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DSC#797

PIONEER 10 and 11

SOLAR WIND PLASMA ARCHIVE

72-012A-13L SPHE-00066

73-019A-13K SPHE-00310

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1. INTRODUCTION:

The documentation for this data set was originally on paper, kept in NSSDC's Data Set Catalogs (DSCs). The paper documentation in the Data Set Catalogs have been made into digital images, and then collected into a single PDF file for each Data Set Catalog. The inventory information in these DSCs is current as of July 1, 2004. This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system. The information existing in the DSCs is now not needed for locating the data files, but we did not remove that inventory information.

The offline tape datasets have now been migrated from the original magnetic tape to Archival Information Packages (AIP's).

A prior restoration may have been done on data sets, if a requestor of this data set has questions; they should send an inquiry to the request office to see if additional information exists.

2. ERRATA/CHANGE LOG:

NOTE: Changes are made in a text box, and will show up that way when displayed on screen with a PDF reader.

When printing, special settings may be required to make the text box appear on the printed output.

| Version | Date | Person | Page | Description of Change |
|---------|------|--------|------|-----------------------|
| 01 | | | | |
| 02 | | | | |

3 LINKS TO RELEVANT INFORMATION IN THE ONLINE NSSDC INFORMATION SYSTEM:

<http://nssdc.gsfc.nasa.gov/nmc/>

[NOTE: This link will take you to the main page of the NSSDC Master Catalog. There you will be able to perform searches to find additional information]

4. CATALOG MATERIALS:

- a. Associated Documents To find associated documents you will need to know the document ID number and then click here.
<http://nssdcftp.gsfc.nasa.gov/miscellaneous/documents/>

- b. Core Catalog Materials

PIONEER 10
SOLAR WIND PLASMA ARCHIVE

72-012A-13L SPHE-00066

THIS DATASET CONSISTS OF 1 MAGNETIC TAPE. THE TAPE WAS CREATED ON
A VAX COMPUTER, AND IS 9-TRACK, 6250 BPI, WITH THE DATA FILES WRITTEN
IN BINARY. ALL OTHER TEXT FILES ARE WRITTEN IN ASCII. THE TAPE HAS
A LABEL NAME OF "P10SWP"

THE DATA WAS DOWNLOADED FROM THE ANON_DIR: [COHO.P10PLA.VERSION31]

THE D AND C NUMBER ALONG WITH ITS TIMESPAN IS LISTED BELOW.

| D# | C# | FILES | TIMESPAN |
|----------|----------|-------|-------------------|
| D-108635 | C-032783 | 15 | 04/18/72-12/05/94 |

*Print *.SFD files from data set.*

VOLDESC.SFD file

DSC # 797
72-012A-13L

CCSD1Z00000100000034CCSD1R00000300000014
DELIMITER=EOF;
CCSD1R00000300000036
DELIMITER=SMARKER;
TYPE=CCSD1V000002;

VOL_IDENT: ? (Pioneer 10 Plasma Analyzer volume 0001)

VOL_CREATION_DATE: 17-JUN-1996
MEDIUM_DESCRIPTION: 1/2-inch, 9-track, 6250 bpi magnetic tape
TECHNICAL_CONTACT: Dr. Paul Gazis
Mail Stop 245-3
NASA Ames Research Center
Moffett Field, CA 94035

Electronic Mail: 24609::GAZIS or
gazis@arwen.arc.nasa.gov
gazis@24.479.arc.nasa.gov
Telephone: 415-604-5704

PREV_VOLS: none

CCSD1R00000300000018
DELIMITER=EMARKER;
CCSD1R00000300000036
DELIMITER=SMARKER;
TYPE=CCSD1S000002;

DATA_SET_NAME: Pioneer 10 Plasma Analyzer Hourly Averaged Data Set
DATA_SOURCE: Pioneer 10 Plasma Analyzer

SCIENTIFIC_CONTACT: Dr. Paul Gazis
Mail Stop 245-3
NASA Ames Research Center
Moffett Field, CA 94035

Electronic Mail: 24609::GAZIS or
gazis@arwen.arc.nasa.gov
gazis@24.479.arc.nasa.gov
Telephone: 415-604-5704

SPACECRAFT_CHARACTERISTICS:

Pioneer 10 was launched on March 2, 1972, and encountered Jupiter in December, 1973. Since the encounter, it has been on an escape trajectory from the solar system, and at the end of 1995 it was at a distance of approximately 64 AU from the sun, an ecliptic latitude of +3 degrees, and an ecliptic longitude (measured eastward from the vernal equinox) of 73 degrees. The Pioneer 11 spacecraft was launched on April 5, 1973, encountered Jupiter in December of 1974, and encountered Saturn in September of 1979. Like Pioneer 10, it is on an escape trajectory from the solar system, and at the end of 1995 it was at a distance of approximately 45 AU from the sun, an ecliptic latitude and longitude -15 and 272 degrees.

These spacecraft are instrumented with a full suite of instruments for fields and particles, including magnetometer, plasma sensors, and four energetic particle and cosmic ray instruments. Other instruments include an ultraviolet photometer, infrared photometer, imaging photopolarimeter, and micrometeoroid detector. The spacecraft are spin stabilized, with their spin axis oriented toward the earth.

INSTRUMENT_ATTRIBUTES:

Instrument name: Pioneer 10 and 11 plasma analyzer (PA)

Type: Quadrispheric electrostatic analyzer

PI: Aaron Barnes (the original PI was John H. Wolfe)

SCIENCE OBJECTIVES

The Pioneer Plasma Analyzer measures distribution functions of solar wind protons and alpha particles and bulk parameters, such as speed, density, temperature, and flow angle, of solar wind protons. It was designed to measure distribution functions of solar wind electrons as well, but few of these spectra have been analyzed in detail.

