

B10023

NSSDC INFORMATION PACKET

Experiment and Data Set Sections

Explorer 18  
Fluxgate Magnetometer Experiment  
(63-046A-02)

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Explorer 18  
Fluxgate Magnetometer  
(63-046A-02)

General Experiment Information

Original Experiment Institution    NASA-GSFC  
Date Last Useful Data Recorded    05/30/64

Experiment Brief Description

Each of two uniaxial fluxgate magnetometers, having dynamic ranges of  $\pm 40$  gammas, sampled the magnetic field 30 times within each of six 4.8-sec intervals each 5.46 min. Detector sensitivities were  $\pm 0.25$  gamma, and digitization uncertainty was  $\pm 0.40$  gamma. A rubidium vapor magnetometer was used in calibrating the fluxgates, but it did not produce an independently useful data set. The fluxgates functioned normally throughout the useful life of the satellite; last useful data were acquired on May 30, 1964. See Ness et al., J. Geophys. Res., 69, 3531-3569, 1964.

Personnel

Principal Investigator/Dr. Norman F. Ness/NASA-GSFC/Code 616/  
Greenbelt, Md.

Experiment Objectives

The fluxgate magnetometers were intended to delineate precisely the vector characteristics of the interplanetary magnetic field and of the outer regions of the magnetospheric magnetic field.

Experiment Full Description

One fluxgate magnetometer (1.9 cm in diameter, 7.6 cm long) was mounted on each of two booms extending 1.75 m from the main spacecraft body. A rubidium vapor magnetometer was mounted on a 1.73-m boom but did not provide data as useful as those of the fluxgates. The vapor magnetometer is discussed in Ness, Scearce, and Seek, J. Geophys. Res., 69, 3531-3569, 1964, and will not be discussed further here. (NSSDC does not expect to receive this rubidium vapor magnetometer data).

The sensor of each fluxgate magnetometer was a saturable magnetic core which was driven at 10 kHz from positive to negative saturation. Any second harmonic signal generated was due to the presence either of an ambient field component along the axis of the element or of permanent

### Experiment Full Description (continued)

magnetization of the core material. The voltage output represented the discriminated second harmonic output which was calibrated to yield the field component parallel to the sensor axis, while the phase indicated the direction, parallel or anti-parallel.

Each magnetometer was calibrated in flight through a combined use of the rubidium vapor magnetometer data for 0.25 sec each time it was turned on.

The dynamic range of the fluxgate was  $\pm 40$  gammas, with a sensitivity of  $\pm 0.25$  gamma. Subsequent digitization by the use of "comb filters" on the ground led to uncertainties of  $\pm 0.4$  gamma. Analysis of the data indicates that, to within the uncertainties just mentioned, the fields measured are indeed the ambient magnetic fields and are not contaminated by the spacecraft magnetic field.

The telemetry data format on IMP 1 is based on a complete sampling cycle of 5.46-min (327.7 sec) duration. The fluxgates were alternately sampled for 4.8 sec (during which interval 30 discrete field measurements were made) at 20.5-sec intervals until 12 measurements had been obtained. Then the rubidium vapor magnetometer was sampled continuously for 81.9 sec before the fluxgates were sampled again.

More detailed discussions of the instrumentation, spacecraft structure and magnetic cleanliness, data sampling, and the analytic means whereby vector information is gained from uniaxial measurements is given in Ness, Searce, and Seek, J. Geophys. Res., 69, 3531-3569, 1964.

### Experiment Performance

The two fluxgate magnetometers performed normally during the useful lifetime of the spacecraft; final acquisition of a useful quantity of data occurred on May 30, 1964. The performance of the rubidium vapor magnetometer was such that no independently useful information was obtained.

Explorer 18  
5.46-Minute Averages of Vector Magnetic  
Field Data on Tape  
(65-046A-02A)

General Data Set Information

Period Covered by Data Set	11/27/63 to 05/30/64
Data Set Availability/Status	Data at NSSDC Ready for Distribution
Data Set Form	Magnetic Tape
Size of Data Set at NSSDC	2 Tapes

Data Set Brief Description

This data set consists of two 7-track, 556-bpi, binary magnetic tapes written on an IBM 7094 computer. The time-ordered, analyzed fluxgate magnetometer data are as received from the experimenter, i.e., 5.46-min averaged vector magnetic field data in both Cartesian and spherical polar representations in a solar ecliptic coordinate system. Time of coverage extends from November 27, 1963, through May 30, 1964, with 90% coverage. Some ephemeris information is contained on the tapes.

