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**THE LLL ELECTRON AND PROTON SPECTROMETER
ON NASA'S ORBITING GEOPHYSICAL OBSERVATORY V(E):
THE THREE-WAY MERGED TAPE
(AN ARCHIVAL DATA BASE)**

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Abstract

This is a description of a data base that can be used for archival records. The data are combined from three sources and thus the name of the resultant tape: The Three-Way Merged Tape.

The data contained on these tapes came from the following sources:

- The LLL Electron and Proton Spectrometer (Experiment E-06) on NASA's Orbiting Geophysical Observatory V(E).¹
- Attitude-orbit tapes containing the satellite ephemeris provided by Goddard Space Flight Center.
- Magnetometer tapes provided by Drs. Paul J. Coleman and C. T. Russell with data from the Triaxial Fluxgate Magnetometer Experiment (Experiment E-14) on OGO-5.

Brief Description

The three-way merged tapes combine data from:

- The original data tapes provided by the Goddard Space Flight Center for the Electron Spectrometer and Proton Telescope experiment on OGO-5. These tapes were cleaned* and several tapes were time-merged to represent an interesting block of time, e.g., an orbit or a particular region of space.
- The attitude-orbit tapes provided by the Goddard Space Flight Center for OGO-5 experimenters.

*To clean a tape is to correct or remove erroneous information, i.e., wrong year, date or data.

1. H. I. West et al., The LRL Electron and Proton Spectrometer on NASA's Orbiting Geophysical Observatory V(E) Instrumentation and Calibration, Lawrence Livermore Laboratory, Rept. UCRL-50572 (1969).

- Magnetometer tapes provided by Drs. Paul J. Coleman and C. T. Russell which contain data averaged over 4.608 sec of the magnetic field encountered by OGO-5.

Each tape is limited to 2000 records, each record having an identical format. These tapes were generated on a CDC 6600 computer.

A CDC 7600 computer code which reads these three-way merged tapes and produces 20-min plots is included in this report as Appendix C.

A printout of the first two records of one of these tapes identified as Day 222 is included as Appendix A.

Each record is composed of 724 60-bit words. These words are broken down as follows:

1-4 Control Words

These data are information words from the original spacecraft tapes signifying when, where, and how the data were taken. Also included from the three-way merged tape are the record, number, kilobit rate, sync signal, and date generated.

5-124 Selected Attitude-Orbit Data

These data concern the position of the spacecraft with respect to time, sun, distance from earth, and the computed magnetic field.

125-128 Time Data

These data are the corrected time values associated with the readout of the detector points.

189-316 Detector Data

These words are used for the count rates (counts/sec) from each of the 36 detectors on board this experiment.

317-356 OPEP Scan Data

357-384 OPEP Shaft Sine Data

385-412 OPEP Shaft Cosine Data

These three sets of data are used to compute the control look angle of the spectrometer.

413-416 Add-On Data

A few words to record data on ac magnetic field fluctuation and electric field sensor. These data were provided by Drs. E. Smith and F. Scarf, respectively.

417-608 Magnetometer Data

These data record the x, y, and z components of the measured magnetic field in gammas.

609-640 R Values

641-672 L Values

673-704 Magnetic-Latitude Values

These three sets of data values were computed from the attitude-orbit data records.

705-708 Main-Body Commutator Words

E-6 experiment, counting data.

709-716 OPEP Commutator Words

E-6 experiment, status.

717-724 Subcommutators 2 and 3

Spacecraft functions.

The code used to generate the three-way merged tapes is included in this report as Appendix B.

Detailed Description

The three-way merged tapes combine data from: (1) The original data tapes provided by the Goddard Space Flight Center for the Electron Spectrometer and Proton Telescope experiment on OGO-5, or from cleaned-up or time-merged versions of these tapes; (2) the attitude-orbit tapes provided by the Goddard Space Flight Center for OGO-5 experimenters; and (3) magnetometer tapes provided by Drs. Paul J. Coleman and C. T. Russell which contain data averaged over 4.608 sec of the vector magnetic field encountered by OGO-5.

The three-way merged tapes are written at 556 "bits"/in. density on seven-track tape, six data tracks plus a parity track, in odd-parity binary mode. The nominal 2400-ft 1/2-in. tapes are limited to 2000 records per tape. The end of the records is marked by three end-of-file marks; there are no other end-of-file marks on the tapes.

Each record contains 724 60-bit words and is followed by a 3/4-in. record gap (the length of each record plus gap is about 13.77 in. or 1.145 ft).

The data acquisition rates of the original spacecraft tapes were 1, 8, or 64 kilobits/sec. In the three-way merged tapes, the rates are restricted to 1 or 2 kilobits. The 8- and 64-kilobit data records are reduced to 2-kilobits equivalent.

For 8-kilobit original data, time values in the three-way merged records are taken from time values starting in frame 1 and from every 4th frame thereafter, i.e., 1, 5, 9, 13, . . . 125. Each record both in the original and in the three-way merged tape has 128 frames, regardless of kilobit rate.

For 64-kilobit original data, time values in the three-way merged records are taken from time values starting in frame 1 and from every 32nd frame thereafter, i.e., 1, 33, 65, and 97.

The scan angle, shaft sine, shaft cosine, magnetometer values, R value, L value, and magnetic-latitude data contained in the three-way merged records are computed, interpolated, or taken for the above selected time values for 8- or 64-kilobit original data.

For 8- and 64-kilobit original detector data, the counts were arithmetically averaged without weighting. Whenever the kilobit rate changed, the remainder of the current three-way merged record was filled with zeros and a new three-way merged record was started, reflecting the new rate.

BIT NUMBERING

For the ease and convenience of a future programmer to decode these close-packed, three-way merged tapes, the conventional manner of numbering bits is rejected here. Instead the following scheme is used:

The left-most (or highest order) bit in a word or byte is numbered 1. The right-most (or lowest order) bit in a 60-bit word is numbered 60.

The left-most bit in a line of 6 data bits on the tape is numbered 1. The right-most bit is numbered 6.

The bits from the first line of 6 bits read into the computer from the tape are placed in the left-most portion of the first word of the computer storage array. Bit 1 from the tape is read into bit 1 of the first word; bit 6 from the tape is read into bit 6 of the first word. Bit 1 from the second line of 6 bits from the tape is read into bit 7 of the first word. Bit 6 from the tenth line is read into bit 60 of the first word. Bit 1 of the eleventh line of 6 bits from the tape is read into bit 1 of the second word of the computer read storage array.

SIGNS

The CDC computers use 1's complement arithmetic for negative values. So that the three-way merged tapes could be easily read and decoded on other computers, the negative value representation was changed. Negative values were multiplied by -1; for both integer and floating-point values, bit 1 was changed from 0 to 1 before storage on the tape.

Most of the values stored on the three-way merged tape are always positive; they do not have a sign bit associated, and the entire byte is available for greater precision.

For those values, integer or floating point, all which require a sign bit, the sign bit is always located in bit position 1 of the byte. If this bit 1 is 0 the value is positive; if bit 1 is 1 then the value is negative.

FLOATING-POINT BYTES

Floating point values in three-way merged tape records occur only in the attitude-orbit data section. The left-most bit, bit 1, is the sign bit; 0 for positive values and 1 for negative values. The following 11 bits, bits 2-12, are used as the exponent. The remaining 28 right-most bits, bits 13-40, are used as the fractional part. The number of fractional bits retain all of the precision present in the original attitude-orbit data records. The exponent is biased by 1717 octal.

Exponent Examples

Octal	Decimal	Exponent
1716	= 974	= -1
1717	= 975	= 0
1720	= 976	= +1

Byte Examples (only bits 1 through 24 shown)

Octal	Decimal
1720 4000	= $2^1 * (4/8)$ = +1.0
5720 4000	= $-2^1 * (4/8)$ = -1.0
0000 0000	= 0.
1720 1200	= $2^1 * (1/8 + 2/64)$ = +0.3125

RECORDS

Each 724 60-bit word record consists of the following:

Words

1- 4	Control words
5-124	Selected attitude-orbit data
125-188	Time data
189-316	Detector data
317-356	OPEP scan data
357-384	OPEP shaft sine data
385-412	Open shaft cosine data
413-416	Add-on data
417-608	Magnetometer data
609-640	R Values

641-672	L Values
673-704	Magnetic-latitude values
705-708	Selected main-body commutator words
709-716	Selected OPEP-commutator words
717-724	Selected words from subcommutators 2 and 3.

CONTROL WORDS (1-4)

These four 60-bit words are divided into 20 bytes of 12 bits each, each byte representing a control word. Each control word is a positive integer (no sign bit) and may take values from 0 to $2^{12} - 1$ or from 0 to 4095.

Control Word

1	Orbit number
2	Year (e.g., 69)
3	Day of year (1 to 366)

Values from original spacecraft tape

4	Run number
5	Reel number
6	File number
7	Record number
8	Kilobit rate
	1 - 1 kbit realtime
	2 - 8 kbits
	3 - 64 kbits
	4 - 1 kbit playback
9	Sync signal (may take values from 1 to 16)
10	Receiving station number

Values for this three-way merged record

11	Record number
12	Kilobit rate
	1 - 1 kbit
	2 - 2 kbits
13	Sync signal (1-kbit data may take values from 1 to 16, 2-kbit data will only have a value of 16)

Values computed from original spacecraft tape

14	Month number (1 to 12)
15	Day of month (1 to 31)

- 16 Number of days since launch
- 17 Error signal
- 1 - Parity error in reading original spacecraft tape
 - 2 - Word-count error in reading original spacecraft tape
 - 3 - Record consists entirely of fill data
 - 4 - No main-body sync signal in this record
 - 5 - Main-body sync signal shifted
 - 6 - Main-body ground signal shifted
 - 7 - Both main-body sync and ground signals shifted
- Errors 1 through 4 will not occur when the three-way merged tapes were produced from time-merged or cleaned-up spacecraft tapes.
- Data on date the three-way merged tape was generated
- 18 Day (1 to 31)
- 19 Month (1 to 12)
- 20 Year (e.g. 1972)

SELECTED ATTITUDE-ORBIT DATA (5-124)

These 120 60-bit words are divided into four groups of 30 60-bit words (5-34, 35-64, 65-94, 95-124). Each group has an identical format. These four groups represent four sets of selected attitude-orbit data spaced 1 min apart and taken directly from the attitude-orbit data records without interpolation.

The first record, at the start of tape generation, will have non-zero values in each of the four groups. Subsequent records may have 0, 2, or 4 groups of non-zero values (1 or 3 groups may occur at the end of an orbit).

In the following table, the 60-bit words are renumbered for convenience. Word 1 in the table corresponds to words 5, 35, 65, and 95 on the three-way merged tape. Word 30 corresponds to words 34, 64, 94, and 124.

No.	Value	OGO A-O Word	60-Bit Word	Bits	Byte Length	Sign Bit
1	Seconds, universal	2	1	1 - 30	30	None
2	Seconds, local	3-5	1	31 - 60	30	None
3	R value	—	2	1 - 20	20	None
4	L value	78	2	21 - 40	20	21
5	Magnetic latitude	77	2	41 - 60	20	41
6	Phi, GSE (azimuth)	—	3	1 - 20	20	1
7	Theta, GSE (latitude)	—	3	21 - 40	20	21
8	Phi, GSM	—	3	41 - 60	20	41

Table continued

No.	Value	OGO A-O Word	60-Bit Word	Bits	Byte Length	Sign Bit
9	Theta, GSM	—	4	1 - 20	20	1
10	Right ascension	6	4	21 - 40	20	21
11	Declination	7	4	41 - 60	20	41
12	Latitude	17	5	1 - 20	20	1
13	Longitude	18	5	21 - 40	20	21
14	Paddle angle	121	5	41 - 60	20	41
15	B/B ₀	80	6	1 - 20	20	None
16	B	79	6	21 - 47	27	None
17	Flag	—	6	48 - 60	13	None
18	Position vector	8	7	1 - 40	40	1
19		8	7	41 - 60 +	40	41
			8	1 - 20		
20		10	8	21 - 60	40	21
21	Solar vector	14	9	1 - 40	40	1
22		15	9	41 - 60 +	40	41
			10	1 - 20		
23		16	10	21 - 60	40	21
24	B vector	85	11	1 - 40	40	1
25		86	11	41 - 60 +	40	41
			12	1 - 20		
26		87	12	21 - 60	40	21
27	GCI transformation	49	13	1 - 40	40	1
28		52	13	41 - 60 +	40	41
			14	1 - 20		
29		55	14	21 - 60	40	21
30		50	15	1 - 40	40	1
31		53	15	41 - 60 +	40	41
			16	1 - 20		
32		56	16	21 - 60	40	21
33		51	17	1 - 40	40	1
34		54	17	41 - 60 +	40	41
			18	1 - 20		
35		57	18	21 - 60	40	21
36	GSE transformation	100	19	1 - 40	40	1
37		101	19	41 - 60 +	40	41
			20	1 - 20		
38		102	20	21 - 60	40	21

Table continued

No.	Value	OGO A-O Word	60-Bit Word	Bits	Byte Length	Sign Bit
39		103	21	1 - 40	40	1
40		104	21	41 - 60 +	40	41
			22	1 - 20		
41		105	22	21 - 60	40	21
42		106	23	1 - 40	40	1
43		107	23	41 - 60 +	40	41
			24	1 - 20		
44		108	24	21 - 60	40	21
45	GSM transformation	109	25	1 - 40	40	1
46		110	25	41 - 60 +	40	41
			26	1 - 20		
47		111	26	21 - 60	40	21
48		112	27	1 - 40	40	1
49		113	27	41 - 60 +	40	41
			28	1 - 20		
50		114	28	21 - 60	40	21
51		115	29	1 - 40	40	1
52		116	29	41 - 60 +	40	41
			30	1 - 20		
53		117	30	21 - 60	40	21

Items 1 (seconds) through 16 (B) are stored as integers. These integers are to be converted to floating point and then divided by 1000 to obtain the item values.

Items 18 (position vector) through 53 are 40-bit bytes in floating point. The left-most bit (bit 1) is the sign bit and has the value 0 if positive or 1 if negative. The next 11 bits (2-12) are the exponent. The remaining right-most 28 bits (13-40) are the fractional part.

Item 4 (L value) has a sign bit (bit 1 of the byte of item 4), L values of course are always positive. If this sign bit has a value of 0, then the GEI-transformation function (items 27-35) was normally taken from the actual body roll, pitch, and yaw axis of words 49-57 from the attitude-orbit tape data records. If this sign bit has a value of 1, actual body data were missing and the ideal body roll-, pitch- and yaw-axis data were substituted, if available, for the GEI-transformation function.

In items 27-35, the rows of the actual body roll, pitch, and yaw vectors have been changed to columns of the GEI-transformation function (see table above). The

GEI-, GSE-, and GSM-transformation matrices can now be handled identically in operations on vectors.

Item 17 (flag) is a 13-bit integer and was obtained from error words 123-125 from the attitude-orbit tape data records. If A-O word 123 has a value of -1.0, then the left-most bit (bit 1) of this integer has a value of 1; if not, it has a value of 0. The integer value found in the right-most six bits of A-O word 124 are stored in bits 2-7 of item 17. The integer value found in the right-most six bits of A-O word 125 are stored in bits 8-13 of item 17.

The OGO-5 A-O word in the table legend is the number of the word in the attitude-orbit-tape data records.²

TIME DATA (125-188)

These 64 60-bit words are divided into 128 bytes of 30 bits each. Each byte is a positive integer (no sign bit) representing the milliseconds of day. The first time value is stored in the left-most 30 bits (bits 1-30) of the first 60-bit word. The second time value is stored in the right-most 30 bits (bits 31-60) of the first 60-bit word. The third time value is stored in the left-most 30 bits (bits 1-30) of the second 60-bit word.

For 1-kilobit data, these 128 bytes represent the 128 milliseconds of day values (one time value for each of the 128 frames) stored in the original spacecraft-tape data record.

Eight-kilobit and 64-kilobit data from the original spacecraft-tape data records have been averaged to a 2-kilobit equivalent rate in the three-way merged tapes.

Each of the 36 detectors accumulates counts for four frames before readout; readout occurs in the fourth frame. The time value to be associated with the readout should be the median of the start of the count and the end of the count times, and thus it is less than the time value of the frame in which readout occurred. Each of the main detectors (e.g. E1) readout 32 times in 128 frames of the data record. The frame associated with their readout can be determined by the main-body (m.b.) sync signal. This m.b. sync signal can vary from record to record and rarely it varies within a record. Most often it is constant for a large number of records, sometimes for an entire original file of records. The position of the original m.b. sync signal is given by control word 9.

For 8-kilobit original data, the time values stored on the three-way merged tapes are taken starting in frame 1 and from every 4th frame thereafter, i.e., 1, 5, 9, 13 125, of the original spacecraft data record. Thus 32 time values are stored for each original data record. Four such original data records are reduced to provide one three-way merged record.

2. Data Processing Plan for Eccentric Orbiting Geophysical Observatory (OGO-E), Goddard Space Flight Center, Greenbelt, Md., Preprint X-565-68-19 (Jan. 1968), pp. 96-107.

For 64-kilobit original data, the time values stored on the three-way merged tapes are taken starting in frame 1 and from every 32nd frame thereafter, i.e., 1, 33, 65, and 97, of the original spacecraft-data record. Thus four time values are stored for each original data record. Thirty-two such original data records are reduced to provide one three-way merged record.

For original 8- and 64-kilobit data, the time values chosen for the 2-kilobit equivalent rate records were selected to cause the least overall error in plotting counting rates versus time without making individual time corrections. For detailed plots or readouts, these corrections will have to be made. These corrections have been made in the 20-min plot code in Appendix C. Arrays of constants used in these corrections occur in subroutine CONST2. The corrections occur in the last part of subroutine PSC DATA.

DETECTOR DATA (189-316)

These 128 60-bit words are divided into 640 12-bit bytes. No sign bit occurs. Each byte represents a detector word. The format and evaluation of these bytes differ from the original spacecraft detector words.

For each 12-bit byte, the left-most 2 bits (1 and 2) are not used and will always be 0. The next 4 bits (3-6) are the positive exponent. The right-most 6 bits (7-12) are a positive integer. The byte is evaluated by multiplying the integer by a power of 2 given by the exponent. For example:

<u>Octal</u>		<u>Decimal</u>		<u>Decimal</u>
0000	→	0		
0001	→	$2^0 * 1$	=	1
0110	→	$2^1 * 8$	=	16
0277	→	$2^2 * 63$	=	252

Detector word 1 consists of the left-most 12 bits (1-12) of the first 60-bit word. Detector word 5 consists of the right-most 12 bits (49-60) of the first 60-bit word. Detector word 6 consists of the left-most 12 bits (1-12) of the second 60-bit word. This pattern continues for 640 bytes or detector words.

The detector words are assigned to the 36 detectors as follows:

<u>Detector</u>	<u>Detector Words</u>	<u>Number</u>
E1	1 - 32	32
E2	33 - 64	32
E3	65 - 96	32
E4	97 - 128	32
E5	129 - 160	32
E6	161 - 192	32
E7	193 - 224	32

<u>Detector</u>	<u>Detector Words</u>	<u>Number</u>
EB	225 - 240	16
EB1	241 - 248	8
EB2	249 - 256	8
EB3	257 - 264	8
EB4	265 - 272	8
EB5	273 - 280	8
EB6	281 - 288	8
EB7	289 - 296	8
P1	297 - 328	32
P2	329 - 360	32
P3	361 - 392	32
P4	393 - 424	32
P5	425 - 456	32
P6	457 - 488	32
P7	489 - 504	16
PB1	505 - 512	8
PB2	513 - 520	8
PB3	521 - 528	8
PB4	529 - 536	8
PB5	537 - 544	8
PB6	545 - 552	8
A1	553 - 568	16
A2	569 - 576	8
A3	577 - 584	8
AB1	585 - 592	8
AB2	593 - 600	8
AB3	601 - 608	8
O1	609 - 624	16
O2	625 - 640	16

OPEP SCAN ANGLE (317-356)

These 40 60-bit words are divided into 128 18-bit bytes. Each byte is a positive integer (no sign bit) and corresponds to the scan angle for one frame. The last 96 bits in this block are not used and are 0. Each integer byte is evaluated by converting to floating point and dividing by 100. The scan angle may assume values from 0 to 360 deg.

<u>Scan Word</u>	<u>60-Bit Word</u>	<u>Bits</u>
1	1	1 - 18
2	1	19 - 36
3	1	37 - 54
4	1	55 - 60 +
	2	1 - 12
5	2	13 - 30
6	2	31 - 48
7	2	1 - 6
8	3	7 - 24
9	3	25 - 42
10	3	43 - 60
11	4	1 - 18
121	37	1 - 18
122	37	19 - 36
123	37	37 - 54
124	37	55 - 60 +
	38	1 - 12
125	38	13 - 30
126	38	31 - 48
127	38	49 - 60 +
	39	1 - 6
128	39	7 - 24
	39	25 - 60 not used
	40	1 - 60 not used

OPEP-SHAFT-SINE WORDS (357-384)

These 28 60-bit words are divided into 128 12-bit bytes. Each byte or shaft-sine word is a positive integer (no sign bit) and may take values from 0 to 255. The last 144 bits of this block are not used and are 0. The shaft-sine words are evaluated in a manner identical to the shaft-sine words of the original spacecraft data records.

<u>Shaft-Sine Word</u>	<u>60-Bit Word</u>	<u>Bits</u>
1	1	1 - 12
2	1	13 - 24
3	1	25 - 36
4	1	37 - 48
5	1	49 - 60
6	2	1 - 12
126	26	1 - 12
127	26	13 - 24
128	26	25 - 36
	26	37 - 60 not used
	27	0 - 60 not used
	28	0 - 60 not used

OPEP-SHAFT-COSINE WORDS (385-412)

These 28 60-bit words are divided into 128 12-bit bytes. Each byte or shaft-cosine word is a positive integer (no sign bit) and may take values from 0 to 255. The last 144 bits of this block are not used and are 0. The shaft-cosine words are evaluated in a manner identical to the shaft-cosine words of the original spacecraft data records.

<u>Shaft-Cosine Word</u>	<u>60-Bit Word</u>	<u>Bits</u>
1	1	1 - 12
2	1	13 - 24
3	1	25 - 36
4	1	37 - 48
5	1	49 - 60
6	2	1 - 12
126	26	1 - 12
127	26	13 - 24
128	26	25 - 36
	26	37 - 60 not used
	27	0 - 60 not used
	28	0 - 60 not used

ADD-ON DATA (413-416)

The first 60-bit word of this block is divided into two 30-bit bytes. Each byte is a positive integer (no sign bit). Each byte is evaluated by converting to floating point and dividing by 1000. The last three words of this block are not used and are 0.

<u>Add-On Word</u>	<u>60-Bit Word</u>	<u>Bits</u>
ac Magnetic field fluctuation	1	1 - 30
Electric field sensor	1	31 - 60
	2	1 - 60 not used
	3	1 - 60 not used
	4	1 - 60 not used

COLEMAN'S MAGNETOMETER DATA (417-608)

These 192 60-bit words are divided into 384 30-bit bytes. The 384 30-bit bytes are further separated into 128 sets of 3 30-bit bytes corresponding to the x, y, and z components of the magnetic field. These magnetic-field components were computed by vector interpolation of Coleman's 4,608-sec-average magnetometer data. The first or left-most bit in each byte is a sign bit which is 0 for positive values and 1 for negative values. The remainder of each byte (bits 2-30) is an integer. The integer part of each byte is evaluated by converting to floating point and dividing by 100, yielding values in gamma.

<u>Magnetometer Word</u>	<u>60-Bit Word</u>	<u>Bits</u>	<u>Sign Bit</u>	<u>Value</u>	<u>Frame</u>
1	1	1 - 30	1	BX	1
2	1	31 - 60	31	BY	1
3	2	1 - 30	1	BZ	1
4	2	31 - 60	31	BX	2
5	3	1 - 30	1	BY	2
6	3	31 - 60	31	BZ	2
7	4	1 - 30	1	BX	3
8	4	31 - 60	31	BY	3
9	5	1 - 30	1	BZ	3
10	5	31 - 60	31	BX	4
11	6	1 - 30	1	BY	4
12	6	31 - 60	31	BZ	4
379	190	1 - 30	1	BX	127
380	190	31 - 60	31	BY	127
381	191	1 - 30	1	BZ	127

<u>Magnetometer Word</u>	<u>60-Bit Word</u>	<u>Bits</u>	<u>Sign Bit</u>	<u>Value</u>	<u>Frame</u>
382	191	31 - 60	31	BX	128
383	192	1 - 30	1	BY	128
384	192	31 - 60	31	BZ	128

R VALUES (609-640)

These 32 60-bit words are divided into 128 15-bit bytes. Each byte is a positive integer (no sign bit) and is evaluated by converting to floating point and dividing by 1000. The R values were computed by vector interpolation of the position vectors of the attitude-orbit data records and division of the root mean square of the sum of the resultant components by 6371.0.

<u>R Value</u>	<u>60-Bit Word</u>	<u>Bits</u>
1	1	1 - 15
2	1	16 - 30
3	1	31 - 45
4	1	46 - 60
5	2	1 - 15
125	32	1 - 15
126	32	16 - 30
127	32	31 - 45
128	32	46 - 60

L VALUES (641-672)

These 32 60-bit words are divided into 128 15-bit bytes. Each byte is a positive integer (no sign bit) and is evaluated by converting to floating point and dividing by 1000. The L values were computed by linear interpolation of the L values of the attitude-orbit data records.

<u>L Value</u>	<u>60-Bit Word</u>	<u>Bits</u>
1	1	1 - 15
2	1	16 - 30
3	1	31 - 45
4	1	46 - 60
5	2	1 - 15
125	32	1 - 15
126	32	16 - 30
127	32	31 - 45
128	32	46 - 60

MAGNETIC-LATITUDE VALUES (673-704)

These 32 60-bit words are divided into 128 15-bit bytes. The first of left-most bit of each byte is a sign bit which is 0 for positive values and 1 for negative values. The remainder of the byte (bits 2-15) is an integer. The integer part of the byte is evaluated by converting to floating point and dividing by 100. The magnetic latitude values were computed by linear interpolation of the magnetic latitude values of the attitude-orbit data records.

<u>Magnetic Latitude Value</u>	<u>60-Bit Word</u>	<u>Bits</u>	<u>Sign Bit</u>
1	1	1 - 15	1
2	1	16 - 30	16
3	1	31 - 45	31
4	1	46 - 60	46
5	2	1 - 15	1
125	32	1 - 15	1
126	32	16 - 30	16
127	32	31 - 45	31
128	32	46 - 60	46

MAIN-BODY COMMUTATOR ANALOG WORDS (705-708)

These 4 60-bit words are divided into 12 12-bit bytes. The bytes are positive integers (no sign bit) and may take values from 0 to 255. The bytes are evaluated by converting to floating point and multiplying by 0.02 yielding values in volts. These bytes of main-body commutator words are taken from the first cycle (first 16 frames) of a spacecraft data record; they are intended to be a sampling. The last 96 bits in this block are not used and are 0.

<u>Main-Body Commutator Word</u>	<u>Function</u>	<u>60-Bit Word</u>	<u>Bits</u>
1	Pulse generator	1	1 - 12
2	Equipment group No.	1	13 - 24
3	Shift register high voltage	1	25 - 36
4	1.9-volt monitor	1	37 - 48
5	Main body temperature	1	49 - 60
6	Pulse generator	2	1 - 12
7	4.5-volt monitor	2	13 - 24
8	12-volt monitor	2	25 - 36
9	6.3-volt monitor	2	37 - 48
10	-6-volt monitor	2	49 - 60

<u>Main-Body Commutator Word</u>	<u>Function</u>	<u>60-Bit Word</u>	<u>Bits</u>
11	Ground	3	1 - 12
12	Sync	3	13 - 24
		3	25 - 60 not used
		4	1 - 60 not used

OPEP-COMMUTATOR ANALOG WORDS (706-716)

These 8 60-bit words are divided into 32 12-bit bytes. The bytes are positive integers (no sign bit) and may take values from 0 to 255. The bytes are evaluated by converting to floating point and multiplying by 0.02, yielding values in volts. These OPEP-commutator analog words are those contained in a single original-data record at 1 kilobit. For 8- and 64-kilobit original data reduced to 2-kilobit equivalent, these words are from the first record in each set of records to be reduced. The last 96 bits in this block are not used and are 0.

<u>OPEP Commutator Analog Word</u>	<u>Function</u>	<u>60-Bit Word</u>	<u>Bits</u>
1	Sync	1	1 - 12
2	Ground	1	13 - 24
3	Hall effect probe	HE-1	25 - 36
4		HE-2	37 - 48
5	+6.3-volt monitor	1	49 - 60
6	Current monitor	E1	1 - 12
7		B1 B2	13 - 24
8		E2	25 - 36
9		E3	37 - 48
10		B3	49 - 60
11		E4	1 - 12
12		B4	13 - 24
13		E5	25 - 36
14		B5	37 - 48
15		E6	49 - 60
16		B6	1 - 12
17		E7	13 - 24
18		B7	25 - 36
19		DM1	37 - 48
20		DZ	49 - 60
21		D1	1 - 12

OPEP Commutator		Function	60-Bit Word	Bits
Analog Word				
22		D2	5	13 - 24
23		D3	5	25 - 36
24		D4	5	37 - 48
25	High voltage	HV1	5	49 - 60
26		HV2	6	1 - 12
27	Low field magnet temp	LMT1	6	13 - 24
28	High	HMT1	6	25 - 36
29	Low	LMT2	6	37 - 48
30	High	HMT2	6	49 - 60
31	+12-volt monitor		7	1 - 12
32	Ground		7	13 - 24
			7	25 - 60 not used
			8	1 - 60 not used

SUB-COMMUTATORS 2 AND 3 ANALOG WORDS (714-724)

These 8 60-bit words are divided into 36 12-bit bytes. The bytes are positive integers (no sign bit). The first 35 bytes have integer values from 0 to 255 and are evaluated by converting to floating point and multiplying by 0.02 yielding values in volts. The 36th byte is the day of the year. These analog words are taken from the end of an original spacecraft data record. For 8- and 64-kilobit original data reduced to 2-kilobit equivalent, these words are from the first record in each set of records to be reduced. The last 48 bits in this block are not used and are 0.

Sub-Commutators 2 and 3		Function	60-Bit Word	Bits
Analog Words				
1	Pitch error	D (98,25)	1	1 - 12
2		D (98,89)	1	13 - 24
3	Roll error	D (98,26)	1	25 - 36
4		D (98,90)	1	37 - 48
5	Yaw error	D (98,42)	1	49 - 60
6		D (98,106)	2	1 - 12
7	Drive motors OPEP array	D (98,49)	2	13 - 24
8		D (98,113)	2	25 - 36
9	Horizon track check	D (98,41)	2	37 - 48
10		D (98,105)	2	49 - 60

Sub-Commutators
2 and 3
Analog Words

Function

60 - Bit
Word

Bits

11	Horizon scanners, Head A	3	1 - 12
12	B	3	13 - 24
13	C	3	25 - 36
14	D	3	37 - 48
15	Mode logic D (98,54)	3	49 - 60
16	D (98,54)	4	1 - 12
17	OPEP gyro status D (99,10)	4	13 - 24
18	D (99,74)	4	25 - 36
19	OPEP gyro motor Tach. D (99,52)	4	37 - 48
20	D (99,116)	4	49 - 60
21	OPEP gyro blanket temp	5	1 - 12
22	OPEP drive shaft temp	5	13 - 24
23	Load bus voltage	5	25 - 36
24	E7 temp	5	37 - 48
25	E20 temp	5	49 - 60
26	E21 temp	6	1 - 12
27	F25 voltage	6	13 - 24
28	F26 voltage	6	25 - 36
29	F27 voltage	6	37 - 48
30	F28 voltage	6	49 - 60
31	F29 voltage	7	1 - 12
32	F30 voltage	7	13 - 24
33	F31 voltage	7	25 - 36
34	Spare	7	37 - 48
35	Spare	7	49 - 60
36	Day of year (1-366)	8	1 - 12
		8	13 - 60 not used

Appendix A

1
 S/C RUN REEL FILE RECD YEAR MON MDAY YDAY MCDP MIN SEC INIT. SEC FINAL SEC DIT PRECD MPIT
 S/C 98 1 1 1 69 APR 10 100 0 1 14.662 74.662 220.966 1PB 1 1KR

1
 HFPGED SPACECRAFT DATA RECORD 1

CONSTANTS.

NDRBIT ORBIT 155
 NSYEAR YEAR 69
 NSDAY DAY 100

NSRUN RUN NO. 98
 NSREEL REEL NO. 1
 NSFILE FILE NO. 1
 NSPREC ORIG RECORD 1
 NKILO ORIG KR 4
 NSYNC ORIG SYNC 4
 NSSTAT STATION 19

NUPREC MPG RECD NO 1
 KILO MRG KB RATE 1
 MSYNC MRG SYNC 4

NNMON NUM OF MON 4
 MNDAY DAY OF MON 10
 NLDAY LAUNCH DAYS 402
 NSHIFT ERRORS 0

NCDAY CALC DAY 7
 NCMON CALC MONTH 5
 NCYEAR CALC YEAR 1972

1
SELECTED ATTITUDE-ORBIT DATA.

SECONDS	120.000	180.000	240.000	300.000
LOCAL SECONDS	22494.924	27494.746	22502.564	22506.384
R	20.939	20.944	20.950	20.956
L	21.876	21.882	21.889	21.895
MAGNETIC LATITUDE	11.687	11.687	11.687	11.688
PHI GSE	279.011	279.027	279.744	279.060
THETA	43.959	43.944	43.928	43.913
PHI GSM	276.603	276.616	276.630	276.644
THETA	11.338	11.342	11.346	11.350
RIGHT ASCENSION	292.202	292.218	292.235	292.251
DECLINATION	22.723	22.710	22.698	22.685
LATITUDE	22.729	22.717	22.704	22.692
LONGITUDE	93.653	93.419	93.195	92.961
PADDLE ANGLE	195.955	185.955	185.955	185.955
B/RD	1.210	1.210	1.210	1.210
B	3.603	3.600	3.596	3.593
FLAG	0000	0000	0000	0000

POSITION VECTOR	1	46437.892	46548.350	46598.779	46649.180
	2	-113929.188	-113957.374	-113986.492	-114015.540
	3	61632.167	51519.948	51507.699	51495.417
SOLAR VECTOR	1	140966918.	140966338.	140965758.	140965176.
	2	45941883.	46943432.	46944980.	46946529.
	3	20355556.	20356228.	20356899.	20357571.
B BODY VECTOR	1	-0.3165646	-0.3173225	-0.3180406	-0.3188388
	2	0.6425746	0.6420541	0.6415369	0.6410227
	3	0.6377712	0.6979061	0.6980466	0.6981631

TGEI	1	0.2330455	0.2348080	0.2347223	0.2338603
	2	-0.9003637	-0.9005185	-0.9031189	-0.9032052
	3	-0.3574710	-0.3659666	-0.3595576	-0.3599025
	4	-0.3208163	-0.3161263	-0.3129262	-0.3149636
	5	-0.4279019	-0.4267712	-0.4203440	-0.4205828
	6	0.8449715	0.8473078	0.8517092	0.8508279
	7	-0.9180233	-0.9192004	-0.9203506	-0.9198409
	8	-0.0790262	-0.0832630	-0.0874361	-0.0856146
	9	-0.3385719	-0.3848869	-0.3811952	-0.3828343

TGSE	1	0.9399975	0.9399935	0.9399944	0.9399854
	2	0.3130172	0.3130275	0.3130177	0.3130480
	3	0.1357382	0.1357427	0.1357471	0.1357516
	4	-0.3411812	-0.3411924	-0.3412036	-0.3412148
	5	0.8624020	0.8623983	0.8623946	0.8623909
	6	0.3739760	0.3739744	0.3739728	0.3739712
	7	0.0000000	0.0000000	0.0000000	0.0000000
	8	-0.3978479	-0.3978479	-0.3978479	-0.3978479
	9	0.9174514	0.9174514	0.9174514	0.9174514

TGSM	1	0.9399975	0.9399935	0.9399944	0.9399854
	2	0.3130185	0.3130288	0.3130390	0.3130493
	3	0.1357352	0.1357397	0.1357441	0.1357486

4	-0.2864555	-0.2865232	-0.2865915	-0.2866604
5	0.9401834	0.9402229	0.9402624	0.9403023
6	-0.1343844	-0.13440795	-0.1337713	-0.1334597
7	-1.1353318	-0.1852477	-0.1851627	-0.1850766
8	0.1344388	0.1341410	0.1334399	0.1335357
9	0.9734364	0.9734934	0.9735511	0.9736092

1

TIME DATA.

FRAME	MILLISECONDS	DAY	SECONDS	HOUR	MINUTES	SECONDS
1	74662	74.662	0	1	14.662	
2	75814	75.814	0	1	15.814	
3	76965	76.966	0	1	16.966	
4	78113	78.118	0	1	18.118	
5	79270	79.270	0	1	19.270	
6	80422	80.422	0	1	20.422	
7	81574	81.574	0	1	21.574	
8	82726	82.726	0	1	22.726	
9	83874	83.878	0	1	23.878	
10	85030	85.030	0	1	25.030	
11	86182	86.182	0	1	26.182	
12	87334	87.334	0	1	27.334	
13	88486	88.486	0	1	28.486	
14	89638	89.638	0	1	29.638	
15	90790	90.790	0	1	30.790	
16	91942	91.942	0	1	31.942	
17	93094	93.094	0	1	33.094	
18	94246	94.246	0	1	34.246	
19	95398	95.398	0	1	35.398	
20	96550	96.550	0	1	36.550	
21	97702	97.702	0	1	37.702	
22	98854	98.854	0	1	38.854	
23	100006	100.006	0	1	40.006	
24	101158	101.158	0	1	41.158	
25	102310	102.310	0	1	42.310	
26	103462	103.462	0	1	43.462	
27	104614	104.614	0	1	44.614	
28	105766	105.766	0	1	45.766	
29	106918	106.918	0	1	46.918	
30	108070	108.070	0	1	48.070	
31	109222	109.222	0	1	49.222	
32	110374	110.374	0	1	50.374	
33	111526	111.526	0	1	51.526	
34	112678	112.678	0	1	52.678	
35	113830	113.830	0	1	53.830	
36	114982	114.982	0	1	54.982	
37	116134	116.134	0	1	56.134	
38	117286	117.286	0	1	57.286	
39	118438	118.438	0	1	58.438	
40	119590	119.590	0	1	59.590	

41	120742	120.742	0	2	0.742
42	121894	121.894	0	2	1.894
43	123046	123.046	0	2	3.046
44	124198	124.198	0	2	4.198
45	125350	125.350	0	2	5.350
46	126502	126.502	0	2	6.502
47	127654	127.654	0	2	7.654
48	128806	128.806	0	2	8.806
49	129958	129.958	0	2	9.958
50	131110	131.110	0	2	11.110
51	132262	132.262	0	2	12.262
52	133414	133.414	0	2	13.414
53	134566	134.566	0	2	14.566
54	135718	135.718	0	2	15.718
55	136870	136.870	0	2	16.870
56	138022	138.022	0	2	18.022
57	139174	139.174	0	2	19.174
58	140326	140.326	0	2	20.326
59	141478	141.478	0	2	21.478
60	142630	142.630	0	2	22.630
61	143782	143.782	0	2	23.782
62	144934	144.934	0	2	24.934
63	146086	146.086	0	2	26.086
64	147238	147.238	0	2	27.238
65	148390	148.390	0	2	28.390
66	149542	149.542	0	2	29.542
67	150694	150.694	0	2	30.694
68	151846	151.846	0	2	31.846
69	152998	152.998	0	2	32.998
70	154150	154.150	0	2	34.150
71	155302	155.302	0	2	35.302
72	156454	156.454	0	2	36.454
73	157606	157.606	0	2	37.606
74	158758	158.758	0	2	38.758
75	159910	159.910	0	2	39.910
76	161062	161.062	0	2	41.062
77	162214	162.214	0	2	42.214
78	163366	163.366	0	2	43.366
79	164518	164.518	0	2	44.518
80	165670	165.670	0	2	45.670
81	166822	166.822	0	2	46.822
82	167974	167.974	0	2	47.974
83	169126	169.126	0	2	49.126
84	170278	170.278	0	2	50.278
85	171430	171.430	0	2	51.430
86	172582	172.582	0	2	52.582
87	173734	173.734	0	2	53.734
88	174886	174.886	0	2	54.886
89	176038	176.038	0	2	56.038
90	177190	177.190	0	2	57.190
91	178342	178.342	0	2	58.342
92	179494	179.494	0	2	59.494
93	180646	180.646	0	3	0.646

94	181799	181.798	0	3	1.798
95	182950	182.950	0	3	2.950
96	184102	184.102	0	3	4.102
97	185254	185.254	0	3	5.254
98	186406	186.406	0	3	6.406
99	187558	187.558	0	3	7.558
100	188710	188.710	0	3	8.710
101	189862	189.862	0	3	9.862
102	191014	191.014	0	3	11.014
103	192166	192.166	0	3	12.166
104	193318	193.318	0	3	13.318
105	194470	194.470	0	3	14.470
106	195622	195.622	0	3	15.622
107	196774	196.774	0	3	16.774
108	197926	197.926	0	3	17.926
109	199078	199.078	0	3	19.078
110	200230	200.230	0	3	20.230
111	201382	201.382	0	3	21.382
112	202534	202.534	0	3	22.534
113	203686	203.686	0	3	23.686
114	204838	204.838	0	3	24.838
115	205990	205.990	0	3	25.990
116	207142	207.142	0	3	27.142
117	208294	208.294	0	3	28.294
118	209446	209.446	0	3	29.446
119	210598	210.598	0	3	30.598
120	211750	211.750	0	3	31.750
121	212902	212.902	0	3	32.902
122	214054	214.054	0	3	34.054
123	215206	215.206	0	3	35.206
124	216358	216.358	0	3	36.358
125	217510	217.510	0	3	37.510
126	218662	218.662	0	3	38.662
127	219814	219.814	0	3	39.814
128	220966	220.966	0	3	40.966

1

DETECTOR DATA.

RATE FACTOR = 0.217

DET CYCLE		CTAL				INTEGR				COUNTS/SEC			
		1	2	3	4	1	2	3	4	1	2	3	4
E1	1	0002	0011	0011	0003	2	9	9	3	0.43	1.95	1.95	0.65
E1	2	0003	0003	0006	0010	3	3	6	8	0.65	0.65	1.30	1.74
E1	3	0005	0004	0002	0010	5	4	2	9	1.09	0.87	0.43	1.74
E1	4	0004	0002	0007	0003	4	2	7	3	0.87	0.43	1.52	0.65
E1	5	0004	0004	0007	0003	4	4	7	3	0.87	0.87	1.52	0.65
E1	6	0005	0002	0006	0007	5	2	6	7	1.09	0.43	1.30	1.52
E1	7	0007	0010	0005	0003	7	9	5	3	1.52	1.74	1.09	0.65
E1	8	0003	0004	0002	0003	3	4	2	3	0.87	0.87	0.43	0.65
E2	1	0003	0004	0001	0001	3	4	1	1	0.87	0.87	0.22	0.22
E2	2	0000	0002	0003	0001	0	2	3	1	0.	0.43	0.65	0.22

E2	3	0001	0002	0001	0002	1	2	1	2	0.22	0.43	0.22	0.43
E2	4	0000	0001	0003	0001	0	1	3	1	0.	0.22	0.65	0.22
E2	5	0004	0001	0003	0003	4	1	3	3	0.87	0.22	0.65	0.65
E2	6	0001	0005	0000	0000	1	5	0	0	0.22	1.09	0.	0.
E2	7	0002	0002	0001	0000	2	2	1	0	0.43	0.43	0.22	0.
E2	8	0000	0002	0001	0003	0	2	1	3	0.	0.43	0.22	0.65
E3	1	0000	0003	0003	0001	0	3	3	1	0.	0.65	0.65	0.22
E3	2	0002	0001	0000	0002	2	1	0	2	0.43	0.22	0.	0.43
E3	3	0000	0000	0002	0000	0	0	2	0	0.	0.	0.43	0.
E3	4	0002	0002	0000	0002	2	2	0	2	0.43	0.43	0.	0.43
E3	5	0002	0000	0000	0000	2	0	0	0	0.43	0.	0.	0.
E3	6	0000	0002	0000	0002	0	2	0	3	0.	0.43	0.	0.65
E3	7	0001	0001	0002	0000	1	1	2	0	0.22	0.22	0.43	0.
E3	8	0001	0001	0001	0002	1	1	1	2	0.22	0.22	0.22	0.43
E4	1	0004	0001	0005	0001	4	1	5	1	0.87	0.22	1.09	0.22
E4	2	0001	0002	0001	0000	1	2	1	0	0.22	0.43	0.22	0.
E4	3	0001	0002	0001	0000	1	2	1	0	0.22	0.43	0.22	0.
E4	4	0001	0000	0000	0001	1	0	0	1	0.22	0.	0.	0.22
E4	5	0001	0002	0003	0001	1	2	3	1	0.22	0.43	0.65	0.22
E4	6	0000	0001	0000	0000	0	1	0	0	0.	0.22	0.	0.
E4	7	0002	0001	0000	0001	2	1	0	1	0.43	0.22	0.	0.22
E4	8	0005	0000	0000	0001	5	0	0	1	1.09	0.	0.	0.22
E5	1	0001	0002	0003	0001	1	10	3	1	0.22	2.17	0.65	0.22
E5	2	0004	0005	0005	0001	4	5	5	1	0.87	1.09	1.09	0.22
E5	3	0001	0000	0003	0004	1	0	3	4	0.22	0.	0.65	0.87
E5	4	0004	0002	0002	0003	4	2	2	3	0.87	0.43	0.43	0.65
E5	5	0001	0005	0004	0001	1	5	4	1	0.22	1.09	0.87	0.22
E5	6	0003	0003	0001	0004	3	3	1	4	0.65	0.65	0.22	0.87
E5	7	0001	0006	0004	0001	1	6	4	1	0.22	1.30	0.87	0.22
E5	8	0003	0001	0003	0001	3	1	3	1	0.65	0.22	0.65	0.22
E6	1	0003	0000	0001	0004	3	8	1	4	0.65	1.74	0.22	0.87
E6	2	0006	0007	0004	0004	6	7	4	4	1.30	1.52	0.87	0.87
E6	3	0007	0004	0003	0002	7	4	3	2	1.52	0.87	0.65	0.43
E6	4	0002	0003	0004	0004	2	3	4	4	0.43	0.65	0.87	0.87
E6	5	0002	0002	0002	0003	2	2	2	3	0.43	0.43	0.43	0.65
E6	6	0004	0000	0004	0003	4	8	4	3	0.87	1.74	0.87	0.65
E6	7	0005	0004	0005	0002	5	4	5	2	1.09	0.87	1.09	0.43
E6	8	0003	0002	0005	0001	3	2	5	1	0.65	0.43	1.09	0.22
E7	1	0000	0004	0004	0004	0	4	4	4	0.	0.87	0.87	0.87
E7	2	0004	0004	0003	0001	4	4	3	1	0.87	0.87	0.65	0.22
E7	3	0003	0005	0002	0007	3	5	2	3	0.65	1.09	0.43	0.65
E7	4	0002	0005	0004	0004	2	5	4	4	0.43	1.09	0.87	0.87
E7	5	0003	0002	0003	0005	3	2	3	5	0.65	0.43	0.65	1.09
E7	6	0001	0003	0001	0004	1	3	1	4	0.22	0.65	0.22	0.87
E7	7	0005	0003	0001	0001	5	3	1	1	1.09	0.65	0.22	0.22
E7	8	0005	0003	0005	0002	5	3	5	2	1.09	0.65	1.09	0.43
E8	1	0000	0000			0	0			0.	0.		
E8	2	0000	0000			0	0			0.	0.		
E8	3	0001	0000			1	0			0.22	0.		
E8	4	0001	0000			1	0			0.22	0.		
E8	5	0000	0000			0	0			0.	0.		
E8	6	0000	0000			0	0			0.	0.		

EB	7	0000	0001	0	1	0.	0.22
EB	8	0000	0010	0	0	0.	0.
EB1	1	0000		0		0.	
EB1	2	0000		0		0.	
EB1	3	0000		0		0.	
EB1	4	0000		0		0.	
EB1	5	0001		1		0.22	
EB1	6	0000		0		0.	
EB1	7	0000		0		0.	
EB1	8	0000		0		0.	
EB2	1	0002		2		0.43	
EB2	2	0001		1		0.22	
EB2	3	0001		1		0.22	
EB2	4	0000		0		0.	
EB2	5	0001		1		0.22	
EB2	6	0000		0		0.	
EB2	7	0000		0		0.	
EB2	8	0003		3		0.65	
EB3	1	0000		0		0.	
EB3	2	0000		0		0.	
EB3	3	0001		1		0.22	
EB3	4	0002		2		0.43	
EB3	5	0000		0		0.	
EB3	6	0000		0		0.	
EB3	7	0002		2		0.43	
EB3	8	0001		1		0.22	
EB4	1	0001		1		0.22	
EB4	2	0000		0		0.	
EB4	3	0002		2		0.43	
EB4	4	0000		0		0.	
EB4	5	0000		0		0.	
EB4	6	0002		2		0.43	
EB4	7	0001		1		0.22	
EB4	8	0001		1		0.22	
EB5	1	0000		0		0.	
EB5	2	0004		4		0.87	
EB5	3	0003		3		0.65	
EB5	4	0004		4		0.87	
EB5	5	0003		3		0.65	
EB5	6	0003		3		0.65	
EB5	7	0007		7		1.52	
EB5	8	0002		2		0.43	
EB6	1	0001		1		0.22	
EB6	2	0004		4		0.87	
EB6	3	0001		1		0.22	
EB6	4	0005		5		1.09	
EB6	5	0006		6		1.30	
EB6	6	0004		4		0.87	
EB6	7	0001		1		0.22	
EB6	8	0005		5		1.09	

EB7	1	0003		3		0.65
EB7	2	0004		4		0.87
EB7	3	0003		3		0.65
EB7	4	0000		0		0.
EB7	5	0001		1		0.22
EB7	6	0002		2		0.43
EB7	7	0004		4		0.87
EB7	8	0004		4		0.87

P1	1	0001	0011	0007	0001	1	1	3	1	0.22	0.22	0.65	0.22
P1	2	0005	0011	0003	0004	5	1	3	4	1.09	0.22	0.65	0.87
P1	3	0005	0035	0004	0001	5	5	4	1	1.09	1.09	0.87	0.22
P1	4	0001	0030	0001	0001	1	0	1	1	0.22	0.	0.22	0.22
P1	5	0001	0032	0002	0000	1	2	2	0	0.22	0.43	0.43	0.
P1	6	0002	0030	0004	0000	2	0	4	0	0.43	0.	0.87	0.
P1	7	0001	0033	0001	0006	1	3	1	6	0.22	0.65	0.22	1.30
P1	8	0004	0032	0000	0002	4	2	0	2	0.87	0.43	0.	0.43
P2	1	0004	0033	0004	0006	4	3	4	6	0.87	0.65	0.87	1.30
P2	2	0013	0017	0011	0014	11	7	0	12	2.39	1.52	1.95	2.60
P2	3	0024	0017	0012	0010	20	15	10	8	4.34	3.26	2.17	1.74
P2	4	0007	0005	0006	0010	7	5	6	8	1.52	1.09	1.30	1.74
P2	5	0015	0004	0007	0011	13	4	7	9	2.82	0.87	1.52	1.95
P2	6	0022	0012	0005	0010	19	10	5	8	3.91	2.17	1.09	1.74
P2	7	0042	0664	0007	0362	34	3328	7	400	7.38	722.22	1.52	86.81
P2	8	0006	0011	0011	0007	6	9	9	7	1.30	1.95	1.95	1.52
P3	1	0007	0007	0012	0004	7	7	10	4	1.52	1.52	2.17	0.87
P3	2	0010	0011	0010	0010	3	9	8	8	1.74	1.95	1.74	1.74
P3	3	0011	0010	0004	0005	9	8	4	5	1.95	1.74	0.87	1.09
P3	4	0007	0034	0004	0006	7	4	4	6	1.52	0.87	0.87	1.30
P3	5	0003	0034	0011	0013	3	4	9	11	0.65	0.87	1.95	2.39
P3	6	0005	0010	0005	0005	5	8	5	5	1.09	1.74	1.09	1.09
P3	7	0004	0003	0005	0006	4	3	5	6	0.87	0.65	1.09	1.30
P3	8	0011	0012	0011	0003	9	10	4	3	1.95	2.17	1.95	0.65
P4	1	0004	0007	0011	0007	4	7	9	7	0.87	1.52	1.95	1.52
P4	2	0003	0035	0010	0011	3	5	8	9	0.65	1.09	1.74	1.95
P4	3	0010	0036	0006	0003	8	6	6	3	1.74	1.30	1.30	0.65
P4	4	0006	0035	0012	0010	6	5	10	8	1.30	1.09	2.17	1.74
P4	5	0004	0034	0012	0004	4	4	10	4	0.87	0.87	2.17	0.87
P4	6	0010	0035	0005	0007	8	5	5	7	1.74	1.09	1.09	1.52
P4	7	0003	0037	0003	0005	3	7	3	5	0.65	1.52	0.65	1.09
P4	8	0010	0036	0006	0003	8	6	6	3	1.74	1.30	1.30	0.65
P5	1	0000	0030	0000	0000	0	0	0	0	0.	0.	0.	0.
P5	2	0000	0031	0000	0000	0	1	0	0	0.	0.22	0.	0.
P5	3	0000	0030	0001	0001	0	0	1	1	0.	0.	0.22	0.22
P5	4	0000	0031	0001	0000	0	1	1	0	0.	0.22	0.22	0.
P5	5	0000	0000	0000	0000	0	0	0	0	0.	0.	0.	0.
P5	6	0002	0031	0001	0001	2	1	1	1	0.43	0.22	0.22	0.22
P5	7	0030	0030	0000	0000	0	0	0	0	0.	0.	0.	0.
P5	8	0001	0031	0000	0000	1	1	0	0	0.22	0.22	0.	0.
P6	1	0001	0031	0001	0003	1	1	1	3	0.22	0.22	0.22	0.65
P6	2	0030	0030	0000	0001	0	0	0	1	0.	0.	0.	0.22
P6	3	0000	0034	0001	0000	0	4	1	0	0.	0.87	0.22	0.

P6	4	0000	0000	0000	0000	0	0	0	0	0.	0.	0.	0.
P6	5	0000	0000	0000	0001	0	0	0	1	0.	0.	0.	0.
P6	6	0000	0000	0000	0001	0	0	0	1	0.	0.	0.	0.22
P6	7	0000	0000	0001	0000	0	0	0	1	0.	0.	0.	0.22
P6	8	0003	0000	0000	0001	3	0	1	1	0.	0.	0.22	0.
P7	1	0000	0002			0	2			0.65			0.22
P7	2	0000	0000			0	0			0.	0.43		
P7	3	0000	0000			0	0			0.	0.		
P7	4	0000	0011			0	1			0.	0.		
P7	5	0001	0000			1	0			0.	0.22		
P7	6	0000	0000			0	0			0.22	0.		
P7	7	0000	0000			0	0			0.	0.		
P7	8	0000	0011			0	1			0.	0.		

PR1	1	0001				1				0.22			
PR1	2	0002				2				0.43			
PR1	3	0002				2				0.43			
PR1	4	0000				0				0.			
PR1	5	0003				3				0.65			
PR1	6	0000				0				0.			
PR1	7	0002				2				0.43			
PR1	8	0001				1				0.22			
PR2	1	0002				2				0.43			
PR2	2	0003				3				0.65			
PR2	3	0002				2				0.43			
PR2	4	0004				4				0.67			
PR2	5	0003				3				0.65			
PR2	6	0003				3				0.65			
PR2	7	0004				4				0.87			
PR2	8	0000				0				0.			
PR3	1	0000				0				0.			
PR3	2	0000				0				0.			
PR3	3	0000				0				0.			
PR3	4	0000				0				0.			
PR3	5	0000				0				0.			
PR3	6	0002				2				0.43			
PR3	7	0001				1				0.22			
PR3	8	0000				0				0.			
PR4	1	0000				0				0.			
PR4	2	0001				1				0.22			
PR4	3	0001				1				0.22			
PR4	4	0000				0				0.			
PR4	5	0001				1				0.			
PR4	6	0000				0				0.22			
PR4	7	0001				1				0.			
PR4	8	0000				0				0.22			
PR5	1	0002				2				0.			
PR5	2	0000				0				0.43			
PR5	3	0000				0				0.			
PR5	4	0000				0				0.			
PR5	5	0000				0				0.			
PR5	6	0000				0				0.			

PB5	7	0000	0
PB5	8	0000	0
PB6	1	0001	1
PB6	2	0001	1
PB6	3	0003	3
PB6	4	0002	2
PB6	5	0003	3
PB6	6	0003	3
PB6	7	0003	3
PB6	8	0002	2

0.
0.
0.22
0.22
0.65
0.43
0.65
0.65
0.65
0.43

A1	1	0000	0011	0	1	0.	0.22
A1	2	0000	0000	0	0	0.	0.
A1	3	0000	0000	0	0	0.	0.
A1	4	0001	0000	1	0	0.22	0.
A1	5	0000	0000	0	0	0.	0.
A1	6	0000	0000	0	0	0.	0.
A1	7	0001	0000	1	0	0.22	0.
A1	8	0000	0000	0	0	0.	0.
A2	1	0000		0		0.	
A2	2	0000		0		0.	
A2	3	0000		0		0.	
A2	4	0000		0		0.	
A2	5	0000		0		0.	
A2	6	0000		0		0.	
A2	7	0000		0		0.	
A2	8	0000		0		0.	
A3	1	0000		0		0.	
A3	2	0000		0		0.	
A3	3	0000		0		0.	
A3	4	0000		0		0.	
A3	5	0000		0		0.	
A3	6	0000		0		0.	
A3	7	0000		0		0.	
A3	8	0000		0		0.	
AB1	1	0000		0		0.	
AB1	2	0000		0		0.	
AB1	3	0000		0		0.	
AB1	4	0000		0		0.	
AB1	5	0000		0		0.	
AB1	6	0000		0		0.	
AB1	7	0000		0		0.	
AB1	8	0000		0		0.	
AB2	1	0000		0		0.	
AB2	2	0000		0		0.	
AB2	3	0000		0		0.	
AB2	4	0000		0		0.	
AB2	5	0000		0		0.	
AB2	6	0000		0		0.	
AB2	7	0000		0		0.	
AB2	8	0000		0		0.	
AB3	1	0000		0		0.	

AB3	2	0001		1		0.22	
AB3	3	0000		0		0.	
AB3	4	0000		0		0.	
AB3	5	0001		1		0.22	
AB3	6	0001		1		0.22	
AB3	7	0002		2		0.43	
AB3	8	0001		1		0.22	
01	1	0020	0025	16	21	3.47	4.56
01	2	0016	0026	14	22	3.04	4.77
01	3	0020	0025	16	21	3.47	4.56
01	4	0013	0022	11	10	2.39	3.91
01	5	0020	0022	16	14	3.47	3.91
01	6	0024	0033	20	27	4.34	5.86
01	7	0023	0024	19	20	4.12	4.34
01	8	0023	0014	19	12	4.12	2.60
02	1	0003	0032	3	2	0.65	0.43
02	2	0002	0032	2	2	0.43	0.43
02	3	0001	0035	1	5	0.22	1.09
02	4	0003	0002	3	2	0.65	0.43
02	5	0001	0003	1	3	0.22	0.65
02	6	0001	0012	1	2	0.22	0.43
02	7	0002	0002	2	2	0.43	0.43
02	8	0003	0002	3	2	0.65	0.43

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SHAFT AND SCAN DATA.

FRAME	NSCAN	NSHSIN	NSHCOS	SCAN	SHAFT	DIRECTION
1	25459	172	21	254.59	339.78	234.37
2	25167	173	21	251.67	339.34	231.01
3	24777	173	21	247.77	339.34	227.11
4	24485	173	21	244.85	339.34	224.19
5	24387	173	21	243.87	339.34	223.21
6	24680	173	21	246.80	339.34	226.14
7	25070	173	21	250.70	339.34	230.04
8	25362	173	21	253.62	339.34	232.96
9	25752	173	21	257.52	339.34	236.86
10	26044	172	21	260.44	339.78	240.22
11	26434	172	21	264.34	339.78	244.12
12	26726	172	21	267.26	339.78	247.04
13	27116	173	21	271.16	339.34	250.50
14	27408	173	21	274.08	339.34	253.42
15	27798	173	21	277.98	339.34	257.32
16	28090	173	21	280.90	339.34	260.24
17	28480	173	21	284.80	339.34	264.14
18	28870	173	21	288.70	339.34	268.04
19	29162	173	21	291.62	339.34	270.96
20	29455	173	21	294.55	339.34	273.89
21	29845	173	21	298.45	339.34	277.79
22	30234	173	21	302.34	339.34	281.68

23	3052.7	172	21	305.27	339.78	285.05
24	3091.6	173	21	309.16	339.34	288.50
25	3120.9	173	21	312.09	339.34	291.43
26	3159.9	173	21	315.99	339.34	295.33
27	3.891	173	21	318.91	339.34	298.25
28	3221.1	173	21	322.81	339.34	302.15
29	3257.3	173	21	325.73	339.34	305.07
30	3296.3	173	21	329.63	339.34	308.97
31	3335.3	173	21	333.53	339.34	312.87
32	3364.5	173	21	336.45	339.34	315.79
33	3403.5	173	21	340.35	339.34	319.69
34	3432.7	173	21	343.27	339.34	322.61
35	3471.7	172	21	347.17	339.78	326.95
36	3500.9	172	21	350.09	339.78	329.87
37	3539.9	173	21	353.99	339.34	333.33
38	3569.1	173	21	356.91	339.34	336.25
39	8.1	173	21	0.81	339.34	340.15
40	47.1	173	21	4.71	339.34	344.05
41	76.3	173	21	7.63	339.34	346.97
42	105.6	173	21	10.56	339.34	349.90
43	144.5	173	20	14.45	339.34	353.79
44	183.5	173	21	18.35	339.34	357.69
45	212.8	173	21	21.28	339.34	0.62
46	251.7	173	21	25.17	339.34	4.51
47	281.0	172	21	28.10	339.78	7.88
48	320.0	173	21	32.00	339.34	11.34
49	359.9	173	21	35.99	339.34	15.23
50	388.2	173	21	38.82	339.34	18.16
51	427.1	173	21	42.71	339.34	22.05
52	456.4	173	21	45.64	339.34	24.98
53	495.4	173	21	49.54	339.34	28.88
54	524.6	173	21	52.46	339.34	31.80
55	563.6	172	21	56.36	339.78	36.14
56	602.6	173	21	60.26	339.34	39.60
57	631.8	173	21	63.18	339.34	42.52
58	661.0	173	21	66.10	339.34	45.44
59	700.0	173	21	70.00	339.34	49.34
60	729.2	173	21	72.92	339.34	52.26
61	768.2	173	21	76.82	339.34	56.16
62	807.2	173	21	80.72	339.34	60.06
63	836.4	173	21	83.64	339.34	62.98
64	875.4	173	21	87.54	339.34	66.88
65	904.6	173	21	90.46	339.34	69.80
66	943.6	173	21	94.36	339.34	73.70
67	972.9	173	21	97.29	339.34	76.63
68	1011.8	173	21	101.18	339.34	80.52
69	1041.1	173	21	104.11	339.34	83.45
70	1080.0	173	21	108.00	339.34	87.34
71	1119.0	173	21	111.90	339.34	91.24
72	1148.3	172	21	114.83	339.78	94.61
73	1167.7	172	21	116.77	339.78	96.55
74	1148.3	173	21	114.83	339.34	94.17
75	1119.0	172	21	111.90	339.78	91.68

76	10800	173	21	108.00	139.34	87.34
77	10508	173	21	105.08	139.34	84.42
78	10118	173	21	101.18	139.34	80.52
79	9826	173	21	98.26	139.34	77.60
80	9436	173	21	94.36	139.34	73.70
81	9046	173	21	90.46	139.34	69.80
82	8754	173	21	87.54	139.34	66.88
83	8364	173	21	83.64	139.34	62.98
84	7974	172	21	79.74	139.78	59.52
85	7682	172	21	76.82	139.78	56.60
86	7292	173	21	72.92	139.34	52.26
87	7000	173	21	70.00	139.34	49.34
88	6610	172	21	66.10	139.78	45.88
89	6318	173	21	63.18	139.34	42.52
90	5928	173	21	59.28	139.34	38.62
91	5636	173	21	56.36	139.34	35.70
92	5246	173	21	52.46	139.34	31.80
93	4954	173	21	49.54	139.34	28.88
94	4564	173	21	45.64	139.34	24.98
95	4271	173	21	42.71	139.34	22.05
96	3882	173	21	38.82	139.34	18.16
97	3499	173	21	35.99	139.34	15.23
98	3200	173	21	32.00	139.34	11.34
99	2810	173	21	28.10	139.34	7.44
100	2517	173	21	25.17	139.34	4.51
101	2225	172	21	22.25	139.78	2.03
102	1835	173	21	18.35	139.34	357.69
103	1445	173	21	14.45	139.34	353.79
104	1056	173	21	10.56	139.34	349.90
105	763	172	21	7.63	139.78	347.41
106	374	173	21	3.74	139.34	343.08
107	"1	173	21	0.31	139.34	340.15
108	356.1	173	21	356.91	139.34	336.25
109	353.2	173	21	353.02	139.34	332.36
110	350.9	173	21	350.09	139.34	329.43
111	347.7	173	21	347.17	139.34	326.51
112	343.7	172	21	343.27	139.78	323.05
113	339.7	173	21	339.37	139.34	318.71
114	336.5	173	21	336.45	139.34	315.79
115	332.5	173	21	332.55	139.34	311.69
116	329.3	173	21	329.63	139.34	308.97
117	325.3	173	21	325.73	139.34	305.07
118	322.1	173	21	322.81	139.34	302.15
119	318.1	173	21	318.91	139.34	298.25
120	315.9	173	21	315.99	139.34	295.33
121	312.9	173	21	312.09	139.34	291.43
122	309.6	173	21	309.16	139.34	288.50
123	305.2	173	21	305.27	139.34	284.61
124	301.7	173	21	301.37	139.34	280.71
125	298.6	173	21	298.45	139.34	277.79
126	294.5	173	21	294.55	139.34	273.80
127	291.6	173	21	291.62	139.34	270.91
128	287.3	173	21	287.71	139.34	267.37

AND ON DATA.