GENERAL INSTRUMENT DESCRIPTION

The Pioneer Plasma Analyzer contains two separate instruments: Detector A and Detector B. Each detector consists of an entrance aperture followed by two charged parallel quadrispherical plates and an array of sensors: channeltrons for Detector A and electrometers for Detector B. The instrument is described in detail in Wolfe et al. [1974] and McKibbin et al. [1977]. Some parameters of the two detectors are summarized in McKibbin et al. [1977].

Particles that pass the entrance aperture of a detector describe Keplerian orbits under the influence of the electric field between the two plates. Because the separation of the plates is finite, the analyzer accepts particles from a finite range of kinetic energies. The acceptance range also depends on the azimuth of the incoming particles. Standard analytic expressions admit computation of the range of acceptance angle and energy [e.g., Gosling et al., 1984]. For Detector B, the range of acceptance angles is approximately 14 degrees, and the energy acceptance range is approximately 35% of the central energy. The acceptance range is somewhat narrower for Detector A.

While the acceptance range of the Pioneer plasma analyzers is quite wide, the actual resolution of these instruments is distinct from, and much narrower than, the acceptance range. The ideal response of Detector B to a cold beam of plasma incident along the axis of the instrument is only non-zero over the energy range from 4% below to 5% above the central energy. This energy range corresponds to orbits that graze the inner and outer plates of the plasma analyzer.

The response function of the plasma analyzers is known, and can be convolved with simulated distribution functions to simulate the spectra that would be obtained for different plasma bulk parameters. These tests show that Detector B cannot distinguish between temperatures lower than 5000 K, but there are distinct

differences between the spectra for higher temperatures. It appears that the resolution of Detector B is adequate to distinguish between spectra with temperatures greater than 5000 K and provide reasonably reliable measurements of temperatures greater than 10,000 K.

The power supplies aboard the Pioneer 10 and 11 spacecraft have declined in output over the decades since these spacecraft were launched. The plasma analyzer aboard Pioneer 11 was turned off due to lack of power on day 151 of 1992. At that time, Pioneer 11 was at a heliocentric distance of 35.83 and an ecliptic longitude and latitude of 267.92 and 15.84, headed approximately upstream with respect to the flow of the local interstellar medium (LISM). The plasma analyzer aboard Pioneer 10 was turned off due to lack of power on day 250 of 1995. At that time, Pioneer 10 was at a heliocentric distance of 63.05 and an ecliptic longitude and latitude of 74.91 and 3.05, headed approximately downstream with respect to the flow of the (LISM).

INSTRUMENT CALIBRATION

The calibration was performed in two phases. First the instrument electronics transfer function was measured at several temperatures by simulating the electrometer input current over all ranges and polarities. Second, the optics were calibrated by placing the instrument in a 2-axis gimbal system in the ARC plasma chamber and measuring its response to a monoenergetic plasma beam for all view angles.

INSTRUMENT MODE DESCRIPTIONS

The instrument has two commandable logic modes of operation: maximum flux mode (MFM) and full scan mode (FSM). In the maximum flux mode the instrument steps through its E/Q steps, one step per spacecraft rotation, to determine the maximum flux, the collector (or target) number, and the azimuthal angle for which the maximum flux occurs for each E/Q step. In the full scan mode, the instrument makes one E/Q step per spacecraft rotation and returns data from as many angular sectors as the telemetry will allow, without regard to the direction of maximum flux. Only spectra taken using Maximum Flux Mode were used for the calculation of plasma parameters.

INSTRUMENT REFERENCES

Wolfe, J. H., J. D. Mihalov, H. R. Collard, D. D. McKibbin, L. A. Frank, and D. S. Intrilligator, Pioneer 10 observations of the solar wind interaction with Jupiter., J. Geophys. Res., 79, 3489-3500, 1974.

McKibbin, D. D., J. H. Wolfe, H. R. Collard, and H. F. Savage, Plasma Analyzer for the Pioneer Jupiter missions, Sp. Sci. Instrumentation, 3, 219-228, 1977

Gosling, J. T., M. F. Thomsen, and R. C. Anderson, A Cookbook for determining essential transmission characteristics of Spherical section electrostatic analyzers, Los Alamos National Laboratory technical note LA-10147-M, 1984

DATA_SET_PARAMETERS:

Each record contains a spacecraft identifier, record time, spacecraft trajectory information, a quality flag, and the following plasma bulk parameters:

- 1) Proton bulk speed -- the proton bulk speed in km/s.
- 2) Proton number density -- the proton number density in #/cc
- 3) Proton temperature -- the proton temperature in Kelvin.
- 4) Azimuthal and polar flow angles -- Flow angles are in the RTN system. Flow angles of zero correspond to flow in the radial direction AWAY from the Sun. A positive azimuthal angle corresponds to flow toward the EAST (in the direction of planetary rotation) while a positive polar angle corresponds to flow toward the NORTH.

DATA SET QUALITY:

The Pioneer 10 and 11 data production software has been tested by examining its response to a range of simulated plasma distributions. These tests suggest that the plasma parameters measured by Pioneer 10 and 11 have the following uncertainties:

- 1) Proton bulk speed: < 5 km/sec
- 2) Proton number density:
 - 2.1) 20% at Pioneer 10 prior to 1992
 - 2.2) 50% at Pioneer 10 after 1992 (Detector A flux measurements)
 - 2.21) NOTE: densities from these Detector A flux measurements also appear to be 50% higher than densities from the other measurement schemes when the solar wind temperature is low.
 - 2.3) 20% at Pioneer 11
- 3) Proton temperature:
 - 3.1) 20% when $T > 10,000$ K
 - 3.2) 40% when $10,000$ K $> T > 5,000$ K?
 - 3.3) Unreliable when $T < 5000$ K
- 4) Flow angles:
 - 4.1) Unknown, but probably < 3 degrees at Pioneer 10 before 1983.
 - 4.2) Unreliable at Pioneer 10 after 1983.
 - 4.3) Unreliable at Pioneer 11 during 1973.
 - 4.4) Unknown, but probably < 3 degrees at Pioneer 11 after 1973.

