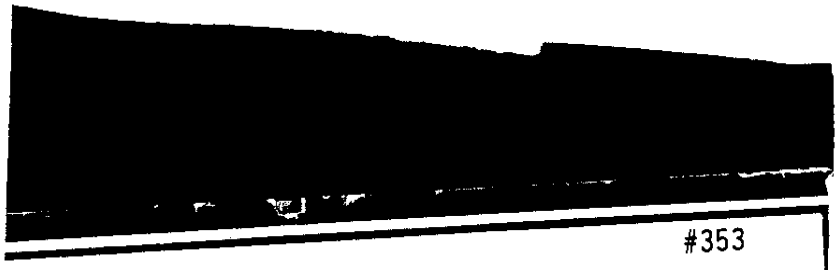

#353

PIONEER 11

CRUISE ONE MIN. AVG. VECTOR MAG. FIELD DATA

JUPITER ENC. ONE MIN. AVG. VEC. MAG. FIELD DATA

HOURLY & DAILY MAGNETIC FIELD AVERAGES

73-019A-01B

73-019A-01F

73-019A-01G

Table of Contents

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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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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 11

1 MIN, HOURLY, DAILY AVG. CRUISE

73-019A-01B SPHE-00366

THIS DATA SET HAS BEEN RESTORED. THERE WERE ORIGINALLY 71 TAPES, 30 WERE 7-TRACK, 800 BPI, 29 WERE 9-TRACK, 1600 BPI, AND 12 WERE 9-TRACK 6250 BPI, ALL WRITTEN IN BCD. THERE ARE 17 RESTORED TAPES, WRITTEN IN ASCII. SOME OF THESE TAPES WERE NOT STACKED IN TIME SEQUENTIAL ORDER. THE DR TAPES ARE 3480 CARTRIDGES AND THE DS TAPES ARE 9-TRACK, 6250 BPI. THE ORIGINAL TAPES WERE CREATED ON AN IBM 360 COMPUTER AND WERE RESTORED ON AN IBM 9021 COMPUTER. THE DR AND DS NUMBERS ALONG WITH THE CORRESPONDING D NUMBERS AND TIME SPANS ARE AS FOLLOWS:

DR#	DS#	DD#	FILES	TIME SPAN
DR03752	DS03752	D34450	1	04/01/73 - 04/28/73
		D34451	2	04/29/73 - 06/02/73
		D34452	3	06/03/73 - 06/30/73
		D34453	4	07/01/73 - 07/28/73
		D34454	5	07/29/73 - 09/01/73
		D34455	6	09/02/73 - 09/29/73
		D34456	7	09/30/73 - 11/02/73
		D34457	8	11/04/73 - 11/30/73
		D34458	9	12/02/73 - 12/29/73
		D34459	10	12/30/73 - 02/02/74
DR03753	DS03753	D34460	1	02/03/74 - 03/02/74
		D34461	2	03/03/74 - 03/30/74
		D34462	3	03/31/74 - 04/27/74
		D34463	4	04/28/74 - 06/01/74
		D34464	5	06/02/74 - 06/29/74
		D34465	6	06/30/74 - 08/03/74
		D34466	7	08/04/74 - 08/31/74
		D34467	8	09/01/74 - 09/28/74
		D34468	9	09/29/74 - 11/02/74

DR#	DS#	D#	FILES	TIME SPAN
DR03754	DS03754	D34469	1	11/03/74 - 11/23/74 *
			2	11/24/74 - 12/14/74 *
		D34470	3	12/08/74 - 12/28/74
		D45494	4	12/29/74 - 02/01/75
		D45495	5	02/02/75 - 03/01/75
		D45496	6	03/02/75 - 03/29/75
		D45497	7	09/28/75 - 11/01/75
		D45498	8	11/02/75 - 11/29/75
		D45499	9	11/30/75 - 01/03/76
		D45500	10	01/01/76 - 02/04/76
		D45501	11	02/05/76 - 03/03/76
DR03755	DS03755	D45502	1	03/04/76 - 03/31/76
		D61938	2	04/01/76 - 05/26/76
		D61939	3	05/27/76 - 07/21/76
		D61940	4	07/22/76 - 09/15/76
		D61941	5	09/16/76 - 11/10/76
		D61942	6	11/11/76 - 12/31/76
DR03756	DS03756	D61943	1	01/01/77 - 03/04/77
		D61944	2	03/05/77 - 05/06/77
		D61945	3	05/07/77 - 07/01/77
		D61946	4	07/02/77 - 09/02/77
		D61947	5	09/03/77 - 11/04/77
		D61948	6	11/05/77 - 12/31/77
DR03757	DS03757	D61949	1	01/01/78 - 03/04/78
		D61950	2	03/05/78 - 05/06/78
		D61951	3	05/07/78 - 07/01/78
		D61952	4	07/02/78 - 09/02/78
DR03758	DS03758	D61953	1	09/03/78 - 11/04/78
		D61954	2	11/05/78 - 12/31/78
		D61955	3	01/01/79 - 03/04/79
		D61956	4	03/05/79 - 05/06/79
		D61957	5	05/07/79 - 07/01/79
DR03759	DS03759	D61958	1	07/02/79 - 08/29/79
		D61959	2	08/30/79 - 09/01/79
		D61960	3	09/02/79 - 12/31/79
		D61961	4	01/01/80 - 03/04/80
		D61962	5	03/04/80 - 05/05/80
DR03760	DS03760	D61964	1	07/01/80 - 09/01/80
		D61965	2	09/02/80 - 11/03/80
DR03761	DS03761	D61966	1	11/04/80 - 12/31/80
		D78929	2	07/02/81 - 12/31/81

*THERE WERE NOT 2 FILES ON THE ORIGINAL TAPE, BUT A REPLACEMENT WAS NEEDED FOR PART OF THE TIME PERIOD CONTAINED ON THAT TAPE, SO IT HAD TO BE BROKEN INTO 2 PARTS.

DR#	DS#	D#	FILES	TIME SPAN
DR03762	DS03762	D78930	1	01/01/82 - 07/01/82
		D78931	2	07/02/82 - 12/31/82
DR03763	DS03763	D78972	1	01/01/83 - 07/01/83
		D78973	2	07/02/83 - 12/31/83
DR03764	DS03764	D78975	1	07/01/84 - 12/31/84
		D78976	2	01/01/85 - 07/01/85*
DR03765	DS03765	D78976	1	01/01/85 - 07/01/85*
		D78977	2	07/02/85 - 12/31/85
DR03766	DS03766	D78978	1	01/01/86 - 07/01/86
DR03924	DS03924	D61963	1	05/06/80 - 06/03/80
		D78925	2-4	01/01/81 - 07/01/81
DR03969	DS03969	D78974	1	01/01/84 - 06/30/84
		D78979	2	07/02/86 - 12/31/86

* THESE TAPES ARE THE SAME DATA, PUT ON DIFFERENT TAPES.

REQ. AGENT	RAND NO.	ACQ. AGENT
ANR	RC6482	JHK
BER	V0151	WSC
DAD	V0239	JHK

PIONEER 11

CRUISE ONE MINUTE AVERAGED VECTOR MAGNETIC FIELD DATA

JUIPITER ENCOUNTER ONE MINUTE AVERAGED VECTOR MAGNETIC FIELD DATA

73-019A-01B

73-019A-01F

This data set consists of 60 Cruise One Minute Averaged Vector Magnetic data tapes and 1 Jupiter Encounter One Minute Averaged Vector Magnetic Field Data tape. These tapes were created on the UNIVAC 1108 computer. 30 tapes are 800 bpi, BCD, 7-track and contain 1 file of data. The D and C numbers along with the time spans are as follows.

