

#312

IMP-I

MAGNETOMETER

15 SEC. B VECTORS

71-019A-01B

(RESTORED)

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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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

IMP-I

15 SECOND B VECTORS

71-019A-01B

SPHE-00605

THIS DATA SET HAS BEEN RESTORED. ORIGINALLY THERE WERE 62 9-TRACK, 1600 BPI STANDARD LABEL TAPES WRITTEN IN BINARY. THERE ARE 13 RESTORED TAPES. THESE TAPES WERE RUN THROUGH A PROGRAM WHICH EXTRACTED THE FILE MARK, SO THERE IS ONE FILE PER RESTORED TAPE. EACH FILE OF THE RESTORED DATA SET CONTAINS 9090 PHYSICAL RECORDS (EXCEPT THE LAST TAPE DR/DS01588 WHICH CONTAINS 145 PHYSICAL RECORDS). EACH PHYSICAL RECORD OF THE RESTORED DATA SET IS 16,564 BYTES LONG AND CONSISTS OF 4 CONTROL BYTES FOLLOWED BY 60 LOGICAL RECORDS, EACH BEING 276 BYTES LONG. THE TAPES WERE CREATED ON A 360/75 COMPUTER. THE DR AND DS TAPES ARE 9-TRACK, 6250 BPI. THE DR AND DS NUMBERS ALONG WITH THE CORRESPONDING D NUMBERS AND THE TIME SPANS ARE AS FOLLOWS:

DR#	DS#	D#	FILES	TIME SPAN
DR01576	DS01576	D18781	1	03/13/71 - 04/03/71
		D18782	1	04/03/71 - 04/24/71
		D18783	1	04/24/71 - 05/10/71
		D18784	1	05/10/71 - 06/04/71
		D18785	1	06/04/71 - 06/25/71
DR01577	DS01577	D18786	1	06/25/71 - 07/16/71
		D18787	1	07/16/71 - 08/05/71
		D18788	1	08/05/71 - 08/26/71
		D18789	1	08/26/71 - 09/16/71
		D18790	1	09/16/71 - 10/04/71
DR01578	DS01578	D18790	1	10/04/71 - 10/07/71
		D18791	1	10/07/71 - 10/27/71
		D18792	1	10/27/71 - 11/17/71
		D23664	1	11/17/71 - 12/08/71
		D23665	1	12/08/71 - 12/20/71
		D23666	1	12/20/71 - 12/29/71
		D23667	1	12/29/71 - 01/12/72
DR01579	DS10579	D23667	1	01/12/72 - 01/18/72
		D23668	1	01/18/72 - 02/08/72
		D23669	1	02/08/72 - 02/29/72
		D23670	1	02/29/72 - 03/21/72
		D23671	1	03/21/72 - 04/10/72
		D23672	1	04/10/72 - 04/20/72