Data Set Objectives

The purpose of this data set is to present 5.46-min average values of the magnetic field observed in the outer regions of the magnetosphere, including the earth's magnetic tail, and in interplanetary space.

Data Set Full Description

The data set consists of two 7-track, 556-bpi, IBM 7094 binary magnetic tapes. Each physical record consists of a code word followed by 35 data words. The data words include: time information; Cartesian and spherical components of the averaged vector magnetic field in solar ecliptic coordinates; variances of the averaged Cartesian components; spacecraft position in geodetic and geomagnetic coordinates; geomagnetic longitude and latitude of the subsolar point; the angle between the spin axis and the satellite-sun vector; and the number of good 20.5-sec data points (maximum of 12) from which the averaged field vector was constructed.

Data Set Quantity and Quality

The time period covered by these two tapes extends from November 27, 1963, to May 30, 1964. There is at least 90% coverage. However, because the fluxgates saturated at field values greater than 40 gammas, the data given for radial distances less than about 8 earth radii are meaningless. (The spacecraft spends 95% of its orbital period beyond 8 earth radii).

These tapes have been used at NSSDC in generating further data sets, and they have been found to contain data in the specified format and to be free of tape errors.

Accession UnitsAccession UnitsTime Covered

D00079  
D00083

11/27/63 - 02/28/64  
02/24/64 - 05/30/64

Explorer 18  
5.46-Minute Vector Magnetic Field  
Data Merged with  
Ephemeris Data on Tape  
(63-046A-02B)

General Data Set Information

Period Covered by Data Set	1/27/63 to 05/30/64
Data Set Availability/Status	Data at NSSDC Ready for Distribution
Data Set Form	Magnetic Tape
Size of Data Set at NSSDC	1 Tape

Data Set Brief Description

This data set consists of one 7-track, 800-bpi, IBM 7094, binary magnetic tape. The fluxgate data contained in data set 63-046A-02A are merged with ephemeris data given in solar ecliptic and solar magnetospheric coordinates. This tape was generated at NSSDC.

Data Set Objective

The purpose of generating this data set is to present an ephemeris-merged set of fluxgate magnetometer data.

Data Set Full Description

This data set consists of a merging of the data contained in data set 63-046A-02A with ephemeris information. The data set is on one reel of 7-track, 800-bpi, IBM 7094, binary tape. Each physical record consists of a Fortran control word followed by seven logical 33-word records. The tape was generated by NSSDC personnel.

The ephemeris information was taken from tapes generated by the experimenter and provided by him to NSSDC. In addition to certain ephemeris information (geodetic and geomagnetic latitude and longitude, radial distance) contained on the data tapes constituting 63-046A-02A, the ephemeris tapes supplied by the experimenter also contained spacecraft position in solar ecliptic and solar magnetospheric coordinate systems as well as a spherical representation of an internal source model magnetic field in solar ecliptic coordinates. Ephemeris points are given for each 5 min of the spacecraft period. Time coverage of these tapes extends between December 21, 1963, and December 30, 1964.

Data Set Full Description (continued)

Data from set 63-046A-02A (one point every 5.46 min) is merged with ephemeris data (one point every 5.0 min) for those cases when the times of the data and ephemeris points lie within 2.5 min of each other (i.e., 90% of the time); in these cases, data appearing on both input tapes (e.g., geomagnetic and geodetic latitude and longitude, radial distance) were taken from the ephemeris tapes. No time interpolation was performed.

Those data points of data set 63-046A-02A that did not lie within 2.5 min of a point on the ephemeris tapes were written on the merged tapes with zeros in place of the ephemeris words; common quantities such as radial distance are taken from data set -02A for inclusion in data set -02B. Such points arise due to differences in the start times of the tapes or due to infrequent time gaps in the ephemeris tapes.

Data Set Quantity and Quality

This data set (-02B) has the same time coverage as data set -02A. However, due to the difference in start times of the -02A tapes and of the ephemeris tapes (11/27/63 and 12/21/63, respectively) and due to infrequent time gaps on the ephemeris tapes, only about 90% of the data points from -02A are associated with ephemeris points in this data set.

Note also the "Quantity and Quality" section of the 63-046A-02A entry.

This tape was checked for parity errors at the time of its generation and was found to be free of such errors.