AC MAGNETIC FIELD FLUCTUATION
ELECTRIC FIELD SEMI-D

114.891
44.000

114.891
44.100

1

COLEMAN'S MAGNETOMETER DATA.

FRAME	IX	OY	OZ	NT
1	-13.100	-10.840	15.880	23.266
2	-13.450	-10.910	15.720	23.189
3	-13.790	-10.980	15.560	23.513
4	-14.130	-11.050	15.400	23.641
5	-14.010	-11.100	15.050	23.366
6	-13.770	-11.140	14.860	22.992
7	-13.540	-11.180	14.270	22.626
8	-13.310	-11.230	13.880	22.269
9	-13.230	-11.140	13.660	22.039
10	-13.190	-11.030	13.480	21.848
11	-13.150	-10.920	13.310	21.664
12	-13.100	-10.810	13.130	21.468
13	-13.090	-10.780	13.090	21.422
14	-13.090	-10.780	13.090	21.422
15	-13.090	-10.780	13.090	21.422
16	-13.090	-10.780	13.090	21.422
17	-13.720	-10.710	13.650	22.119
18	-13.840	-10.140	13.410	21.776
19	-13.960	-9.580	13.170	21.450
20	-14.070	-9.010	12.930	21.127
21	-14.520	-8.170	11.810	20.422
22	-15.050	-7.270	10.490	19.733
23	-15.570	-6.380	9.180	19.158
24	-16.090	-5.480	7.860	18.727
25	-16.080	-6.140	7.960	18.964
26	-15.940	-7.170	8.390	19.488
27	-15.790	-8.190	8.820	19.954
28	-15.650	-9.220	9.250	20.384
29	-15.710	-8.870	9.350	20.320
30	-15.810	-8.190	9.370	20.120
31	-15.910	-7.520	9.380	19.941
32	-16.010	-6.840	9.400	19.785
33	-15.930	-6.670	9.480	19.946
34	-15.820	-6.620	10.480	20.201
35	-15.700	-6.570	11.390	20.473
36	-15.590	-6.510	12.080	20.769
37	-15.410	-7.040	12.740	20.960
38	-15.230	-7.700	12.490	21.148
39	-15.050	-8.360	12.640	21.358
40	-14.860	-9.020	12.790	21.582
41	-15.050	-8.960	12.330	21.420
42	-15.320	-8.720	11.720	21.168

43	-15.607	-8.490	11.120	20.955
44	-15.873	-8.260	10.520	20.795
45	-15.983	-7.900	10.380	20.551
46	-15.820	-7.500	10.360	20.343
47	-15.760	-7.110	10.333	20.140
48	-15.713	-6.720	10.300	19.951
49	-15.640	-6.190	10.480	19.618
50	-15.570	-5.620	10.710	19.716
51	-15.517	-5.060	10.940	19.643
52	-15.443	-4.490	11.170	19.579
53	-15.363	-3.160	11.390	19.511
54	-15.280	-6.150	11.600	20.146
55	-15.190	-7.120	11.810	20.516
56	-15.110	-8.100	12.020	20.938
57	-15.163	-8.280	11.880	20.968
58	-15.280	-8.270	11.620	20.902
59	-15.380	-8.260	11.370	20.434
60	-15.480	-8.260	11.120	20.773
61	-15.620	-7.800	10.990	20.430
62	-15.770	-7.250	10.890	20.495
63	-15.920	-6.690	10.780	20.197
64	-16.070	-6.130	10.670	20.240
65	-16.090	-6.060	10.780	20.293
66	-16.090	-6.100	10.940	20.391
67	-16.090	-6.140	11.100	20.489
68	-16.090	-6.190	11.260	20.591
69	-16.220	-6.290	11.280	20.734
70	-16.380	-6.410	11.280	20.896
71	-16.540	-6.530	11.280	21.058
72	-16.700	-6.650	11.280	21.221
73	-16.590	-6.820	11.130	21.102
74	-16.393	-7.000	10.930	20.907
75	-16.210	-7.180	10.740	20.728
76	-16.030	-7.360	10.540	20.548
77	-16.300	-7.190	10.170	20.514
78	-16.673	-5.930	9.790	20.518
79	-17.053	-6.670	9.340	20.553
80	-17.420	-6.410	8.970	20.594
81	-17.690	-6.320	8.660	20.685
82	-17.930	-6.260	8.440	20.782
83	-18.180	-6.200	8.220	20.493
84	-18.420	-6.140	8.000	21.000
85	-17.480	-6.210	8.480	20.708
86	-17.170	-6.320	8.950	20.368
87	-16.450	-6.420	9.500	20.052
88	-16.730	-6.530	10.050	19.776
89	-16.600	-6.380	10.440	19.826
90	-16.613	-6.170	10.800	19.950
91	-16.620	-5.960	11.150	20.095
92	-16.620	-5.750	11.510	20.237
93	-16.260	-5.530	11.860	20.428
94	-17.030	-5.300	10.430	20.661

95	-17.900	-5.070	9.810	20.947
96	-18.580	-4.840	9.170	21.277
97	-18.400	-4.690	9.310	21.148
98	-18.000	-4.560	9.620	20.913
99	-17.800	-4.440	9.930	20.690
100	-17.200	-4.310	10.240	20.476
101	-16.790	-4.180	9.570	19.995
102	-16.390	-4.310	9.570	19.463
103	-15.980	-4.330	9.170	18.326
104	-15.570	-4.340	8.770	18.309
105	-15.600	-4.970	8.720	18.550
106	-15.720	-5.740	8.740	18.880
107	-15.850	-6.520	8.770	19.252
108	-15.970	-7.290	8.800	19.637
109	-15.970	-6.880	8.830	19.502
110	-15.940	-6.190	8.850	19.254
111	-15.900	-5.510	8.880	19.027
112	-15.870	-4.820	8.910	18.828
113	-16.140	-4.740	8.870	19.017
114	-16.480	-4.800	8.820	19.298
115	-16.820	-4.860	8.760	19.577
116	-17.160	-4.920	8.710	19.863
117	-17.500	-5.110	8.530	20.128
118	-17.850	-5.320	8.330	20.404
119	-18.190	-5.530	8.130	20.677
120	-18.530	-5.740	7.920	20.953
121	-18.820	-5.660	8.270	21.058
122	-18.430	-5.510	8.750	21.133
123	-18.340	-5.360	9.230	21.220
124	-18.240	-5.200	9.700	21.303
125	-17.920	-4.880	9.650	20.935
126	-17.550	-4.520	9.490	20.457
127	-17.170	-4.160	9.320	19.974
128	-16.800	-3.800	9.160	19.509

1

R, L, AND MAGNETIC LATITUDE VALUES.

FRAME	R	L	MAG LAT
1	20.933	21.871	11.680
2	20.933	21.872	11.680
3	20.933	21.872	11.680
4	20.933	21.872	11.680
5	20.933	21.872	11.680
6	20.933	21.872	11.680
7	20.933	21.872	11.680
8	20.933	21.872	11.680
9	20.933	21.872	11.680
10	20.933	21.872	11.680
11	20.933	21.873	11.680

12	20.933	21.873	11.680
13	20.933	21.873	11.680
14	20.933	21.873	11.680
15	20.933	21.873	11.680
16	20.933	21.873	11.680
17	20.933	21.873	11.680
18	20.933	21.873	11.680
19	20.933	21.874	11.680
20	20.933	21.874	11.680
21	20.933	21.874	11.680
22	20.933	21.874	11.680
23	20.933	21.874	11.680
24	20.933	21.874	11.680
25	20.933	21.874	11.680
26	20.933	21.874	11.680
27	20.933	21.875	11.680
28	20.933	21.875	11.680
29	20.933	21.875	11.680
30	20.933	21.875	11.680
31	20.933	21.875	11.680
32	20.933	21.875	11.680
33	20.933	21.875	11.680
34	20.933	21.875	11.680
35	20.933	21.875	11.680
36	20.933	21.876	11.680
37	20.933	21.876	11.680
38	20.933	21.876	11.680
39	20.933	21.876	11.680
40	20.933	21.876	11.680
41	20.933	21.876	11.680
42	20.933	21.876	11.680
43	20.933	21.876	11.680
44	20.933	21.877	11.680
45	20.933	21.877	11.680
46	20.933	21.877	11.680
47	20.933	21.877	11.680
48	20.933	21.877	11.680
49	20.933	21.877	11.680
50	20.933	21.877	11.680
51	20.933	21.877	11.680
52	20.933	21.878	11.680
53	20.933	21.878	11.680
54	20.933	21.878	11.680
55	20.933	21.878	11.680
56	20.933	21.878	11.680
57	20.933	21.878	11.680
58	20.933	21.878	11.680
59	20.933	21.878	11.680
60	20.933	21.879	11.680
61	20.933	21.879	11.680
62	20.933	21.879	11.680
63	20.933	21.879	11.680
64	20.933	21.879	11.680

65	20.939	21.879	11.680
66	20.939	21.879	11.680
67	20.939	21.879	11.680
68	20.939	21.880	11.680
69	20.939	21.880	11.680
70	20.939	21.880	11.680
71	20.939	21.880	11.680
72	20.939	21.880	11.680
73	20.939	21.880	11.680
74	20.939	21.880	11.680
75	20.939	21.880	11.680
76	20.939	21.880	11.680
77	20.939	21.881	11.680
78	20.939	21.881	11.680
79	20.939	21.881	11.680
80	20.939	21.881	11.680
81	20.939	21.881	11.680
82	20.939	21.881	11.680
83	20.939	21.881	11.680
84	20.939	21.881	11.680
85	20.939	21.882	11.680
86	20.939	21.882	11.680
87	20.939	21.882	11.680
88	20.939	21.882	11.680
89	20.939	21.882	11.680
90	20.939	21.882	11.680
91	20.939	21.882	11.680
92	20.939	21.882	11.680
93	20.945	21.883	11.680
94	20.945	21.883	11.680
95	20.945	21.883	11.680
96	20.945	21.883	11.680
97	20.945	21.883	11.680
98	20.945	21.883	11.680
99	20.945	21.883	11.680
100	20.945	21.883	11.680
101	20.945	21.884	11.680
102	20.945	21.884	11.680
103	20.945	21.884	11.680
104	20.945	21.884	11.680
105	20.945	21.884	11.680
106	20.945	21.884	11.680
107	20.945	21.884	11.680
108	20.945	21.884	11.680
109	20.945	21.884	11.680
110	20.945	21.885	11.680
111	20.945	21.885	11.680
112	20.945	21.885	11.680
113	20.945	21.885	11.680
114	20.945	21.885	11.680

115	20.945	21.885	11.680
116	20.945	21.885	11.680
117	20.945	21.885	11.680
118	20.945	21.886	11.680
119	20.945	21.886	11.680
120	20.945	21.886	11.680
121	20.945	21.886	11.680
122	20.945	21.886	11.680
123	20.945	21.886	11.680
124	20.945	21.886	11.680
125	20.945	21.886	11.680
126	20.945	21.887	11.680
127	20.945	21.887	11.680
128	20.945	21.887	11.680

1

MAIN BODY COMMUTATOR ANALOG WORDS.

NO.	FUNCTION	INTEGER	VALUE
1	PG	235	4.70
2	FG	24	0.48
3	SRHVM	216	4.32
4	1.9V	115	2.30
5	MPT	118	2.36
6	PG	233	4.66
7	4.5V	153	3.26
8	12V	136	2.72
9	6.3V	171	3.42
10	-6V	155	3.10
11	GRD	10	0.20
12	SYNC	255	5.10

OPEP COMMUTATOR ANALOG WORDS.

NO.	FUNCTION	INTEGER	VALUE
1	SYNC	228	4.56
2	GRD	12	0.24
3	HE-1	108	2.16
4	HF-2	142	2.84
5	+6.3V	154	3.28
6	CME1	159	3.18
7	CMB1B2	116	2.72
8	CME2	125	2.50
9	CME3	114	2.28
10	CMB3	122	2.44
11	CME4	141	2.82
12	CMB4	142	2.84

13	CME5	145	2.90
14	CME5	115	2.30
15	CME6	120	2.40
16	CME6	139	2.78
17	CME7	147	2.94
18	CME7	115	2.30
19	CMDM1	157	3.14
20	CMD2	126	2.52
21	CMD1	173	3.46
22	CMD2	147	2.94
23	CMD3	180	3.60
24	CMD4	151	3.22
25	HV1	199	3.98
26	HV2	170	3.40
27	LMT1	56	1.12
28	HMT1	52	1.04
29	LMT2	172	3.44
30	HMT2	174	3.48
31	+12V	170	3.40
32	GRD	11	0.22

1

SUB COMMUTATORS 2 AND 3 ANALOG WORDS.

-41-

NO.	CALIBRATION	INTEGER	VALUE
1		126	2.52
2		123	2.46
3		110	2.20
4		113	2.26
5		125	2.50
6		124	2.48
7		248	4.96
8		248	4.96
9		248	4.96
10		248	4.96
11		15	0.30
12		10	0.20
13		9	0.18
14		11	0.22
15		17	0.34
16		17	0.34
17		17	1.34
18		68	1.36
19		27	0.54
20		24	0.48
21		52	1.04
22		109	2.18
23		221	4.42
24		148	2.96
25		159	3.18
26		142	2.84

27	0	0.
28	25	0.50
29	85	1.70
30	132	2.64
31	159	3.18
32	206	4.12
33	253	5.06
34	107	2.14
35	22	0.44
36	100	100.00

1

S/C DATA RECORD IN OCTAL. (60 BIT WORDS)

CONTROL WORDS

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1 02330105014401420001
2 00010001000400040023
3 00010001000400040012
4 06220000000700053664

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ATTITUDE-ORBIT DATA

5	00007523000128637314	35	00005374400125646672	65	00007246000125656244	95	00011117400125669620
6	01216240252720026647	36	01216400252750026647	66	01216540253004026647	96	01216700253034026650
7	21017060527335034173	37	21017460527241034216	67	21020100527141034226	97	21020500527045034244
8	00542244352650054303	38	00542344352750054266	68	00542444353054054252	98	00542544353154054235
9	0130622133352453143	39	01305721331654553143	69	01305401330004553143	99	01305101326134553143
10	00045640000101450000	40	00045640000160400000	70	00045640000160300000	100	00045640000160220000
11	1737553207442750336	41	17375535213142760336	71	17375540330742760336	101	17375543445602760336
12	41314043677446141254	42	44527743677444777454	72	50237403677444635456	102	53742443677444473256
13	17534146770031734663	43	17534146763410764663	73	17534146756770764663	103	17534146752340764663
14	04327343721195147444	44	04631043721155167042	74	05132443721155174434	104	05434103721155207030
15	57165041230310747644	45	57165047403139747644	75	5716505556530747644	105	57165063733020747644
16	37742543637312411050	46	27324443637312517620	76	16741543537312624166	106	06410243637312726412
17	17157352157502747746	47	17157407060302747746	77	17157409541152747747	107	17157367442022747747
18	3743F25363530451204	48	4206101363535377646	78	14546453635340277354	108	16072013635341051104
19	57165134110752747333	49	57165035551612747332	79	57165002530312747327	109	57165024134752747327
20	05372143537541200336	50	40340303637541511242	80	17361343537550114730	110	25520203637547176660
21	57177260152232746241	51	57177265026742746252	81	57177271603012746263	111	57177267526142746257
22	46074353635433627160	52	41344613635424177106	82	04327613635414540060	112	26152153635420026706
23	17177412165561747240	53	17177412155160747240	83	17177412144560747240	113	17177412134140747240
24	26745003033053757554	54	21221203633054001032	84	21475303633054012302	114	21751443633054023556
25	57165752751611747734	55	57165353030570747734	85	57165353107510747734	115	57165353166440747734
26	61461503635375716236	56	61421343635375714474	86	61362203635375712732	116	61322743635375711166
27	1517100010003747313	57	15170000000002747313	87	15170000000002747313	117	15170000000002747313
28	54534143617633506000	58	54534143637653360600	88	54534143637653360600	118	54534143637653360600
29	17177412165561747240	59	17177412155161747240	89	17177412144560747240	119	17177412134140747240

30 20777143633033751262
31 57164452511437747760
32 5376145363333172134
33 5715734363503746611
34 52452043637746631000

60 21247343633033772540
61 57164453633033747760
62 54471613633361772550
63 57155731062370746611
64 27040143637744666736

90 21523443633054004010
91 5716445363303710747760
92 55204753633360564220
93 57155731550740746611
94 03253143637744725106

120 21777603633054015264
121 57164454244670747760
122 55723153633357346676
123 57155730227040746610
124 57312343637744763476

1

MILLISECONDS

125 0000221646003224046
126 0000226246000230446
127 0000232646000235046
128 0000237246000241446
129 0000243646000246046
130 0000250246000252446
131 0000256646000257046
132 0000263246000263446
133 0000269646000269046
134 0000276246000274446
135 0000282646000280046
136 0000289246000285646
137 0000295646000291246
138 0000302246000296846
139 0000308646000302446
140 0000315246000308046

141 0000321646000313646
142 0000328246000319246
143 0000334646000324846
144 0000341246000330446
145 0000347646000336046
146 0000354246000341646
147 0000360646000347246
148 0000367246000352846
149 0000373646000358446
150 0000380246000364046
151 0000386646000369646
152 0000393246000375246
153 0000399646000380846
154 0000406246000386446
155 0000412646000392046
156 0000419246000397646

157 0000425646000403246
158 0000432246000408846
159 0000438646000414446
160 0000445246000420046
161 0000451646000425646
162 0000458246000431246
163 0000464646000436846
164 0000471246000442446
165 0000477646000448046
166 0000484246000453646
167 0000490646000459246
168 0000497246000464846
169 0000503646000470446
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-43-

DETECTOR DATA

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1

SCAN

317 06156 3061117 16031105
318 76450 5750306 1500607
319 56061 4220622 33052674
320 16350 2064146 05475406
321 54200 6622606 66720675
322 00070 3060707 52071417
323 07222 5073032 07347707
324 43040 7475107 5550762
325 23077 0310774 75100303
326 10111 1101955 10236310
327 30271 0363510 43011051
328 07195 5530001 21000727
329 00137 3002040 01254900
330 34530 0412000 07253053
331 72006 2000070 05037452
332 01025 7010724 01153201
333 21760 1300401 35120142
334 56014 7220155 39016174
335 01700 2017610 02025402
336 10620 2152602 23340230
337 01023 6062425 53025060
338 02566 6026333 02563902
339 63330 2565602 53000244
340 14021 6060231 42022334
341 02152 6021362 02025401
342 74460 1700201 61740155
343 30014 7221142 56013450
344 01300 4012176 01153201
345 07240 1025790 74520070
346 65006 2000053 72014725
347 00420 1003453 03264500
348 20400 0137300 05660001
349 21105 5531047 46104301
350 10363 5103027 13222110
351 15551 0074710 30307774
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SHAFT SINE

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ADD ON DATA

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MR

OPER

SUR 2-3

705 0353003033001630166
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S/C 98 1 1 2 69 APR 10 100 0 3 42.118 222.118 368.422 1PB 2 1K0

1

MERGED SPACECRAFT DATA RECORD 2

CONSTANTS.

NORBIT ORBIT 155
 NSYEAR YEAR 69
 NSDAY DAY 100

NSRUN RUN NO. 98
 NSREEL REEL NO. 1
 NSFILE FILE NO. 1
 NSRECT ORIG RECORD 2
 NKILO ORIG KB 4
 NSYNC ORIG SYNC 4
 NSSTAT STATION 19

NURECD MRG PECD NO 2
 KILO MRG KB RATE 1
 MSYNC MRG SYNC 4

NNMON NUM OF MON 4
 MSDAY DAY OF MON 10
 NLDAY LAUNCH DAYS 402
 NSHIFT EPOCHS 0

NGDAY CALC DAY 7
 NCHON CALC MONTH 5
 NCYEAR CALC YEAR 1972

1

SELECTED ATTITUDE-ORBIT DATA.

SECONDS	350.000	420.000	0.	0.
LOCAL SECONDS	22510.196	22514.010	0.	0.
R	20.962	20.968	0.	0.
L	21.902	21.908	0.	0.
MAGNETIC LATITUDE	11.689	11.690	0.	0.
PHI GSE	279.077	279.093	0.	0.

THETA	43.898	43.882	0.	0.
PHI GSM	276.654	276.672	0.	0.
THETA	11.354	11.358	0.	0.
RIGHT ASCENSION	292.268	292.284	0.	0.
DECLINATION	22.673	22.660	0.	0.
LATITUDE	22.679	22.667	0.	0.
LONGITUDE	32.717	32.443	0.	0.
PADDLER ANGLE	185.955	185.955	0.	0.
B/BO	1.210	1.210	0.	0.
B	3.590	3.587	0.	0.
FLAG	00000	00000	00000	00000

POSITION VECTOR	1	45639.555	46749.400	0.	0.
	2	-114044.522	-114071.434	0.	0.
	3	51432.105	51470.762	0.	0.
SOLAP VECTOR	1	140964596.	140964016.	0.	0.
	2	46948076.	46949625.	0.	0.
	3	20358242.	20358914.	0.	0.
B BODY VECTOR	1	-0.3195971	-0.3203556	0.	0.
	2	0.6405119	0.6400042	0.	0.
	3	0.6982852	0.6984032	0.	0.

TGEI	1	0.2308860	0.2276073	0.	0.
	2	-0.9039005	-0.9043300	0.	0.
	3	-0.3600771	-0.3610847	0.	0.
	4	-0.3149559	-0.3147069	0.	0.
	5	-0.4195830	-0.4192333	0.	0.
	6	0.8513242	0.8515885	0.	0.
	7	-0.9205946	-0.9214958	0.	0.
	8	-0.0331505	-0.0301919	0.	0.
	9	-0.3315646	-0.3300195	0.	0.

TGSE	1	0.9399813	0.9399773	0.	0.
	2	0.3130582	0.3130685	0.	0.
	3	0.1357560	0.1357605	0.	0.
	4	-0.3412260	-0.3412372	0.	0.
	5	0.8623871	0.8623834	0.	0.
	6	0.3739696	0.3739680	0.	0.
	7	0.0000000	0.0000000	0.	0.
	8	-0.3978479	-0.3978479	0.	0.
	9	0.9174514	0.9174514	0.	0.

TGSM	1	0.9399813	0.9399773	0.	0.
	2	0.3130596	0.3130698	0.	0.
	3	0.1357530	0.1357575	0.	0.
	4	-0.2967299	-0.2968000	0.	0.
	5	0.9403425	0.9403430	0.	0.
	6	-0.1331448	-0.1328266	0.	0.
	7	-0.1849895	-0.1849015	0.	0.
	8	0.1332282	0.1329176	0.	0.
	9	0.9736679	0.9737270	0.	0.

TIME DATA.

FRAME	MILLIS	SECONDS	HOUR	MINUTES	SECONDS
1	222118	222.118	0	3	42.118
2	223270	223.270	0	3	43.270
3	224422	224.422	0	3	44.422
4	225574	225.574	0	3	45.574
5	226726	226.726	0	3	46.726
6	227878	227.878	0	3	47.878
7	229030	229.030	0	3	49.030
8	230182	230.182	0	3	50.182
9	231334	231.334	0	3	51.334
10	232486	232.486	0	3	52.486
11	233638	233.638	0	3	53.638
12	234790	234.790	0	3	54.790
13	235942	235.942	0	3	55.942
14	237094	237.094	0	3	57.094
15	238246	238.246	0	3	58.246
16	239398	239.398	0	3	59.398
17	240550	240.550	0	4	0.550
18	241702	241.702	0	4	1.702
19	242854	242.854	0	4	2.854
20	244006	244.006	0	4	4.006
21	245158	245.158	0	4	5.158
22	246310	246.310	0	4	6.310
23	247462	247.462	0	4	7.462
24	248614	248.614	0	4	8.614
25	249766	249.766	0	4	9.766
26	250918	250.918	0	4	10.918
27	252070	252.070	0	4	12.070
28	253222	253.222	0	4	13.222
29	254374	254.374	0	4	14.374
30	255526	255.526	0	4	15.526
31	256678	256.678	0	4	16.678
32	257830	257.830	0	4	17.830
33	258982	258.982	0	4	18.982
34	260134	260.134	0	4	20.134
35	261286	261.286	0	4	21.286
36	262438	262.438	0	4	22.438
37	263590	263.590	0	4	23.590
38	264742	264.742	0	4	24.742
39	265894	265.894	0	4	25.894
40	267046	267.046	0	4	27.046
41	268198	268.198	0	4	28.198
42	269350	269.350	0	4	29.350
43	270502	270.502	0	4	30.502
44	271654	271.654	0	4	31.654
45	272806	272.806	0	4	32.806
46	273958	273.958	0	4	33.958

47	275110	275.110	0	4	35.110
48	276262	276.262	0	4	36.262
49	277414	277.414	0	4	37.414
50	278566	278.566	0	4	38.566
51	279718	279.718	0	4	39.718
52	280870	280.870	0	4	40.870
53	282022	282.022	0	4	42.022
54	283174	283.174	0	4	43.174
55	284326	284.326	0	4	44.326
56	285478	285.478	0	4	45.478
57	286630	286.630	0	4	46.630
58	287782	287.782	0	4	47.782
59	288934	288.934	0	4	48.934
60	290086	290.086	0	4	50.086
61	291238	291.238	0	4	51.238
62	292390	292.390	0	4	52.390
63	293542	293.542	0	4	53.542
64	294694	294.694	0	4	54.694
65	295846	295.846	0	4	55.846
66	296998	296.998	0	4	56.998
67	298150	298.150	0	4	58.150
68	299302	299.302	0	4	59.302
69	300454	300.454	0	5	0.454
70	301606	301.606	0	5	1.606
71	302758	302.758	0	5	2.758
72	303910	303.910	0	5	3.910
73	305062	305.062	0	5	5.062
74	306214	306.214	0	5	6.214
75	307366	307.366	0	5	7.366
76	308518	308.518	0	5	8.518
77	309670	309.670	0	5	9.670
78	310822	310.822	0	5	10.822
79	311974	311.974	0	5	11.974
80	313126	313.126	0	5	13.126
81	314278	314.278	0	5	14.278
82	315430	315.430	0	5	15.430
83	316582	316.582	0	5	16.582
84	317734	317.734	0	5	17.734
85	318886	318.886	0	5	19.886
86	320038	320.038	0	5	20.038
87	321190	321.190	0	5	21.190
88	322342	322.342	0	5	22.342
89	323494	323.494	0	5	23.494
90	324646	324.646	0	5	24.646
91	325798	325.798	0	5	25.798
92	326950	326.950	0	5	26.950
93	328102	328.102	0	5	28.102
94	329254	329.254	0	5	29.254
95	330406	330.406	0	5	30.406
96	331558	331.558	0	5	31.558
97	332710	332.710	0	5	32.710
98	333862	333.862	0	5	33.862

99	335014	335.014	0	5	35.014
100	336166	336.166	0	5	36.166
101	337318	337.318	0	5	37.318
102	338470	338.470	0	5	38.470
103	339622	339.622	0	5	39.622
104	340774	340.774	0	5	40.774
105	341926	341.926	0	5	41.926
106	343078	343.078	0	5	43.078
107	344230	344.230	0	5	44.230
108	345382	345.382	0	5	45.382
109	346534	346.534	0	5	46.534
110	347686	347.686	0	5	47.686
111	348838	348.838	0	5	48.838
112	349990	349.990	0	5	49.990
113	351142	351.142	0	5	51.142
114	352294	352.294	0	5	52.294
115	353446	353.446	0	5	53.446
116	354598	354.598	0	5	54.598
117	355750	355.750	0	5	55.750
118	356902	356.902	0	5	56.902
119	358054	358.054	0	5	58.054
120	359206	359.206	0	5	59.206
121	360358	360.358	0	6	0.358
122	361510	361.510	0	6	1.510
123	362662	362.662	0	6	2.662
124	363814	363.814	0	6	3.814
125	364966	364.966	0	6	4.966
126	366118	366.118	0	6	6.118
127	367270	367.270	0	6	7.270
128	368422	368.422	0	6	8.422

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DETECTOR DATA.

RATE FACTOR = 0.217

DET CYCLE		CH1L				INTEGER				COUNTS/SEC			
	1	2	3	4	1	2	3	4		1	2	3	4
E1	1	0004	0005	0011	0003	4	5	9	3	0.87	1.09	1.95	0.65
E1	2	0016	0037	0002	0000	14	7	2	0	3.04	1.52	0.43	0.
E1	3	0004	0007	0005	0005	4	7	5	5	0.87	1.52	1.09	1.09
E1	4	0000	0005	0002	0001	0	5	2	1	0.	1.09	0.43	0.22
E1	5	0005	0034	0004	0005	5	4	4	5	1.09	0.87	0.87	1.09
E1	6	0000	0005	0011	0004	0	5	9	4	0.	1.09	1.95	0.87
E1	7	0000	0003	0006	0003	0	3	6	3	0.	0.65	1.30	0.65
E1	8	0006	0003	0003	0005	6	3	3	5	1.30	0.65	0.65	1.09
E2	1	0003	0000	0001	0001	3	0	1	1	0.65	0.	0.22	0.22
E2	2	0006	0003	0002	0002	6	3	2	2	1.30	0.65	0.43	0.43
E2	3	0002	0002	0003	0002	2	2	3	2	0.43	0.43	0.65	0.43
E2	4	0005	0001	0003	0004	5	1	3	4	1.09	0.22	0.65	0.87
E2	5	0003	0001	0000	0002	3	1	0	2	0.65	0.22	0.	0.43
E2	6	0001	0004	0002	0001	1	4	2	1	0.22	0.87	0.43	0.22

E2	7	0003	0003	0002	0002	3	3	2	2	0.65	0.65	0.43	0.43
E2	8	0001	0003	0000	0005	1	3	0	5	0.22	0.65	0.	1.09
E3	1	0000	0004	0001	0004	0	4	1	4	0.	0.87	0.22	0.87
E3	2	0000	0003	0000	0002	0	3	0	2	0.	0.65	0.	0.43
E3	3	0000	0001	0002	0002	0	1	2	2	0.	0.22	0.43	0.43
E3	4	0001	0001	0000	0002	1	1	0	2	0.22	0.22	0.	0.43
E3	5	0001	0000	0002	0000	1	0	2	0	0.22	0.	0.43	0.
E3	6	0003	0000	0001	0001	3	0	1	1	0.65	0.	0.22	0.22
E3	7	0000	0000	0000	0000	0	0	0	0	0.	0.	0.	0.
E3	8	0004	0000	0001	0002	4	0	1	2	0.87	0.	0.22	0.43
E4	1	0003	0000	0002	0003	3	0	2	3	0.65	0.	0.43	0.65
E4	2	0003	0001	0002	0001	3	1	2	1	0.65	0.22	0.43	0.22
E4	3	0001	0004	0003	0004	1	4	3	4	0.22	0.87	0.65	0.87
E4	4	0000	0000	0002	0000	0	0	2	0	0.	0.	0.43	0.
E4	5	0000	0000	0000	0002	0	0	0	2	0.	0.	0.	0.43
E4	6	0004	0002	0001	0001	4	2	1	1	0.87	0.43	0.22	0.22
E4	7	0001	0000	0001	0001	1	0	1	1	0.22	0.	0.22	0.22
E4	8	0001	0002	0000	0001	1	2	0	1	0.22	0.43	0.	0.22
E5	1	0002	0006	0003	0003	2	6	3	3	0.43	1.30	0.65	0.65
E5	2	0007	0004	0003	0001	7	4	3	1	1.52	0.87	0.65	0.22
E5	3	0001	0004	0001	0007	1	4	1	7	0.22	0.87	0.22	1.52
E5	4	0002	0004	0004	0004	2	4	4	4	0.43	0.87	0.87	0.87
E5	5	0000	0001	0002	0001	0	1	2	1	0.	0.22	0.43	0.22
E5	6	0003	0002	0002	0002	3	2	2	2	0.65	0.43	0.43	0.43
E5	7	0005	0002	0000	0001	5	2	0	1	1.09	0.43	0.	0.22
E5	8	0001	0003	0000	0005	1	3	0	5	0.22	0.65	0.	1.09
E6	1	0004	0003	0004	0006	4	3	4	6	0.87	0.65	0.87	1.30
E6	2	0004	0003	0003	0002	4	3	3	2	0.87	0.65	0.65	0.43
E6	3	0002	0003	0002	0003	2	3	2	3	0.43	0.65	0.43	0.65
E6	4	0007	0003	0004	0006	7	3	4	6	1.52	0.65	0.87	1.30
E6	5	0001	0003	0003	0005	1	3	3	5	0.22	0.65	0.65	1.09
E6	6	0004	0000	0004	0006	4	8	4	6	0.87	1.74	0.87	1.30
E6	7	0003	0007	0002	0002	3	7	2	2	0.65	1.52	0.43	0.43
E6	8	0002	0004	0002	0006	2	4	2	6	0.43	0.87	0.43	1.30
E7	1	0003	0002	0006	0006	3	2	6	6	0.65	0.43	1.30	1.30
E7	2	0004	0001	0002	0002	4	1	2	2	0.87	0.22	0.43	0.43
E7	3	0004	0002	0004	0001	4	2	4	1	0.87	0.43	0.87	0.22
E7	4	0004	0004	0002	0007	4	4	2	7	0.87	0.87	0.43	1.52
E7	5	0005	0001	0005	0003	5	1	5	3	1.09	0.22	1.09	0.65
E7	6	0004	0003	0006	0004	4	3	6	4	0.87	0.65	1.30	0.87
E7	7	0000	0002	0002	0003	0	3	3	3	0.	0.43	0.65	0.65
E7	8	0001	0003	0005	0002	1	3	5	2	0.22	0.65	1.09	0.43
E8	1	0001	0000			1	0			0.22	0.		
E8	2	0001	0000			1	0			0.22	0.		
E8	3	0000	0002			0	2			0.	0.43		
E8	4	0000	0001			0	1			0.	0.22		
E8	5	0000	0000			0	0			0.	0.		
E8	6	0004	0000			4	0			0.87	0.		
E8	7	0000	0001			0	1			0.	0.22		
E8	8	0000	0000			0	0			0.	0.		

EB1	1	C001	1	0.22
EB1	2	C000	0	0.
EB1	3	0000	0	0.
EB1	4	0001	1	0.22
EB1	5	0000	0	0.
EB1	6	0003	3	0.65
EB1	7	C001	1	0.22
EB1	8	0000	0	0.
EB2	1	0000	0	0.
EB2	2	0003	3	0.65
EB2	3	0000	0	0.
EB2	4	0000	0	0.
EB2	5	0001	1	0.22
EB2	6	C003	3	0.65
EB2	7	C001	1	0.22
EB2	8	C000	0	0.
EB3	1	0006	6	1.30
EB3	2	0000	0	0.
EB3	3	0001	1	0.22
EB3	4	0002	2	0.43
EB3	5	0000	0	0.
EB3	6	0003	3	0.65
EB3	7	0000	0	0.
EB3	8	0002	2	0.43
EB4	1	C001	1	0.22
EB4	2	0000	0	0.
EB4	3	0000	0	0.
EB4	4	C003	3	0.65
EB4	5	0000	0	0.
EB4	6	0001	1	0.22
EB4	7	0001	1	0.22
EB4	8	C006	6	1.30
EB5	1	C001	1	0.22
EB5	2	0001	1	0.22
EB5	3	0002	2	0.43
EB5	4	0000	0	0.
EB5	5	0002	2	0.43
EB5	6	C004	4	0.87
EB5	7	C001	1	0.22
EB5	8	0002	2	0.43
EB6	1	C006	6	1.30
EB6	2	C001	1	0.22
EB6	3	0001	1	0.22
EB6	4	0001	1	0.22
EB6	5	0001	1	0.22
EB6	6	0002	2	0.43
EB6	7	0000	0	0.
EB6	8	C001	1	0.22
EB7	1	0003	3	0.65
EB7	2	0000	0	0.
EB7	3	C005	5	1.09
EB7	4	C004	4	0.87
EB7	5	C002	2	0.43

P7	1	0000	0001	0	1	0.	0.22
P7	2	0000	0011	0	1	0.	0.22
P7	3	0001	0033	1	3	0.22	0.65
P7	4	0001	0000	1	0	0.22	0.
P7	5	0001	0000	1	0	0.22	0.
P7	6	0000	0000	0	0	0.	0.
P7	7	0000	0000	0	0	0.	0.
P7	8	0001	0000	1	0	0.22	0.
P81	1	0000		0		0.	
P81	2	0001		1		0.22	
P81	3	0001		1		0.22	
P81	4	0001		1		0.22	
P81	5	0001		1		0.22	
P81	6	0001		1		0.22	
P81	7	0000		0		0.	
P81	8	0000		0		0.	
P82	1	0003		3		0.65	
P82	2	0001		1		0.22	
P82	3	0003		3		0.65	
P82	4	0004		4		0.87	
P82	5	0005		5		1.09	
P82	6	0003		3		0.65	
P82	7	0000		0		0.	
P82	8	0001		1		0.22	
P83	1	0000		0		0.	
P83	2	0000		0		0.	
P83	3	0001		1		0.22	
P83	4	0002		2		0.43	
P83	5	0001		1		0.22	
P83	6	0001		1		0.22	
P83	7	0000		0		0.	
P83	8	0002		2		0.43	
P84	1	0001		1		0.22	
P84	2	0000		0		0.	
P84	3	0000		0		0.	
P84	4	0001		1		0.22	
P84	5	0000		0		0.	
P84	6	0000		0		0.	
P84	7	0000		0		0.	
P84	8	0000		0		0.	
P85	1	0000		0		0.	
P85	2	0000		0		0.	
P85	3	0000		0		0.	
P85	4	0000		0		0.	
P85	5	0000		0		0.	
P85	6	0000		0		0.	
P85	7	0000		0		0.	
P85	8	0000		0		0.	
P86	1	0003		3		0.65	
P86	2	0002		2		0.43	
P86	3	0004		4		0.87	

PB6	4	0003		3		0.65	
PB6	5	0004		4		0.87	
PB6	6	0004		4		0.87	
PB6	7	0002		2		0.43	
PB6	8	0000		0		0.	
A1	1	0000	0031	0	1	0.	0.22
A1	2	0000	0030	0	0	0.	0.
A1	3	0000	0030	0	0	0.	0.
A1	4	0030	0032	0	2	0.	0.43
A1	5	0000	0031	0	1	0.	0.22
A1	6	0000	0030	0	0	0.	0.
A1	7	0000	0030	0	0	0.	0.
A1	8	0000	0030	0	0	0.	0.
A2	1	0000		0		0.	
A2	2	0000		0		0.	
A2	3	0000		0		0.	
A2	4	0030		0		0.	
A2	5	0000		0		0.	
A2	6	0000		0		0.	
A2	7	0000		0		0.	
A2	8	0000		0		0.	
A3	1	0000		0		0.	
A3	2	0000		0		0.	
A3	3	0000		0		0.	
A3	4	0030		0		0.	
A3	5	0000		0		0.	
A3	6	0000		0		0.	
A3	7	0000		0		0.	
A3	8	0030		0		0.	
AB1	1	0000		0		0.	
AB1	2	0000		0		0.	
AB1	3	0030		0		0.	
AB1	4	0030		0		0.	
AB1	5	0000		0		0.	
AB1	6	0000		0		0.	
AB1	7	0030		0		0.	
AB1	8	0030		0		0.	
AB2	1	0000		0		0.	
AB2	2	0030		0		0.	
AB2	3	0000		0		0.	
AB2	4	0001		1		0.22	
AB2	5	0000		0		0.	
AB2	6	0030		0		0.	
AB2	7	0000		0		0.	
AB2	8	0000		0		0.	
AB3	1	0012		10		2.17	
AB3	2	0011		1		0.22	
AB3	3	0001		1		0.22	
AB3	4	0001		1		0.22	
AB3	5	0001		1		0.22	
AB3	6	0000		0		0.	

AB3	7	0000		0		0.
AB3	8	0001		1		0.22
01	1	0017	0035	15	29	3.26
01	2	0021	0025	17	21	3.69
01	3	0023	0017	19	15	4.12
01	4	0025	0027	21	23	4.56
01	5	0014	0017	12	15	2.60
01	6	0011	0020	9	16	1.95
01	7	0021	0025	17	21	3.69
01	8	0012	0023	10	19	2.17
02	1	0000	0004	0	4	0.
02	2	0005	0002	5	2	1.09
02	3	0001	0001	1	1	0.22
02	4	0003	0003	3	3	0.65
02	5	0001	0002	1	2	0.22
02	6	0002	0002	2	2	0.43
02	7	0004	0002	4	2	0.97
02	8	0001	0002	1	2	0.22

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SHAFT AND SCAN DATA.

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FRAME	SCAN	NSHSIN	NSHGOS	SCAN	SHAFT	DIRECTION
1	8490	173	21	284.80	339.34	264.14
2	28090	173	21	280.90	339.34	260.24
3	27798	173	21	277.98	339.34	257.32
4	27468	173	21	274.08	339.34	253.42
5	27019	173	21	270.19	339.34	249.53
6	26726	173	20	267.26	339.34	246.60
7	26336	173	21	263.36	339.34	242.70
8	26044	173	21	260.44	339.34	239.78
9	25752	172	21	257.52	339.78	237.30
10	25362	172	21	253.62	339.78	233.40
11	24972	172	21	249.72	339.78	229.50
12	24680	172	21	246.80	339.78	226.58
13	24387	173	21	243.87	339.34	223.21
14	24485	176	21	244.85	338.01	222.86
15	24777	173	21	247.77	339.34	227.11
16	25167	173	21	251.67	339.34	231.01
17	25557	172	21	255.57	339.78	235.35
18	25849	173	21	258.49	339.34	237.83
19	26239	176	21	262.39	338.01	240.40
20	26531	173	21	265.31	339.34	244.65
21	26921	173	21	269.21	339.34	248.55
22	27213	172	21	272.13	339.78	251.91
23	27603	173	21	276.03	339.34	255.37
24	27896	176	21	278.96	338.01	256.97
25	28285	172	21	282.85	339.78	262.63
26	28578	173	20	285.78	339.34	265.12

27	2896.8	173	21	289.68	339.34	269.02
28	2926.0	173	21	292.60	339.34	271.94
29	2965.0	176	21	296.50	339.01	274.51
30	2994.2	172	21	299.42	339.74	279.20
31	3033.2	173	21	303.32	339.34	282.66
32	3072.2	173	21	307.22	339.34	286.56
33	3101.4	172	21	310.14	339.78	289.92
34	3140.4	176	21	314.04	338.01	292.05
35	3169.6	172	21	316.96	339.78	296.74
36	3208.6	173	20	320.86	339.34	300.20
37	3237.8	173	21	323.78	339.34	303.12
38	3276.8	172	21	327.68	339.78	307.46
39	3306.0	176	21	330.60	338.01	308.61
40	3345.0	172	21	334.50	339.74	314.24
41	3374.2	173	21	337.42	339.34	316.76
42	3413.2	173	21	341.32	339.34	320.66
43	3452.2	172	21	345.22	339.78	325.00
44	3481.4	176	21	348.14	338.01	326.15
45	3510.7	173	21	351.07	339.34	330.41
46	3549.7	173	20	354.97	339.34	334.31
47	3588.6	173	21	358.86	339.34	338.20
48	17.9	172	21	1.79	339.78	341.57
49	56.8	176	21	5.68	338.01	343.69
50	86.1	173	21	8.61	339.34	347.95
51	125.1	172	20	12.51	339.78	352.29
52	154.3	173	21	15.43	339.34	354.77
53	193.3	173	21	19.33	339.34	358.67
54	232.3	172	21	23.23	339.78	3.01
55	261.5	173	21	26.15	339.34	5.49
56	300.5	173	21	30.05	339.34	9.30
57	329.7	173	21	32.97	339.74	12.31
58	368.7	173	21	36.87	339.34	16.21
59	397.9	172	21	39.79	339.78	19.57
60	436.9	173	21	43.69	339.74	23.03
61	475.9	172	21	47.59	339.78	27.17
62	505.1	173	21	50.51	339.34	29.85
63	544.1	173	21	54.41	339.34	33.75
64	573.3	172	21	57.33	339.78	37.11
65	612.3	173	21	61.23	339.34	40.57
66	641.5	173	20	64.15	339.34	43.49
67	680.5	173	21	68.05	339.34	47.39
68	709.7	172	21	70.97	339.78	50.75
69	748.7	172	21	74.87	339.78	54.65
70	778.0	173	21	77.80	339.34	57.14
71	816.9	173	21	81.69	339.34	61.03
72	846.2	172	21	84.62	339.78	64.40
73	885.2	173	21	88.52	339.34	67.86
74	924.1	172	21	92.41	339.78	72.19
75	953.4	173	21	95.34	339.34	74.68
76	992.3	173	21	99.23	339.34	78.57
77	1021.6	172	21	102.16	339.78	81.94
78	1061.6	173	21	106.06	339.34	85.40

79	10898	172	21	108.98	339.78	80.76
80	11288	172	21	112.88	339.78	92.66
81	11677	173	21	116.77	339.34	96.11
82	11677	172	21	116.77	339.78	96.55
83	11385	172	21	113.85	339.78	93.63
84	10995	172	21	109.95	339.78	89.73
85	10763	172	21	107.03	339.78	86.81
86	10411	173	21	104.11	339.34	83.45
87	10021	172	21	100.21	339.78	79.99
88	9621	173	21	96.21	339.34	75.65
89	9339	173	21	93.39	339.34	72.73
90	8949	172	21	89.49	339.78	69.27
91	8559	173	21	85.59	339.34	64.93
92	8267	172	21	82.67	339.78	62.45
93	7877	173	21	78.77	339.34	58.11
94	7585	172	21	75.85	339.78	55.63
95	7195	172	21	71.95	339.78	51.73
96	6903	173	21	69.03	339.34	48.37
97	6513	173	21	65.13	339.34	44.47
98	6220	172	21	62.20	339.78	41.58
99	5831	172	21	58.31	339.78	38.09
100	5538	172	21	55.38	339.78	35.18
101	5148	173	21	51.48	339.34	30.82
102	4856	172	21	48.56	339.78	28.34
103	4456	172	21	44.56	339.78	24.44
104	4174	172	21	41.74	339.78	21.52
105	3784	172	21	37.84	339.78	17.62
106	3492	173	21	34.92	339.34	14.26
107	3162	173	21	31.62	339.34	10.36
108	2810	172	21	28.10	339.78	7.88
109	2420	173	21	24.20	339.34	3.54
110	2128	173	21	21.28	339.34	0.62
111	1738	173	21	17.38	339.34	356.72
112	1348	173	21	13.48	339.34	352.82
113	958	172	21	9.58	339.78	349.36
114	666	172	21	6.66	339.78	346.44
115	276	173	21	2.76	339.34	342.18
116	35984	172	21	359.84	339.78	339.62
117	35994	173	21	359.94	339.34	335.28
118	35204	173	21	352.04	339.34	331.38
119	34912	172	21	349.12	339.78	328.90
120	34522	173	21	345.22	339.34	324.56
121	34230	172	21	342.30	339.78	322.08
122	33840	172	21	338.40	339.78	318.18
123	33548	172	21	335.48	339.78	315.26
124	33158	172	21	331.58	339.78	311.36
125	32865	173	21	328.65	339.34	307.99
126	32476	172	21	324.76	339.78	304.54
127	32086	173	21	320.86	339.34	300.20
128	31794	173	21	317.94	339.34	297.28

ADD ON DATA.

AC MAGNETIC FIELD FLUCTUATION
ELECTRIC FIELD SENSOR

771621
41000

771.621
41.000

1

COLEMAN'S MAGNETOMETER DATA.

FRAME	RX	BY	BZ	BT
1	-16.770	-4.030	9.220	19.557
2	-16.830	-4.390	9.330	19.738
3	-16.890	-4.750	9.450	19.928
4	-16.950	-5.110	9.560	20.120
5	-16.970	-5.830	9.250	20.187
6	-16.980	-6.630	8.850	20.263
7	-16.990	-7.430	8.440	20.374
8	-16.990	-8.230	8.030	20.515
9	-16.660	-8.210	7.980	20.215
10	-16.260	-8.000	8.020	19.817
11	-15.850	-7.790	8.050	19.409
12	-15.440	-7.580	8.090	19.008
13	-15.070	-7.680	8.080	18.745
14	-14.710	-7.860	8.060	18.524
15	-14.350	-8.040	8.050	18.313
16	-13.990	-8.220	8.030	18.104
17	-14.140	-7.970	8.360	18.258
18	-14.400	-7.620	8.760	18.490
19	-14.660	-7.260	9.170	18.754
20	-14.920	-6.910	9.580	19.030
21	-15.300	-6.390	9.450	19.085
22	-15.720	-5.840	9.390	19.123
23	-16.130	-5.290	8.930	19.181
24	-16.550	-4.730	8.670	19.273
25	-16.920	-4.400	8.420	19.405
26	-17.290	-4.130	8.160	19.560
27	-17.660	-3.850	7.910	19.730
28	-18.030	-3.580	7.650	19.910
29	-17.610	-4.210	7.590	19.633
30	-17.010	-5.060	7.470	19.294
31	-16.410	-5.910	7.550	19.006
32	-15.810	-6.760	7.530	18.769
33	-15.990	-6.940	7.680	19.148
34	-16.360	-6.980	7.850	19.446
35	-16.730	-7.010	8.050	19.845
36	-17.100	-7.050	8.240	20.249
37	-16.620	-6.750	8.300	19.766
38	-15.960	-6.370	8.320	19.092
39	-15.290	-5.990	8.350	18.422
40	-14.620	-5.620	8.380	17.764
41	-14.330	-5.220	8.260	17.344

42	-14.125	-4.820	8.110	16.982
43	-13.910	-4.410	7.060	16.622
44	-13.700	-4.010	7.800	16.267
45	-13.520	-3.720	8.280	16.368
46	-13.570	-3.460	8.900	16.593
47	-13.520	-3.190	9.520	16.840
48	-13.470	-2.930	10.150	17.119
49	-13.440	-3.050	9.440	16.705
50	-13.420	-3.260	8.430	16.180
51	-13.390	-3.480	7.420	15.699
52	-13.370	-3.690	6.410	15.279
53	-13.630	-3.680	5.430	15.126
54	-13.950	-3.610	4.470	15.087
55	-14.280	-3.540	3.510	15.125
56	-14.600	-3.470	2.540	15.220
57	-14.350	-3.180	2.460	14.903
58	-13.970	-2.830	2.590	14.487
59	-13.580	-2.490	2.730	14.074
60	-13.200	-2.150	2.860	13.676
61	-13.320	-1.850	2.290	13.641
62	-13.560	-1.560	1.570	13.739
63	-13.810	-1.270	0.840	13.894
64	-14.050	-0.980	0.110	14.085
65	-13.690	-0.210	-0.140	13.692
66	-13.190	0.650	-0.290	13.209
67	-12.690	1.510	-0.440	12.787
68	-12.190	2.390	-0.590	12.436
69	-12.010	2.720	-0.590	12.328
70	-11.900	2.930	-0.550	12.268
71	-11.790	3.140	-0.520	12.212
72	-11.690	3.350	-0.480	12.170
73	-11.690	2.940	-0.500	12.054
74	-11.710	2.390	-0.540	11.964
75	-11.740	1.840	-0.570	11.897
76	-11.760	1.290	-0.610	11.846
77	-11.700	1.860	-0.710	11.858
78	-11.630	2.600	-0.820	11.963
79	-11.550	3.490	-0.940	12.102
80	-11.490	4.320	-1.050	12.311
81	-11.650	4.320	-1.330	12.496
82	-11.890	4.140	-1.640	12.697
83	-12.120	3.950	-1.950	12.896
84	-12.350	3.760	-2.260	13.106
85	-12.690	3.620	-2.090	13.361
86	-13.060	3.490	-1.800	13.638
87	-13.430	3.360	-1.520	13.927
88	-13.800	3.230	-1.240	14.227
89	-13.950	2.170	-0.820	14.142
90	-14.060	0.910	-0.380	14.095
91	-14.170	-0.330	0.050	14.174
92	-14.270	-1.600	0.490	14.368
93	-14.290	-2.230	0.280	14.466

94	-14.280	-2.700	-0.070	14.533
95	-14.270	-3.170	-0.430	14.624
96	-14.270	-3.650	-0.800	14.751
97	-13.950	-3.520	0.170	14.188
98	-13.570	-3.250	1.440	14.024
99	-13.190	-2.990	2.710	13.793
100	-12.800	-2.730	3.990	13.683
101	-13.020	-3.430	4.810	14.298
102	-13.380	-4.360	5.520	15.116
103	-13.740	-5.290	6.220	15.983
104	-14.100	-6.230	6.930	16.901
105	-14.370	-6.270	6.710	17.054
106	-14.630	-6.110	6.280	17.053
107	-14.490	-5.950	5.850	17.069
108	-15.150	-5.790	5.420	17.100
109	-15.250	-5.380	5.000	16.927
110	-15.320	-4.920	4.580	16.730
111	-15.380	-4.460	4.160	16.545
112	-15.450	-3.990	3.740	16.389
113	-15.100	-3.700	3.520	15.940
114	-14.650	-3.460	3.340	15.419
115	-14.200	-3.210	3.170	14.899
116	-13.750	-2.960	2.990	14.379
117	-13.330	-2.990	3.110	14.011
118	-12.910	-3.080	3.290	13.674
119	-12.490	-3.170	3.470	13.345
120	-12.070	-3.270	3.660	13.030
121	-12.090	-2.290	3.550	12.807
122	-12.210	-1.100	3.380	12.717
123	-12.320	0.090	3.200	12.729
124	-12.440	1.300	3.030	12.870
125	-12.310	2.290	2.540	12.776
126	-12.130	3.210	1.980	12.703
127	-11.950	4.130	1.420	12.723
128	-11.760	5.060	0.860	12.831

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R, L, AND MAGNETIC LATITUDE VALUES.

FRAME	R	L	MAG LAT
1	20.945	21.887	11.680
2	20.945	21.887	11.680
3	20.945	21.887	11.680
4	20.945	21.887	11.680
5	20.945	21.887	11.680
6	20.945	21.888	11.680
7	20.945	21.888	11.680
8	20.945	21.888	11.680
9	20.945	21.888	11.680
10	20.945	21.888	11.680

11	20.945	21.888	11.680
12	20.945	21.888	11.680
13	20.945	21.888	11.680
14	20.945	21.889	11.680
15	20.945	21.889	11.680
16	20.945	21.889	11.680
17	20.951	21.889	11.680
18	20.951	21.889	11.680
19	20.951	21.889	11.680
20	20.951	21.889	11.680
21	20.951	21.889	11.680
22	20.951	21.889	11.680
23	20.951	21.890	11.680
24	20.951	21.890	11.680
25	20.951	21.890	11.680
26	20.951	21.890	11.680
27	20.951	21.890	11.680
28	20.951	21.890	11.680
29	20.951	21.890	11.680
30	20.951	21.890	11.680
31	20.951	21.891	11.680
32	20.951	21.891	11.680
33	20.951	21.891	11.680
34	20.951	21.891	11.680
35	20.951	21.891	11.680
36	20.951	21.891	11.680
37	20.951	21.891	11.680
38	20.951	21.891	11.680
39	20.951	21.892	11.680
40	20.951	21.892	11.680
41	20.951	21.892	11.680
42	20.951	21.892	11.680
43	20.951	21.892	11.680
44	20.951	21.892	11.680
45	20.951	21.892	11.680
46	20.951	21.892	11.680
47	20.951	21.893	11.680
48	20.951	21.893	11.680
49	20.951	21.893	11.680
50	20.951	21.893	11.680
51	20.951	21.893	11.680
52	20.951	21.893	11.680
53	20.951	21.893	11.680
54	20.951	21.893	11.680

55	20.951	21.894	11.680
56	20.951	21.894	11.680
57	20.951	21.894	11.680
58	20.951	21.894	11.680
59	20.951	21.894	11.680
60	20.951	21.894	11.680
61	20.951	21.894	11.680
62	20.951	21.894	11.680
63	20.951	21.894	11.680
64	20.951	21.895	11.680
65	20.951	21.895	11.680
66	20.951	21.895	11.680
67	20.951	21.895	11.680
68	20.951	21.895	11.680
69	20.957	21.895	11.680
70	20.957	21.895	11.680
71	20.957	21.895	11.680
72	20.957	21.896	11.680
73	20.957	21.896	11.680
74	20.957	21.896	11.680
75	20.957	21.896	11.680
76	20.957	21.896	11.680
77	20.957	21.896	11.680
78	20.957	21.896	11.680
79	20.957	21.896	11.680
80	20.957	21.897	11.680
81	20.957	21.897	11.680
82	20.957	21.897	11.680
83	20.957	21.897	11.680
84	20.957	21.897	11.680
85	20.957	21.897	11.680
86	20.957	21.897	11.680
87	20.957	21.897	11.680
88	20.957	21.898	11.680
89	20.957	21.898	11.680
90	20.957	21.898	11.680
91	20.957	21.898	11.680
92	20.957	21.898	11.680
93	20.957	21.898	11.680
94	20.957	21.898	11.680
95	20.957	21.898	11.680
96	20.957	21.899	11.680
97	20.957	21.899	11.680
98	20.957	21.899	11.680
99	20.957	21.899	11.680
100	20.957	21.899	11.680
101	20.957	21.899	11.680
102	20.957	21.899	11.680
103	20.957	21.899	11.680
104	20.957	21.900	11.680
105	20.957	21.900	11.680
106	20.957	21.900	11.680
107	20.957	21.900	11.680

108	20.957	21.900	11.680
109	20.957	21.900	11.680
110	20.957	21.900	11.680
111	20.957	21.900	11.680
112	20.957	21.900	11.680
113	20.957	21.901	11.680
114	20.957	21.901	11.680
115	20.957	21.901	11.680
116	20.957	21.901	11.680
117	20.957	21.901	11.680
118	20.957	21.901	11.680
119	20.957	21.901	11.680
120	20.957	21.901	11.680
121	20.963	21.902	11.680
122	20.963	21.902	11.680
123	20.963	21.902	11.680
124	20.963	21.902	11.680
125	20.963	21.902	11.680
126	20.963	21.902	11.680
127	20.963	21.902	11.680
128	20.963	21.902	11.680

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MAIN BODY COMMUTATOR ANALOG WORDS.

NO.	FUNCTION	INTEGER	VALUE
1	PG	235	4.70
2	EG	24	0.48
3	SRHVM	216	4.32
4	1.9V	115	2.30
5	HRT	118	2.36
6	PG	233	4.66
7	4.5V	153	3.26
8	12V	136	2.72
9	6.3V	171	3.42
10	-6V	155	3.10
11	GRD	10	0.20
12	SYNC	255	5.10

OPEP COMMUTATOR ANALOG WORDS.

NO.	FUNCTION	INTEGER	VALUE
1	SYNC	228	4.56
2	GRD	12	0.24
3	HE-1	108	2.16
4	HE-2	142	2.84
5	+6.3V	154	3.28

6	CME1	159	3.18
7	CMB102	136	2.72
8	CME2	125	2.50
9	CME3	114	2.28
10	CME3	122	2.44
11	CME4	141	2.82
12	CMB4	142	2.84
13	CME5	145	2.90
14	CMB5	115	2.30
15	CME6	120	2.40
16	CMB6	139	2.78
17	CME7	147	2.94
18	CMP7	115	2.30
19	CMDM1	157	3.14
20	CMDZ	126	2.52
21	CMD1	174	3.48
22	CMD2	147	2.94
23	CMD3	130	3.60
24	CMD4	151	3.22
25	HV1	139	3.98
26	HV2	170	3.40
27	LMT1	36	1.12
28	HMT1	52	1.04
29	LMT2	172	3.44
30	HMT2	174	3.48
31	+12V	170	3.40
32	GRO	11	0.22

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1

SUB COMMUTATORS 2 AND 3 ANALOG WORDS.

