ---------------------------------------------------
                    TOTAL   1  AUTO   0  MANUAL   1  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES 8  CODED  GUE
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL  N/A    N/A   1.4       N/A
                    PREDIC  N/A    N/A   2.2       N/A
                    RESID   N/A    N/A  -0.8       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS   2.578HZ C NOS 0.008HZ EXP 0.004HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
          2035Z-2044Z 360 DOWN WARM IPL WARM RESTART DR 3979
          2353Z-0012Z DSN XMTS NOT UPDATING NO DR.
          LATE AOS DUE TO SCHEDULING ERROR AND BAD PREDICTS DR N-0211

  PN9CEZ65628

1290  721411630    721420456    1290
          DSS 12 PASS 1290 CL B-B CTON 303314 GCF S20B CPS  N/A DSS B200
          CONFIG    ---------------------------------------------------
                    AOS DOY 141  LOS DOY 142         TOTAL
                    SCHEDULED 1628Z SCHEDULED 0500Z SCHEDULED 13H 00M
                    ACTUAL    1630Z ACTUAL    0456Z ACTUAL    12H 26M
                    ST XFR     N/AZ RELEASE   0459Z DSS TIME  12H 29M
          COMMAND   ---------------------------------------------------
                    TOTAL   1  AUTO   0  MANUAL   1  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES  8  CODED  MMT
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL 169.7   N/A   1.4       N/A
                    PREDIC 168.7   N/A   1.5       N/A
                    RESID   -1.0   N/A  -0.1       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS   2.597HZ C NOS 0.004HZ EXP 0.004HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------

  PN9CEZ65634

1291  721421628    721430455    1291
          DSS 12 PASS 1291 CL B-B CTON 303314 GCF S20B CPS  N/A DSS B200
          CONFIG    ---------------------------------------------------
                    AOS DOY 142  LOS DOY 143         TOTAL
                    SCHEDULED 1620Z SCHEDULED 0500Z SCHEDULED 12H 40M
                    ACTUAL    1628Z ACTUAL    0455Z ACTUAL    12H 27M
                    ST XFR     N/AZ RELEASE   0455Z DSS TIME  12H 27M
          COMMAND   ---------------------------------------------------
                    TOTAL   1  AUTO   0  MANUAL   1  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES  8  CODED GUE
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL 168.6   N/A   1.2       N/A
                    PREDIC 168.7   N/A   1.5       N/A
                    RESID   +0.1   N/A             N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS   2.600HZ C NOS 0.006HZ EXP 0.005HZ
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------------

          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------

 PN9CEZ65638

1292  721431628     721440457     1292
          DSS 12 PASS 1292 CL B-B CTDN 303314 GCF S00B CPS  N/A DSS B000
          CONFIG    ---------------------------------------------------
                    AOS DOY 143  LOS DOY 144          TOTAL
                    SCHEDULED 1620Z SCHEDULED 0500Z SCHEDULED 13H 00M
                    ACTUAL    1628Z ACTUAL    0457Z ACTUAL    12H 29M
                    ST XFR     N/AZ RELEASE   0457Z DSS TIME  12H 29M
          COMMAND   ---------------------------------------------------
                    TOTAL   1  AUTO   0  MANUAL   1  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES 8  CODED  GOE
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL 168.7    N/A    0.9      N/A
                    PREDIC 168.6    N/A    1.6      N/A
                    RESID   -0.1    N/A   -0.7      N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS   2.591HZ C NOS 0.004HZ EXP 0.005HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------

 PN9CEZ65647

1293  721441630     721450457     1293
          DSS 12 PASS 1293 CL B-B CTDN 303314 GCF S00B CPS  N/A DSS B000
          CONFIG    ---------------------------------------------------
                    AOS DOY 144  LOS DOY 145          TOTAL
                    SCHEDULED 1623Z SCHEDULED 0500Z SCHEDULED 13H 00M
                    ACTUAL    1630Z ACTUAL    0457Z ACTUAL    12H 27M
                    ST XFR     N/AZ RELEASE   0457Z DSS TIME  12H 27M
          COMMAND   ---------------------------------------------------
                    TOTAL   6  AUTO   0  MANUAL   6  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES 8  CODED  GOE
                           RX 1   RX 2  TCP A     TCP B
                    ACTUAL 168.5    N/A    1.3      N/A
                    PREDIC 168.6    N/A    1.6      N/A
                    RESID   +0.1    N/A   -0.3      N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS   2.594HZ C NOS 0.005HZ EXP 0.005HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/A   N/A   N/A   N/A
                    TCP   N/A   N/A   N/A   N/A

