DATA SET CATALOG # 97

Explorer 33, Magnetometer 'A'
66-058A-01A 59 tapes

Quantity	Word No.	Single or Double Precision	Integer or Real
If AIMP D tape:			
41. Sequence ID (1, 2, 3 or 4)	270	1S	I
If AIMP E tape:			
41. Selenocentric satellite position $(X, Y, Z)_{SSE}$ (R_L)	270-272	3S	R
42. Sequence ID (1, 2, 3 or 4)	273	1S	I

	Characters	Description
7.	54-61	Value of 1 earth radius in kilometers, to 0.1 km.
8.	62-66	Value of 1 lunar radius in kilometers, to 0.1 km.

LOGICAL DATA RECORD FORMAT

	Characters	Description	Print Program Mnemonic	Printout Label
1.	Time of the coordinate set.			
	1-2	Year	IYRD	YR
	3-5	Decimal day number	IDAYD	DAY
	6-13	Fraction of day to 8 places	TIMED	TIME
2.	Position vector (X, Y, Z) of the moon in mean equator and equinox of 1950 coordinate system. Components are in kilometers to 0.1 km.			
	14	Sign of X		
	15-21	X Component	ECX	LUNAXEE
	22	Sign of Y		
	23-29	Y Component	ECY	LUNAYEE
	30	Sign of Z		
	31-37	Z Component	ECZ	LUNAZEE
3.	Position vector of the moon in geocentric solar ecliptic coordinates. Components are in earth radii, to 0.01 R_E.			
	38	Sign of X		
	39-42	X Component	SCX	LXSE
	43	Sign of Y		
	44-47	Y Component	SCY	LYSE
	48	Sign of Z		
	49-52	Z Component	SCZ	LZSE

Quantity	Word No.	Single or Double Precision	Integer or Real
25. θ_p, Ψ_p (payload field latitude and azimuth - deg.)	168-169	2S	R
26. 16 values of BX_{SE} (solar ecliptic components-gammas)	170-185	16S	R
27. 16 values of BY_{SE}	186-201	16S	R
28. 16 values of BZ_{SE}	202-217	16S	R
29. Sequence average (BX, BY BZ)$_{SE}$ components (gammas)	218-220	3S	R
30. (X, Y, Z)$_{SE}$ RMS deviations (gammas)	221-223	3S	R
31. C Ratio*	224	1S	I
32. θ_{SE}, ϕ_{SE} (SE field latitude and azimuth-deg.)	225-226	2S	R
33. 16 values of Y_{SM} (solar magnetospheric components-gammas)	227-242	16S	R
34. 16 values of Z_{SM}	243-258	16S	R
35. Sequence average (Y, Z)$_{SM}$ components (gammas)	259-260	2S	R
36. Data quality flag	261	1S	I
37. Experiment flags 12 A, B	262-263	2S	I
38. No. of digitized data points in sequence.	264	1S	I
39. Satellite position (X, Y, Z)$_{SE}$ (R_E)	265-267	3S	R
40. Satellite position (Y, Z)$_{SM}$ (R_E)	268-269	2S	R

*The component ratio is defined by

$$\text{C RATIO} = \left(\frac{\text{sum of component RMS deviations}}{3\sqrt{\overline{BX}^2 + \overline{BY}^2 + \overline{BZ}^2}}\right) \times 100,$$

where $\overline{BX}$, $\overline{BY}$ and $\overline{BZ}$ are the sequence average solar ecliptic coordinate field components.

66-058A-01A

To: ADP Services
From: Joe H. King
Subject: Explorer 33 (Ness)

Complete documentation for this data set consists of:

1. AIM file spacecraft, experiment and data set brief descriptions

2. Imp Project Report/Bibliography (TRF B 11228)

3. "Trajectories of Explorers 33, 34, and 35. July 1966-April 1969" by Behannon, Schatten, Fairfield, and Ness (TRF B05208)

4. "GSFC Magnetic Field Experiment - Explorers 33 and 35" by Scearce, Ness, and Cantarano (TRF B03706)

5. "AIMP D and E Magnetic Field Analysis" by Behannon, Haney, and Taylor (TRF B06337) with appended discussion of data quality flag