NO.	CALIBRATION	INTEGER	VALUE
1		120	2.40
2		123	2.46
3		122	2.44
4		119	2.38
5		124	2.48
6		125	2.50
7		248	4.96
8		248	4.96
9		248	4.96
10		248	4.96
11		11	0.22
12		6	0.12
13		7	0.14
14		12	0.24
15		17	0.34
16		17	0.34
17		67	1.34
18		66	1.32

19	24	0.48
20	25	0.50
21	52	1.04
22	119	2.18
23	218	4.36
24	148	2.96
25	159	3.18
26	141	2.82
27	0	0.
28	25	0.50
29	85	1.70
30	132	2.64
31	159	3.18
32	206	4.12
33	253	5.06
34	107	2.14
35	22	0.44
36	100	100.00

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S/C DATA RECORD IN DCTA.. (60 BIT WORDS)

CONTROL WORDS

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1 02336 105014431420001
2 00010 002000400040023
3 00020 001000400040012
4 06220 00000070053664

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ATTITUDE-ORBIT DATA

5	00012 771000125675164	35	00014642400125704532	65	000000000000000000	95	000000000000000000
6	01217040253071026651	36	01217200253120026652	66	000000000000000000	96	000000000000000000
7	21021120526791034262	37	21021520526691034300	67	000000000000000000	97	000000000000000000
8	00542644357260054221	38	00542744353360054204	68	000000000000000000	98	000000000000000000
9	01304561324264553143	39	01304261322414553143	69	000000000000000000	99	000000000000000000
10	00045640000160140000	40	00045640000160060000	70	000000000000000000	100	000000000000000000
11	1737554656160750336	41	17375551674642760336	71	000000000000000000	101	000000000000000000
12	5744134367744330660	42	63133603677444166062	72	000000000000000000	102	000000000000000000
13	17534146745720754663	43	17534146741300764663	73	000000000000000000	103	000000000000000000
14	0573544372115221420	44	06237143721155234016	74	000000000000000000	104	000000000000000000
15	5716507210730747643	45	57165100254600747643	75	000000000000000000	105	000000000000000000
16	76113243637313026430	46	65647743637313124314	76	000000000000000000	106	000000000000000000
17	17157306654372747747	47	17157221074262747747	77	000000000000000000	107	000000000000000000
18	31402713635341340174	48	40425653635343400624	78	000000000000000000	108	000000000000000000
19	57165024074572747326	49	57165022050452747326	79	000000000000000000	109	000000000000000000
20	64713043637547603034	50	51337043637550015512	80	000000000000000000	110	000000000000000000

21	57177272692632746252	51	57177276344532746244	91	00000000000000000000	111	00000000000000000000
22	22F4445363541533416	52	16722357635412217232	92	00000000000000000000	112	00000000000000000000
23	17177412123530747240	53	17177412113130747240	93	00000000000000000000	113	00000000000000000000
24	22225503633054035026	54	22501703633054046302	94	00000000000000000000	114	00000000000000000000
25	57165353245350747734	55	57165353324310747734	95	00000000000000000000	115	00000000000000000000
26	61263543635375707422	56	61224403635375705660	96	00000000000000000000	116	00000000000000000000
27	1517000000002747313	57	15170000000002747313	97	00000000000000000000	117	00000000000000000000
28	54534143637653360600	58	54534143637653360600	98	00000000000000000000	118	00000000000000000000
29	17177412123530747240	59	17177412113130747240	99	00000000000000000000	119	00000000000000000000
30	22253643633054026532	60	22530043633054040006	00	00000000000000000000	120	00000000000000000000
31	57164454710300747760	61	57164455356310747760	01	00000000000000000000	121	00000000000000000000
32	5644431363336122334	62	57170353633354667066	02	00000000000000000000	122	00000000000000000000
33	57155726674511746610	63	57155725332003746610	03	00000000000000000000	123	00000000000000000000
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MILLISECONDS

125	0000F616460009654046	141	00007716460000774046	157	00011016460001104046	173	00012116460001214046
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128	0000F772460000701446	144	00010072460001011446	160	00011172460001121446	176	00012272460001231446
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130	00007102460000712446	146	00010202460001022446	162	00011302460001132446	178	00012402460001242446
131	00007146460000717046	147	00010246460001027046	163	00011346460001137046	179	00012446460001247046
132	00007212460000723446	148	00010312460001033446	164	00011412460001143446	180	00012512460001253446
133	00007256460000730046	149	00010356460001040046	165	00011456460001150046	181	00012556460001260046
134	00007322460000734446	150	00010422460001044446	166	00011522460001154446	182	00012622460001264446
135	00007364460000741046	151	00010464460001051046	167	00011564460001161046	183	00012664460001271046
136	00007432460000745446	152	00010532460001055446	168	00011632460001165446	184	00012732460001275446
137	00007476460000752046	153	00010576460001062046	169	00011676460001172046	185	00012776460001282046
138	00007542460000756446	154	00010642460001066446	170	00011742460001176446	186	00013042460001306446
139	00007606460000763046	155	00010706460001073046	171	00012006460001203046	187	00013106460001313046
140	00007692460000774446	156	00010752460001077446	172	00012052460001207446	188	00013152460001317446

DETECTOR DATA

189	0004005001110300016	221	00040003000400060004	253	00030002000000000001	285	00000000000000000000
190	00070002000003040007	222	00030003000200020003	254	00000001000100060007	286	00000001000000000001
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192	00010005000400040005	224	00060001000300030005	256	00050007000700070005	288	00000001000600000000
193	00040005001100040000	225	00040010000400060003	257	00060006000500030011	289	00000000000100000000
194	00030006000300050003	226	00070002000200020004	258	00040004000700070011	290	00010001000100010001
195	000300050003000300001	227	00020006000300020006	259	00060003000500060007	291	00000000000300010003
196	00011006000300020002	228	00060004000100020002	260	00060006000540070014	292	00040005000300000001
197	00020002000300020005	229	00040002000400010004	261	00040002000600030005	293	00000000000100020001
198	000400030009000300001	230	00040002000700035001	262	00030007000500040011	294	00010000000200010000
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203	00000002000000000000	235	00000001000000000000	267	00080004000000000000	299	00020000000000000000
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218	00010002000000000000	250	00020001000000000000	282	00000000000000000000	314	0004000600002000100001
219	00020002000000000000	251	00010002000000000000	283	00000000000000000000	315	00030003000100020002
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SCAN

SHAFT SINE

SHAFT COSINE

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319	4006267462230051422	359	02540254025502600255	397	00250025002500250025
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SUB 2-3

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PLCT 1

-72-

JOB COMPLETED.

15.991 609/14 0 3 38

Appendix B

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SUPROUTINE MFGGM

CLICHE MFG10

PARAMETER (MBTPWC = 60)	60
PARAMETER (MBTPCH = 6)	6
PARAMETER (MCHPWC = MBTPW / MBTPCH)	10
PARAMETER (LSLBC = 120)	120
PARAMETER (MSLBC = LSLBC / MCHPWC)	12
PARAMETER (LPHCP = 22)	22
PARAMETER (LSWPF = 21)	21
PARAMETER (LSFPR = 128)	128
PARAMETER (LSWPR = LSWPF * LSFPR)	2688
PARAMETER (LSC23 = 36)	36
PARAMETER (LSFPRW = LSWPF + LSC23)	2724
PARAMETER (LSCPW = 2)	2
PARAMETER (LSPC = LSCPW * LSCFW)	5448
PARAMETER (MSPCWC = 545)	545
PARAMETER (MTPCK = MBTPC * LSCPW)	12
PARAMETER (MCHPWC = MBTPW / MBTPCH)	5
PARAMETER (LCYCLE = 8)	8
PARAMETER (LFFC = LSFPR / LCYCLE)	16
PARAMETER (LCFTWC = 5)	5
PARAMETER (LCFT = 36)	36
PARAMETER (LDPG = 4)	4
PARAMETER (LMPCWC = 16)	16
PARAMETER (LCPWC = 32)	32
PARAMETER (LMPCWC = 12)	12
PARAMETER (LCLWC = 250)	250
PARAMETER (MLCWC = 150)	150
PARAMETER (LOPCWC = 250)	250
PARAMETER (MOPWC = 150)	150
PARAMETER (LCPWC = LOPWC / 2)	125
PARAMETER (LMPCWC = 128)	128
PARAMETER (LMGWC = 5)	5
PARAMETER (LMGWC = LMGCV * LMGWP)	640
PARAMETER (LMGEX = 4)	4
PARAMETER (LMGWC = LMGND + LMGEX)	644
PARAMETER (MMPCWC = 516)	516
PARAMETER (LMGWC = LMGWC + 1)	129
PARAMETER (MUPCK = 724)	
COMMON MC, NM, NC, NP, NS, NT, NL	8
COMMON ICCM1(2)	2
COMMON RATE1K	1
COMMON DITRATE(3)	3
COMMON NEITPT(8)	8
COMMON KPCWC(15), MPCRZ(16), MEXPON(16)	47
COMMON ICLOC1, ICLOC2, MONTH, IYEAR, JYEAR, TRATE(6)	11
COMMON NCLC1, NCLC2, NC, OC3, NCLC(4)	7
COMMON LMCWH(12), NMONT(5,12), NDAYCT(5,12)	132
COMMON SPLAB(LBACRO,3)	66
COMMON STATION(16,2)	122
COMMON XJLOBIT(8,3)	24
COMMON LOPRET(LDET)	36
COMMON IOPET(LDET,4)	144
COMMON JOPET(LDET,16)	576
COMMON JTMPC(LMPC)	16
COMMON CRATE, KILO, LKLOC, MKILO, NKILO	5
COMMON LYEAR, LCPAY, TCAY, TLIN, MTLIN	2
COMMON PEGRAD, PACFG	2
COMMON IPPRRE, IPRMAG	2
COMMON IPICK	1
COMMON ICOMP(2)	2

78	COMMON ISYNC, JSYNC, MS'NC, NSYNC, LSYNC, MH9ID, NOPID	7
79	COMMON IWRSC0, IWRSC1, IWRSC2, IWRSC3, IWRSC4, IWRSC5, IWRSC6	7
80	COMMON INIT0, IRST0, LAST0, INITH, IPSTH, LASTH	6
81	COMMON INITL, IRSTL, LASTL	3
82	COMMON INFORL, INFORH, INHGH	3
83	COMMON LSCREC, LSCEND, NS' REC, LSSKIP, TOSKIP	5
84	COMMON LDPREC, LOREND, NF' REC, LCKSKIP	4
85	COMMON LMPREC, LMPEND, NF' REC, LMSKIP	4
86	COMMON LUNPREC, LUNEND, NF' REC, LLSKIP	4
87	COMMON NSODAY, NSFSEC, NS' DAY, NSFSEC	4
88	COMMON NSYEAR, NSDAY, NO' EAR, NODAY	4
89	COMMON NMYEAR, NPEAY, NPEAP, NLDAY	4
90	COMMON NSEON, ANPCN, NSTAY, NLDAY, NPDAY	5
91	COMMON NSPUN, NSHEEL, NS' ILE, NSPEC0, NSREC0, NSSTAT	6
92	COMMON NORUN, NOREFL, NO' ILE, NSPEC0, NSREC0, NORBIT	6
93	COMMON NMPUN, NMPREFL, NMF ILE, NMREC0, NMREC0, MORBIT	6
94	COMMON NUFUN, NUREFL, NMF ILE, NUREC0, NUREC0, LO'BIT, LUREC0	7
95	COMMON NLINE	1
96	COMMON STFTIM, ENFTIM	2
97	COMMON KSPFC0, KREC0, NI' ECD, NOMERG	4
98	COMMON MSPEC, MSEND	2
99	COMMON MORTAP, ICCRTP(4)	5
100	COMMON IRTAPE, ICSCRT, IC' CRT, IDMAGT, IDMRGT	5
101		
102	COMMON ICOM3(2)	2
103	COMMON JSCLAB(MSLEW0)	12
104	COMMON KSCLAB(LBWK00)	22
105	COMMON LSFLAB(LBWK00)	22
106	COMMON MSCLAB(LBWK00)	22
107	COMMON TSCDAT(MSRCW0)	545
108	COMMON JSCLAT(MSRLW0)	545
109		
110	COMMON JOFLAB(MOLEW0)	150
111	COMMON KOFLAB(LOLPH0)	250
112	COMMON AOFLAB(LOLEW0)	250
113	COMMON IOF0AT(MOFCH0)	150
114	COMMON JOF0AT(MOFCH0)	150
115	COMMON KOF0AT(LOREW0)	250
116	COMMON AOF0AT(6,LCW000)	750
117	COMMON AVATOP (LCW000)	125
118		
119	COMMON R(10), RN(4), U(4), V(4), PATIO	23
120	COMMON SCLARV(4), POSITV(4), TGEI(9), TGSE(9), TGSW(9)	35
121		
122	COMMON IMG0AT(MMRCH0)	516
123	COMMON JPC0AT(MMRCH0)	516
124	COMMON VMG0AT(645)	645
125	COMMON BYMAG(LMGID0)	129
126	COMMON BYMAG(LMGIX)	129
127	COMMON BYMAG(LMGICX)	129
128	COMMON BTMAG(LMGID0)	129
129	COMMON PSEC (LMGID0)	129
130	COMMON IAVPT(LMGITX)	129
131	COMMON IGUAL(LMGID0)	129
132		
133	COMMON ICOM4(2)	2
134	COMMON KSCDAT(2725)	2725
135	COMMON NSUBC1(LSFP0)	128
136	COMMON NSUBC2(LSFP0)	128
137	COMMON NSUB23(LSFC23)	36
138	COMMON NOFEP (5,LSFPR,3)	1920
139	COMMON VOFEP (5,LSFPR)	600
140	COMMON EXPDAT(LODET,LCPC,LYCLE)	1192
141	COMMON NSHOUR(LSFP0), NSM,N (LSFP0), SECON0(LSFP0), SCMIN0(LSFP0)	512
142	COMMON NANA0 (LSFP0)	128
143	COMMON VANAL (LSFP0)	128
144	COMMON VMDAN (12,LCYCLE)	96
145	COMMON VCFAN (LCF00)	32
146		
147	COMMON ICOM5(2)	2
148	COMMON ONECYC(LODET,LCYCLE)	288
149	COMMON TWOCYC(LODET,4)	144
150	COMMON FORCYC(LODET,2)	72
151	COMMON ONEPEC(LODET)	36

152		
153	COMMON ICOM6(2)	2
154	COMMON EXP(LCET,8)	288
155	COMMON NOP(LDFT,8)	288
156	COMMON KREC64(3,32)	96
157	COMMON PREC64(2,32)	64
158		
159	COMMON ICOM7(2)	2
160	COMMON NEXDAT(LDNET,LCPG,LCYCLE)	1152
161	COMMON MILESC(LSFPR), SECAY(LSFPR)	256
162	COMMON SCAN (130)	130
163	COMMON NANGLE(3,130)	390
164	COMMON NMEAN (12,LCYCLE)	96
165	COMMON NOPAN (LOPKD)	32
166	COMMON NSUBC(LSFPR)	128
167	COMMON N9AC, NEFC, BAC, E-D	4
168		
169	COMMON ICOM8(2)	2
170	COMMON PEXP(LCET,LCPG,LCYCLE)	1152
171	COMMON KEXP(LCET,LCPG,LCYCLE)	1152
172	COMMON LPEC64(3,LSFPR)	384
173	COMMON OPEC64(2,LSFPR)	256
174	COMMON PPEC64(2,32)	64
175	COMMON NMEAN (12)	12
176	COMMON MOPAN (LOPKD)	32
177	COMMON NSUB23(LSC23)	36
178		
179	COMMON IRST, LAST, IDERR, NCGCOC	4
180	COMMON NSCPAR, NSCEPR, MS-IFT	3
181	COMMON ORPDAT(4,52), NDFLG(4), NORDAT(4,17), NOPR	281
182	COMMON KBUSFC(1006)	
183	COMMON NDETER(640)	640
184	COMMON NMDPR(139)	130
185	COMMON RVALUE(LSFPR), DLVLU(LSFPR), DMGLAT(LSFPR)	384
186	COMMON RM(SC(1,4,LSFPR))	512
187	COMMON ICOM9(2)	2
188		
189	ENDCLICHF	
190	END	
193		
194	SUBROUTINE INTT	
195		
196	USE MEMP1E	
197		
198	ILAST = (.LOC. ICOM2(2)) - (.LOC. ICOM1(1))	
199	DO 10 I7FPR = 1, ILAST	
200	1) ICOM1(I7FPR) = 0	
201		
202	NP = 2	
203	NT = 3	
204	NS = 5	
205	NO = 6	
206	NM = 7	
207	NU = 8	
208	NC = 9	
209	NP = 100	
210	CALL ASSIGN (33, 12)	
211		
212	UNLOAD HP	
213		
214	WRITE OUTPUT TAPE NT, 100	
215		
216	CALL CONSTANT	
217	CALL CYCLE	
218		
219	1)67) FORMAT (// 14H LCAC PROGRAM)	
220		
221	END	

```

224
225 SUPROUTINE CONSTANT
226
227 USE MERG10
228
229
230 IYFAR = 1972
231 JYFAR = 54/1972
232 LYEAR = FA
233 MILIM = 86400000
234 ILIM = 86400.0
235 TCOAY = 64.
236 LCOAY = 64
237
238 CSEGRAD = 57.29578
239 PARNEG = 0.0174532925
240
241 RATE1K = 1.152
242
243 CITRATE(1) = 1.0
244 BITRATE(2) = 8.0
245 BITRATE(3) = 64.0
246
247 NBITRT(1) = 4H 1KF
248 NBITRT(2) = 4H 8KE
249 NBITRT(3) = 4H 64KE
250 NBITRT(4) = 4H 1PF
251 NBITRT(5) = 4H 1AE
252 NBITRT(6) = 4H 8AS
253 NBITRT(7) = 4H 64AS
254 NBITRT(8) = 4H 64AS
255
256 NPOWER2( 1) = 1
257 NPOWER2( 2) = 2
258 NPOWER2( 3) = 4
259 NPOWER2( 4) = 8
260 NPOWER2( 5) = 16
261 NPOWER2( 6) = 32
262 NPOWER2( 7) = 64
263 NPOWER2( 8) = 128
264 NPOWER2( 9) = 256
265 NPOWER2(10) = 512
266 NPOWER2(11) = 1024
267 NPOWER2(12) = 2048
268 NPOWER2(13) = 4096
269 NPOWER2(14) = 8192
270 NPOWER2(15) = 16384
271
272 NPOWER2( 1) = 1
273 NPOWER2( 2) = 256
274 NPOWER2( 3) = 16
275 NPOWER2( 4) = 4096
276 NPOWER2( 5) = 4
277 NPOWER2( 6) = 1024
278 NPOWER2( 7) = 64
279 NPOWER2( 8) = 16384
280 NPOWER2( 9) = 2
281 NPOWER2(10) = 512
282 NPOWER2(11) = 32
283 NPOWER2(12) = 8192
284 NPOWER2(13) = 8
285 NPOWER2(14) = 2048
286 NPOWER2(15) = 128
287 NPOWER2(16) = 1
288
289 NEXPON( 1) = 0
290 NEXPON( 2) = 8
291 NEXPON( 3) = 4
292 NEXPON( 4) = 12
293 NEXPON( 5) = 2
294 NEXPON( 6) = 10
295 NEXPON( 7) = 6
296 NEXPON( 8) = 14
297 NEXPON( 9) = 1

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298 MEXPCN(10) = 0
299 MEXPCN(11) = 5
300 MEXPCN(12) = 13
301 MEXPCN(13) = 3
302 MEXPCN(14) = 11
303 MEXPCN(15) = 7
304 MEXPCN(16) = 0
305
306 LMONTH( 1) = 3HJAN
307 LMONTH( 2) = 3HFEB
308 LMONTH( 3) = 3HMAR
309 LMONTH( 4) = 3HAPR
310 LMONTH( 5) = 3HMAY
311 LMONTH( 6) = 3HJUN
312 LMONTH( 7) = 3HJUL
313 LMONTH( 8) = 3HAUG
314 LMONTH( 9) = 3HSEP
315 LMONTH(10) = 3HOCT
316 LMONTH(11) = 3HNOV
317 LMONTH(12) = 3HDEC
318
319 NMONTH(1, 1) = 31
320 NMONTH(1, 2) = 29
321 NMONTH(1, 3) = 31
322 NMONTH(1, 4) = 30
323 NMONTH(1, 5) = 31
324 NMONTH(1, 6) = 30
325 NMONTH(1, 7) = 31
326 NMONTH(1, 8) = 31
327 NMONTH(1, 9) = 30
328 NMONTH(1,10) = 31
329 NMONTH(1,11) = 30
330 NMONTH(1,12) = 31
331
332 DO 14 M = 2, 5
333 DO 14 N = 1, 12
334 14 NMONTH(M,N) = NMONTH(1,N)
335 NMCNTH(2,2) = NMCNTH(3,2) = NMONTH(4,2) = 29
336
337 NSUM = 0
338 DO 16 M = 1, 5
339 DO 16 N = 1, 12
340 NSUM = NSUM + NMONTH(M,N)
341 15 MONTH(M,N) = NSUM
342
343 SCRLAB( 1,1) = 8HSATELLIT
344 SCRLAB( 1,2) = 8HE IDENTI
345 SCRLAB( 1,3) = 8HIFICATION
346 SCRLAB( 2,1) = 8HEXPERIME
347 SCRLAB( 2,2) = 8HAT NUMBE
348 SCRLAB( 2,3) = 8H
349 SCRLAB( 3,1) = 8HEXPERIME
350 SCRLAB( 3,2) = 8HAT STATU
351 SCRLAB( 3,3) = 8H
352 SCRLAB( 4,1) = 8HSTATION
353 SCRLAB( 4,2) = 8HNUMBER
354 SCRLAB( 4,3) = 8H
355 SCRLAB( 5,1) = 8HTYPE OF
356 SCRLAB( 5,2) = 8HCATA IN
357 SCRLAB( 5,3) = 8HFILE
358 SCRLAB( 6,1) = 8HPRN NUMB
359 SCRLAB( 6,2) = 8HPR
360 SCRLAB( 6,3) = 8H
361 SCRLAB( 7,1) = 8HREF L SEQ
362 SCRLAB( 7,2) = 8HUCENCE NU
363 SCRLAB( 7,3) = 8HMBER
364 SCRLAB( 8,1) = 8HYEAR
365 SCRLAB( 8,2) = 8H
366 SCRLAB( 8,3) = 8H
367 SCRLAB( 9,1) = 8HDAY OF Y
368 SCRLAB( 9,2) = 8HYEAR
369 SCRLAB( 9,3) = 8H
370 SCRLAB(10,1) = 8HSECONDS
371 SCRLAB(10,2) = 8HOF DAY

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372 SCRLAB(10,3) = BH
 373 SCRLAB(11,1) = 9F DAY OF Y
 374 SCRLAB(11,2) = RF EAR
 375 SCRLAB(11,3) = BF
 376 SCRLAB(12,1) = 2H SECONDS
 377 SCRLAB(12,2) = 9H CF DAY
 378 SCRLAB(12,3) = BF
 379 SCRLAB(13,1) = 8H DATE OF
 380 SCRLAB(13,2) = BF CIGITIZA
 381 SCRLAB(13,3) = BHTION
 382 SCRLAB(14,1) = RF EQUIPMEN
 383 SCRLAB(14,2) = RFT GROUP
 384 SCRLAB(14,3) = RHN USE
 385 SCRLAB(15,1) = BF IS FLEXI
 386 SCRLAB(15,2) = BABLE FORM
 387 SCRLAB(15,3) = BF IN USE
 388 SCRLAB(16,1) = BHFLEXIBLE
 389 SCRLAB(16,2) = RF FORMAT
 390 SCRLAB(16,3) = BNUMBER
 391 SCRLAB(17,1) = BHALALG T
 392 SCRLAB(17,2) = RF PE NUMB
 393 SCRLAB(17,3) = RHER
 394 SCRLAB(18,1) = BHALALOG F
 395 SCRLAB(18,2) = BFILE NUMB
 396 SCRLAB(18,3) = BHER
 397 SCRLAB(19,1) = BMASTER B
 398 SCRLAB(19,2) = BINARY TA
 399 SCRLAB(19,3) = BPE NO.
 400 SCRLAB(20,1) = BMASTER B
 401 SCRLAB(20,2) = BINARY FI
 402 SCRLAB(20,3) = BFILE NO.
 403 SCRLAB(21,1) = BHA/D LINE
 404 SCRLAB(21,2) = RF OPERATO
 405 SCRLAB(21,3) = BFR ID
 406 SCRLAB(22,1) = BHA/D LINE
 407 SCRLAB(22,2) = RF IN
 408 SCRLAB(22,3) = BF
 409
 410 STATION(1,1) = PHBLCSSOM
 411 STATION(1,2) = BFPPOINT
 412 STATION(5,1) = BHQUITO
 413 STATION(5,2) = BF
 414 STATION(8,1) = BHSANTIAG
 415 STATION(8,2) = BF
 416 STATION(15,1) = BFWINKFIEL
 417 STATION(15,2) = PHD
 418 STATION(16,1) = BFJOHANNET
 419 STATION(16,2) = BFBURG
 420 STATION(16,3) = BHALASKA
 421 STATION(16,4) = BF
 422 STATION(20,1) = BPROSPAN
 423 STATION(20,2) = BF
 424 STATION(21,1) = BHOROPAL
 425 STATION(21,2) = BF
 426 STATION(22,1) = BFMAGAGAS
 427 STATION(22,2) = BWAR
 428 STATION(61,1) = BCOLLEGE
 429 STATION(61,2) = BWFARK
 430
 431 KILOBIT(1,1) = BF1 KILOBIT
 432 KILOBIT(1,2) = BF1
 433 KILOBIT(1,3) = BF
 434 KILOBIT(2,1) = BF2 KILOBIT
 435 KILOBIT(2,2) = BF2
 436 KILOBIT(2,3) = BF
 437 KILOBIT(3,1) = BF4 KILOBIT
 438 KILOBIT(3,2) = BF4
 439 KILOBIT(3,3) = BF
 440 KILOBIT(4,1) = BF4 KILOBIT
 441 KILOBIT(4,2) = BF4
 442 KILOBIT(4,3) = BF4
 443 KILOBIT(5,1) = BF5 KILOBIT
 444 KILOBIT(5,2) = BF5
 445 KILOBIT(5,3) = BF5


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446 KILOBIT(6,1) = 8H1 KILOB1
447 KILOBIT(6,2) = 8H1 AC0. 5
448 KILOBIT(6,3) = 8HUBCOM.
449 KILOBIT(7,1) = 8H4 KIL03
450 KILOBIT(7,2) = 8H1T AC0.
451 KILOBIT(7,3) = 8HSUBCOM.
452 KILOBIT(8,1) = 8H1 KB PLA
453 KILOBIT(8,2) = 8HYBACK AC
454 KILOBIT(8,3) = 8HC SUBCOM
455
456 LABDET( 1) = 3HE1
457 LABDET( 2) = 3HE2
458 LABDET( 3) = 3HE3
459 LABDET( 4) = 3HE4
460 LABDET( 5) = 3HE5
461 LABDET( 6) = 3HE6
462 LABDET( 7) = 3HE7
463 LABDET( 8) = 3HE8
464 LABDET( 9) = 3HEB1
465 LABDET(10) = 3HEE2
466 LABDET(11) = 3HEE3
467 LABDET(12) = 3HEE4
468 LABDET(13) = 3HEE5
469 LABDET(14) = 3HEE6
470 LABDET(15) = 3HEE7
471 LABDET(16) = 3HP1
472 LABDET(17) = 3HP2
473 LABDET(18) = 3HP3
474 LABDET(19) = 3HP4
475 LABDET(20) = 3HP5
476 LABDET(21) = 3HP6
477 LABDET(22) = 3HP7
478 LABDET(23) = 3HPE1
479 LABDET(24) = 3HPE2
480 LABDET(25) = 3HPE3
481 LABDET(26) = 3HPE4
482 LABDET(27) = 3HPE5
483 LABDET(28) = 3HPE6
484 LABDET(29) = 3HA1
485 LABDET(30) = 3HA2
486 LABDET(31) = 3HA3
487 LABDET(32) = 3HAB1
488 LABDET(33) = 3HAE2
489 LABDET(34) = 3HAE3
490 LABDET(35) = 3H01
491 LABDET(36) = 3H02
492
493 IDDET( 1,1) = 1
494 IDDET( 2,1) = 1
495 IDDET( 3,1) = 1
496 IDDET( 4,1) = 1
497 IDDET( 5,1) = 1
498 IDDET( 6,1) = 1
499 IDDET( 7,1) = 1
500 IDDET( 8,1) = 2
501 IDDET( 9,1) = 4
502 IDDET(10,1) = 4
503 IDDET(11,1) = 4
504 IDDET(12,1) = 4
505 IDDET(13,1) = 4
506 IDDET(14,1) = 4
507 IDDET(15,1) = 4
508 IDDET(16,1) = 1
509 IDDET(17,1) = 1
510 IDDET(18,1) = 1
511 IDDET(19,1) = 1
512 IDDET(20,1) = 1
513 IDDET(21,1) = 1
514 IDDET(22,1) = 2
515 IDDET(23,1) = 4
516 IDDET(24,1) = 4
517 IDDET(25,1) = 4
518 IDDET(26,1) = 4
519 IDDET(27,1) = 4

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```

E1
E2
E3
E4
E5
E6
E7
E8
E81
E82
E83
E84
E85
E86
E87
P1
P2
P3
P4
P5
P6
P7
PB1
PB2
PB3
PB4
PB5

```

520	INDET(28,1) = 4	P86
521	INDET(29,1) = 2	A1
522	INDET(30,1) = 4	A2
523	INDET(31,1) = 4	A3
524	INDET(32,1) = 4	AB1
525	INDET(33,1) = 4	AB2
526	INDET(34,1) = 4	AB3
527	INDET(35,1) = 2	O1
528	INDET(36,1) = 2	O2
529		
530	INDET(1,2) = 1	E1
531	INDET(2,2) = 1	E2
532	INDET(3,2) = 2	E3
533	INDET(4,2) = 3	E4
534	INDET(5,2) = 1	E5
535	INDET(6,2) = 1	E6
536	INDET(7,2) = 2	E7
537	INDET(8,2) = 7	E8
538	INDET(9,2) = 8	E81
539	INDET(10,2) = 8	E82
540	INDET(11,2) = 12	E83
541	INDET(12,2) = 4	E84
542	INDET(13,2) = 16	E85
543	INDET(14,2) = 12	E86
544	INDET(15,2) = 16	E87
545	INDET(16,2) = 3	P1
546	INDET(17,2) = 2	P2
547	INDET(18,2) = 3	P3
548	INDET(19,2) = 1	P4
549	INDET(20,2) = 2	P5
550	INDET(21,2) = 2	P6
551	INDET(22,2) = 7	P7
552	INDET(23,2) = 4	P81
553	INDET(24,2) = 16	P82
554	INDET(25,2) = 12	P83
555	INDET(26,2) = 8	P84
556	INDET(27,2) = 4	P85
557	INDET(28,2) = 12	P86
558	INDET(29,2) = 9	A1
559	INDET(30,2) = 16	A2
560	INDET(31,2) = 8	A3
561	INDET(32,2) = 4	AB1
562	INDET(33,2) = 4	AB2
563	INDET(34,2) = 12	AB3
564	INDET(35,2) = 3	O1
565	INDET(36,2) = 3	O2
566		
567	DO 18 I = 1, LDFT	
568	18 INDET(I,4) = INDET(I,1) * 4	
569		
570	DO 42 J = 1, 16	
571	M = MM8 = J - 1	
572	IF (M - P) 22, 20, 20	
573	20 M = M - P	
574	22 M8 = M	
575		
576	IF (M - 4) 26, 24, 24	
577	24 M = M - 4	
578	26 M4 = M	
579		
580	DO 40 I = 1, LDFT	
581	IF (INDET(I,1) - 2) 28, 32, 36	
582		
583	28 NUMBER = INDET(I,2) - M4	
584	IF (NUMBER) 30, 32, 40	
585	30 NUMBER = NUMBER + 4	
586	GO TO 40	
587		
588	32 NUMBER = INDET(I,2) - M8	
589	IF (NUMBER) 34, 34, 40	
590	34 NUMBER = NUMBER + 8	
591	GO TO 40	
592		
593	36 NUMBER = INDET(I,2) - MM8	

```

594      IF (NUMBER) 3A, 3B, 40
595      3A NUMBER = NUMBER + 16
596      40 JUDGE(I,J) = NUMBER
597      42 CONTINUE
598
599      IDMBG( 1) = 1
600      IDMBG( 2) = 2
601      IDMBG( 3) = 2
602      IDMBG( 4) = 3
603      IDMBG( 5) = 4
604      IDMBG( 6) = 5
605      IDMBG( 7) = 5
606      IDMBG( 8) = 6
607      IDMBG( 9) = 7
608      IDMBG(10) = 8
609      IDMBG(11) = 8
610      IDMBG(12) = 9
611      IDMBG(13) = 10
612      IDMBG(14) = 11
613      IDMBG(15) = 11
614      IDMBG(16) = 12
615
616      RETURN
617
618      END
621
622      SUBROUTINE CYCLE
623
624      USE MEGG10
625
626      CALL CLOK
627
628      ILAST = (.LOC. ICOM9(2)) - (.LOC. ICCM2(1))
629      DO 20 IZEF0 = 1, ILAST
630      20 ICCM2(IZEF0) = 0
631
632      LSCEND = LOSEND = LMGEND = 1000000
633      LURECO = 2070
634      NCPAP = 1
635      NMPSEG = 1
636
637      WRITE OUTPUT TAPE AT, 100
638
639      CALL CARDS
640
641      1100 FORMAT (// 194 START COMPUTATION.)
642
643      END
646
647      SUBROUTINE CLOK
648
649      USE MEGG10
650
651      CALL CLOK1 (ICLOC1, ICLOC2)
652      CALL CLOK2 (ICLOC1, ICLOC2)
653      IDATE(2) = ICLOC1
654      IF (ICLOC2 - 54 DOWN) 14, 13, 14
655      13 IDATE(5) = ICLOC2
656      GO TO 18
657      14 IF (MONTH) 15, 1E, 19
658      15 BEFORE 16, (ICLOC2), 17, (IDATE(1), MONTH, IDATE(4))
659      16 FORMAT (AE)
660      17 FORMAT (A1, T2, 1X, I2)
661      IDATE(7) = MONTH
662
663      GO TO (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12), MONTH
664      1 IDATE(5) = 8JANUARY
665      GO TO 18
666      2 IDATE(5) = 8FEBRUARY
667      GO TO 18

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668      3 IDATE(5) = 8MARCH
669      GO TO 18
670      4 IDATE(5) = 8MAY
671      GO TO 18
672      5 IDATE(5) = 8MAY
673      GO TO 18
674      6 IDATE(5) = 8JUNE
675      GO TO 18
676      7 IDATE(5) = 8JULY
677      GO TO 18
678      8 IDATE(5) = 8AUGUST
679      GO TO 18
680      9 IDATE(5) = 8SEPTEMBER
681      GO TO 18
682      10 IDATE(5) = 8OCTOBER
683      GO TO 18
684      11 IDATE(5) = 8NOVEMBER
685      GO TO 18
686      12 IDATE(5) = 8DECEMBER
687      13 IDATE(5) = 1YEAR
688      13 RETURN
689
690      END
691
692      SUBROUTINE INTERF (TFRAC, A, B, C, E, RATIO)
693
694      USE MEMP10
695
696      DIMENSION A(1), B(1), C(1), R(1)
697
698      C VECTOR INTERPOLATION.
699
700      C(1) = C(2) = C(3) = C(4) = 0.0
701      D(1) = D(2) = D(3) = D(4) = 0.0
702      THETA = THINT = RATIO = PROD = AMAG = BMAG = 0.0
703      A(4) = SQRT( (A(1) * A(1)) + (A(2) * A(2)) + (A(3) * A(3)) )
704      B(4) = SQRT( (B(1) * B(1)) + (B(2) * B(2)) + (B(3) * B(3)) )
705
706      DO 10 K = 1, 3
707      PROD = PROD + (A(K) * B(K))
708      AMAG = AMAG + (A(K) * A(K))
709      BMAG = BMAG + (B(K) * B(K))
710
711      TERM = SQRT( AMAG * BMAG )
712      IF (TERM) 12, 12, 16
713      DO 14 K = 1, 4
714      C(K) = D(K) = 0.0
715      RETURN
716
717      15 COSTH = PROD / TERM
718      IF (ABS(COSTH) - 0.99995) 22, 18, 18
719      DO 20 K = 1, 3
720      C(K) = A(K)
721      D(K) = B(K)
722      GO TO 26
723
724      22 THETA = ACOS( COSTH )
725      THINT = TFRAC * THETA
726      TERM1 = SQRT( 2.0 * (1.0 - COSTH) )
727      TERM2 = SIN( THINT )
728      TERM3 = SIN( (90.0 / 57.29578) - THINT + (THETA / 2.0) )
729      RATIO = (1.0 / TERM1) * (TERM2 / TERM3)
730
731      THETA = THETA * 57.29578
732      THINT = THINT * 57.29578
733
734      DO 24 K = 1, 3
735      C(K) = A(K) + (RATIO * (B(K) - A(K)))
736
737      25 C(4) = SQRT( (C(1) * C(1)) + (C(2) * C(2)) + (C(3) * C(3)) )
738
739      IF (C(4)) 32, 32, 28
740      DO 30 K = 1, 4

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[illegible]

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A15      NSMON = LMONTH(NNMON)
A16      MILSEC(1) = (KBUFSC(125) .SHL. 30) .INT. 0777777777B
A17      MILSEC(2) = KBUFSC(188) .INT. 0777777777B
A18
A19      DO 34 N = 1, 2
A20      SECTION = MILSEC(N)
A21      DELTHR = SECCAY(N) = SECTION / 1000.0
A22      NSHOUR(N) = (DELTHR / 3600.0) + 0.001
A23      HOURS = NSHOUR(N)
A24      DELTMN = DELTHR - (HOURS * 3600.0)
A25      SCMIN(N) = DELTMN / 60.0
A26      NSMIN(N) = SCMIN(N) + 0.0001
A27      TMINS = NSMIN(N)
A28      SECON(N) = DELTMN - (TMINS * 60.0)
A29      34 CONTINUE
A30
A31      NLINE = NLINE + 1
A32      IF (NLINE - 50) 44, 44, 44
A33      42 NLINE = 0
A34      WRITE OUTPUT TAPE NT, 100
A35      44 WRITE (NT, 1006) NSRUN, NSREEL, NSFILE, NSRECD, NSYEAR, NSMON,
A36      2 MSDAY, NSDAY, NSHOUR(1), NSMIN(1), SECONS(1),
A37      3 SECCAY(1), SECCAY(1), NSITRT(MKILO), NURECD
A38      GO TO 20
A39
A40      50 NLINE = 0
A41      NSFILE = NSRECD = 0
A42      WRITE OUTPUT TAPE NT, 100
A43      RETURN
A44
A45
A46      1013 FORMAT (1H1// 30H MERGED TAPE SKIP UP TO RECORD, 16//)
A47      1024 FORMAT (1H1// 45H MERGE REEL FILE RECD YEAR MON MDAY YDAY,
A48      2 51H HOUR MIN SEC INIT. SEC FINAL SEC BIT MPECD//)
A49      1005 FORMAT (5H MFD, 515, 2X, A3, 415, F7.3, 2F11.3, 2X, A4, 16)
A50      1103 FORMAT (// 25H END OF MERGED TAPE SKIP.//)
A51
A52      END
A53
A54      SUBROUTINE CARDS
A55
A56      USE MFRG10
A57
A58      IF (IOSKIP) 10, 10, 4
A59      9 IO = IOSKIP
A60      IOSKIP = 0
A61      GO TO 24
A62
A63      10 READ INPUT TAPE MP, 1000, (R(N),N=1,10)
A64      WRITE (3, 1714) (R(N),N=1,10)
A65      DECODE 1000, (R(N),N=1,10), 1002, (IT)
A66
A67      23 IF (IO - 101) 24, 110, 24
A68      24 IF (IO - 120) 30, 120, 30
A69      30 IF (IO - 150) 31, 150, 31
A70      31 IF (IO - 160) 32, 160, 32
A71      32 IF (IO - 200) 34, 200, 34
A72      34 IF (IO - 210) 36, 210, 36
A73      35 IF (IO - 220) 38, 220, 38
A74      39 IF (IO - 300) 40, 300, 40
A75      40 IF (IO - 320) 42, 320, 42
A76      42 IF (IO - 600) 44, 600, 44
A77      44 IF (IO - 900) 46, 900, 46
A78      45 IF (IO - 951) 48, 950, 48
A79      48 IF (IO - 999) 90, 990, 90
A80
A81      91 WRITE OUTPUT TAPE NT, 103
A82      92 WRITE OUTPUT TAPE NT, 100, (P(N),N=1,10)
A83      GO TO 10
A84
A85      C TYPE 100 CARD. SELECT A PART OF THE SPACECRAFT TAPE FOR PROCESSING.
A86
A87
A88

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889 100 DECODE 1000, (P(N),N=1,10), 1004, (LSCBEG, LSCEND)
890 IF (LSCEND) 102, 102, 10
891 102 LSCEND = 1000000
892 GO TO 10
893
894 C TYPE 120 CARD. PRINT THE SPACE CRAFT DATA.
895
896 120 DECODE 1000, (R(N),N=1,10),
897 2 1006, (INRSC0, INRSC1, INRSC2, INRSC3,
898 3 INRSC4, INRSC5, INPSC6)
899 GO TO 11
900
901 C TYPE 150 CARD. S/C, A-C, MAG AND MERGE TAPE IDENTIFICATION.
902
903 150 DECODE 1000, (R(N),N=1,10), 1012, (YSCRT, IDAORT, IDPAGT, IDMRGT)
904 INTAFF = 10
905 WRITE OUTPUT TAPE NT, 102.
906 WRITE (NT, 1022) YSCRT
907 WRITE (NT, 1024) IDACPT
908 WRITE (NT, 1026) IDMAGT
909 WRITE (NT, 1028) IDMRGT
910 GO TO 10
911
912 C TYPE 160 CARD. DEALG. ON NOT HAVE A MERGE TAPE.
913
914 160 DECODE 1000, (R(N),N=1,10), 1006, (NCMERG)
915 NCMERG = 9
916 GO TO 10
917
918 C TYPE 200 CARD. SELECT A PART OF THE ATTITUDE-ORBIT TAPE FOR PROCESSING.
919
920 200 DECODE 1000, (R(N),N=1,10), 1004, (LORENG, LOREND)
921 IF (LOREND) 202, 202, 204
922 202 LOREND = 1000000
923 204 LORENG = 10
924 GO TO 10
925
926 C TYPE 210 CARD. ATTITUDE - ORBIT TAPE IDENTIFICATION OF LABEL.
927
928 210 DECODE 1000, (R(N),N=1,10),
929 2 1010, (IDORTP(1), IDORTP(2), IDORTP(3), IDORTP(4))
930 GO TO 10
931
932 C TYPE 220 CARD. PRINT THE ATTITUDE - ORBIT DATA.
933
934 220 DECODE 1000, (R(N),N=1,10), 1006, (IMRORL, IMRORP)
935 IMOROR = 10
936 GO TO 10
937
938 C TYPE 300 CARD. SELECT A PART OF THE MAGNETOMETER TAPE FOR PROCESSING.
939
940 300 DECODE 1000, (P(N),N=1,10), 1004, (LMBEG, LMGEND)
941 IF (LMGEN) 302, 302, 304
942 302 LMGEND = 1000000
943 304 IPPMAG = 10
944 GO TO 10
945
946 C TYPE 320 CARD. PRINT THE MAGNETOMETER DATA.
947
948 320 DECODE 1000, (R(N),N=1,10), 1006, (IMPMAG)
949 IPPMAG = 10
950 GO TO 10
951
952 C TYPE 600 CARD. SKIP PART OF THE S/C, A-C, MAG MERGE TAPE.
953
954 600 DECODE 1000, (P(N),N=1,10), 1004, (LUNBEG)
955 CALL RINTAPE
956 GO TO 10
957
958 C TYPE 900 CARD. START COMPUTING.
959
960 900 CALL RSCAPE
961
962 C TYPE 950 CARD. RECYCLE WITH A NEW S/C DATA TAPE.

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963
964 350 IF (JDTAPE) 954, 954, 952
965 352 WRITE OUTPUT TAPE NT, 102
966 WRITE (NT, 1022) IDSCRIPT
967 WRITE (NT, 1024) ICAOPT
968 WRITE (NT, 1026) IDMAGT
969 WRITE (NT, 1028) IDMRGT
970
971 354 READ INPUT TAPE NR, 1002, ID
972 IF (ID) 990, 990, 996
973 355 IF (ID - 950) 954, 954, 990
974
975 358 CALL CLOCK (ICLOC1, ICLOC2)
976 WRITE OUTPUT TAPE NT, 105, ICLOC1, ICLOC2
977 PRINT 1052, ICLOC1, ICLOC2
978 UNLOAD NS
979 CALL ASSIGN (NS, 1, 5RNEXTS)
980 WRITE OUTPUT TAPE 33, 1054
981 WRITE OUTPUT TAPE NT, 106
982 NSFILE = NSRFILE = NSPREC = LSCREG = 0
983 LSCEND = 1000000
984 GO TO 10
985
986 C IY2= 999 CAPD. CALL EXIT.
987
988 390 CALL CLOCK1 (NCLOC2, ICLOC2)
989 CALL CLOCK1 (ICLOC1, ICLOC2)
990 NCLOC14 = ICLOC = NCLOC1 - NCLOC1
991 NCLOC11 = NCLOC = ICLOC / 3600
992 JCLSC = ICLOC - (NCLOC * 3600)
993 NCLOC12 = NCLOC = JCLSC / 60
994 NCLOC13 = JCLSC - (NCLOC * 60)
995 WRITE (NT, 1064) ICLOC1, ICLOC2, (NCLOC(N), N=1,3)
996 PRINT 1066, ICLOC1, ICLOC2, (NCLOC(N), N=1,3)
997 WRITE OUTPUT TAPE 33, 106
998
999 UNLOAD NS
1000 IF (IPPCRE) 994, 994, 992
1001 392 UNLOAD NO
1002 394 IF (IPPCRE) 998, 998, 996
1003 395 UNLOAD NU
1004 396 END FILE NU
1005 END FILE NU
1006 END FILE NU
1007 UNLOAD NU
1008 CALL EXIT
1009
1010 1000 FORMAT (1PAP)
1011 1002 FORMAT (1X, 14)
1012 1004 FORMAT (5X, 5(4X, 16))
1013 1005 FORMAT (5X, 10(15))
1014 1006 FORMAT (1X, 20(11, 1X))
1015 1010 FORMAT (10X, 4(2X, 9))
1016 1012 FORMAT (5X, 5(5X, A5))
1017 1014 FORMAT (// 10A4)
1018
1019 1020 FORMAT (// 20H TAPE IDENTIFICATION)
1020 1022 FORMAT (/ 3X, 6H S/C , 3X, A5)
1021 1024 FORMAT (/ 3X, 6H A-D , 3X, A5)
1022 1025 FORMAT (/ 3X, 6H PAG , 3X, A5)
1023 1028 FORMAT (/ 3X, 6H PERGE, 3X, A5//)
1024
1025 1030 FORMAT (// 47H THE FOLLOWING CARD HAS AN UNASSIGNED CARD TYPE,
1026 2 RH NUMBER.)
1027
1028 1030 FORMAT (///// 24H THE S/C TAPE WAS ENDED., 76X, A6, 3X, A6)
1029 1032 FORMAT (// 5X, 24H THE S/C TAPE WAS ENDED., 71X, A6, 3X, A6)
1030 1034 FORMAT (3X, 42H CFC - TAKE DOWN UNLOADED S/C TAPE (45) AND,
1031 2 24H HANG THE NEXT S/C TAPE.//)
1032 1062 FORMAT (1H1)
1033 1064 FORMAT (///// 15H JOB COMPLETED., 70X, A6, 3X, A6, 3(3X, 12))
1034 1065 FORMAT (// 5X, 15H JOB COMPLETED., 65X, A6, 3X, A6, 3(3X, 12))
1035 1068 FORMAT (3X, 19H CFC JOB COMPLETED.)
1036

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1037      END
1040
1041      SUBROUTINE RSCTAFE
1042
1043      USE PERG10
1044
1045      C READ SPACECRAFT INPUT DATA TAPE RECORD LABEL.
1046
1047      IF (LSSKIP) 20, 20, 18
1048      13 LSSKIP = 0
1049      GO TO 312
1050
1051      20 NSFILE = NSFILE + 1
1052      NSFREC = NSFILE * 10000
1053      NWCCT = 0
1054
1055      DO 22 IZERC = 1, NSLBND
1056      22 JSCLAB(IZERC) = 0
1057
1058      BUFFER IN (NS, 0) (JSCLAB(1), JSCLAB(NSLBND))
1059      24 IF (UNIT, NS, NWCCT) 24, 30, 40, 30
1060
1061      30 IF (IOCHECK, NS) 50, 32
1062      32 WRITE (MT, 1000) NSFILE, 'NWCCT, NSLBND
1063      NLINE = NLINE + 2
1064      GO TO 50
1065
1066      40 IOSKIP = 950
1067      LSSKIP = 0
1068      WRITE (MT, 1004) NWCCT
1069      CALL CAPDS
1070
1071      50 CONTINUE
1072
1073      C PROCESS THE SPACECRAFT TAPE LABEL RECORD DATA.
1074
1075      C SEPARATE THE CLOSE PACKET DATA IN THE RECORD LABEL WORDS AND STORE THE DATA.
1076
1077      KSCLAB( 1) = JSCLAB( 1).INT.77777777770000000000      SATEL IG
1078      LSCLAB( 1) = KSCLAB( 1)
1079      KSCLAB( 2) = (JSCLAB( 1).INT.00000000007777770000).SHL.18      YEAR
1080      KSCLAB( 3) = ((JSCLAB( 1).INT.0000000000000000007781).SHL.42).UN.      STATION
1081      2      ((JSCLAB( 2).INT.77770000000000000000).SHR.18)
1082      KSCLAB( 4) = JSCLAB( 2).INT.00000077770000000000      ANA FILE
1083      KSCLAB( 5) = (JSCLAB( 2).INT.00000000000000777777).SHL.30      ANA TAPE
1084      KSCLAB( 6) = ((JSCLAB( 3).INT.0000000000000000007781).SHL.42).UN.      DATA DIG
1085      2      ((JSCLAB( 4).INT.77770000000000000000).SHR.18)
1086      KSCLAB( 7) = (JSCLAB( 7).INT.000000000000007700000000).SHL.12      KILCBIT
1087      KSCLAB( 8) = ((JSCLAB( 7).INT.00000000000000007777).SHL.36).UN.      DAY STRT
1088      2      ((JSCLAB( 8).INT.77000000000000000000).SHR.24)
1089      KSCLAB( 9) = (JSCLAB( 8).INT.0000777777777700000000).SHL.12      SEC STRT
1090      KSCLAB(10) = (JSCLAB( 8).INT.0000000000000000770000).SHL.24      FF USE
1091      KSCLAB(11) = (JSCLAB( 9).INT.77770000000000000000).SHR.18      FF AQ.
1092      KSCLAB(12) = (JSCLAB( 9).INT.00000000000000000000).SHR.17      EXP STAT
1093      KSCLAB(13) = (JSCLAB( 9).INT.0000000000000000770000).SHL.24      EQ GROUP
1094      KSCLAB(14) = (JSCLAB(10).INT.77777777000000000000).SHR. 6      BIA TAPE
1095      KSCLAB(15) = (JSCLAB(10).INT.00000000007777000000).SHL.12      BIN FILE
1096      KSCLAB(16) = (JSCLAB(10).INT.0000000000000000777700).SHL.30      A/C OPER
1097      KSCLAB(17) = (JSCLAB(11).INT.0077770000000000000000).SHR.12      A/C LINE
1098      KSCLAB(18) = (JSCLAB(11).INT.0000007777770000000000).SHL. 6      DAY STOP
1099      KSCLAB(19) = ((JSCLAB(11).INT.00000000000000777777).SHL.42).UN.      SEC STOP
1100      2      ((JSCLAB(12).INT.77770000000000000000).SHR.18)
1101      KSCLAB(20) = JSCLAB(12).INT.00000077770000000000      REEL NO.
1102      KSCLAB(21) = (JSCLAB(12).INT.00000000007777770000).SHL.18      RUN NO.
1103      KSCLAB(22) = (JSCLAB(12).INT.0000000000000000777781).SHL.30      EXPT NO.
1104
1105      C CONVERT THE NUMBERS IN THE LABEL ARRAY FROM PCN TO INTEGER.
1106
1107      DO 124 K = 2, LBNPCD
1108      KV = 0
1109      KD = KSCLAB(K).INT. 77777777770000000000
1110      IF (KD) 126, 126, 112
1111      112 DO 124 L = 1, 5
1112      KN = KD.INT. 7700000000 0000000000

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1113      KD = KD .SHL. 6
1114      KN = ((KN .SHL. 6) .INT. /7C) - 208
1115      IF (KN - 0) 116, 116, 114
1116      114 IF (KV)      124, 124, 120
1117      115 IF (KV)      118, 118, 122
1118      119 KV = KN
1119      GO TO 124
1120      120 KV = KV * 10
1121      GO TO 124
1122      122 KV = (KV * 10) + KN
1123      124 CONTINUE
1124      125 LSCLAB(K) = KV
1125
1126      C REARRANGE THE S/C LABEL RECORD DATA.
1127
1128      MSCLAB( 1) = MSCLAB( 1)
1129      LSCLAB( 1) = MSCLAB(1) .INT. 77777777770000000000 .SHL. 30
1130      MSCLAB( 2) = LSCLAB(22)
1131      MSCLAB( 3) = 1
1132      MSCLAB( 4) = LSCLAB( 3)
1133      MSCLAB( 5) = LSCLAB( 7)
1134      MSCLAB( 6) = LSCLAB(21)
1135      MSCLAB( 7) = LSCLAB(20)
1136      MSCLAB( 8) = LSCLAB( 2)
1137      MSCLAB( 9) = LSCLAB( 8)
1138      MSCLAB(10) = LSCLAB( 9)
1139      MSCLAB(11) = LSCLAB(18)
1140      MSCLAB(12) = LSCLAB(10)
1141      MSCLAB(13) = LSCLAB( 6)
1142      MSCLAB(14) = LSCLAB(13)
1143      MSCLAB(15) = LSCLAB(10)
1144      MSCLAB(16) = LSCLAB(11)
1145      MSCLAB(17) = LSCLAB( 5)
1146      MSCLAB(18) = LSCLAB( 4)
1147      MSCLAB(19) = LSCLAB(14)
1148      MSCLAB(20) = LSCLAB(15)
1149      MSCLAB(21) = LSCLAB(16)
1150      MSCLAB(22) = LSCLAB(17)
1151
1152      C STORE SELECTED NUMBERS.
1153
1154      NSSTAT = MSCLAB( 4)
1155      NSRUN = MSCLAB( 6)
1156      NSREEL = MSCLAB( 7)
1157      NSYEAR = MSCLAB( 8)
1158      NSRTAY = MSCLAB( 9)
1159      NSRSEC = MSCLAB(10)
1160      NSRDAY = MSCLAB(11)
1161      NSESEC = MSCLAB(12)
1162      LKILC = KILO = MSCLAB(5) * 1
1163      GO TO 156, 146, 146, 142, 142, 144, 144, 142, KILO
1164      142 KILO = 1
1165      GO TO 146
1166      144 KILO = KILO - 4
1167      145 GO TO (146, 152, 154), KILO
1168      148 MKILO = MKILO + 1
1169      IF (LKILC - 4) 156, 156, 156
1170      153 MKILC = 4
1171      GO TO 156
1172      152 MKILC = MKILO = 2
1173      GO TO 156
1174      154 MKILC = 3
1175      MKILC = 2
1176      155 CRATE = BITRATE(KILO) / (4.0 * RATE1K)
1177
1178      C PRINT THE RECORD LABEL INFORMATION.
1179
1180      WRITE OUTPUT TAPE NT, 119
1181      WRITE (NT, 1202) (IDATE(I), I=1,6)
1182      WRITE (NT, 1204) NSFILE
1183
1184      WRITE (NT, 1206) (SCRLAB( 1,N), N=1,3), MSCLAB( 1)
1185      WRITE (NT, 1208) (SCRLAB( 2,N), N=1,3), MSCLAB( 2)
1186      IF (MSCLAB(3)) 202, 202, 204

```

SATEL ID

EXP NO.
EXP STAT
STATION
KILCBIT
RUN NO.
REEL NO.
YEAR
DAY STRT
SEC STRT
DAY STOP
SEC STOP
DATE DIG
EQ GRP
FF USE
FF NO.
ANA TAPE
ANA FILE
BIN TAPE
BIN FILE
A/D OPER
A/C LINE

SATEL ID
EXP NO.