          COMMENTS  ---------------------------------------------------
          2034Z-2048Z 360 DOWN DR 3594

 PN9CEZ65656

1294  721451628     721460459     1294
          DSS 12 PASS 1294 CL B-B CTDN 303314 GCF S00B CPS  N/A DSS B000
          CONFIG    ---------------------------------------------------
                    AOS DOY 145  LOS DOY 146          TOTAL
                    SCHEDULED 1624Z SCHEDULED 0501Z SCHEDULED 12H 37M
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
-------------------------------------------------------------------------

                    ACTUAL     1620Z ACTUAL     0459Z ACTUAL     12H 39M
                    ST XFR     NONEZ RELEASE    0504Z DSS TIME   12H 44M
          COMMAND   ---------------------------------------------------
                    TOTAL   6  AUTO   0  MANUAL   6  ABORT   0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES  8  CODED  GOE
                           RX 1    RX 2  TCP A     TCP B
                    ACTUAL   N/A  168.4   0.9       N/A
                    PREDIC   N/A  168.6   1.5       N/A
                    RESID    N/A   +0.2  -0.6       N/A
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
                    DOP BIAS   +2.58HZ C NOS 0.005HZ EXP 0.005HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS   N/R   N/R   N/R   N/R
                    TCP   N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------

 PN9CFZ65812

1322  721721755    721736138    1322
          DSS 12 PASS 1323 CL B-B CTDN 303314 GCF S20B CPS N/A  DSS B200
          CONFIG    ---------------------------------------------------
                    ACS DOY 174  LOS DOY 174         TOTAL
                    SCHEDULED 1630Z SCHEDULED 0430Z SCHEDULED 12H 00M
                   *ACTUAL    1755Z ACTUAL    0138Z ACTUAL     7H 43M
                    ST XFR    NONEZ RELEASE   0138Z DSS TIME   7H 43M
          COMMAND   ---------------------------------------------------
                    TOTAL  2   AUTO  0   MANUAL  2   ABORT  0
          TELEMETRY ---------------------------------------------------
                    POWER  10KW  BIT RATES   16 CODED GOE
                           RX 1    RX 2  TCP A     TCP B
                    ACTUAL N/A    167.3   N/A       0.6
                    PREDIC N/A    167.2   N/A       1.6
                    RESID  N/A     -0.6   N/A      -1.0
          TRACKING  ---------------------------------------------------
                    TRACK MD  2 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
                    DOP BIAS  +2.097HZ C NOS  .004HZ EXP  .005HZ
          MONITOR   ---------------------------------------------------
                         LGWR  LGER  BLRC  BLER
                    DIS  N/R   N/R   N/R   N/R
                    TCP  N/R   N/R   N/R   N/R

          COMMENTS  ---------------------------------------------------
                   *DSS-12 RELEASED EARLY DUE TO DSS-11 MASER PROBLEMS  UNABLE TO
                    SUPPORT PN-10
                    DSS-12 SWITCHED TO PN-10 TRACK
                    S/C 16 BPS VERSUS 8 BPS OR T-0929 ON PROJECT
                   *LATE ACS DUE TO 01 DOPPLER OFF 1KHZ

 PN9CFZ65821

1324  721751641    721763057    1324
          DSS 12 PASS 1324 CL B-B CTDN 303314 GCF S20B CPS N/A  DSS B000
          CONFIG    ---------------------------------------------------
                    ACS DOY 175  LOS DOY 176         TOTAL
                    SCHEDULED 1630Z SCHEDULED 0430Z SCHEDULED 12H 00M
                   *ACTUAL    1700Z ACTUAL    0057Z ACTUAL     7H 57M
                    ST XFR    N/R Z RELEASE   0100Z DSS TIME   8H 00M
          COMMAND   ---------------------------------------------------
                    TOTAL  0   AUTO  0   MANUAL  0   ABORT  0
          TELEMETRY ---------------------------------------------------
                    POWER N/AKW  BIT RATES  16    GOE
                           RX 1    RX 2  TCP A     TCP B
                    ACTUAL N/A    167.3   1.6       N/A
                    PREDIC N/A    167.0   1.9       N/A
                    RESID  N/A     -0.3  -0.3       N/A
```