DR#	DS#	D#	QTY	DATE
DR01580	DS01580	D23672	1	04/20/72 - 05/01/72
		D23673	1	05/01/72 - 05/22/72
		D23674	1	05/22/72 - 06/12/72
		D23675	1	06/12/72 - 07/02/72
		D23676	1	07/02/72 - 07/23/72
		D23677	1	07/23/72 - 07/28/72
DR01581	DS01581	D23677	1	07/29/72 - 08/13/72
		D23678	1	08/13/72 - 09/03/72
		D23679	1	09/03/72 - 09/23/72
		D23680	1	09/23/72 - 10/14/72
		D23681	1	10/14/72 - 11/04/72
		D23682	1	11/04/72 - 11/25/72
DR01582	DS01582	D23683	1	11/28/72 - 12/15/72
		D29246	1	12/15/72 - 01/05/73
		D23684	1	01/05/73 - 01/26/73
		D23685	1	01/26/73 - 02/20/73
		D23686	1	02/16/73 - 03/08/73
		D23687	1	03/08/73 - 03/12/73
DR01583	DS01583	D23687	1	03/12/73 - 03/29/73
		D23688	1	03/29/73 - 04/19/73
		D23689	1	04/19/73 - 05/10/73
		D23690	1	05/10/73 - 05/30/73
		D23691	1	05/30/73 - 06/20/73
		D23692	1	06/20/73 - 06/25/73
DR01584	DS01584	D23692	1	06/25/73 - 07/11/73
		D23693	1	07/11/73 - 08/01/73
		D25135	1	08/01/73 - 08/21/73
		D23694	1	08/21/73 - 09/11/73
		D23695	1	09/11/73 - 10/02/73
		D28139	1	10/02/73 - 10/09/73
DR01585	DS01585	D28139	1	10/09/73 - 10/23/73
		D23696	1	10/23/73 - 11/12/73
		D23697	1	11/12/73 - 12/03/73
		D25136	1	12/03/73 - 12/24/73
		D25137 *	1	12/24/73 - 01/01/74
		D25138	1	01/14/74 - 01/31/74
DR01586	DS01586	D25138	1	01/31/74 - 02/03/74
		D25139	1	02/03/74 - 02/24/74
		D25140	1	02/24/74 - 03/17/74
		D25141	1	03/17/74 - 04/07/74
		D25142	1	04/07/74 - 04/27/74
		D25143	1	04/27/74 - 05/14/74
DR01587	DS01587	D25143	1	05/14/74 - 05/18/74
		D25144	1	05/18/74 - 06/08/74
		D25145	1	06/08/74 - 06/28/74
		D25146	1	06/28/74 - 07/19/74
		D25147	1	07/19/74 - 08/09/74
		D29247	1	08/09/74 - 08/28/74
DR01588	DS01588	D29247	1	08/28/74 - 08/30/74

* THE DATA ON THIS TAPE WRITTEN AS YEAR 1975 IS INCORRECT AND SHOULD BE THE YEAR 1974.

REQ. AGENT
RBK
WTJ

RAND NO.
RC3203
RC5376, RC6383

ACQ. AGENT
JHK

IMP-I
MAGNETOMETER
15 SEC. B VECTORS
71-019A-01B

*Also send
B20233*

This catalog consists of 62 IMP-I 3-Axis Fluxgate Magnetometer data tapes. The tapes are 1600 BPI, Binary, 9-track and were created on the 360/75 computer. The tapes are standard labeled and contain one file each.

The time spans for the tapes are as follows:

<u>D#</u>	<u>C#</u>	<u>FP#</u>	<u>TIME SPAN</u>	
D-18781	C-14875		3/13/71 - 4/03/71	} 1576
D-18782	C-14876		4/03/71 - 4/24/71	
D-18783	C-14877		4/24/71 - 5/10/71	
D-18784	C-14878		5/10/71 - 6/04/71	
D-18785	C-14879		6/04/71 - 6/25/71	
D-18786	C-14880		6/25/71 - 7/16/71	} 1577
D-18787	C-14881		7/16/71 - 8/05/71	
D-18788	C-14882		8/05/71 - 8/26/71	
D-18789	C-14883		8/26/71 - 9/16/71	
D-18790	C-14884		9/16/71 - 10/07/71	
D-18791	C-14885		10/07/71 - 10/27/71	} 1578
D-18792	C-14886		10/27/71 - 11/17/71	
D-23664	C-17705	FP7400	11/17/71 - 12/08/71	
D-23665	C-17706	FP7409	12/08/71 - 12/20/71	
D-23666	C-17707	FP7424	12/20/71 - 12/29/71	
D-23667	C-17708	FP3264	12/29/71 - 1/18/72	} 1579
D-23668	C-17709	FP7493	1/18/72 - 2/08/72	