D#	C#	FILES	TIME SPAN
D-34450*	C-20772	1	04/06/73 - 04/28/73
D-34451	C-20773	1	04/29/73 - 06/02/73
D-34452	C-20774	1	06/03/73 - 06/30/73
D-34453	C-20775	1	07/01/73 - 07/28/73
D-34454	C-20776	1	07/29/73 - 09/01/73
D-34455	C-20777	1	09/02/73 - 09/29/73
D-34456	C-20778	1	09/30/73 - 11/02/73
D-34457	C-20779	1	11/03/73 - 11/30/73
D-34458	C-20780	1	12/01/73 - 12/29/73
D-34459	C-20781	1	12/30/73 - 02/02/74
D-34460	C-20782	1	02/03/73 - 03/02/74
D-34461	C-20783	1	03/03/73 - 03/30/74
D-34462	C-20784	1	03/31/73 - 04/27/74
D-34463	C-20785	1	04/28/73 - 06/01/74
D-34464	C-20786	1	06/02/73 - 06/29/74
D-34465	C-20787	1	06/30/73 - 08/03/74
D-34466	C-20788	1	08/04/73 - 08/31/74
D-34467	C-20789	1	09/01/73 - 09/28/74
D-34468	C-20790	1	09/29/73 - 11/02/74
D-34469	C-20791	1	11/03/73 - 12/07/74
D-34470	C-20792	1	12/08/73 - 12/28/74
D-45494	C-22571	1	12/29/74 - 02/01/75
D-45495	C-22572	1	02/02/75 - 03/01/75
D-45496	C-22573	1	03/02/75 - 03/29/75
D-45497	C-22574	1	09/28/75 - 11/01/75
D-45498	C-22575	1	11/02/75 - 11/29/75
D-45499	C-22576	1	11/30/75 - 01/03/76

* Records on tape D-34450 prior to April 6, 1973, contain only fill data.

Pioneer 11 73-019A-01B Cont.

D#	C#	FILES	TIME SPAN
D-45500	C-22577	1	01/01/76 - 02/04/76
D-45501	C-22578	1	02/05/76 - 03/03/76
D-45502	C-22579	1	03/04/76 - 03/31/76

These 29 tapes are 9-track, 1600 bpi, ASCII

D-61938	C-23864	1	04/01/76 - 05/26/76
D-61939	C-23865	1	05/27/76 - 07/21/76
D-61940	C-23866	1	07/22/76 - 09/15/76
D-61941	C-23867	1	09/16/76 - 11/10/76
D-61942	C-23868	1	11/11/76 - 12/31/76
D-61943	C-23869	1	01/01/77 - 03/04/77
D-61944	C-23870	1	03/05/77 - 05/06/77
D-61945	C-23871	1	05/07/77 - 07/01/77
D-61946	C-23872	1	07/02/77 - 09/02/77
D-61947	C-23873	1	09/03/77 - 11/04/77
D-61948	C-23874	1	11/05/77 - 12/31/77
D-61949	C-23875	1	01/01/78 - 03/04/78
D-61950	C-23876	1	03/05/78 - 05/06/78
D-61951	C-23877	1	05/07/78 - 07/01/78
D-61952	C-23878	1	07/02/78 - 09/02/78
D-61953	C-23879	1	09/03/78 - 11/04/78
D-61954	C-23880	1	11/05/78 - 12/31/78
D-61955	C-23881	1	01/01/79 - 03/04/79
D-61956	C-23882	1	03/05/79 - 05/06/79
D-61957	C-23883	1	05/07/79 - 07/01/79
D-61958	C-23884	1	07/02/79 - 08/29/79
D-61959	C-23885	1	08/30/79 - 09/01/79
D-61960	C-23886	1	09/02/79 - 12/31/79
D-61961	C-23887	1	01/01/80 - 03/04/80
D-61962	C-23888	1	03/04/80 - 05/05/80
D-61963	C-23889	1	05/06/80 - 06/03/80
D-61964	C-23890	1	07/01/80 - 09/01/80
D-61965	C-23891	1	09/02/80 - 11/03/80
D-61966	C-23892	1	11/04/80 - 12/31/80

Pioneer 11 73-019A-01B Cont.

These tapes are 6250 ASCII:

D-78925	C-26833	1	01/01/81 - 07/01/81
D-78929	C-27104	1	07/02/81 - 12/31/81
D-78930	C-27105	1	01/01/82 - 07/01/82
D-78931	C-27106	1	07/02/82 - 12/31/82
D-78972	C-27107	1	01/01/83 - 07/01/83
D-78973	C-27108	1	07/02/83 - 12/31/83
D-78974	C-27109	1	01/01/84 - 06/30/84
D-78975	C-27110	1	07/01/84 - 12/31/84
D-78976	C-27111	1	01/01/85 - 07/01/85
D-78977	C-27112	1	07/02/85 - 12/31/85
D-78978	C-27113	1	01/01/86 - 07/01/86
D-78979	C-27114	1	07/02/86 - 12/31/86

Pioneer 11 73-019A-01F

D-35333	C-20839	1	11/24/74 - ~~12/31/80~~ 12/14/74

JET PROPULSION LABORATORY

January 16, 1979

TO: Distribution

FROM: Joyce Wolf

SUBJECT: TAPE FORMAT: Vector Helium Magnetometer Data Averages

The tapes are 9-track, 1600 bpi, odd parity, written in ASCII format. Each tape contains a single file.

Each file contains an integral number of days of data. There are 50 blocks (physical records) per day. The first block is a header record 240 bytes long. Each of the remaining 49 blocks is 7200 bytes long, and consists of 30 logical records of 240 bytes. The 1440 logical records of blocks 2-49 contain averages for the 1440 minutes of the day. In block 50, the first 24 logical records contain hour averages; the 25th contains day averages, and the last 5 contain blanks.

Each logical record contains 15 quantities in the format (8E15.6, 15X, 7E15.6). The first quantity is the number of milliseconds for which data exists in the period over which the average was taken; the next 14 are the data averages in the coordinate system identified in the text portion of the header record, as follows:

1. $\langle B_x \rangle$
2. $\langle B_y \rangle$
3. $\langle B_z \rangle$
4. $\langle B_x^2 \rangle$
5. $\langle B_x B_y \rangle$
6. $\langle B_x B_z \rangle$
7. $\langle B_y^2 \rangle$
8. $\langle B_y B_z \rangle$
9. $\langle B_z^2 \rangle$
10. $\langle \cos \alpha \rangle = \langle B_x / |B| \rangle$
11. $\langle \cos \beta \rangle = \langle B_y / |B| \rangle$
12. $\langle \cos \gamma \rangle = \langle B_z / |B| \rangle$
13. $\langle |B| \rangle$
14. $\langle |B|^2 \rangle$

JW:ydj

Attachments

FORMAT OF PIONEER 10,11 AVERAGE DATA RECORD:
VECTOR HELIUM MAGNETOMETER

72-012A-01B Encounter 1 min. Avg Data Plots

72-012A-01G Hourly & Daily Magnetic Field Avg.

The Pioneer VHM Average data record (ADR) tapes are written on 9-track tapes at 6250 BPI. The data is written on the tape in odd parity, ASCII format.

A data set contains an integral number (usually four or five) weeks of data. Each of the seven days in a week consists of fifty blocks (physical records). The first block for a day is a single logical record of 120 tape characters. The remaining blocks for a day each consist of 30 logical records of 240 tape characters each.

The first logical record for a day is a header. the next 1440 logical records contain minute averages. The next 24 logical records contain hour averages. The next logical record contains daily averages. The last 5 logical records for the day contain blanks.