The individual points in the Summary (high resolution) data set are flagged with a 'data quality index' (BADREC) that indicates the reliability of each point. This parameter is described in the format description for the summary data sets.

DATA PROCESSING OVERVIEW:

The plasma bulk parameters (proton bulk speed, proton number density, proton temperature, and flow angles) were obtained using one of three processing schemes. All of these processing schemes take into account the instrument response function (the 'instrument optics' described above) and calibration.

- 1) The 'Block 3 Least Squares' processing scheme. This involves least squares fits of a convected spherical Maxwellian to the solar wind spectra. For historical reasons, data from this scheme only include measurements from Detector B of the plasma analyzers. At Pioneer 11, this processing scheme appears to give reliable results for the entire mission. At Pioneer 10, this scheme appears to give reliable results for data taken prior to mid-1983. After mid-1983, when Pioneer 10 passed beyond a

heliocentric distance of 30 AU and densities dropped below 0.001 - 0.01, this scheme suffers from sensitivity limitations.

2) The 'Filtered Spectra' scheme. This is a refinement of the Block 3 Least Squares scheme described above that significantly improves data recovery, sensitivity, and reliability when the solar wind flux is low. It has been applied to all Pioneer 10 data taken after 1979, samples of Pioneer 11 data, and will be extended to the rest of the Pioneer 10 and 11 missions as resources become available. This scheme was applied to data from Detectors A and B. Velocities and temperatures from this scheme should both be reliable.

3) The 'Detector B Total Flux' scheme. This processing scheme involves direct integration of spectra from Detector B to obtain moments. It gives more reliable densities than the first two schemes when the solar wind fluxes is low, but the velocities it returns are only accurate to approximately 5 km/s and it cannot as yet give temperatures. Also, this scheme cannot be applied when the solar wind temperature is greater than 60,000 K.

4) The 'Detector A Total Flux' scheme. This scheme involves a moments calculation similar to the 'Detector B Total Flux' scheme described above, only applied to spectra from Detector A. Since Detector A is more sensitive than Detector B, this scheme is the most sensitive, but uncertainties in the flux calibration Detector A make this scheme the least reliable. This scheme has been applied to all Pioneer 10 measurements after 1989, but it is only useful after 1992, when Pioneer 10 passed beyond a heliocentric distance of 56 AU and the solar wind flux dropped below the sensitivity limit of Detector B for extended periods of time.

NOTE: Except for a limited period in 1989 when the solar wind temperature was high (this could affect the deconvolution procedure used in the moments integration) the densities returned by the 'Detector A Total Flux measurements scheme appear to be 50% higher than densities from the other measurement schemes. This may be related to uncertainties in the calibration of Detector A.

SUMMARY DATA

The Pioneer 10 and 11 'summary' data sets consist of high resolution data. The first processing scheme ('Block 3 Least Squares') was adequate to produce the current version of the Pioneer 11 summary data set. All four processing schemes were used to produce a reliable Pioneer 10 summary data set. Data from these four schemes were combined as follows:

1) Prior to day 201 of 1981, only data from the 'Block 3 Least Squares' processing scheme was used.

2) Between day 201 of 1981 and day 10 of 1984, velocities from the 'Filtered Spectra' processing scheme were combined with parameters from the 'Block 3 Least Squares' scheme and identified by SCID as described in the table below.

SCID Comments

| | |
|------|---|
| P10 | Block 3 Least Squares. V only, others set to zero |
| P10A | Filtered spectra scheme, Detector A fit |

P10B Filtered spectra scheme, Detector B fit
P10b Filtered spectra scheme, Combined A and B fit

3) Between day 10 of 1984 and the end of 1988, velocities and temperatures from the 'Detector B Total Flux' processing scheme were combined with velocities and densities from the 'Filtered Spectra' scheme and identified by SCID as described in the table below.

| SCID | Source | Parameters |
|------|------------------------------|----------------------------|
| P10V | Block 3 Least Squares | V only, others set to zero |
| P10C | Filtered spectra, Detector A | Vfs and Tfs, N set to zero |
| P10D | Filtered spectra, Detector B | Vfs and Tfs, N set to zero |
| P10F | Both schemes, Detector B | Vfs, Ntf, Tfs |
| P10H | Total flux only, Detector B | Vtf and Ntf, T set to zero |

4) After the beginning of 1989, velocities and temperatures from the 'Detector A Total Flux' processing scheme were combined with velocities and densities from the 'Filtered Spectra' scheme and the 'Detector B Total Flux' scheme and identified by SCID as described in the table below.

| SCID | Source | Parameters |
|------|------------------------------|----------------------------|
| P10V | Block 3 Least Squares | V only, others set to zero |
| P10C | Filtered spectra, Detector A | Vfs and Tfs, N set to zero |
| P10D | Filtered spectra, Detector B | Vfs and Tfs, N set to zero |
| P10E | Both schemes, Detector A | Vfs, Ntf, Tfs |
| P10F | Both schemes, Detector B | Vfs, Ntf, Tfs |
| P10G | Total flux only, Detector A | Vtf and Ntf, T set to zero |
| P10H | Total flux only, Detector B | Vtf and Ntf, T set to zero |

HOURLY AND DAILY AVERAGED DATA

Hourly and daily averaged data files were created by averaging every valid parameter in each averaging interval, regardless of the processing scheme used to derive it. This was straightforward for Pioneer 11, but there were problems late in the Pioneer 10 mission when data from the first three processing schemes described above were combined with densities from the Detector A Total Flux scheme. When the solar wind velocity (and temperature) is low, the Detector A Total Flux calculation appears to return densities 50% higher than densities from the other three measurement schemes. This may be related to uncertainties in the calibration of Detector A. Because of these uncertainties, the Detector A Total Flux densities (SCIDs P10E and P10G described above) were weighted by a factor of 0.5 and adjusted by the following calibration factors:

0.68 when $V < 520$ km/s
1.47 when $V > 520$ km/s

There are averaging intervals late in the Pioneer 10 mission when density and temperature were not both available. The different cases are identified by SCID as described in the table below:

| SCID | Comments |
|------|--|
| P10 | Record contains values for V, N, and T |

P10v Record only contains values for V
P10n Record only contains values for V and N
P10t Record only contains values for V and T

LIT_REFERENCES:

Wolfe, J. H., J. D. Mihalov, H. R. Collard, D. D. McKibbin,
L. A. Frank, and D. S. Intrilligator, Pioneer 10 observations
of the solar wind interaction with Jupiter., J. Geophys. Res.,
79, 3489-3500, 1974.