Accession UnitAccession Unit

D02891

Time Covered

11/27/63 - 05/30/64

Explorer 18  
5.46-Minute Averages of Vector Magnetic  
Field Data on Reformatted Tape  
(63-046A-02C)

General Data Set Information

Period Covered by Data Set	11/27/63 to 05/30/64
Data Set Availability/Status	Data at NSSDC Ready for Distribution
Data Set Form	Magnetic Tape
Size of Data Set at NSSDC	1 Tape

Data Set Brief Description

This data set consists of a single 7-track, 800-bpi, IBM 7094 binary tape on which the data of set 63-046A-02A have been blocked 10 logical records per physical record. This tape was generated at NSSDC and was used in the generation of the tape constituting data set 63-046A-02B.

Accession Unit

Accession Unit

D02901

Time Covered

11/27/63 - 05/30/64

Explorer 18  
Hourly Averaged Values of Interplanetary  
Magnetic Field Data on Tape  
(63-046A-02D)

General Data Set Information

Period Covered by Data Set	11/27/63 to 02/15/64
Data Set Availability/Status	Data at NSSDC Ready for Distribution
Data Set Form	Magnetic Tape
Size of Data Set at NSSDC	1 Tape

Data Set Brief Description

This data set consists of a single 9-track, 800-bpi, BCD tape. The analyzed data are as received from the experimenter: hourly averaged data taken while the spacecraft was in interplanetary space. Data presented are from the time interval November 27, 1963, to February 15, 1964, with at least 80% coverage.

Data Set Objective

This data set was generated to facilitate the study of the time-averaged interplanetary magnetic field and the long time scale (greater than an hour) variations of that field.

Data Set Full Description

This data set consists of a single reel of 9-track, 800-bpi, BCD tape supplied by the experimenter. Data words include orbit and time information, spacecraft radial distance and position in solar ecliptic coordinates, Cartesian and spherical components of the magnetic field in solar ecliptic coordinates, and the standard deviations of the Cartesian components. The data are chronologically ordered.

NSSDC has generated a 7-track, 800-bpi, BCD tape containing the same information as that on the original 9-track tape.

Data Set Quantity and Quality

This data set consists of a single tape covering the period November 27, 1963, to February 15, 1964, with at least 80% coverage. No errors were detected in the original tape in producing the 7-track tape.

Accession Unit

Accession Unit

Time Covered

(9-track)    (7-track)

D02902    C02096

11/27/63 - 02/15/64

Explorer 18  
Hourly Averaged Values of Interplanetary  
Magnetic Field Data on Microfilm  
(63-046A-02E)

General Data Set Information

Period Covered by Data Set	11/27/63 to 02/15/64
Data Set Availability/Status	Data at NSSDC Ready for Distribution
Data Set Form	Microfilm
Size of Data Set at NSSDC	1 Reel

Data Set Brief Description

This data set consists of one reel of 35-mm microfilm on which a listing of the contents of data set 63-046A-02D appears. This reel also contains three other data sets of hourly averaged field values.

Accession Unit

<u>Accession Unit</u>	<u>Time Covered</u>
M02901	11/27/63 - 02/15/64

Explorer 18  
Hourly Averaged Values of Magnetospheric  
Magnetic Field Data on Tape  
(63-046A-02F)

General Data Set Information

Period Covered by Data Set	02/28/64 to 05/26/64
Data Set Availability/Status	Data at NSSDC Ready for Distribution
Data Set Form	Magnetic Tape
Size of Data Set at NSSDC	1 Tape

Data Set Brief Description

This data set consists of one 9-track, 800-bpi, BCD tape provided by the experimenter. Hourly averaged field data, taken while the spacecraft was within the magnetosphere, are presented. Time coverage extends from February 28, 1964, through May 26, 1964.

Data Set Objective

This data set was generated to facilitate the study of the time averaged distant geomagnetic field, particularly the geomagnetic tail field, and the long time scale (greater than an hour) variations of that field.

Data Set Full Description

This data set consists of a single reel of 9-track, 800-bpi, BCD tape supplied by the experimenter. Data words include orbit and time information, spacecraft radial components of the magnetic field in solar magnetospheric coordinates, and the standard deviations of the Cartesian components. The data are chronologically ordered.

NSSDC personnel have generated a 7-track, 800-bpi, BCD tape containing the same information as that on the original 9-track tape.

Data Set Quantity and Quality

This data set consists of a single tape covering the period February 28, 1964, to May 26, 1964, during which the spacecraft spent most of its time in the geomagnetic tail. There is between 50% and 75% coverage. No errors were detected in the original tape in producing the 7-track tape.