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1187 202 WRITE (NT, 1210) (SCRLAB( 3,N),N=1,3), MSCLAB( 3) EXP STAT
1188 GO TO 204
1189 204 WRITE (NT, 1212) (SCRLAB( 3,N),N=1,3), MSCLAB( 3)
1190 205 IXX = MSCLAB(4)
1191 WRITE (NT, 1214) (SCRLAB( 4,N),N=1,3), MSCLAB( 4), STATION
1192 2 (STATION(IXX,N),N=1,2)
1193 WRITE (NT, 1216) (SCRLAB( 5,N),N=1,3), MSCLAB( 5), KILCBIT
1194 2 (KILCBIT(KILC,N),N=1,3)
1195 WRITE OUTPUT TAPE NT, 120
1196
1197 WRITE (NT, 1208) (SCRLAB( 6,N),N=1,3), MSCLAB( 6) RUN NO.
1198 WRITE (NT, 1208) (SCRLAB( 7,N),N=1,3), MSCLAB( 7) REEL NO.
1199 WRITE OUTPUT TAPE NT, 120
1200
1201 WRITE (NT, 1208) (SCRLAB( 8,N),N=1,3), MSCLAB( 8) YEAR
1202 WRITE (NT, 1218) (SCRLAB( 9,N),N=1,3), MSCLAB( 9) DAY STRT
1203 WRITE (NT, 1208) (SCRLAB(10,N),N=1,3), MSCLAB(10) SEC STRT
1204 WRITE (NT, 1220) (SCRLAB(11,N),N=1,3), MSCLAB(11) DAY STOP
1205 WRITE (NT, 1208) (SCRLAB(12,N),N=1,3), MSCLAB(12) SEC STOP
1206 WRITE OUTPUT TAPE NT, 120
1207
1208 WRITE (NT, 1208) (SCRLAB(13,N),N=1,3), MSCLAB(13) DATE DIG
1209 WRITE (NT, 1208) (SCRLAB(14,N),N=1,3), MSCLAB(14) EC GRP
1210 IF (MSCLAB(15)) 208, 208, 210
1211 201 WRITE (NT, 1222) (SCRLAB(15,N),N=1,3), MSCLAB(15) FF USE
1212 WRITE (NT, 1224) (SCRLAB(16,N),N=1,3) NO FF KC
1213 GO TO 212
1214 211 WRITE (NT, 1226) (SCRLAB(15,N),N=1,3), MSCLAB(15) FF USE
1215 WRITE (NT, 1208) (SCRLAB(16,N),N=1,3), MSCLAB(16) FF NO.
1216
1217 212 WRITE (NT, 1208) (SCRLAB(17,N),N=1,3), MSCLAB(17) ANA TAPE
1218 WRITE (NT, 1208) (SCRLAB(18,N),N=1,3), MSCLAB(18) ANA FILE
1219 WRITE (NT, 1208) (SCRLAB(19,N),N=1,3), MSCLAB(19) BIN TAPE
1220 WRITE (NT, 1208) (SCRLAB(20,N),N=1,3), MSCLAB(20) BIN FILE
1221 WRITE (NT, 1208) (SCRLAB(21,N),N=1,3), MSCLAB(21) A/C OPER
1222 WRITE (NT, 1208) (SCRLAB(22,N),N=1,3), MSCLAB(22) A/C LINE
1223 NLINE = 99
1224
1225 C SKIP UNWANTED SPACECRAFT TAPE INPUT DATA FILES.
1226
1227 KSPREC = MSPECN = IRST = LAST = 0
1228
1229 IF (LSPECG - 19999) 312, 312, 302
1230 302 IF (LSPECG - NSPEC - 100 0) 312, 304, 304
1231 304 CALL RENECE (NS)
1232 GO TO 20
1233
1234 C SKIP UNWANTED SPACECRAFT TAPE INPUT DATA RECORDS.
1235
1236 312 MSPECN = MSPECN + 1
1237 NSPEC = NSPEC + 1
1238 IF (LSPECG - NSPEC) 318, 318, 314
1239 314 BUFFER IN (NS, 1) (ISCDAT(1), ISCDAT(MSPECN))
1240 316 IF (UNIT, NS) 316, 312, 2', 312
1241 313 ISDONE = 10
1242 GO TO 322
1243
1244 C READ SPACECRAFT TAPE INPUT DATA RECORDS.
1245
1246 321 MSPECN = MSPECN + 1
1247 NSPEC = NSPEC + 1
1248
1249 322 ON 324 IZERO = 1, MSPECN
1250 324 ISCDAT(IZERO) = 0
1251
1252 BUFFER IN (NS, 1) (ISCDAT(1), ISCDAT(MSPECN))
1253 325 IF (UNIT, NS, NRECT) 350, 340, 330, 330
1254
1255 330 IF (IOCHECK, NS) 334, 332
1256 332 WRITE (NT, 1300) MSPECN, MSFILE, NRECT, MSPECN
1257 NLINE = NLINE + 2
1258 NSCAR = -10
1259 GO TO 340
1260 334 WRITE (NT, 1302) MSPECN, MSFILE

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1261      NLINE = NLINE + 2
1262      NSCPAR = 10
1263
1264      340 DO 342 J = 1, MSRCWD
1265      342 JSCPAR(J) = ISCPAR(J)
1266      ISDONE = 0
1267      GO TO 320
1268
1269      350 IF (ISDONE) 352, 352, 326
1270      352 IF (LSCEND - NSRFC + 1) 354, 356, 356
1271      354 IF (UNIT, NS) 354, , ,
1272      LSSKIP = 10
1273      LSCDEG = 0
1274      LSCEND = 1000000
1275      CALL CARDS
1276      355 NSRFC = NSRFC - 1
1277      MSHIFT = 0
1278      CALL PSCPAR
1279      ISDONE = 10
1280      GO TO 326
1281
1282      360 LAST = 10
1283      IF (KILC - 2) 366, 362, 344
1284      362 CALL RFD0
1285      GO TO 366
1286      364 IF (KILC - 3) 348, 366, 348
1287      366 CALL REIN64
1288      368 GO TO 20
1289
1290      1101 FORMAT ( / 43H THE S/C TAPE HAS A WORD COUNT ERROR IN THE, 115
1291      2 21H LABEL RECORD OF FILE, I3, 1H., 25
1292      3 19H THE WORD COUNT WAS, I3, 1H., 23
1293      4 20H IT SHOULD HAVE BEEN, I3, 1H.) 24
1294      1102 FORMAT ( / 39H THE S/C TAPE HAS A PARITY ERROR IN THE,
1295      2 21H LABEL RECORD OF FILE, I3, 1H.) 25
1296      1104 FORMAT (// 20H MESSAGE TAP RECORDS, I5//)
1297
1298      1199 FORMAT (I11//)
1299      1201 FORMAT (/)
1300      1202 FORMAT (6H ODD V, 25X, 17H COMPUTATION DATE, 48
1301      2 3X, A1, 2X, A6, 2X, I2, 3X, I2, 2X, A8, 2X, I4) 37
1302      1204 FORMAT (// 18H RECORD LABEL DATA, I3X, 5H FILE, I7//)
1303      1205 FORMAT (1X, 3A4, 10X, A5)
1304      1208 FORMAT (1X, 3A8, I15)
1305      1211 FORMAT (1X, 3A8, I15)
1306      1212 FORMAT (1X, 3A8, I15, 7X, 7H ACTIVE)
1307      1214 FORMAT (1X, 3A8, I15, 8X, 2A8)
1308      1215 FORMAT (1X, 3A8, I15, 8X, 4A8)
1309      1218 FORMAT (1X, 3A8, I15, 7X, 19H START TIME OF DATA)
1310      1221 FORMAT (1X, 3A8, I15, 7X, 18H STOP TIME OF DATA)
1311      1222 FORMAT (1X, 3A8, I15, 7X, 3H NO)
1312      1224 FORMAT (1X, 3A8)
1313      1225 FORMAT (1X, 3A8, I15, 7X, 4H YES)
1314      1243 FORMAT (4HFILE, I3, 38H WAS REJECTED BECAUSE THE RECORD LABEL,
1315      2 25H CONTAINS ERRONEOUS DATA.)
1316
1317      1301 FORMAT ( / 44H THE S/C TAPE HAS A WORD COUNT ERROR IN DATA, 116
1318      2 7H RECORD, I4, 8H OF FILE, I3, 1H., 23
1319      3 19H THE WORD COUNT WAS, I4, 1H., 24
1320      4 20H IT SHOULD HAVE BEEN, I4, 1H.) 25
1321      1402 FORMAT ( / 35H THE S/C TAPE HAS A PARITY ERROR IN,
1322      2 12H DATA RECORD, I4, 8H OF FILE, I3, 1H.) 28
1323
1324      END
1325      ( 1061)= WARNING TWO BRANCH IF APPEARS
1326
1327      SUBROUTINE ROPTAPE
1328
1329      USE MEG10
1330
1331      ENTRY ROINIT
1332
1333
1334      C READ INPUT ORBIT TAPE RECORD LABEL.
1335

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1336 IF (LOSKIP) 20, 20, 19
1337 19 LCSKIP = 0
1338 GO TO 312
1339
1340 20 NOFILE = NOFILE + 1
1341 NOPEFC = NOFILE * 10000
1342 NWCCT = 0
1343
1344 NO 22 IZEP0 = 1, PCLEWD
1345 22 JORLAB (IZEP0) = 0
1346
1347 DIFFER IN (NO, 1) (JORLAB(1), JORLAB(MOLBWD))
1348 24 IF (UNIT, NO, NWCCT) 24, 30, 40, 33
1349
1350 33 IF (IOSHECK, NO) 50, 32
1351 32 WRITE (NT, 1000) NOFILE, 'HDCST, PCLEWD
1352 NLINE = NLINE + 2
1353 GO TO 50
1354
1355 41 NOFILE = NOPEFC = NOPECH = NOPECC = LOSKIP = LORREG = 0
1356 INITC = 20
1357 LORFAD = 100000
1358 CALL PLOTE
1359 UNLOAD NO
1360 CALL ASSIGN (NO, 1, SPNEXT0)
1361 PRINT 1004
1362 WRITE OUTPUT TAPE NT, 1000
1363 WRITE OUTPUT TAPE 33, 1000
1364 NOFTAP = NOFTAP + 1
1365 GO TO 20
1366
1367 51 CONTINUE
1368
1369 C PROCESS THE ATTITUDE-CORBIT TAPE LABEL RECORD DATA.
1370
1371 C SEPARATE THE CLOSE PACKED DATA IN THE ORBIT LABEL RECORD AND STORE.
1372 C THE UNIVAC ATTITUDE-CORBIT TAPE PROCESSOR AT GODDARD HAS 36 BIT WORDS.
1373 C 250 THIRTY-SIX BIT WORDS = 150 SIXTY BIT (CDC 6600) WORDS.
1374 C WORDS 31 - 250 IN THE A-D RECORD LABEL ARE SPARES.
1375
1376 I = J = 0
1377 DO 102 K = 1, 6
1378 I = I + 1
1379 J = J + 1
1380 KORLAB(J) = (JORLAB(I) .INT.777777777777000300009).SHL.57
1381 J = J + 1
1382 KOPLAB(J) = ((JORLAB(I) .INT.000000000007777777777).SHL.33).UN.
1383 2 ((JORLAB(I+1).INT.777770000000000000009).SHL.33)
1384 I = I + 1
1385 J = J + 1
1386 KOPLAB(J) = (JORLAB(I) .INT.000077777777777700009).SHL. 9
1387 J = J + 1
1388 KOPLAB(J) = ((JORLAB(I) .INT.00000000000000000777777).SHL.45).UN.
1389 2 ((JORLAB(I+1).INT.777777777000000000009).SHL.45)
1390 I = I + 1
1391 J = J + 1
1392 102 KOPLAB(J) = (JORLAB(I) .INT.0000000007777777777777777).SHL.21
1393
1394 C CONVERT THE FLOATING POINT DATA FROM UNIVAC WORDS TO CDC 6600 WORDS.
1395 C 1717 OCTAL = 200 DECIMAL = 1517 OCTAL
1396 C 975 DECIMAL = 128 OCTAL = 847 DECIMAL
1397
1398 DO 114 J = 1, 30
1399 JSIGA = KOPLAB(J) .INT. 040000000000000000009
1400 ACPLAB(J) = ((KOPLAB(J) .INT. 037700000000000000009)
1401 2 + 151700000000000000009) .UN.
1402 3 ((KOPLAB(J) .INT. 00007777777770000000009)
1403 IF (JSTGM) 112, 114, 112
1404 112 ACPLAB(J) = - ACPLAB(J)
1405 114 CONTINUE
1406
1407 NORBIT = ACPLAB(12)
1408 NOYEAR = ACPLAB(12)
1409 IF (ACPLAB(12) = 599.) 116, 40, 43

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1410      115 CONTINUE
1411
1412      C PRINT THE ATTITUDE-ORBIT LABEL RECORD DATA.
1413
1414          IF (IMPR1) 208, 208, 202
1415
1416      202 WRITE OUTPUT TAPE AT, 120
1417          WRITE (NT, 1204) NOFILE
1418
1419          DO 206 J = 1, 30
1420              GO TO (204, 204, 206, 206, 204, 206, 204, 206, 204, 206,
1421                  2      204, 206, 204, 206, 204, 206, 204, 204, 204,
1422                  3      204, 204, 206, 204, 206, 204, 206, 204, 206, 206), J
1423      204 WRITE OUTPUT TAPE AT, 120
1424      206 WRITE (NT, 1208) J, ADRLA (J)
1425
1426      208 CONTINUE
1427
1428      C SKIP UNWANTED ATTITUDE-ORBIT INPUT TAPE DATA FILES.
1429
1430          MORECD = IRSTC = LASTC =
1431
1432          IF (LORPFC - 19999)          312, 312, 302
1433      402 IF (LORPFC - NOFREC - 100 0) 312, 304, 304
1434      304 CALL PDEFDF (NO)
1435          GO TO 20
1436
1437      C SKIP UNWANTED ATTITUDE-ORBIT TAPE INPUT DATA RECORDS.
1438
1439          312 MORECD = MORECD + 1
1440          NOFREC = NOFREC + 1
1441          IF (LORPFC - NOFREC) 314, 314, 314
1442          314 BUFFER IN (NO, 1) (IORDAT(1), IORDAT(MORECD))
1443          315 IF (UNIT, NO) 316, 312, 2, 312
1444          318 IODONE = 10
1445          GO TO 322
1446
1447      C READ ATTITUDE-ORBIT TAPE INPUT DATA RECORDS.
1448
1449          321 MORECD = MORECD + 1
1450          NOFREC = NOFREC + 1
1451
1452          322 DO 324 IZPC = 1, MORECD
1453          324 IORDAT(IZPC) = 0
1454
1455          BUFFER IN (NO, 1) (IORDAT(1), IORDAT(MORECD))
1456          325 IF (UNIT, NO, NWCCT) 350, 340, 20, 330
1457
1458          331 IF (IOPCHECK, NO) 334, 332
1459          332 WRITE (NT, 1300) MORECD, NOFILE, NWDCT, MORECD
1460              NLINE = NLINE + 2
1461              GO TO 340
1462          334 WRITE (NT, 1302) MORECD, NOFILE
1463              NLINE = NLINE + 2
1464
1465          340 DO 342 J = 1, MORECD
1466          342 IORDAT(J) = IORDAT(J)
1467              IODONE = 0
1468              GO TO 320
1469
1470          351 IF (IODONE) 352, 352, 326
1471          352 IF (LORPFC - NOFREC + 1) 354, 356, 356
1472          354 IF (UNIT, NO) 354, , ,
1473          355 IPRGRB = 0
1474          CALL SCORPB
1475          356 MORECD = MORECD - 1
1476
1477      C PROCESS THE ATTITUDE-ORBIT TAPE DATA RECORD.
1478
1479      C SEPARATE THE (LOSF PACKED DATA IN THE ORBIT DATA RECORD AND STORE.
1480
1481          J = K = 0
1482          DO 402 I = 1, 50
1483              J = J + 1

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150/3

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1484 K = K + 1
1485 KORJAT(K) = (JORDAT(J) .INT.7777777777700000000B).SHL.57
1486 K = K + 1
1487 KORJAT(K) = ((JORDAT(J) .INT.0000000000007777777B).SHL.33).UN.
1488 2 ((JORDAT(J+1).INT.7777700000000000000B).SHL.33)
1489 J = J + 1
1490 K = K + 1
1491 KORJAT(K) = (JORDAT(J) .INT.0000777777777770000B).SHL. 9
1492 K = K + 1
1493 KORJAT(K) = ((JORDAT(J) .INT.00000000000000007777B).SHL.45).UN.
1494 2 ((JORDAT(J+1).INT.7777777770000000000B).SHL.45)
1495 J = J + 1
1496 K = K + 1
1497 +02 KORJAT(K) = (JORDAT(J) .INT.0000000077777777777B).SHL.21
1498
1499 C CONVERT THE FLOATING POINT DATA FROM UNIVAC WORDS TO FOR E600 WORDS.
1500
1501 K = 0
1502 DO 414 I = 5, 6
1503 DO 414 J = 1, LOKCOR
1504 K = K + 1
1505 KSIGN = KORJAT(K).INT.0400000000000000000B
1506 AKORJAT(I,J) = ((KORJAT(K).INT.0377700000000000000B)
1507 2 +1517100000000000000B).UN.
1508 3 (KORJAT(K).INT.0700777777777000000B)
1509 IF (KSGN) 412, 414, 412
1510 +12 AKORJAT(I,J) = -AKORJAT(I,J)
1511 414 CONTINUE
1512
1513 HODAY = AKORJAT(1,1)
1514 AKORJAT(5,2) = AKORJAT(5,2) / 1000.0
1515 AKORJAT(6,2) = AKORJAT(6,2) / 1000.0
1516 NS = AKORJAT(5,2) + 1.0001
1517 NA = AKORJAT(6,2) + 1.0001
1518 AKORJAT(5,2) = NS
1519 AKORJAT(6,2) = NA
1520
1521 C THE EARLY A-0 TAPES CONTAINED WRONG SIGN VALUES IN WORDS 101-103 OF THE
1522 C TGSE MATRIX. THE TSM MATRIX SIGN VALUES WERE CORRECT.
1523 C THE X VECTORS OF THE TGSE AND TGSX MATRICES SHOULD BE IDENTICAL.
1524
1525 DO 434 T = 5, 6
1526 NSIGN = 0
1527 DO 424 J = 100, 102
1528 IF (AKORJAT(I,J+9)) 422, 428, 424
1529 +22 IF (AKORJAT(I,J)) 428, 428, 426
1530 +24 IF (AKORJAT(I,J)) 426, 428, 428
1531 425 NSIGN = 1
1532 424 CONTINUE
1533 IF (NSIGN) 434, 434, 430
1534 430 DO 432 J = 101, 103
1535 +32 AKORJAT(I,J) = -AKORJAT(I,J)
1536 434 CONTINUE
1537
1538 C OBTAIN SELECTED A-0 DATA.
1539
1540 IF (NOPR - 2) 406, 406, 8 2
1541 302 DO 304 K = 1, 52
1542 ORRORAT(1,K) = ORRORAT(3,K)
1543 ORRORAT(2,K) = ORRORAT(4,K)
1544 304 ORRORAT(3,K) = ORRORAT(4,K) = 0.0
1545 NOR3 = 2
1546 405 N = NOPR
1547
1548 DO 350 L = 5, 6
1549 N = N + 1
1550
1551 N123 = 0
1552 IF (AKORJAT(L,123)) 312, 314, 314
1553 312 N123 = 10000
1554 314 N124 = AKORJAT(L,124)
1555 N124 = N124 .SHL. 6
1556 N125 = AKORJAT(L,125)
1557 NDFLAG(N) = (N123.INT.10000).UN.(N124.INT.77000).UN.(N125.INT.77B)

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125

DAY
SECONDS

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1558
1559      SECLCC = (AORDAT(L,3)*360.0)+(ACRDAT(L,4)*60.0)+(AORDAT(L,5)*6.0)
1560
1561      DO 822 K = 1, 3
1562      ORBDAT(N,K+16) = AORDAT(L,K+7)          POSIT V
1563      ORBDAT(N,K+19) = AORDAT(L,K+13)        SOLAR V
1564      ORBDAT(N,K+22) = AORDAT(L,K+84)        B GEI
1565      822 POSITV(K) = AORDAT(L,K+7)          POSITV
1566
1567      POSITV(4) = SQRT((POSITV(1)**2)+(POSITV(2)**2)+(POSITV(3)**2))
1568
1569      NOACT = 0
1570      DO 882 K = 1, 9
1571      IF (AORDAT(L,K+48)) 884, 882, 884
1572      882 CONTINUE
1573
1574      NOACT = 10
1575      ORBDAT(N,26) = ACRDAT(L,27)          IDEAL
1576      ORBDAT(N,27) = ACRDAT(L,27)          TGEI
1577      ORBDAT(N,28) = ACRDAT(L,28)
1578      ORBDAT(N,29) = ACRDAT(L,29)
1579      ORBDAT(N,30) = ACRDAT(L,29)
1580      ORBDAT(N,31) = ACRDAT(L,29)
1581      ORBDAT(N,32) = ACRDAT(L,29)
1582      ORBDAT(N,33) = ACRDAT(L,29)
1583      ORBDAT(N,34) = ACRDAT(L,31)
1584      GO TO 885
1585
1586      884 ORBDAT(N,26) = ACRDAT(L,47)          ACT BODY
1587      ORBDAT(N,27) = ACRDAT(L,57)          TGEI
1588      ORBDAT(N,28) = ACRDAT(L,57)
1589      ORBDAT(N,29) = ACRDAT(L,57)
1590      ORBDAT(N,30) = ACRDAT(L,57)
1591      ORBDAT(N,31) = ACRDAT(L,57)
1592      ORBDAT(N,32) = ACRDAT(L,57)
1593      ORBDAT(N,33) = ACRDAT(L,57)
1594      ORBDAT(N,34) = ACRDAT(L,57)
1595      885 CONTINUE
1596
1597      DO 824 K = 1, 9
1598      ORBDAT(N,K+34) = AORDAT(L,K+99)
1599      ORBDAT(N,K+43) = AORDAT(L,K+108)
1600      TGSE(K) = AORDAT(L,K+99)
1601      824 TGSM(K) = AORDAT(L,K+108)
1602
1603      CALL TRANSV (TGSE(1), POSITV(1), R(1), RN(1))
1604      GSEPHI = GSETHE = GSEPMI = GSETHE = 0.0
1605      IF (ABS(FN(1)) - 1.0E-9) 848, 848, 830
1606      131 GSEPHI = DEGRAD * ATANF (RN(2) / FN(1))
1607      GSETHE = DEGRAD * ASINF (RN(3))
1608      IF (RN(1)) 834, 832, 832
1609      832 IF (RN(2)) 836, 838, 838
1610      834 GSEPHI = GSEPHI + 190.0
1611      GO TO 838
1612      835 GSEPHI = GSEPHI + 360.0
1613      838 CONTINUE
1614
1615      CALL TRANSV (TGSM(1), POSITV(1), R(1), RN(1))
1616      GSEPMI = DEGRAD * ATANF (RN(2) / RN(1))
1617      GSETHE = DEGRAD * ASINF (RN(3))
1618      IF (RN(1)) 844, 842, 842
1619      842 IF (RN(2)) 846, 848, 848
1620      844 GSEPMI = GSEPMI + 190.0
1621      GO TO 848
1622      845 GSEPMI = GSEPMI + 360.0
1623      848 CONTINUE
1624
1625      ORBDAT(N, 1) = ACRDAT(L, 2)
1626      ORBDAT(N, 2) = SECLCC
1627      ORBDAT(N, 3) = POSITV(4) / 6371.2
1628      ORBDAT(N, 4) = ACRDAT(L, 7)
1629      ORBDAT(N, 5) = ACRDAT(L, 7)
1630      ORBDAT(N, 6) = GSEPHI
1631      ORBDAT(N, 7) = GSETHE

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1632 ORBDAT(N, A) = GSPHI
1633 ORBDAT(N, 9) = GSPHIE
1634 ORBDAT(N, 10) = ACFOAT(L, 1)
1635 ORBDAT(N, 11) = ACFOAT(L, 2)
1636 ORBDAT(N, 12) = ACFOAT(L, 3)
1637 ORBDAT(N, 13) = ACFOAT(L, 4)
1638 ORBDAT(N, 14) = ACFOAT(L, 5)
1639 ORBDAT(N, 15) = ACFOAT(L, 6)
1640 ORBDAT(N, 16) = ACFOAT(L, 7)
1641 IF (NOACT) 850, 850, 892
1642 392 ORBDAT(N, 4) = - CRBDAT(N, 4)
1643 453 CONTINUE
1644 NOR3 = NOR3 + 2
1645
1646 C PRINT THE ATTITUDE-ORBIT DATA RECORD.
1647
1648 IF (INWROR) 850, 650, 692
1649 502 WRITE OUTPUT TAPE NT, 150
1650 WRITE (NT, 1502) NOFILE, "ORECU
1651 WRITE OUTPUT TAPE NT, 150
1652
1653 L = 0
1654 DO 606 K = 1, 33
1655 L = L + 1
1656 GO TO (604, 606, 604, 606, 606, 604, 604, 604, 606, 606,
1657 2 604, 606, 605, 604, 604, 606, 604, 604, 604, 604,
1658 3 604, 604, 606, 606, 604, 606, 604, 606, 606, 606,
1659 4 604, 606, 606), L
1660 504 WRITE OUTPUT TAPE NT, 150
1661 505 WRITE (NT, 1504) K, (AORDAT(J,K), J=5,6)
1662
1663 WRITE OUTPUT TAPE NT, 150
1664 WRITE OUTPUT TAPE NT, 150
1665 L = 0
1666 DO 616 K = 34, 75
1667 L = L + 1
1668 GO TO (614, 616, 616, 614, 616, 616, 614, 616, 616,
1669 2 614, 616, 616, 614, 616, 616, 614, 616, 616,
1670 3 614, 616, 616, 614, 616, 616, 614, 616, 616,
1671 4 614, 616, 616, 614, 616, 616, 614, 616, 616,
1672 5 614, 616, 616, 614, 616, 616), L
1673 514 WRITE OUTPUT TAPE NT, 150
1674 515 WRITE (NT, 1508) K, (AORDAT(J,K), J=5,6)
1675 WRITE OUTPUT TAPE NT, 150
1676 WRITE OUTPUT TAPE NT, 150
1677 L = 0
1678 DO 626 K = 76, 99
1679 L = L + 1
1680 GO TO (624, 624, 624, 624, 624, 624, 626, 624, 626,
1681 2 624, 626, 626, 624, 626, 626, 624, 626, 626,
1682 3 624, 626, 626, 624, 626, 626), L
1683 624 WRITE OUTPUT TAPE NT, 150
1684 625 WRITE (NT, 1508) K, (AORDAT(J,K), J=5,6)
1685
1686 WRITE OUTPUT TAPE NT, 150
1687 WRITE OUTPUT TAPE NT, 150
1688 L = 0
1689 DO 636 K = 100, 125
1690 L = L + 1
1691 GO TO (634, 636, 636, 634, 636, 636, 636, 636, 636,
1692 2 634, 636, 636, 634, 636, 636, 636, 636, 636,
1693 3 634, 636, 636, 634, 634, 634, 634, 634), L
1694 534 WRITE OUTPUT TAPE NT, 150
1695 535 WRITE (NT, 1508) K, (AORDAT(J,K), J=5,6)
1696
1697 C PRINT SELECTED ATTITUDE-ORBIT RECORD DATA.
1698
1699 553 NLINE = NLINE + 1
1700 IF (NLINE - 50) 654, 654, 652
1701 552 NLINE = 1
1702 WRITE OUTPUT TAPE NT, 160
1703 654 NOIDAY = AORDAT(5,1)
1704 NOIDAY = AORDAT(6,1)
1705 ORISEC = AORDAT(5,2)

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1706 OPFSEC = AORDAT(6,2)
1707 WRITE (NT, 1602) NORBIT, 'DRECO, NOYEAR, NOIDAY, NOFDAY,
1708 2 CRISED, PRFSEC, (AORDAT(3,NI,N=75,79)
1709
1710 IF (INITO) 702, 704, 722
1711 /02 IF (INITO + 10) 720, 706, 722
1712 /04 INITC = -10
1713 GO TO 70A
1714 /05 INITC = -20
1715 /03 NO 710 K = 1, 125
1716 AORDAT(1,K) = AORFAT(3,K)
1717 AORDAT(2,K) = AORFAT(4,K)
1718 AORDAT(3,K) = AORFAT(5,K)
1719 /10 AORDAT(4,K) = AORFAT(6,K)
1720 GO TO 730
1721
1722 /20 INITC = 10
1723 RETURN ROPINTT
1724 /22 RETURN PRORDATA
1725
1726 ENTRY ROPDATA
1727 GO TO 70A
1728
1729 /30 IUCINF = 10
1730 GO TO 72F
1731
1732 /100 FORMAT ( / 45H THE ORBIT TAPE HAS A WORD COUNT ERROR IN THE, 117
1733 2 24H LABEL RECORD OF FILE, I3, 1H., 25
1734 3 16H THE WORD COUNT WAS, I4, 1H., 24
1735 4 20H IT SHOULD HAVE BEEN, I4, 1H.) 25
1736 /102 FORMAT ( / 41H THE ORBIT TAPE HAS A PARITY ERROR IN THE,
1737 2 21H LABEL RECORD OF FILE, I3, 1H.) 25
1738 /104 FORMAT (///32H END OF THE ATTITUDE-ORBIT TAPE.///)
1739 /105 FORMAT (3X, 42H CGO - TAKE DOWN UNLOADED A-0 TAPE (A6) AND,
1740 2 24H LONG THE NEXT A-C TAPE.//)
1741
1742 /103 FORMAT (1H1)
1743 /102 FORMAT (/)
1744 /104 FORMAT (/ 27H ATTITUDE - ORBIT LABEL DATA, 30X, 10H TAPE FILE, I3//
1745 2 4H PR., 10X, 8H VALUE/ 4H ---, 10X, 6H ----)
1746 /105 FORMAT (1X, I7, 4X, 3AB, 4X, AB, 4X, A6)
1747 /103 FORMAT (1X, I3, 1X, F20.0)
1748
1749 /103 FORMAT ( / 46H THE ORBIT TAPE HAS A WORD COUNT ERROR IN DATA, 117
1750 2 7H RECORD, I5, 8H OF FILE, I3, 1H., 24
1751 3 16H THE WORD COUNT WAS, I3, 1H., 23
1752 4 20H IT SHOULD HAVE BEEN, I3, 1H.) 24
1753 /102 FORMAT ( / 77H THE ORBIT TAPE HAS A PARITY ERROR IN,
1754 2 12H DATA RECORD, I5, 8H OF FILE, I3, 1H.) 29
1755
1756 /103 FORMAT (1H1)
1757 /102 FORMAT ( / 24H ATTITUDE - ORBIT DATA RECORD,
1758 2 48X, 5H FILE, I7/ 76X, 7H RECORD, I5)
1759 /104 FORMAT ( / 4H NO., 10X, 4H INITIAL, 12X, 6H FINAL/
1760 2 4H ---, 10X, 4H ----, 12X, 6H ----)
1761 /105 FORMAT (/)
1762 /103 FORMAT (1X, I3, 1X, F20.0)
1763
1764 /103 FORMAT (1H1/ 45H S/C RUN REEL FILE RECO YEAR MON MDAY YDAY,
1765 2 45H HOUR MIN SEC INIT, SEC FINAL SEC BIT/
1766 3 5H A-0, 10X, 5H ORBT, 70X, 30H P MAG LAT L B/
1767 4 6H MFC, 0X, 5H ORBT, 70X, 30H 0X BY B7 B//)
1768 /102 FORMAT (15H A-0, 10X, 315, 5X, 215, 17X, F11.3, 4F9.2)
1769
1770 END
( 1350) = WARNING TWO BRANCH IF APPEARS
1771
1772 SURRCUTINE RMGTAPE
1773
1774 USE MFCFIC
1775
1776 ENTRY RMGINIT
1777
1778 IF (LMSKIP) 360, 360, 1A

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1781      19 LMSKIP = 0
1782          GO TO 312
1783
1784 C SKIP UNWANTED MAGNETOMETER TAPE INPUT DATA FILES.
1785
1786     300 NMFILE = NMFILE + 1
1787           NMFREC = NMFILE * 10000
1788           MMRECD = LASTM = NMDCCT =
1789
1790           IF (LMGBFC - 19900)                312, 312, 302
1791     302 IF (LMGBFC - NMFREC - 100' 0)' 312, 304, 304
1792     304 CALL REDEFN (NM)
1793           GO TO 300
1794
1795 C SKIP UNWANTED MAGNETOMETER TAPE INPUT DATA RECORDS.
1796
1797     311 NMFILE = NMFILE + 1
1798           NMFREC = NMFILE * 10000
1799           MMRECD = LASTM = NMDCCT =
1800
1801     312 MMRECD = MMRECD + 1
1802           NMFREC = NMFREC + 1
1803           IF (LMGBFC - NMFREC) 318, 318, 314
1804     314 BUFFER IN (NM, 0) (IMGDAT(1), IMGDAT(515))
1805     315 IF (UNIT, NM) 316, 312, 10, 312
1806     318 IMONE = 10
1807           GO TO 322
1808
1809 C READ MAGNETOMETER TAPE INPUT DATA RECORDS.
1810
1811     320 MMRECD = MMRECD + 1
1812           NMFREC = NMFREC + 1
1813
1814     322 DO 324 IFRAC = 1, MMRCND
1815     324 IMGDAT(IFRAC) = 0
1816
1817           BUFFER IN (NM, 0) (IMGDAT(1), IMGDAT(515))
1818     325 IF (UNIT, NM, NMDCCT) 350, 340, 340, 330
1819
1820     330 IF (IOPHECK, NM) 334, 332
1821     332 WRITE (INT, 1300) MMRECD, NMFILE, NMDCCT, MMRCND
1822           NLIN = NLIN + 2
1823           GO TO 340
1824     334 WRITE (INT, 1302) MMRECD, NMFILE
1825           NLIN = NLIN + 2
1826
1827     340 DO 342 J = 1, MMRCND
1828     342 JMGCAT(J) = IMGDAT(J)
1829           IMONE = 1
1830           GO TO 320
1831
1832     350 IF (IMONE) 352, 352, 326
1833     352 IF (LHGENC - NMFREC + 1) 354, 356, 356
1834     354 IF (UNIT, NM) 354, , ,
1835           IPRMAG = 1
1836           CALL SSCPMG
1837     355 CONTINUE
1838
1839 C PROCESS THE MAGNETOMETER INPUT DATA.
1840
1841 C SEPARATE THE CLOSE PACKED DATA IN THE MAGNETOMETER RECORD.
1842
1843       J = K = 0
1844       DO 402 I = 1, LHGCYC+1
1845         J = J + 1
1846         K = K + 1
1847         KMGCAT(K) = JMGCAT(J) . INT.77777777777777777777777777777777
1848         K = K + 1
1849         KMGCAT(K) = ((JMGCAT(J) . INT.00000000000000000000000000000000).SHL.49).UN.
1850     2        ((JMGCAT(J+1).INT.77777777777777777777777777777777).SHR.12)
1851         J = J + 1
1852         K = K + 1
1853         KMGCAT(K) = ((JMGCAT(J) . INT.00000000000000000000000000000000).SHL.36).UN.
1854     ?        ((JMGCAT(J+1).INT.77777777777777777777777777777777).SHR.24)

```



```

1929      BYMAG(J) = BYMAG(J) / 100.0
1930      BZMAG(J) = BZMAG(J) / 100.0
1931      BSEC (J) = BSEC (J) / 100.0
1932      444 BTMAG(J) = SORTF ((BXMAG(J)**2) + (BYMAG(J)**2) + (BZMAG(J)**2))
1933
1934      C PRINT THE MAGNETOMETER DATA RECORD.
1935
1936      IF (IMRMC0) 550, 550, 502
1937      502 WRITE (NT, 1504) NMYEAR, NMDAY, MORBIT, NMFILE, NMRECO
1938      WRITE OUTPUT TAPE NT, 1504
1939      K = 0
1940
1941      DO 506 J = 2, LMEIDY
1942      K = K + 1
1943      IF (K - 52) 506, 506, 504
1944      504 K = 1
1945      WRITE OUTPUT TAPE NT, 1504
1946      WRITE OUTPUT TAPE NT, 1504
1947      505 WRITE (NT, 1508) J, BSEC (J), BXMAG(J), BYMAG(J), BZMAG(J),
1948      2      BTMAG(J), IAVPT(J), IOUAL(J)
1949
1950      C PRINT SELECTED MAGNETOMETER RECORD DATA.
1951
1952      553 NLINE = NLINE + 1
1953      IF (NLINE - 50) 554, 554, 552
1954      552 NLINE = 1
1955      WRITE OUTPUT TAPE NT, 1604
1956      554 WRITE (NT, 1602) MORBIT, IMPECO, NMYEAR, NMDAY,
1957      2      BSEC(2), BSEC(129), BXMAG(2), BYMAG(2), BZMAG(2), BTMAG(2)
1958
1959      IF (INITM) 602, 602, 604
1960      602 INITM = 10
1961      RETURN PMEINIT
1962      504 RETURN PMCDATA
1963
1964      ENTRY PMCDATA
1965      IMDONE = 10
1966      GO TO 726
1967
1968      381 GUESS IN (NM, 0) (IMDAT(1), IMDAT(NMPCMD))
1969      382 IF (UNIT, AM, ADOCT) 382, 384, 385, 384
1970      384 CALL BSPACE (NM)
1971      IMGIN = 0
1972      GO TO 310
1973
1974      385 NMFILE = NMPECO = NMRECO = NMPECO = LMSKIP = LMSREG = 0
1975      LMGEND = 100000
1976      INITM = 10
1977      CALL PLATE
1978      UNLOAD NM
1979      CALL ASSIGN (NM, 1, SRNEXTM)
1980      PRINT 1304
1981      WRITE OUTPUT TAPE NT, 1304
1982      WRITE OUTPUT TAPE 33, 1304
1983      GO TO 310
1984
1985      1303 FORMAT ( / 44H THE MAG TAPE HAS A WORD COUNT ERROR IN DATA,
1986      2      7H RECORD, I4, 8H OF FILE, I3, 1H.,
1987      3      15H THE WORD COUNT WAS, I5, 1H.,
1988      4      20H IT SHOULD HAVE BEEN, I5, 1H.)
1989
1990      1302 FORMAT ( / 35H THE MAG TAPE HAS A PARITY ERROR IN,
1991      2      12H DATA RECORD, I4, 8H OF FILE, I3, 1H.)
1992
1993      1304 FORMAT (///30H END OF THE MAGNETOMETER TAPE.///)
1994
1995      1305 FORMAT (3X, 42H OGD - TAK DOWN UNLOADED MAG TAPE (47) AND,
1996      2      24H RANG THE NEXT MAG TAPE.///)
1997
1998      1301 FORMAT (1H1//)
1999      1302 FORMAT (//)
2000      1304 FORMAT (1H1// 18H MAGNETOMETER DATA.,
2001      2      13X, 5H YEAR, I3, 4X, 5H DAY, I4, 3X, 6H ORBIT, I4,
2002      3      7X, 5H FILE, I3, 2X, 7H RECORD, I4)
2003
2004      1505 FORMAT (/ 49H NO. SEC OF DAY          BY          8Z.
2005      2      78H          ET          POINTS          QUALITY//
2006      3      16H --- -----, 6(3X, 9H-----)///)

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[illegible]

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2074      K = K + 1
2079      NOPEP(1,N,1) = KSCCAT(K) .INT. 7779      OPEP 1
2080      K = K + 1
2081      NOPEP(2,N,1) = KSCCAT(K) .INT. 7779      OPEP 2
2082      K = K + 1
2083      NOPEP(3,N,1) = KSCCAT(K) .INT. 7779      OPEP 3
2084
2085      K = K + 1
2086      NANAL(N) = KSCCAT(K) .INT. 377B      OFEP 55
2087      VANAL(N) = 0.02 * NANAL(N)      ANALOG
2088
2089      K = K + 1
2090      NOPEP(4,N,1) = KSCCAT(K) .INT. 7779      OPEP 4
2091      K = K + 1
2092      NOPEP(5,N,1) = KSCCAT(K) .INT. 7779      OPEP 5
2093
2094      K = K + 1
2095      NANGLE(1,N) = KSCCAT(K) .INT. 377B      SCAN
2096      K = K + 1
2097      NANGLE(2,N) = KSCCAT(K) .INT. 377B      SHAFTSIN
2098      K = K + 1
2099      53 NANGLE(3,N) = KSCCAT(K) .INT. 377B      SHAFTCOS
2100
2101      C EVALUATE THE OPEP EXPERIMENT ACROSS.
2102      C CONVERT THE OPEP WORDS TO COUNTS / SECOND.
2103
2104      DO 72 M = 1, LOETWD
2105      DO 72 N = 1, LSFFR      5
2106      IF (NOPEP(M,N,1)) 62, 64, 66      128
2107      62 NOPEP(M,N,2) = NOPEP(M,N,1) = 0
2108      GO TO 72
2109      64 NOPEP(M,N,2) = NOPEP(M,N,1) = 32
2110      GO TO 72
2111
2112      65 IMANT = NOPEP(M,N,1) .INT. 37B
2113      ICHAR = (NOPEP(M,N,1) .SFR. 5) .INT. 17B
2114      JEXPON = JEXPON(ICHAR+1)
2115      JEXPON = MPONR2(ICHAR+1)
2116
2117      IF (ICHAR - 15) 76, 68, 66
2118      68 NOPEP(M,N,2) = NOPEP(M,N,1) = IMANT
2119      GO TO 72
2120
2121      70 JMANT = IMANT + 32
2122      NOPEP(M,N,2) = JMANT * JEXPON
2123      NOPEP(M,N,1) = ((JEXPON.T.T.17B).SHL.5).UN.(JMANT.INT.779)
2124      72 NOPEP(M,N) = NOPEP(M,N,1) * CPATE      MIXED AR
2125
2126      C FIND THE INDEX OF THE MAIN BODY COMMUTATOR SYNC SIGNAL.
2127      C      MSYNC = FRAME NUMBER OF THE M2 SYNC SIGNAL (1 - 16)
2128
2129      DO 106 I = 1, LCYCLE      8
2130      IL = ((I - 1) * LFPC) + 1      16
2131      IU = I * LFPC
2132
2133      MAX = NANAL(IL)
2134      ISYNC = IL
2135      DO 104 IS = IL+1, IU
2136      IF (NANAL(IS) - MAX) 104, 104, 102
2137      102 MAX = NANAL(IS)
2138      ISYNC = IS
2139      104 CONTINUE
2140
2141      IF (NANAL(ISYNC) - 255) 106, 116, 106
2142      106 CONTINUE
2143
2144      DO 114 I = 1, LCYCLE      8
2145      IL = ((I - 1) * LFPC) + 1
2146      IU = I * LFPC
2147
2148      MAX = NANAL(IL)
2149      ISYNC = IL
2150      DO 110 IS = IL+1, IU
2151      IF (NANAL(IS) - MAX) 110, 110, 106

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```

2152 104 MAX = NANAL(15)
2153 ISYNC = IS
2154 110 CONTINUE
2155
2156 IF (NANAL(ISYNC) - 240) 114, 116, 112
2157 112 IF (NANAL(ISYNC) - 255) 116, 116, 114
2158 114 CONTINUE
2159
2160 115 MSYNC = ISYNC - ((I - 1) * LFPC)
2161 IF (MSYNC) 118, 118, 130
2162 118 ISYNC = 32
2163 MSYNC = 16
2164 MSHTFT = 4
2165 IF (IDFPR) 122, 120, 122
2166 120 IDFPR = 4
2167 122 IF (NOGOOD) 120, 124, 180
2168 124 NOGOOD = 10
2169 WRITE (NP, 1004) NSRUN, NCREEL, NSFILE, NSRECD
2170 GO TO 180
2171
2172 C CHECK FOR MB SYNC SIGNAL SHIFT DURING RECORD.
2173
2174 130 M = MSYNC - LFPC
2175 DO 136 K = 1, LCYCLE
2176 M = M + LFPC
2177 IF (NANAL(M)) 136, 136, 132
2178 132 IF (NANAL(M) - 240) 138, 136, 134
2179 134 IF (NANAL(M) - 255) 136, 136, 138
2180 136 CONTINUE
2181 GO TO 140
2182 138 MSHTFT = 5
2183
2184 C CHECK FOR MB GROUND SIGNAL SHIFT DURING RECORD.
2185
2186 140 M = MSYNC - 2
2187 IF (MSYNC - 2) 144, 144, 142
2188 142 M = M - LFPC
2189 144 DO 148 K = 1, LCYCLE
2190 M = M + LFPC
2191 IF (NANAL(M)) 150, 148, 146
2192 146 IF (NANAL(M) - 151) 148, 148, 150
2193 148 CONTINUE
2194 GO TO 156
2195
2196 150 IF (MSHTFT - 5) 152, 154, 152
2197 152 MSHTFT = 6
2198 GO TO 156
2199 154 MSHTFT = 7
2200
2201 156 IF (NOGOOD) 158, 158, 180
2202 158 IF (MSHTFT - 5) 180, 180, 160
2203 160 IF (IDFPR) 164, 162, 164
2204 162 IDFPR = MSHTFT
2205 164 IF (MSHTFT - 6) 166, 168, 170
2206 166 WRITE (NP, 1006) NSRUN, NCREEL, NSFILE, NSRECD
2207 GO TO 180
2208 168 WRITE (NP, 1008) NSRUN, NCREEL, NSFILE, NSRECD
2209 GO TO 180
2210 170 WRITE (NP, 1010) NSRUN, NCREEL, NSFILE, NSRECD
2211
2212 180 IF (NSCPAR) 184, 186, 182
2213 182 NSCPAR = 0
2214 MSHTFT = 1
2215 NOGOOD = 0
2216 GO TO 186
2217 184 NSCPAR = 0
2218 MSHTFT = 2
2219 NOGOOD = 10
2220 186 IF (NOGOOD) 190, 190, 188
2221 188 NOGOOD = 0
2222 RETURN
2223 190 CONTINUE
2224
2225 C FIND THE INDEX OF THE OPER COMBINATOR SYNC SIGNAL.

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2224 C      JSYNC = FRAME NUMBER OF THE OPER SYNC SIGNAL (1 - 128).
2227 C      MSYNC = INDEX OF SYN' SIGNAL IN OPER ANALOG WORD CYCLE (1 - 32).
2228
2229      JL = MSYNC
2230      202 IF (JL - 4) 206, 210, 204
2231      204 JL = JL - 4
2232      GO TO 202
2233      205 IF (JL - 2) 209, 219, 216
2234      209 JL = 4
2235      GO TO 212
2236      210 JL = JL - 1
2237
2238      212 GO 216 J = JL, LSFFP, 4
2239      IF (NANAL(J) - 225) 216, 222, 214
2240      214 IF (NANAL(J) - 213) 222, 22, 216
2241      215 CONTINUE
2242
2243      GO 220 J = JL, LSFFP, 4
2244      IF (NANAL(J) - 215) 220, 222, 218
2245      218 IF (NANAL(J) - 215) 222, 22, 220
2246      221 CONTINUE
2247      JSYNC = J
2248      LSYNC = 1
2249      GO TO 230
2250
2251      222 JSYNC = J
2252      MSYNC = (JSYNC + 7) / 4
2253
2254 C FIRST FRAME INDICES.
2255 C      MMBID = MAIN BODY ANALOG WORD INDEX FOR THE FIRST FRAME.
2256
2257      230 MMBID = LMPHW + 1 - MSYNC
2258
2259 C      MOPID = OPER ANALOG WORD INDEX FOR THE FIRST FRAME.
2260
2261      IF (MSYNC - 1) 232, 232, 234
2262      232 MOPID = 1
2263      GO TO 236
2264      234 MOPID = LOPHW + 2 - MSYNC
2265      235 CONTINUE
2266
2267 C MAIN BODY AND OPER COMMUTATOR DATA.
2268
2269      MMB = MMBID - 1
2270      NOP = MOPID - 1
2271      N = 0
2272      I = IDMBD(MMB)
2273
2274      DO 258 K = 1, LCYCLF
2275      DO 258 J = 1, LFFP
2276      N = N + 1
2277      MMB = MMB + 1
2278      IF (MMB - LMPHW) 244, 244, 242
2279      242 MMB = 1
2280      244 GO TO (246, 246, 252, 246, 246, 252, 246,
2281      2 246, 246, 252, 246, 246, 246, 252, 246), MMB
2282      245 I = I + 1
2283      IF (I - LMPCHD) 250, 250, 248
2284      248 I = 1
2285      NMPAN(I,K) = NANAL(N)
2286      VOPAN(I,K) = VANAL(N)
2287      GO TO 258
2288      252 NOP = NOP + 1
2289      IF (NOP - LOPHW) 256, 256, 254
2290      254 NOP = 1
2291      NOPAN(NOP) = NANAL(N)
2292      VOPAN(NOP) = VANAL(N)
2293      255 CONTINUE
2294
2295 C PREPARE THE DETECTOR TIME SHIFT INDEX ARRAY.
2296
2297      DO 262 I = 1, LOET
2298      262 IDTET(I,3) = JDET(I,MMBI)
2299

```

2300 C CONVERT THE MILLISECS OF DAY TO HOURS, MINUTES, AND SECONDS.

```

2301
2402      LSYND = MSYND
2303      NSDAY = NSUP2(36)
2304      DO 308 N = 1, LSFR
2305      IF
2306      302 IF (86400000 - MILEC(N)) 304, 304, 302
2307      304 SECDAY(N) = SCMDAY(N) = S CONSI(N) = 0.0
2308      NSHOUR(N) = NSMIN(N) = MFLSEC(N) = 0
2309      GO TO 308
2310      305 SECTIM = MILEC(N)
2311      DELTHO = SECDAY(N) = SECTIM / 1000.0
2312      NSHOUR(N) = (DELTHO / 360.0) + 0.001
2313      HOURS = NSHOUR(N)
2314      DELTMN = DELTHO - (HOURS * 3600.0)
2315      SCMIN(N) = DELTMN / 60.0
2316      NSMIN(N) = SCMIN(N) + 0.0001
2317      TMINS = NSMIN(N)
2318      SECONDS(N) = DELTMN - (TMINS * 60.0)
2319      303 CONTINUE
2320
2321      DO 322 MSPEC = 1, LSFR
2322      IF (MILEC(MSPEC)) 322, 3 2, 324
2323      322 CONTINUE
2324      RETURN
2325
2326      324 DO 326 MSFND = LSFR, 1, -1
2327      IF (MILEC(MSFND)) 326, 3 6, 328
2328      326 CONTINUE
2329      324 CONTINUE
2330

```

C COMPUTE THE OPEP SCAN ANGLE.

```

2331
2332      DO 340 N = 1, LSFR
2333      POTENT = ANGLE(1,N)
2334      IF (POTENT)
2335      372 IF (POTENT - 250.0) 374, 374, 378
2336      374 ANGLE = -121.9671715 + (0.9744781592 * POTENT)
2337      IF (ANGLE) 376, 380, 380
2338      376 ANGLE = ANGLE + 360.0
2339      GO TO 340
2340      378 ANGLE = 0.0
2341      340 SCAN(N) = ANGLE
2342

```

128

C PREPARE THE VARIATION OF THE MAGNETIC AND ELECTRIC FIELD DATA.

```

2344
2345      IGAIN = NSUP2(51)
2346      IF (IGAIN - 75) 388, 390, 390
2347      388 NGAIN = 100
2348      GO TO 396
2349      390 IF (IGAIN - 110) 392, 392, 394
2350      392 NGAIN = 10
2351      GO TO 396
2352      394 NGAIN = 1
2353
2354      395 XAC = NGAIN * NSUBC1(48)
2355      YAC = NGAIN * NSUBC1(49)
2356      ZAC = NGAIN * NSUBC1(50)
2357      PAC = SQRT((YAC ** 2) + (ZAC ** 2) + (XAC ** 2))
2358      EFD = NSUBC1(54)
2359

```

C REARRANGE OPEP DETECTOR DATA /OPDS.

```

2361
2362      MMR = MMRP - 1
2363      N = 0
2364      J7 = 1
2365
2366      DO 422 K = 1, LCYCLF
2367      J1 = J2 = J3 = 0
2368      J4 = J5 = J6 = -1
2369
2370      DO 422 J = 1, LFFP
2371      N = N + 1
2372      MMR = MMR + 1
2373

```

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```

2374      IF (PMO - L*PMO) 404, 404, 407
2375      402 HMP = 1
2376
2377      404 GO TO (406, 408, 410, 414, 406, 408, 412, 416,
2378      2      406, 408, 411, 418, 406, 408, 412, 420), 444
2379
2380      405 J1 = J1 + 1
2381      EXPDAT(1, J1, K) = VOPEP(1, N)      E1
2382      EXPDAT(5, J1, K) = VOPEP(2, N)      E5
2383      EXPDAT(2, J1, K) = VOPEP(3, N)      E2
2384      EXPDAT(6, J1, K) = VOPEP(4, N)      E6
2385      EXPDAT(19, J1, K) = VOPEP(5, N)      P4
2386      NEXDAT(1, J1, K) = NOPEP(1, N, 3)    E1
2387      NEXDAT(5, J1, K) = NOPEP(2, N, 3)    E5
2388      NEXDAT(2, J1, K) = NOPEP(3, N, 3)    E2
2389      NEXDAT(6, J1, K) = NOPEP(4, N, 3)    E6
2390      NEXDAT(19, J1, K) = NOPEP(5, N, 3)    P4
2391      GO TO 422
2392
2393      404 J2 = J2 + 1
2394      EXPDAT(3, J2, K) = VOPEP(1, N)      E3
2395      EXPDAT(20, J2, K) = VOPEP(2, N)      P5
2396      EXPDAT(17, J2, K) = VOPEP(3, N)      P2
2397      EXPDAT(21, J2, K) = VOPEP(4, N)      P6
2398      EXPDAT(7, J2, K) = VOPEP(5, N)      E7
2399      NEXDAT(3, J2, K) = NOPEP(1, N, 3)    E3
2400      NEXDAT(20, J2, K) = NOPEP(2, N, 3)    P5
2401      NEXDAT(17, J2, K) = NOPEP(3, N, 3)    P2
2402      NEXDAT(21, J2, K) = NOPEP(4, N, 3)    P6
2403      NEXDAT(7, J2, K) = NOPEP(5, N, 3)    E7
2404      GO TO 422
2405
2406      411 J3 = J3 + 1
2407      J4 = J4 + 2
2408      EXPDAT(16, J4, K) = VOPEP(1, N)      P1
2409      EXPDAT(26, J4, K) = VOPEP(2, N)      Q2
2410      EXPDAT(35, J4, K) = VOPEP(3, N)      O1
2411      EXPDAT(18, J4, K) = VOPEP(4, N)      P3
2412      EXPDAT(4, J4, K) = VOPEP(5, N)      E4
2413      NEXDAT(16, J4, K) = NOPEP(1, N, 3)    P1
2414      NEXDAT(26, J4, K) = NOPEP(2, N, 3)    Q2
2415      NEXDAT(35, J4, K) = NOPEP(3, N, 3)    O1
2416      NEXDAT(18, J4, K) = NOPEP(4, N, 3)    P3
2417      NEXDAT(4, J4, K) = NOPEP(5, N, 3)    E4
2418      GO TO 422
2419
2420      412 J3 = J3 + 1
2421      J5 = J5 + 2
2422      EXPDAT(16, J5, K) = VOPEP(1, N)      P1
2423      EXPDAT(22, J5, K) = VOPEP(2, N)      P7
2424      EXPDAT(8, J5, K) = VOPEP(3, N)      E8
2425      EXPDAT(11, J5, K) = VOPEP(4, N)      P3
2426      EXPDAT(4, J5, K) = VOPEP(5, N)      E4
2427      NEXDAT(16, J5, K) = NOPEP(1, N, 3)    P1
2428      NEXDAT(22, J5, K) = NOPEP(2, N, 3)    P7
2429      NEXDAT(8, J5, K) = NOPEP(3, N, 3)      E8
2430      NEXDAT(11, J5, K) = NOPEP(4, N, 3)    P3
2431      NEXDAT(4, J5, K) = NOPEP(5, N, 3)      E4
2432      GO TO 422
2433
2434      414 EXPDAT(23, J7, K) = VOPEP(1, N)      PB1
2435      EXPDAT(33, J7, K) = VOPEP(2, N)      A22
2436      EXPDAT(27, J7, K) = VOPEP(3, N)      PB5
2437      EXPDAT(12, J7, K) = VOPEP(4, N)      AE1
2438      EXPDAT(12, J7, K) = VOPEP(5, N)      EB4
2439      NEXDAT(23, J7, K) = NOPEP(1, N, 3)    PE1
2440      NEXDAT(33, J7, K) = NOPEP(2, N, 3)    AE2
2441      NEXDAT(27, J7, K) = NOPEP(3, N, 3)    PB5
2442      NEXDAT(12, J7, K) = NOPEP(4, N, 3)    AE1
2443      NEXDAT(12, J7, K) = NOPEP(5, N, 3)    EB4
2444      GO TO 422
2445
2446      415 J6 = J6 + 2
2447      EXPDAT(9, J7, K) = VOPEP(1, N)      EB1

```

2443	EXPJAT(31,J7,K) = VOPEP(2,N)	A3
2449	EXPJAT(10,J7,K) = VOPEP(3,N)	EB2
2450	EXPJAT(29,J6,K) = VOPEP(14,N)	A1
2451	EXPJAT(26,J7,K) = VOPEP(5,N)	PE4
2452	NEXPJAT(9,J7,K) = NOPEP(1,N,3)	EB1
2453	NEXPJAT(31,J7,K) = NOPEP(2,N,3)	A3
2454	NFXJAT(10,J7,K) = NOPEP(3,N,3)	EB2
2455	NFXJAT(29,J6,K) = NOPEP(14,N,3)	A1
2456	NEXPJAT(26,J7,K) = NOPEP(5,N,3)	PE4
2457	GO TC 422	
2458		
2459	+13 EXPJAT(11,J7,K) = VOPEP(1,N)	EB3
2460	EXPJAT(34,J7,K) = VOPEP(12,N)	AB3
2461	EXPJAT(14,J7,K) = VOPEP(13,N)	EB6
2462	EXPJAT(28,J7,K) = VOPEP(4,N)	PE6
2463	EXPJAT(25,J7,K) = VOPEP(5,N)	PE3
2464	NEXPJAT(11,J7,K) = NOPEP(11,N,3)	EB3
2465	NEXPJAT(34,J7,K) = NOPEP(2,N,3)	AB3
2466	NEXPJAT(14,J7,K) = NOPEP(13,N,3)	EB6
2467	NEXPJAT(28,J7,K) = NOPEP(4,N,3)	PE6
2468	NFXJAT(25,J7,K) = NOPEP(5,N,3)	PE3
2469	GO TC 422	
2470		
2471	+20 J6 = J6 + 2	
2472	EXPJAT(13,J7,K) = VOPEP(1,N)	EB5
2473	EXPJAT(30,J7,K) = VOPEP(12,N)	A2
2474	EXPJAT(24,J7,K) = VOPEP(13,N)	PE2
2475	EXPJAT(29,J6,K) = VOPEP(4,N)	A1
2476	EXPJAT(15,J7,K) = VOPEP(5,N)	EB7
2477	NFXJAT(13,J7,K) = NOPEP(1,N,3)	EB5
2478	NFXJAT(30,J7,K) = NOPEP(2,N,3)	A2
2479	NFXJAT(24,J7,K) = NOPEP(13,N,3)	PE2
2480	NFXJAT(29,J6,K) = NOPEP(4,N,3)	A1
2481	NEXPJAT(15,J7,K) = NOPEP(5,N,3)	EB7
2482	422 CONTINUE	
2483		
2484	C SET VERY HIGH DATA POINTS TO ZERO.	
2485		
2486	DO 436 I = 1, LNBT	
2487	DO 436 J = 1, LDPC	
2488	DO 436 K = 1, LCYCLE	
2489	IF (EXPJAT(I,J,K)) 434, 436, 432	
2490	432 IF (EXPJAT(I,J,K) - 1.0E+.) 436, 436, 434	
2491	434 EXPJAT(I,J,K) = 0.0	
2492	436 CONTINUE	
2493		
2494	IF (ASDAY - NFDAY) 602, 612, 602	
2495	612 LSDAY = NFDAY + ASDAY	
2496	LYEAR = EP	
2497	MYEAR = NMYEAR - LYEAR	
2498	IF (MYEAR) 606, 606, 604	
2499	604 LSDAY = NSDAY + LCAYCT(MY-AR,12)	
2500	605 DO 608 L = 1, 5	
2501	DO 608 M = 1, 12	
2502	IF (LSDAY - NDAYCT(L,M)) 610, 610, 605	
2503	605 MDAY = NDAYCT(L,M)	
2504	+10 NSMOR = LMONTH(M)	
2505	NMOR = M	
2506	MSDAY = LSDAY - MDAY	
2507	NLDAY = LSDAY - LCDAY	
2508	612 CONTINUE	
2509		
2510	IF (NCGOOD) 654, 654, 652	
2511	652 NCGOOD = 0	
2512	RETURN	
2513	654 IF (KILO - 7) 662, 656, 658	
2514	653 CALL RENP	
2515	RETURN	
2516	653 IF (KILO - 3) 662, 660, 652	
2517	669 CALL REN64	
2518	RETURN	
2519	652 CALL PAMDATA	
2520	RETURN	
2521		

```

2522
2523 1101 FORMAT (40X, 12H DATA ERRORS//)
2524 1102 FORMAT (4H RUN, 15, 6H R EL, 13, 6H FILE, 13, 8H RECORD, 14, 39
2525 2 5TH WAS REJECTED BECAUSE IT CONSISTS ENTIRELY OF FILL DATA.)
2526 1104 FORMAT (4H RUN, 15, 6H R EL, 13, 6H FILE, 13, 8H RECORD, 14,
2527 2 61H WAS REJECTED BECAUSE THERE WAS NOT EVEN ONE MB SYNC SIGNAL.)
2528 1105 FORMAT (4H RUN, 15, 6H R EL, 13, 6H FILE, 13, 8H RECORD, 14,
2529 2 48H THE MP SYNC SIGNAL SHIFTED DURING THIS RECORD.)
2530 1103 FORMAT (4H RUN, 15, 6H R EL, 13, 6H FILE, 13, 8H RECORD, 14,
2531 2 50H THE MP GROUND SIGNAL SHIFTED DURING THIS RECORD.)
2532 1110 FORMAT (4H RUN, 15, 6H R EL, 13, 6H FILE, 13, 8H RECORD, 14,
2533 2 61H BOTH MB SYNC AND GROUND SIGNALS SHIFTED DURING THIS RECORD.)
2534
2535 END
2536
2537 SUBROUTINE RFR4
2538
2539 USE MPE10
2540
2541 C THIS SUBROUTINE REDUCES FOUR 4KB RECORDS TO ONE 2KB EQUIV. RECORD.
2542
2543 IF (LAST) 10, 10, 144
2544
2545 C SET TEMPORARY 4KB EQUIVALENT CYCLE DATA ARRAYS TO ZERO.
2546
2547 11 ILAST = (.LOG. ICOM7(2)) - (.LOG. ICOM5(1))
2548 DO 12 I = 1, ILAST
2549 12 ICOM5(I) = 0
2550
2551 C AVERAGE THE DETECTOR DATA.
2552
2553 DO 24 I = 1, LOET 36
2554 SUMNUM = LCPC / ICDET(I,1)
2555 DO 24 K = 1, LCYCLE 8
2556 SUMVAL = 0.0
2557 DO 22 J = 1, LCPC 4
2558 22 SUMVAL = SUMVAL + EXPDAT(I,J,K)
2559 24 ONECYC(I,K) = SUMVAL / SUMNUM
2560
2561 DO 34 J = 1, LCET 36
2562 K = 0
2563 DO 34 L = 1, 4
2564 SUMVAL = 0.0
2565 DO 32 M = 1, 2
2566 K = K + 1
2567 32 SUMVAL = SUMVAL + ONECYC(I,K)
2568 34 TWOCYC(I,L) = SUMVAL / 2.0
2569
2570 DO 44 J = 1, LOET 36
2571 K = 0
2572 DO 44 L = 1, 2
2573 SUMVAL = 0.0
2574 DO 42 M = 1, 4
2575 K = K + 1
2576 42 SUMVAL = SUMVAL + ONECYC(I,K)
2577 44 FRCYC(I,L) = SUMVAL / 4.0
2578
2579 C PROCESSING FOR EACH 4KB RECORD.
2580
2581 C USE 1, 2, OF 4 CYCLE AVERAGES FROM THE 4KB RECORD
2582 C FOR EACH 2KB DETECTOR DATA EQUIVALENT.
2583
2584 DO 106 K = 1, 8
2585 DO 102 I = 1, 7
2586 112 EXP(I,K) = ONECYC(I,K) E1 - E7
2587 DO 104 T = 16, 21
2588 104 EXP(I,K) = ONECYC(I,K) P1 - P6
2589 105 CONTINUE
2590
2591 L = -1
2592 DO 108 J = 1, 4
2593 L = L + 2
2594 EXP(8,L) = TWOCYC(8,J)
2595 EXP(22,L) = TWOCYC(22,J)
2596

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```

2598      EXP(29,L) = TWO CYC(29,J)
2599      EXP(35,L) = TWO CYC(35,J)
2600 103 EXP(36,L) = TWO CYC(36,J)
2601
2602      L = -3
2603      DO 114 M = 1, 2
2604      L = L + 4
2605      DO 110 I = 9, 15
2606 111 EXP(I,L) = FORCYC(I,M)
2607      DO 112 I = 23, 29
2608 112 EXP(I,L) = FORCYC(I,M)
2609      DO 114 I = 30, 34
2610 114 EXP(I,L) = FORCYC(I,M)
2611
2612 C REMOVE COUNT RATE FACTOR AND CONVERT DATA TO INTEGERS.
2613 C CONVERT DETECTOR DATA INTO POWER OF TWO EXPONENTIAL FORM.
2614
2615      DO 130 I = 1, LOET
2616      DO 130 J = 1, 8
2617      IF (EXP(I,J)) 130, 130, 116
2618 115 NEX = (EXP(I,J) * 2.354) + 0.5
2619      IF (NEX - 64) 118, 120, 130
2620 119 NOP(I,J) = NEX
2621      GO TO 130
2622
2623 120 VALUE = VAL = NEX
2624      DO 122 N = 1, 14
2625      VAL = VAL / 2.0
2626      IF (VAL - 64.0) 124, 122, 122
2627 122 CONTINUE
2628
2629 124 IEXPCN = N
2630      VALEXP = NPOW2(IEXPCN + 1)
2631      VMANT = (VALUE / VALEXP) + 0.5
2632      IF (VMANT - 64.0) 128, 12, 126
2633 125 VMANT = F2.0
2634 124 IMANT = VMANT
2635      NOP(I,J) = ((IEXPCN .INT. 170) .SHL. 6) .UN. (IMANT .INT. 770)
2636 133 CONTINUE
2637
2638 C STORE CORRESPONDING TIME AND APERTURE DATA.
2639
2640      N = -3
2641      DO 132 L = 1, 32
2642      N = N + 4
2643      KREC64(1,L) = MILEC(N)
2644      KREC64(2,L) = NANGLE(2,N)
2645      KREC64(7,L) = NANGLE(3,N)
2646      PREC64(1,L) = SECPRY(N)
2647 132 PREC64(2,L) = SCAN (N)
2648
2649 C STORE SUPCOMBUTATE WORDS FOR THE FIRST RECORD.
2650
2651      IF (N1RECD) 350, 350, 358
2652 350 N1RECD = 10
2653      DO 352 L = 1, LMECHN
2654 352 NMPAN(L) = NMPAN(L,1)
2655      DO 354 L = 1, LOPKC
2656 354 NMPAN(L) = NMPAN(L)
2657      DO 356 L = 1, LSC23
2658 356 MSUB23(L) = MSUB23(L)
2659 353 CONTINUE
2660
2661 C THE 8KB RECORD DATA NOW CORRESPONDS TO TWO CYCLES OF A 2KB EQUIV. RECORD.
2662 C STORE ADDITIONAL 2KB EQUIVALENT CYCLES.
2663
2664      NREG = (KREC0 * 32) + 1
2665      NEND = NREG + 31
2666      KREC0 = KREC0 * 2
2667      KREC0 = KREC0 + 1
2668
2669      DO 134 I = 1, LOET
2670      K = KREG
2671      M = 0

```

36

SINE
COSINE

12

32

36

1

2

3

4

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2672      DO 134 L = 1, ?
2673      K = K + 1
2674      DO 134 J = 1, 4
2675      M = M + 1
2676      134 KNOP(I,J,K) = NOP(I,M)
2677
2678      L = 0
2679      DO 135 N = NREG, NEND
2680      L = L + 1
2681      LREC64(1,N) = KREC64(1,L)
2682      LREC64(2,N) = KREC64(2,L)
2683      LREC64(3,N) = KREC64(3,L)
2684      QREC64(1,N) = PREC64(1,L)
2685      135 QREC64(2,N) = PREC64(2,L)
2686
2687      RREC64(1,KREC6) = BAC
2688      RREC64(2,KREC6) = EFD
2689
2690      C PRINT A LINE OF S/C DATA ON THE MSP TAPE.
2691
2692      IF (NSRECD - 1) 304, 306, 304
2693      304 NLINE = NLINE + 1
2694      IF (NLINE - 50) 308, 309, 306
2695      305 NLINE = 1
2696      WRITE OUTPUT TAPE NT, 100
2697      100 WRITE (NT, 1002) NSRUN, NSREEL, NSFILE, NSRECD, NSYEAR, NSMON,
2698      2   MSDAY, NSDAY, NSHOUR((SREG), NSMIN((MSREG), SECONS((MSREG),
2699      3   SECDAY((MSREG), SECDAY((SEND), NBITRT((LKLO)
2700      1003 FORMAT (1H1/ 45H S/C RUN REEL FILE RECD YEAR MON DAY YDAY,
2701      2   45H HOUR MIN SEC INIT, SEC FINAL SEC BIT/
2702      3   5H A=0, 10X, 5H ORRT, 70X, 30H R MAG LAT L B/
2703      4   6H MAG, 9X, 5H OFET, 70X, 30H BX BY BZ B//)
2704      1002 FORMAT (5H S/C , 5I5, 2X, A3, 4I5, F7.3, 2F11.3, 2X, A4)
2705
2706      IF (KREC6 - 4) 138, 144, 144
2707      139 RETURN
2708
2709      C THE 2KB EQUIVALENT DATA RECORD IS COMPLETE.
2710
2711      C SET ORIGINAL DATA ARRAYS TO ZERO BEFORE TRANSFER.
2712
2713      144 ILAST = (.LOC. ICCM9(2)) - (.LOC. ICCM7(1))
2714      DO 146 I = 1, ILAST
2715      145 ICCM7(I) = 0
2716
2717      C THE MAIN BODY SYNC SIGNAL HAS BEEN SET TO FRAME 16
2718
2719      MSYNC = 16
2720
2721      C TRANSFER DATA TO ORIGINAL DATA ARRAYS FOR MERGING.
2722
2723      KEND = 2 * KREC6
2724
2725      DO 150 I = 1, LDFT
2726      DO 150 J = 1, LDFC
2727      DO 150 K = 1, KEND
2728      150 NEXMAT(I,J,K) = KNOP(I,J,K)
2729
2730      DO 154 N = 1, LSFFR
2731      HILSEC(N) = LREC64(1,N)
2732      NANGLE(2,N) = LREC64(2,N)
2733      NANGLE(3,N) = LREC64(3,N)
2734      SECDAY(N) = QREC64(1,N)
2735      154 SCAN (N) = QREC64(2,N)
2736
2737      RK = KREC6
2738      SUMBAC = SUMEFD = 0.0
2739      DO 156 K = 1, KREC6
2740      SUMBAC = SUMBAC + RREC64(1,K)
2741      155 SUMEFD = SUMEFD + RREC64(2,K)
2742      EFD = SUMEFD / RK
2743      BAC = SUMBAC / RK
2744
2745      N1R6CD = 0