McKibbin, D. D., J. H. Wolfe, H. R. Collard, and H. F. Savage,
Plasma Analyzer for the Pioneer Jupiter missions, Sp. Sci.
Instrumentation, 3, 219-228, 1977

Gosling, J. T., M. F. Thomsen, and R. C. Anderson, A Cookbook
for determining essential transmission characteristics of
Spherical section electrostatic analyzers, Los Alamos
National Laboratory technical note LA-10147-M, 1984

CCSD1R00000300000018
DELIMITER=EMARKER;
CCSD1R00000300000036
DELIMITER=SMARKER;
TYPE=CCSD1K000002;

VOL_TIME_COVERAGE: 1978-09-14 to 1992-12-31
FILE_NAMING_CONVENTION: Pioneer 10 data files are named according to the
spacecraft (P10), time resolution, year if any,
and content:

| Filename | Content |
|-------------|---|
| PnnVxxyySUM | Summary (high resolution) data for Pioneer nn, Version xx, year 19yy |
| PnnVxxHOURL | Hourly averaged data for Pioneer nn Version xx |
| PnnTRA | Trajectory data for Pioneer nn |
| PnnATT | Attitude data for Pioneer nn |

FILE_TIME_COVERAGE: All files have full time coverage

CCSD1R00000300000018
DELIMITER=EMARKER;
CCSD1R00000300000032
DELIMITER=EOF;
TYPE=CCSD1R000003;
REFERENCE=FORMAT.SFD;
TYPE=NSSD1I00 ;
REFERENCE= .DAT;

{ end of file occurs here }

DSC # 797

72-012A-13L

CCSD3ZF0000100000001

VOLDESC_PIOPLA.SFD file - Pioneer 10/11 Plasma Analyzer Data Archive

Submission Date: 5/11/95 (PG)
Revision Date: 7/19/95 (JFC)

*****/

CCSD3VS00002MRK**001

VOL_IDENT: ? (e.g., Pioneer 10/11 Plasma Analyzer volume 0001)

VOL_CREATION_DATE: 1993-2-11
MEDIUM_DESCRIPTION: 1/2-inch, 9-track, 6250 bpi magnetic tape
TECHNICAL_CONTACT: Dr. Paul Gazis
Mail Stop 245-3
NASA Ames Research Center
Moffett Field, CA 94035

Electronic Mail: WINDEE::GAZIS or
gazis@windee.span.nasa.gov
Telephone: 415-604-5704

PREV_VOLS: none

CCSD\$MARKERMK**001

CCSD3SS00002MRK**002

DATA_SET_NAME: Pioneer 10/11 Plasma Analyzer Data Archive
DATA_SOURCE: Pioneer 10/11 Plasma Analyzer

SCIENTIFIC_CONTACT: Dr. Paul Gazis
Mail Stop 245-3
NASA Ames Research Center
Moffett Field, CA 94035

Electronic Mail: WINDEE::GAZIS
gazis@windee.span.nasa.gov
Telephone: 415-604-5704

SPACECRAFT_CHARACTERISTICS:

Pioneer 10 was launched on March 3, 1972, and encountered Jupiter in December, 1973. Since the encounter, it has been on an escape trajectory from the solar system, and at the end of 1992 it was at a distance of about 56 AU from the sun, a celestial latitude of +3 degrees, and a celestial longitude (measured eastward from the vernal equinox) of 73 degrees.

Pioneer 11 was launched a years later on April 6, 1973 and encountered Jupiter and Saturn in December 1974 and September 1979, respectively. Like Pioneer 10, Pioneer 11 is on an escape trajectory from the solar system and was at about 37 AU as of the end of 1992.

Both spacecraft are instrumented with a full suite of instruments for fields and particles, including magnetometer, plasma sensors, and four energetic particle and cosmic ray instruments. Other

instruments include an ultraviolet photometer, infrared photometer, imaging photopolarimeter, and micrometeoroid detector. The spacecraft is spin stabilized, with the spin axis oriented toward the earth.

INSTRUMENT_ATTRIBUTES:

Instrument name: Pioneer 10/11 Plasma Analyzer (PA)

Type: Quadrispheric electrostatic analyzer

PI: Aaron Barnes (the original PI was John H. Wolfe)

GENERAL INSTRUMENT DESCRIPTION

The Pioneer plasma analyzer contains two separate instruments: Detector A and Detector B. Each detector consists of an entrance aperture, followed by two charged parallel quadrispherical plates and an array of sensors -- channeltrons for Detector A and electrometers for Detector B. The instrument is described in detail in Wolfe et al. [1974] and McKibbin et al. [1977]. Some parameters of the two detectors are summarized in McKibbin et al. [1977].

Particles that pass the entrance aperture of a detector describe Keplerian orbits under the influence of the electric field between the two plates. Because the separation of the plates is finite, the analyzer accepts particles from a finite range of kinetic energies. The acceptance range also depends on the azimuth of the incoming particles.

Standard analytic expressions admit computation of the range of acceptance angle and energy [e.g., Gosling et al., 1984]. For Detector B, the range of acceptance angles turns out to be approximately 14 degrees, and the energy acceptance range is about 35% of the central energy; the acceptance is somewhat narrower for Detector A.

While the acceptance range of the Pioneer plasma analyzers is quite wide, the relevant issue is the resolution of these instruments. The resolution is distinct from, and much narrower than, the acceptance range. The ideal response of Detector B to a cold beam of plasma incident along the axis of the instrument is only non-zero over the energy range from 4% below to 5% above the central energy, which corresponds to orbits that graze the inner and outer plates.