```
PASS  GMT-START     GMT-END        DATA
NO.                                DAY
```

TRACKING
TRACK MD 1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
DOP BIAS N/A HZ C NOS N/A HZ EXP N/A HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS
*TRACK TERMINATED EARLY DUE TO MASER PROBLEMS AT DSS-11 TURN-AROUND TRACK ON PN10
ONE WAY

PN9CFZ65824

1323 721741642 721750430 1323
DSS 12 PASS 1323 CL B-B CTDN 303314 GCF S20B CPS N/A DSS B000

CONFIG
AOS DOY 174 LOS DOY 175 TOTAL
SCHEDULED 1630Z SCHEDULED 0430Z SCHEDULED 12H 00M
ACTUAL 1642Z ACTUAL 0430Z ACTUAL 11H 48M
ST XFR N/R Z RELEASE 0435Z DSS TIME 11H 53M

COMMAND
TOTAL 0 AUTO 0 MANUAL 0 ABORT 0

TELEMETRY
POWER N/AKW BIT RATES 16 CODED GOE

	RX 1	RX 2	TCP A	TCP B
ACTUAL	167.7	N/A	1.6	N/A
PREDIC	167.1	N/A	1.7	N/A
RESID	-0.6	N/A	-0.1	N/A

TRACKING
TRACK MD 1 WAY RANGING NONEBIAS N/A RU NOISE N/A RU
DOP BIAS +1448 HZ C NOS N/A HZ EXP N/A HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/R	N/R	N/R	N/R
TCP	N/R	N/R	N/R	N/R

COMMENTS

PN9CFZ65861

1331 721822300 721830430 1331
DSS 12 PASS 1331 CL B-B CTDN 303314 GCF S20B CPS N/A DSS B200

CONFIG
AOS DOY 182 LOS DOY 183 TOTAL
SCHEDULED 2300Z SCHEDULED 0430Z SCHEDULED 5H 30M
ACTUAL 2300Z ACTUAL 0412Z ACTUAL 5H 12M
ST XFR N/R Z RELEASE 0500Z DSS TIME 6H 00M

COMMAND
TOTAL 4 AUTO 0 MANUAL 4 ABORT 0

TELEMETRY
POWER 10KW BIT RATES 16 8 CODED GOE

	RX 1	RX 2	TCP A	TCP A
ACTUAL	166.5	N/A	0.0	2.0
PREDIC	168.6	N/A	1.9	3.5
RESID	-2.1	N/A	-1.9	-1.5

TRACKING
TRACK MD 2 WAY RANGING NIL BIAS N/A RU NOISE N/A RU
DOP BIAS N/A HZ C NOS 0.004HZ EXP 0.005HZ

MONITOR

	LGWR	LGER	BLRC	BLER
DIS	N/A	N/A	N/A	N/A
TCP	N/A	N/A	N/A	N/A

PASS NO.	GMT-START	GMT-END	DATA DAY

COMMENTS
2320Z TRANSMITTER KICKED OFF. UNDERFLOW COOLANT PROBLEM.
DR T-2145
0134Z-1038Z 360/75A DOWN. DR 3737.
0355Z TRANSMITTER OFF TWO PHASES OF PRIME POWER TO 400 CYCLE CONVERTER. DR T-2148.
NOTE EARLY LOS DUE TO TRANSMITTER KICK OFF.
TWO WAY 0019Z-0355Z COMMANDS AT 0022Z-0355Z.

GLOSSARY

ADSS	Automatic Data Switching System
AGC	automatic gain control
AOS	acquisition of signal
APS	Antenna Pointing Subsystem
ARC	Ames Research Center
BER	bit error rate
CLT	communications line terminal
CP	Communications Processor
CPS	Central Processing System
DIS	Digital Instrumentation Subsystem
DOY	day of year
DPTRAJ	Double Precision Trajectory Program
DSIF	Deep Space Instrumentation Facility
DSN	Deep Space Network
DSS	Deep Space Station
EDR	Experiment Data Record
EOT	end of track
ETR	Eastern Test Range
FTS	Frequency and Timing Subsystem
GCF	Ground Communications Facility
GMT	Greenwich Mean Time
GOD	ground operations equipment
HSD	high-speed data
HSDL	high-speed data line
IRS	Information Retrieval System
LOS	loss of signal
MCD	monitor criteria data
MDE	mission-dependent equipment
MDF	Master Data File
MDR	Master Data Record
MMC	Multiple Mission Command
MMT	Multiple-Mission Telemetry
MSA	Mission Support Area
MUX line	multiplexed communication line
NASCOM	NASA Communications Network
NAA	Network Analysis Area
NAT	Network Analysis Team
NSP	NASA Support Plan
OC	Operations Chief
OCT	Operations Control Team
ODC	Operational Data Control
ODR	Original Data Record
PDS	polarimeter diplexed S-band
PE	Project Engineer
PER	parity error rate
RTLT	round-trip light time
S/C	spacecraft
SCU	S-band Cassegrain ultracone
SDA	Subcarrier Demodulator Assembly
SDR	System Data Record
SEP	Sun-Earth probe
SFOF	Space Flight Operations Facility
SMT	S-band megawatt transmit
SNR	signal-to-noise ratio
SNT	system noise temperature
SPU	S-band polarized ultracone
STDN	Spacecraft Tracking and Data Network
TCD	Telemetry and Command Data Handling Subsystem
TCP	Telemetry and Command Processor
TDA	Tracking and Data Acquisition
TDH	Tracking Data Handling Subsystem
TDS	Tracking and Data System
T_s	system temperature
TTY	teletype
TWT	traveling wave tube
UPS	uninterruptible power system
VCO	voltage-controlled oscillator
VOCA	voice operational communications assembly

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