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36
4
UP TO 8

128

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2746      DO 362 L = 1, LMPCWN                                12
2747      362 NMPAN(L,1) = MPBAN(L)
2748      DO 364 L = 1, LOFWD                                    32
2749      364 NOPAN(L) = MOPAN(L)
2750      DO 366 L = 1, LSC23                                    36
2751      366 MSU923(L) = MSU923(L)
2752
2753      IF (IMRSCD) 810, 810, 800
2754      803 DO 808 N = 1, LSFFR
2755      IF (MILSEC(N)) 804, 804, 802
2756      802 IF (866400000 - MILSEC(N)) 804, 806, 806
2757      804 SFCDAY(N) = SCHINS(N) = S-CONS(N) = 0.0
2758      NSPDR(N) = NSMIN(N) = MILEC(N) = 0
2759      GO TO 808
2760      805 SFCTIM = MILSEC(N)
2761      DFLTHR = SECCAY(N) = SECTIM / 1000.0
2762      NSHOUR(N) = (DELTHR / 3600.0) + 0.001
2763      HOURS = NSHOUR(N)
2764      DELTMN = DELTHR - (HOURS * 3600.0)
2765      SCHTNS(N) = DELTMN / 60.0
2766      NSMIN(N) = SCHTNS(N) + 0.0001
2767      TMINS = NSMIN(N)
2768      SECCNS(N) = DFLTMN - (TMINS * 60.0)
2769      803 CONTINUE
2770      811 CONTINUE
2771
2772      DO 502 MSREG = 1, LSFFR
2773      IF (MILSEC(MSREG)) 502, 5.2, 504
2774      502 CONTINUE
2775
2776      504 DO 506 MSEC = LSFFR, 1, -1
2777      IF (MILSEC(MSREG)) 506, 5.6, 508
2778      506 CONTINUE
2779      508 CONTINUE
2780
2781      C      ANY DATA
2782
2783      KSECT = 0
2784      DO 296 I = 1, LOET
2785      DO 298 J = 1, LOPC
2786      DO 296 K = 1, LCYCLE
2787      IF (NEXTDAT(I,J,K)) 296, 216, 298
2788      295 CONTINUE
2789      RETURN
2790      293 KSECT = KSECT + 1
2791      NRGDOD = 0
2792
2793      503 CALL PAMDATA
2794      RETURN
2795
2796      END
2797
2798      SUBROUTINE REN64
2799
2800      USE MP610
2801
2802      C THIS SUBROUTINE REDUCES 32 64-B RECORDS TO ONE 2KB EQUIV. RECORD.
2803
2804      IF (LAST) 10, 10, 144
2805
2806      C SET AVERAGING APPRAYS TO ZERO.
2807
2808      10 ILAST = (.LOC. ICCH5(2)) - (.LOC. ICCH5(1))
2809      DO 12 I = 1, ILAST
2810      12 ICCH5(I) = 0
2811
2812      C AVERAGE THE DETECTOR DATA.
2813
2814      DO 24 I = 1, LOET
2815      SUMNUM = LOPC / ICDET(I,1)
2816      DO 24 K = 1, LCYCLE
2817      SUMVAL = 0.0
2818      DO 22 J = 1, LOPC
2819      22 SUMVAL = SUMVAL + EXPDAT(I,J,K)

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36
4
8

36

8

4


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2822      2% ONECYC(I,K) = SUMVAL / SUMNUM
2823
2824      DO 54 I = 1, LOET                               36
2825      SUMVAL = 0.0
2826      DO 52 K = 1, LCYCLE                               8
2827      52 SUMVAL = SUMVAL + CNECYC(I,K)
2828      54 ONERFC(I) = SUMVAL / A.0
2829
2830      C PROCESSING FOR EACH 64KB RECORD.
2831
2832      C USE ONE RECORD AVERAGES FROM THE 64KB RECORD
2833      C FOR EACH 2KB DETECTOR DATUM EQUIVALENT.
2834
2835      NREG = KRFCD * 4                                  1
2836      K = KPECD / 4                                      2
2837      KRFCD = KPECD + 1                                  3
2838      J = KRFCD - (K * 4)                                4
2839      K = K + 1                                          5
2840
2841      DO 102 I = 1, LOET                                  36
2842      102 PEXP(I,J,K) = ONEREC(I)
2843
2844      C STORE CORRESPONDING TIME AND APERTURE DATA.
2845
2846      N = NREG
2847      M = -31
2848      DO 108 L = 1, 4
2849      N = N + 1
2850      M = M + 32
2851      LREC64(1,N) = N1LSEC(M)
2852      LPFC64(2,N) = NANGLE(2,M)
2853      LREC64(3,N) = NANGLE(3,M)
2854      QPEC64(1,N) = SEC0AY(M)
2855      108 QPEC64(2,N) = SC0A (M)
2856
2857      RPEC64(1,KRFCD) = BAC
2858      RPEC64(2,KRFCD) = EFO
2859
2860      C STORE SUBCOMPUTATION WORDS FOR THE FIRST RECORD.
2861
2862      IF (N1RECD) 350, 353, 354
2863      350 N1RECD = 10
2864      DO 352 L = 1, LMECHN                                12
2865      352 MMBAN(L) = NMBAN(L,1)
2866      DO 354 L = 1, LCPYC                                32
2867      354 MOPAN(L) = NOPAN(L)
2868      DO 356 L = 1, LSC23                                36
2869      356 NSUB23(L) = NSUB23(L)
2870      353 CONTINUE
2871
2872      C PRINT A LINE OF S/C DATA ON THE MSP TAPE.
2873
2874      IF (NSPFC - 1) 304, 306, 304
2875      304 NLINE = NLINE + 1
2876      IF (NLINE - 50) 308, 309, 306
2877      305 NLINE = 1
2878      WRITE OUTPUT TAPE AT, 100.
2879      309 WRITE (INT, 1002) NSPUN, NSREFL, NSFILE, NSRECD, NSYEAR, NSMON,
2880      2 NSDAY, NSDAY, NSHOUR(NSBEG), NSMIN(NSBEG), SECONS(NSBEG),
2881      3 SEC0AY(NSBEG), SEC0AY(NSEND), NPITRT(LK10)
2882      1002 FORMAT (1H1/ 45H S/C PUN REEL FILE RECD YEAR M3N M0AY Y0AY,
2883      2 45H M0MP MIN SEC INIT. SEC FINAL SEC BIT/
2884      3 5H A=0, 10X, 5H 0RET, 70X, 30H P MAG LAT L E/
2885      4 6H MAC, 0X, 5H 0RET, 70X, 30H 0X BY AZ B//)
2886      1022 FORMAT (5H S/C, 515, 2X, A3, 415, F7.3, 2F11.3, 2X, A4)
2887
2888      IF (NRECD - 32) 174, 144, 144
2889      139 RETURN
2890
2891      C THE 2KB EQUIVALENT DATA RECORD IS COMPLETE.
2892
2893      C SET ORIGINAL DATA ARRAYS TO ZERO BEFORE TRANSFER.
2894
2895      144 ILAST = (.LOC. ICOMB(2)) - (.LOC. ICOM7(1))

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2896      DO 146 I = 1, ILAST
2897      145 ICONT7(I) = 0
2898
2899      C   THE MAIN BODY SYNC SIGNAL HAS BEEN SET TO FRAME 16
2900
2901      MSYNC = 16
2902
2903      C   AVERAGE THE 2 FRAME AND 4 FRAME DETECTORS.
2904
2905      KEND = ((KPERD - 1) / 4) + 1
2906
2907      DO 654 K = 1, KEND
2908      J = -1
2909      N = 0
2910      DO 654 L = 1, 2
2911      SUM1 = SUM2 = SUM3 = SUM4 = SUM5 = 0.0
2912      DO 652 M = 1, 2
2913      N = N + 1
2914      SUM1 = SUM1 + PEXP( A,N,K)
2915      SUM2 = SUM2 + PEXP(22,N,K)
2916      SUM3 = SUM3 + PEXP(29,N,K)
2917      SUM4 = SUM4 + PEXP(35,N,K)
2918      SUM5 = SUM5 + PEXP(36,N,K)
2919      PEXP( B,N,K) = PEXP(22,N,K) = PEXP(29,N,K) = 0.0
2920      552 PEXP(35,N,K) = PEXP(36,N,K) = 0.0
2921      J = J + 2
2922      PEXP( A,J,K) = SUM1 / 2.0
2923      PEXP(22,J,K) = SUM2 / 2.0
2924      PEXP(29,J,K) = SUM3 / 2.0
2925      PEXP(35,J,K) = SUM4 / 2.0
2926      654 PEXP(36,J,K) = SUM5 / 2.0
2927
2928      DO 664 I = 0, 15
2929      DO 664 K = 1, KEND
2930      SUM = 0.0
2931      DO 662 J = 1, 4
2932      SUM = SUM + PEXP(I,J,K)
2933      562 PEXP(I,J,K) = 0.0
2934      664 PEXP(I,1,K) = SUM / 4.0
2935
2936      DO 668 I = 23, 28
2937      DO 668 K = 1, KEND
2938      SUM = 0.0
2939      DO 666 J = 1, 4
2940      SUM = SUM + PEXP(I,J,K)
2941      565 PEXP(I,J,K) = 0.0
2942      668 PEXP(I,1,K) = SUM / 4.0
2943
2944      DO 672 I = 30, 34
2945      DO 672 K = 1, KEND
2946      SUM = 0.0
2947      DO 670 J = 1, 4
2948      SUM = SUM + PEXP(I,J,K)
2949      570 PEXP(I,J,K) = 0.0
2950      572 PEXP(I,1,K) = SUM / 4.0
2951
2952      C   REMOVE COUNT RATE FACTOR AND CONVERT DATA TO INTEGERS.
2953      C   CONVERT DETECTOR DATA INTO POWER OF TWO EXPONENTIAL FORM.
2954
2955      DO 130 I = 1, LMET
2956      DO 130 J = 1, LDFC
2957      DO 130 K = 1, KEND
2958      IF (PEXP(I,J,K)) 130, 130, 116
2959      115 NEX = (PEXP(I,J,K) * 2.304) + 0.5
2960      IF (NEX - 64) 118, 120, 120
2961      118 KNOP(I,J,K) = NEX
2962      GO TO 130
2963
2964      123 VALUE = VAL = NEX
2965      DO 122 N = 1, 14
2966      VAL = VAL / 2.0
2967      IF (VAL - 64.0) 124, 122, 122
2968      122 CONTINUE
2969

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3E
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2970 124 IEXPCN = N
2971 VALEXP = NFCWR2(IEXPCN + 1)
2972 VMANT = (VALUE / VALEXP) + 0.5
1 2973 IF (VMANT - 64.0) 128, 125, 126
2974 125 VMANT = 63.0
2975 128 IMANT = VMANT
2976 KNOP(I,J,K) = ((IEXPCN .INT. 178) ,SHL. 6) .UN. (IMANT .INT. 778)
2977 130 CONTINUE
2978
2979 C TRANSFER DATA TO ORIGINAL DATA ARRAYS FOR MERGING.
2980
2981 DO 150 I = 1, LOET
2982 DO 150 J = 1, LDPC
2983 DO 150 K = 1, KENC
2984 150 NEXDAT(I,J,K) = KNOP(I,J,K)
2985
2986 DO 154 N = 1, LSFFR
2987 MILSEC(N) = LREC64(1,N)
2988 NANGLE(2,N) = LREC64(2,N)
2989 NANGLE(3,N) = LREC64(3,N)
2990 SECDAY(N) = QREC64(1,N)
2991 154 SCAN (N) = QREC64(2,N)
2992
2993 RK = KREC C
2994 SUMBAC = SUMEFD = 0.0
2995 DO 156 K = 1, KREC C
2996 SUMBAC = SUMBAC + RREC64(I,K)
2997 156 SUMEFD = SUMEFD + RREC64(I,K)
2998 EFD = SUMEFD / RK
2999 DAC = SUMBAC / RK
3000
3001 NIRECD = 0
3002 DO 362 L = 1, LMBCWD
3003 362 NMBAN(L,1) = MMRAA(L)
3004 DO 364 L = 1, LOPW0
3005 364 NMPAN(L) = MOPAN(L)
3006 DO 366 L = 1, LSC23
3007 366 NSUB23(L) = MSUB23(L)
3008
3009 IF (IMRSCD) 810, 810, 800
3010 303 DO 808 N = 1, LSFFR
3011 IF (MILSEC(N)) 804, 804, *02
3012 302 IF (25400000 - MILSEC(N)) 804, 806, 806
3013 804 SECDAY(N) = SCHIAS(N) = SECONS(N) = 0.0
3014 NSHOUR(N) = NSMIN (N) = MILSEC(N) = 0
3015 GO TO *08
3016 305 SECTIM = MILSEC(N)
3017 DELTHR = SECDAY(N) = SECTIM / 1000.0
3018 NSHOUR(N) = (DELTHR / 3600.0) + 0.001
3019 HOURS = NSHOUR(N)
3020 DELTMN = DELTHR * (HOURS * 3600.0)
3021 SCHIKS(N) = DELTMN / 60.0
3022 NSMIN (N) = SCHIKS(N) + 0.0001
3023 TMINS = NSMIN(N)
3024 SECONS(N) = DELTMN - (TMINS * 60.0)
3025 303 CONTINUE
3026 313 CONTINUE
3027
3028 DO 502 MSBFG = 1, LSFFR
3029 IF (MILSEC(MSBFG)) 502, 5.2, 504
3030 502 CONTINUE
3031
3032 DO 506 MSEND = LSFFR, 1, -1
3033 IF (MILSEC(MSEND)) 506, 5.6, 508
3034 506 CONTINUE
3035 508 CONTINUE
3036
3037 C ANY DATA
3038
3039 KREC D = 0
3040 DO 296 I = 1, LOET
3041 DO 296 J = 1, LDPC
3042 DO 296 K = 1, LCYCLE
3043 IF (NEXDAT(I,J,K)) 296, 296, 298

```

36
4
UP TO 8

128

12

32

36

36
4
8

```

3044 295 CONTINUE
3045 RETURN
3046 298 KSFECD = KSRECD + 1
3047 HNGOOD = 0
3048
3049 300 CALL PAMDATA
3050 RETURN
3051
3052 END
3053
3054 SUBROUTINE PAMDATA
3055
3056 USE MERG10
3057
3058 RATIC = 0.0
3059
3060
3061 C INTERPOLATE THE MAGNETOMETER DATA.
3062 C TLIM = 86400.0
3063
3064 IF (IPRMAG) 200, 200, 100
3065
3066 100 IF (INITM) 106, 106, 110
3067 105 CALL RMGINIT
3068
3069 110 IF (NMDAY - NSDAY) 111, 120, 178
3070 111 IF (NMDAY + 1 - NSDAY) 115, 112, 178
3071 112 IF (BSEC(1) - 85810.) 115, 115, 113
3072 113 IF (SECNDAY(MSBEG) - 85810.) 114, 115, 120
3073 114 IF (SECNDAY(MSEEG) - 590.) 120, 115, 115
3074 115 CALL PMGDATA
3075 GO TO 110
3076
3077 120 JREG = 2
3078 DO 160 I = MSBEG, MSEND 428
3079 IF (NMDAY - NSDAY) 122, 122, 178
3080 122 TSCS = SECNDAY(I)
3081 IF (TSCS) 160, 160, 124
3082 124 IF (TLIM - TSCS) 160, 130, 130
3083
3084 130 DO 158 J = JREG, LMGINX 129
3085 TBEG = BSEC(J-1)
3086 TEND = BSEC(J)
3087 IF (TBEG) 158, 131, 131
3088 131 IF (TEND) 158, 132, 132
3089 132 IF (TLIM - TBEG) 158, 133, 133
3090 133 IF (TLIM - TEND) 158, 134, 134
3091
3092 134 IF (TEND - TSCS) 135, 152, 135
3093 135 IF (TSCS - TBEG) 140, 150, 154
3094 135 IF (TSCS - TBEG) 158, 150, 137
3095
3096 137 IF (590. - TEND) 158, 158, 138
3097 138 IF (TBEG - 5910.) 158, 158, 139
3098 139 TEND = TEND + 86400.0
3099 GO TO 154
3100
3101 140 IF (590. - TEND) 158, 158, 141
3102 141 IF (TBEG - 5910.) 158, 158, 142
3103 142 TBEG = TBEG - 86400.0
3104 GO TO 154
3105
3106 150 BMGSC(1,1,I) = BXPAG(J-1)
3107 BMGSC(1,2,I) = BYMAG(J-1)
3108 BMGSC(1,3,I) = BZMAG(J-1)
3109 BMGSC(1,4,I) = BTPAG(J-1)
3110 JREG = J
3111 GO TO 160
3112
3113 152 BMGSC(1,1,I) = BXPAG(J)
3114 BMGSC(1,2,I) = BYMAG(J)
3115 BMGSC(1,3,I) = BZMAG(J)
3116 BMGSC(1,4,I) = BTPAG(J)
3117 JREG = J
3118 GO TO 160
3119

```

```

7120 154 TINTER = TFND - TREG
7121 TOLTA = TSCS - TREG
7122 IF (TINTER) 154, 159, 156
7123 155 TFRACT = TOLTA / TINTER
7124 U(1) = PXMAC(J-1)
7125 U(2) = PYMAC(J-1)
7126 U(3) = BZMAC(J-1)
7127 V(1) = PXMAG(J)
7128 V(2) = PYMAG(J)
7129 V(3) = BZMAG(J)
7130
7131 CALL INTFRP (TFRACT, U(1), V(1), F(1), RN(1), PATIO)
7132
7133 BMGSC(1,1,I) = P(1)
7134 BMGSC(1,2,I) = P(2)
7135 BMGSC(1,3,I) = P(3)
7136 BMGSC(1,4,I) = P(4)
7137 JREG = J
7138 GO TO 160
7139
7140 159 CONTINUE
7141 IF (TSCS - TENN) 160, 160, 159
7142 159 CALL PMGDATA
7143 I = I - 1
7144 JREG = J
7145 160 CONTINUE
7146
7147 ENTRY SSCMAG
7148
7149 178 CONTINUE
7150
7151 C OBTAIN ATTITUDE-ORBIT DATA.
7152
7153 C FIND THE APPROPRIATE A-O RECORDS (TIMENISE).
7154
7155 201 IF (IFPORB) 602, 602, 202
7156 202 IF (INITO) 206, 206, 210
7157 205 CALL PCORBIT
7158
7159 210 DO 600 N = MSFEG, MSENK
7160 212 NDAY = AOPDAT(6,1)
7161 NDAY = AOPDAT(1,1)
7162 IF (NDAY - NSDAY) 216, 210, 214
7163 214 IF (NDAY - NSDAY) 216, 210, 270
7164 215 CALL PORDATA
7165 GO TO 212
7166
7167 220 DO 264 L = 6, 2, -1
7168 TSCS = SECDAV(N)
7169 TBEG = AOPDAT(L-1,2)
7170 TEND = AOPDAT(L, 2)
7171 IF (TSCS) 270, 270, 222
7172 222 IF (TBEG) 264, 226, 274
7173 224 IF (TBEG - 1.0) 226, 228, 229
7174 225 TEST = ABSF (TEND - 50.0)
7175 IF (TEST - 1.0) 236, 236, 264
7176 229 IF (TEND) 264, 232, 230
7177 230 IF (TEND - 1.0) 232, 236, 236
7178 232 TEST = APSF (TBEG - 86340.0)
7179 IF (TEST - 1.0) 234, 234, 264
7180 234 IF (TSCS - TREG) 264, 242, 244
7181
7182 235 IF (TEND - TSCS) 240, 280, 238
7183 239 IF (TSCS - TBEG) 252, 242, 300
7184 240 IF (TSCS - TBEG) 264, 242, 244
7185 242 L = L - 1
7186 IF (L - 1) 270, 270, 280
7187
7188 244 IF (TSCS - 85000.0) 264, 264, 246
7189 245 IF (14000.0 - TEND) 264, 264, 248
7190 249 IF (TBEG - TEND) 264, 264, 250
7191 250 TEND = TEND + 86400.0
7192 GO TO 300
7193

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7194 252 IF (TBEG - TEND) 264, '64, 254
7195 254 IF (TBEG - *5000.0) 264, '64, 256
7196 255 IF (1400.0 - TSCS) 264, '64, 258
7197 258 TBEG = TBEG - 86400.0
7198 GO TO 300
7199
7200 264 CONTINUE
7201 IF (AORPAT(5,1) - NSDAY) 266, 268, 265
7202 265 IF (AORPAT(1,1) - NSDAY) 266, 266, 270
7203 265 IF (AORPAT(6,2) - TSCS) 266, 266, 270
7204 263 CALL POPDATA
7205 GO TO 220
7206
7207 271 PVALUE(N) = DLVALUE(N) - DGLAT(N) = 0.0
7208 GO TO 600
7209
7210 293 DMGLAT(N) = AORPAT(L,77)
7211 DLVALUE(N) = AORPAT(L,78)
7212 DO 284 K = 1, 3
7213 284 POSITV(K) = AORPAT(L,K+7)
7214 POSITV(4) = SQRT((POSITV(1)**2)+(POSITV(2)**2)+(POSITV(3)**2))
7215 RVALUE(N) = POSITV(4) / 6.71.0
7216 GO TO 600
7217
7218 C TIME INTERPOLATION VALUE.
7219
7220 301 TDELTA = TSCS - TBEG
7221 TINTER = TEND - TBEG
7222 IF (TINTER) 270, 270, 302
7223 302 IF (2400.0 - TINTER) 270, 270, 304
7224 304 TFRAC = TDELTA / TINTER
7225 IF (TFRAC) 270, 270, 306
7226 305 CONTINUE
7227
7228 C PRELIMINARY TIME AVERAGING.
7229
7230 430 DO 332 K = 77, 78
7231 VREG = AORPAT(L-1,K)
7232 VEND = AORPAT(L, K)
7233 332 AVATOR(K) = VREG + (TFRAC * (VEND - VREG))
7234
7235 DMGLAT(N) = AVATOR(77)
7236 DLVALUE(N) = AVATOR(78)
7237
7238 C POSITION VECTOR INTERPOLATION AND COMPUTATION OF P IN EARTH RADII.
7239
7240 DO 402 K = 1, 3
7241 U(K) = AORPAT(L-1,K+7)
7242 402 V(K) = AORPAT(L, K+7)
7243 CALL INTEFP (TFRAC, L(1), V(1), POSITV(1), RN(1), RATIO)
7244 RVALUE(N) = POSITV(4) / 6.71.0
7245
7246 401 CONTINUE
7247
7248 ENTRY SSCORE
7249
7250 502 CALL SSCDATA
7251 RETURN
7252
7253 END
7254
7255 SUPRCUTIME SSCDATA
7256
7257 USE PERG10
7258
7259 C PRINT A LINE OF S/C DATA ON THE MSP TAPE.
7260
7261 NURECD = NURECD + 1
7262
7263 IF (KIL0 - 2) 74, 72, 74
7264 72 NLINE = NLINE + 2
7265 WRITE (NT, 1000) NURECD, SECDDAY(MSBEG), SECDDAY(MSEND)
7266 GO TO 88
7267 74 IF (KIL0 - 3) 80, 76, 80

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POSITION
VECTOR

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3270 75 NLINE = NLINE + 2
3271 WRITE (INT, 1002) NURECD, SECDAY(MSREG), SECDAY(MSENC)
3272 GO TO 8A
3273
3274 80 NLINE = NLINE + 3
3275 IF (NLINE - 50) 86, 86, A.
3276 84 NLINE = 3
3277 WRITE OUTPUT TAPE NT, 1004
3278 85 WRITE (INT, 1006) NSRUN, NSREEL, NSFILE, NSRECD, NSYEAR, NSMON,
3279 2 MSRDY, NSPAY, NSHOUR(MSREG), NSMIN(MSREG), SECONS(MSREG),
3280 3 SECDAY(MSREG), SECDAY(MSENC), NSITRT(LKIL0)
3281 WRITE (INT, 1008) NURECD, SECDAY(MSREG), SECDAY(MSENC)
3282 83 CONTINUE
3283
3284 1103 FORMAT (8H FFD 8, 12X, 15, 37X, 2F11.3, 2X, 4H 2KB//)
3285 1102 FORMAT (8H FFD 64, 12X, 15, 37X, 2F11.3, 2X, 4H 2KB//)
3286 1104 FORMAT (11H1/ 45H S/C RUN REEL FILE RECD YEAR MON HDAY YDAY,
3287 2 45H HOUR MIN SEC INIT. SEC FINAL SEC BIT/
3288 3 5H A-O, 10X, 5H ORRT, 70X, 30H P MAG LAT L B/
3289 4 6H MAG, 9X, 5H ORRT, 70X, 30H PX EY B2 B//)
3290 1105 FORMAT (5H S/C, 15, 2X, A3, 415, F7.3, 2F11.3, 2X, A4)
3291 1108 FORMAT (8H HFP 1, 12X, 15, 37X, 2F11.3, 2X, 4H 1KB//)
3292
3293 C WRITE MERGED TAPE DATA RECORD.
3294 C WORKS IN GROUPS OF 4. 4 * 60 = 5 * 48
3295
3296 C CONTROL WORDS.
3297
3298 KBUFSC(1) = ((NORBIT .INT. 7777B) .SPL. 48) .UN.
3299 2 ((NSYEAR .INT. 7777B) .SPL. 36) .UN.
3300 3 ((NSDAY .INT. 7777B) .SPL. 24) .UN.
3301 4 ((NSRUN .INT. 7777B) .SPL. 12) .UN.
3302 5 ((NSREEL .INT. 7777B) .SPL. 12) .UN.
3303
3304 KBUFSC(2) = ((NSFILE .INT. 7777B) .SPL. 48) .UN.
3305 2 ((NSRECD .INT. 7777B) .SPL. 36) .UN.
3306 3 ((NPKILO .INT. 7777B) .SPL. 24) .UN.
3307 4 ((LSYNC .INT. 7777B) .SPL. 12) .UN.
3308 5 ((NSSTAT .INT. 7777B) .SPL. 12) .UN.
3309
3310 KBUFSC(3) = ((NURECD .INT. 7777B) .SPL. 48) .UN.
3311 2 ((NKILO .INT. 7777B) .SPL. 36) .UN.
3312 3 ((NSYNC .INT. 7777B) .SPL. 24) .UN.
3313 4 ((NNMON .INT. 7777B) .SPL. 12) .UN.
3314 5 ((MSDAY .INT. 7777B) .SPL. 12) .UN.
3315
3316 KBUFSC(4) = ((NINLDA .INT. 7777B) .SPL. 48) .UN.
3317 2 ((MSHIFT .INT. 7777B) .SPL. 36) .UN.
3318 3 ((IDATE(4) .INT. 7777B) .SPL. 24) .UN.
3319 4 ((IDATE(3) .INT. 7777B) .SPL. 12) .UN.
3320 5 ((IDATE(6) .INT. 7777B) .SPL. 12) .UN.
3321
3322 C SELECTED ORIGINAL ATTITUDE-ORBIT DATA.
3323
3324 M = 4
3325 IF (NORR - 2) 116, 112, 116
3326 112 IF (ORDAT(NORR,1) - SECDAY(MSENC) - 27.455) 114, 116, 116
3327 114 CALL PORDATA
3328 115 CONTINUE
3329
3330 DO 128 N = 1, 4
3331 DO 122 K = 1, 16
3332 122 NORCAT(N,K) = ORDAT(N,K) * 1300.0
3333 DO 126 K = 4, 15
3334 IF (NORCAT(N,K)) 124, 126, 126
3335 124 NORCAT(N,K) = -NORCAT(N,K)
3336 NORCAT(N,K) = (NORCAT(N,K) .INT. 7777777B) .UN. (20C00000)
3337 125 CONTINUE
3338 NORCAT(N,17) = 0
3339 129 CONTINUE
3340
3341 DO 158 N = 1, 4
3342 KBUFSC(M+1) = ((NORCAT(N,1) .INT. 777777777B) .SPL. 30) .UN.
3343 2 ((NORCAT(N,1) .INT. 777777777B) .SPL. 30) .UN.

```

ORIG KIL
ORIG SYN
STATION

MERG REC
MERG KIL
MERG SYN
MON NUP
DAY MON

DAY LAUN
ERRORS
COMP DAY
COMP MON
COMP YR

```

3344      M = M + 1
3345      K = 2
3346
3347      DO 132 J = 1, 4
3348      KBUFSC(M+1) = ((NORDAT(N, J+1) .INT. 3777777B) .SHL. 40) .UN.
3349      2      ((NORDAT(N, J+2) .INT. 3777777B) .SHL. 20) .UN.
3350      3      ((NORDAT(N, J+3) .INT. 3777777B)
3351      M = M + 1
3352 132 K = K + 3
3353
3354      M = M + 1
3355      KBUFSC(M) = ((NORDAT(N, 15) .INT. 3777777B) .SHL. 40) .UN.
3356      2      ((NORDAT(N, 16) .INT. 7777777B) .SHL. 131) .UN.
3357      3      (NCF LAG(N) .INT. 17777B)
3358
3359      K = 16
3360      DO 154 J = 1, 12
3361      WORD1 = ORF DAT(N, K+1)
3362      WORD2 = ORF DAT(N, K+2)
3363      WORD3 = ORF DAT(N, K+3)
3364      IF (WORD1) 142, 144, 144
3365 142 WORD1 = -WORD1
3366      WORD1 = (WORD1 .INT. 37777777777777777B) .UN.
3367      2      4000 000000000000000000
3368 144 IF (WORD2) 146, 148, 148
3369 146 WORD2 = -WORD2
3370      WORD2 = (WORD2 .INT. 37777777777777777B) .UN.
3371      2      4000 000000000000000000
3372 148 IF (WORD3) 150, 152, 152
3373 150 WORD3 = -WORD3
3374      WORD3 = (WORD3 .INT. 37777777777777777B) .UN.
3375      2      4000 000000000000000000
3376 152 KBUFSC(M+1) = (WORD1 .INT. 77777777777777777B) .UN.
3377      2      ((WORD2 .INT. 7777776000000000000000) .SHL. 201
3378      KBUFSC(M+2) = ((WORD2 .INT. 0000001777777400000000) .SHL. 20)
3379      2      .UN. ((WORD3 .INT. 7777777777777400000000) .SHL. 40)
3380      M = M + 2
3381 154 K = K + 3
3382 159 CONTINUE
3383
3384 C MILLISECONDS OF DAY.
3385
3386      M = 124
3387      N = 0
3388      DO 172 L = 1, 64
3389      KBUFSC(M+1) = ((MILSEC(N+1) .INT. 0777777777B) .SHL. 30) .UN.
3390      2      ((MILSEC(N+2) .INT. 0777777777B)
3391      M = M + 1
3392 172 N = N + 2
3393
3394 C DETECTOR DATA.
3395
3396      M = 188
3397      N = 0
3398      DO 202 I = 1, 7
3399      DO 202 K = 1, LCYCLE
3400      DO 202 J = 1, LOPC
3401      N = N + 1
3402 202 NDETEC(N) = NEXDAT(I, J, K)
3403
3404      DO 204 K = 1, LCYCLE
3405      N = N + 1
3406 204 NDETEC(N) = NEXDAT(8, 1, K)
3407      N = N + 1
3408 204 NDETEC(N) = NEXDAT(8, 3, K)
3409
3410      DO 206 I = 9, 15
3411      DO 206 K = 1, LCYCLE
3412      N = N + 1
3413 206 NDETEC(N) = NEXDAT(I, 1, K)
3414
3415      DO 208 I = 16, 21
3416      DO 208 J = 1, LCYCLE
3417      DO 208 J = 1, LOPC

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3418      N = N + 1
3419      209 NDETFC(N) = NEXDAT(I,J,K)
3420
3421      DO 210 K = 1, LCYCLE
3422          N = N + 1
3423          NDETFC(N) = NEXDAT(22,1,K)
3424          N = N + 1
3425          211 NDETFC(N) = NEXDAT(22,3,K)
3426
3427      DO 212 I = 23, 28
3428          DO 212 K = 1, LCYCLE
3429              N = N + 1
3430              212 NDETFC(N) = NEXDAT(I,1,K)
3431
3432      DO 214 K = 1, LCYCLE
3433          N = N + 1
3434          NDETFC(N) = NEXDAT(29,1,K)
3435          N = N + 1
3436          214 NDETFC(N) = NEXDAT(29,3,K)
3437
3438      DO 216 I = 30, 34
3439          DO 216 K = 1, LCYCLE
3440              N = N + 1
3441              215 NDETFC(N) = NEXDAT(I,1,K)
3442
3443      DO 218 I = 35, 36
3444          DO 218 K = 1, LCYCLE
3445              N = N + 1
3446              NDETFC(N) = NEXDAT(I,1,K)
3447              N = N + 1
3448              215 NDETFC(N) = NEXDAT(I,3,K)
3449
3450      N = 0
3451      DO 220 L = 1, 128
3452          KBUFSC(M+1) = ((NDETFC(M+1) .INT. 17777B) .SHL. 48) .UN.
3453              2 ((NDETFC(M+1) .INT. 17777B) .SHL. 36) .UN.
3454              3 ((NDETFC(M+1) .INT. 17777B) .SHL. 24) .UN.
3455              4 ((NDETFC(M+1) .INT. 17777B) .SHL. 12) .UN.
3456              5 ((NDETFC(M+1) .INT. 17777B)
3457          M = M + 1
3458          220 N = N + 5
3459
3460      C DREP SCAN ANGLE.
3461
3462      N = 316
3463      M = 0
3464      SCAN(129) = SCAN(130) = 0.0
3465      DO 234 I = 1, 13
3466          DO 232 J = 1, 10
3467              N = N + 1
3468              232 NWORD(J) = SCAN(N) * 100.
3469
3470      KBUFSC(M+1) = ((NWORD( 1) .INT. 777777B) .SHL. 42) .UN.
3471      2 ((NWORD( 2) .INT. 777777B) .SHL. 24) .UN.
3472      3 ((NWORD( 3) .INT. 777777B) .SHL. 6) .UN.
3473      4 ((NWORD( 4) .INT. 770000B) .SHL. 12)
3474      KBUFSC(M+2) = ((NWORD( 4) .INT. 007777B) .SHL. 48) .UN.
3475      2 ((NWORD( 5) .INT. 777777B) .SHL. 30) .UN.
3476      3 ((NWORD( 6) .INT. 777777B) .SHL. 12) .UN.
3477      4 ((NWORD( 7) .INT. 777000B) .SHL. 6)
3478      KBUFSC(M+3) = ((NWORD( 7) .INT. 000977B) .SHL. 54) .UN.
3479      2 ((NWORD( 8) .INT. 777777B) .SHL. 36) .UN.
3480      3 ((NWORD( 9) .INT. 777777B) .SHL. 18) .UN.
3481      4 ((NWORD(10) .INT. 777777B)
3482      234 N = M + 3
3483
3484      C SHAF1 SINF.
3485
3486      M = 356
3487      N = 0
3488      NANGLE(2,129) = NANGLE(2, 30) = 0
3489
3490      DO 242 L = 1, 26
3491      KBUFSC(M+1) = ((NANGLE(2, L+1) .INT. 3777B) .SHL. 48) .UN.

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3492      2      ((NANGLE(2,'+2) .INT. 377B) .SHL. 36) .UN.
3493      3      ((NANGLE(2,'+3) .INT. 377B) .SHL. 24) .UN.
3494      4      ((NANGLE(2,'+4) .INT. 377B) .SHL. 12) .UN.
3495      5      ((NANGLE(2,'+5) .INT. 377B)
3496      M = M + 1
3497      242 N = N + 5
3498
3499      C SHAFT COSINE.
3500
3501      M = 384
3502      N = 0
3503      NANGLE(3,120) = NANGLE(3,130) = 0
3504
3505      DO 252 L = 1, 25
3506      KBUFSC(M+1) = ((NANGLE(3,N+1) .INT. 377B) .SHL. 44) .UN.
3507      2      ((NANGLE(3,N+2) .INT. 377B) .SHL. 36) .UN.
3508      3      ((NANGLE(3,N+3) .INT. 377B) .SHL. 24) .UN.
3509      4      ((NANGLE(3,N+4) .INT. 377B) .SHL. 12) .UN.
3510      5      ((NANGLE(3,N+5) .INT. 377B)
3511      N = M + 1
3512      252 N = N + 5
3513
3514      C MAGNETIC FIELD FLUCTUATIONS, ELECTRIC FIELD SENSOR
3515
3516      M = 412
3517      NBAC = BAC * 1000.0
3518      NEFD = EFF * 1000.0
3519      KBUFSC(M+1) = ((NBAC .INT. 777777777B) .SHL. 30) .UN.
3520      2      ((NEFD .INT. 777777777B)
3521
3522      C COLEMAN'S MAGNETOMETER DATA. BODY CORR. S/C INTERPOLATED.
3523
3524      M = 416
3525      N = 0
3526      DO 286 K = 1, 64
3527      N = N + 1
3528      NWCRD1 = FMGSC(1,1,N) * 1.0.0
3529      NWCRD2 = FMGSC(1,2,N) * 1.0.0
3530      NWCRD3 = FMGSC(1,3,N) * 1.0.0
3531      N = N + 1
3532      NWCRD4 = FMGSC(1,1,N) * 1.0.0
3533      NWCRD5 = FMGSC(1,2,N) * 1.0.0
3534      NWCRD6 = FMGSC(1,3,N) * 1.0.0
3535
3536      IF (NWCRD1) 262, 264, 264
3537      262 NWCRD1 = -NWCRD1
3538      NWCRD1 = (NWCRD1 .INT. 377777777B) .UN. 4000000000P
3539      264 IF (NWCRD2) 266, 268, 268
3540      266 NWCRD2 = -NWCRD2
3541      NWCRD2 = (NWCRD2 .INT. 377777777B) .UN. 4000000000B
3542      268 IF (NWCRD3) 270, 272, 272
3543      270 NWCRD3 = -NWCRD3
3544      NWCRD3 = (NWCRD3 .INT. 377777777B) .UN. 4000000000B
3545      272 IF (NWCRD4) 274, 276, 276
3546      274 NWCRD4 = -NWCRD4
3547      NWCRD4 = (NWCRD4 .INT. 377777777B) .UN. 4000000000B
3548      276 IF (NWCRD5) 278, 280, 280
3549      278 NWCRD5 = -NWCRD5
3550      NWCRD5 = (NWCRD5 .INT. 377777777B) .UN. 4000000000B
3551      280 IF (NWCRD6) 282, 284, 284
3552      282 NWCRD6 = -NWCRD6
3553      NWCRD6 = (NWCRD6 .INT. 377777777B) .UN. 4000000000B
3554
3555      284 KBUFSC(M+1) = ((NWCRD1 .INT. 777777777B) .SHL. 30) .UN.
3556      2      ((NWCRD2 .INT. 777777777B)
3557      KBUFSC(M+2) = ((NWCRD3 .INT. 777777777B) .SHL. 30) .UN.
3558      2      ((NWCRD4 .INT. 777777777B)
3559      KBUFSC(M+3) = ((NWCRD5 .INT. 777777777B) .SHL. 30) .UN.
3560      2      ((NWCRD6 .INT. 777777777B)
3561      285 M = M + 3
3562
3563      C R VALUES.
3564
3565      M = 60A

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```

3566      DO 302 N = 1, LSFPR
3567      302 NWORD(N) = RVALUE(N) * 10 0.0
3568      IGO = 1
3569
3570      304 N = 0
3571      DO 306 K = 1, 32
3572      M = K + 1
3573      KBUFSC(M) = ((NWORD(N+1) .INT. 77777) .SHL. 45) .UN.
3574      2      ((NWORD(N+2) .INT. 77777) .SHL. 30) .UN.
3575      3      ((NWORD(N+3) .INT. 77777) .SHL. 15) .UN.
3576      4      (NWORD(N+4) .INT. 77777)
3577      306 N = N + 4
3578      GO TO (310, 320, 325), IGO
3579
3580      C . VALUES.
3581
3582      310 M = 640
3583      DO 312 N = 1, LSFPR
3584      312 NWORD(N) = CLVALUE(N) * 100 0.0
3585      IGO = 2
3586      GO TO 304
3587
3588      C MAGNETIC LATITUDE VALUES.
3589
3590      320 M = 672
3591      DO 324 N = 1, LSFPR
3592      NWORD(N) = DMGLAT(N) * 100 0.0
3593      IF (NWORD(N)) 322, 324, 324
3594      322 NWORD(N) = -NWORD(N)
3595      NWORD(N) = (NWORD(N) .INT. 37777) .UN. (400000)
3596      324 CONTINUE
3597      IGO = 3
3598      GO TO 304
3599      325 CONTINUE
3600
3601      C MAIN BODY COMMUTATOR ANALOG WORDS (FIRST 12).
3602
3603      M = 704
3604      N = 0
3605      DO 332 L = 1, 2
3606      KBUFSC(M+1) = ((NMBAN(N+1, 1) .INT. 377) .SHL. 48) .UN.
3607      2      ((NMBAN(N+2, 1) .INT. 377) .SHL. 36) .UN.
3608      3      ((NMBAN(N+3, 1) .INT. 377) .SHL. 24) .UN.
3609      4      ((NMBAN(N+4, 1) .INT. 377) .SHL. 12) .UN.
3610      5      (NMBAN(N+5, 1) .INT. 377)
3611      M = M + 1
3612      332 N = N + 5
3613      KBUFSC(M+1) = ((NMBAN(N+1, 1) .INT. 377) .SHL. 48) .UN.
3614      2      ((NMBAN(N+2, 1) .INT. 377) .SHL. 36)
3615
3616      C JEEP COMMUTATOR ANALOG WORDS (32).
3617
3618      M = 708
3619      N = 0
3620      DO 342 L = 1, 5
3621      KBUFSC(M+1) = ((NCPAN(N+1) .INT. 377) .SHL. 48) .UN.
3622      2      ((NCPAN(N+2) .INT. 377) .SHL. 36) .UN.
3623      3      ((NCPAN(N+3) .INT. 377) .SHL. 24) .UN.
3624      4      ((NCPAN(N+4) .INT. 377) .SHL. 12) .UN.
3625      5      (NCPAN(N+5) .INT. 377)
3626      M = M + 1
3627      342 N = N + 5
3628      KBUFSC(M+1) = ((NCPAN(N+1) .INT. 377) .SHL. 48) .UN.
3629      2      ((NCPAN(N+2) .INT. 377) .SHL. 36)
3630
3631      C SUB COMMUTATORS 2 AND 3 DATA (36 WORDS ADDED ON END OF S/C DATA RECORD).
3632
3633      M = 716
3634      N = 0
3635      DO 352 L = 1, 7
3636      KBUFSC(M+1) = ((NSUB23(N+1) .INT. 377) .SHL. 48) .UN.
3637      2      ((NSUB23(N+2) .INT. 377) .SHL. 36) .UN.
3638      3      ((NSUB23(N+3) .INT. 377) .SHL. 24) .UN.
3639      4      ((NSUB23(N+4) .INT. 377) .SHL. 12) .UN.

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3640      5      (NSUB23(N+1) .INT. 3778)
3641      M = M + 1
3642      352 N = N + 5
3643      KBUFSC(M+1) = ((NSUB23(N+1) .INT. 3778) .SHL. 48)
3644
3645      C WRITE THE NEW RECORD ON THE MERGED TAPE.
3646
3647      IF (NOMEPC) 402, 402, 404
3648      402 M = 724
3649      BUFFER OUT (NU, 1) (KBUFS(1), KBUFS(724))
3650      404 CONTINUE
3651
3652      IF (INRSCC) 414, 414, 412
3653      412 CALL WSCDATA
3654      414 CONTINUE
3655
3656
3657      C END THE MERGED TAPE.
3658
3659      IF (NURECD - LURECD) 424, 422, 422
3660      422 WRITE (NT, 1200) NURECD
3661      PRINT 1202, NURECD
3662      END FILE NU
3663      END FILE NU
3664      END FILE NU
3665      UNLOAD NU
3666      CALL ASSIGN (NU, 1, 5RNEXIU)
3667      WRITE OUTPUT TAPE 37, 1204
3668      424 CONTINUE
3669
3670      1201 FORMAT (///31H THE MERGED TAPE HAS ENDED WITH, I6, 9H RECORDS.///)
3671      1202 FORMAT ( / 31H THE MERGED TAPE HAS ENDED WITH, I6, 9H RECORDS.///)
3672      1204 FORMAT (44H DEQ - TAKEOVER UNLOADED MERGE TAPE (AB) AND,
3673      2          25 HANG THE N XT MERGE TAPE//)
3674
3675      C SET PLOTTING APPAYS TO ZERO.
3676
3677      ILAST = (.LOC. ICOM9(2)) - (.LOC. ICOM8(1))
3678      DO 502 I = 1, ILAST
3679      502 ICOM8(I) = 0
3680
3681      C CONTINUE PROCESSING OF EXIT.
3682
3683      C
3684      IF (SENSE SWITCH 1) 520, 512
3685      512 RETURN
3686
3687      521 WRITE OUTPUT TAPE NT, 110;
3688      PRINT 1100
3689
3690      1101 FORMAT (///// 44H EXECUTION TERMINATED BY SENSE SWITCH 1 DOWN)
3691
3692      UNLOAD NS
3693      IF (IPROPP) 524, 524, 522
3694      522 UNLOAD NO
3695      524 IF (IPRMAG) 528, 528, 526
3696      525 UNLOAD NM
3697      523 END FILE NU
3698      END FILE NU
3699      END FILE NU
3700      UNLOAD NU
3701      CALL EXIT
3702
3703      END
3704      ( 3684) = MAPPING TWO BRANCH IF APPEARS
3705
3706      SUBROUTINE WSCDATA
3707
3708      USE MERG10
3709
3710      C PRINT MERGED TAPE DATA.
3711
3712      C CONTROL WORDS.
3713
3714

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2715 IF (IHRSP1) 350, 350, 202
2716 202 WRITE (NT, 1100) NURECD
2717 WRITE OUTPUT TAPE NT, 1101
2718 WRITE (NT, 1104) ACRBIT
2719 WRITE (NT, 1106) NSYEAR
2720 WRITE (NT, 1108) NSDAY
2721 WRITE (NT, 1110) NSRUN
2722 WRITE (NT, 1112) NSPEEL
2723 WRITE (NT, 1114) NSFILE
2724 WRITE (NT, 1116) NSRECD
2725 WRITE (NT, 1118) NKILC
2726 WRITE (NT, 1120) LSYNC
2727 WRITE (NT, 1122) NSSTAT
2728 WRITE (NT, 1124) NURECD
2729 WRITE (NT, 1126) NKILC
2730 WRITE (NT, 1128) NSYNC
2731 WRITE (NT, 1130) NMON
2732 WRITE (NT, 1132) NSDAY
2733 WRITE (NT, 1134) NSDAY
2734 WRITE (NT, 1136) NSHIFT
2735 WRITE (NT, 1138) IDATE(4)
2736 WRITE (NT, 1140) IDATE(3)
2737 WRITE (NT, 1142) IDATE(6)
2738
2739 C SELECTED ATTITUDE-CREIT DATA.
2740
2741 WRITE OUTPUT TAPE NT, 115
2742 WRITE (NT, 1152) (ORBCAT(1, 1), N=1, 4)
2743 WRITE (NT, 1154) (ORBCAT(1, 2), N=1, 4)
2744 WRITE (NT, 1156) (ORBCAT(1, 3), N=1, 4)
2745 WRITE (NT, 1158) (ORBCAT(1, 4), N=1, 4)
2746 WRITE (NT, 1160) (ORBCAT(1, 5), N=1, 4)
2747 WRITE (NT, 1162) (ORBCAT(1, 6), N=1, 4)
2748 WRITE (NT, 1164) (ORBCAT(1, 7), N=1, 4)
2749 WRITE (NT, 1166) (ORBCAT(1, 8), N=1, 4)
2750 WRITE (NT, 1168) (ORBCAT(1, 9), N=1, 4)
2751 WRITE (NT, 1170) (ORBCAT(1, 10), N=1, 4)
2752 WRITE (NT, 1172) (ORBCAT(1, 11), N=1, 4)
2753 WRITE (NT, 1174) (ORBCAT(1, 12), N=1, 4)
2754 WRITE (NT, 1176) (ORBCAT(1, 13), N=1, 4)
2755 WRITE (NT, 1178) (ORBCAT(1, 14), N=1, 4)
2756 WRITE (NT, 1180) (ORBCAT(1, 15), N=1, 4)
2757 WRITE (NT, 1182) (ORBCAT(1, 16), N=1, 4)
2758 WRITE (NT, 1184) (ORBCAT(1, 17), N=1, 4)
2759
2760 WRITE (NT, 1202) (ORBCAT(1, 17), N=1, 4)
2761 WRITE (NT, 1204) (ORBCAT(1, 18), N=1, 4)
2762 WRITE (NT, 1206) (ORBCAT(1, 19), N=1, 4)
2763 WRITE (NT, 1208) (ORBCAT(1, 20), N=1, 4)
2764 WRITE (NT, 1210) (ORBCAT(1, 21), N=1, 4)
2765 WRITE (NT, 1212) (ORBCAT(1, 22), N=1, 4)
2766 WRITE (NT, 1214) (ORBCAT(1, 23), N=1, 4)
2767 WRITE (NT, 1216) (ORBCAT(1, 24), N=1, 4)
2768 WRITE (NT, 1218) (ORBCAT(1, 25), N=1, 4)
2769
2770 WRITE (NT, 1220) (ORBCAT(1, 26), N=1, 4)
2771 DO 204 K = 2, 9
2772 204 WRITE (NT, 1222) K, (ORBCAT(1, K+25), N=1, 4)
2773 WRITE (NT, 1224) (ORBCAT(1, 35), N=1, 4)
2774 DO 206 K = 2, 9
2775 206 WRITE (NT, 1222) K, (ORBCAT(1, K+34), N=1, 4)
2776 WRITE (NT, 1226) (ORBCAT(1, 44), N=1, 4)
2777 DO 208 K = 2, 9
2778 208 WRITE (NT, 1222) K, (ORBCAT(1, K+43), N=1, 4)
2779
2780 C MILLISECONDS AND TIME VALUES.
2781
2782 WRITE OUTPUT TAPE NT, 125
2783 DO 212 N = 1, LSFR
2784 212 WRITE (NT, 1252) N, MILSEC(N), SECDAY(N), NSHOUR(N), NSMIN(N),
2785 2 SECON(N)
2786
2787 C DETECTOR DATA.
2788

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SEGONDS
LOCAL SE
R
L
MAG LAT
PHI GSE
THETA
PHI GSM
THETA
RIGHT AS
DECLIN
LAT
LCNG
PACCLE
B/EQ
B
FLAG
PCBIT V
SCLAR V
B BODY V
TGEI
TGSE
TGSF

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2789      WRITE (NT, 1272) CPATE
2790      DO 222 I = 1, 7
2791      DO 222 K = 1, LCYCLE
2792 222 WRITE (NT, 1274) LABDET(I, K,
2793      ?      (NEXDAT(I,J,K),J=1,4), (EXPDAT(I,J,K),J=1,4)
2794
2795      DO 224 K = 1, LCYCLE
2796 224 WRITE (NT, 1276) LABDET(8, K,
2797      ?      NEXDAT(8,1,K), NEXDAT(8,2,K), EXPDAT(8,1,K), EXPDAT(8,3,K)
2798      WRITE OUTPUT TAPE NT, 127
2799
2800      DO 226 I = 9, 15
2801      DO 226 K = 1, LCYCLE
2802 226 WRITE (NT, 1278) LABDET(I, K, NEXDAT(I,1,K), EXPDAT(I,1,K)
2803      WRITE OUTPUT TAPE NT, 127
2804
2805      DO 228 I = 16, 21
2806      DO 228 K = 1, LCYCLE
2807 228 WRITE (NT, 1274) LABDET(I, K,
2808      ?      (NEXDAT(I,J,K),J=1,4), (EXPDAT(I,J,K),J=1,4)
2809
2810      DO 230 K = 1, LCYCLE
2811 230 WRITE (NT, 1276) LABDET(22, K,
2812      ?      NEXDAT(22,1,K), NEXDAT(22,3,K), EXPDAT(22,1,K), EXPDAT(22,3,K)
2813      WRITE OUTPUT TAPE NT, 127
2814
2815      DO 232 I = 23, 28
2816      DO 232 K = 1, LCYCLE
2817 232 WRITE (NT, 1278) LABDET(I, K, NEXDAT(I,1,K), EXPDAT(I,1,K)
2818      WRITE OUTPUT TAPE NT, 127
2819
2820      DO 234 K = 1, LCYCLE
2821 234 WRITE (NT, 1276) LABDET(29, K,
2822      ?      NEXCAT(29,1,K), NEXCAT(29,3,K), EXPDAT(29,1,K), EXPDAT(29,3,K)
2823
2824      DO 236 I = 30, 34
2825      DO 236 K = 1, LCYCLE
2826 236 WRITE (NT, 1278) LABDET(I, K, NEXDAT(I,1,K), EXPDAT(I,1,K)
2827      WRITE OUTPUT TAPE NT, 127
2828
2829      DO 238 I = 35, 36
2830      DO 238 K = 1, LCYCLE
2831 238 WRITE (NT, 1276) LABDET(I, K,
2832      ?      NEXDAT(I,1,K), NEXDAT(I,3,K), EXPDAT(I,1,K), EXPDAT(I,3,K)
2833
2834 C DPER SCAN AND SHAFT DATA.
2835
2836      WRITE OUTPUT TAPE NT, 129
2837      DO 252 N = 1, LSFFR
2838 252 WRITE (NT, 1292) N, SCAN(N), NANGLE(2,N), NANGLE(3,N)
2839
2840 C MAGNETIC FIELD FLUCTUATIONS, ELECTRIC FIELD SENSOR.
2841
2842      WRITE OUTPUT TAPE NT, 130
2843      WRITE (NT, 1302) NBAC, BAC
2844      WRITE (NT, 1304) NEFC, EFC
2845
2846 C COLEMAN'S MAGNETOMETER DATA.
2847
2848      WRITE OUTPUT TAPE NT, 131
2849      DO 262 N = 1, LSFFR
2850 262 WRITE (NT, 1312) N, (PMGS:(1,M,N),M=1,4)
2851
2852 C R, L, AND MAG LAT VALUES.
2853
2854      WRITE OUTPUT TAPE NT, 132
2855      DO 272 M = 1, LSFFR
2856 272 WRITE (NT, 1322) M, RVALU(M), GLVALL(M), DMGLAT(M)
2857
2858 C MAIN BODY COMPUTER ANALOG WORDS (FIRST 12).
2859
2860      WRITE OUTPUT TAPE NT, 133
2861      DO 282 L = 1, LMECHD
2862 282 WRITE (NT, 1332) L,

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8

128

12

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7863
7864 C JPEP COMMUTATOR ANALOG WORDS (32).
7865
7866 WRITE OUTPUT TAPE NT, 134'
7867 DO 292 L = 1, LCPWC 32
7868 292 WRITE (NT, 1342) L, NDFAN(L)
7869
7870 C SUB COMMUTATORS 2 AND 3 DATA (36 WORDS ADDED ON END OF ORIG. S/C DATA RECORD).
7871
7872 WRITE OUTPUT TAPE NT, 136
7873 DO 302 L = 1, LSC23 36
7874 302 WRITE (NT, 1352) L, NSUB23(L)
7875
7876 C PRINT MERGED FFCCWD IN OCTAL
7877
7878 350 IF (IKFSC2) 400, 400, 352
7879 352 WRITE OUTPUT TAPE NT, 140
7880 WRITE OUTPUT TAPE NT, 140'
7881 DO 354 N = 1, 4 CONTROL
7882 354 WRITE (NT, 1404) N, KBUFS(N)
7883
7884 WRITE OUTPUT TAPE NT, 140'
7885 I = 4 A-C
7886 J = 34
7887 K = 64
7888 L = 94
7889 DO 355 N = 1, 30
7890 I = I + 1
7891 J = J + 1
7892 K = K + 1
7893 L = L + 1
7894 355 WRITE (NT, 1404) I, KBUFS(I), J, KBUFS(J),
7895 2 K, KBUFS(K), L, KBUFS(L)
7896
7897 WRITE OUTPUT TAPE NT, 141 MILLISEC
7898 I = 124
7899 J = 140
7900 K = 156
7901 L = 172
7902 DO 356 N = 1, 16
7903 I = I + 1
7904 J = J + 1
7905 K = K + 1
7906 L = L + 1
7907 356 WRITE (NT, 1404) I, KBUFS(I), J, KBUFS(J),
7908 2 K, KBUFS(K), L, KBUFS(L)
7909
7910 WRITE OUTPUT TAPE NT, 141' DET DATA
7911 I = 134
7912 J = 220
7913 K = 252
7914 L = 284
7915 DO 360 N = 1, 32
7916 I = I + 1
7917 J = J + 1
7918 K = K + 1
7919 L = L + 1
7920 360 WRITE (NT, 1404) I, KBUFS(I), J, KBUFS(J),
7921 2 K, KBUFS(K), L, KBUFS(L)
7922
7923 WRITE OUTPUT TAPE NT, 141' ANGLE
7924 I = 316
7925 J = 356
7926 K = 384
7927 DO 362 N = 1, 24
7928 I = I + 1
7929 J = J + 1
7930 K = K + 1
7931 362 WRITE (NT, 1420) I, KBUFS(I), J, KBUFS(J), K, KBUFS(K)
7932 DO 364 I = 345, 356
7933 364 WRITE (NT, 1422) I, KBUFS(I)
7934
7935 WRITE OUTPUT TAPE NT, 142' ACC ON
7936 I = 413

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7937      J = 414
7938      K = 415
7939      L = 416
7940      WRITE (NT, 1400) I, KBUFSC(I), J, KBUFSC(J),
7941      2      K, KBUFSC(K), L, KBUFSC(L)
7942
7943      WRITE OUTPUT TAPE NT, 1424
7944      I = 416
7945      J = 464
7946      K = 512
7947      L = 560
7948      DO 7948 N = 1, 48
7949      I = I + 1
7950      J = J + 1
7951      K = K + 1
7952      L = L + 1
7953 165 WRITE (NT, 1400) I, KBUFSC(I), J, KBUFSC(J),
7954      2      K, KBUFSC(K), L, KBUFSC(L)
7955
7956      WRITE OUTPUT TAPE NT, 1434
7957      I = 604
7958      J = 640
7959      K = 672
7960      DO 7960 N = 1, 32
7961      I = I + 1
7962      J = J + 1
7963      K = K + 1
7964 165 WRITE (NT, 1420) I, KBUFSC(I), J, KBUFSC(J), K, KBUFSC(K)
7965
7966      WRITE OUTPUT TAPE NT, 1434
7967      I = 704
7968      J = 708
7969      K = 716
7970      DO 7970 N = 1, 4
7971      J = J + 1
7972      K = K + 1
7973      I = I + 1
7974 170 WRITE (NT, 1420) I, KBUFSC(I), J, KBUFSC(J), K, KBUFSC(K)
7975
7976      J = 712
7977      K = 720
7978      DO 7978 N = 1, 4
7979      J = J + 1
7980      K = K + 1
7981 172 WRITE (NT, 1440)      J, KBUFSC(J), K, KBUFSC(K)
7982
7983      403 RETURN
7984
7985 1101 FORMAT (1H1// 30H MERGED SPACECRAFT DATA RECORD, I5)
7986 1102 FORMAT (/ 11H CONSTANTS.)
7987 1104 FORMAT (/ 20H NORBIT ORBIT , I7)
7988 1105 FORMAT (/ 20H NSYEAR YEAR , I7)
7989 1106 FORMAT (/ 20H NSDAY DAY , I7)
7990 1110 FORMAT (/ 20H NSRUN RUN NO. , I7)
7991 1112 FORMAT (/ 20H NSREEL REEL NO. , I7)
7992 1114 FORMAT (/ 20H NSFILE FILE NO. , I7)
7993 1115 FORMAT (/ 20H NSREC'D ORIG. RECORD, I7)
7994 1116 FORMAT (/ 20H NKILO ORIG. KR , I7)
7995 1121 FORMAT (/ 20H LSYNC ORIG. SYNC , I7)
7996 1122 FORMAT (/ 20H NSSTAT STATION , I7)
7997 1124 FORMAT (/ 20H NURECD MRG RECD NO, I7)
7998 1125 FORMAT (/ 20H NKILO MRG KR RATE, I7)
7999 1126 FORMAT (/ 20H NSYNC MRG SYNC , I7)
8000 1130 FORMAT (/ 20H NNMCM NUM OF MON , I7)
8001 1132 FORMAT (/ 20H NSCFY DAY OF MON , I7)
8002 1134 FORMAT (/ 20H NLDAY LAUNCH DAYS, I7)
8003 1135 FORMAT (/ 20H NSLIFT LIFTS , I7)
8004 1138 FORMAT (/ 20H NCCAY DAY , I7)
8005 1141 FORMAT (/ 20H NCMON CAL. MONTH , I7)
8006 1142 FORMAT (/ 20H NCYEAR CAL. YEAR , I7)
8007
8008 1151 FORMAT (1H1// 30H SELECTED ATTITUDE-ORBIT DATA.)
8009 1152 FORMAT (/ 18H SECONDS , 4F12.3)
8010 1154 FORMAT (/ 18H LOCAL SECONDS , 4F12.3)