Accession Units

Accession Units

Time Covered

(9 track)    (7 track)

D02903    C02097

02/28/64 - 05/26/64

Explorer 18  
Hourly Averaged Values of Magnetospheric  
Magnetic Field Data on Microfilm  
(63-046A-02G)

General Data Set Information

Period Covered by Data Set	02/28/64 to 05/26/64
Data Set Availability/Status	Data at NSSDC Ready for Distribution
Data Set Form	Microfilm
Size of Data Set at NSSDC	One reel of 35-mm microfilm

Data Set Brief Description

This data set consists of one reel of 35-mm microfilm on which a listing of the contents of data set 63-046A-02F appears. The reel also contains three other data sets of hourly averaged field values.

Accession Unit

Accession Unit

M02901

Time Covered

02/28/64 - 05/26/64

7 Track, 556 BPI, IBM/7094 Binary tapes

There is one file per tape. Each physical record contains 36 words (216 characters). The first word of each record is a control word which shows that there are 35 data words to follow. Each data word is a IBM/7094 floating point word unless otherwise indicated in the description given below.

<u>DATA WORD</u>	<u>DESCRIPTION</u>
1	Data Month ID (integer) Jan.=1,...Dec.=12
2	Data Day Count ID (integer) 1,2,...31
3	Station Number (integer) NITU*
4	Tape Number (integer)
5	Year (integer) 19XX; XX given on tape
6	Data Day of year (integer) 1,2,...365
7	Data Hour (integer) 0,1,...23
8	Data Minutes 0.000...59.999
9	Sequence Number (integer in floating point format) NITU*
10	Spin Angle Average+
11	Flux Angle Average+
12	Field Payload X Component, in gammas
13	Field Payload Y Component, in gammas
14	Field Payload Z Component, in gammas
15	Field Solar Ecliptic X Component, in gammas
16	Field Solar Ecliptic Y Component, in gammas
17	Field Solar Ecliptic Z Component, in gammas
18	Field Payload X Component Variance, in gammas
19	Field Payload Y Component Variance, in gammas
20	Field Payload Z Component Variance, in gammas
21	Magnitude of Field, in gammas
22	Angle between Field and Ecliptic Plane, in degrees**
23	Angle between Projection of Field onto Ecliptic Plane and Earth-Sun Axis, in degrees***
24	Field Solar Ecliptic X Component Variance, in gammas
25	Field Solar Ecliptic Y Component Variance, in gammas
26	Field Solar Ecliptic Z Component Variance, in gammas
27	Number of Good Vector Field Measurements used in generating 5.46 minute averaged vector field
28	Spacecraft Geodetic Latitude, in degrees
29	Spacecraft Geodetic Longitude, in degrees
30	Spacecraft Geomagnetic Latitude, in degrees
31	Spacecraft Geomagnetic Longitude, in degrees
32	Radial Distance of Spacecraft in earth radii
33	Geomagnetic Longitude of Sub-Solar Point, in degrees
34	Geomagnetic Latitude of Sub-Solar Point, in degrees
35	Angle between Spin Axis and Satellite-Sun Vector, in degrees

\* NITU - Not important to User

\*\* This angle is measured from the ecliptic plane, positive north

\*\*\* This angle is 0 if ecliptic-plane field component is towards sun, 90° if towards dusk meridian.

+ The significance of these variables is indeterminate and is presumably minor.

## FORMAT

63-046A-02B

EXPLORER 18, MAGNETOMETER

7 Track, 800 BPI, IBM/7094 Binary Tape

There is one file per tape. Each physical record of 232 words has an initial FORTRAN control word and seven logical 33 word records. The words are described below and are IBM/7094 floating point words unless otherwise indicated.

There is a record of sevens at the end of the tape, with a FORTRAN control word and 231 words of sevens /6H777777/.

The formats vary according to the presence or absence of matching ephemeris data. In the following list MAG denotes data taken from the magnetometer data tapes, while EPH denotes data taken from the ephemeris tapes. SAME means the entry for no matching ephemeris is the same as that for matching ephemeris. One can use the first word of each logical record as a test. If the word is equal to 999999 there was no matching ephemeris for this time. If not equal to 999999 there is matching ephemeris data. The two record formats follow:

<u>DATA WORD</u>	<u>MATCHING EPHEMERIS</u>	<u>NO MATCHING EPHEMERIS</u>
1	Time difference between magnetometer and ephemeris data	999999.
2	Data year - integer (MAG)	SAME
3	Data day count - integer (MAG)	SAME
4	Data hour - integer (MAG)	SAME
5	Data minutes (MAG)	SAME
6*	Sequence number - not important to user (MAG)*	SAME
7	Spacecraft geodetic latitude in degrees (EPH)	SAME (MAG)
8	Spacecraft geodetic longitude in degrees (EPH)	SAME (MAG)
9	Spacecraft geomagnetic latitude in degrees (EPH)	SAME (MAG)
10	Spacecraft geomagnetic longitude in degrees (EPH)	SAME (MAG)
11	Spacecraft radial distance in earth radii (EPH)	SAME (MAG)
12	Geomagnetic latitude of sub-solar point (EPH)	SAME (MAG)
13	Geomagnetic longitude of sub-solar point (EPH)	SAME (MAG)
14	Angle in degrees between probe spin axis and probe sun vector (EPH)	000000.

<u>DATA WORD</u>	<u>MATCHING EPHEMERIS</u>	<u>NO MATCHING EPHEMERIS</u>
15	Field solar ecliptic X component (MAG) in $\gamma$ 's	SAME
16	Field solar ecliptic Y component (MAG) in $\gamma$ 's	SAME
17	Field solar ecliptic Z component (MAG) in $\gamma$ 's	SAME
18	Spacecraft X position in solar ecliptic coordinates in earth radii (EPH)	000000.
19	Spacecraft Y position in solar ecliptic coordinates in earth radii (EPH)	000000.
20	Spacecraft Z position in solar ecliptic coordinates in earth radii (EPH)	000000.
21	Field magnitude in gammas (MAG)	SAME
22	Angle between field vector and ecliptic plane, in degrees (MAG)**	SAME
23	Angle between projection of field vector onto ecliptic plane and earth sun axis, in degrees (MAG)***	SAME
24	Field solar ecliptic X component variance in gammas (MAG)	SAME
25	Field solar ecliptic Y component variance in gammas (MAG)	SAME
26	Field solar ecliptic Z component variance in gammas (MAG)	SAME
27	Model magnetic field magnitude in gammas (EPH)	000000.
28	Angle between projection of model field vector onto ecliptic plane and earth-sun axis, in degrees (EPH)***	000000.
29	Angle between model field vector and ecliptic plane in degrees (EPH)**	000000.
30	Spacecraft X position in solar magnetospheric coordinates in earth radii (EPH)	000000.
31	Spacecraft Y position in solar magnetospheric coordinates in earth radii (EPH)	000000.
32	Spacecraft Z position in solar magnetospheric coordinates in earth radii (EPH)	000000.
33	Number of good vector field measurements used in generating 5.46 minute averaged vector field (MAG)	SAME

\*Integer in floating point format

\*\*This angle is measured from the ecliptic plane, positive north.

\*\*\*This angle is  $0^\circ$  if ecliptic plane field component is towards sun,  $90^\circ$  if towards dusk meridian.

7 Track, 556 BPI, IBM/7094 Binary tape

This is a one file tape. Each physical record contains 10 logical records plus a control word which is the first word. Each logical record consists of 35 data words. So there are 351 words or 2106 characters per physical record. Each data word of the logical record is an IBM/7094 floating point word unless otherwise indicated in the description given below.

<u>DATA WORD</u>	<u>DESCRIPTION</u>
1	Data Month ID (integer) Jan.=1,...Dec.=12
2	Data Day Count ID (integer) 1,2,...31
3	Station number (integer) NITU*
4	Tape Number (integer)
5	Year (integer) 19XX; XX given on tape
6	Data Day of year (integer) 1,2,...365
7	Data Hour (integer) 0,1,...23
8	Data Minutes 0.000...59.999
9	Sequence Number (integer in floating point format) NITU*
10	Spin Angle Average+
11	Flux Angle Average+
12	Field Payload X Component, in gammas
13	Field Payload Y Component, in gammas
14	Field Payload Z Component, in gammas
15	Field Solar Ecliptic X Component, in gammas
16	Field Solar Ecliptic Y Component, in gammas
17	Field Solar Ecliptic Z Component, in gammas
18	Field Payload X Component Variance, in gammas
19	Field Payload Y Component Variance, in gammas
20	Field Payload Z Component Variance, in gammas
21	Magnitude of Field, in gammas
22	Angle between Field and Ecliptic Plane, in degrees**
23	Angle between Projection of Field onto Ecliptic Plane and Earth-Sun Axis, in degrees***
24	Field Solar Ecliptic X Component Variance, in gammas
25	Field Solar Ecliptic Y Component Variance, in gammas
26	Field Solar Ecliptic Z Component Variance, in gammas
27	Number of Good Vector Field Measurements used in generating 5.46 minute averaged vector field
28	Spacecraft Geodetic Latitude, in degrees
29	Spacecraft Geodetic Longitude, in degrees
30	Spacecraft Geodetic Longitude, in degrees
31	Spacecraft Geomagnetic Longitude, in degrees
32	Radial Distance of Spacecraft in earth radii
33	Geomagnetic Longitude of Sub-Solar Point, in degrees
34	Geomagnetic Latitude of Sub-Solar Point, in degrees
35	Angle between Spin Axis and Satellite-Sun Vector, in degrees