72-012A-01H

Header is 24 logical records of hour averages, then one logical record of daily averages.

Table 1 - Header Record

Variable	Format	Description
	3X	
IYR	I2	Last two digits of year
	2X	
IDAY	I3	Day of year
	4X	
ISC	A1	Spacecraft (F or G)
	15X	
HRANGP	E15.7	Distance of spacecraft from Sun (km)
CELLTP	E15.7	Heliocentric celestial latitude of spacecraft (degrees)
CELLNP	E15.7	Heliocentric celestial longitude of spacecraft (degrees)
REARSU	E15.7	Distance of earth from the Sun
CELLTE	E15.7	Heliocentric celestial latitude of Earth (degrees)
CELLNE	E15.7	Heliocentric celestial longitude of Earth (degrees)

ATTACHMENT #1

Structure of Header Record

Variable	Format	Meaning
IYR	3X,I2	Last two digits of year
IDAY	2X,I3	Day of Year
ISC	4X,A1	Spacecraft Identifier (F=Pioneer 10, G=Pioneer 11, 3=ISEE-3)
TRAJ(I), I=1,6	15X,6E15.6	Trajectory Parameters* (May be filled with errors)
TEXT(I), I=1,30	30A4	Identifying text (except for the coordinate system indication, PE or SH (SH is attached) this text is only useful or meaningful to JPL.)

For the Pioneer spacecraft, the trajectory parameters have the following meanings:

TRAJ (1) = Distance of Spacecraft from sun (km.)

TRAJ (2) = Heliocentric celestial latitude of spacecraft (deg.)

TRAJ (3) = Heliocentric celestial longitude of spacecraft (deg.)

TRAJ (4) = Distance of Earth from Sun (km.)

TRAJ (5) = Heliocentric celestial latitude of Earth (deg.)

TRAJ (6) = Heliocentric celestial longitude of Earth (deg.)

For the ISEE-3 spacecraft, the trajectory parameters are as follows:

TRAJ (1) = Geocentric solar ecliptic (GSE) x-coordinate of spacecraft position at start of day's data.

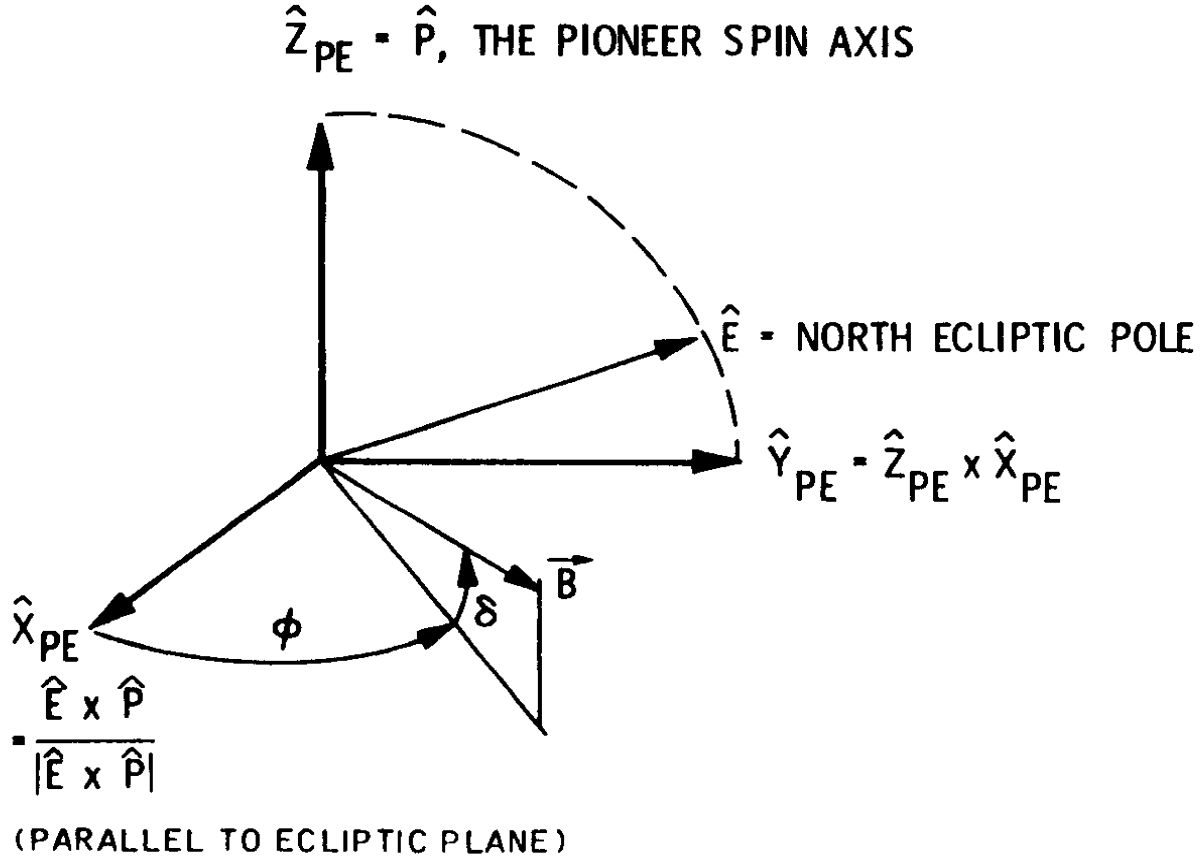
TRAJ (2) = GSE y-coordinate of spacecraft position.

TRAJ (3) = GSE z-coordinate of spacecraft position.

TRAJ (4) = TRAJ (5) = TRAJ (6) = 0.

* Trajectory information is available for the first 3 years of data only. (4/6/73 - 3/31/76)

PIONEER INERTIAL (PE)
COORDINATES



FORMAT OF PIONEER 10, 11 AVERAGE DATA RECORD: VECTOR HELIUM MAGNETOMETER

The Pioneer VHM Average Data Record (ADR) tapes are written on 7-track tape units at 800 bpi. The data are written on the tape in (even parity) BCD format. Each tape contains a single data set (file).

A data set contains an integral number (usually four or five) of weeks of data. Each of the seven days in a week consists of fifty blocks (physical records). The first block for a day is a single logical record of 120 tape characters. The remaining blocks for a day each consist of 30 logical records of 240 tape characters each.

The first logical record for a day is a header. The next 1440 logical records contain minute averages. The next 24 logical records contain hour averages. The next logical record contains day averages. The last 5 logical records for the day contain blanks.

Table 1 - Header Record

Variable	Format	Description
	3X	
IYR	I2	Last two digits of year
	2X	
IDAY	I3	Day of year
	4X	
ISC	A1	Spacecraft (F or G)
	15X	
HRANGP	E15.7	Distance of spacecraft from sun (km)
CELLTP	E15.7	Heliocentric celestial latitude of spacecraft (degrees)
CELLNP	E15.7	Heliocentric celestial longitude of spacecraft (degrees)
REARSU	E15.7	Distance of Earth from sun (km)
CELLTE	E15.7	Heliocentric celestial latitude of Earth (degrees)
CELLNE	E15.7	Heliocentric celestial longitude of Earth (degrees)

Table 2 - Average Records

Variable	Format	Description
DT	E15.7	Number of milliseconds for which data exists in the period over which the average was taken.
EV(1)	E15.7	$\langle B_R \rangle$
EV(2)	E15.7	$\langle B_T \rangle$
EV(3)	E15.7	$\langle B_N \rangle$
EV(4)	E15.7	$\langle B_R^2 \rangle$
EV(5)	E15.7	$\langle B_R B_T \rangle$
EV(6)	E15.7	$\langle B_R B_N \rangle$
EV(7)	E15.7	$\langle B_T^2 \rangle$
	15X	
EV(8)	E15.7	$\langle B_T B_N \rangle$
EV(9)	E15.7	$\langle B_N^2 \rangle$
EV(10)	E15.7	$\langle \cos \alpha \rangle = \langle B_R / \lvert B \rvert \rangle$
EV(11)	E15.7	$\langle \cos \beta \rangle = \langle B_T / \lvert B \rvert \rangle$
EV(12)	E15.7	$\langle \cos \gamma \rangle = \langle B_N / \lvert B \rvert \rangle$
EV(13)	E15.7	$\langle \lvert B \rvert \rangle$
EV(14)	E15.7	$\langle \lvert B \rvert^2 \rangle$

APPENDIX 1

Form and Content of the RDR Tapes

The Pioneer HVM RDR Tapes are written on 7-track tape units at 800 bpi. Each tape has a header file written in even parity (BCD) to identify the tape. The header file is followed by one or more data sets (files). Each data set contains all the data for a given day of the mission. Days are numbered consecutively for each year. January 1 is day 1.