6. Current TRF output for spacecraft and experiment

```
//GO.FT12F001   DD DUMMY,DSNAME=SC4020,UNIT=2400-7,                  *
//              VOLUME=SER=Z632,                                     *
//              DCB=(LRECL=1200,BLKSIZE=1200,DEN=1),                 *
//              LABEL=(,BLP),DISP=(NEW,KEEP)
//GO.FT13F001   DD SYSOUT=A,DCB=(RECFM=VBA,LRECL=137,                *
//              BLKSIZE=3429),SPACE=(CYL,(10,5))
//GO.FT14F001   DD DSNAME=DSKTRAJ,UNIT=2314,                         *
//              DCB=(,RECFM=V,LRECL=1024,BLKSIZE=1028),              *
//              DISP=(NEW,DELETE),SPACE=(CYL,(10,5))
//GO.FT15F001   DD DSNAME=AIMPT,UNIT=2400-7,DISP=(OLD,KEEP),         *
//              LABEL=(,BLP),DCB=(,RECFM=U,BLKSIZE=1020,             *
//              DEN=1,TRTCH=ET),VOLUME=SER=Z0613
//GO.FT16F001   DD SYSOUT=A,DCB=(RECFM=VBA,LRECL=137,                *
//              BLKSIZE=3429),SPACE=(CYL,(10,5))
//GO.FT17F001   DD SYSOUT=A,DCB=(RECFM=VBA,LRECL=137,                *
//              BLKSIZE=3429),SPACE=(CYL,(10,5))
```

Inputs are the Experimenter Tape on FT08 and the Trajectory Tape on FT15. Output is the Raw Summary Tape on FT11.

3. SC 4020 SEQUENCE STATISTIC PLOT

```
//GO.FT10F001   DD DSNAME=SUMMARY,                                   *
//              DISP=(OLD,KEEP),                                     *
//              UNIT=2400,                                           *
//              LABEL=(,BLP),                                        *
//              VOLUME=SER=Z1301,                                    *
//              DCB=(,BLKSIZE=4404,LRECL=1100,RECFM=VB)
//GO.SC4020     DD UNIT=2400-7,                                      *
//              LABEL=(,BLP),                                        *
//              VOLUME=SER=Z0640,                                    *
//              DCB=(LRECL=1200,BLKSIZE=1200,DEN=1)
```

Input is the Raw Summary Tape on FT10. Output is the Plot Tape on SC 4020 unit.

4. AUTOMATIC SMOOTHING

```
//GO.FT09001    DD SYSOUT=A,SPACE=(CYL,(10,5)),                      *
//              DCB=(RECFM=VBA,LRECL=137,BLKSIZE=3429)
```

(AIMP-[illegible] MP-D
EXPLORER 33, [illegible] TOMETER 'A'
66-05[illegible]-1A

42 TAPES
[illegible]

D Tapes are 9 track, 800 BPI, Binary, [illegible]
C Tapes are 7 track, 800 BPI, Binary, [illegible]

DR	CR	FILES	TIME	SPAN
D-[illegible]	C-04341	2	07/0[illegible]/66	- 07/16/66
D-[illegible]	C-04342	2	07/[illegible]/66	- 07/30/66
D-[illegible]	C-04343	2	07/30/66	- 08/13/66
D-[illegible]	C-04344	2	08/13/66	- 08/27/66
D-[illegible]	C-04345	2	08/27/66	- 09/10/66
D-[illegible]	C-04346	2	09/10/66	- 09/24/66
D-[illegible]	C-04347	2	09/24/66	- 10/[illegible]/66
D-[illegible]	C-04348	2	10/08/66	- 10/22/66
D-[illegible]	C-04349	2	10/22/66	- 11/05/66
D-[illegible]	C-04350	2	11/05/66	- 11/19/66
D-[illegible]	C-04351	2	11/19/66	- 12/03/66
D-[illegible]	C-04352	2	12/03/66	- 12/17/66
D-[illegible]	C-04353	2	12/17/66	- 12/31/66
D-[illegible]	C-04354	2	01/01/67	- 01/14/67
D-[illegible]	C-04355	2	01/14/67	- 01/28/67
D-[illegible]	C-04356	2	01/2[illegible]/67	- 02/11/67
D-[illegible]	C-04357	2	02/11/67	- 02/25/67
D-[illegible]	C-04358	1	02/25/67	- 03/04/67
[illegible]	C-04629	1	03/04/67	- 03/11/67
[illegible]	C-04359	2	03/11/67	- 03/25/67
D-05599	C-04360	2	03/25/67	- 04/08/67
D-05600	C-04361	2	04/08/67	- 04/22/67
D-05601	C-04362	2	04/22/67	- 05/06/67
D-056[illegible]	C-04363	2	05/06/67	- 05/20/67
D-05[illegible]	C-04364	2	05/20/67	- 06/03/67
D-[illegible]	C-04365	2	[illegible]/03/67	- 06/17/67
D-[illegible]	C-04366	2	06/17/67	- 06/30/67
D-[illegible]	C-04367	2	07/01/67	- 07/15/67
D-[illegible]	C-04368	1	07/15/67	- 07/22/67
[illegible]	C-04369	1	07/22/67	- 07/29/67
D-[illegible]	C-04370	1	07/29/67	- 08/05/67
[illegible]	C-04371	1	08/05/67	- 08/12/67
*D-[illegible]	C-04372	1	08/12/67	- 08/19/67
[illegible]	C-04373	1	08/19/67	- 08/26/67
*D-05610	C-04374	1	08/26/67	- 09/02/67
[illegible]	C-04375	1	09/02/67	- 09/09/67
*D-05611	C-04376	1	09/09/67	- 09/16/67
[illegible]	C-04377	1	09/16/67	- 09/23/67
D-05[illegible]	C-04378	2	09/23/67	- 10/07/67
D-[illegible]	C-04379	2	10/07/67	- 10/21/67
*D-05[illegible]	C-04380	1	10/21/67	- 10/28/67
[illegible]	C-04381	1	10/28/67	- 11/04/67
D-0[illegible]	C-04382	2	11/04/67	- 11/[illegible]/67
D-05[illegible]	C-04383	2	11/18/67	- 12/02/67