<u>D#</u>	<u>C#</u>	<u>FP#</u>	<u>TIME SPAN</u>			
D-23669	C-17710	FP7393	2/08/72 - 2/29/72	1579		
D-23670	C-17711	FP7460	2/29/72 - 3/21/72			
D-23671	C-17712	FP5987	3/21/72 - 4/10/72			
D-23672	C-17713	FP7291	4/10/72 - 5/01/72			
D-23673	C-17714	FP5985	5/01/72 - 5/22/72			
D-23674	C-17715	FP7462	5/22/72 - 6/12/72			
D-23675	C-17716	FP4069	6/12/72 - 7/02/72		1580	
D-23676	C-17717	FP7464	7/02/72 - 7/23/72			
D-23677	C-17718	FP2335	7/23/72 - 8/13/72			
D-23678	C-17719	FP2403	8/13/72 - 9/03/72			
@D-23679	C-17720	FP4051	9/03/72 - 9/23/72			
D-23680	C-17721	FP5672	9/23/72 - 10/14/72	1581		
D-23681	C-17722	FP5511	10/14/72 - 11/04/72			
D-23682	C-17723	FP5539	11/04/72 - 11/25/72			
D-23683	C-17724	FP5540	11/25/72 - 12/15/72			
@D-29246	C-18938	FP5666	12/15/72 - 01/05/73			
D-23684	C-17725	FP7324	1/05/73 - 1/26/73			
D-23685	C-17726	FP2625	1/26/73 - 2/20/73		1582	
D-23686	C-17727	FP4650	2/16/73 - 3/08/73			
D-23687	C-17728	FP4864	3/08/73 - 3/29/73			
D-23688	C-17729	FP4649	3/29/73 - 4/19/73			
D-23689	C-17730	FP5336	4/19/73 - 5/10/73	1583		
D-23690	C-17731	FP5542	5/10/73 - 5/30/73			
D-23691	C-17732	FP5543	5/30/73 - 6/20/73			
D-23692 ✓	C-17733	FP4182	6/20/73 - 7/11/73			
D-23693	C-17734	FP5673	7/11/73 - 8/01/73			
D-23694	C-17735	FP4050	8/21/73 - 9/11/73			1584
D-23695	C-17736	FP4052	9/11/73 - 10/02/73			
D-23696	C-17737	FP5674	10/23/73 - 11/12/73			
D-23697	C-17738	FP5513	11/12/73 - 12/03/73		1585	

<u>D#</u>	<u>C#</u>	<u>FP#</u>	<u>TIME SPAN</u>
D-25135	C-18245	FP5611	8/01/73 - 8/23/73 - 1584
D-25136	C-18246	FP5633	12/03/73 - 12/24/73
*D-25137	C-18247	FP5917	12/24/73 - 1/01/74
D-25138	C-18248	FP5665	1/14/74 - 2/03/74
D-25139	C-18249	FP5918	2/03/74 - 2/24/74
D-25140	C-18250	FP5919	2/24/74 - 3/17/74
D-25141	C-18251	FP5920	3/17/74 - 4/07/74
D-25142	C-18252	FP5945	4/06/74 - 4/27/74
D-25143	C-18253	FP5937	4/29/74 - 5/18/74
D-25144	C-18254	FP5938	5/18/74 - 6/08/74
D-25145	C-18255	FP5943	6/08/74 - 6/28/74
D-25146	C-18256	FP5946	6/28/74 - 7/19/74
D-25147	C-18257	FP5944	7/19/74 - 8/09/74
@ D-29247	C-18939	FP5947	08/09/74 - 08/30/74
D-28139	C-18518	FP5809	10/02/73 - 10/23/73 - 1584, 1585

* The data on this tape written as year 1975 is incorrect and should be the year 1974.

@ These tapes are NOT standard label.

IMP EYE 15.36 SEC STATISTICS TAPE PRODUCED
BY PHASE I PROGRAM

W. H. MISH
1/28/72

This tape is written by the STAT15 subroutine by a call to FWRITE which is a subroutine contained in the FTIO package. The following DD card is used to ^{READ} produce the tape.

```
//ddname DD UNIT=(9TRACK,,DEFER),LABEL=(,SL,,IN),DISP=SHR,  
//DCB=(RECFM=VBS,LRECL=276,BLKSIZE=16564,DEN=3),  
//DSN=IMPEYE.SUMMARY,VOL=SER=fptape
```