Each block (physical record) in a data set consists of a HEADER of 44 words and zero or more SCIENCE DATA GROUPS of variable length. A word is defined as 36 bits (6 tape characters of 6 bits each). A block with zero SCIENCE DATA GROUPS is a dummy record indicating that there is no data for a given day. If there is any data for a day all blocks in the data set will have at least one SCIENCE DATA GROUP.

(WARNING: Many of the older tapes have empty files for days on which there is no data. This means that a double end-of-file mark does not necessarily mean end-of-volume on these tapes.)

Table 1 - Header Portion of Block

Word	Variable	Description
1	NBLK	Block Number. (Blocks are numbered consecutively starting with one in each data set.)
2	LBLK	Block Length (in 36 bit words).
3	NGRP	Number of Science Data Groups in the block. If there are no gaps in the EDR record from which this data is taken, NGRP is one.

Word	Variable	Description
4	IFDAY	The magnitude of the contents of this word is the day of the year. If the number is negative, there are corrected or suspect times in the block.
5	NFRAME	Number of first frame in the block (modulo 8192).
6	IRTLT	Round trip light time.
7	HRANGP	Distance of spacecraft from sun (km).
8	CELLTP	Heliocentric celestial latitude of spacecraft (degrees).
9	CELLNP	Heliocentric celestial longitude of spacecraft (degrees).
10	REARSU	Distance of Earth from sun (km).
11	CELLTE	Heliocentric celestial latitude of Earth (degrees).
12	CELINE	Heliocentric celestial longitude of Earth (degrees).
13		
•		Spectrum Analyzer data plus contents of Science Subcom
•		Words 106 and 202. (See Figure 1 for format of this
•		group of words.)
44		

The first 12 words of the HEADER are in I108 internal format. The spectrum analyzer data is in a format similar to that used for the science data words except the fractions are 6 bits instead of 9 bits. The E106 words are not converted. Figure 3 shows the meaning of bits. Science subcom word 202 is subcommutated again into a cycle eight words long. The first word is a sync word and should always contain zero. The second word is the instrument serial number. The third word is the electronics temperature in degrees C. The fourth word is the sensor temperature in degrees C. The fifth word is the voltage at the +12 volt supply monitor (this is the

only non-integer word in the group. For this word only, the three low order bits are assumed to be to the right of the binary point). The sixth word is the A/D converter reference and should be about 41. The seventh word contains the range in which the instrument is operating. The eighth word is from the 24 volt monitor and should be 63.

The SCIENCE DATA GROUPS are stored as shown in Figure 2. Each SDG consists of a series of consecutive data points. The number of points is given (split between two words as shown), and the times of the first and last points are given in addition to the data values themselves. (Note that the RDR read program reconstructs all the times of the data points in a group from the information given.)

The three fractions of the science data words give the three components of the magnetic field in Solar-Interplanetary Coordinates in units of gamma. The values are stored on the tape in a floating point octal representation. The given characteristic is a power of eight given in excess -16 notation (allowing exponents to have the range -16 to +15) and is used with all three fractions. Three sign bits are given as shown in Figure 2. Each of the fractions is three octal digits long. The fraction having the largest magnitude is normalized in terms of octal digits (not bits) and the remaining two fractions are adjusted to have the same exponent. The fractions are truncated not rounded when they are stored on the tape.

FIGURE 1

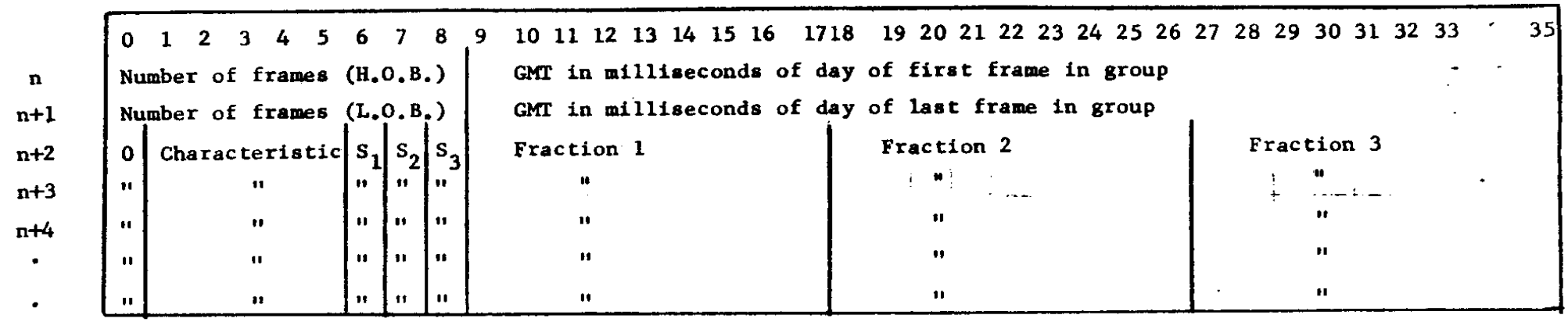
HEADER

	0 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 32 33 34 35
1	Block (Record) Number. (Blocks numbered consecutively from 1 for each day)
2	Block Length (in 36 bit words).
3	Number of Science Data Groups in block (1 if no gaps in data).
4	Flag, magnitude is day of year, minus sign indicates corrected or suspect times.
5	Extended frame counter and Subcom ID of first data frame in block.
6	Round trip light time.
7	Spacecraft sun distance in km (1108 floating point).
8	Heliocentric celestial latitude of spacecraft in degrees (1108 fp).
9	Heliocentric celestial longitude of spacecraft in degrees (1108 fp).
10	Sun-Earth distance in km (1108 fp).
11	Heliocentric celestial latitude of Earth in degrees (1108 fp).
12	Heliocentric celestial longitude of Earth in degrees (1108 fp).
13	Q | Characteristic | S_1 | S_2 | S_3 | Fraction E103 | Fraction E104 | Fraction E105 | 0 0 0 | E106
14	" | " | " | " | " | " | " | " | " | "
•	" | " | " | " | " | " | " | " | " | "
•	" | " | " | " | " | " | " | " | " | "
•	" | " | " | " | " | " | " | " | " | "
•	" | " | " | " | " | " | " | " | " | "
28	" | " | " | " | " | " | " | " | " | "
29	" | " | " | " | " | Fraction E203 | Fraction E204 | Fraction E205 | E202
30	" | " | " | " | " | " | " | " | "
•	" | " | " | " | " | " | " | " | "
•	" | " | " | " | " | " | " | " | "
44	" | " | " | " | " | " | " | " | "