Since the response function is known, it can be convolved with simulated plasma distribution functions to simulate the spectra that would be obtained for different plasma bulk parameters. While these tests show that Detector B cannot distinguish temperatures lower than 5000 K, there are distinct differences between the spectra for higher temperatures. In conclusion, it appears that the resolution of Detector B is adequate to distinguish between spectra with temperatures greater than 5000 K and provide reasonably reliable measurements for temperatures greater than 10,000 K.

SCIENCE OBJECTIVES

The PA measures the flow velocity, density, temperature, etc. of the solar wind plasma.

INSTRUMENT CALIBRATION

The calibration was performed in two phases. First the instrument electronics transfer function was measured at several temperatures by simulating the electrometer input current over all ranges and polarities. Second, the optics was calibrated by placing the instrument in the ARC plasma chamber and measuring instrument response for all view angles. In this phase the instrument was held in a 2-axis gimbal system and rotated while illuminated with a monoenergetic plasma beam.

INSTRUMENT MODE DESCRIPTIONS

The instrument has two commandable logic modes of operation: Maximum Flux Mode and Full Scan Mode. In the Maximum Flux Mode the instrument steps through its E/Q steps, one step per spacecraft rotation, to determine the maximum flux, and the collector (or target) number and azimuthal angle for which the maximum flux occurs for each E/Q step. In the Full Scan Mode, the instrument makes one E/Q step per spacecraft rotation and returns data from as many angular sectors as the telemetry will allow, without regard to the direction of maximum flux. Only spectra taken using Maximum Flux Mode were used for the calculation of plasma parameters.

INSTRUMENT REFERENCES

Wolfe, J. H., J. D. Mihalov, H. R. Collard, D. D. McKibbin, L. A. Frank, and D. S. Intrilligator, Pioneer 10 observations of the solar wind interaction with Jupiter., J. Geophys. Res., 79, 3489-3500, 1974.

McKibbin, D. D., J. H. Wolfe, H. R. Collard, and H. F. Savage, Plasma Analyzer for the Pioneer Jupiter missions, Sp. Sci. Instrumentation, 3, 219-228, 1977

Gosling, J. T., M. F. Thomsen, and R. C. Anderson, A Cookbook for determining essential transmission characteristics of Spherical section electrostatic analyzers, Los Alamos National Laboratory technical note LA-10147-M, 1984

DATA_SET_PARAMETERS:

DATA_SET_QUALITY:

The Pioneer 10 and 11 data production software has been tested by examining its response to a range of simulated plasma distributions. These tests suggest that the plasma parameters measured by Pioneer 10 and 11 may have the following uncertainties:

Bulk velocity: < 5 km/sec

Proton number density: 20%

Proton temperature: 20% when $T > 10,000$ K

40% when $10,000$ K $> T > 5,000$ K?

Flow angles: Unknown, but probably < 5 degrees prior to 1983

Unreliable at Pioneer 10 after 1983!

The individual points in the Summary (high resolution) data set are flagged with a 'data quality index' (BADREC) that indicates the reliability of each point. This parameter is described in the descriptions for the individual data sets.

DATA_PROCESSING_OVERVIEW:

The plasma bulk parameters (bulk velocity, proton number density, proton temperature, and flow angles) were obtained using one of three processing schemes. All of these processing schemes take into account the instrument response function (the 'instrument optics', described above) and calibration.

1) The 'Block 3 Least Squares' processing scheme. This involves least squares fits of a convected spherical Maxwellian to the solar wind spectra. Velocities from this scheme should be reliable. Densities and temperatures should be reliable at Pioneer 11, and for measurements made at Pioneer 10 prior to mid-1983 after which this processing scheme suffers from problems with sensitivity. For historical reasons, data from this scheme only includes measurements from Detector B of the plasma analyzer.

2) The 'Filtered Spectra' scheme. This is a refinement of the Block 3 Least Squares scheme that drastically improves data recovery, sensitivity, and accuracy when fluxes are low. It has been applied to all Pioneer 10 data taken after 1979, and will be extended to the rest of the Pioneer 10 and 11 missions as resources become available. Velocities and temperatures from this scheme should both be reliable. Densities should also be reliable except for three small but important anomalies described below. Data from this scheme includes measurements from both Detectors A and B.

3) The 'Total Flux' scheme. This involves direct integration of spectra in a manner analogous to, but somewhat more involved than, the Voyager 'moments' analysis. It gives better densities than the first two schemes when solar wind fluxes are low, but its velocities are only accurate to approximately 5 km/s and it cannot as yet give temperatures. Also, this scheme does not work for temperatures greater than 60,000 K. This scheme was designed for Detector B. It has recently been extended to Detector A, but as of 8-May-1995, individual measurements of density from Detector A were only accurate to a factor of two, (though the hourly averages are almost certainly better).

Only the first processing scheme was used to produce the Pioneer 11 'summary' (high resolution) data set. Data from all three processing schemes were combined to produce the Pioneer 10 summary data set. Prior to day 201 of 1981, only data from the Block 3 Least Squares scheme was used. Between day 201 of 1981 and day 10 of 1984, velocities from the Block 3 Least Squares scheme were combined with parameters from the Filtered Spectra scheme and identified via the SCID as follows:

SCID Comments

| | |
|------|---|
| P10 | Block 3 Least Squares. V only! Others set to zero |
| P10A | Filtered spectra scheme, Detector A fit |
| P10B | Filtered spectra scheme, Detector B fit |

P10b Filtered spectra scheme, Combined A and B fit

After day 10 of 1984, velocities and temperatures from the Filtered Spectra scheme were combined with velocities and densities from the Total Flux scheme and identified by SCID as follows:

| SCID | Source | Parameters |
|------|------------------------------|----------------------------|
| P10 | Block 3 Least Squares. | V only! Others set to zero |
| P10A | Filtered spectra, Detector A | V and T, N set to zero |
| P10B | Filtered spectra, Detector B | V and T, N set to zero |
| P10C | Total flux, Detector A | V and N, T set to zero |
| P10D | Total flux, Detector B | V and N, T set to zero |
| P10E | Total flux, Detector A | Vfs, Ntf, Tfs |
| P10F | Total flux, Detector B | Vfs, Ntf, Tfs |