ITEM	DESCRIPTION	(TYPE) (SIZE)	UNITS		
1*	Year	I*4		Last two digets only	
2*	Day	I*4	Days	Jan 1 = 0	
3*	Milliseconds of day	I*4	Millisec	Elasped Millisec in day	
4*	Data Quality Flag	↓		(See Def. Ref. 1)	
5*	Orbit Number				
6*	Bit Rate Flag				
7*	Pseudo Sequence Count				
8*	Actual satellite clock from S/C				
9*	Housekeeping Data		See Footnote (1)		
10	Field Magnitude (F1) (Average over 15.36 sec.)		R*4	γ	$F1 = \frac{1}{N} \sum F_i$ where F_i is computed by PAYAVG subroutine 1.28 seconds
11	Field Magnitude (F2) (Average over 15.36 sec.)		R*4	γ	See footnote (2)
12	θ (Average over 15.36 sec.)		R*4	Degrees	$-90^\circ \leq \theta \leq +90^\circ$ (Payload coordinates)
13	φ (Average over 15.36 sec.)	R*4	Degrees	$0^\circ \leq \phi < 360^\circ$ (Payload coordinates)	

*Items 1 through 9 are for the last sequence included in the 15.36 second statistical computation. For all data processed prior to 1/28/72 these quantities are for the sequence following the statistical computations.

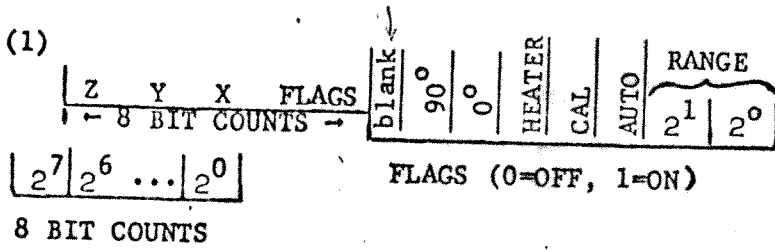
ITEM	DESCRIPTION	(TYPE) (SIZE)	UNITS	NOTES
14	Variance XX from averages	R*4	Y	Variance matrix over 15.36 sec
15	Variance YY from averages	R*4		V _{XX} -- --
16	Variance ZZ from averages	R*4		V _{XX} V _{YY} --
17	Variance YX from averages	R*4		V _{ZX} V _{ZY} V _{ZZ}
18	Variance ZX from averages	R*4		(Payload coordinates)
19	Variance ZY from averages	R*4		See footnote (3)
20	N	I*4		Number of sequences over which statistics were computed
21	ND	I*4		Number of detail points over which statistics were computed
22	Trajectory Day	I*4	Day	Jan 1 = 0
23	Trajectory Millisec of day	I*4	Millisec	
24	Trajectory Data	R*4	(Deg)	Geomagnetic latitude satellite position
25	Trajectory Data	R*4	(Deg)	Geomagnetic Longitude satellite position
26	Trajectory Data	R*4	(km)	X Geocentric solar ecliptic satellite position
27	Trajectory Data	R*4	(km)	Y Geocentric solar ecliptic satellite position
28	Trajectory Data	R*4	(km)	Z Geocentric solar ecliptic satellite position
29	Trajectory Data	R*4	(km)	Radial distance to satellite from earth center
30	Trajectory Data	R*4	(km)	Y Geocentric solar magnetospheric satellite position
31	Trajectory Data	R*4	(km)	Z Geocentric solar magnetospheric satellite position
32	Trajectory Data	R*4	(Deg)	Geomagnetic latitude sun position
33	Trajectory Data	R*4	(Deg)	Geomagnetic longitude sun position
34	Trajectory Data	R*4	Y	X theoretical geomagnetic field in geocentric solar ecliptic
35	Trajectory Data	R*4	Y	Y theoretical geomagnetic field in geocentric solar ecliptic
36	Trajectory Data	R*4	Y	Z theoretical geomagnetic field in geocentric solar ecliptic
37	Trajectory Data	R*4		Rotation matrix from geocentric solar ecliptic to geocentric solar magnetospheric
38	Trajectory Data	R*4		
39	Trajectory Data	R*4		
40	Trajectory Data	R*4		
41	Trajectory Data	R*4		
42	Trajectory Data	R*4		