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4011 1155 FORMAT ( 1PH P , 4F12.3)
4012 1154 FORMAT ( 1PH L , 4F12.3)
4013 1160 FORMAT ( 1PH MAGNETIC LATITUDE, 4F12.3)
4014 1152 FORMAT ( 1PH PHI GSE , 4F12.3)
4015 1164 FORMAT ( 1PH THETA , 4F12.3)
4016 1165 FORMAT ( 1PH PHI GSM , 4F12.3)
4017 1164 FORMAT ( 1PH THETA , 4F12.3)
4018 1170 FORMAT ( 1PH RIGHT ASCENSION , 4F12.3)
4019 1172 FORMAT ( 1PH DECLINATION , 4F12.3)
4020 1174 FORMAT ( 1PH LATITUDE , 4F12.3)
4021 1175 FORMAT ( 1PH LONGITUDE , 4F12.3)
4022 1173 FORMAT ( 1PH PACCLE ANGLE , 4F12.3)
4023 1180 FORMAT ( 1PH P/E0 , 4F12.3)
4024 1182 FORMAT ( 1PH P , 4F12.3)
4025 1184 FORMAT ( 1PH FLAG , 4(7X, 05))
4026
4027 1202 FORMAT ( / 1PH POSITION VECTOR 1, 4F12.3)
4028 1204 FORMAT ( 1PH 2, 4F12.3)
4029 1205 FORMAT ( 1PH 3, 4F12.3)
4030 1206 FORMAT ( 1PH SOLAR VECTOR 1, 4F12.0)
4031 1210 FORMAT ( 1PH 2, 4F12.0)
4032 1212 FORMAT ( 1PH 3, 4F12.0)
4033 1214 FORMAT ( 1PH R ACCE VECTOR 1, 4F12.7)
4034 1215 FORMAT ( 1PH 2, 4F12.7)
4035 1216 FORMAT ( 1PH 3, 4F12.7)
4036 1220 FORMAT ( / 1PH TGFI 1, 4F12.7)
4037 1222 FORMAT ( 1PH 11, 4F12.7)
4038 1224 FORMAT ( 1PH TGSE 1, 4F12.7)
4039 1225 FORMAT ( 1PH TGSM 1, 4F12.7)
4040
4041 1250 FORMAT (1H1// 11H TIME DATA// 6H FRAME,
4042 2 5H MILLISECONDS DAY SECONDS HOUR MINUTES SECONDS//)
4043 1252 FORMAT (1X, I5, I13, F13.1, 219, F9.3)
4044
4045 1270 FORMAT (/)
4046 1272 FORMAT (1H1// 15H DETECTOR DATA., 10X, 15H RATE FACTOR = , F7.3//
4047 2 25X, 8H INTEGER, 30X, 11H COUNTS/SEC/
4048 3 1PH DET CYCLE,
4049 4 7X, 1H1, 7X, 1H2, 7X, 1H3, 7X, 1H4,
4050 5 10X, 1H1, 10X, 1H2, 10X, 1H3, 10X, 1H4//)
4051 1274 FORMAT (1X, A3, 2X, I2, 2, 41R, 4F11.2)
4052 1275 FORMAT (1X, A3, 2X, I2, 2, 21R, 15X, 2F11.2)
4053 1276 FORMAT (1X, A3, 2X, I2, 2, 1R, 24X, F11.2)
4054
4055 1280 FORMAT (1H1// 3PH DETECTOR DATA. RATE FACTOR = , F8.3//6H FRAME,
4056 2 55H DET 1 DET 2 DET 3 DET 4 DET 5//)
4057 1282 FORMAT (1X, I5, 5F11.2)
4058
4059 1290 FORMAT (1H1// 21H SMART AND SCAN DATA// 6H FRAME,
4060 2 27H SCAN NSHNSIN NSHNSCOS//)
4061 1292 FORMAT (1X, I5, F9.2, 219)
4062
4063 1300 FORMAT (////// 13H ADD ON DATA.//)
4064 1302 FORMAT (3PH AC MAGNETIC FIELD FLUCTUATION, I11, F13.3)
4065 1304 FORMAT (2H ELECTRIC FIELD SENSOR, 8X, I11, F13.3)
4066
4067 1310 FORMAT (1H1// 26H COLEMAN MAGNETOMETER DATA.//
4068 2 6H FRAME, 6X, 3H 8X, 9X, 3H 9Y, 9X, 3H 8Z, 9X, 3H 9Z//)
4069 1312 FORMAT (1X, I5, 4F12.3)
4070
4071 1320 FORMAT (1H1// 36H R, L, AND MAGNETIC LATITUDE VALUES.//
4072 2 6H FRAME, 7X, 2H R, 10, 2H L, 6X, 8H MAG LAT//)
4073 1322 FORMAT (1X, I5, 3F12.3)
4074
4075 1330 FORMAT (1H1// 35H MAIN BODY COMMUTATOR ANALOG WORDS.//
4076 2 35H NO. FUNCTION INTEGER VALUE//)
4077 1332 FORMAT (1X, I5, 4X, 6X, I10, F10.2)
4078
4079 1340 FORMAT ( / 34H CPEP COMMUTATOR ANALOG WORDS.//
4080 2 34H NO. FUNCTION INTEGER VALUE//)
4081 1342 FORMAT (1X, I5, 4X, 6X, I10, F10.2)
4082
4083 1350 FORMAT (1H1// 38H SUB COMMUTATORS 2 AND 3 ANALOG WORDS.//
4084 2 2PH NO. CALIBRATION, 15X, 1PH INTEGER VALUE//)

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4085 1352 FORMAT (1X, I5, 5X, 24X, F10, F10.2)
4086
4087 1493 FORMAT (1H1// 43+ S/C DATA RECCRD IN OCTAL. (60 BIT WORDS) //)
4088 1402 FORMAT ( // 21+ CONTROL WORDS //)
4089 1404 FORMAT (1X, I6, 2X, C20)
4090 1405 FORMAT ( // 21H ATTITUDE-ORBIT DATA //)
4091 1406 FORMAT (1X, I6, 2X, 020, I7, 2X, 020, I7, 2X, 020, I7, 2X, 020)
4092 1411 FORMAT (1H1// 21H MILLISECONDS //)
4093 1414 FORMAT ( // 21H DETECTOR DATA //)
4094 1418 FORMAT (1H1// 8+ 5H SCAN, 24X, 11H SHAFT SINE,
4095 2 19X, 13H SHAFT COSINE//)
4096 1421 FORMAT (1X, I6, 2X, 020, I7, 2X, 020, I7, 2X, 020)
4097 1422 FORMAT (1X, I6, 2X, C20)
4098 1424 FORMAT ( // 12+ ANGLE ON DATA//)
4099 1428 FORMAT (1H1// 13+ MAGNETOMETER//)
4100 1432 FORMAT (1H1// 8X, 2H P, 27X, 2H L, 27X, 8H MAG LAT//)
4101 1435 FORMAT ( // 8X, 3H MS, 16X, 5H DEEP, 24X, 8H SUB 2-3//)
4102 1441 FORMAT (20X, I7, 2X, 020, I7, 2X, 020)
4103
4104
4105
4106
4107
4108
4109
4110
4111
4112
4113
4114
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4200

```

END

Appendix C

4	SUBROUTINE MIN20		
5	CLICHE TWENTY		
6			
7			
8			
9	PARAMETER (MBTPWD = 60)	60	
10	PARAMETER (MBTPCH = 6)	6	
11	PARAMETER (MCHPWC = MBTPWD / MBTPCH)	10	
12			
13	PARAMETER (MURCHD = 724)	724	
14			
15	PARAMETER (LSFPR = 128)	128	
16	PARAMETER (LCYCLE = 8)	8	
17	PARAMETER (LOPC = 4)	4	
18	PARAMETER (LOPR = LOPC * LCYCLE)	32	
19	PARAMETER (LFPC = LSFPR / LCYCLE)	16	
20	PARAMETER (LOETWD = 5)	5	
21	PARAMETER (LOET = 36)	36	
22	PARAMETER (LMBWD = 16)	16	
23	PARAMETER (LOPWD = 32)	32	
24	PARAMETER (LMBCHD = 12)	12	
25	PARAMETER (LSC23 = 36)	36	
26			
27	PARAMETER (LPOINT = 256)	256	
28	PARAMETER (LASP = 2048)	2048	
29			
30	COMMON /MINCOM/ MDFILE(94)	94	
31	COMMON /SCTAPE/ NVAULT		
32	COMMON NC, NG, NP, NR, NT, NU	6	
33			
34	COMMON ICOM1(2)	2	
35	COMMON RATE1K	1	
36	COMMON BITRATE(3)	3	
37	COMMON MBITRT(8)	8	
38	COMMON MBITRT(2)	2	
39	COMMON PLTIME	1	
40	COMMON DSLOPE(2,3)	6	
41	COMMON IAVDET(LOET)	36	
42	COMMON NPWR2(15)	15	
43	COMMON ICLOC1, ICLOC2, MONTH, IYEAR, JYEAR, IDATE(16)	11	
44	COMMON NCLOC1, NCLOC2, NCLOC3, NCLOC(4)	7	
45	COMMON CHOURS, HTHDAY		
46	COMMON LMONTH(12), NMONTHTS(12), NDAYCT(5,12)	132	
47	COMMON STATION(61,2)	122	
48	COMMON KLOBIT(8,3)	24	
49	COMMON LABDET(LOET)	36	
50	COMMON IDPLOT(19,3)	57	
51	COMMON TFRAM(3,4), TWORD(3,4), HCDT(LOET,3)	132	
52	COMMON IDDET(LOET,10), JDDT(LOET,16)	936	
53	COMMON ODDT(2,LCET,3), PDDT(2,LOET,3), QDDT(2,3)	438	
54	COMMON MCLAB(12)	12	
55	COMMON OPLAB(LOPWC)	32	
56	COMMON S23LAB(LSC23,3)	108	
57	COMMON YTICK(61)	61	
58	COMMON YLAB(8,6)	48	
59	COMMON YCPS(7)	7	
60	COMMON IPPRH, IFLOTB(7)	8	
61	COMMON NATBEG, NOTIME(5,18), NOTIME(5,18)	181	
62	COMMON ORBDAT(19,18), ATTDAT(19,18)	684	
63	COMMON IPLOT(13), SLOTL(2,3,2), VLDT(2,8,47)		
64	COMMON IPLOT(13), SLOTR(2,3,2), VRDAT(18,47)		
65	COMMON BBTIME		
66			
67	COMMON LSDT, LSBKG, LEFLD	3	
68	COMMON CRATE, KILO, NKILO	3	
69	COMMON LYEAR, TLM, HTLM, TCDAY, LCDAY		
70	COMMON DEGRAD, RADDEG, REARTH	3	
71	COMMON DGMAGE, DGMAGN, ROMAGN, COSMGN, SINMGN	5	
72	COMMON XPMIN, XPMAX, YPMIN, YPMAX, YPHIO	5	
73	COMMON XMN, XMAX, YMN, YMAX	4	
74	COMMON THMIN, THMAX, WMIN, WMAX, IDMIN, NZERO	6	
75	COMMON XLMIN, XLMAX, YLMIN, YLMAX, YLNID, YLQUA	6	
76	COMMON YLCPS, YLCLK, YLMIN, YLASP	4	
77	COMMON YLOEL, YLWDG, YLADG, XLOEG, XNTIC, XXTIC	6	

78	COMMON YLTIC, YLIII, YLSEC, XSSEC, XESEC	5
79	COMMON YDEGD, YDEGH, YDEGA	3
80	COMMON XDTB, XDTT	2
81	COMMON XMP1, XMP2, XMP3, XMP4	4
82	COMMON XMP1, XMP2, XMP3, XMP4, XMP5, XMP6, XMP7, XMP8, XMP9	9
83	COMMON YML1, YML2, YML3, YML4, YML5, YML6, YML7, YML8, YML9	9
84	COMMON XMTD, XMTB, XMTT, YMTD, YMTL, YMTR, YMLG, YMLC, YMLL	9
85	COMMON YEP1, YEP2, YEP3, YEP4, YEL1, YEL2, YEL3, YEL4	8
86	COMMON IPLOT1, IPLOT2, IPLOT3, IPLOT4, IPLOT5, IPLOT6, NPDATA	7
87	COMMON NDD80, LMACH	2
88	COMMON YAL1, YAL2, YAL3, YAL4, XAL1, XAL2, XAL3	7
89	COMMON YAP1, YAP2, YAP3, YAP4, XAP1, XAP2, XAP3	7
90	COMMON YATL(19), XATL(13), YAC(19), YAO(13), YAL(3)	67
91		
92	COMMON ICOM2(2)	2
93	COMMON MSYNC, NSYNC, HMBID, NSHIFT, NPLCUT, IUDONE	6
94	COMMON LUNBEG, LUNEND, IDSKIP, NOGRID	4
95	COMMON IWRSCD, IWRSC1, IWRSC2, IWRSC3, IWRSC4, IWRSC5, IWRSC6	7
96	COMMON IPLOTX(19), IPLOTY(19), IPLOTA(19)	57
97	COMMON MSYEAR, NMON, NSMON, NSDAY, NSDAY, NPDAY	7
98	COMMON NSRUN, NSREEL, NSFILE, NSRECD, NSSTAT	5
99	COMMON NURECD, NURECD	2
100	COMMON NUREIT	1
101	COMMON STRTIM, ENDTIM, MSBEG, MSEND	4
102	COMMON NPAGE, NLINE, NMPAGE	3
103	COMMON IDTAPE, IDPERT	2
104	COMMON IGTAPE, LGRECC, NGRECD, ICASPT	4
105		
106	COMMON ICOM3(2)	2
107	COMMON JUNDAT(MURCWD)	724
108		
109	COMMON ICOM4(2)	2
110	COMMON NDAY, NCMON, NCMON	
111	COMMON NORDAT(4,17), NOFLAG(4), ATODAT(4,52)	280
112	COMMON MILEC(LSFPR)	128
113	COMMON NDETEC(1640)	640
114	COMMON LEXDAT(LOET,LOPR), NEXDAT(LOET,LOPR), EXPDAT(LOET,LOPR)	3456
115	COMMON NSCAN(130), NSHIN(130), NSHOS(130), NWORD(130)	520
116	COMMON SCAN(LSFPR)	128
117	COMMON NBAC, NEFC, BAC, EFO	4
118	COMMON NCOLE(3,LSFPR), BCOLE(4,LSFPR)	896
119	COMMON DRVALU(LSFPR), DLVALU(LSFPR), DMGLAT(LSFPR)	384
120	COMMON NMBAN(12), VMBAN(12), NOPAN(32), VOPAN(32)	88
121	COMMON NSUB23(36), VSUB23(36)	72
122		
123	COMMON ICOM5(2)	2
124	COMMON SECDAY(LSFPR), SCHINS(LSFPR), SCHOUR(LSFPR)	384
125	COMMON NSHOUR(LSFPR), NSHIN(LSFPR), SECONS(LSFPR)	384
126	COMMON SHAFT(LSFPR)	128
127	COMMON DIRECT(LSFPR), THETAB(LSFPR)	256
128	COMMON DETHIN(LOET,LOPR), DTHINS(LOET,LOPR), DTHOUR(LOET,LOPR)	3456
129	COMMON ENDMIN(LSFPR), ASPMIN(LSFPR), ASHOUR(LSFPR)	384
130	COMMON TWODAT(LOET,16)	576
131		
132	COMMON ICOM6(2)	2
133	COMMON NOPT, SECAOR(32), VWINDC(32)	65
134	COMMON GSEPHI(32), GSETHE(32), GSPHI(32), GSMTHE(32)	128
135	COMMON SOEP(32), BMGSC(7,4,32)	928
136		
137	COMMON ICOM7(2)	2
138	COMMON AORDAT(6,52), NOFLAG(6)	330
139		
140	COMMON R(10), RN(4), U(4), V(4), RATIO	23
141	COMMON POSITY(4), SOLARV(4), BBODY(4)	12
142	COMMON XU(4), XG(4), YU(4), YG(4), ZU(4), ZG(4), OU(4), OG(4)	32
143	COMMON RG(4), RO(4), BG(4), BO(4), BA(4), BO(4)	24
144	COMMON TGEI(9), TGSE(9), TGSM(9), TGMS(9)	36
145		
146	COMMON ICOM(2)	2
147	COMMON JSGET, KASP, NEFLO, ICHOUR, NPOINT(LOET)	40
148	COMMON IBEG, IRST, LAST, IGOP, IDERR, NOGOOD	6
149	COMMON SCPATH, LPATH, NLBEG, NLEND, NRBEG, NREND, LROEL	7
150	COMMON PLVHIN, PLVMAX, PRVHIN, PRVMAX, PHLHIN, PHLMAX	6
151	COMMON LEGEND(12,16), SEGEN(12)	34

152	COMMON SCTIME(LPOINT), EMTIME(64)	320
153	COMMON YVAL(LPOINT), TIME(LPOINT), BVAL(LPOINT), XVAL(LPOINT)	1024
154	COMMON ICOM9(2)	2
155		
156	LCM (LCBUF)	
157	COMMON /LCBUF/ ILNDAT(MURCHD), BUFTAP(2000)	2724
158		
159	LCM (LPLOT)	
160	COMMON /LPLOT/ LCOM1 (2),	2
161	2 DETDAT(LDET,LPOINT), DETIME(LDET,LPOINT), DETASP(LDET,LPOINT),	27648
162	3 ASPECT(LASP), ASTIME(LASP),	4096
163	4 WINDOW(LPCINT), OSHAFT(LPOINT), OSCAN (LPOINT),	768
164	5 PRVALU(LPOINT), PLVALU(LPOINT), PHGLAT (LPOINT), SPASA (LPOINT),	1024
165	6 PHIGSE(LPOINT), THEGSE(LPOINT), PHIGSH(LPOINT), THEGSH(LPOINT),	1024
166	7 BACVAR(64), EFIELD(64), BSCPL (7,4,LPOINT),	7296
167	8 LCOM2(2)	2
168		
169	ENDCLICHE	
170	ENC	
171		
172	USE TWENTY	
173		
174	C PROGRAM PL20 (HSP, INPUT, PRINT, TAPE63, TAPE62)	
175		
176	ILAST = (.LOC. ICOM2(2)) - (.LOC. ICOM1(1))	
177	DO 10 IZERO = 1, ILAST	
178	10 ICOM1(IZERO) = 0	
179		
180	NT = 3	
181	NG = 7	
182	NU = 8	
183	NC = 9	
184	NP = 100	
185		
186	WRITE OUTPUT TAPE NT, 1000	
187		
188	CALL CONST1	
189	CALL CONST2	
190	CALL CYCLE	
191		
192	1000 FORMAT (// 14H LOAD PROGRAM.)	
193		
194	END	
195		
196	SUBROUTINE CONST1	
197		
198	USE TWENTY	
199		
200	IYEAR = 1972	
201	JYEAR = 54/1972	
202	LYEAR = 68	
203	MTIM = 86400000	
204	TLIM = 86400.0	
205	TCDAY = 64.	
206	LCDAY = 64	
207		
208	DEGRAD = 57.2957795131	
209	RADDEG = 0.017453292519943	
210	REARTH = 6371.2	
211	OGMAGE = -69.761	
212	OGMAGN = 78.565	
213	ROMAGN = OGMAGN * RADDEG	
214	COSMGN = COSF (ROMAGN)	
215	SINMGN = SINF (ROMAGN)	
216		
217	RATE1K = 1.152	
218		
219	BITRATE(1) = 1.0	
220	BITRATE(2) = 8.0	
221	BITRATE(3) = 64.0	
222		
223	NBITRT(1) = 4H 1KE	
224		
225		
226		
227		
228		
229		

MAGNETIC
POLE
1.37122
0.198256
09980150

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230      NBITRT(2) = 4H 8KE
231      NBITRT(3) = 4H64KE
232      NBITRT(4) = 4H 1FB
233      NBITRT(5) = 4H 1AS
234      NBITRT(6) = 4H 8AS
235      NBITRT(7) = 4H64AS
236      NBITRT(8) = 4HPBAS
237
238      MBITRT(1) = 4H 1KB
239      MBITRT(2) = 4H 2KE
240
241      C      PLTIME = 1179.648
242              PLTIME = 19.6608
243
244              THFIN = 0.0
245              THMAX = 180.0
246
247              XLMIN = 72.0
248              XLMAX = 952.0
249              YLMIN = 192.0
250              YLMAX = 952.0
251              YLMID = YLMIN + (0.5 * (YLMAX - YLMIN))
252              YLQUA = YLMID + (0.5 * (YLMAX - YLMID))
253
254              XPHIN = XLMIN / 1024.0
255              XPMAX = XLMAX / 1024.0
256              YPHIN = YLMIN / 1024.0
257              YPMAX = YLMAX / 1024.0
258              YPHID = YLMID / 1024.0
259
260              YLCPS = YLMID - 108.0
261              YLCLK = YLMIN + 4.0
262              YLWIN = YLQUA - 60.0
263              YLASP = YLQUA - 124.0
264              YLOEL = (YLMAX - YLMIN) / 24.0
265              YLWOG = YLMIN - YLOEL
266              YLADG = YLMID - YLOEL
267              XLDEG = XLMAX + 5.0
268              XNTIC = XLMIN + 2.0
269              XXVIC = XLMAX - 1.0
270              YLVIC = YLMAX - 3.5
271              YLVII = YLMAX - 8.0
272              YLSEC = YLMAX + 8.0
273              XSSEC = XLMIN + 6.0
274              XESEC = XLMAX - 42.0
275              YDEGO = (YLMAX - YLMIN - 4.0) / 24.0
276              YDEGW = YLMIN - YDEGO
277              YDEGA = YLMID - YDEGO
278              XDTB = YLMIN + 1.0
279              XDTT = YLMAX - 6.0
280
281              YMP1 = 0.189375
282              YMP9 = 0.890625
283              XMPL = XPHIN
284              XMPR = XPMAX
285
286              PDEL = (YMP9 - YMP1) / 8.0
287              YMP2 = YMP1 + PDEL
288              YMP3 = YMP2 + PDEL
289              YMP4 = YMP3 + PDEL
290              YMP5 = YMP4 + PDEL
291              YMP6 = YMP5 + PDEL
292              YMP7 = YMP6 + PDEL
293              YMP8 = YMP7 + PDEL
294
295              XMLL = XMPL * 1024.0
296              XMLR = XMPR * 1024.0
297              YML1 = YMP1 * 1024.0
298              YML2 = YMP2 * 1024.0
299              YML3 = YMP3 * 1024.0
300              YML4 = YMP4 * 1024.0
301              YML5 = YMP5 * 1024.0
302              YML6 = YMP6 * 1024.0
303              YML7 = YMP7 * 1024.0

```

SECONDS
MINUTES

```

304      YML8 = YMP8 * 1024.0
305      YML9 = YMP9 * 1024.0
306
307      XMTD = (XLMAX - XLMIN) / 11.0
308      XMTB = YML1 + 1.0
309      XMTT = YML9 - 6.0
310      YMTD = (YML9 - YML1) / 40.0
311      YMTL = XLMIN + 2.0
312      YMTR = XLMAX - 2.0
313      YMLC = YML9 - 140.0
314      YNLG = YML5 - 24.0
315      YMLLG = YML5 - 64.0
316
317      YEP1 = 0.082
318      YEP2 = 0.441
319      YEP3 = 0.543
320      YEP4 = 0.898
321
322      YEL1 = 234.0
323      YEL2 = 8.0
324      YEL3 = 476.0
325      YEL4 = 944.0
326
327      YLAB(1,1) = -25.0
328      YLAB(1,2) = 25.0
329      YLAB(1,3) = 50.0
330      YLAB(2,1) = -50.0
331      YLAB(2,2) = 50.0
332      YLAB(2,3) = 100.0
333      YLAB(3,1) = -250.0
334      YLAB(3,2) = 250.0
335      YLAB(3,3) = 500.0
336      YLAB(4,1) = -500.0
337      YLAB(4,2) = 500.0
338      YLAB(4,3) = 1000.0
339      YLAB(5,1) = -2500.0
340      YLAB(5,2) = 2500.0
341      YLAB(5,3) = 5000.0
342      YLAB(6,1) = -5000.0
343      YLAB(6,2) = 5000.0
344      YLAB(6,3) = 10000.0
345      YLAB(7,1) = -25000.0
346      YLAB(7,2) = 25000.0
347      YLAB(7,3) = 50000.0
348      YLAB(8,1) = -50000.0
349      YLAB(8,2) = 50000.0
350      YLAB(8,3) = 100000.0
351
352      YLAB(1,4) = 6H -25
353      YLAB(1,5) = 6H 25
354      YLAB(1,6) = 6H 50
355      YLAB(2,4) = 6H -50
356      YLAB(2,5) = 6H 50
357      YLAB(2,6) = 6H 100
358      YLAB(3,4) = 6H -250
359      YLAB(3,5) = 6H 250
360      YLAB(3,6) = 6H 500
361      YLAB(4,4) = 6H -500
362      YLAB(4,5) = 6H 500
363      YLAB(4,6) = 6H 1000
364      YLAB(5,4) = 6H -2500
365      YLAB(5,5) = 6H 2500
366      YLAB(5,6) = 6H 5000
367      YLAB(6,4) = 6H -5000
368      YLAB(6,5) = 6H 5000
369      YLAB(6,6) = 6H 10000
370      YLAB(7,4) = 6H -25000
371      YLAB(7,5) = 6H 25000
372      YLAB(7,6) = 6H 50000
373      YLAB(8,4) = 6H -50000
374      YLAB(8,5) = 6H 50000
375      YLAB(8,6) = 6H 100000

```



```

376
377 YMIN = 0.1
378 YMAX = 100000.0
379
380 YCPS(1) = 6H 0.1
381 YCPS(2) = 6H 1
382 YCPS(3) = 6H 10
383 YCPS(4) = 6H 100
384 YCPS(5) = 6H 1000
385 YCPS(6) = 6H 10000
386 YCPS(7) = 6H 100000
387
388 DELTA = (YLMAX - YLMIN) / 6.0
389 YTICK( 1) = YLMIN
390 YTICK( 2) = 1.5
391 YTICK( 3) = 2.0
392 YTICK( 4) = 3.0
393 YTICK( 5) = 4.0
394 YTICK( 6) = 5.0
395 YTICK( 7) = 6.0
396 YTICK( 8) = 7.0
397 YTICK( 9) = 8.0
398 YTICK(10) = 9.0
399 YTICK(11) = 10.0
400
401 DO 10 K = 2, 11
402 SPACE = 0.4342944819 * LCGF (YTICK(K))
403 10 YTICK(K) = (SPACE * DELTA) + YLMIN
404 DO 12 K = 12, 61
405 12 YTICK(K) = YTICK(K-10) + DELTA
406
407 OSLOPE(1,1) = 1.728
408 OSLOPE(1,2) = 0.216
409 OSLOPE(1,3) = 0.027
410 OSLOPE(2,1) = 3.41
411 OSLOPE(2,2) = 0.42625
412 OSLOPE(2,3) = 0.05028125
413
414 NPOWR2( 1) = 1
415 NPOWR2( 2) = 2
416 NPOWR2( 3) = 4
417 NPOWR2( 4) = 8
418 NPOWR2( 5) = 16
419 NPOWR2( 6) = 32
420 NPOWR2( 7) = 64
421 NPOWR2( 8) = 128
422 NPOWR2( 9) = 256
423 NPOWR2(10) = 512
424 NPOWR2(11) = 1024
425 NPOWR2(12) = 2048
426 NPOWR2(13) = 4096
427 NPOWR2(14) = 8192
428 NPOWR2(15) = 16384
429
430 LMONTH( 1) = 3HJAN
431 LMONTH( 2) = 3HFEB
432 LMONTH( 3) = 3HMAR
433 LMONTH( 4) = 3HAPR
434 LMONTH( 5) = 3HMAY
435 LMONTH( 6) = 3HJUN
436 LMONTH( 7) = 3HJUL
437 LMONTH( 8) = 3HAUG
438 LMONTH( 9) = 3HSEP
439 LMONTH(10) = 3HOCT
440 LMONTH(11) = 3HNOV
441 LMONTH(12) = 3HDEC
442
443 NMONTH(1, 1) = 31
444 NMONTH(1, 2) = 29
445 NMONTH(1, 3) = 31
446 NMONTH(1, 4) = 30
447 NMONTH(1, 5) = 31
448 NMONTH(1, 6) = 30
449 NMONTH(1, 7) = 31

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6 CY LCG

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450     NMONTH(1, 8) = 31
451     NMONTH(1, 9) = 30
452     NMONTH(1,10) = 31
453     NMONTH(1,11) = 30
454     NMONTH(1,12) = 31
455
456     DO 14 M = 2, 5
457     DO 14 N = 1, 12
458 14  NMONTH(M,N) = NMONTH(1,N)
459     NMONTH(12,2) = NMONTH(13,2) = NMONTH(14,2) = 28
460
461     NSUM = 0
462     DO 16 M = 1, 5
463     DO 16 N = 1, 12
464     NSUM = NSUM + NMONTH(M,N)
465 15  NDAYCT(M,N) = NSUM
466
467     STATION( 1,1) = 8HBLOSSOM
468     STATION( 1,2) = 8PPPOINT
469     STATION( 5,1) = 8HQUITC
470     STATION( 5,2) = 8H
471     STATION( 8,1) = 8HSANTIAGO
472     STATION( 8,2) = 8H
473     STATION(15,1) = 8HWINKFIEL
474     STATION(15,2) = 8HD
475     STATION(16,1) = 8HJOHANNES
476     STATION(16,2) = 8HBURG
477     STATION(19,1) = 8HALASKA
478     STATION(19,2) = 8H
479     STATION(20,1) = 8HROSMAN
480     STATION(20,2) = 8H
481     STATION(21,1) = 8HORORAL
482     STATION(21,2) = 8H
483     STATION(22,1) = 8HMADAGASC
484     STATION(22,2) = 8HAR
485     STATION(61,1) = 8COLLEGE
486     STATION(61,2) = 8HPARK
487
488     KILOBIT(1,1) = 8M1 KILOBI
489     KILOBIT(1,2) = 8HT
490     KILOBIT(1,3) = 8H
491     KILOBIT(2,1) = 8H8 KILOBI
492     KILOBIT(2,2) = 8HT
493     KILOBIT(2,3) = 8H
494     KILOBIT(3,1) = 8H64 KILOB
495     KILOBIT(3,2) = 8HT
496     KILOBIT(3,3) = 8H
497     KILOBIT(4,1) = 8HCOMMAND
498     KILOBIT(4,2) = 8HSTORAGE
499     KILOBIT(4,3) = 8HPLAYBACK
500     KILOBIT(5,1) = 8M1 KILOBI
501     KILOBIT(5,2) = 8HT ACC. S
502     KILOBIT(5,3) = 8HUBCOM.
503     KILOBIT(6,1) = 8M1 KILOBI
504     KILOBIT(6,2) = 8HT ACC. S
505     KILOBIT(6,3) = 8HUBCOM.
506     KILOBIT(7,1) = 8H64 KILOB
507     KILOBIT(7,2) = 8HT ACC.
508     KILOBIT(7,3) = 8HUBCOM.
509     KILOBIT(8,1) = 8M1 KB PLA
510     KILOBIT(8,2) = 8HYBACK AC
511     KILOBIT(8,3) = 8HC SUBCOM
512
513     MCLAB( 2) = 6H EG
514     MCLAB( 3) = 6H SRVVM
515     MCLAB( 4) = 6H 1.9V
516     MCLAB( 5) = 6H MBT
517     MCLAB( 6) = 6H PG
518     MCLAB( 7) = 6H 4.5V
519     MCLAB( 8) = 6H 12V
520     MCLAB( 9) = 6H 6.3V
521     MCLAB(10) = 6H -6V
522     MCLAB(11) = 6H GRD
523     MCLAB(12) = 6H SYNC

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524
525      OPLAB( 1) = 6H SYNC
526      OPLAB( 2) = 6H GRD
527      OPLAB( 3) = 6H HE-1
528      OPLAB( 4) = 6H HE-2
529      OPLAB( 5) = 6H +E.3V
530      OPLAB( 6) = 6H CME1
531      OPLAB( 7) = 6H CME1B2
532      OPLAB( 8) = 6H CME2
533      OPLAB( 9) = 6H CME3
534      OPLAB(10) = 6H CME3
535      OPLAB(11) = 6H CME4
536      OPLAB(12) = 6H CME4
537      OPLAB(13) = 6H CME5
538      OPLAB(14) = 6H CME5
539      OPLAB(15) = 6H CME6
540      OPLAB(16) = 6H CME6
541      OPLAB(17) = 6H CME7
542      OPLAB(18) = 6H CME7
543      OPLAB(19) = 6H CM01
544      OPLAB(20) = 6H CM02
545      OPLAB(21) = 6H CM01
546      OPLAB(22) = 6H CM02
547      OPLAB(23) = 6H CM03
548      OPLAB(24) = 6H CM04
549      OPLAB(25) = 6H HV1
550      OPLAB(26) = 6H HV2
551      OPLAB(27) = 6H LMT1
552      OPLAB(28) = 6H LMT1
553      OPLAB(29) = 6H LMT2
554      OPLAB(30) = 6H LMT2
555      OPLAB(31) = 6H +12V
556      OPLAB(32) = 6H GRD
557
558      RETURN
559
560      END
561
562      SUBROUTINE CONST2
563
564      USE TWENTY
565
566      LABDET( 1) = 3HE1
567      LABDET( 2) = 3HE2
568      LABDET( 3) = 3HE3
569      LABDET( 4) = 3HE4
570      LABDET( 5) = 3HE5
571      LABDET( 6) = 3HE6
572      LABDET( 7) = 3HE7
573      LABDET( 8) = 3HE8
574      LABDET( 9) = 3HE81
575      LABDET(10) = 3HE82
576      LABDET(11) = 3HE83
577      LABDET(12) = 3HE84
578      LABDET(13) = 3HE85
579      LABDET(14) = 3HE86
580      LABDET(15) = 3HE87
581      LABDET(16) = 3HP1
582      LABDET(17) = 3HP2
583      LABDET(18) = 3HP3
584      LABDET(19) = 3HP4
585      LABDET(20) = 3HP5
586      LABDET(21) = 3HP6
587      LABDET(22) = 3HP7
588      LABDET(23) = 3HP81
589      LABDET(24) = 3HP82
590      LABDET(25) = 3HP83
591      LABDET(26) = 3HP84
592      LABDET(27) = 3HP85
593      LABDET(28) = 3HP86
594      LABDET(29) = 3HA1
595      LABDET(30) = 3HA2
596      LABDET(31) = 3HA3
597      LABDET(32) = 3HA81

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600	LABDET(33) = 3HA82	
601	LABDET(34) = 3HA83	
602	LABDET(35) = 3H01	
603	LABDET(36) = 3H02	
604		
605	IDPLOT(1,1) = IDPLOT(2,1) = IDPLOT(3,1) = IDPLOT(4,1) = 0	E1 - E4
606	IDPLOT(5,1) = IDPLOT(6,1) = IDPLOT(7,1) = IDPLOT(8,1) = 0	E5 - E8
607	IDPLOT(9,1) = IDPLOT(10,1) = IDPLOT(11,1) = IDPLOT(12,1) = 7	P1 - P4
608	IDPLOT(13,1) = IDPLOT(14,1) = IDPLOT(15,1) = 7	P5 - P7
609	IDPLOT(16,1) = IDPLOT(17,1) = IDPLOT(18,1) = 13	A1 - A3
610	IDPLOT(19,1) = 16	O1
611		
612	IDPLOT(1,2) = IDPLOT(2,2) = IDPLOT(3,2) = IDPLOT(4,2) = 8	E81-E84
613	IDPLOT(5,2) = IDPLOT(6,2) = IDPLOT(7,2) = IDPLOT(8,2) = 8	E85-E87
614	IDPLOT(9,2) = IDPLOT(10,2) = IDPLOT(11,2) = IDPLOT(12,2) = 14	P81- P84
615	IDPLOT(13,2) = IDPLOT(14,2) = IDPLOT(15,2) = 14	P85- P86
616	IDPLOT(16,2) = IDPLOT(17,2) = IDPLOT(18,2) = 16	A81- A83
617	IDPLOT(19,2) = 17	O2
618		
619	IDPLOT(1,3) = IDPLOT(2,3) = IDPLOT(3,3) = IDPLOT(4,3) = 0	E81- E84
620	IDPLOT(5,3) = IDPLOT(6,3) = IDPLOT(7,3) = 0	E85- E87
621	IDPLOT(9,3) = IDPLOT(10,3) = IDPLOT(11,3) = IDPLOT(12,3) = 0	P81- P84
622	IDPLOT(13,3) = IDPLOT(14,3) = 0	P85- P86
623	IDPLOT(16,3) = IDPLOT(17,3) = IDPLOT(18,3) = 0	A81- A83
624	IDPLOT(19,3) = 0	O2
625	IDPLOT(8,3) = IDPLOT(15,3) = 10	E8, P7 B
626		
627	IDDET(1,1) = 1	E1
628	IDDET(2,1) = 1	E2
629	IDDET(3,1) = 1	E3
630	IDDET(4,1) = 1	E4
631	IDDET(5,1) = 1	E5
632	IDDET(6,1) = 1	E6
633	IDDET(7,1) = 1	E7
634	IDDET(8,1) = 2	E8
635	IDDET(9,1) = 4	E81
636	IDDET(10,1) = 4	E82
637	IDDET(11,1) = 4	E83
638	IDDET(12,1) = 4	E84
639	IDDET(13,1) = 4	E85
640	IDDET(14,1) = 4	E86
641	IDDET(15,1) = 4	E87
642	IDDET(16,1) = 1	P1
643	IDDET(17,1) = 1	P2
644	IDDET(18,1) = 1	P3
645	IDDET(19,1) = 1	P4
646	IDDET(20,1) = 1	P5
647	IDDET(21,1) = 1	P6
648	IDDET(22,1) = 2	P7
649	IDDET(23,1) = 4	P81
650	IDDET(24,1) = 4	P82
651	IDDET(25,1) = 4	P83
652	IDDET(26,1) = 4	P84
653	IDDET(27,1) = 4	P85
654	IDDET(28,1) = 4	P86
655	IDDET(29,1) = 2	A1
656	IDDET(30,1) = 4	A2
657	IDDET(31,1) = 4	A3
658	IDDET(32,1) = 4	A81
659	IDDET(33,1) = 4	A82
660	IDDET(34,1) = 4	A83
661	IDDET(35,1) = 2	O1
662	IDDET(36,1) = 2	O2
663		
664	IDDET(1,2) = 1	E1
665	IDDET(2,2) = 1	E2
666	IDDET(3,2) = 2	E3
667	IDDET(4,2) = 3	E4
668	IDDET(5,2) = 1	E5
669	IDDET(6,2) = 1	E6
670	IDDET(7,2) = 2	E7
671	IDDET(8,2) = 7	E8
672	IDDET(9,2) = 8	E81
673	IDDET(10,2) = 8	E82

674	IDDET(11,2) = 12	E83
675	IDDET(12,2) = 4	E84
676	IDDET(13,2) = 16	E85
677	IDDET(14,2) = 12	E86
678	IDDET(15,2) = 16	E87
679	IDDET(16,2) = 3	P1
680	IDDET(17,2) = 2	P2
681	IDDET(18,2) = 3	P3
682	IDDET(19,2) = 1	P4
683	IDDET(20,2) = 2	P5
684	IDDET(21,2) = 2	P6
685	IDDET(22,2) = 7	P7
686	IDDET(23,2) = 4	P81
687	IDDET(24,2) = 16	P82
688	IDDET(25,2) = 12	P83
689	IDDET(26,2) = 8	P84
690	IDDET(27,2) = 4	P85
691	IDDET(28,2) = 12	P86
692	IDDET(29,2) = 8	A1
693	IDDET(30,2) = 16	A2
694	IDDET(31,2) = 8	A3
695	IDDET(32,2) = 4	A81
696	IDDET(33,2) = 4	A82
697	IDDET(34,2) = 12	A83
698	IDDET(35,2) = 3	D1
699	IDDET(36,2) = 3	O2

700	
701	IDDET(1,5) = -20
702	IDDET(2,5) = 27
703	IDDET(3,5) = -20
704	IDDET(4,5) = 89
705	IDDET(5,5) = 10
706	IDDET(6,5) = 50
707	IDDET(7,5) = 89
708	IDDET(8,5) = 27
709	IDDET(9,5) = -20
710	IDDET(10,5) = 27
711	IDDET(11,5) = -20
712	IDDET(12,5) = 89
713	IDDET(13,5) = -20
714	IDDET(14,5) = 27
715	IDDET(15,5) = 89
716	IDDET(16,5) = -20
717	IDDET(17,5) = 27
718	IDDET(18,5) = 56
719	IDDET(19,5) = 89
720	IDDET(20,5) = 10
721	IDDET(21,5) = 50
722	IDDET(22,5) = 10
723	IDDET(23,5) = -20
724	IDDET(24,5) = 27
725	IDDET(25,5) = 89
726	IDDET(26,5) = 89
727	IDDET(27,5) = 27
728	IDDET(28,5) = 50
729	IDDET(29,5) = 50
730	IDDET(30,5) = 10
731	IDDET(31,5) = 10
732	IDDET(32,5) = 50
733	IDDET(33,5) = 10
734	IDDET(34,5) = 10
735	IDDET(35,5) = 27
736	IDDET(36,5) = 10

737	
738	C IDDET(I,1) = 1 2 4
739	C 2) = 1 2 3 4 7 8 13-16
740	C 3) =
741	C 4) = 4 8 16
742	C 5) = -20 10 27 50 89
743	C 6) = 32 16 8
744	C 7) = 16 8 4
745	C 8) = 1
746	C 9) = 3 5 9
747	

RECIPROCAL DETECTOR COUNTS PER 4 FRAMES.
 SYNC - START IN FRAME
 REARRANGED SYNC AND START
 4 * IDDET(I,1)
 FRAME WORD INTERVALS
 DETECTOR COUNTS PER RECORD
 1/2 DETECTOR COUNTS PER RECORD
 PICKUP FRAME OF 8KB ORIG. DATA
 PICKUP FRAME OF 64KB ORIG. DATA

```

748      DO 68 I = 1, LOET
749      IDDET(I,4) = IDDET(I,1) * 4
750      IDDET(I,6) = 32 / IDDET(I,1)
751      IDDET(I,7) = IDDET(I,6) / 2
752      IDDET(I,8) = 1
753      IF (IDDET(I,1) - 2) 62, 64, 66
754      62 IDDET(I,9) = 3
755      GO TO 68
756      64 IDDET(I,9) = 5
757      GO TO 68
758      66 IDDET(I,9) = 9
759      68 CONTINUE
760
761      C      TFRAM(M,N)      M = 1 MINUTES      N = 1 1KB      FRAME INTERVAL TIME
762      C      TWORD(M,N)      2 HOURS              2 8KB      WORD INTERVAL TIME
763      C      3 SECONDS      3 64KB
764      C      4 2KB
765
766      TFRAM(3,1) = 1.152
767      TFRAM(3,4) = TFRAM(3,1) / 2.0
768      TFRAM(3,2) = TFRAM(3,1) / 8.0
769      TFRAM(3,3) = TFRAM(3,1) / 64.0
770
771      DO 72 N = 1, 4
772      TFRAM(1,N) = TFRAM(3,N) / 60.0
773      72 TFRAM(2,N) = TFRAM(1,N) / 60.0
774
775      DO 74 M = 1, 3
776      DO 74 N = 1, 4
777      74 TWORD(M,N) = TFRAM(M,N) / 128.0
778
779      DO 88 I = 1, LOET
780      HDEET(I,1) = 1.0
781      IF (IDDET(I,1) - 2) 82, 84, 86
782      82 HDEET(I,2) = 7.5
783      GO TO 88
784      84 HDEET(I,2) = 15.5
785      GO TO 88
786      86 HDEET(I,2) = 31.5
787      88 HDEET(I,3) = -1.5
788
789      DO 92 I = 1, LOET
790      DO 92 M = 1, 2
791      DO 92 N = 1, 3
792      92 ODDDET(M,1,N) = HDEET(I,N) * TFRAM(M,N)
793
794      DO 94 M = 1, 2
795      DO 94 N = 1, 3
796      ODDDET(M,N) = -2.0 * TFRAM(M,N)
797      DO 94 I = 1, LOET
798      94 POODDET(M,I,N) = ODDDET(M,N) + (IDDET(I,5) * TWORD(M,N))
799
800      DO 126 J = 1, 16
801      M = MMB = J - 1
802      IF (M - 8) 106, 104, 104
803      104 M = M - 8
804      106 MB = M
805
806      IF (M - 4) 110, 108, 108
807      108 M = M - 4
808      110 M4 = M
809
810      DO 124 I = 1, LOET
811      IF (IDDET(I,1) - 2) 112, 116, 120
812
813      112 NUMBER = IDDET(I,2) - M4
814      IF (NUMBER) 114, 114, 124
815      114 NUMBER = NUMBER + 4
816      GO TO 124
817
818      116 NUMBER = IDDET(I,2) - MB
819      IF (NUMBER) 118, 118, 124
820      118 NUMBER = NUMBER + 8
821      GO TO 124

```

SEC/FRAM
2 KB
8 KB
64 KB

MINUTES
HOURS

36

```

822
823 120 NUMBER = IDDET(I,2) - MMB
824 IF (NUMBER) 122, 122, 124
825 122 NUMBER = NUMBER + 16
826 124 JDDDET(I,J) = NUMBER
827 125 CONTINUE
828
829 C COUNTING RATE VS MAGNETIC ASPECT ANGLE PLOTTING CONSTANTS.
830
831 YAL1 = 224.0
832 YAL4 = 960.0
833 XAL1 = 96.0
834 XAL3 = 976.0
835
836 YADL = (YAL4 - YAL1) / 3.0
837 XADL = (XAL3 - XAL1) / 2.0
838 YAL2 = YAL1 + YADL
839 YAL3 = YAL2 + YADL
840 XAL2 = XAL1 + XADL
841
842 YAP1 = YAL1 / 1024.0
843 YAP2 = YAL2 / 1024.0
844 YAP3 = YAL3 / 1024.0
845 YAP4 = YAL4 / 1024.0
846 XAP1 = XAL1 / 1024.0
847 XAP2 = XAL2 / 1024.0
848 XAP3 = XAL3 / 1024.0
849
850 YATL(19) = YAL4
851 YATL( 1) = YAL1
852 XATL(13) = XAL3
853 XATL( 1) = XAL1
854 YATDEL = (YAL4 - YAL1) / 18.0
855 XATDEL = (XAL3 - XAL1) / 12.0
856 DO 906 N = 2, 18
857 305 YATL(N) = YATL(N-1) + YATDEL
858 DO 908 N = 2, 12
859 903 XATL(N) = XATL(N-1) + XATDEL
860
861 YAL(1) = (YAL4 + YAL3) / 2.0
862 YAL(2) = (YAL3 + YAL2) / 2.0
863 YAL(3) = (YAL2 + YAL1) / 2.0
864
865 YAC( 1) = 8H 0.1 -
866 YAC( 2) = 8H 1 -
867 YAC( 3) = 8H 10 -
868 YAC( 4) = 8H 100 -
869 YAC( 5) = 8H 1000 -
870 YAC( 6) = 8H 10000 -
871 YAC( 7) = 8H100000 -
872 YAC( 8) = 8H 1 -
873 YAC( 9) = 8H 10 -
874 YAC(10) = 8H 100 -
875 YAC(11) = 8H 1000 -
876 YAC(12) = 8H 10000 -
877 YAC(13) = 8H100000 -
878 YAC(14) = 8H 1 -
879 YAC(15) = 8H 10 -
880 YAC(16) = 8H 100 -
881 YAC(17) = 8H 1000 -
882 YAC(18) = 8H 10000 -
883 YAC(19) = 8H100000 -
884
885 YAD( 1) = 3H 0
886 YAD( 2) = 3H 30
887 YAD( 3) = 3H 60
888 YAD( 4) = 3H 90
889 YAD( 5) = 3H120
890 YAD( 6) = 3H150
891 YAD( 7) = 3H 0
892 YAD( 8) = 3H 30
893 YAD( 9) = 3H 60
894 YAD(10) = 3H 90
895 YAD(11) = 3H120

```

```

896      YAD(12) = 3H150
897      YAD(13) = 3H180
898
899      RETURN
900
901      END
902
903      SUBROUTINE CYCLE
904
905      USE TWENTY
906
907      CALL CLOK
908
909      ILAST = (.LOC. ICOM9(2)) - (.LOC. ICOM2(1))
910      DO 20 IZERO = 1, ILAST
911      21 ICOM2(IZERO) = 0
912      ILAST = (.LOC. LCOM2(2)) - (.LOC. LCOM1(1))
913      DO 30 IZERO = 1, ILAST
914      30 LCOM1(IZERO) = 0
915
916      LSOET = LPOINT
917      LEFLD = 64
918      LUNEND = 1000000
919      IPILOT1 = IPILOT2 = IPILOT3 = IPILOT4 = 7
920      LGREC0 = 980
921
922      DO 22 I = 1, 19
923      22 IPILOT(I) = 7
924      IPILOTX(8) = IPILOTX(17) = IPILOTX(18) = 0
925      IPILOTX(6) = IPILOTX(17) = IPILOTX(18) = 0
926
927      DO 24 I = 1, 7
928      24 IPILOTB(I) = 7
929
930      WRITE OUTPUT TAPE NT, 1000
931
932      CALL CRTIC (2HJW, 1, 1)
933      CALL DDERS (1)
934      CALL FRAME (1)
935      CALL CARDS
936
937      1000 FORMAT (/// 19H START COMPUTATION.)
938
939      END
940
941      SUBROUTINE CLOK
942
943      USE TWENTY
944
945      CALL CLOK1 (ICLOC1, NCLOC3)
946      CALL CLOK (ICLOC1, ICLOC2)
947      IF (ICLOC2 - 5H DOWN) 14, 13, 14
948      13 IDATE(5) = ICLOC2
949      GO TO 18
950      14 IF (MONTH) 15, 15, 19
951
952      15 REWIND 63
953      WRITE (63, 16) ICLOC2
954      REWIND 63
955      READ (63, 17) LMACH, MONTH, MTHDAY
956      15 FORMAT (R7)
957      17 FORMAT (A1, 1X, I2, 1X, I2)
958
959      IDATE(1) = LMACH
960      IDATE(2) = ICLOC1 .SHL. 12
961      IDATE(3) = MONTH
962      IDATE(4) = MTHDAY
963
964      GO TO (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12), MONTH
965      1 IDATE(5) = 8HJANUARY
966      GO TO 18
967      2 IDATE(5) = 8HFEBRUARY
968      GO TO 18
969
970
971
972
973

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```

COMPUTER
HOURS
NO. MONTH
NO. DAY

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```

974      3 IDATE(5) = 8HMARCH
975      GO TO 18
976      4 IDATE(5) = 8HAPRIL
977      GO TO 18
978      5 IDATE(5) = 8HMAY
979      GO TO 18
980      6 IDATE(5) = 8HJUNE
981      GO TO 18
982      7 IDATE(5) = 8HJULY
983      GO TO 18
984      8 IDATE(5) = 8HAUGUST
985      GO TO 18
986      9 IDATE(5) = 8HSEPTEMBER
987      GO TO 18
988      10 IDATE(5) = 8HOCTOBER
989      GO TO 18
990      11 IDATE(5) = 8HNOVEMBER
991      GO TO 18
992      12 IDATE(5) = 8HDECEMBER
993      13 IDATE(6) = IYEAR
994      13 RETURN
995
996      END
999
1000      SUBROUTINE INTERP (TFRACT, A, B, C, D, RATIO)
1001
1002      USE TWENTY
1003
1004      DIMENSION A(1), B(1), C(1), D(1)
1005
1006      C VECTOR INTERPOLATION.
1007
1008      C(1) = C(2) = C(3) = C(4) = 0.0
1009      D(1) = D(2) = D(3) = D(4) = 0.0
1010      THETA = THINT = RATIO = PROD = AMAG = BMAG = 0.0
1011      A(4) = SQRTF ((A(1) * A(1)) + (A(2) * A(2)) + (A(3) * A(3)))
1012      B(4) = SQRTF ((B(1) * B(1)) + (B(2) * B(2)) + (B(3) * B(3)))
1013
1014      DO 10 K = 1, 3
1015      PROD = PROD + (A(K) * B(K))
1016      AMAG = AMAG + (A(K) * A(K))
1017      BMAG = BMAG + (B(K) * B(K))
1018
1019      TERM = SQRTF (AMAG * BMAG)
1020      IF (TERM) 12, 12, 16
1021      DO 14 K = 1, 4
1022      C(K) = D(K) = 0.0
1023      RETURN
1024      15 COSTH = PROD / TERM
1025      IF (ABSF (COSTH) - 0.99985) 22, 18, 18
1026      DO 20 K = 1, 3
1027      C(K) = A(K)
1028      GO TO 26
1029
1030      22 THETA = ACOSF (COSTH)
1031      THINT = TFRACT * THETA
1032      TERM1 = SQRTF (2.0 * (1.0 - COSTH))
1033      TERM2 = SINF (THINT)
1034      TERM3 = SINF ((90.0 / 57.29578) - THINT + (THETA / 2.0))
1035      RATIO = (1.0 / TERM1) * (TERM2 / TERM3)
1036
1037      THETA = THETA * 57.29578
1038      THINT = THINT * 57.29578
1039
1040      DO 24 K = 1, 3
1041      24 C(K) = A(K) + (RATIO * (B(K) - A(K)))
1042
1043      25 C(4) = SQRTF ((C(1) * C(1)) + (C(2) * C(2)) + (C(3) * C(3)))
1044
1045      IF (C(4)) 32, 32, 28
1046      DO 30 K = 1, 4
1047      30 D(K) = C(K) / C(4)
1048
1049      32 RETURN

```

```

1050
1051      END
1052
1054      SUBROUTINE TRANSV (A, B, C, D)
1055
1056      USE TWENTY
1057
1058      DIMENSION A(1), B(1), C(1), D(1)
1059
1060      C TRANSFORM A COLUMN VECTOR.
1061
1062      C(1) = C(2) * C(3) = C(4) = 0.0
1063      D(1) = D(2) * D(3) = D(4) = 0.0
1064
1065      DO 12 K = 1, 3
1066      C(1) = C(1) + (A(K) * B(K))
1067      C(2) = C(2) + (A(K+3) * B(K))
1068      12 C(3) = C(3) + (A(K+6) * B(K))
1069
1070      C(4) = SORTF ((C(1) * C(1)) + (C(2) * C(2)) + (C(3) * C(3)))
1071
1072      IF (C(4)) 18, 18, 14
1073      14 DO 15 K = 1, 4
1074      15 D(K) = C(K) / C(4)
1075
1076      18 RETURN
1077
1078      END
1079
1080      SUBROUTINE CARDS
1081
1082      USE TWENTY
1083
1084      IF (IDSKIP) 10, 10, 8
1085      9 ID = IDSKIP
1086      IDSKIP = 0
1087      GO TO 20
1088
1089      10 READ (2, 1000) (R(N), N=1, 10)
1090      WRITE (3, 1014) (R(N), N=1, 10)
1091      REWIND 63
1092      WRITE (63, 1000) (R(N), N=1, 10)
1093      REWIND 63
1094      READ (63, 1002) (ID)
1095      REWIND 63
1096      WRITE (63, 1000) (R(N), N=1, 10)
1097      REWIND 63
1098
1099      20 IF (ID - 100) 22, 100, 22
1100      22 IF (ID - 110) 24, 110, 24
1101      24 IF (ID - 120) 26, 120, 26
1102      26 IF (ID - 130) 28, 130, 28
1103      28 IF (ID - 140) 30, 140, 30
1104      30 IF (ID - 150) 32, 150, 32
1105      32 IF (ID - 160) 34, 160, 34
1106      34 IF (ID - 170) 36, 170, 36
1107      36 IF (ID - 180) 38, 180, 38
1108      38 IF (ID - 190) 40, 190, 40
1109      40 IF (ID - 200) 42, 200, 42
1110      42 IF (ID - 210) 44, 210, 44
1111      44 IF (ID - 220) 46, 220, 46
1112      46 IF (ID - 230) 48, 230, 48
1113      48 IF (ID - 240) 50, 240, 50
1114
1115      50 WRITE OUTPUT TAPE 3, 1030
1116      92 WRITE (3, 1000) (R(N), N=1, 10)
1117      GO TO 10
1118
1119      C TYPE 100 CARD. SELECT A PART OF THE SPACECRAFT TAPE FOR PROCESSING.
1120
1121      100 READ (63, 1004) LUNBEG, LUNEND
1122      IF (LUNEND) 102, 102, 10
1123      102 LUNEND = 1000000
1124      GO TO 10
1125
1126      C TYPE 110 CARD. PLOT GRID LINES.
1127

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1128
1129      110 READ (63, 1006) NOGRID
1130      GO TO 10
1131
1132 C TYPE 120 CARD.   PRINT THE SPACE CRAFT DATA.
1133
1134      121 READ (63, 1006) INRSC0, INRSC1, INRSC2, INRSC3, INRSC4, INRSC5
1135      GO TO 10
1136
1137 C TYPE 130 CARD.   SELECT PLOTTING ROUTINES.
1138
1139      130 READ (63, 1006) IPLOT1, IPLOT2, IPLOT3, IPLOT4
1140      GO TO 10
1141
1142 C TYPE 140 CARD.   SELECT PLOTS FOR PLCT1 SUBROUTINE.
1143
1144      140 READ (63, 1008) (IPLOTX(N),N=1,19)
1145      GO TO 10
1146
1147 C TYPE 150 CARD.   MERGED TAPE IDENTIFICATION.
1148
1149      150 READ (63, 1012) IDMERT
1150      CALL ASSIGN (NU, 1, IDMERT)
1151      NVault = IDMERT
1152      IDTAPE = 10
1153      WRITE OUTPUT TAPE NT, 1020
1154      WRITE (NT, 1022) IDMERT
1155      CALL FRAME (1)
1156      CALL MAP (0.0, 1024.0, 0.0, 1024.0)
1157      CALL SETLCH (264.0, 176.0, 1, 0, 3, 0)
1158      WRITE OUTPUT TAPE NP, 1020
1159      WRITE (NP, 1022) IDMERT
1160      GO TO 10
1161
1162 C TYPE 180 CARD.   GENERATE AN ASPECT ANGLE DATA TAPE.
1163
1164      181 READ (63, 1016) ICTAPE, IDASPT
1165      IF (ICTAPE) 10, 10, 182
1166      182 CALL ASSIGN (NG, 1, IDASPT)
1167      GO TO 10
1168
1169 C TYPE 190 CARD.   SAVE THE DD80 FILES FOR DEBUG.
1170 C      COL 10 = 1 SAVE THE DD80 FILES.
1171 C      0 GIVE THE DD80 FILES TO MONITOR.
1172
1173      190 READ (63, 1006) NDD80
1174      CALL KEEP80 (NDD80)
1175      GO TO 10
1176
1177 C TYPE 330 CARD.   SELECT MAGNETOMETER PLOTS.
1178
1179      330 READ (63, 1006) IPLOTB(1), IPLOTB(2), IPLOTB(3),
1180      2 IPLOTB(4), IPLOTB(5), IPLOTB(6), IPLOTB(7)
1181      GO TO 10
1182
1183 C TYPE 340 CARD.   PREPMT THE MAGNETOMETER PLOT SCALES.
1184 C      COLUMN 10.   1 = 0 TO 25 SCALE, 5 = 0 TO 2500 SCALE,
1185 C                  2 = 0 TO 50   6 = 0 TO 5000
1186 C                  3 = 0 TO 250  7 = 0 TO 25000
1187 C                  4 = 0 TO 500  8 = 0 TO 50000
1188
1189      340 READ (63, 1006) IPPREM
1190      IF (IPPREM) 334, 334, 332
1191      332 IF (IPPREM - 8) 10, 10, 334
1192      334 IPPREM = 0
1193      WRITE OUTPUT TAPE NT, 1048
1194      GO TO 92
1195
1196 C TYPE 900 CARD.   START COMPUTING.
1197
1198      901 CALL RUNTAPE
1199
1200 C TYPE 950 CARD.   RECYCLE WITH A NEW S/C DATA TAPE.
1201

```

READTAPE

1 = KEEP
0 = GIVE

```

1202 951 IF (IDTAPE) 954, 954, 952
1203 952 CALL FRAME (1)
1204 CALL MAP (0.0, 1024.0, 0.0, 1024.0)
1205 CALL SETLCH (264.0, 876.0, 1, 0, 3, 0)
1206 WRITE OUTPUT TAPE NP, 1020
1207 WRITE (NP, 1022) IDMEPT
1208
1209 954 READ (2, 1002) IC
1210 IF (ID) 990, 990, 956
1211 955 IF (ID - 950) 954, 956, 990
1212
1213 958 CALL CLOCK (ICLOC1, ICLOC2)
1214 WRITE (NT, 1050) ICLOC1, ICLOC2
1215 PRINT 1052, ICLOC1, ICLOC2
1216 UNLOAD NU
1217 CALL ASSIGN (NU, 1, 5RNEXTU)
1218 WRITE OUTPUT TAPE 62, 1054
1219
1220 WRITE OUTPUT TAPE NT, 1062
1221 CALL FRAME (1)
1222 CALL PLOTE
1223
1224 CALL CYCLE
1225
1226 C TYPE 999 CARD. CALL EXIT.
1227
1228 991 CALL CLOCK1 (NCLOC2, NCLOC3)
1229 CALL CLOCK (ICLOC1, ICLOC2)
1230 NCLOC(4) = ICLOC = NCLOC2 - NCLOC1
1231 NCLOC(1) = NCLHR = ICLOC / 3600
1232 JCLSC = ICLOC - (NCLHR * 3600)
1233 NCLOC(2) = NCLMN = JCLSC / 60
1234 NCLOC(3) = JCLSC - (NCLMN * 60)
1235
1236 IF (IGTAPE) 994, 994, 992
1237 992 WRITE (NT, 1072) NGRECO
1238 END FILE NG
1239 END FILE NG
1240 END FILE NG
1241 UNLOAD NG
1242
1243 994 WRITE (NT, 1064) ICLOC1, ICLOC2, (NCLOC(N), N=1,3)
1244 WRITE OUTPUT TAPE 62, 1066
1245
1246 CALL FRAME (1)
1247 CALL PLOTE
1248
1249
1250 UNLOAD NU
1251 CALL EXIT
1252
1253 1000 FORMAT (10A8)
1254 1002 FORMAT (1X, I4)
1255 1004 FORMAT (5X, 5(4X, I6))
1256 1006 FORMAT (5X, 10I5)
1257 1008 FORMAT (9X, 20(I1, 1X))
1258 1010 FORMAT (10X, 4(2X, R8))
1259 1012 FORMAT (5X, 5(5X, R5))
1260 1014 FORMAT (// 10A8)
1261 1016 FORMAT (9X, I1, 5X, R5)
1262
1263 1020 FORMAT (/ 21HCODE 1 - 20 MIN PLOTS// 20M TAPE IDENTIFICATION)
1264 1022 FORMAT (/ 3X, 6H MERGE, 3X, R5)
1265
1266 1030 FORMAT (/// 47H THE FOLLOWING CARD HAS AN UNASSIGNED CARD TYPE,
1267 2 8H NUMBER.)
1268 1040 FORMAT (/// 42H THE MAGNETOMETER PLOT SCALE VALUE IS BAD.//)
1269
1270 1050 FORMAT (///// 24H THE S/C TAPE WAS ENDED., 73X, R8, 3X, R7)
1271 1052 FORMAT (// 5X, 24H THE S/C TAPE WAS ENDED., 68X, R8, 3X, R7)
1272 1054 FORMAT (3X, 42H OGG - TAKEDOWN UNLOADED S/C TAPE (A5) AND,
1273 2 24H HANG THE NEXT S/C TAPE.)
1274
1275 1062 FORMAT (1H1)

```

END CRT

END CRT

```

1276 1064 FORMAT (///// 15H JCB COMPLETED., 67X, R8, 3X, R7, 3(3X, I2))
1277 1065 FORMAT (/// 5X, 15H JOB COMPLETED., 62X, R8, 3X, R7, 3(3X, I2))
1278 1066 FORMAT (3X, 19H CEO JOB COMPLETED.)
1279
1280 1072 FORMAT (///31H THE ASPECT TAPE WAS ENDED WITH, I6, 9H RECORDS.///)
1281 1074 FORMAT ( / 31H THE ASPECT TAPE WAS ENDED WITH, I6, 9H RECORDS.//)
1282
1283     END
1284
1285     SUBROUTINE RUNTAPE
1286
1287     USE TWENTY
1288
1289     NWOCT = 0
1290
1291
1292
1293 C SKIP UNWANTED SPACECRAFT TAPE INPUT DATA RECORDS.
1294
1295     310 BUFFER IN (NU, 1) (IUNDAT(1), IUNDAT(MURCWD))
1296     312 IF (UNIT, NU) 312, 314, 314, 314
1297     314 NURECO = (IUNDAT(3) .SHL. 12) .INT. 7777B
1298         IF (LUNBEG - NURECO) 316, 316, 310
1299     315 MURECO = NURECO
1300         GO TO 350
1301
1302 C READ SPACECRAFT TAPE INPUT DATA RECORDS.
1303
1304     320 MURECO = NURECO + 1
1305
1306     BUFFER IN (NU, 1) (IUNDAT(1), IUNDAT(MURCWD))
1307     330 IF (UNIT, NU, NWOCT) 360, 350, 380, 340
1308
1309     340 IF (IOCHECK, NU) 344, 342
1310     342 WRITE (NT, 1300) MURECO, NWOCT, MURCWD
1311         NLINE = NLINE + 2
1312         GO TO 350
1313     344 WRITE (NT, 1302) MURECO
1314         NLINE = NLINE + 2
1315
1316     350 DO 352 J = 1, MURCWD
1317     352 JUNDAT(J) = IUNDAT(J)
1318         IU DONE = 0
1319         GO TO 320
1320
1321     360 IF (IU DONE) 362, 362, 330
1322     362 IF (LUNEND - NURECO) 364, 364, 370
1323     364 IF (UNIT, NU) 364, 366, 366, 366
1324     366 CALL SSCPLOT
1325         IDSKIP = 950
1326         CALL CARDS
1327
1328     370 CALL DECDATA
1329         IF (IU DONE) 372, 374, 374
1330     372 IU DONE = 10
1331         GO TO 320
1332     374 IU DONE = 10
1333         GO TO 330
1334
1335     380 LAST = 10
1336         CALL SSCPLOT
1337         IDSKIP = 950
1338         CALL CARDS
1339
1340 1300 FORMAT ( / 42H THE MERGED TAPE HAS A WORD COUNT ERROR IN,
1341             2 7H RECORD, I5, 1H.,
1342             3 19H THE WORD COUNT WAS, I4, 1H.,
1343             4 20H IT SHOULD HAVE BEEN, I4, 1H.//)
1344 1302 FORMAT ( / 38H THE MERGED TAPE HAS A PARITY ERROR IN,
1345             2 7H RECORD, I5, 1H.//)
1346
1347     END
1348 ( 1309)= WARNING TWO BRANCH IF APPEARS
1349
1350     SUBROUTINE DECDATA
1351
1352

```

724

MERG REC

724

42

13

24

38