Q is quality indicator, 0 if word contains good data, 1 if word contains fill

FIGURE 2

SCIENCE DATA GROUP



FORMAT OF E106

1	0 if calibrate off, 1 if calibrate on
2	0 if ranging in manual mode, 1 if ranging in automatic mode
3	0 if instrument in normal mode, 1 if instrument in interchange mode
4	High order bit of calibration step
5	Middle bit of calibration step
6	Low order bit of calibration step

INPUT PARAMETERS ARE: BC SR=1=2 X-449

2/3/74 - 3/2/74

034460

TAPE NO. 1 FILE NO. 1
RECORD 1 LENGTH 120
74 34 G .5011263+09 -.2265205+01 .3283750+03 .1474436+09 -.4058
'67-04 .1337549+03

TAPE NO. 1 FILE NO. 1
RECORD 2 LENGTH 7200
.0000000 .0000000 .0000000 .0000000 .0000000 .0000000 .0000
000 .0000000 .0000000 .0000000 .0000000 .0000000
.0000000 .0000000 .0000000 .0000000 .0000000 .0000000 .0000000
.0000000 .0000000 .0000000 .0000000 .0000000 .0000000 .0
000000 .0000000 .0000000 .0000000 .0000000 .0000000 .0000000
.0000000 .0000000 .0000000 .0000000 .0000000 .0000000 .0000
00 .0000000 .0000000 .0000000 .0000000 .0000000
.0000000 .0000000 .0000000 .0000000 .0000000 .0000000 .0000000
.0000000 .0000000 .0000000 .0000000 .0000000 .0000000 .0
000000 .0000000 .0000000 .0000000 .0000000 .0000000 .5100000+05 .4921301+00
.7848116+00 .8519372-01 .2449669+00 .3860278+00 .4216362-01 .6170486+00
.6677257-01 .8262298-02 .5273118+00 .8423384+00 .9133776-01 .9321420+00
.8702778+00 .6000000+05 .5049805+00 .7771973+00 .1013184+00 .2586597+00 .3924135
+00 .5062876-01 .6047659+00 .7864608-01 .1120253-01 .5391230+00 .8
323920+00 .1088848+00 .9344776+00 .8746282+00 .6000000+05 .5039063+00 .7917969+00
.9487305-01 .2572721+00 .3986822+00 .4783726-01 .6283294+00 .7507
219-01 .1036158-01 .5321156+00 .8376907+00 .1003290+00 .9456973+00 .8959631+00
.6000000+05 .5069824+00 .8159668+00 .4951172-01 .2598435+00 .4133550+00 .2549162
-01 .6674475+00 .3989372-01 .4011345-02 .5254772+00 .8464500+00 .5
160308-01 .9642024+00 .9313024+00 .6000000+05 .4953613+00 .8044434+00 .1017090+00
.2475499+00 .3982356+00 .5071926-01 .6480972+00 .8144893-01 .1234
751-01 .5197019+00 .8449321+00 .1068554+00 .9523536+00 .9079947+00 .5850000+05
.5161258+00 .7821014+00 .1243990+00 .2703440+00 .4031822+00 .6444628-01 .6126964
+00 .9742325-01 .1656733-01 .5435885+00 .8259858+00 .1310193+00 .9
476832+00 .8996077+00 .6000000+05 .5372559+00 .7628418+00 .1128906+00 .2906432+00
.4097071+00 .6079569-01 .5827934+00 .8610859-01 .1345558-01 .5703
768+00 .8108597+00 .1199114+00 .9411577+00 .8868922+00 .6000000+05 .5576172+00
.7581543+00 .1478516+00 .3143648+00 .4221360+00 .8206234-01 .5754872+00
.1119693+00 .2279625-01 .5830302+00 .7946656+00 .1551860+00 .9548280+00 .9
126482+00 .0000000 .0000000 .0000000 .0000000 .0000000 .0000000 .0000000
.0000000 .0000000 .0000000 .0000000 .0000000 .0000000 .0000
00 .0000000 .0000000 .0000000 .0000000 .0000000
.0000000 .0000000 .0000000 .0000000 .0000000 .0000000 .0000000
.0000000 .0000000 .0000000 .0000000 .0000000 .0000000 .5
400000+05 .5342882+00 .7681207+00 .9841580-01 .2904951+00 .4101130+00 .5231836-01
.5904055+00 .7568444-01 .1148499-01 .5642402+00 .8151688+00 .1043
248+00 .9437900+00 .8923856+00 .6000000+05 .5308594+00 .7752930+00 .1449219+00
.2837768+00 .4116928+00 .7712097-01 .6018396+00 .1122923+00 .2191925
-01 .5570074+00 .8147471+00 .1522289+00 .9520128+00 .9075357+00 .6000000+05 .4
952148+00 .8029297+00 .1431641+00 .2484785+00 .3978262+00 .7099075-01 .6452388+00
.1150421+00 .2097359-01 .5170506+00 .8409740+00 .1498802+00 .9556
004+00 .9146909+00 .6000000+05 .5389648+00 .7853516+00 .1056641+00 .2935438+00
.4223566+00 .5665741-01 .6180641+00 .8273029-01 .1181374-01 .5606274
+00 .8179448+00 .1104412+00 .9604829+00 .9234216+00 .6000000+05 .5029297+00 .7
688477+00 .1506836+00 .2568485+00 .3859804+00 .7572746-01 .5917329+00
.1159082+00 .2341175-01 .5376419+00 .8246574+00 .1615085+00 .9332709+00 .8719
932+00 .6000000+05 .5348633+00 .7759766+00 .1647625+00 .2890077+00 .4146803+00
.8711433-01 .6031849+00 .1274000+00 .2774887-01 .5573738+00 .8098809
+00 .1715192+00 .9585282+00 .9199415+00 .6000000+05 .5024414+00 .7838867+00 .1
328125+00 .2545805+00 .3939672+00 .6617928-01 .6149026+00 .1038601+00
.1871719-01 .5326196+00 .8325921+00 .1415407+00 .9419685+00 .8882003+00 .6000
000+05 .5242187+00 .7875000+00 .1193359+00 .2775305+00 .4123087+00 .6311436-01
.6212799+00 .9398975-01 .1521797-01 .5482465+00 .8246720+00 .1246084
+00 .9553719+00 .9139984+00 .6000000+05 .5227539+00 .8032227+00 .1240234+00 .2
764040+00 .4186356+00 .6519871-01 .6469335+00 .9932709-01 .1646309-01
.5394273+00 .8290505+00 .1280457+00 .9689150+00 .9398506+00 .6000000+05 .4962

```
$NOP
$ASS IN MTS
$NOP ******************   DCD LIST OF BOUT-12   ********************
$EXE TPLIST BS

INPUT PARAMETERS ARE:  BC FL=1=1

 TAPE NO.   1              FILE NO.   1
 RECORD     1              LENGTH    120
   74  363     G                    .7227260+09    -.3505765+00     .3535484+03     .1471077+09     .6939
669-04     .9685338+02

 TAPE NO.   1              FILE NO.   1
 RECORD   1750             LENGTH   7200
    .2520000+07     .1479941+00    -.1912316+00    -.4555690-02     .2506688-01    -.2852182-01    -.7023
976-03     .3758230-01                          .8165977-03     .8686317-03     .5816538+00    -.7798039+00
-.1931683-01     .2481828+00     .6351781-01     .3537000+07     .1558728+00    -.1820784+00    -.2458511
-01     .2753536-01    -.2871115-01    -.3843550-02     .3406728-01                          .4423926-02     .1
622165-02     .6144819+00    -.7466459+00    -.1015052+00     .2473291+00     .6322480-01     .3414000+07
    .1706784+00    -.1317263+00    -.7271421-01     .3299952-01    -.2195591-01    -.1315459-01     .2056
199-01                    .7344002-02     .8516970-02     .6823211+00    -.5456778+00    -.3036676+00
 .2448055+00     .6207648-01     .3525000+07     .1021400+00    -.1972176+00    -.1007002-01     .1646441
-01    -.1988044-01    -.2878304-02     .4002093-01                          .1625950-02     .2377333-02     .4
111448+00    -.8316323+00    -.4079369-01     .2392011+00     .5886267-01     .3397500+07     .6180864-01
   -.1988267+00    -.3003846-02     .8283894-02    -.1230131-01    -.7456341-03     .4098153-01
            .2534707-03     .2058675-02     .2642541+00    -.8928204+00    -.1843357-01     .2231165+00
 .5132410-01     .3391500+07     .4738655-01    -.1678948+00    -.1551961-01     .8504215-02    -.5849018
-02    -.3618333-02     .3260995-01                          -.8363811-03     .4843345-02     .2453729+00    -.7
853211+00    -.1259792+00     .2085179+00     .4595751-01     .3237750+07     .3346480-01    -.2212361+00
   -.6500180-02     .5098841-02    -.7761081-02    -.2070128-03     .4992323-01                          .1473
163-02     .1140413-02     .1329049+00    -.9445352+00    -.2697762-01     .2346165+00     .5615448-01
 .3261000+07     .7782179-02    -.2107420+00     .4842935-01     .3918349-02    -.2065403-02    -.4891600
-04     .4554156-01                          -.1000611-01     .3851294-02     .2960036-01    -.9224551+00     .2
122064+00     .2286241+00     .5331121-01     .3498000+07     .9351989-01    -.1273797+00     .4085712-01
    .1722111-01    -.8874111-02     .5950833-02     .1997307-01                          -.3687421-02     .3770
662-02     .4673075+00    -.6472481+00     .2195551+00     .1973517+00     .4096424-01     .3579000+07
 .1379487+00    -.1260463+00    -.1868975-01     .2224526-01    -.1768230-01    -.2395510-02     .1791553
-01                    .2465886-02     .2489866-02     .6712510+00    -.6454878+00    -.1005978+00     .2
010551+00     .4265066-01     .3276000+07     .8541758-01    -.1514895+00    -.2227459-01     .1274609-01
   -.1276548-01     .5021275-03     .2426830-01                          .4076577-02     .4875291-02     .4159
124+00    -.7635824+00    -.1008334+00     .2004368+00     .4188968-01     .3372000+07     .1382876+00
-.1304506+00    -.4013528-01     .2240155-01    -.1838492-01    -.5366641-02     .1798523-01
         .5056279-02     .3018008-02     .6592411+00    -.6565126+00    -.2048758+00     .2030746+00     .4
340478-01     .3579000+07     .1347482+00    -.1347302+00    -.6467782-01     .2152987-01    -.1849944-01
   -.8661312-02     .1925362-01                          .8674816-02     .5334242-02     .6214230+00    -.6530
419+00    -.3175091+00     .2096863+00     .4611774-01     .3582000+07     .1496037+00    -.1531197+00
-.1727070-01     .2542112-01    -.2322523-01    -.2485566-02     .2442241-01                          .2711828
-02     .1449451-02     .6581404+00    -.7026322+00    -.7949110-01     .2216940+00     .5129297-01     .3
580590+07    -.3390333-01    -.1563706+00    -.6623176-01     .2277395-01     .7671491-02     .7999093-02
    .2618427-01                          .1127388-01     .7396793-02    -.1097294+00    -.6780604+00    -.2759
769+00     .2336406+00     .5635562-01     .3511500+07    -.1090170+00    -.1922815+00    -.3992528-01
 .1663810-01     .2017617-01     .4239214-02     .3799898-01                          .7624290-02     .3137893
-02    -.4434541+00    -.8179856+00    -.1695874+00     .2376996+00     .5777497-01     .3588000+07    -.7
265990-01    -.1956912+00     .4735634-02     .1133198-01     .1344268-01    -.3975560-03     .3936794-01
                -.8776043-03     .1382064-02    -.3075041+00    -.8695961+00     .2187426-01     .2266
921+00     .5258198-01     .3249000+07    -.9124829-01    -.1864622+00    -.2252045-03     .2026259-01
 .1603657-01    -.1602008-02     .3597412-01                          .3280997-04     .1959350-02    -.3569371
+00    -.7953157+00    -.5440372-02     .2379170+00     .5819605-01     .3529500+07     .1606597-01    -.2
112005+00     .4038644-02     .5263045-02    -.3323315-02    -.6733223-03     .4583370-01
   -.1221299-02     .1791441-02     .6719105-01    -.9289051+00     .1287479-01     .2274997+00     .5288
819-01     .3085500+07     .9131405-01    -.1826001+00    -.4304780-01     .1238497-01    -.1658804-01
-.4633480-02     .3486055-01                          .6940047-02     .4338923-02     .3885181+00    -.8229624
+00    -.1982467+00     .2236092+00     .5158444-01     .3588000+07     .4073280-01    -.2143644+00    -.1
253140-01     .5737197-02    -.9190895-02    -.6658155-03     .4696566-01                          .2716954-02
    .3758708-02     .1613448+00    -.9145612+00    -.4911776-01     .2351166+00     .5646157-01     .3514
500+07     .7465034-01    -.2054100+00    -.2757685-01     .1009906-01    -.1546141-01    -.1682195-02
```