ITEM	DESCRIPTION	(TYPE) (SIZE)	UNITS	NOTES
43	Trajectory Data	R*4		Rotation matrix from geocentric solar ecliptic to geocentric Solar magnetospheric
44	Trajectory Data	R*4		
45	Trajectory Data	R*4		
46	Trajectory Data	R*4		Rotation matrix from celestial inertial to geocentric solar ecliptic
47	Trajectory Data	R*4		
48	Trajectory Data	R*4		
49	Trajectory Data	R*4		
50	Trajectory Data	R*4		
51	Trajectory Data	R*4		
52	Trajectory Data	R*4		
53	Trajectory Data	R*4		
54	Trajectory Data	R*4		
55	Trajectory Data	R*4	(Deg)	Geocentric latitude satellite position
56	Trajectory Data	R*4	(Deg)	Geocentric longitude satellite position
57	Trajectory Data	R*4		Right ascension (in deg.) of satellite spin vector in celestial inertial coordinates*
58	Trajectory Data	R*4		Declination (in deg.) of satellite spin vector in celestial inertial coordinates*
59	\ominus_{se}	R*4		Solar ecliptic and solar magnetospheric latitude and longitude angles of field vector (degrees)
60	\ominus_{sm}	R*4		
61	\oplus_{se}	R*4		
62	\oplus_{sm}	R*4		
63	XSE	R*4		Cartesian components of field vector in solar ecliptic and solar magnetospheric coordinates (gammas)
64	YSE	R*4		
65	ZSE	R*4		
66	XSM	R*4		
67	YSM	R*4		
68	ZSM	R*4		

*See memo of D. H. Fairfield, included in this information package, for more accurate values.

FOOTNOTES

(1)



(2) $F_2 = \text{SQRT} \left(\left(\frac{1}{N} \sum_{i=1}^N x_i \right)^2 + \left(\frac{1}{N} \sum_{i=1}^N y_i \right)^2 + \left(\frac{1}{N} \sum_{i=1}^N z_i \right)^2 \right)$ where x_i, y_i, z_i are computed by PAYAVG subroutine over 1.28 seconds

(3) e.g., $V_{XX} = \left(N \sum_{i=1}^N x_i^2 - \frac{\sum_{i=1}^N x_i \sum_{i=1}^N x_i}{N} \right) / (N(N-1))$

$$Y_{ZY} = \left(N \sum_{i=1}^N z_i y_i - \frac{\sum_{i=1}^N z_i \sum_{i=1}^N y_i}{N} \right) / (N(N-1))$$

IMP EYE 15.36 SEC STATISTICS TAPE PRODUCED
BY PHASE II PROGRAM

The following DD card is used to produce the tape.

```
//GO.FT20F001 DD UNIT=(9TRACK,,DEFER),LABEL=(1,SL,,OUT),
// DISP=(SHR,KEEP),DCB=(RECFM=VBS,BLKSIZE=16564,LRECL=276,DEN=3),
// VOL=SER=FP4302,DSN=IMPEYE.SUMMARY
```

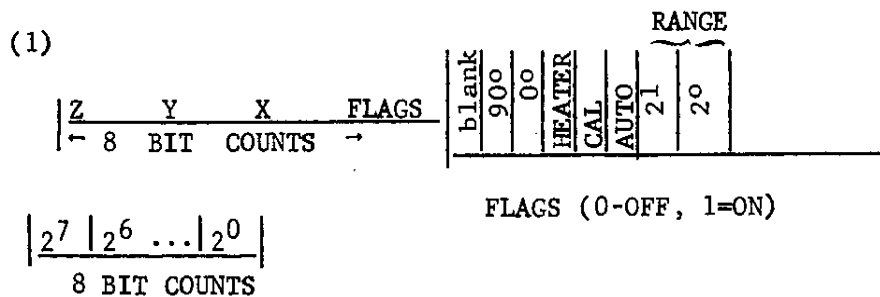
ITEM	DESCRIPTION	(SIZE) (TYPE)	UNITS	
1*	Year	I*4		Last two digits only
2*	Day	I*4	Days	Jan 1 = 0
3*	Milliseconds of day	I*4	Millisec	Elapsed Millisec in day
4*	Data Quality Flag	I*4		(See Def.Ref. 1)
5*	Orbit Number	I*4		
6*	Bit Rate Flag	I*4		
7*	Pseudo Sequence Count	I*4		
8*	Actual satellite clock from S/C	I*4		
9*	Housekeeping Data	I*4		See Footnote (1)
10	Field Magnitude (F1) (Average over 15.36 sec.)	R*4	Y	$F1 = \frac{1}{N} \sum_{i=1}^n F_i$ where F_i is computed by PAYAVG sub- routine over 1.28 seconds
11	Field Magnitude (F2) (Average over 15.36 sec.)	R*4	Y	See footnote (2)
12	θ (Average over 15.36 sec.)	R*4	Degrees	$-90^\circ \leq \theta \leq +90^\circ$
13	ϕ (Average over 15.36 sec.)	R*4	Degrees	$0^\circ \leq \phi \leq 360^\circ$