D#	C#	FILES	TIME SPAN
D-05617	C-04384	2	12/02/67 - 12/16/67
D-05618	C-04385	2	12/16/67 - 12/30/67
D-05619	C-04386	2	01/01/68 - 01/13/68
D-05620	C-04387	2	01/13/68 - 01/27/68
D-05621	C-04388	2	01/27/68 - 02/10/68
D-05622	C-04389	2	02/10/68 - 02/24/68
*D-05623	C-04390	1	02/24/68 - 03/02/68
	C-04391	1	03/02/68 - 03/09/68
D-05624	C-04392	2	03/09/68 - 03/23/68
*D-05625	C-04393	1	03/23/68 - 03/30/68
	C-04394	1	03/30/68 - 04/06/68
*D-05626	C-04395	1	04/06/68 - 04/13/68
	C-04396	1	04/13/68 - 04/20/68
*D-05627	C-04397	1	04/20/68 - 04/27/68
	C-04398	1	04/27/68 - 05/04/68
D-05628	C-04399	2	05/04/68 - 05/18/68
*D-05629	C-04630	1	05/18/68 - 05/25/68
	C-04631	1	05/25/68 - 06/01/68
*D-05630	C-04632	1	06/01/68 - 06/08/68
	C-04633	1	06/08/68 - 06/15/68
*D-05631	C-04634	1	06/15/68 - 06/22/68
	C-04635	1	06/22/68 - 06/29/68
*D-05632	C-04636	1	06/29/68 - 07/06/68
	C-04683	1	07/06/68 - 07/13/68
D-05633	C-04684	2	07/13/68 - 07/27/68
*D-05634	C-04685	1	07/27/68 - 08/03/68
	C-04686	1	08/03/68 - 08/10/68
D-05635	C-04687	2	08/10/68 - 08/24/68
D-05636	C-04688	2	08/24/68 - 09/07/68
D-05637	C-04689	2	09/07/68 - 09/21/68
D-05638	C-04690	2	09/21/68 - 10/05/68

* Indicates a problem encountered while attempting to dupe 9 track to 7 track tapes. The problem was the input tapes with 2 files were too long for the output tapes. As a result we had to dupe each file separately. The 2ND C-TAPE OF EACH SET HAS A EOV AT THE BEGINNING OF THE TAPE.

NOTE: JANUARY 1ST IS BEING TO DAY. O.

APPENDIX F

FORMAT OF AIMP-D SUMMARY DATA TAPES (EXPL 33)

The AIMP summary data tapes are produced on an IBM 360 computer. They are 9-track, 800 BPI binary tapes that will contain 2 files of data unless otherwise specified, with standard IBM 360 integer and real single and double precision 32-bit words. Each logical record on the tapes contains summary magnetic field data from one telemetry sequence. The tapes are system blocked with 4 logical records to a physical record each logical record contains 19 double precision words and 232 single precision words for the AIMP D tapes (for a total of 270 32-bit words or 1080 bytes). On IBM 360 these tapes can be read one logical record at a time using the appropriate DCB parameters in the DD specifications for that input unit. An example of this for AIMP E tapes is as follows:

DCB = (,BLKSIZE = 4088, LRECL = 1080, RECFM = VB).

The format of each logical record is given below.

Quantity	Word No.	Single or Double Precision	Integer or Real
1. Decimal day of sequence*	1-2	1D (double)	R (real)
2. Hour of sequence	3	1S (single)	I (integer)
3. Minute of sequence	4	1S	R
4. Sequence number (clock)	5	1S	I
5. Year	6	1S	I
6. Span period (seconds)	7-8	1D	R
7. Optical aspect time (seconds)	9-10	1D	R
8. Span axis right ascension (mag. solar ecliptic)	11	1S	R

*The sequence decimal day time that is written on the summary tapes is actually the time of the [illegible] of the GSFC Magnetometer sampling interval in the sequence. It is the time of frame [illegible] Channel 0 + 39.4[illegible] seconds.