```

1427
1428      NSIGN1 = (JUNCAT(M+1) .SHL. 1) .INT. 18
1429      NSIGN2 = (JUNCAT(M+1) .SHL. 41) .INT. 18
1430      NSIGN3 = (JUNCAT(M+2) .SHL. 21) .INT. 18
1431
1432      IF (NSIGN1) 124, 124, 122
1433      122 ATODAT(N,K+1) = - ATODAT(N,K+1)
1434      124 IF (NSIGN2) 128, 128, 126
1435      126 ATODAT(N,K+2) = - ATODAT(N,K+2)
1436      128 IF (NSIGN3) 132, 132, 130
1437      130 ATODAT(N,K+3) = - ATODAT(N,K+3)
1438      132 M = M + 2
1439      K = K + 3
1440      135 CONTINUE
1441
1442      DO 142 K = 1, 16
1443      142 ATODAT(N,K) = NORDAT(N,K) / 1000.0
1444      144 CONTINUE
1445
1446      C IF IDEAL TRANSF USED INSTEAD OF ACTUAL BODY TRANSF, L VALUE IS -. RESET.
1447
1448      NOACT1 = NOACT2 = 0
1449      IF (ATODAT(1,4)) 862, 864, 864
1450      862 ATODAT(1,4) = ABSF (ATODAT(1,4))
1451      ATODAT(2,4) = ABSF (ATODAT(2,4))
1452      NOACT1 = 10
1453      864 IF (ATODAT(3,4)) 866, 868, 868
1454      866 ATODAT(3,4) = ABSF (ATODAT(3,4))
1455      ATODAT(4,4) = ABSF (ATODAT(4,4))
1456      NOACT2 = 10
1457      868 CONTINUE
1458
1459      C HILLISECONDS OF DAY.
1460
1461      M = 124
1462      N = 0
1463      DO 182 L = 1, 64
1464      HILSEC(N+1) = (JUNDAT(M+1) .SHL. 30) .INT. 077777777778
1465      HILSEC(N+1) = JUNDAT(M+1) .INT. 077777777778
1466      M = M + 1
1467      182 N = N + 2
1468
1469      C DETECTOR DATA.
1470
1471      M = 188
1472      L = 0
1473      DO 202 N = 1, LSFPR
1474      NOETEC(L+1) = (JUNDAT(M+1) .SHL. 12) .INT. 17778
1475      NOETEC(L+2) = (JUNDAT(M+1) .SHL. 24) .INT. 17778
1476      NOETEC(L+3) = (JUNDAT(M+1) .SHL. 36) .INT. 17778
1477      NOETEC(L+4) = (JUNDAT(M+1) .SHL. 48) .INT. 17778
1478      NOETEC(L+5) = JUNDAT(M+1) .INT. 17778
1479      L = L + 5
1480      202 M = M + 1
1481
1482      L = 0
1483      DO 204 I = 1, 7
1484      DO 204 J = 1, 32
1485      L = L + 1
1486      204 LEXDAT(I,J) = NOETEC(L)
1487
1488      DO 206 J = 1, 16
1489      L = L + 1
1490      206 LEXDAT(8,J) = NOETEC(L)
1491
1492      DO 208 I = 9, 15
1493      DO 208 J = 1, 8
1494      L = L + 1
1495      208 LEXDAT(I,J) = NOETEC(L)
1496
1497      DO 210 I = 16, 21
1498      DO 210 J = 1, 32
1499      L = L + 1
1500      210 LEXDAT(I,J) = NOETEC(L)

```

```

1501
1502      DO 212 J = 1, 16
1503      L = L + 1
1504      212 LEXDAT(22,J) = NCETEC(L)
1505
1506      DO 214 I = 23, 28
1507      DO 214 J = 1, 8
1508      L = L + 1
1509      214 LEXDAT(I,J) = NDETEC(L)
1510
1511      DO 216 J = 1, 16
1512      L = L + 1
1513      216 LEXDAT(29,J) = NDETEC(L)
1514
1515      DO 218 I = 30, 34
1516      DO 218 J = 1, 8
1517      L = L + 1
1518      218 LEXDAT(I,J) = NDETEC(L)
1519
1520      DO 220 I = 35, 36
1521      DO 220 J = 1, 16
1522      L = L + 1
1523      220 LEXDAT(I,J) = NDETEC(L)
1524
1525      BKILO = KILO
1526      CRATE = BKILO / (4.0 * RATE1K)
1527
1528      DO 236 I = 1, LDET
1529      JEND = IDDET(I,6)
1530      DO 236 J = 1, JEND
1531      IF (LEXDAT(I,J)) 232, 232, 234
1532      232 NEXDAT(I,J) = 0
1533      EXPDAT(I,J) = 0.0
1534      GO TO 236
1535      234 IFRAC = LEXDAT(I,J) .INT. 778
1536      IEXP = (LEXDAT(I,J) .INT. 17008) .SHL. 54
1537      HEXDAT(I,J) = IFRAC * NPWR2(IEXP + 1)
1538      EXPDAT(I,J) = NEXDAT(I,J) * CRATE
1539      236 CONTINUE
1540
1541      C OPEP SCAN ANGLE.
1542
1543      M = 316
1544      N = 0
1545      DO 252 L = 1, 13
1546      NSCAN(N+ 1) = (JUNDAT(M+1) .SHL. 18) .INT. 7777778
1547      NSCAN(N+ 2) = (JUNDAT(M+1) .SHL. 36) .INT. 7777778
1548      NSCAN(N+ 3) = (JUNDAT(M+1) .SHL. 54) .INT. 7777778
1549      NSCAN(N+ 4) = ((JUNDAT(M+1) .SHL. 12) .INT. 7700008) .UN.
1550      2 NSCAN(N+ 5) = ((JUNDAT(M+2) .SHL. 12) .INT. 0077778) .UN.
1551      NSCAN(N+ 6) = (JUNDAT(M+2) .SHL. 30) .INT. 7777778
1552      NSCAN(N+ 7) = ((JUNDAT(M+2) .SHL. 48) .INT. 7777778) .UN.
1553      2 NSCAN(N+ 8) = (JUNDAT(M+3) .SHL. 6) .INT. 7777008) .UN.
1554      NSCAN(N+ 9) = (JUNDAT(M+3) .SHL. 6) .INT. 0000778) .UN.
1555      NSCAN(N+ 10) = (JUNDAT(M+3) .SHL. 24) .INT. 7777778
1556      NSCAN(N+ 11) = (JUNDAT(M+3) .SHL. 42) .INT. 7777778
1557      NSCAN(N+ 12) = JUNDAT(M+3) .INT. 7777778
1558      N = N + 10
1559      252 M = M + 3
1560
1561      DO 254 N = 1, LSFPR
1562      254 SCAN(N) = NSCAN(N) / 100.0
1563
1564      C SHAFT SINE.
1565
1566      M = 356
1567      N = 0
1568      DO 262 L = 1, 26
1569      NSHSIN(N+1) = (JUNDAT(M+1) .SHL. 12) .INT. 3778
1570      NSHSIN(N+2) = (JUNDAT(M+1) .SHL. 24) .INT. 3778
1571      NSHSIN(N+3) = (JUNDAT(M+1) .SHL. 36) .INT. 3778
1572      NSHSIN(N+4) = (JUNDAT(M+1) .SHL. 48) .INT. 3778
1573      NSHSIN(N+5) = JUNDAT(M+1) .INT. 3778
1574      N = N + 5

```

P7

PB1- PB6

A1

A2 - A3
A81- A83

O1 - O2

36

128


```

1575      262 M = M + 1
1576
1577 C SHAFT COSINE.
1578
1579      M = 384
1580      N = 0
1581      DO 272 L = 1, 26
1582      NSHCOS(N+1) = (JUNDAT(M+1) .SHL. 12) .INT. 377B
1583      NSHCOS(N+2) = (JUNDAT(M+1) .SHL. 24) .INT. 377B
1584      NSHCOS(N+3) = (JUNDAT(M+1) .SHL. 36) .INT. 377B
1585      NSHCOS(N+4) = (JUNDAT(M+1) .SHL. 48) .INT. 377B
1586      NSHCOS(N+5) = JUNDAT(M+1) .INT. 377B
1587      N = N + 5
1588      272 M = M + 1
1589
1590 C MAGNETIC FIELD FLUCTUATIONS, ELECTRIC FIELD SENSOR.
1591
1592      M = 412
1593      NBAC = (JUNDAT(M+1) .SHL. 30) .INT. 777777777B
1594      NEFD = JUNCAT(M+1) .INT. 777777777B
1595      BAC = NBAC / 1000.0
1596      EFD = NEFD / 1000.0
1597
1598 C COLEMAN'S MAGNETOMETER DATA. BODY COORD. S/C INTERPOLATED.
1599
1600      M = 416
1601      N = 0
1602      DO 326 L = 1, 64
1603      NCOLE(1,N+1) = (JUNDAT(M+1) .SHL. 30) .INT. 377777777B
1604      NCOLE(2,N+1) = JUNDAT(M+1) .INT. 377777777B
1605      NCOLE(3,N+1) = (JUNDAT(M+2) .SHL. 30) .INT. 377777777B
1606      NCOLE(1,N+2) = JUNDAT(M+2) .INT. 377777777B
1607      NCOLE(2,N+2) = (JUNDAT(M+3) .SHL. 30) .INT. 377777777B
1608      NCOLE(3,N+2) = JUNDAT(M+3) .INT. 377777777B
1609
1610      NSIGN1 = (JUNDAT(M+1) .SHL. 1) .INT. 1B
1611      NSIGN2 = (JUNDAT(M+1) .SHL. 31) .INT. 1B
1612      NSIGN3 = (JUNDAT(M+2) .SHL. 1) .INT. 1B
1613      NSIGN4 = (JUNCAT(M+2) .SHL. 31) .INT. 1B
1614      NSIGN5 = (JUNDAT(M+3) .SHL. 1) .INT. 1B
1615      NSIGN6 = (JUNDAT(M+3) .SHL. 31) .INT. 1B
1616
1617      IF (NSIGN1) 304, 304, 302
1618      302 NCOLE(1,N+1) = - NCOLE(1,N+1)
1619      304 IF (NSIGN2) 308, 308, 306
1620      306 NCOLE(2,N+1) = - NCOLE(2,N+1)
1621      308 IF (NSIGN3) 312, 312, 310
1622      310 NCOLE(3,N+1) = - NCOLE(3,N+1)
1623      312 IF (NSIGN4) 316, 316, 314
1624      314 NCOLE(1,N+2) = - NCOLE(1,N+2)
1625      316 IF (NSIGN5) 320, 320, 318
1626      318 NCOLE(2,N+2) = - NCOLE(2,N+2)
1627      320 IF (NSIGN6) 324, 324, 322
1628      322 NCOLE(3,N+2) = - NCOLE(3,N+2)
1629      324 N = N + 2
1630      326 M = M + 3
1631
1632      DO 332 N = 1, LSFPF
1633      DO 332 L = 1, 3
1634      BCOLE(L,N) = NCOLE(L,N)
1635      332 BCOLE(L,N) = BCOLE(L,N) / 100.0
1636
1637      DO 334 N = 1, LSFPF
1638      334 BCOLE(4,N) = SQRTF((BCOLE(1,N)**2)+(BCOLE(2,N)**2)+(BCOLE(3,N)**2))
1639
1640 C R VALUES.
1641
1642      M = 608
1643      N = 0
1644      DO 352 L = 1, 32
1645      M = M + 1

```

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```

1646     NWORC(N+1) = (JUNDAT(M) .SHL. 15) .INT. 77777B
1647     NWORC(N+2) = (JUNCAT(M) .SHL. 30) .INT. 77777B
1648     NWORC(N+3) = (JUNCAT(M) .SHL. 45) .INT. 77777B
1649     NWORC(N+4) = JUNCAT(M) .INT. 77777B
1650
1651
1652     DO 354 N = 1, LSFPF
1653     354 DRVALU(N) = NWORC(N) / 1000.0
1654
1655

```

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C L VALUES.

```

1656
1657     M = 640
1658     N = 0
1659     DO 362 L = 1, 32
1660     M = M + 1
1661     NWORC(N+1) = (JUNDAT(M) .SHL. 15) .INT. 77777B
1662     NWORC(N+2) = (JUNDAT(M) .SHL. 30) .INT. 77777B
1663     NWORC(N+3) = (JUNDAT(M) .SHL. 45) .INT. 77777B
1664     NWORC(N+4) = JUNDAT(M) .INT. 77777B
1665     362 N = N + 4
1666
1667     DO 364 N = 1, LSFPF
1668     364 DLVALU(N) = NWORC(N) / 1000.0
1669

```

C MAGNETIC LATITUDE VALUES.

```

1670
1671     M = 672
1672     N = 0
1673     DO 386 L = 1, 32
1674     M = M + 1
1675     NWORC(N+1) = (JUNDAT(M) .SHL. 15) .INT. 37777B
1676     NWORC(N+2) = (JUNDAT(M) .SHL. 30) .INT. 37777B
1677     NWORC(N+3) = (JUNDAT(M) .SHL. 45) .INT. 37777B
1678     NWORC(N+4) = JUNCAT(M) .INT. 37777B
1679
1680     NSIGN1 = (JUNDAT(M) .SHL. 11) .INT. 1B
1681     NSIGN2 = (JUNDAT(M) .SHL. 16) .INT. 1B
1682     NSIGN3 = (JUNCAT(M) .SHL. 31) .INT. 1B
1683     NSIGN4 = (JUNDAT(M) .SHL. 46) .INT. 1B
1684
1685     IF (NSIGN1) 374, 374, 372
1686     372 NWORC(N+1) = - NWORC(N+1)
1687     374 IF (NSIGN2) 378, 378, 376
1688     376 NWORC(N+2) = - NWORC(N+2)
1689     378 IF (NSIGN3) 382, 382, 380
1690     380 NWORC(N+3) = - NWORC(N+3)
1691     382 IF (NSIGN4) 386, 386, 384
1692     384 NWORC(N+4) = - NWORC(N+4)
1693     386 N = N + 4
1694
1695

```

```

1696     DO 392 N = 1, LSFPF
1697     392 DMGLAT(N) = NWORC(N) / 100.0
1698

```

C MAIN BODY COMPUTATOR ANALOG WORDS (FIRST 12).

```

1700
1701     M = 704
1702     N = 0
1703     DO 402 L = 1, 2
1704     NMBAN(N+1) = (JUNDAT(M+1) .SHL. 12) .INT. 377B
1705     NMBAN(N+2) = (JUNDAT(M+1) .SHL. 24) .INT. 377B
1706     NMBAN(N+3) = (JUNDAT(M+1) .SHL. 36) .INT. 377B
1707     NMBAN(N+4) = (JUNDAT(M+1) .SHL. 48) .INT. 377B
1708     NMBAN(N+5) = JUNCAT(M+1) .INT. 377B
1709     N = N + 5
1710     402 M = M + 1
1711     NMBAN(N+1) = (JUNDAT(M+1) .SHL. 12) .INT. 377B
1712     NMBAN(N+2) = (JUNCAT(M+1) .SHL. 24) .INT. 377B
1713

```

12

```

1714     DO 404 L = 1, LMBCWD
1715     404 VMEAN(L) = 0.02 * NMBAN(L)
1716

```

C QPEP COMPUTATOR ANALOG WORDS (32).

```

1717     M = 708
1718
1719

```

```

1720      N = 0
1721      DO 412 L = 1, 6
1722      NOPAN(N+1) = (JUNCAT(M+1) .SHL. 12) .INT. 3778
1723      NOPAN(N+2) = (JUNCAT(M+1) .SHL. 24) .INT. 3778
1724      NOPAN(N+3) = (JUNCAT(M+1) .SHL. 36) .INT. 3778
1725      NOPAN(N+4) = (JUNCAT(M+1) .SHL. 48) .INT. 3778
1726      NOPAN(N+5) = JUNCAT(M+1) .INT. 3778
1727      N = N + 5
1728      412 M = M + 1
1729      NOPAN(N+1) = (JUNCAT(M+1) .SHL. 12) .INT. 3778
1730      NOPAN(N+2) = (JUNCAT(M+1) .SHL. 24) .INT. 3778
1731
1732      DO 414 L = 1, LOPWD
1733      414 VOPAN(L) = 0.02 * NOPAN(L)
1734
1735      G SUB COMMUTATORS 2 AND 3 DATA (36 WORDS ADDED ON END OF ORIG. S/C DATA RECORD).
1736
1737      M = 716
1738      N = 0
1739      DO 422 L = 1, 7
1740      NSUB23(N+1) = (JUNCAT(M+1) .SHL. 12) .INT. 3778
1741      NSUB23(N+2) = (JUNCAT(M+1) .SHL. 24) .INT. 3778
1742      NSUB23(N+3) = (JUNCAT(M+1) .SHL. 36) .INT. 3778
1743      NSUB23(N+4) = (JUNCAT(M+1) .SHL. 48) .INT. 3778
1744      NSUB23(N+5) = JUNCAT(M+1) .INT. 3778
1745      N = N + 5
1746      422 M = M + 1
1747      NSUB23(N+1) = (JUNCAT(M+1) .SHL. 12) .INT. 3778
1748
1749      DO 424 L = 1, 35
1750      424 VSUB23(L) = 0.02 * NSUB23(L)
1751      VSUB23(36) = NSUB23(36)
1752
1753      C      M = 724
1754
1755      CALL PSCDATA
1756      RETURN
1757
1758      END
1759
1760      SUBROUTINE PSCDATA
1761
1762      USE TWENTY
1763
1764      C ARE THERE ERRORS IN THE S/C DATA RECORD.
1765
1766      IF (NSHIFT) 42, 42, 20
1767      20 IF (NSHIFT - 7) 22, 22, 42
1768      22 IF (IDERR) 24, 24, 26
1769      24 IDERR = 10
1770      CALL FRAME (1)
1771      CALL MAP (0.0, 1024.0, 0.0, 1024.0)
1772      CALL SETLCH (4.0, 1016.0, 1, 0, 0, 0)
1773      WRITE OUTPUT TAPE NP, 1000
1774      26 GO TO (28, 30, 32, 34, 36, 38, 40), NSHIFT
1775      28 WRITE (NP, 1002) NSRUN, NSREEL, NSFILE, NSRECO
1776      GO TO 42
1777      30 WRITE (NP, 1004) NSRUN, NSREEL, NSFILE, NSRECO
1778      GO TO 42
1779      32 WRITE (NP, 1006) NSRUN, NSREEL, NSFILE, NSRECO
1780      GO TO 42
1781      34 WRITE (NP, 1008) NSRUN, NSREEL, NSFILE, NSRECO
1782      GO TO 42
1783      36 WRITE (NP, 1010) NSRUN, NSREEL, NSFILE, NSRECO
1784      GO TO 42
1785      38 WRITE (NP, 1012) NSRUN, NSREEL, NSFILE, NSRECO
1786      GO TO 42
1787      40 WRITE (NP, 1014) NSRUN, NSREEL, NSFILE, NSRECO
1788      GO TO 42
1789      42 CONTINUE
1790
1791      C CONVERT THE HILLISECONDS OF DAY TO HOURS, MINUTES, AND SECONDS.
1792
1793
1794
1795

```

32

PARITY

WORD CNT

FILL DAT

NO SYNC

SYNC SHF

GND SHF

SYNC GND

```

1796 DO 308 N = 1, LSFPR
1797 IF (MILSEC(N)) 304, 304, 302
1798 302 IF (86400000 - MILSEC(N)) 304, 306, 306
1799 304 SEC DAY(N) = SCMINS(N) = SECONS(N) = SCHOUR(N) = 0.0
1800 NSHOUR(N) = NSMIN(N) = MILSEC(N) = 0
1801 GO TO 308
1802 305 SECTIM = MILSEC(N)
1803 DELTHR = SEC DAY(N) = SECTIM / 1000.0
1804 SCHOUR(N) = DELTHR / 3600.0
1805 NSHOUR(N) = SCHOUR(N) + 0.0001
1806 HOURS = NSHOUR(N)
1807 DELTMN = DELTHR - (HOURS * 3600.0)
1808 ENOMIN(N) = SCMINS(N) = DELTMN / 60.0
1809 NSMIN(N) = SCMINS(N) + 0.000001
1810 TMIN = NSMIN(N)
1811 SECONS(N) = DELTMN - (TMIN * 60.0)
1812 308 CONTINUE
1813
1814 DO 322 MSBEG = 1, LSFPR
1815 IF (MILSEC(MSBEG)) 322, 322, 324
1816 322 CONTINUE
1817 RETURN
1818
1819 324 DO 326 MSEND = LSFPR, 1, -1
1820 IF (MILSEC(MSEND)) 326, 326, 328
1821 326 CONTINUE
1822 328 CONTINUE
1823
1824 C COMPUTE THE OPEP SHAFT ANGLE.
1825
1826 DO 368 N = 1, LSFPR
1827 SIN = NSIN = NSHSIN(N)
1828 COS = NCOS = NSHCOS(N)
1829 IF (NSIN - 10) 362, 362, 332
1830 332 IF (NCOS - 10) 362, 362, 334
1831 334 IF (NSIN - 255) 336, 336, 362
1832 336 IF (NCOS - 255) 338, 338, 362
1833
1834 338 IF (NCOS - 194) 346, 340, 340
1835 340 IF (NCOS - 238) 342, 342, 346
1836 342 IF (NSIN - 140) 344, 346, 346
1837 344 ANGLE = -325.67873369 + (0.44130649293 * COS)
1838 GO TO 364
1839
1840 346 IF (NCOS - 220) 350, 348, 348
1841 348 ANGLE = -235.82879602 + (0.44599950832 * SIN)
1842 GO TO 364
1843
1844 350 IF (NSIN - 220) 354, 352, 352
1845 352 ANGLE = -31.591760526 - (0.46478719617 * COS)
1846 GO TO 364
1847
1848 354 IF (NCOS - 32) 356, 356, 358
1849 356 ANGLE = 55.688556804 - (0.44130319697 * SIN)
1850 GO TO 364
1851
1852 358 IF (NSIN - 32) 360, 360, 362
1853 360 ANGLE = 36.230472677 + (0.44414727311 * COS)
1854 GO TO 364
1855
1856 362 ANGLE = 0.0
1857 GO TO 368
1858 364 IF (ANGLE) 366, 368, 368
1859 366 ANGLE = 360.0 + ANGLE
1860 368 SHAFT(N) = ANGLE
1861
1862 C COMPUTE THE WINDOW LOCK ANGLE.
1863
1864 DO 384 N = 1, LSFPR
1865 ANGLE = SHAFT(N) + SCAN(N)
1866 IF (ANGLE - 360.0) 384, 384, 382
1867 382 ANGLE = ANGLE - 360.0
1868 384 DIRECT(N) = ANGLE
1869

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1870 C COMPUTE THE MAGNETIC ASPECT ANGLE.
1871
1872 DO 396 N = 1, LSFFR
1873 IF (BCOLE(4,N)) 396, 396, 392
1874 392 ANGLE = DIRECT(N) * RADDEG
1875 COSTH = ((BCOLE(1,N) * COSF(ANGLE)) +
1876 2 (BCOLE(2,N) * SINF(ANGLE))) / BCOLE(4,N)
1877 IF (ABSF(COSTH) - 0.99985) 394, 394, 396
1878 394 THETAB(N) = DEGRAD * ACOSF(COSTH)
1879 396 CONTINUE
1880
1881 C SET VERY HIGH DATA POINTS TO ZERO (SHOULD NOT BE ANY).
1882
1883 DO 436 I = 1, LDET
1884 JEND = IDDET(I,6)
1885 DO 436 J = 1, JENC
1886 IF (EXPDAT(I,J)) 434, 436, 432
1887 432 IF (EXPDAT(I,J) - 1.0E+6) 436, 436, 434
1888 434 EXPDAT(I,J) = 0.0
1889 436 CONTINUE
1890
1891 C IF 2 KILOBIT, AVERAGE THE MAIN DETECTORS.
1892
1893 IF (KILO - 1) 456, 456, 452
1894 452 DO 454 I = 1, LDET
1895 KEND = IDDET(I,7)
1896 DO 454 K = 1, KEND
1897 J = 2 * K
1898 454 TWODAT(I,K) = (EXPDAT(I,J-1) + EXPDAT(I,J)) / 2.0
1899 456 CONTINUE
1900
1901 C TIME AXIS SCALE SHIFT FOR END OF HOUR.
1902
1903 IF (ICHOURL) 502, 502, 520
1904 502 DO 506 N = 1, LSFFR
1905 IF (ENDMIN(N) - 60.0) 504, 508, 506
1906 504 IF (ENDMIN(N) - 55.0) 506, 508, 508
1907 506 CONTINUE
1908 GO TO 524
1909
1910 508 DO 512 N2 = N, LSFFR
1911 IF (ENDMIN(N2)) 512, 512, 510
1912 510 IF (ENDMIN(N2) - 5.0) 514, 514, 512
1913 512 CONTINUE
1914 GO TO 524
1915
1916 514 DO 516 N = N2, LSFFR
1917 516 ENDMIN(N) = ENDMIN(N) + 60.0
1918 ICHOURL = 10
1919 GO TO 524
1920
1921 520 DO 522 N = 1, LSFFR
1922 522 ENDMIN(N) = ENDMIN(N) + 60.0
1923 524 CONTINUE
1924
1925 C SET THE DETECTOR TIME SHIFT INDEX ARRAY.
1926
1927 IF (NSYNC) 534, 534, 532
1928 532 IF (NSYNC - 16) 536, 536, 534
1929 534 NSYNC = 16
1930 536 NMBID = 17 - NSYNC
1931
1932 DO 538 I = 1, LDET
1933 538 IDDET(I,3) = JDDDET(I,NMBID)
1934
1935 MKILO = NKILO
1936 IF (MKILO) 542, 542, 540
1937 540 IF (MKILO - 4) 548, 544, 542
1938 542 IF (MKILO - 1) 544, 544, 546
1939 544 MKILO = 1
1940 GO TO 548
1941 546 MKILO = 2
1942 548 CONTINUE
1943

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```

1944 C INDIVIDUAL DETECTOR POINT TIME VALUES.
1945 C      1 KB DATA
1946
1947 IF (K1LO - 1) 562, 562, 570
1948 562 DO 564 I = 1, LDET
1949 KBEG = IDDET(I,3)
1950 KOEL = IDDET(I,4)
1951 JEND = IDDET(I,6)
1952 K = KBEG - KOEL
1953
1954 DO 564 J = 1, JEND
1955 K = K + KOEL
1956 DETHIN(I,J) = ENDMIN(K) + PODET(1,I,1) 32
1957 564 DTHOUR(I,J) = SCHOUR(K) + QODET(2,1) 32
1958 GO TO 590
1959
1960 C      2 KB DATA FROM A KB ORIGINAL DATA.
1961
1962 570 IF (MK1LO - 2) 572, 572, 582
1963 572 DO 576 I = 1, LDET
1964 KOEL = IDDET(I,4)
1965 JEND = IDDET(I,6)
1966 K = IDDET(I,8) 1
1967 K = K - KOEL
1968 SINK = IDDET(I,3) - 1
1969 COR1 = SINK * TFRAM(1,2)
1970 COR2 = SINK * TFRAM(2,2)
1971
1972 DO 574 J = 1, JEND
1973 K = K + KOEL
1974 DTHINS(I,J) = ENDMIN(K) + COR1 + QODET(1,I,2) + PODET(1,I,2) 32
1975 574 DTHOUR(I,J) = SCHOUR(K) + COR2 + QODET(2,I,2) + QODET(2,2) 32
1976
1977 KEND = IDDET(I,7)
1978 DO 576 K = 1, KEND
1979 J = 2 * K
1980 575 DETHIN(I,K) = (DTHINS(I,J-1) + DTHINS(I,J)) / 2.0 16
1981 GO TO 590
1982
1983 C      2 KB DATA FROM 64 KB ORIGINAL DATA.
1984
1985 582 DO 586 I = 1, LDET
1986 KOEL = IDDET(I,4)
1987 JEND = IDDET(I,6)
1988 K = IDDET(I,9) 3 5 9
1989 K = K - KOEL
1990 SINK = IDDET(I,3) - 1
1991 COR1 = SINK * TFRAM(1,3)
1992 COR2 = SINK * TFRAM(2,3)
1993
1994 DO 584 J = 1, JEND
1995 K = K + KOEL
1996 DTHINS(I,J) = ENDMIN(K) + COR1 + QODET(1,I,3) + PODET(1,I,3) 32
1997 584 DTHOUR(I,J) = SCHOUR(K) + COR2 + QODET(2,I,3) + QODET(2,3) 32
1998
1999 KEND = IDDET(I,7)
2000 DO 586 K = 1, KEND
2001 J = 2 * K
2002 585 DETHIN(I,K) = (DTHINS(I,J-1) + DTHINS(I,J)) / 2.0 16
2003
2004 590 CONTINUE
2005
2006 C ASPECT ANGLE TIME VALUES.
2007
2008 DO 602 N = 1, LSFPR
2009 ASPMIN(N) = ENDMIN(N) + (108.888888 * TWORD(1,MK1LO))
2010 602 ASPHOUR(N) = SCHOUR(N) + (108.888888 * TWORD(2,MK1LO))
2011
2012 CALL SSCDATA
2013 RETURN
2014
2015 1000 FORMAT (40X, 12H DATA ERRORS//)
2016 1002 FORMAT (4H RUN, I5, 6H REEL, I3, 6H FILE, I3, 6H RECORD, I4, 39
2017 2 50H THERE WAS A PARITY ERROR IN READING THIS RECORD.)

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2018 1004 FORMAT (4H RUN, I5, 6H REEL, I3, 6H FILE, I3, 8H RECORD, I4,
2019 2 54H THERE WAS A WORD COUNT ERROR IN READING THIS RECORD.)
2020 1006 FORMAT (4H RUN, I5, 6H REEL, I3, 6H FILE, I3, 8H RECORD, I4,
2021 2 57H WAS REJECTED BECAUSE IT CONSISTS ENTIRELY OF FILL DATA.)
2022 1008 FORMAT (4H RUN, I5, 6H REEL, I3, 6H FILE, I3, 8H RECORD, I4,
2023 2 61H WAS REJECTED BECAUSE THERE WAS NOT EVEN ONE MB SYNC SIGNAL.)
2024 1010 FORMAT (4H RUN, I5, 6H REEL, I3, 6H FILE, I3, 8H RECORD, I4,
2025 2 48H THE MB SYNC SIGNAL SHIFTED DURING THIS RECORD.)
2026 1012 FORMAT (4H RUN, I5, 6H REEL, I3, 6H FILE, I3, 8H RECORD, I4,
2027 2 50H THE MB GROUND SIGNAL SHIFTED DURING THIS RECORD.)
2028 1014 FORMAT (4H RUN, I5, 6H REEL, I3, 6H FILE, I3, 8H RECORD, I4,
2029 2 61H BOTH MB SYNC AND GROUND SIGNALS SHIFTED DURING THIS RECORD.)
2030
2031 END
2032
2033 SUBROUTINE PORDATA
2034
2035 USE TWENTY
2036
2037 RATIC = 0.0
2038
2039
2040
2041 C OBTAIN A-O PLOT LEGEND DATA
2042
2043 LEND = 0
2044 DO 14 L = 1, 4
2045 IF (ATODAT(L,1)) 14, 14, 12
2046 12 LEND = L
2047 14 CONTINUE
2048
2049 LBEG = 1
2050 DO 26 N = NATBEG, 18
2051 SECPLT = ORPOAT(2,N)
2052 IF (SECPLT - ATODAT(LEND,1) - 2) 22, 22, 28
2053
2054 22 DO 26 L = LBEG, LEND
2055 SECORB = ATODAT(L,1)
2056 NDEL = ABSF (SECORB - SECPLT)
2057 IF (2 - NDEL) 26, 26, 24
2058
2059 24 ORBDAT( 5,N) = ATODAT(L, 3)
2060 ORBDAT( 6,N) = ATODAT(L, 4)
2061 ORBDAT( 7,N) = ATODAT(L, 5)
2062 ORBDAT( 8,N) = ATODAT(L, 6)
2063 ORBDAT( 9,N) = ATODAT(L, 7)
2064 ORBDAT(10,N) = ATODAT(L, 8)
2065 ORBDAT(11,N) = ATODAT(L, 9)
2066 ORBDAT(12,N) = ATODAT(L, 2)
2067 ORBDAT(13,N) = ATODAT(L,10)
2068 ORBDAT(14,N) = ATODAT(L,11)
2069 ORBDAT(15,N) = ATODAT(L,12)
2070 ORBDAT(16,N) = ATODAT(L,13)
2071 ORBDAT(17,N) = ATODAT(L,14)
2072 ORBDAT(18,N) = ATODAT(L,15)
2073 ORBDAT(19,N) = ATODAT(L,16)
2074
2075 MOTIME(3,N) = (ATODAT(L,2) / 3600.0) + 0.001
2076 HOURS = MOTIME(3,N)
2077 DELSC = ATODAT(L,2) - (HOURS * 3600.0)
2078 MOTIME(4,N) = (DELSCL / 60.0) + 0.001
2079 THINS = MOTIME(4,N)
2080 MOTIME(5,N) = DELSC - (THINS * 60.0)
2081
2082 LBEG = L
2083 NATBEG = N
2084 25 CONTINUE
2085 28 CONTINUE
2086
2087 C SHIFT THE A-O DATA FROM THE RECORD ARRAY TO THE SEARCH ARRAY.
2088 C THE RECORD ARRAY ATODAT MAY HAVE 2 OR 4 SETS OF A-O DATA.
2089 C THE SEARCH ARRAY AORDAT WILL HAVE 6 SETS OF A-C DATA.
2090
2091 IF (LEND) 60, 60, 42
2092 42 IF (LEND - 2) 44, 44, 50
2093 44 DO 46 N = 1, 52

```

```

R
L
MAG LAT
PHI GSE
THETA
PHI GSM
THETA
SEC LOC
RIGHT AS
DECLIN
LAT
LONG
PADDLE
B/B0
B
HRS LOC
MIN LOC
SEC LOC

```

```

2094      AORDAT(1,N) = AORDAT(3,N)
2095      AORDAT(2,N) = AORDAT(4,N)
2096      AORDAT(3,N) = AORDAT(5,N)
2097      AORDAT(4,N) = AORDAT(6,N)
2098      AORDAT(5,N) = ATOCAT(1,N)
2099      45 AORDAT(6,N) = ATOCAT(2,N)
2100
2101      NOFLAG(1) = NOFLAG(3)
2102      NOFLAG(2) = NOFLAG(4)
2103      NOFLAG(3) = NOFLAG(5)
2104      NOFLAG(4) = NOFLAG(6)
2105      NOFLAG(5) = NOFLAG(1)
2106      NOFLAG(6) = NOFLAG(2)
2107      GG TC 60
2108
2109      50 DO 52 N = 1, 52
2110      AORDAT(1,N) = AORDAT(5,N)
2111      AORDAT(2,N) = AORDAT(6,N)
2112      AORDAT(3,N) = ATOCAT(1,N)
2113      AORDAT(4,N) = ATOCAT(2,N)
2114      AORDAT(5,N) = ATOCAT(3,N)
2115      52 AORDAT(6,N) = ATOCAT(4,N)
2116
2117      NOFLAG(1) = NOFLAG(5)
2118      NOFLAG(2) = NOFLAG(6)
2119      NOFLAG(3) = NOFLAG(1)
2120      NOFLAG(4) = NOFLAG(2)
2121      NOFLAG(5) = NOFLAG(3)
2122      NOFLAG(6) = NOFLAG(4)
2123      60 CONTINUE
2124
2125      C OBTAIN ATTITUDE-ORBIT DATA.
2126
2127      C   FIND THE APPROPRIATE A-O RECORDS (TIMWISE).
2128
2129      DO 700 N = 1, NOPT
2130
2131      DO 264 L = 6, 2, -1
2132      TSCS = SECAOR(N)
2133      TBEG = AORDAT(L-1,1)
2134      TEND = AORDAT(L, 1)
2135      IF (TSCS) 270, 270, 222
2136      222 IF (TBEG) 264, 226, 224
2137      224 IF (TBEG - 1.0) 226, 228, 228
2138      225 TEST = ABSF (TEND - 60.0)
2139      IF (TEST - 1.0) 236, 236, 264
2140      229 IF (TEND) 264, 232, 230
2141      230 IF (TEND - 1.0) 232, 236, 236
2142      232 TEST = ABSF (TBEG - 86340.0)
2143      IF (TEST - 1.0) 234, 234, 264
2144      234 IF (TSCS - TBEG) 264, 242, 244
2145
2146      235 IF (TEND - TSCS) 240, 280, 238
2147      238 IF (TSCS - TBEG) 252, 242, 300
2148      240 IF (TSCS - TBEG) 264, 242, 244
2149      242 L = L - 1
2150      IF (L - 1) 270, 270, 280
2151
2152      244 IF (TSCS - 85000.0) 264, 264, 246
2153      245 IF (1400.0 - TEND) 264, 264, 248
2154      248 IF (TBEG - TEND) 264, 264, 250
2155      250 TEND = TEND + 86400.0
2156      GO TO 300
2157
2158      252 IF (TBEG - TEND) 264, 264, 254
2159      254 IF (TBEG - 85000.0) 264, 264, 256
2160      256 IF (1400.0 - TSCS) 264, 264, 258
2161      258 TBEG = TBEG - 86400.0
2162      GO TO 300
2163
2164      264 CONTINUE
2165
2166      270 SOEP(N) = GSEPHI(N) = GSETHE(N) = GSMPHI(N) = GSMTHE(N) = 0.0
2167      DO 272 NN = 2, 6

```



```

2168      DO 272 NN = 1, 4
2169      272 BMGSC(MM,NN,N) = 0.0
2170      GO TO 700
2171
2172      DO 282 K = 1, 3
2173      POSITV(K) = AORDAT(L,K+16)
2174      282 SOLARV(K) = AORDAT(L,K+19)
2175      POSITV(4) = SQRT((POSITV(1)**2)+(POSITV(2)**2)+(POSITV(3)**2))
2176      DO 284 K = 1, 9
2177      TGSE(K) = AORDAT(L,K+34)
2178      284 TGSM(K) = AORDAT(L,K+43)
2179      NTGSE = NTGSM = 0
2180      TFRACT = 1.0
2181      GO TO 444
2182
2183      C      TIME INTERPOLATION VALLE.
2184
2185      303 TDELTA = TSCS - TBEG
2186      TINTER = TENC - TEEG
2187      IF (TINTER)      270, 270, 302
2188      302 IF (2400.0 - TINTER) 270, 270, 304
2189      304 TFRACT = TDELTA / TINTER
2190      IF (TFRACT) 270, 270, 306
2191      305 CONTINUE
2192
2193      IF (TFRACT - 0.5) 322, 324, 324
2194      322 LIOX = L - 1
2195      GO TO 330
2196      324 LIOX = L
2197      330 CONTINUE
2198
2199      C      STORE TRANSFORMATION MATRICES.
2200
2201      NTGEI = NTGSE = NTGSM = 0
2202      MM = 25
2203      M = 0
2204      DO 352 J = 1, 3
2205      DO 350 K = 1, 3
2206      MM = MM + 1
2207      IF (AORDAT(L-1,MM) - 1.0) 342, 344, 344
2208      342 IF (AORDAT(L, MM) - 1.0) 344, 344, 344
2209      344 DO 346 KK = 1, 9
2210      346 TGEI(KK) = 0.0
2211      NTGEI = 10
2212      GO TO 354
2213      349 U(K) = AORDAT(L-1,MM)
2214      350 V(K) = AORDAT(L, MM)
2215      CALL INTERP (TFRACT, U(1), V(1), R(1), RN(1), RATIO)
2216      DO 352 K = 1, 3
2217      M = M + 1
2218      352 TGEI(M) = RN(K)
2219      354 CONTINUE
2220
2221      MM = 34
2222      M = 0
2223      DO 372 J = 1, 3
2224      DO 370 K = 1, 3
2225      MM = MM + 1
2226      IF (AORDAT(L-1,MM) - 1.0) 362, 364, 364
2227      362 IF (AORDAT(L, MM) - 1.0) 364, 364, 364
2228      364 DO 366 KK = 1, 9
2229      366 TGSE(KK) = 0.0
2230      NTGSE = 10
2231      GO TO 374
2232      369 U(K) = AORDAT(L-1,MM)
2233      370 V(K) = AORDAT(L, MM)
2234      CALL INTERP (TFRACT, U(1), V(1), R(1), RN(1), RATIO)
2235      DO 372 K = 1, 3
2236      M = M + 1
2237      372 TGSE(M) = RN(K)
2238      374 CONTINUE
2239
2240      MM = 43
2241      M = 0

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```

2242      DO 392 J = 1, 3
2243      DO 390 K = 1, 3
2244      MM = MM + 1
2245      IF (AORDAT(L-1,MM) - 1.0) 382, 384, 384
2246      382 IF (AORDAT(L, MM) - 1.0) 388, 384, 384
2247      384 DO 386 KK = 1, 9
2248      386 TGSMM(KK) = 0.0
2249      NTGSM = 10
2250      GO TO 394
2251      388 U(K) = AORDAT(L-1,MM)
2252      390 V(K) = AORDAT(L, MM)
2253      CALL INTERP (TFRAC, U(1), V(1), R(1), RN(1), RATIO)
2254      DO 392 K = 1, 3
2255      H = H + 1
2256      392 TGSMM(H) = RN(K)
2257      394 CONTINUE
2258
2259 C   POSITION VECTOR INTERPOLATION.
2260
2261      DO 422 K = 1, 3
2262      U(K) = AORDAT(L-1,K+16)
2263      422 V(K) = AORDAT(L, K+16)
2264      CALL INTERP (TFRAC, U(1), V(1), POSITV(1), R(1), RATIO)
2265
2266 C   SOLAR VECTOR - NO INTERPOLATION.
2267
2268      DO 432 K = 1, 3
2269      432 SOLARV(K) = AORDAT(LIDX,K+19)
2270      SOLARV(4) = SQRT((SOLARV(1)**2)+(SOLARV(2)**2)+(SOLARV(3)**2))
2271      IF (SOLARV(4)) 434, 434, 436
2272      434 SOEP(N) = 0.0
2273      GO TO 450
2274      435 DO 438 K = 1, 4
2275      438 SOLARV(K) = SOLARV(K) / SOLARV(4)
2276
2277 C   SUN APERTURE ANGLE FROM SOLAR VECTOR AND WINDOW LOOK ANGLE.
2278
2279      444 ANGLE = VWINO(N) * RADDEG
2280 C   V(1) = 0.9799247 * COSF (ANGLE)
2281 C   V(2) = 0.9799247 * SINF (ANGLE)
2282 C   V(3) = 0.1993679
2283      V(1) = COSF (ANGLE)
2284      V(2) = SINF (ANGLE)
2285      V(3) = 0.0
2286
2287      V(4) = SQRT((V(1)**2) + (V(2)**2) + (V(3)**2))
2288      DO 445 K = 1, 4
2289      445 RN(K) = V(K) / V(4)
2290
2291      SCPROD = 0.0
2292      DO 446 K = 1, 3
2293      446 SCPROD = SCPROD + (SOLARV(K) * RN(K))
2294      TERM = SCPROD / SOLARV(4)
2295      IF (ABSF(TERM) - 1.0) 448, 448, 434
2296      448 SOEP(N) = DEGRAD * ACOSF (TERM)
2297      450 CONTINUE
2298
2299 C   COMPUTE PHI AND THETA IN GSE COORDINATES.
2300
2301      GSEPHI(N) = GSETHE(N) = GSMPHI(N) = GSMTHE(N) = 0.0
2302      IF (NTGSE) 452, 452, 462
2303      452 CALL TRANSV (TGSE(1), POSITV(1), R(1), RN(1))
2304      IF (ABSF(RN(1)) - 1.0E-9) 482, 482, 454
2305      454 GSEPHI(N) = DEGRAD * ATANF (RN(2) / RN(1))
2306      GSETHE(N) = DEGRAD * ASINF (RN(3))
2307      IF (RN(1)) 458, 456, 456
2308      455 IF (RN(2)) 460, 462, 462
2309      458 GSEPHI(N) = GSEPHI(N) + 180.0
2310      GO TO 462
2311      460 GSEPHI(N) = GSEPHI(N) + 360.0
2312      462 CONTINUE
2313
2314 C   COMPUTE PHI AND THETA IN GSM COORDINATES.
2315

```

POSITION
VECTOR

WINDOW

SCALAR
PRODUCT

```

2316 IF (NTGSM) 472, 472, 482
2317 472 CALL TRANSV (TGSM(1), POSITV(1), R(1), RN(1))
2318 GSPHI(N) = DEGRAD * ATANF (RN(2) / RN(1))
2319 GSMTHE(N) = DEGRAD * ASINF (RN(3))
2320 IF (RN(1)) 478, 476, 476
2321 475 IF (RN(2)) 480, 482, 482
2322 478 GSPHI(N) = GSPHI(N) + 180.0
2323 GO TO 482
2324 481 GSPHI(N) = GSPHI(N) + 360.0
2325 482 CONTINUE
2326
2327 C 3 VECTOR (GEI) INTERPOLATION FROM A-O EXPANSION.
2328 C NORMALIZED TO FIELD STRENGTH IN GAMMA.
2329
2330 DO 508 K = 1, 3
2331 IF (AORDAT(L-1,K+22) - 1.0) 502, 504, 504
2332 502 IF (AORDAT(L, K+22) - 1.0) 506, 504, 504
2333 504 GO TO 510
2334 505 U(K) = AORDAT(L-1,K+22)
2335 505 V(K) = AORDAT(L, K+22)
2336
2337 CALL INTERP (TFRAC, U(1), V(1), R(1), RN(1), RATIO)
2338 TNORM = AORDAT(L-1,16) +
2339 2 (RATIO * (AORDAT(L,16) - AORDAT(L-1,16)))
2340 BMGSC(3,1,N) = RN(1) * TNORM
2341 BMGSC(3,2,N) = RN(2) * TNORM
2342 BMGSC(3,3,N) = RN(3) * TNORM
2343 BMGSC(3,4,N) = TNORM
2344 510 CONTINUE
2345
2346 C CONVERT COLEMANS MAGNETOMETER VALUES FROM BODY TO IDEAL COORDINATES.
2347
2348 IF (NTGEI) 526, 526, 700
2349 526 U(1) = BMGSC(1,1,N)
2350 U(2) = BMGSC(1,2,N)
2351 U(3) = BMGSC(1,3,N)
2352 CALL TRANSV (TGEI(1), U(1), R(1), BG(1))
2353
2354 DO 528 K = 1, 4
2355 528 BMGSC(2,K,N) = V(K) = R(K)
2356
2357 C DEVIATIONS BETWEEN COLEMANS MAGNETOMETER DATA AND A-O COMPUTED DATA.
2358
2359 DO 532 K = 1, 4
2360 532 BMGSC(4,K,N) = BMGSC(2,K,N) - BMGSC(3,K,N)
2361
2362 C CONVERT COLEMANS MAGNETOMETER VALUES TO GSE COORDINATES.
2363
2364 IF (NTGSE) 542, 542, 550
2365 542 CALL TRANSV (TGSE(1), V(1), R(1), RN(1))
2366 BMGSC(5,1,N) = R(1)
2367 BMGSC(5,2,N) = R(2)
2368 BMGSC(5,3,N) = R(3)
2369 BMGSC(5,4,N) = R(4)
2370
2371 C CONVERT COLEMANS MAGNETOMETER VALUES TO GSM COORDINATES.
2372
2373 IF (NTGSM) 552, 552, 600
2374 552 CALL TRANSV (TGSM(1), V(1), R(1), RN(1))
2375 BMGSC(6,1,N) = R(1)
2376 BMGSC(6,2,N) = R(2)
2377 BMGSC(6,3,N) = R(3)
2378 BMGSC(6,4,N) = R(4)
2379
2380 C COMPUTE THE INCLINATION AND DECLINATION ANGLES.
2381
2382 DO 604 IF (BMGSC(2,4,N)) 690, 690, 602
2383 602 DO 604 K = 1, 4
2384 604 BA(K) = BMGSC(3,K,N) / BMGSC(3,4,N)
2385
2386 DRASC = (TFRAC * (AORDAT(L,10) - AORDAT(L-1,10))) + AORDAT(L-1,10) RIGHT AS
2387 DLONG = (TFRAC * (AORDAT(L,13) - AORDAT(L-1,13))) + AORDAT(L-1,13) LONG
2388 DLAMB = DGNAGE + DRASC - DLONG
2389 DLRAD = DLAMB * RADDEG

```

B BODY
VECTOR

B FIELD
STRENGTH

A-O EXP

```

2390      DU(1) = COSF (DLRAD) * COSMGN
2391      DU(2) = SINP (DLRAD) * COSMGN
2392      DU(3) = SINMGN
2393      DU(4) = SQRTF ((DU(1)**2) + (DU(2)**2) + (DU(3)**2))
2394
2395      IF (DU(4)) 690, 690, 610
2396 610 DO 612 K = 1, 4
2397 612 DG(K) = DU(K) / DU(4)
2398
2399
2400      YU(1) = (DG(2) * RG(3)) - (DG(3) * RG(2))
2401      YU(2) = (DG(3) * RG(1)) - (DG(1) * RG(3))
2402      YU(3) = (DG(1) * RG(2)) - (DG(2) * RG(1))
2403      YU(4) = SQRTF ((YU(1)**2) + (YU(2)**2) + (YU(3)**2))
2404
2405      IF (YU(4)) 690, 690, 620
2406 620 DO 622 K = 1, 4
2407 622 YG(K) = YU(K) / YU(4)
2408
2409      XU(1) = (DG(2) * YG(3)) - (DG(3) * YG(2))
2410      XU(2) = (DG(3) * YG(1)) - (DG(1) * YG(3))
2411      XU(3) = (DG(1) * YG(2)) - (DG(2) * YG(1))
2412      XU(4) = SQRTF ((XU(1)**2) + (XU(2)**2) + (XU(3)**2))
2413
2414      IF (XU(4)) 690, 690, 630
2415 630 DO 632 K = 1, 4
2416 632 XG(K) = XU(K) / XU(4)
2417
2418      DO 642 K = 1, 3
2419      TDMS(K) = XG(K)
2420      TDMS(K+3) = YG(K)
2421 642 TDMS(K+6) = DG(K)
2422
2423      CALL TRANSV (TDMS(1), RG(1), R(1), RD(1))
2424      CALL TRANSV (TDMS(1), BG(1), R(1), BD(1))
2425      CALL TRANSV (TDMS(1), BA(1), R(1), BC(1))
2426
2427      RB3P = (RD(1) * BC(1)) + (RD(3) * BD(3))
2428      IF (ABSF (RB3P) - 0.99985) 654, 654, 652
2429 652 VINCL = 0.0
2430      GO TO 656
2431 654 VINCL = (ACOSF (RB3P) * DEGRAD) - 90.0
2432 656 CONTINUE
2433
2434      RB1M = (RD(1) * BD(3)) - (RD(3) * BD(1))
2435      IF (BD(2)) 662, 664, 662
2436 662 IF (RB1M) 666, 666, 666
2437 664 VDECL = 0.0
2438      GO TO 668
2439 666 VDECL = (- ATANF (BD(2) / RB1M) * DEGRAD)
2440 668 CONTINUE
2441
2442      AINCL = (ACOSF ((RD(1)*BD(1)) + (RD(3)*BD(3))) * DEGRAD) - 90.0
2443
2444      BMGSC(7,1,N) = VINCL
2445      BMGSC(7,2,N) = VDECL
2446      BMGSC(7,3,N) = BMGSC(1,4,N)
2447      BMGSC(7,4,N) = AINCL
2448 593 CONTINUE
2449
2450 703 CONTINUE
2451
2452      RETURN
2453
2454      END
2455
2456      SUBROUTINE SSCDATA
2457
2458
2459
2460
2461      USE TWENTY
2462
2463      C INITIAL PLOT VALUES.
2464
2465      IF (IBEG)      20, 20, 2

```

MAG POLE

RADIUS V
COLE B
A-O EXP

INCLIN

DECLIN

J-C INCL

```

2466      2 IF (KIL0 - 1) 4, 6, 8
2467      % RETURN
2468      5 TDEL = 2.44
2469      GO TO 10
2470      8 TDEL = 1.22
2471      10 IF (SCHINS(MSBEG) + TDEL - ENDTIM) 20, 20, 12
2472      12 CALL BSPACE (NU)
2473      IUDONE = -10
2474      MURECD = MURECD - 1
2475      GO TO 460
2476
2477      20 IF (IBEG) 22, 22, 98
2478      22 IBEG = 10
2479      NSMON = LMONTH(NKMON)
2480
2481      LEGEND(1, 2) = NORBIT
2482      LEGEND(1, 3) = NSYEAR
2483      LEGEND(1, 4) = NSMON
2484      LEGEND(1, 5) = NSDAY
2485      LEGEND(1, 6) = NSCAY
2486      LEGEND(1, 7) = NSDAY
2487      LEGEND(1, 8) = NSHOUR(MSBEG)
2488      LEGEND(1, 9) = NSMIN (MSBEG)
2489      SEGENO(1) = SECONS(MSBEG)
2490      LEGEND(1,10) = NSRUN
2491      LEGEND(1,11) = NSREEL
2492      LEGEND(1,12) = NSFILE
2493      LEGEND(1,13) = NSREC'D
2494      LEGEND(1,14) = NEITRT(NKIL0)
2495      LEGEND(1,15) = NURECD
2496      LEGEND(1,16) = MBITRT(KILO)
2497
2498      STRTIM = SCHINS(MSBEG)
2499      ENDTIM = STRTIM + 19.6600
2500
2501      C COMPUTE THE TIME AXIS SCALING LIMITS.
2502
2503      NATBEG = 1
2504
2505      NOEL = SCHINS(MSBEG) / 2.0
2506      TDEL = NOEL
2507      XMIN = TDEL * 2.0
2508      XMAX = XMIN + 22.0
2509
2510      XHOUR = NSHOUR(MSBEG)
2511      XTIME = XHOUR + (XMIN / 60.0)
2512
2513      C INITIALIZE A-0 LEGEND PLOT DATA.
2514
2515      DO 52 N = 1, 19
2516      DO 50 N = 1, 18
2517      ATTOAT(M,N) = ORBDAT(M,N)
2518      50 ORBDAT(M,N) = 0.0
2519      DO 52 N = 1, 5
2520      NOTIME(M,N) = MOTIME(M,N)
2521      52 MOTIME(M,N) = 0
2522
2523      ORBDAT(1,1) = XTIME
2524      TDEL = 0.0333333333
2525      DO 54 N = 2, 18
2526      54 ORBDAT(1,N) = ORBDAT(1,N-1) + TDEL
2527
2528      DO 60 N = 1, 18
2529      ORBDAT(2,N) = ORBDAT(1,N) * 3600.0
2530      IF (ORBDAT(2,N) - 86400.0) 56, 58, 56
2531      55 ORBDAT(2,N) = ORBDAT(2,N) - 86400.0
2532      58 NHOUR = ORBDAT(1,N) + 0.001
2533      ORBDAT(3,N) = NHOUR
2534      NMINS = ((ORBDAT(1,N) - ORBDAT(3,N)) * 60.0) + 0.01
2535      60 ORBDAT(4,N) = NMINS
2536
2537      K = 1
2538      DO 70 N = 1, 18
2539      DO 68 L = K, 18

```

2.4576

1.2288

ORBIT
YEAR
MONTH
DAY MONTH
DAY YEAR
HOUR
MINUTES
SECONDS
RUN NO.
REEL NO.
FILE
RECORD
BIT RATE
MERG REC
BIT RATE

PREVIOUS
PLOT

```

2540      TDEL = ABSF (ORBDAT(2,N) - ATTDAT(2,L))
2541      IF (TDEL - 1.0) E2, 62, 68
2542      DO 64 M = 5, 19
2543      64 ORBDAT(M,N) = ATTCAT(M,L)
2544      DO 66 M = 3, 5
2545      65 MOTIME(M,N) = NOTIME(M,L)
2546      K = L + 1
2547      GO TO 70
2548      68 CONTINUE
2549      70 CONTINUE
2550
2551      DO 72 N = 1, 18
2552      MOTIME(1,N) = ORECAT( 3,N) + 0.1
2553      72 MOTIME(2,N) = ORECAT( 4,N) + 0.1
2554
2555      C FINAL PLOT VALUES.
2556
2557      93 LEGEND(2, 8) = NSHOUR(HSEND)
2558      LEGEND(2, 9) = NSMIN (HSEND)
2559      SEGEN(2) = SECONS(HSEND)
2560      LEGEND(2,12) = NSFILE
2561      LEGEND(2,13) = NSRECD
2562      LEGEND(2,14) = MBITRT(NKILO)
2563      LEGEND(2,15) = NURECD
2564      LEGEND(2,16) = MBITRT(KILO)
2565
2566      C PRINT A LINE OF S/C DATA ON THE HSP TAPE.
2567
2568      IF (NURECD - 1) 102, 104, 102
2569      102 NLINE = NLINE + 1
2570      IF (NLINE - 50) 106, 106, 104
2571      104 NLINE = 1
2572      WRITE OUTPUT TAPE NT, 1000
2573      105 WRITE (NT, 1002) NSRUN, NSREEL, NSFILE, NSRECD, NSYEAR, NSMON,
2574      2 NSDAY, NSDAY, NSHOUR(MSBEG), NSMIN(MSBEG), SECONS(MSBEG),
2575      3 SECDAY(MSEFG), SECDAY(MSEND), MBITRT(NKILO),
2576      4 NURECD, MBITRT(KILO)
2577
2578      1000 FORMAT (1H1/ 45H S/C RUN REEL FILE RECD YEAR MON HDAY YDAY,
2579      2 45H HOUR MIN SEC INIT. SEC FINAL SEC BIT,
2580      3 12H MRECD MBIT//)
2581      1002 FORMAT (5H S/C , 5I5, 2X, A3, 4I5, F7.3, 2F11.3, 2X,A4, I6, 2X,A4)
2582
2583      C TRANSFER THE DETECTOR DATA TO THE PLOTTING DATA ARRAY.
2584
2585      C PLOT DATA ARRAYS HOLD 256 POINTS.
2586
2587      J = JSDET
2588      K = KASP
2589      N = NEFLD
2590      IF (KILO - 1) 400, 310, 330
2591
2592      C 1 KILOBIT DATA. PROCESS 1 RECORD AND STORE.
2593      C FOR PLOT OF EACH POINT.
2594      C 8 RECORDS WILL BE PLOTTED.
2595      C 32 DATA POINTS/RECORD
2596      C 128 ASPECT, ASTIME
2597      C 32 SCTIME, MAGNETOMETER, R, L, MAG LAT, PHI, THETA
2598      C 32 SHAFT, SCAN, WINDOW
2599      C 1 BACVAR, EFIELD, EMTIME
2600      310 M = -1
2601      DO 312 L = 1, 32
2602      M = M + 4
2603      SECAOR(L) = SECDAY(M)
2604      VWINO(L) = DIRECT(M)
2605      DO 312 NN = 1, 4
2606      312 BMGSC(1,NN,L) = ECOL(NN,M)
2607      NOPT = 32
2608      CALL PORDATA
2609
2610      N = N + 1
2611      BACVAR(N) = BAC
2612      EFIELD(N) = EFD
2613      EMTIME(N) = ENDMIN(66)