*Items 1 through 9 are for the last sequence included in the 15.36 second statistical computation. For all data processed prior to 1/28/72 these quantities are for the sequence following the statistical computations.

ITEM	DESCRIPTION	(SIZE) (TYPE)	UNITS	NOTES
14	Variance XX from averages	R*4	γ^2	Variance matrix over 15.36 sec $\begin{bmatrix} V_{XX} & -- & -- \\ V_{YX} & V_{YY} & -- \\ V_{ZX} & V_{ZY} & V_{ZZ} \end{bmatrix}$ See footnote (3)
15	Variance YY from averages	↓		
16	Variance ZZ from averages			
17	Variance YX from averages			
18	Variance ZX from averages			
19	Variance ZY from averages			
20	N	I*4		Number of sequences over which statistics were computed
21	ND	I*4		Number of detail points over which statistics were computed
22	Trajectory Day	I*4	Day	Jan 1 = 0
23	Trajectory Millisec of day	I*4	Millisec	
24	Geomagnetic latitude satellite position	↓	deg	
25	Geomagnetic longitude satellite position		deg	
26	X Geocentric solar ecliptic satellite position		km	
27	Y Geocentric solar ecliptic satellite position		km	
28	Z Geocentric solar ecliptic satellite position		km	
29	Radial distance to satellite from earth center		km	
30	Y Geocentric solar magneto- spheric satellite position		km	
31	Z Geocentric solar magneto- spheric satellite position		km	
32	Geomagnetic latitude sun position		deg	
33	Geomagnetic longitude sun position		deg	
34	X theoretical geomagnetic field in geocentric solar ecl.		gamma	
35	Y theoretical geomagnetic field in geocentric solar ecl.		gamma	
36	Z theoretical geomagnetic field in geocentric solar ecl.	gamma		

ITEM	DESCRIPTION	(SIZE) (TYPE)	UNITS	NOTES
37	Rotation matrix from geocentric solar ecliptic to	R*4		Elements given in the following order:
38	geocentric solar magneto-			
39	spheric. (Items 37 thru 45)			
40				
41				
42				
43				
44				
45				
46	Rotation matrix from celestial inertial to			
47	geocentric solar ecliptic. (Items 46 thru 54).			
48				
49				
50				
51				
52				
53				
54				
55	Geocentric latitude satellite position		deg	
56	Geocentric longitude satellite position		deg	
57	Right ascension		deg	
58	Declination		deg	
59	θ_{SE} Averaged over 15.36 sec	R*4		deg

ITEM	DESCRIPTION	(SIZE) (TYPE)	UNITS	NOTES
60	θ_{SM} Averaged over 15.36 sec.	R*4	deg	
61	ϕ_{SE} Averaged over 15.36 sec.	R*4	deg	
62	ϕ_{SM} Averaged over 15.36 sec.	R*4	deg	
63	X_{SE} Averaged over 15.36 sec.	R*4	Y	
64	Y_{SE} Averaged over 15.36 sec.	R*4	Y	
65	Z_{SE} Averaged over 15.36 sec.	R*4	Y	
66	X_{SM} Averaged over 15.36 sec.	R*4	Y	
67	Y_{SM} Averaged over 15.36 sec.	R*4	Y	
68	Z_{SM} Averaged over 15.36 sec.	R*4	Y	