DAY

NOTE : DAY 0 IS JANUARY 1ST

Quantity	Word No.	Single or Double Precision	Integer or Real
9. Spin axis declination (deg.-SE)	12	1S	R
10. Spin axis right ascension (deg. solar magnetospheric)	13	1S	R
11. Spin axis declination (deg.-SM)	14	1S	R
12. 16 sample times (sec. since beginning of year)	15-46	16D	R
13. 16 values of magnetic field magnitude (gammas)	47-62	16S	R
14. Sequence average field magnitude (gammas)	63	1S	R
15. Magnitude standard deviation (gammas)	64	1S	R
16. F Ratio*	65	1S	I
17. 16 values of BX_A† (gammas)	66-81	16S	R
18. 16 values of BY_A	82-97	16S	R
19. 16 values of BZ_A	98-113	16S	R
20. 16 values of BX_p† (payload coord. components-gammas)	114-129	16S	R
21. 16 values of BY_p	130-145	16S	R
22. 16 values of BZ_p	146-161	16S	R
23. Sequence average $(BX, BY, BZ)_p$ components (gammas)	162-164	3S	R
24. $(X, Y, Z)_p$ RMS deviations (gammas)	165-167	3S	R

*This magnitude ratio is defined by

$$F\ RATIO = \left(\frac{\text{sequence total field RMS deviation}}{\text{sequence average total field magnitude}}\right) \cdot 100.$$

†The $(BX, BY, BZ)_A$ components are relative to the triaxial magnetometer sensor coordinate axes rotating with the spacecraft. Payload components $(BX, BY, BZ)_p$ are relative to a fixed frame of reference centered in the spacecraft with the Z axis along the spin axis and the X axis in the plane defined by the spin axis and the satellite-sun vector.

Quantity	Word No.	Single or Double Precision	Integer or Real
9. Spin axis declination (deg.-SE)	12	1S	R
10. Spin axis right ascension (deg. solar magnetospheric)	13	1S	R
11. Spin axis declination (deg.-SM)	14	1S	R
12. 16 sample times (sec. since beginning of year)	15-46	16D	R
13. 16 values of magnetic field magnitude (gammas)	47-62	16S	R
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	Quantity	Word No.	Single or Double Precision	Integer or Real
9.	Spin axis declination (deg.-SE)	12	1S	R
10.	Spin axis right ascension (deg. solar magnetospheric)	13	1S	R
11.	Spin axis declination (deg.-SM)	14	1S	R
12.	16 sample times (sec. since beginning of year)	15-46	16D	R
13.	16 values of magnetic field magnitude (gammas)	47-62	16S	R
14.	Sequence average field magnitude (gammas)	63	1S	R
15.	Magnitude standard deviation (gammas)	64	1S	R
16.	F Ratio*	65	1S	I
17.	16 values of BX_A† (gammas)	66-81	16S	R
18.	16 values of BY_A	82-97	16S	R
19.	16 values of BZ_A	98-113	16S	R
20.	16 values of BX_p† (payload coord. components-gammas)	114-129	16S	R
21.	16 values of BY_p	130-145	16S	R
22.	16 values of BZ_p	146-161	16S	R
23.	Sequence average $(BX, BY, BZ)_p$ components (gammas)	162-164	3S	R
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Quantity	Word No.	Single or Double Precision	Integer or Real
9. Spin axis declination (deg.-SE)	12	1S	R
10. Spin axis right ascension (deg. solar magnetospheric)	13	1S	R
11. Spin axis declination (deg.-SM)	14	1S	R
12. 16 sample times (sec. since beginning of year)	15-46	16D	R
13. 16 values of magnetic field magnitude (gammas)	47-62	16S	R
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15. Magnitude standard deviation (gammas)	64	1S	R
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17. 16 values of BX_A† (gammas)	66-81	16S	R
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19. 16 values of BZ_A	98-113	16S	R
20. 16 values of BX_p† (payload coord. components-gammas)	114-129	16S	R
21. 16 values of BY_p	130-145	16S	R
22. 16 values of BZ_p	146-161	16S	R
23. Sequence average $(BX, BY, BZ)_p$ components (gammas)	162-164	3S	R
24. $(X, Y, Z)_p$ RMS deviations (gammas)	165-167	3S	R

*This magnitude ratio is defined by

$$F\ RATIO = \left(\frac{\text{sequence total field RMS deviation}}{\text{sequence average total field magnitude}}\right) \times 100.$$

†The $(BX, BY, BZ)_A$ components are relative to the triaxial magnetometer sensor coordinate axes rotating with the spacecraft. Payload components $(BX, BY, BZ)_p$ are relative to a fixed frame of reference centered in the spacecraft with the Z axis along the spin axis and the X axis in the plane defined by the spin axis and the satellite-sun vector.