\* NITU\_ Not important to User

\*\* This angle is measured from the ecliptic plane, positive north.

\*\*\* This angle is 0 if ecliptic-plane field component is towards sun, 90° if towards dusk meridian.

+ The significance of these variables is indeterminate and is presumably minor.

FORMAT

63-046A-02D

Explorer 18, Magnetometer

9 track, 800 bpi, odd parity, IBM/360, BCD tape

Card images on tape; logical record length equals physical record length equals 79. In IBM/360 notation: RECFM = FB; LRECL = 79; BLKSIZE = 79; DEN = 2; 9 track; NO LABEL (LABEL = (,BLP).

The "duplicate" tapes are 7 track, 800 bpi, even parity, IBM/7094 BCD tapes.

The following apply to the 7 track and to the 9 track tapes.

<u>WORD</u>	<u>FORMAT</u>	<u>DESCRIPTION</u>
1	I2	Orbit number
2	F5.1	Spacecraft radial distance, in earth radii
3	F5.1	Spacecraft X position in solar ecliptic coordinates in earth radii
4	F5.1	Spacecraft Y position in solar ecliptic coordinates in earth radii
5	F5.1	Spacecraft Z position in solar ecliptic coordinates in earth radii
6	I2	Data year (65, 66, 67)
7	I3	Data day of year (1, . . . 365)
8	I2	Data hour (0, . . . 23)
9	F5.1	Field magnitude in gammas
10	F5.1	Field latitude angle in degrees ( $\pm 90^\circ$ ), where + 90° north
11	F5.1	Field longitude angle, in degrees ( $0^\circ - 360^\circ$ ), where 0° towards sun, 90° towards dusk meridian
12	F5.1	Field solar ecliptic X component, in gammas
13	F5.1	Field solar ecliptic Y component, in gammas
14	F5.1	Field solar ecliptic Z component, in gammas
15	F5.1	Field solar ecliptic X component standard deviation in gammas
16	F5.1	Field solar ecliptic Y component standard deviation in gammas
17	F5.1	Field solar ecliptic Z component standard deviation in gammas

FORMAT

63-046A-02F

Explorer 18, Magnetometer

9 Track BPI, IBM/360 BCD

Card images on tape; logical record length equals physical record length equals 79. In IBM/360 notation: RECFM = FB; LRECL = 79; BLKSIZE = 79; DEN = 2; 9 track; NO LABEL, LABEL = (, BLP).

The "duplicate" (C) tape is 7 track, 800 BPI, Even Parity, IBM/7094 tape.

The following applies to both 7 and 9 track tapes.

<u>WORD</u>	<u>FORMAT</u>	<u>DESCRIPTION</u>
1	I2	Orbit number
2	F5.1	Spacecraft radial distance, in earth radii
3	F5.1	Spacecraft X position in solar magnetospheric coordinates, in earth radii
4	F5.1	Spacecraft Y position in solar magnetospheric coordinates, in earth radii
5	F5.1	Spacecraft Z position in solar magnetospheric coordinates, in earth radii
6	I2	Data year (65,66,67)
7	I3	Data day of year (1, . . . 365)
8	I2	Data hour (0, . . . 23)
9	F5.1	Field magnitude in gammas
10	F5.1	Field latitude angle in degrees ( $\pm 90^\circ$ ), where $+ 90^\circ$ north
11	F5.1	Field longitude angle in degrees ( $0^\circ - 360^\circ$ ), where $0^\circ$ towards sun, $90^\circ$ towards dusk
12	F5.1	Field solar magnetospheric X component, in gammas
13	F5.1	Field solar magnetospheric Y component, in gammas
14	F5.1	Field solar magnetospheric Z component, in gammas
15	F5.1	Field solar magnetospheric X component standard deviation, in gammas
16	F5.1	Field solar magnetospheric Y component standard deviation, in gammas
17	F5.1	Field solar magnetospheric Z component standard deviation, in gammas