(2)

$$F2 = \text{SQRT}\left(\frac{1}{N} \sum_{i=1}^N X_i^2 + \left(\frac{1}{N} \sum_{i=1}^N Y_i\right)^2 + \left(\frac{1}{N} \sum_{i=1}^N Z_i\right)^2\right)$$

where X_i, Y_i, Z_i are computed by PAYAVG subroutine over 1.28 seconds

(3)

e.g., $V_{XX} = \left(N \sum_{i=1}^N X_i^2 - \frac{\left(\sum_{i=1}^N X_i\right)^2}{N}\right) / (N-1)$

$$Y_{ZY} = \left(N \sum_{i=1}^N Z_i Y_i - \frac{\left(\sum_{i=1}^N Z_i\right) \left(\sum_{i=1}^N Y_i\right)}{N}\right) / (N-1)$$



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

GODDARD SPACE FLIGHT CENTER

GREENBELT, MARYLAND 20771

January 27, 1975

Poor Original

REPLY TO
ATTN OF Code 692

MEMO

TO: Files

FROM: D. H. Fairfield

SUBJECT: IMP 6 (IMP EYE) Spin Axis Orientation

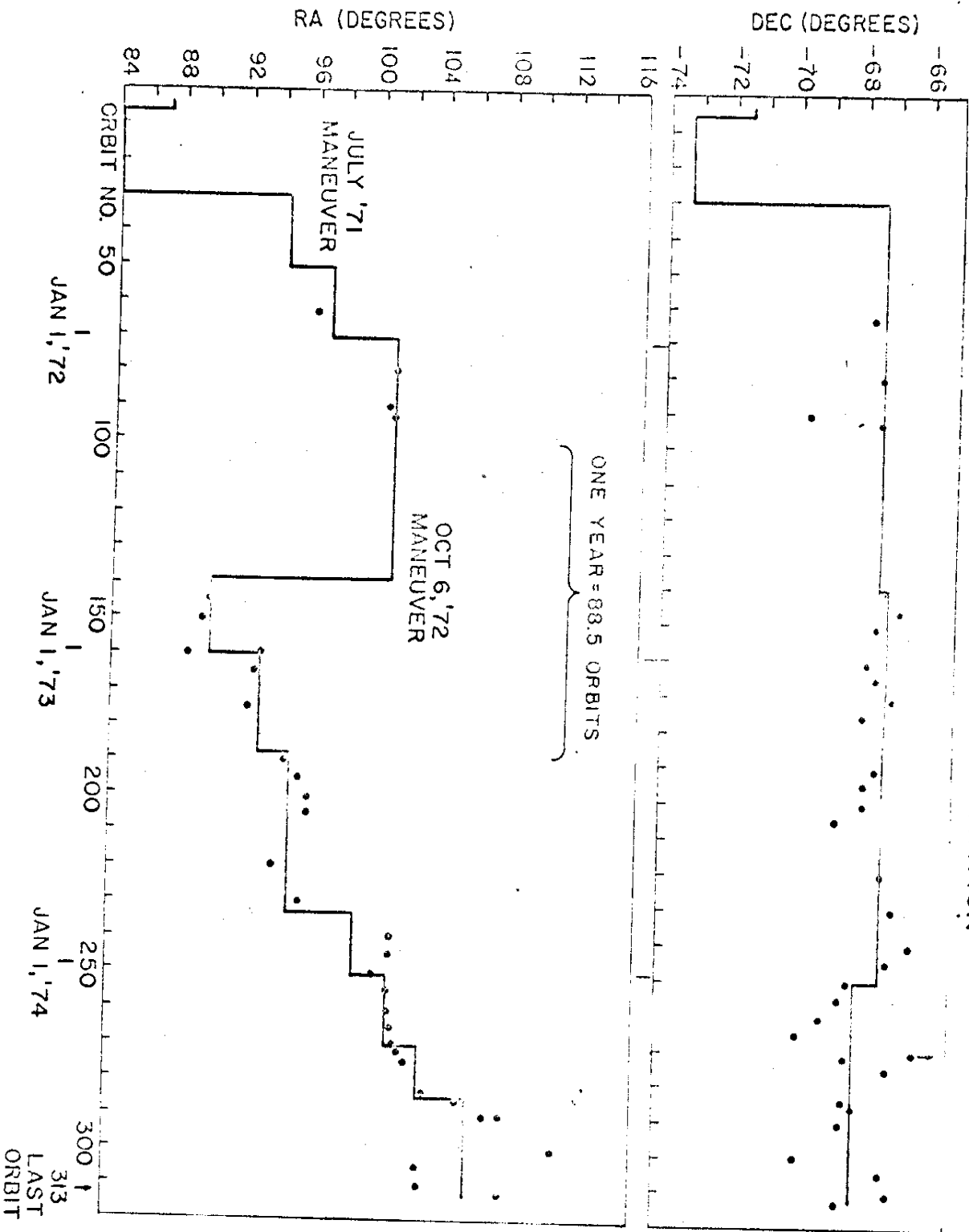
Knowledge of spacecraft orientation represents a fundamental limitation in the accuracy of spacecraft magnetic field measurements. For this reason the following memo was prepared to document the history of the IMP 6 spin axis orientation. The attached plot displays the right ascension and declination of the spin axis vector in inertial coordinates as a function of orbit number for the lifetime of the spacecraft. Points were obtained from Gene Smith of the Information Processing Division (Code 565) and represent his calculations for individual orbits. Data prior to orbit 30 is that contained in a July 30, 1971 memo from S. T. Paddock of the IMP Project Office. Times on the plot represent an arbitrary fit to the data represent points used in the magnetic field data processing. (Values slightly different from these in the figure may have been used for some of the first 220 orbits of magnetic field data processing). Since the calculated points were determined after the production of experimenter data tapes, it is clear that times inserted on the tapes differ from those in the figure and processing are less accurate. The data suggest that the uncertainty in orientation knowledge is approximately one degree.