Pioneer 11
D-45494
12/29/74 - 2/1/75

```
 .5334777-01                    .5179541-02    .6136933-02    .2926645+00    -.8568640+00    -.1195980
+00    .2411404+00    .5958576-01    .3597000+07    .1130315+00    -.1884198+00    -.8072920-01    .1
637791-01    -.2149983-01    -.0937090-02    .3673665-01                    .1462875-01    .8480016-02
    .4456207+00    -.7740436+00    -.3351479+00    .2450901+00    .6159457-01    .3595500+07    .1370
060+00    -.1889412+00    -.1460087-01    .2210573-01    -.2629432-01    -.2512559-02    .3667323-01
          .2587611-02    .2454710-02    .5449359+00    -.7851198+00    -.5939799-01    .2435018
+00    .6123367-01    .8230875+05    .6786322-01    -.1767631+00    -.2064840-01    .1637746-01    -.1
083127-01    -.1940759-02    .3362662-01                    .3123431-02    .3676022-02    .2970025+00
    -.7807570+00    -.9255754-01    .2274193+00    .5368011-01


***** JOB DONE.
$EXE TPLIST BS

INPUT PARAMETERS ARE:  BC SR=1701=1

 TAPE NO.   1              FILE NO.   1
 RECORD   1701             LENGTH   120
   75    32    G                    .6992055+09    .6969167+00    .3572623+03    .1473962+09    .1443
687-03    .1314659+03

***** JOB DONE.
$WEO LPS


$$
$ASS IN MT4 OUT MT1
$EXE TPDUPC BS
```

PIONEER 11

JUPITER ENCOUNTER-1 MIN. AVGD TAPE

73-019A-01F PSFP-00132

This data set has been restored. There was originally one 9-track, 1600 BPI tape written in ASCII. There is one restored tape. The DR tape is a 3480 cartridge and the DS tape is 9-track, 6250 BPI. The original tape was created on an ~~IBM 360~~ Univax 1180 computer and the restored tape was created on an IBM 9021 computer. The DR and DS numbers along with the corresponding D number are as follows:

DR#	DS#	D#	FILES	TIME SPAN
DR005499	DS005499	D035333	1	11/24/74 - 12/14/74

Refer to 73-019A-01F

PIONEER 11

HRLY & DAILY MAG. FLD AVGS

73-019A-01G SPHE-00446

THESE DATA SETS HAVE BEEN RESTORED. THERE WAS ORIGINALLY ONE 9-TRACK, 1600 BPI TAPE, WRITTEN IN ASCII. THERE IS ONE RESTORED TAPE. THE DR TAPE IS A 3480 CARTRIDGE AND THE DS TAPE IS 9-TRACK, 6250 BPI. THE ORIGINAL TAPE WAS CREATED ON AN IBM 360 COMPUTER AND WAS RESTORED ON AN IBM 9021 COMPUTER. THE DR AND DS NUMBERS ALONG WITH THE CORRESPONDING D NUMBER AND TIME SPAN IS AS FOLLOWS:

DR#	DS#	DD#	FILES	TIME SPAN
DR006163	DS006163	D063110	1	04/06/73 - 12/31/86

REQ. AGENT	RAND NO.	ACQ. AGENT
PAR		JHK

PIONEER 11

HOURLY AND DAILY MAGNETIC FIELD AVERAGES

73-019A-01G

This data set consists of one 9-track, 6250 bpi, ASCII magnetic tape created on the MODCOMP IV computer. This tape was created at NSSDC by extracting the hourly and daily averages from the 71 experimenter supplied tapes contained in data set 73-019A-01B (the ´01B´ data set submitted by Ed Smith, NASA-JPL, contained one minute, hourly and daily averages). This data set was last updated in Dec. 89 using program CRUISE.EXE on the VAX 8650. The D and C numbers and time span are as follows:

D#	C#	FILES	TIME SPAN
D-63110	C-24011	1	04/06/73 - 12/31/86*

* Records on this tape prior to April 6,1973 contain only fill data.

73-019A-019

p1.

TAPE FORMAT

Each 7440 byte physical block contains a 240 byte header, 24 logical records of 240 bytes containing hour averages, one 240 byte record containing day averages, and 5 blank 240 byte records.

VARIABLE	FORMAT	DESCRIPTION
IYR	3X,I2	Last two digits of year
IDAY	2X,I3	Day of Year
ISC	4X,A1	Spacecraft Identifier (F=Pioneer 10, G=Pioneer 11, 3=ISEE-3)
TRAJ(I), I=1,6	15X,6E15.6	Trajectory Parameters* (May be filled with errors)
TEXT(I), I=1,30	30A4	Identifying text (except for the coordinate system indication, PE or SH (SH is attached) this text is only useful or meaningful to JPL.)

The trajectory parameters (TRAJ) are as follows:

TRAJ (1) = Distance of Spacecraft from sun (km.)

TRAJ (2) = Heliocentric celestial latitude of spacecraft (deg.)

TRAJ (3) = Heliocentric celestial longitude of spacecraft (deg.)

TRAJ (4) = Distance of Earth from Sun (km.)

TRAJ (5) = Helioocentric celestial latitude of Earth (deg.)

TRAJ (6) = Heliocentric celestial longitude of Earth (deg.)

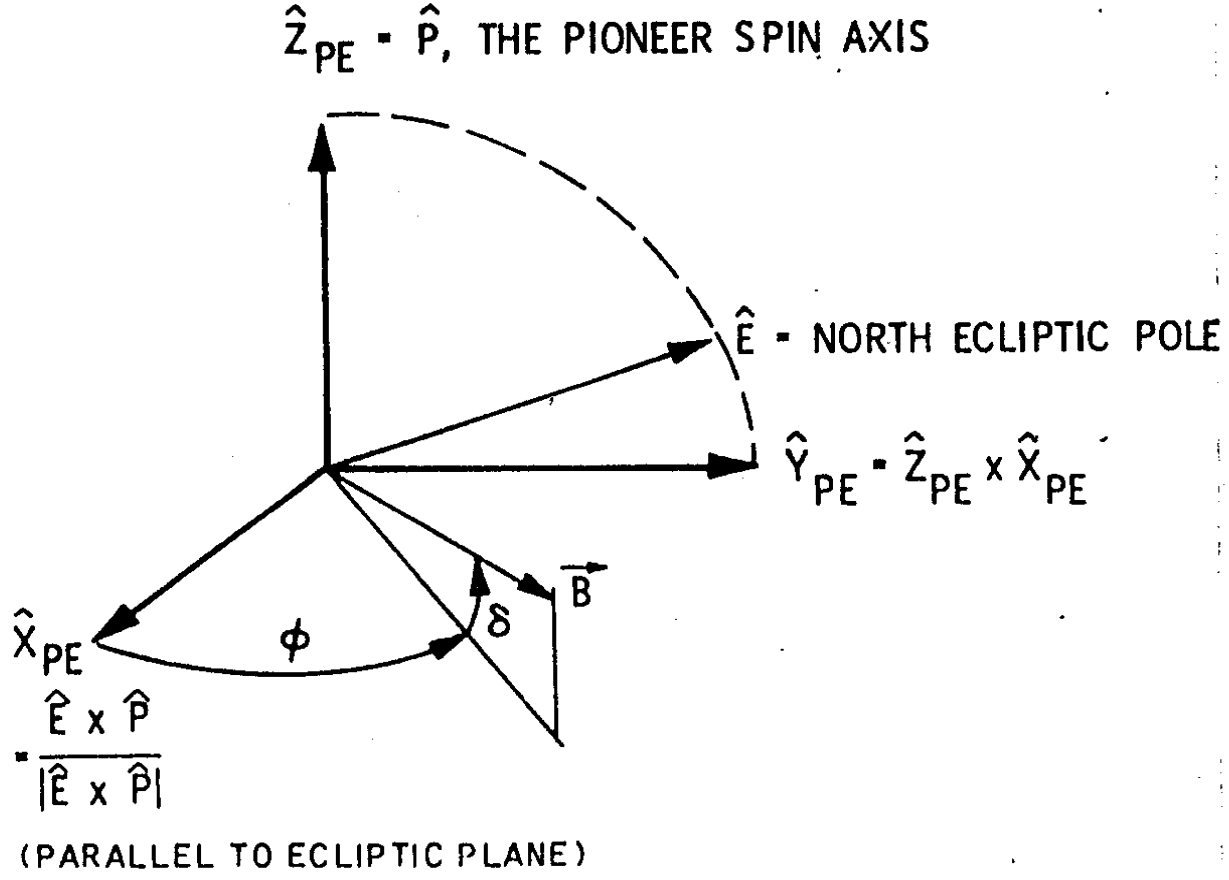
* Trajectory information is available for the first 3 years of data only. (4/6/73 - 3/31/76)

Each logical record contains 15 quantities in the format (8E15.6, 15X, 7E15.6). The first quantity is the number of milliseconds for which data exists in the period over which the average was taken. The next 14 quantities are data averages in the coordinate system identified in the text portion of the header record.