Hourly averaged data files were created by averaging every valid parameter in each hour, regardless of the processing scheme used to derive it. Thus, there are some hours late in the Pioneer 10 mission when density, temperature, or both were not available. The different cases are identified by SCID as follows:

| SCID | Comments |
|------|---|
| P10 | Record contains values for V, N, and T |
| P10v | Record only contains values for V |
| P10n | Record only contains values for V and N |
| P10t | Record only contains values for V and T |

LIT_REFERENCES:

Wolfe, J. H., J. D. Mihalov, H. R. Collard, D. D. McKibbin, L. A. Frank, and D. S. Intrilligator, Pioneer 10 observations of the solar wind interaction with Jupiter., J. Geophys. Res., 79, 3489-3500, 1974.

McKibbin, D. D., J. H. Wolfe, H. R. Collard, and H. F. Savage, Plasma Analyzer for the Pioneer Jupiter missions, Sp. Sci. Instrumentation, 3, 219-228, 1977

Gosling, J. T., M. F. Thomsen, and R. C. Anderson, A Cookbook for determining essential transmission characteristics of Spherical section electrostatic analyzers, Los Alamos National Laboratory technical note LA-10147-M, 1984

VOL_TIME_COVERAGE: 1972-04-18 ro 1994-12-05 (Pioneer 10)
1973-04-21 to 1992-05-30 (Pioneer 11)

FILE_NAMING_CONVENTION: Pioneer 10/11 data files are named according to the spacecraft (mm = 10 or 11), data set version (e.g., V23 for Version 2.3) time resolution (HOUR or SUM), and content:

| Filename | Content |
|----------|---------|
|----------|---------|

PmmV23SUM.DAT Summary (high resol.) data - Version 2.3
PmmV23HOUR.DAT Hourly averaged data - Version 2.3
PmmATT.DAT Spacecraft attitude data
PmmTRA.DAT Spacecraft trajectory data

All *.DAT files are written in VAX binary format.

Version 2.3 includes data reprocessed by NASA Ames from April 1972 through the most recent data. Earlier data set versions should be discarded.

FILE_TIME_COVERAGE: All files have full time coverage

CCSD\$MARKERMRK**002

CCSD3RF0000300000001

REFERENCETYPE= \$VMS;

/* All referenced files were created as VMS files */

LABEL=ATTACHED;

REFERENCE=FORMATSM.SFD;

/* Summary data file */

REFERENCE=FORMATHR.SFD;

/* Hourly average data file */

REFERENCE=FORMATAT.SFD;

/* Attitude data file */

REFERENCE=FORMATTR.SFD;

/* Trajectory data file */

REFERENCE=PIOPLASM.SFD;

/* FORTRAN source code to read summary file */

REFERENCE=PIOPLAHR.SFD;

/* FORTRAN source code to read hourly file */

REFERENCE=PIOPLAAT.SFD;

/* FORTRAN source code to read attitude file */

REFERENCE=PIOPLATR.SFD;

/* FORTRAN source code to read trajectory file */

LABEL=NSSD3IF0023300000001;

REFERENCE= PmmV23SUM.DAT;

/* Summary data file */

LABEL=NSSD3IF0023400000001;

REFERENCE= PmmV23HOUR.DAT;

/* Hourly average data file */

LABEL=NSSD3IF0023500000001;

REFERENCE= PmmATT.DAT;

/* Attitude data file */

LABEL=NSSD3IF0023600000001;

REFERENCE= PmmTRA.DAT;

/* Trajectory data file */

/* end of VOLDESC_PIOPLA.SFD file occurs here */

DSC# 797
13-019A-13K

Directory ANON_DIR: [COHO.P11PLA.ARCHIVE]

COHO_P11PLA_ARCHIVE.VMS;1 File ID: (5953,135,0)
Size: 0/0 Owner: COHO_ANON
Created: 28-MAY-1996 11:51:50.76
Revised: 28-MAY-1996 11:51:50.76 (0)
Expires: <None specified>
Backup: <No backup recorded>
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 0, Extend: 0, Global buffer count: 0, No version
Record format: Variable length
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

FORMATAT.SFD;2 File ID: (6375,111,0)
Size: 11/17 Owner: COHO_ANON
Created: 19-JUL-1995 13:32:52.79
Revised: 19-JUL-1995 13:41:39.78 (2)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 17, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 77 bytes
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

FORMATHR.SFD;2 File ID: (6376,115,0)
Size: 28/34 Owner: COHO_ANON
Created: 19-JUL-1995 13:32:44.80
Revised: 19-JUL-1995 13:41:39.96 (2)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 34, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 78 bytes
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

FORMATSM.SFD;2 File ID: (6390,113,0)
Size: 27/34 Owner: COHO_ANON
Created: 19-JUL-1995 13:32:34.93
Revised: 19-JUL-1995 13:41:40.14 (2)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 34, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 79 bytes
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

FORMATTR.SFD;2 File ID: (28343,12,0)
Size: 12/17 Owner: COHO_ANON
Created: 19-JUL-1995 13:33:00.40
Revised: 19-JUL-1995 13:41:40.30 (2)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 17, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 79 bytes
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

P11ATT.DAT;1 File ID: (3197,23,0)
Size: 80/85 Owner: COHO_ANON
Created: 11-MAY-1995 13:08:44.10
Revised: 29-JUN-1995 16:17:14.32 (4)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 85, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 26 bytes
Record attributes: None
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

P11TRA.DAT;1 File ID: (6182,13,0)