The most significant fact represented by the figure is the fluctuation with time of the right ascension. Both on July 15, 1971 and October 1972 the spacecraft was reoriented such that its spin axis was perpendicular to the plane of the ecliptic. Due to the symmetry of the spacecraft it's orientation was not expected to change, yet the data indicate it did change. To my knowledge there is no understanding of why this change occurred.

Donald H. Fairfield
Space Plasma Physics Branch

NOTE THE VECTOR HAD TO BE THE ECLIPTIC PLANE
DECLINATION - 26.56°, R.A. = 12h 50m - JHK

IMP 6 SPIN AXIS ORIENTATION



//GO.FT08F001 DD UNIT=STRACK.DISP=(OLD,KEEP).LABEL=(,SL.,1N),
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 //GO.DATAS CD *

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 IEF2371 232 ALLOCATED TO FT05F001
 IEF2371 331 ALLOCATED TO FT06F001
 IEF2371 331 ALLOCATED TO FT07F001
 IEF2371 331 ALLOCATED TO SYSPRINT
 IEF2371 231 ALLOCATED TO SYSPRINT
 IEF2371 232 ALLOCATED TO SYSPRINT
 IEF2371 034 ALLOCATED TO FT08F001

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RECORD107847 OF FILE 1
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406338DE	00000000	C065D89D	40EAD5BA	C21B7F38	428CE588	42559999	C245CC0C		C21F58BE
428FA470	4289A9E6	C31B89EB	4314459D	C31B17CA	C31B89EB	4319171C	C316B421		

107847 RECORDS IN FILE 1 OF TAPE

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TP4308

B 18781

3/13/71 - 4/3/71

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STEP 02 CPU OMIN 01.82SEC MAIN 130K LCS
OK
STEP TIME = 1.56 TARE= .21 WINS=(CPU= .03,IDE= .18)
STEP CPU 00000230
STEP CPU 00000240
STEP CPU 00000250
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STEP CPU 00000270
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D-23662 C-17708

IMP I FR 3264

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SIDR: 1/18/72 ORBIT# 75

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1907 RECORDS IN FILE 2 OF TAPE

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