The data parameters are as follows:

1. $\langle B_x \rangle$
2. $\langle B_y \rangle$
3. $\langle B_z \rangle$
4. $\langle B_x^2 \rangle$
5. $\langle B_x B_y \rangle$
6. $\langle B_x B_z \rangle$
7. $\langle B_y^2 \rangle$
8. $\langle B_y B_z \rangle$
9. $\langle B_z^2 \rangle$
10. $\langle \cos a \rangle = \langle B_x / |B| \rangle$
11. $\langle \cos B \rangle = \langle B_y / |B| \rangle$
12. $\langle \cos y \rangle = \langle B_z / |B| \rangle$
13. $\langle |B| \rangle$
14. $\langle |B|^2 \rangle$

PIONEER INERTIAL (PE) COORDINATES



PIONEER-11
HOURLY & DAILY AVGS
73-019A-01G
D-63110

(Created from the 59 tapes in -01B)

1 FILE

```
$ASS IN T81
$NOP
$NOP
$NOP
$NOP *** LIST OF PICNEER II ********
$EXE TPLIST BS

INPUT PARAMETERS ARE:  AS FL=2=2

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   7440
   73   91    G                      .0000000    .0000000    .0000000    .0000000    .0000
000      .0000000
                                                .0000000    .0000000    .0000000    .0000000
     .0000000    .0000000    .0000000    .0000000                       .0000000    .0
000000    .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
   .0000000    .0000000    .0000000    .0000000    .0000000    .0000000    .0000
000                    .0000000    .0000000    .0000000    .0000000    .0000000
 .0000000    .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
     .0000000    .0000000    .0000000                .0000000    .0000000    .0
000000    .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
   .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
       .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
 .0000000    .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
     .0000000    .0000000                .0000000    .0000000    .0000000    .0
000000    .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
   .0000000    .0000000    .0000000    .0000000    .0000000    .0000000    .0000
000      .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
 .0000000    .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
     .0000000    .0000000    .0000000    .0000000    .0000000    .0000000    .0
000000    .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
   .0000000    .0000000    .0000000    .0000000                .0000000    .0000
000      .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
 .0000000    .0000000    .0000000    .0000000    .0000000    .0000000    .0000000
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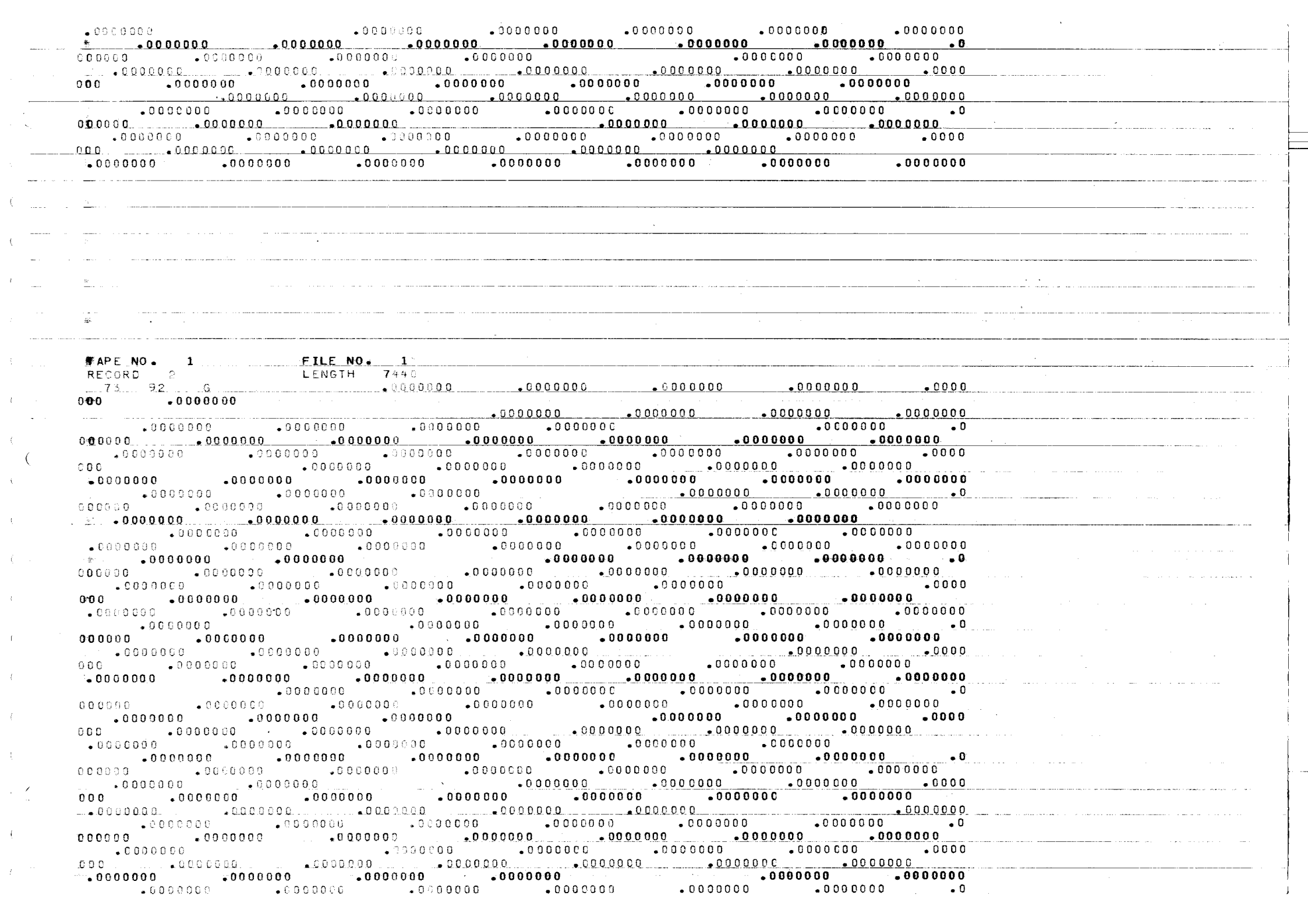

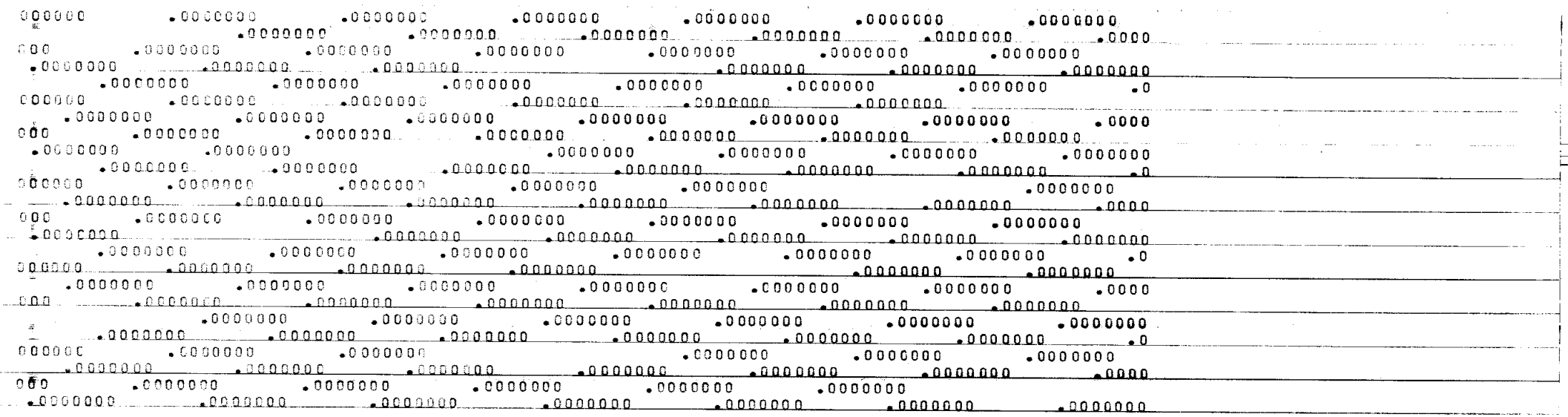

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+00    .888708E-01   -.464965E-01    .280324E-01                   -.143910E-01    .100966E-01    .9
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