Size: 1611/1615 Owner: COHO_ANON
Created: 11-MAY-1995 13:18:32.71
Revised: 30-JUN-1995 16:49:36.28 (5)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 1615, Extend: 0, Global buffer count: 0, No vers
Record format: Variable length, maximum 70 bytes
Record attributes: None
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

P11V23HOUR.DAT;1 File ID: (6180,15,0)
Size: 10618/10625 Owner: COHO_ANON
Created: 11-MAY-1995 13:08:46.52
Revised: 29-JUN-1995 16:17:14.53 (5)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 10625, Extend: 0, Global buffer count: 0, No ver
Record format: Variable length, maximum 122 bytes
Record attributes: None
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

P11V23SUM.DAT;1 File ID: (6181,20,0)
Size: 31982/31994 Owner: COHO_ANON
Created: 11-MAY-1995 13:12:34.75
Revised: 29-JUN-1995 16:17:23.40 (5)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 31994, Extend: 0, Global buffer count: 0, No ver
Record format: Variable length, maximum 110 bytes
Record attributes: None
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

PIOPLAAT.SFD;1 File ID: (6367,100,0)
Size: 8/17 Owner: COHO_ANON
Created: 5-JUL-1995 13:44:49.11

Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 17, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 80 bytes
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

PIOPLASM.EXE;2 File ID: (5946,135,0)
Size: 6/17 Owner: COHO_ANON
Created: 7-MAY-1996 17:04:15.61
Revised: 28-MAY-1996 11:47:59.54 (2)
Expires: <None specified>
Backup: <No backup recorded>
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 17, Extend: 0, Global buffer count: 0, No versio
Record format: Fixed length 512 byte records
Record attributes: None
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

PIOPLASM.FOR;1 File ID: (5922,142,0)
Size: 5/17 Owner: COHO_ANON
Created: 7-MAY-1996 17:03:55.07
Revised: 28-MAY-1996 11:47:52.31 (2)
Expires: <None specified>
Backup: <No backup recorded>
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 17, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 80 bytes
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

PIOPLASM.SFD;2 File ID: (6369,126,0)
Size: 7/17 Owner: COHO_ANON
Created: 5-JUL-1995 14:04:00.19
Revised: 5-JUL-1995 14:20:17.79 (3)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>

Revised: 5-JUL-1995 14:20:17.45 (5)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 17, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 82 bytes
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

PIOPLAHR.EXE;2 File ID: (5925,144,0)
Size: 6/17 Owner: COHO_ANON
Created: 4-DEC-1995 11:49:23.43
Revised: 28-MAY-1996 11:47:59.26 (2)
Expires: <None specified>
Backup: <No backup recorded>
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 17, Extend: 0, Global buffer count: 0, No versio
Record format: Fixed length 512 byte records
Record attributes: None
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

PIOPLAHR.FOR;1 File ID: (5810,158,0)
Size: 4/17 Owner: COHO_ANON
Created: 4-DEC-1995 11:49:08.25
Revised: 28-MAY-1996 11:47:52.12 (2)
Expires: <None specified>
Backup: <No backup recorded>
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 17, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 80 bytes
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

PIOPLAHR.SFD;1 File ID: (6368,120,0)
Size: 6/17 Owner: COHO_ANON
Created: 5-JUL-1995 13:40:59.37
Revised: 5-JUL-1995 14:20:17.64 (5)
Expires: <None specified>

Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 17, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 80 bytes
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

PIOPLATR.SFD;1 File ID: (6370,113,0)
Size: 8/17 Owner: COHO_ANON
Created: 5-JUL-1995 13:48:48.75
Revised: 5-JUL-1995 14:20:17.98 (5)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 17, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 84 bytes
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

VOLDESC_PIOPLA.SFD;5 File ID: (6372,132,0)
Size: 31/34 Owner: COHO_ANON
Created: 19-JUL-1995 13:40:48.32
Revised: 19-JUL-1995 13:41:12.50 (2)
Expires: <None specified>
Backup: 21-MAY-1996 15:51:23.36
Effective: <None specified>
Recording: <None specified>
File organization: Sequential
Shelved state: Online
File attributes: Allocation: 34, Extend: 0, Global buffer count: 0, No versio
Record format: Variable length, maximum 81 bytes
Record attributes: Carriage return carriage control
RMS attributes: None
Journaling enabled: None
File protection: System:RWED, Owner:RWED, Group:RE, World:RE
Access Cntrl List: (IDENTIFIER=[ACQUISIT,JCOOPER],OPTIONS=NOPROPAGATE,ACCESS=RE
(IDENTIFIER=COHO_ANON,ACCESS=READ+WRITE+EXECUTE+DELETE+CONTR

Total of 18 files, 44450/44591 blocks.

HEX DUMP OF \$1#MUA1:P10V31SUM.DAT

D-108635

72-010A-13L

RECORD 1 110 BYTES

| | | | | | | | | | | |
|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| (0) | 03005031 | 30208C48 | 80D60546 | 00702B4E | E6AF5644 | A3ACD1C0 | B0EBA441 | DC9D0000 | 00000000 | 00000000 |
| (40) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00001B4E | A3AFA541 | 2285A144 | 9E4CDAC0 |
| (80) | 0E8BC741 | 95A4DB45 | FA69843F | D0234740 | D88E4844 | 74612D40 | 35F2924E | 0098 | | |

HEX DUMP OF \$1#MUA1:P10V31SUM.DAT

RECORD 2 110 BYTES

| | | | | | | | | | | |
|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| (0) | 03005031 | 30208C48 | 80D6A946 | 00F02B4E | 9EBA5644 | 50B5D2C0 | 78045E42 | E0600000 | 00000000 | 00000000 |
| (40) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00002748 | 0CFFB941 | B8579D44 | 229D98C1 |
| (80) | 3ED0A841 | 468D0346 | 3657A83F | 90EF4E40 | F46A4844 | B6CD0F40 | 626A9248 | 0098 | | |

RECORD 3 110 BYTES

| | | | | | | | | | | |
|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| (0) | 03005031 | 30208C48 | 80D60C47 | 00002B4E | 0CC65644 | 90BED2C0 | E51E2D41 | E0870000 | 00000000 | 00000000 |
| (40) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 0000F847 | 9CBCA241 | 3C1CA344 | 22484541 |
| (80) | BE64A540 | AD0F3845 | 507F1E3F | 7092F63F | 405C4844 | 53361440 | 18DE9248 | 0098 | | |

HEX DUMP OF \$1#MUA1:P10V31SUM.DAT

RECORD 4 110 BYTES

| | | | | | | | | | | |
|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| (0) | 03005031 | 30208C48 | 80D64447 | 00082B4E | D7D15644 | 1CC8D2C0 | 293A1741 | 54700000 | 00000000 | 00000000 |
| (40) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00001748 | 7AC1A841 | 0CEEAE44 | C43FF540 |
| (80) | 8888D73F | 49B1C045 | A274833F | 822F5140 | D7184844 | 2A3E0340 | CB889248 | 0098 | | |

HEX DUMP OF \$1#MUA1:P10V31SUM.DAT

RECORD 5 110 BYTES

| | | | | | | | | | | |
|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| (0) | 03005031 | 30208C48 | 80D67C47 | 00042B4E | 50DD5644 | 65D1D2C0 | AE547740 | 5E8F0000 | 00000000 | 00000000 |
| (40) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000B48 | 508D9E41 | 8CF5A344 | AE30FD40 |
| (80) | EB141AC1 | A5CC8545 | D2BE183F | 0030CB3F | EA134844 | DD449C3F | 144A9248 | 0098 | | |

RECORD 6 110 BYTES

| | | | | | | | | | | |
|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| (0) | 03005031 | 30208C48 | 80D69B47 | 00222B4E | 6AE95644 | 30DBD2C0 | A7702441 | CCBD0000 | 00000000 | 00000000 |
| (40) | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00000000 | 00004A48 | 14F4BC41 | 6C779E44 | E38FB73F |
| (80) | 60DABFBF | B3321146 | 3792903F | 4E6F9940 | 28B24844 | 79800541 | D8929248 | 0098 | | |

HEX DUMP OF \$1#MUA1:P10V31SUM.DAT

RECORD 7 110 BYTES

```
( 0) 03005031 30208C48 80D62647 008A2B4E CCF45644 67E4D2C0 FB8AC142 80990000 00000000 00000000
( 40) 00000000 00000000 00000000 00000000 00000000 00000000 00003348 525AC041 2B369A44 AC340040
( 80) BAD24A40 52152546 50A4B63F FC414C40 CB5B4844 788AA240 E0EA9248 0098
```

HEX DUMP OF #1#MUA1:P10V31SUM.DAT

RECORD 8 110 BYTES

```
( 0) 03005031 30208C48 80D6E147 00A22C4E B4065644 E5F2D2C0 5DB4893F F0010000 00000000 00000000
( 40) 00000000 00000000 00000000 00000000 00000000 00000000 00001148 0701AE41 0EBB9B44 84929B40
( 80) 59271FC1 1AE07645 A8733A3F 095B1640 D88B4844 5542E33F B0569248 0098
```

HEX DUMP OF #1#MUA1:P10V31SUM.DAT

RECORD 9 110 BYTES

```
( 0) 03005031 30208C48 80D6F047 00B42C4E 49105644 A7FAD2C0 85CA9942 E84E0000 00000000 00000000
( 40) 00000000 00000000 00000000 00000000 00000000 00000000 00008548 609EF341 4A2E9A44 2BCF45C0
( 80) 328E79C1 F05A9B46 681C1040 64469940 70254844 BF765040 8FB79248 0098
```

HEX DUMP OF #1#MUA1:P10V31SUM.DAT

RECORD 50218 110 BYTES

```
( 0) 03005031 30209848 80EDA848 802E1850 91C05B43 61984741 8296283F B4990000 00000000 00000000
( 40) 00000000 00000000 00000000 00000000 00000000 00000000 00009746 68F4BA3D 9431BF44 C360C1BF
( 80) F955CD3F 6D3B6C42 3472933A 1898F53D 9003953C 5891E63C 08E39A48 80AF
```

PIONEER 11
SOLAR WIND PLASMA ARCHIVE

73-019A-13K SPHE-00310

THIS DATASET CONSISTS OF 1 MAGNETIC TAPE. THE TAPE WAS CREATED ON
A VAX COMPUTER, AND IS 9-TRACK, 6250, BPI, WITH THE DATA FILES WRITTEN
IN BINARY. ALL OTHER TXT FILES ARE WRITTEN IN ASCII. THE TAPE HAS A
LABEL NAME OF "P11SWP".

THE DATA WAS DOWNLOADED FROM THE ANON_DIR: [COHO.P11PLA.ARCHIVE]

ITS D AND C NUMBER ALONG WITH ITS TIMESPAN IS LISTED BELOW.

| D# | C# | FILES | TIMESPAN |
|------------------|------------------|-----------|----------------------------|
| D- <u>108705</u> | C- <u>032800</u> | <u>18</u> | 04/ <u>21/73</u> -05/30/92 |

Directory D-108705

| | | | |
|---------------------------|-----------------|----------------------|----------------|
| COHO_P11PLA_ARCHIVE.VMS;1 | | FORMATAT.SFD;2 | FORMATHR.SFD;2 |
| FORMATSM.SFD;2 | FORMATTR.SFD;2 | P11ATT.DAT;1 | P11TRA.DAT;1 |
| P11V23HOUR.DAT;1 | P11V23SUM.DAT;1 | PIOPLAAT.SFD;1 | PIOPLAHR.EXE;2 |
| PIOPLAHR.FOR;1 | PIOPLAHR.SFD;1 | PIOPLASM.EXE;2 | PIOPLASM.FOR;1 |
| PIOPLASM.SFD;2 | PIOPLATR.SFD;1 | VOLDESC_PIOPLA.SFD;5 | |

Total of 18 files.