```

HOUR
 MINUTES
 SECONDS
 FILE
 RECORD
 BIT RATE
 MERG REC
 BIT RATE

```

2614      DO 314 M = 1, 128
2615      K = K + 1
2616      ASTIME(K) = ASPHIN(M)
2617      314 ASPECT(K) = THETAB(M)
2618
2619      M = -1
2620      DO 316 L = 1, LOFR
2621      J = J + 1
2622      M = M + 4
2623
2624      SCTIME(J) = ENDMIN(M)
2625      QSHAFT(J) = SHAFT(M)
2626      QSCAN(J) = SCAN(M)
2627      WINDOW(J) = DIRECT(M)
2628      PRVALU(J) = ORVALU(M)
2629      PLVALU(J) = OLVALU(M)
2630      PMGLAT(J) = OMGLAT(M)
2631
2632      PHIGSE(J) = GSEPHI(L)
2633      THEGSE(J) = GSETHE(L)
2634      PHIGSM(J) = GSMPHI(L)
2635      THEGSM(J) = GSMTHE(L)
2636      SPASA(J) = SOEP(L)
2637
2638      DO 318 MM = 1, 7
2639      DO 316 NN = 1, 4
2640      315 BSCPL(MM,NN,J) = BMGSC(MM,NN,L)
2641
2642      DO 318 I = 1, LOET
2643      MEND = IDDET(I,6)
2644      DO 318 M = 1, MEND
2645      L = NPOINT(I) = APOINT(I) + 1
2646      DETIME(I,L) = DETMIN(I,M)
2647      313 DETOAT(I,L) = EXPDAT(I,M)
2648      GO TO 400
2649
2650      C 2 KILOBIT DATA. PROCESS 1 RECORD AND STORE.
2651      C FOR PLOT OF AVERAGE OF EACH TWO POINTS.
2652      C 16 RECORDS WILL BE PLOTTED.
2653      C 16 DATA POINTS/RECORD
2654      C 128 ASPECT, ASTIME
2655      C 16 SCTIME, MAGNETOMETER, R, L, MAG LAT, PHI, THETA
2656      C 16 SHAFT, SCAN, WINDOW
2657      C 1/2 BACVAR, EFIELD, ETIME
2658
2659      330 M = -3
2660      DO 332 L = 1, 16
2661      M = M + 2
2662      SECAOR(L) = SECDAY(M)
2663      VMINDO(L) = DIRECT(M)
2664      DO 332 NN = 1, 4
2665      332 BMGSC(1,NN,L) = BCOLE(NN,M)
2666      NOPT = 16
2667      CALL PORDATA
2668
2669      IF (NBE) 338, 334, 336
2670      334 N = N + 1
2671      BACVAR(N) = BAC
2672      EFIELD(N) = EFO
2673      ETIME(N) = ENDMIN(65)
2674      NBE = 1
2675      GO TO 338
2676      335 BACVAR(N) = (BACVAR(N) + BAC) / 2.0
2677      EFIELD(N) = (EFIELD(N) + EFO) / 2.0
2678      ETIME(N) = ENDMIN(MSBEG)
2679      NBE = 0
2680      335 CONTINUE
2681
2682      DO 340 M = 1, 128
2683      K = K + 1
2684      ASTIME(K) = ASPHIN(M)
2685      340 ASPECT(K) = THETAB(M)
2686
2687

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```

2688      M = -3
2689      DO 342 L = 1, 16
2690      J = J + 1
2691      M = M + 8
2692
2693      SCTIME(J) = ENDMIN(M)
2694      OSHAFT(J) = SHAFT (M)
2695      OSCAN (J) = SCAN (M)
2696      WINDOW(J) = DIRECT(M)
2697      PRVALU(J) = ORVALU(M)
2698      PLVALU(J) = OLVALU(M)
2699      PMGLAT(J) = OMGLAT(M)
2700
2701      PHIGSE(J) = GSEPHI(L)
2702      THEGSE(J) = GSETHE(L)
2703      PHIGSH(J) = GSMPHI(L)
2704      THEGSH(J) = GSMTHE(L)
2705      SPASA (J) = SOEP (L)
2706
2707      DO 342 MM = 1, 7
2708      DO 342 NN = 1, 4
2709      342 BSCPL(MM,NN,J) = BMGSC(MM,NN,L)
2710
2711      DO 344 I = 1, LOET
2712      MEND = IDDET(I,7)
2713      DO 344 M = 1, MEND
2714      L = NPOINT(I) = NPOINT(I) + 1
2715      DETIME(I,L) = DETMIN(I,M)
2716      344 DETDAY(I,L) = THODAT(I,M)
2717
2718      C FOR 1 KILOBIT DATA - 8 RECORDS WILL BE PLOTTED.
2719      C      2 KILOBIT DATA - 16 RECORDS WILL BE PLOTTED.
2720
2721      400 JSDET = J
2722      KASP = K
2723      NEFLO = N
2724
2725      C GENERATE SPECIAL MAGNETIC ASPECT DATA TAPE.
2726
2727      IF (IGTAPE) 404, 404, 402
2728      402 CALL ASTAPE
2729
2730      C SET TEMPORARY STORAGE ARRAYS TO ZERO.
2731
2732      404 ILAST = (.LOC. ICOM7(2)) - (.LOC. ICOM4(1))
2733      DO 406 IZERO = 1, ILAST
2734      406 ICOM4(IZERO) = 0
2735
2736      C IF PLOTTING DATA ARRAY IS FULL, CALL THE PLOT SUBROUTINE.
2737
2738      IF (KILO - 1) 451, 451, 452
2739      451 JOEL = 32
2740      TOEL = 2.48
2741      GO TO 453
2742      452 JOEL = 16
2743      TOEL = 1.24
2744      453 IF (JSDET + JOEL - LSDET) 455, 455, 460
2745      453 IF (SCHINS(MSEEG) + TOEL - ENOTIM) 456, 460, 460
2746      456 RETURN
2747
2748      ENTRY SSCPLOT
2749
2750      C ANY DATA.
2751
2752      460 DO 462 I = 1, LOET
2753      DO 462 J = 1, JSDET
2754      IF (DETDAT(I,J)) 462, 462, 470
2755      462 CONTINUE
2756      GO TO 750
2757
2758
2759      C IS SPACECRAFT OUTBOUND OR INBOUND.
2760
2761      470 NUM = 0

```



```

2762      DO 476 J = 2, JSDET
2763      IF (PLVALU(J) - PLVALU(J-1)) 474, 476, 472
2764 472 NUM = NUM + 1
2765      GO TC 476
2766 474 NUM = NUM - 1
2767 476 CONTINUE
2768
2769      IF (NUM) 478, 480, 480
2770 478 SCPATH = 9H INBOUND
2771      LPATH = 0
2772      GO TC 482
2773 480 SCPATH = 9H OUTBOUND
2774      LPATH = 1
2775 482 CONTINUE
2776
2777 C      CALL PLOTS.
2778
2779      IF (IPLOT1) 704, 704, 702
2780 702 CALL PLOT1
2781 704 IF (IPLOT2) 708, 708, 706
2782 706 CALL PLOT2
2783 708 IF (IPLOT3) 712, 712, 710
2784 710 CALL PLOT3
2785 712 IF (IPLOT4) 716, 716, 714
2786 714 CALL PLOT4
2787 716 CONTINUE
2788
2789 C      SET PLOTTING ARRAYS TO ZERO.
2790
2791 750 ILAST = (.LOC. ICOM9(2)) - (.LOC. ICOM8(1))
2792      DO 752 IZERO = 1, ILAST
2793 752 ICOM8(IZERO) = 0
2794      ILAST = (.LOC. LCCM2(2)) - (.LOC. LCCM1(1))
2795      DO 754 IZERO = 1, ILAST
2796 754 LCCM1(IZERO) = 0
2797
2798 C      CONTINUE PROCESSING OR EXIT.
2799
2800 C                                  CK      OFF
2801      IF (SENSE SWITCH 1) 790, 782
2802 782 IF (INDFILE(23) - 9) 786, 784, 784
2803 784 CALL FRAME (1)
2804      CALL PLOTE
2805      CALL FRAME (1)
2806 786 RETURN
2807
2808 790 CALL FRAME (1)
2809      CALL PLOTE
2810
2811      WRITE OUTPUT TAPE NT, 1100
2812      PRINT 1100
2813
2814 1100 FORMAT (///// 44H EXECUTION TERMINATED BY SENSE SWITCH 1 DOWN)
2815 1102 FORMAT (///31H THE ASPECT TAPE WAS ENDED WITH, 16, 9H RECORDS.////)
2816
2817      IF (IGTAPE) 794, 794, 792
2818 792 WRITE (NT, 1102) NGRECD
2819      END FILE NG
2820      END FILE NG
2821      END FILE NG
2822      UNLOAD NG
2823 794 UNLOAD NU
2824      CALL EXIT
2825
2826      END
2827
2828      SUBROUTINE PLOT1
2829
2830      USE TWENTY
2831
2832 C      DETECTOR DATA PLOTTING SUBROUTINE.
2833
2834      CALL CLOCK (ICLOC1, ICLOC2)
2835      NLINE = NLINE + 3
2836
2837

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2838      NPAGE = NPAGE + 1
2839      WRITE (NT, 10) NPAGE
2840      10 FORMAT (/ 9H PLOT , I5//)
2841
2842 C DETECTOR PLOTTING CYCLE.
2843
2844      IPLOTX(8) = IPLOTX(17) = IPLOTX(18) = 0
2845
2846      DO 600 NPL = 1, 19
2847      IF (IPLOTX(NPL)) 600, 600, 402
2848 402 ID = IDPLOT(NPL,1) + NPL
2849      IB = ICPLLOT(NPL,2) + NPL
2850      IOMIT = IDPLOT(NPL,3)
2851      IF (IOMIT) 404, 404, 406
2852 404 LEGEND(2,1) = LABDET(IB)
2853      GO TO 408
2854 405 LEGEND(2,1) = 3H
2855 408 LEGEND(1,1) = LAEDET(ID)
2856
2857 C PLOT THE HEADING.
2858
2859      CALL FRAME (1)
2860      CALL MAP (0.0, *024.0, 0.0, 1024.0)
2861      CALL SETLCH (4.0, 1016.0, 1, 0, 0, 0)
2862      WRITE (NP, 1000) (LEGEND(1,M),M=1,9), SEGEN(1),
2863 2 (LEGEND(1,M),M=10,16), NPAGE, LEGEND(2,1),
2864 3 (LEGEND(2,M),M=8,9), SEGEN(2), (LEGEND(2,M),M=12,13),
2865 4 (LEGEND(2,M),M=14,15)
2866
2867      CALL SETLCH (4.0, 168.0, 1, 0, 0, 0)
2868      MZ = 12
2869      WRITE (NP, 1002) (MOTIME(1,M),M=1,MZ)
2870      WRITE (NP, 1004) (MOTIME(2,M),M=1,MZ)
2871      CALL SETLCH (4.0, 128.0, 1, 0, 0, 0)
2872      WRITE (NP, 1006) (ORBCAT(5,M),M=1,MZ)
2873      WRITE (NP, 1008) (ORBDAT(6,M),M=1,MZ)
2874      WRITE (NP, 1010) (ORBDAT(7,M),M=1,MZ)
2875      CALL SETLCH (4.0, 56.0, 1, 0, 0, 0)
2876      WRITE (NP, 1012) (ORBDAT(8,M),M=1,MZ)
2877      WRITE (NP, 1014) (ORBDAT(9,M),M=1,MZ)
2878      WRITE (NP, 1016) (ORBDAT(10,M),M=1,MZ)
2879      WRITE (NP, 1018) (ORBDAT(11,M),M=1,MZ)
2880
2881      CALL SETLCH (8.0, YLCPS, 1, 0, 0, 1)
2882      WRITE OUTPUT TAPE NP, 1020
2883      CALL SETLCH (1016.0, YLCLK, 1, 0, 0, 1)
2884      WRITE (NP, 1022) ICLOC1, ICLOC2, JYEAR
2885
2886 C LABEL THE DEGREE AXIS.
2887
2888      IDEG = -15
2889      YPOS = YDEGA
2890      DO 432 M = 1, 13
2891      IDEG = IDEG + 15
2892      YPOS = YPOS + YDEGD
2893      CALL SETLCH (956.0, YPOS, 1, 0, 0, 0)
2894 432 WRITE (NP, 1030) IDEG
2895 434 CONTINUE
2896
2897 C TRANSFER DETECTOR DATA TO PLOTTING ARRAYS.
2898
2899      NMAIN = NPOINT(ID)
2900      NBKGC = NPOINT(IB)
2901
2902      DO 452 J = 1, NMAIN
2903      TIME(J) = DETIME(ID,J)
2904 452 YVAL(J) = DETDAT(ID,J)
2905
2906      DO 454 K = 1, NBKGC
2907      XVAL(K) = DETIME(IB,K)
2908 454 BVAL(K) = DETDAT(IB,K)
2909
2910 C PROTECT THE DETECTOR DATA LOGARITHMIC SCALING.
2911

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MINUTE

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MAG LAT

PHI GSE
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PHI GSH
THETA

DET C/S
PLOT TIM

DEG MARK

```

2912      DO 474 J = 1, NMAIN
2913      IF (YVAL(J) - 0.1) 472, 474, 474
2914      472 YVAL(J) = 0.1
2915      474 CONTINUE
2916
2917      DO 478 K = 1, NBKGD
2918      IF (BVAL(K) - 0.1) 476, 478, 478
2919      475 BVAL(K) = 0.1
2920      478 CONTINUE
2921
2922      C PLOT THE CURVES.
2923
2924      CALL PLGRID
2925      CALL MAPSL (XMIN, XMAX, YMIN, YMAX, XPMIN, XPMAX, YPMIN, YPMAX)
2926
2927      CALL SETPCH (1, 0, 1, 0, 1)
2928      CALL POINTC (1H0, 1H1, YVAL(1), NMAIN, 1, 1)
2929
2930      IF (IOMIT) 502, 502, 510
2931      502 CALL SETPCH (1, 0, 0, 0, 1)
2932      CALL POINTC (1H0, XVAL(1), BVAL(1), NBKGD, 1, 1)
2933
2934      510 CALL MAP (XMIN, XMAX, THMIN, THMAX, XPMIN, XPMAX, YPMIN, YPMAX)
2935      CALL POINTS (ASTIME(1), ASPECT(1), KASP, 1, 1)
2936
2937      500 CONTINUE
2938
2939      RETURN
2940
2941      1000 FORMAT (53HOGG V DETECTOR ORBIT YEAR MONTH DAY YDAY LDAY,
2942      2 52H HOUR MIN. SEC. RUN REEL FILE RECORD KBIT,
2943      3 23H MRG REC MRG KBT PAGE/
2944      4 6H INIT., 5X, A3, I8, I6, 4X, A3, 5I6, F7.1, 3I6, I8, 3X, A4,
2945      5 I7, 4X, A4, 4X, I4/
2946      6 6H FINAL, 5X, A3, 39X, 2I6, F7.1, 12X, I6, I8, 7X, I7)
2947      1002 FORMAT (4HHOUR. I6, 11I10)
2948      1004 FORMAT (4HMIN.. I6, 11I10)
2949      1006 FORMAT (1HR, 1X, 12F10.3)
2950      1008 FORMAT (1HL, 1X, 12F10.3)
2951      1010 FORMAT (4H2F2H, 12F10.2)
2952      1012 FORMAT (9H2F2034GSE, F8.1, 11F10.1)
2953      1014 FORMAT (6H2F/GSE, F8.1, 11F10.1)
2954      1016 FORMAT (9H2F2034GSM, F8.1, 11F10.1)
2955      1018 FORMAT (6H2F/GSM, F8.1, 11F10.1)
2956
2957      1020 FORMAT (26H DETECTOR COUNTS / SECOND)
2958      1022 FORMAT (R8, 1X, R7, A5, 35X, 31H MAGNETIC ASPECT ANGLE DEGREES)
2959      1030 FORMAT (1H-, I3)
2960      1032 FORMAT (1H-)
2961
2962      END
2963
2964      SUBROUTINE PLOT2
2965
2966      USE TWENTY
2967
2968      C PLOT THE MAGNETOMETER DATA.
2969
2970      DO 390 IPB = 1, 6
2971      IF (IPLOT8(IPB)) 390, 390, 102
2972      102 CALL FRAME (1)
2973      CALL MAP 10.0, 1024.0, 0.0, 1024.0)
2974      CALL SETLCH (4.0, 944.0, 1, 0, 0, 0)
2975      GO TO (112, 114, 116, 118, 120, 122), IPB
2976
2977      112 WRITE OUTPUT TAPE NP, 1030
2978      GO TO 130
2979      114 WRITE OUTPUT TAPE NP, 1032
2980      GO TO 130
2981      116 WRITE OUTPUT TAPE NP, 1034
2982      GO TO 130
2983      118 WRITE OUTPUT TAPE NP, 1036
2984      GO TO 130
2985      120 WRITE OUTPUT TAPE NP, 1038
2986
2987      122 WRITE OUTPUT TAPE NP, 1038

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D

LAMBDA
PHI GSE
THETA
PHI GSP
THETA

MAG BODY
MAG GEI
EXP FLD
MAG DIFF
MAG GSE

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2988      GO TO 130
2989      122 WRITE OUTPUT TAPE NP, 1040
2990
2991      130 CALL SETLCH (4.0, 1016.0, 1, 0, 0, 0)
2992      WRITE (NP, 1000) (LEGEND(1,M),M=2,9), SEGEN(1),
2993      2 (LEGEND(1,M),M=10,16), NPAGE,
2994      3 (LEGEND(2,M),M=8,9), SEGEN(2), (LEGEND(2,M),M=12,13),
2995      4 (LEGEND(2,15))
2996
2997      CALL SETLCH (4.0, 168.0, 1, 0, 0, 0)
2998      MZ = 12
2999      WRITE (NP, 1002) (MOTIME(1,M),M=1,MZ)
3000      WRITE (NP, 1004) (MOTIME(2,M),M=1,MZ)
3001      CALL SETLCH (4.0, 120.0, 1, 0, 0, 0)
3002      WRITE (NP, 1006) (ORBDAT(5,M),M=1,MZ)
3003      WRITE (NP, 1008) (ORBDAT(6,M),M=1,MZ)
3004      WRITE (NP, 1010) (ORBDAT(7,M),M=1,MZ)
3005      CALL SETLCH (4.0, 56.0, 1, 0, 0, 0)
3006      WRITE (NP, 1012) (ORBDAT(8,M),M=1,MZ)
3007      WRITE (NP, 1014) (ORBDAT(9,M),M=1,MZ)
3008      WRITE (NP, 1016) (ORBDAT(10,M),M=1,MZ)
3009      WRITE (NP, 1018) (ORBDAT(11,M),M=1,MZ)
3010
3011      CALL SETLCH (4.0, YML8, 1, 0, 0, 0)
3012      WRITE OUTPUT TAPE NP, 1050
3013      CALL SETLCH (4.0, YML6, 1, 0, 0, 0)
3014      WRITE OUTPUT TAPE NP, 1052
3015      CALL SETLCH (4.0, YML4, 1, 0, 0, 0)
3016      WRITE OUTPUT TAPE NP, 1054
3017      CALL SETLCH (4.0, YML2, 1, 0, 0, 0)
3018      WRITE OUTPUT TAPE NP, 1056
3019      CALL SETLCH (32.0, YMLG, 1, 0, 0, 1)
3020      WRITE OUTPUT TAPE NP, 1058
3021      YPOS = YMLC - 24.0
3022      CALL SETLCH (1016.0, YPOS, 1, 0, 0, 1)
3023      WRITE (NP, 1060) ICLOC1, ICLOC2, JYEAR
3024
3025      CALL SETLCH (60.0, YML8, 1, 0, 0, 0)
3026      WRITE OUTPUT TAPE NP, 1062
3027      CALL SETLCH (60.0, YML6, 1, 0, 0, 0)
3028      WRITE OUTPUT TAPE NP, 1062
3029      CALL SETLCH (60.0, YML4, 1, 0, 0, 0)
3030      WRITE OUTPUT TAPE NP, 1062
3031      IF (IPB - 4) 132, 134, 132
3032      132 CALL SETLCH (60.0, YML1, 1, 0, 0, 0)
3033      GO TO 136
3034      134 CALL SETLCH (60.0, YML2, 1, 0, 0, 0)
3035      135 WRITE OUTPUT TAPE NP, 1062
3036
3037      C PLOT THE GRID LINES.
3038
3039      CALL MAP (XMIN, XMAX, 0.0, 8.0, XPMIN, XPMAX, YMP1, YMP9)
3040      IZ = 7777
3041      CALL LINE (XMIN, 8.0, XMAX, 8.0, 1, IZ)
3042      CALL LINE (XMIN, 7.0, XMAX, 7.0, 0, IZ)
3043      CALL LINE (XMIN, 6.0, XMAX, 6.0, 1, IZ)
3044      CALL LINE (XMIN, 5.0, XMAX, 5.0, 0, IZ)
3045      CALL LINE (XMIN, 4.0, XMAX, 4.0, 1, IZ)
3046      CALL LINE (XMIN, 3.0, XMAX, 3.0, 0, IZ)
3047      CALL LINE (XMIN, 2.0, XMAX, 2.0, 1, IZ)
3048      CALL LINE (XMIN, 1.0, XMAX, 1.0, 0, IZ)
3049      CALL LINE (XMIN, 0.0, XMAX, 0.0, 1, IZ)
3050      CALL LINE (XMIN, 0.0, XMIN, 8.0, 1, IZ)
3051      CALL LINE (XMAX, 0.0, XMAX, 8.0, 1, IZ)
3052      CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3053
3054      C TIME AXIS TIC MARKS.
3055
3056      CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3057      XX = XMLL - 5.0
3058      DO 142 I = 1, 13
3059      XX = XX + XMT0
3060      CALL SETLCH (XX, XMTB, 1, 0, 0, 1)
3061      WRITE OUTPUT TAPE NP, 1064

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MAG GSM

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THETA
PHI GSM
THETA

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BZ

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GAMMA

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3062      CALL SETLCH (XX, XMTT, 1, 0, 0, 1)
3063      WRITE OUTPUT TAPE NP, 1064
3064      142 CONTINUE
3065
3066      C      ORDINATE TIC MARKS.
3067
3068      YY = YML1
3069      DO 152 I = 1, 39
3070      YY = YY + YMTD
3071      CALL SETLCH (YMTL, YY, 1, 0, 0, 0)
3072      WRITE OUTPUT TAPE NP, 1064
3073      CALL SETLCH (YMTT, YY, 1, 0, 0, 0)
3074      WRITE OUTPUT TAPE NP, 1064
3075      152 CONTINUE
3076
3077      C      CHOOSE ORDINATE SCALING FACTOR.
3078
3079      IF (IPPRE#) 204, 204, 202
3080      202 IP = IPPRE#
3081      GO TO 250
3082      204 DO 206 K = 2, 8
3083      205 NWORD(K) = 0
3084
3085      DO 228 I = 1, 4
3086      DO 228 J = 1, JSDCT
3087      BABS = ABSF (BSCPL(IPB,I,J))
3088      IF (BABS - 116000.0) 211, 228, 228
3089      211 IF (BABS - 50.0) 228, 228, 212
3090      212 IF (BABS - 100.0) 227, 227, 213
3091      213 IF (BABS - 500.0) 226, 226, 214
3092      214 IF (BABS - 1000.0) 225, 225, 215
3093      215 IF (BABS - 5000.0) 224, 224, 216
3094      216 IF (BABS - 10000.0) 223, 223, 217
3095      217 IF (BABS - 50000.0) 222, 222, 221
3096
3097      221 NWORD(8) = NWORD(8) + 1
3098      GO TO 228
3099      222 NWORD(7) = NWORD(7) + 1
3100      GO TO 228
3101      223 NWORD(6) = NWORD(6) + 1
3102      GO TO 228
3103      224 NWORD(5) = NWORD(5) + 1
3104      GO TO 228
3105      225 NWORD(4) = NWORD(4) + 1
3106      GO TO 228
3107      226 NWORD(3) = NWORD(3) + 1
3108      GO TO 228
3109      227 NWORD(2) = NWORD(2) + 1
3110      228 CONTINUE
3111
3112      NPT = JSDCT / 8
3113      DO 232 K = 8, 2, -1
3114      IF (NWORD(K) - NPT) 232, 234, 234
3115      232 CONTINUE
3116      234 IP = K
3117
3118      C      PRINT THE DATA SCALES.
3119
3120      253 CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3121      CALL SETLCH (20.0, YML9, 1, 0, 0, 0)
3122      WRITE (NP, 1066) YLAB(IP,5)
3123      CALL SETLCH (20.0, YML7, 1, 0, 0, 0)
3124      WRITE (NP, 1066) YLAB(IP,5)
3125      CALL SETLCH (20.0, YML3, 1, 0, 0, 0)
3126      IF (IPB - 4) 252, 254, 252
3127      252 WRITE (NP, 1066) YLAB(IP,6)
3128      CALL SETLCH (20.0, YML2, 1, 0, 0, 0)
3129      WRITE (NP, 1066) YLAB(IP,5)
3130      GO TO 256
3131      254 WRITE (NP, 1066) YLAB(IP,5)
3132      CALL SETLCH (20.0, YML1, 1, 0, 0, 0)
3133      WRITE (NP, 1066) YLAB(IP,4)
3134      255 CONTINUE
3135

```

```

3136 C   PLOT THE DATA.
3137
3138     YBMIN = YLAB(IP,1)
3139     YBMAX = YLAB(IP,2)
3140
3141     DO 380 I = 1, 4
3142     DO 302 J = 1, JSDET
3143 302 BVAL(J) = BSCPL(IPB,I,J)
3144
3145     GO TO (312, 314, 316, 318), I
3146 312 CALL MAP (XMIN, XMAX, YBMIN, YBMAX, XPHIN, XPMAX, YMP7, YMP9)
3147     GO TO 324
3148 314 CALL MAP (XMIN, XMAX, YBMIN, YBMAX, XPHIN, XPMAX, YMP5, YMP7)
3149     GO TO 324
3150 316 CALL MAP (XMIN, XMAX, YBMIN, YBMAX, XPHIN, XPMAX, YMF3, YMP5)
3151     GO TO 324
3152 318 IF (IPB - 4) 320, 322, 320
3153 320 YBMIN = 0.0
3154     YBMAX = YLAB(IP,3)
3155 322 CALL MAP (XMIN, XMAX, YBMIN, YBMAX, XPHIN, XPMAX, YMP1, YMP3)
3156 324 CONTINUE
3157
3158     CALL POINTS (SCTIME(1), BVAL(1), JSDET, 1, 1)
3159
3160     IF (IPB - 1) 356, 352, 356
3161 352 IF (I - 4) 356, 354, 356
3162 354 IPBT = IP
3163 356 CONTINUE
3164
3165 380 CONTINUE
3166 390 CONTINUE
3167
3168 C   PLOT THE INCLINATION AND DECLINATION ANGLES.
3169
3170     IF (IPLBT(7)) 550, 550, 402
3171 402 CALL FRAME (1)
3172     CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3173     CALL SETLCH (4.0, 1016.0, 1, 0, 0, 0)
3174     WRITE (NP, 1000) (LEGEND(1,M), M=2,9), SEGENO(1),
3175 2 (LEGEND(1,M), M=10,16), NPAGE,
3176 3 (LEGEND(2,M), M=8,9), SEGENO(2), (LEGEND(2,M), M=12,13),
3177 4 (LEGEND(2,M), M=14,15)
3178
3179     CALL SETLCH (4.0, 944.0, 1, 0, 0, 0)
3180     WRITE OUTPUT TAPE NP, 1100
3181
3182     CALL SETLCH (4.0, 168.0, 1, 0, 0, 0)
3183     MZ = 12
3184     WRITE (NP, 1002) (MOTIME(1,M), M=1,MZ)
3185     WRITE (NP, 1004) (MOTIME(2,M), M=1,MZ)
3186     CALL SETLCH (4.0, 120.0, 1, 0, 0, 0)
3187     WRITE (NP, 1006) (ORBDAT(5,M), M=1,MZ)
3188     WRITE (NP, 1008) (ORBDAT(6,M), M=1,MZ)
3189     WRITE (NP, 1010) (ORBDAT(7,M), M=1,MZ)
3190     CALL SETLCH (4.0, 56.0, 1, 0, 0, 0)
3191     WRITE (NP, 1012) (ORBDAT(8,M), M=1,MZ)
3192     WRITE (NP, 1014) (ORBDAT(9,M), M=1,MZ)
3193     WRITE (NP, 1016) (ORBDAT(10,M), M=1,MZ)
3194     WRITE (NP, 1018) (ORBDAT(11,M), M=1,MZ)
3195
3196     CALL SETLCH (4.0, 696.0, 1, 0, 0, 1)
3197     WRITE OUTPUT TAPE NP, 1110
3198     CALL SETLCH (4.0, 428.0, 1, 0, 0, 1)
3199     WRITE OUTPUT TAPE NP, 1112
3200     CALL SETLCH (4.0, 248.0, 1, 0, 0, 1)
3201     WRITE OUTPUT TAPE NP, 1114
3202     CALL SETLCH (1016.0, YLCLK, 1, 0, 0, 1)
3203     WRITE (NP, 1060) ICLOC1, ICLOC2, JYEAR
3204
3205 C   PRINT THE DATA SCALES.
3206
3207     CALL SETLCH (20.0, YML9, 1, 0, 0, 0)
3208     WRITE OUTPUT TAPE NP, 1120
3209     CALL SETLCH (20.0, 867.125, 1, 0, 0, 0)

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90

3210	WRITE OUTPUT TAPE NP, 1122	EO
3211	CALL SETLCH (20.0, YML8, 1, 0, 0, 0)	
3212	WRITE OUTPUT TAPE NP, 1124	30
3213	CALL SETLCH (20.0, 777.375, 1, 0, 0, 0)	
3214	WRITE OUTPUT TAPE NP, 1126	0
3215	CALL SETLCH (20.0, YML7, 1, 0, 0, 0)	
3216	WRITE OUTPUT TAPE NP, 1128	-30
3217	CALL SETLCH (20.0, 607.625, 1, 0, 0, 0)	
3218	WRITE OUTPUT TAPE NP, 1130	-60
3219	CALL SETLCH (20.0, 651.0, 1, 0, 0, 0)	
3220	WRITE OUTPUT TAPE NP, 1132	-90
3221		
3222	CALL SETLCH (20.0, 635.0, 1, 0, 0, 0)	
3223	WRITE OUTPUT TAPE NP, 1140	180
3224	CALL SETLCH (20.0, 597.875, 1, 0, 0, 0)	
3225	WRITE OUTPUT TAPE NP, 1142	120
3226	CALL SETLCH (20.0, YML5, 1, 0, 0, 0)	
3227	WRITE OUTPUT TAPE NP, 1144	60
3228	CALL SETLCH (20.0, 508.125, 1, 0, 0, 0)	
3229	WRITE OUTPUT TAPE NP, 1146	0
3230	CALL SETLCH (20.0, YML4, 1, 0, 0, 0)	
3231	WRITE OUTPUT TAPE NP, 1148	-60
3232	CALL SETLCH (20.0, 418.375, 1, 0, 0, 0)	
3233	WRITE OUTPUT TAPE NP, 1150	-120
3234	CALL SETLCH (20.0, 382.0, 1, 0, 0, 0)	
3235	WRITE OUTPUT TAPE NP, 1152	-180
3236		
3237	CALL SETLCH (20.0, 365.5, 1, 0, 0, 0)	
3238	WRITE (NP, 1066) YLAB(IPBT,6)	
3239	CALL SETLCH (20.0, YML2, 1, 0, 0, 0)	
3240	WRITE (NP, 1066) YLAB(IPBT,5)	
3241	CALL SETLCH (20.0, YML1, 1, 0, 0, 0)	
3242	WRITE OUTPUT TAPE NP, 1126	0
3243		
3244	C PLOT THE GRID LINES.	
3245		
3246	CALL MAP (XMIN, XMAX, 0.0, 8.0, XPMIN, XPMAX, YMP1, YMP9)	
3247	IZ = 77770	
3248	CALL LINE (XMIN, 8.0, XMAX, 8.0, 1, IZ)	
3249	CALL LINE (XMIN, 7.5, XMAX, 7.5, 0, IZ)	
3250	CALL LINE (XMIN, 7.0, XMAX, 7.0, 0, IZ)	
3251	CALL LINE (XMIN, 6.5, XMAX, 6.5, 1, IZ)	
3252	CALL LINE (XMIN, 6.0, XMAX, 6.0, 0, IZ)	
3253	CALL LINE (XMIN, 5.5, XMAX, 5.5, 0, IZ)	
3254	CALL LINE (XMIN, 5.0, XMAX, 5.0, 1, IZ)	
3255	CALL LINE (XMIN, 4.5, XMAX, 4.5, 0, IZ)	
3256	CALL LINE (XMIN, 4.0, XMAX, 4.0, 0, IZ)	
3257	CALL LINE (XMIN, 3.5, XMAX, 3.5, 1, IZ)	
3258	CALL LINE (XMIN, 3.0, XMAX, 3.0, 0, IZ)	
3259	CALL LINE (XMIN, 2.5, XMAX, 2.5, 0, IZ)	
3260	CALL LINE (XMIN, 2.0, XMAX, 2.0, 1, IZ)	
3261	CALL LINE (XMIN, 1.0, XMAX, 1.0, 0, IZ)	
3262	CALL LINE (XMIN, 0.0, XMAX, 0.0, 1, IZ)	
3263	CALL LINE (XMIN, 0.0, XMIN, 8.0, 1, IZ)	
3264	CALL LINE (XMAX, 0.0, XMAX, 8.0, 1, IZ)	
3265	CALL MAP (0.0, 1024.0, 0.0, 1024.0)	
3266		
3267	C TIME AXIS TIC MARKS.	
3268		
3269	CALL MAP (0.0, 1024.0, 0.0, 1024.0)	
3270	XX = XMLL - 5.0	
3271	DO 442 I = 1, 13	
3272	XX = XX + XATD	
3273	CALL SETLCH (XX, XMT8, 1, 0, 0, 1)	
3274	WRITE OUTPUT TAPE NP, 1064	
3275	CALL SETLCH (XX, XMT7, 1, 0, 0, 1)	
3276	WRITE OUTPUT TAPE NP, 1064	
3277	442 CONTINUE	
3278		
3279	C ORDINATE TIC MARKS.	
3280		
3281	YY = YML1	
3282	DO 452 I = 1, 9	
3283	YY = YY + YMTD	

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3284 CALL SETLCH (YMTL, YY, 1, 0, 0, 0)
3285 WRITE OUTPUT TAPE NP, 1064
3286 CALL SETLCH (YHTR, YY, 1, 0, 0, 0)
3287 WRITE OUTPUT TAPE NP, 1064
3288 452 CONTINUE
3289
3290 YY = YML3
3291 YINC = (YML9 - YML3) / 36.0
3292 DO 454 I = 1, 35
3293 YY = YY + YINC
3294 CALL SETLCH (YMTL, YY, 1, 0, 0, 0)
3295 WRITE OUTPUT TAPE NP, 1064
3296 CALL SETLCH (YHTR, YY, 1, 0, 0, 0)
3297 WRITE OUTPUT TAPE NP, 1064
3298 454 CONTINUE
3299
3300 C PLOT THE DATA.
3301
3302 DO 542 I = 1, 4
3303 DO 502 J = 1, JSDET
3304 502 BVAL(IJ) = BSCPL(I7,I,J)
3305
3306 GO TO (512, 514, 516, 518), I
3307 512 YBMIA = -100.0
3308 YBMAX = 100.0
3309 CALL MAP(XMIN,XMAX,YBMIN,YBMAX,XPHIN,XPMAX,.613046875,.905234375)
3310 GO TO 520
3311 514 YBMIA = -100.0
3312 YBMAX = 100.0
3313 CALL MAP(XMIN,XMAX,YBMIN,YBMAX,XPHIN,XPMAX,.350078125,.642265625)
3314 GO TO 520
3315 516 YBMIA = 0.0
3316 YBMAX = YLAB(IPBT,3)
3317 CALL MAP(XMIN,XMAX,YBMIN,YBMAX,XPHIN,XPMAX,YMP1,YMP3)
3318 GO TO 520
3319 518 YBMIA = -100.0
3320 YBMAX = 100.0
3321 CALL MAP(XMIN,XMAX,YBMIN,YBMAX,XPHIN,XPMAX,.613046875,.905234375)
3322 520 CONTINUE
3323
3324 CALL POINTS (SCTIME(1), BVAL(1), JSDET, 1, 1)
3325 542 CONTINUE
3326 550 CONTINUE
3327
3328 RETURN
3329
3330 1000 FORMAT (43HOGO V ORBIT YEAR MONTH DAY YDAY LDAY,
3331 2 52H HOUR MIN. SEC. RUN REEL FILE RECORD KBIT,
3332 3 17H MRG REC MRG KBT, 11X, 5H PAGE/
3333 4 6H INIT., I6, I6, 4X, A3, 5I6, F7.1, 3I6, I8, 3X, A4,
3334 5 I7, 4X, A4, 14X, I4/
3335 6 6H FINAL, 37X, 2I6, F7.1, 12X, I6, I8, 7X, I7)
3336 1002 FORMAT (4HHOUR, I6, 11I10)
3337 1004 FORMAT (4HMIN., I6, 11I10)
3338 1005 FORMAT (1HR, 1X, 12F10.3)
3339 1009 FORMAT (1HL, 1X, 12F10.3)
3340 1010 FORMAT (4H2F2H, 12F10.2)
3341 1012 FORMAT (9H2F2034GSE, F8.1, 11F10.1)
3342 1014 FORMAT (6H2F/GSE, F8.1, 11F10.1)
3343 1015 FORMAT (9H2F2034GSM, F8.1, 11F10.1)
3344 1019 FORMAT (6H2F/GSM, F8.1, 11F10.1)
3345
3346 1030 FORMAT (26HMAGNETOMETER BODY COORD.)
3347 1032 FORMAT (25HMAGNETOMETER GEI COORD.)
3348 1034 FORMAT (37HEXPANSION MAGNETIC FIELD GEI COORD.)
3349 1035 FORMAT (32HMAGNETIC DIFFERENCE GEI COORD.)
3350 1039 FORMAT (25HMAGNETOMETER GSE COORD.)
3351 1040 FORMAT (25HMAGNETOMETER GSM COORD.)
3352
3353 1050 FORMAT (2HXB)
3354 1052 FORMAT (2HBY)
3355 1054 FORMAT (2HBY)
3356 1055 FORMAT (2HBT)
3357 1058 FORMAT (6H GAMMA)

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3358 1060 FORMAT (R6, 1X, R7, A5)
3359 1062 FORMAT (1H0)
3360 1064 FORMAT (1H-)
3361 1066 FORMAT (A6)
3362
3363 1100 FORMAT (37HINCLINATION - DECLINATION   ON COORD.)
3364
3365 1113 FORMAT (21HINCLINATION (DEGREES))
3366 1112 FORMAT (21HDECLINATION (DEGREES))
3367 1114 FORMAT (10HBT (GAMMA))
3368
3369 1120 FORMAT (6H    90)
3370 1122 FORMAT (6H    60)
3371 1124 FORMAT (6H    30)
3372 1125 FORMAT (6H    0)
3373 1126 FORMAT (6H   -30)
3374 1130 FORMAT (6H   -60)
3375 1132 FORMAT (6H   -90)
3376
3377 1143 FORMAT (6H    90)
3378 1142 FORMAT (6H    60)
3379 1144 FORMAT (6H    30)
3380 1145 FORMAT (6H    0)
3381 1146 FORMAT (6H   -30)
3382 1150 FORMAT (6H   -60)
3383 1152 FORMAT (6H   -90)
3384
3385     END
3386
3387     SUBROUTINE PLOT3
3388
3389     USE TWENTY
3390
3391     C PROTECT THE CRT PACKAGE AGAINST BAD OR ZERO DATA.
3392
3393     DO 14 N = 1, NEFLC
3394     IF (BACVAR(N) - 1.0) 12, 14, 14
3395     12    BACVAR(N) = 1.0
3396     14    CONTINUE
3397
3398     C PLOT AC MAGNETIC FIELD FLUCTUATIONS, AND ELECTRIC FIELD SENSOR DATA.
3399
3400     CALL FRAME (1)
3401     CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3402     CALL SETLCH (4.0, 1016.0, 1, 0, 0, 0)
3403     WRITE (NP, 1000) (LEGEND(1,M), M=2,9), SEGEN(1),
3404     2    (LEGEND(1,M), M=10,16), NPAGE,
3405     3    (LEGEND(2,M), M=8,9), SEGEN(2), (LEGEND(2,M), M=12,13),
3406     4    LEGEND(2,15)
3407
3408     CALL SETLCH (4.0, YEL4, 1, 0, 0, 0)
3409     WRITE OUTPUT TAPE NP, 1062
3410     CALL SETLCH (4.0, YEL3, 1, 0, 0, 0)
3411     WRITE OUTPUT TAPE NP, 1064
3412     CALL SETLCH (408.0, YEL2, 1, 0, 0, 0)
3413     WRITE OUTPUT TAPE NP, 1064
3414     CALL SETLCH (8.0, YEL1, 1, 0, 0, 1)
3415     WRITE OUTPUT TAPE NP, 1066
3416
3417     CALL SETPCH (1, 0, 1, 0, 1)
3418     CALL MAPGSL (XMIN, XMAX, 1.0, 44168.0, XPHIN, XPHAX, YEP3, YEP4)
3419     CALL POINTC (1HI, ETIME(1), BACVAR(1), NEFLD, 1, 1)
3420
3421     CALL MAPG (XMIN, XMAX, 0.0, 255.0, XPHIN, XPHAX, YEP1, YEP2)
3422     CALL POINTC (1HI, ETIME(1), EFIELD(1), NEFLD, 1, 1)
3423
3424     C PLOT SUN APERTURE ANGLE, AND OPEP SHAFT AND SCAN ANGLES.
3425
3426     CALL FRAME (1)
3427     CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3428     CALL SETLCH (4.0, 1016.0, 1, 0, 0, 0)
3429     WRITE (NP, 1000) (LEGEND(1,M), M=2,9), SEGEN(1),
3430     2    (LEGEND(1,M), M=10,16), NPAGE,
3431     3    (LEGEND(2,M), M=8,9), SEGEN(2), (LEGEND(2,M), M=12,13),

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3434      4      LEGEND(2,15)
3435
3436      CALL SETLCH (4.0, YEL4, 1, 0, 0, 0)
3437      WRITE OUTPUT TAPE NP, 1072
3438      CALL SETLCH (4.0, YEL3, 1, 0, 0, 0)
3439      WRITE OUTPUT TAPE NP, 1074
3440      CALL SETLCH (400.0, YEL2, 1, 0, 0, 0)
3441      WRITE OUTPUT TAPE NP, 1058
3442      CALL SETLCH (8.0, YEL1, 1, 0, 0, 1)
3443      WRITE OUTPUT TAPE NP, 1076
3444
3445      CALL MAPG (XMIN, XMAX, 0.0, 360.0, XPHIN, XPMAX, YEP3, YEP4)
3446      DO 106 K = 2, JSDET
3447      J = K - 1
3448      IF (SCTIME(J)) 106, 106, 102
3449      102 IF (SCTIME(K)) 106, 106, 104
3450      104 CALL LINEP (SCTIME(J), SPASA(J), SCTIME(K), SPASA(K), 3)
3451      106 CONTINUE
3452
3453      CALL MAPG (XMIN, XMAX, 0.0, 360.0, XPHIN, XPMAX, YEP1, YEP2)
3454      DO 120 K = 2, JSCET
3455      J = K - 1
3456      IF (OSHAFT(J)) 120, 120, 112
3457      112 IF (OSHAFT(K)) 120, 120, 114
3458      114 IF (SCTIME(J)) 120, 120, 116
3459      116 IF (SCTIME(K)) 120, 120, 118
3460      118 CALL LINEP (SCTIME(J), OSHAFT(J), SCTIME(K), OSHAFT(K), 5)
3461      120 CONTINUE
3462
3463      DO 130 K = 2, JSDET
3464      J = K - 1
3465      IF (OSCAN(J)) 130, 130, 122
3466      122 IF (OSCAN(K)) 130, 130, 124
3467      124 IF (SCTIME(J)) 130, 130, 126
3468      126 IF (SCTIME(K)) 130, 130, 128
3469      128 CALL LINE (SCTIME(J), OSCAN(J), SCTIME(K), OSCAN(K), 1, 0)
3470      130 CONTINUE
3471
3472      C PL3T MAGNETIC ASPECT AND APERTURE ANGLES.
3473
3474      CALL FRAME (1)
3475      CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3476      CALL SETLCH (4.0, 1016.0, 1, 0, 0, 0)
3477      WRITE (NP, 1000) (LEGEND(1,M),M=2,9), SEGEN(1),
3478      2 (LEGEND(1,M),M=10,16), NPAGE,
3479      3 (LEGEND(2,M),M=8,9), SEGEN(2), (LEGEND(2,M),M=12,13),
3480      4 LEGEND(2,15)
3481
3482      CALL SETLCH (4.0, YEL4, 1, 0, 0, 0)
3483      WRITE OUTPUT TAPE NP, 1082
3484      CALL SETLCH (4.0, YEL3, 1, 0, 0, 0)
3485      WRITE OUTPUT TAPE NP, 1084
3486      CALL SETLCH (400.0, YEL2, 1, 0, 0, 0)
3487      WRITE OUTPUT TAPE NP, 1068
3488      CALL SETLCH (8.0, YEL1, 1, 0, 0, 1)
3489      WRITE OUTPUT TAPE NP, 1076
3490
3491      CALL MAPG (XMIN, XMAX, 0.0, 180.0, XPHIN, XPMAX, YEP3, YEP4)
3492      CALL POINTS (ASTIME(1), ASPECT(1), KASP, 1, 1)
3493
3494      CALL MAPG (XMIN, XMAX, 0.0, 360.0, XPHIN, XPMAX, YEP1, YEP2)
3495      DO 160 K = 2, JSCET
3496      J = K - 1
3497      IF (SCTIME(J)) 160, 160, 152
3498      152 IF (SCTIME(K)) 160, 160, 154
3499      154 IF (WINDOW(J)) 160, 160, 156
3500      156 IF (WINDOW(K)) 160, 160, 158
3501      158 CALL LINEP (SCTIME(J), WINDOW(J), SCTIME(K), WINDOW(K), 3)
3502      160 CONTINUE
3503
3504      C PL3T ADDITIONAL ATTITUDE-ORBIT DATA.
3505
3506      CALL FRAME (1)
3507      CALL MAP (0.0, 1024.0, 0.0, 1024.0)

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DEGREES

SOEP

SHAFT

SCAN

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MAG ASP

APERTURE

MINUTES

DEGREES

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3508 CALL SETLCH (4.0, 1016.0, 1, 0, 0, 0)
3509 WRITE (NP, 1000) (LEGEND(1,M),M=2,9), SEGENO(1),
3510 2 (LEGEND(1,M),M=10,16), NPAGE,
3511 3 (LEGEND(2,M),M=8,9), SEGENO(2), (LEGEND(2,M),M=12,13),
3512 4 LEGEND(2,15)
3513
3514 WRITE OUTPUT TAPE NP, 1100
3515 MZ = 12
3516 WRITE (NP, 1102) (MOTIME( 1,M),M=1,MZ)
3517 WRITE (NP, 1104) (MOTIME( 2,M),M=1,MZ)
3518 WRITE (NP, 1106) (MOTIME( 3,M),M=1,MZ)
3519 WRITE (NP, 1108) (MOTIME( 4,M),M=1,MZ)
3520 WRITE (NP, 1110) (MOTIME( 5,M),M=1,MZ)
3521 WRITE (NP, 1112) (ORBDAT( 5,M),M=1,MZ)
3522 WRITE (NP, 1114) (ORBDAT( 6,M),M=1,MZ)
3523 WRITE (NP, 1116) (ORBDAT( 7,M),M=1,MZ)
3524 WRITE (NP, 1118) (ORBDAT( 8,M),M=1,MZ)
3525 WRITE (NP, 1120) (ORBDAT( 9,M),M=1,MZ)
3526 WRITE (NP, 1122) (ORBDAT(10,M),M=1,MZ)
3527 WRITE (NP, 1124) (ORBDAT(11,M),M=1,MZ)
3528 WRITE (NP, 1126) (ORBDAT(13,M),M=1,MZ)
3529 WRITE (NP, 1128) (ORBDAT(14,M),M=1,MZ)
3530 WRITE (NP, 1130) (ORBDAT(15,M),M=1,MZ)
3531 WRITE (NP, 1132) (ORBDAT(16,M),M=1,MZ)
3532 WRITE (NP, 1134) (ORBDAT(17,M),M=1,MZ)
3533 WRITE (NP, 1136) (ORBDAT(18,M),M=1,MZ)
3534 WRITE (NP, 1138) (ORBDAT(19,M),M=1,MZ)
3535
3536 RETURN
3537
3538 1103 FORMAT (43HOGO V ORBIT YEAR MONTH DAY YOAY LDAY,
3539 2 52H HOUR MIN. SEC. RUN REEL FILE RECORD KBIT,
3540 3 17H MRG REC MRG KBT, 11X, 5H PAGE/
3541 4 6H INIT., I6, I6, 4X, A3, 5I6, F7.1, 3I6, I8, 3X, A4,
3542 5 I7, 4X, A4, 14X, I4/
3543 6 6H FINAL, 37X, 2I6, F7.1, 12X, I6, I8, 7X, I7)
3544
3545 1062 FORMAT (30HAC MAGNETIC FIELD FLUCTUATIONS)
3546 1064 FORMAT (21HELECTRIC FIELD SENSOR)
3547 1065 FORMAT (6H LEVEL, 49X, 6H LEVEL)
3548 1069 FORMAT (8H MINUTES)
3549
3550 1072 FORMAT (18HSUN APERTURE ANGLE)
3551 1074 FORMAT (47HOPEN SHAFT (DOTTED) AND OPEN SCAN (LINE) ANGLES)
3552 1075 FORMAT (8H DEGREES, 51X, 8H DEGREES)
3553
3554 1082 FORMAT (21HMAGNETIC ASPECT ANGLE)
3555 1084 FORMAT (14HAPERTURE ANGLE)
3556
3557 1103 FORMAT (// 21HATTITUDE - ORBIT DATA// 14HUNIVERSAL TIME)
3558 1102 FORMAT ( 4HHOUR, I6, 11I10)
3559 1104 FORMAT ( 4HMIN., I6, 11I10)
3560 1106 FORMAT (/10HLOCAL TIME/ 4HHOUR, I6, 11I10)
3561 1108 FORMAT ( 4HMIN., I6, 11I10)
3562 1111 FORMAT ( 4HSEC., I6, 11I10)
3563 1112 FORMAT (/ 1HR, 1X, 12F10.3)
3564 1114 FORMAT ( 1HL, 1X, 12F10.3)
3565 1115 FORMAT ( 4H2F2H, 12F10.2)
3566 1118 FORMAT (/ 9H2F2034GSE, F8.1, 11F10.1)
3567 1120 FORMAT ( 6H2F/GSE, F8.1, 11F10.1)
3568 1122 FORMAT ( 9H2F2034GSM, F8.1, 11F10.1)
3569 1124 FORMAT ( 6H2F/GSM, F8.1, 11F10.1)
3570 1125 FORMAT (/ 4HR AS, F8.1, 11F10.1)
3571 1129 FORMAT ( 4HDECL, F8.1, 11F10.1)
3572 1133 FORMAT ( 4HPLAT, F8.1, 11F10.1)
3573 1132 FORMAT ( 4HLONG, F8.1, 11F10.1)
3574 1134 FORMAT ( 4HPPAD, F8.1, 11F10.1)
3575 1135 FORMAT (/ 4HBB0, F8.3, 11F10.3)
3576 1138 FORMAT ( 4HB, F8.0, 11F10.0)
3577
3578 END
3581
3582 SUBROUTINE PLOT4
3583

```

HOUR
 MINUTE
 LOC HRS
 LOC MIN
 LOC SEC
 R
 L
 MAG LAT
 PHI GSE
 THETA
 PHI GSM
 THETA
 RIGHT AC
 DECLIN
 LAT
 LONG
 PADOLE
 B/EO
 B

LANGOA
 PHI GSE
 THETA
 PHI GSE
 THETA

```

3584      USE TWENTY
3585
3586      C THIS SUBROUTINE PLOTS COUNTING RATE VS MAGNETIC ASPECT ANGLE.
3587
3588      C FIND THE MAGNETIC ASPECT ANGLE CORRESPONDING TO EACH DETECTOR POINT.
3589
3590      DO 112 I = 1, LDET
3591          JEND = NPOINT(I)
3592          KBEG = 2
3593
3594      DO 110 J = 1, JEND
3595          DETASP(I,J) = 0.0
3596          TOET = DETIME(I,J)
3597
3598      DO 108 K = KBEG, KASP
3599          TASB = ASTIME(K-1)
3600          TASE = ASTIME(K)
3601          IF (TOET - TASB) 108, 104, 102
3602      102 IF (TASE - TOET) 108, 104, 104
3603
3604      104 TDEL = TASE - TASB
3605          IF (TDEL) 108, 102, 106
3606      106 TINT = TOET - TASE
3607          TFRA = TINT / TDEL
3608          DETASP(I,J) = (TFRA * (ASPECT(K) - ASPECT(K-1))) + ASPECT(K-1)
3609          KBEG = K
3610          GO TO 110
3611
3612      108 CONTINUE
3613          KBEG = 2
3614      110 CONTINUE
3615      112 CONTINUE
3616
3617      C PLOTTING CYCLE.
3618
3619      DO 500 NPA = 1, 16
3620          IF (NPA - 8) 202, 500, 202
3621      202 ID = IDPLOT(NPA,1) + NPA
3622          IB = IDPLOT(NPA,2) + NPA
3623          IOHIT = IDPLOT(NPA,3)
3624          IF (NPA - 1) 500, 220, 204
3625      204 IF (NPA - 4) 300, 220, 206
3626      206 IF (NPA - 7) 300, 220, 208
3627      208 IF (NPA - 11) 300, 220, 210
3628      210 IF (NPA - 14) 300, 220, 300
3629
3630      C PLT THE HEADING.
3631
3632      220 ND = 0
3633          CALL FRAME (1)
3634          CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3635          CALL SETLCH (4.0, 1016.0, 1, 0, 0, 0)
3636          WRITE (NP, 1000) (LEGEND(1,M),M=2,9), SEGENO(1),
3637      2      (LEGEND(1,M),M=10,16), NPAGE,
3638      3      (LEGEND(2,M),M=8,9), SEGENO(2), (LEGEND(2,M),M=12,13),
3639      4      LEGEND(2,15)
3640
3641          CALL SETLCH (4.0, 160.0, 1, 0, 0, 0)
3642          NZ = 12
3643          WRITE (NP, 1002) (MOTIME(1,M),M=1,MZ)
3644          WRITE (NP, 1004) (MOTIME(2,M),M=1,MZ)
3645          CALL SETLCH (4.0, 116.0, 1, 0, 0, 0)
3646          WRITE (NP, 1006) (ORBOAT(5,M),M=1,MZ)
3647          WRITE (NP, 1008) (ORBOAT(6,M),M=1,MZ)
3648          WRITE (NP, 1010) (ORBOAT(7,M),M=1,MZ)
3649          CALL SETLCH (4.0, 56.0, 1, 0, 0, 0)
3650          WRITE (NP, 1012) (ORBOAT(8,M),M=1,MZ)
3651          WRITE (NP, 1014) (ORBOAT(9,M),M=1,MZ)
3652          WRITE (NP, 1016) (ORBOAT(10,M),M=1,MZ)
3653          WRITE (NP, 1018) (ORBOAT(11,M),M=1,MZ)
3654
3655          CALL SETLCH (410.0, 184.0, 1, 0, 0, 0)
3656          WRITE OUTPUT TAPE NP, 1020
3657          CALL SETLCH (32.0, 488.0, 1, 0, 0, 1)

```

060 V

HOUR
MINUTE

R
L
MAG LAT

PHI GSE
THETA
PHI GSM
THETA

MAG ASP

```

3658      WRITE OUTPUT TAPE NP, 1022
3659      CALL SETLCH (1016.0, 228.0, 1, 0, 0, 1)
3660      WRITE (NP, 1024) ICLOC1, ICLOC2, JYEAR
3661
3662      C PLT THE BOX.
3663
3664      CALL MAP (0.0, 2.0, 0.0, 3.0, XAP1, XAP3, YAP1, YAP4)
3665      IZ = 77772
3666      CALL LINE (0.0, 0.0, 2.0, 0.0, 1, IZ)
3667      CALL LINE (0.0, 1.0, 2.0, 1.0, 1, IZ)
3668      CALL LINE (0.0, 2.0, 2.0, 2.0, 1, IZ)
3669      CALL LINE (0.0, 3.0, 2.0, 3.0, 1, IZ)
3670      CALL LINE (0.0, 0.0, 0.0, 3.0, 1, IZ)
3671      CALL LINE (1.0, 0.0, 1.0, 3.0, 1, IZ)
3672      CALL LINE (2.0, 0.0, 2.0, 3.0, 1, IZ)
3673
3674      C LABEL THE Y AXIS.
3675
3676      CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3677      DO 232 N = 1, 19
3678      CALL SETLCH (44.0, YATL(N), 1, 0, 0, 0)
3679      232 WRITE (NP, 1030) YAC(N)
3680
3681      C Y AXIS TIC MARKS.
3682
3683      DO 234 N = 2, 18
3684      CALL SETLCH (XAL2, YATL(N), 1, 0, 0, 0)
3685      WRITE OUTPUT TAPE NP, 1032
3686      CALL SETLCH (974.0, YATL(N), 1, 0, 0, 0)
3687      234 WRITE OUTPUT TAPE NP, 1032
3688
3689      C X AXIS TIC MARKS.
3690
3691      DO 242 N = 2, 12
3692      CALL SETLCH (XATL(N), YAL1, 1, 0, 0, 1)
3693      WRITE OUTPUT TAPE NP, 1032
3694      CALL SETLCH (XATL(N), YAL2, 1, 0, 0, 1)
3695      WRITE OUTPUT TAPE NP, 1032
3696      CALL SETLCH (XATL(N), YAL3, 1, 0, 0, 1)
3697      WRITE OUTPUT TAPE NP, 1032
3698      CALL SETLCH (XATL(N), 956.0, 1, 0, 0, 1)
3699      242 WRITE OUTPUT TAPE NP, 1032
3700
3701      C LABEL THE X AXIS.
3702
3703      DO 244 N = 1, 13
3704      XPOS = XATL(N) - 8.0
3705      CALL SETLCH (XPOS, 208.0, 1, 0, 0, 0)
3706      244 WRITE (NP, 1034) YAD(N)
3707
3708      C FOR EACH PLOT -
3709
3710      300 ND = ND + 1
3711      CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3712      CALL SETLCH (4.0, YAL(ND), 1, 0, 0, 0)
3713      WRITE (NP, 1026) LABDET(ND)
3714
3715      C TRANSFER THE DETECTOR DATA TO THE PLOTTING ARRAYS.
3716
3717      NMAIN = NPOINT(ID)
3718      NBKGD = NPOINT(IE)
3719
3720      DO 312 J = 1, NMAIN
3721      XVAL(J) = DETASP(ID, J)
3722      312 YVAL(J) = DETDAT(ID, J)
3723
3724      DO 314 K = 1, NBKGD
3725      TIME(K) = DETASP(IE, K)
3726      314 BVAL(K) = DETDAT(IE, K)
3727
3728      C PROTECT THE DETECTOR DATA LOGARITHMIC SCALING.
3729
3730      DO 324 J = 1, NMAIN
3731      IF (YVAL(J) - 0.1) 322, 324, 324

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3732      322      YVAL(J) = 0.1
3733      324 CONTINUE
3734
3735      DO 328 K = 1, NBKGD
3736      IF (BVAL(K) - 0.1) 326, 328, 328
3737      325      BVAL(K) = 0.1
3738      328 CONTINUE
3739
3740      C PLOT THE CURVES.
3741
3742      NM = NMAIN / 2
3743      NB = NBKGD / 2
3744      IF (ND - 2) 402, 404, 406
3745      402 CALL MAPSL (0.0, 180.0, YMIN, YMAX, XAP1, XAP2, YAP3, YAP4)
3746      GO TO 410
3747      404 CALL MAPSL (0.0, 180.0, YMIN, YMAX, XAP1, XAP2, YAP2, YAP3)
3748      GO TO 410
3749      405 CALL MAPSL (0.0, 180.0, YMIN, YMAX, XAP1, XAP2, YAP1, YAP2)
3750
3751      410 CALL SETPCH (1, 0, 1, 0, 1)
3752      CALL POINTC (1HI, XVAL(1), YVAL(1), NM, 1, 1)
3753
3754      IF (IOMIT) 412, 412, 450
3755      412 CALL SETPCH (1, 0, 0, 0, 1)
3756      CALL POINTC (1H0, TIME(1), BVAL(1), NB, 1, 1)
3757
3758      451 IF (ND - 2) 452, 454, 456
3759      452 CALL MAPSL (0.0, 180.0, YMIN, YMAX, XAP2, XAP3, YAP3, YAP4)
3760      GO TO 460
3761      454 CALL MAPSL (0.0, 180.0, YMIN, YMAX, XAP2, XAP3, YAP2, YAP3)
3762      GO TO 460
3763      455 CALL MAPSL (0.0, 180.0, YMIN, YMAX, XAP2, XAP3, YAP1, YAP2)
3764
3765      460 CALL SETPCH (1, 0, 1, 0, 1)
3766      NM = NM + 1
3767      CALL POINTC (1HI, XVAL(NM), YVAL(NM), NM, 1, 1)
3768
3769      IF (IOMIT) 462, 462, 500
3770      462 CALL SETPCH (1, 0, 0, 0, 1)
3771      NB = NB + 1
3772      CALL POINTC (1H0, TIME(NB), BVAL(NB), NB, 1, 1)
3773      500 CONTINUE
3774
3775      RETURN
3776
3777      1000 FORMAT (43H000 V OREIT YEAR MONTH DAY YDAY LDAY,
3778      2 52H HOUR MIN. SEC. RUN REEL FILE RECORD KBIT,
3779      3 17H MRG REC MRG KET, 11X, 5H PAGE/
3780      4 6H INIT., I6, I6, 4X, A3, 5I6, F7.1, 3I6, I6, 3X, A4,
3781      5 17, 4X, A4, 14X, I4/
3782      6 6H FINAL, 37X, 2I6, F7.1, 12X, I6, I6, 7X, I7)
3783      1002 FORMAT (4HHOUR, I6, 11I10)
3784      1004 FORMAT (4HMIN., I6, 11I10)
3785      1005 FORMAT (1HR, 1X, 12F10.3)
3786      1008 FORMAT (1ML, 1X, 12F10.3)
3787      1010 FORMAT (4H2F2H, 12F10.2)
3788      1012 FORMAT (9H2F2034GSE, F8.1, 11F10.1)
3789      1014 FORMAT (6H2F/GSE, F8.1, 11F10.1)
3790      1015 FORMAT (9H2F2034GSM, F8.1, 11F10.1)
3791      1018 FORMAT (6H2F/GSM, F8.1, 11F10.1)
3792
3793      1023 FORMAT (31H MAGNETIC ASPECT ANGLE DEGREES)
3794      1022 FORMAT (26H DETECTOR COUNTS / SECOND)
3795      1024 FORMAT (R8, 1X, R7, A5)
3796      1026 FORMAT (A3)
3797
3798      1030 FORMAT (A8)
3799      1032 FORMAT (1H-)
3800      1034 FORMAT (A3)
3801
3802      END
3803
3804      SUBROUTINE PLGRID
3805
3806
3807

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LAMBDA
 PHI GSE
 THETA
 PHI GSM
 THETA

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3808      USE TWENTY
3809
3810      CALL MAP (0.0, 11.0, YLMIN, YLMAX, XPMIN, XPMAX, YPMIN, YPMAX)
3811      IZ = 77778
3812      IF (NOGRID) 100, 100, 200
3813
3814      C PLOT FULL GRID.
3815
3816      C   HORIZONTAL GRID LINES.
3817
3818      100 DO 102 M = 1, 61, 2
3819      102 CALL LINE (0.0, YTICK(M), 14.0, YTICK(M), 1, IZ)
3820
3821      C   VERTICAL GRID LINES.
3822
3823      DO 112 M = 1, 12
3824      XPOS = M - 1
3825      112 CALL LINE (XPOS, YLMIN, XPOS, YLMAX, 1, IZ)
3826
3827      C   ORDINATE TIC MARKS.
3828
3829      CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3830      DO 122 M = 2, 60, 2
3831      CALL SETLCH (XNTIC, YTICK(M), 1, 0, 0, 0)
3832      WRITE OUTPUT TAPE NP, 1000
3833      CALL SETLCH (XXTIC, YTICK(M), 1, 0, 0, 0)
3834      122 WRITE OUTPUT TAPE NP, 1000
3835      GO TO 300
3836
3837      C PLOT PARTIAL GRID.
3838
3839      C   PLOT BOX.
3840
3841      203 CALL LINE (0.0, YLMIN, 11.0, YLMIN, 1, IZ)
3842      CALL LINE (0.0, YLMAX, 11.0, YLMAX, 1, IZ)
3843      CALL LINE (0.0, YLMIN, 0.0, YLMAX, 1, IZ)
3844      CALL LINE (11.0, YLMIN, 11.0, YLMAX, 1, IZ)
3845
3846      C   TIME AXIS TIC MARKS.
3847
3848      CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3849      XPOS = XLMIN - 5.0
3850      DO 212 M = 1, 10
3851      XPOS = XPOS + XMTD
3852      CALL SETLCH (XPOS, XDTB, 1, 0, 0, 1)
3853      212 WRITE OUTPUT TAPE NP, 1000
3854
3855      XPOS = XLMIN - 5.0
3856      DO 214 M = 1, 13
3857      XPOS = XPOS + XMTD
3858      CALL SETLCH (XPOS, XDTT, 1, 0, 0, 1)
3859      214 WRITE OUTPUT TAPE NP, 1000
3860
3861      C   ORDINATE TIC MARKS.
3862
3863      DO 222 M = 3, 59, 2
3864      CALL SETLCH (XNTIC, YTICK(M), 1, 0, 0, 0)
3865      WRITE OUTPUT TAPE NP, 1000
3866      CALL SETLCH (XXTIC, YTICK(M), 1, 0, 0, 0)
3867      222 WRITE OUTPUT TAPE NP, 1000
3868
3869      C   ORDINATE PLOT LEGEND.
3870
3871      303 CALL MAP (0.0, 1024.0, 0.0, 1024.0)
3872      CALL SETLCH (20.0, YLMIN, 1, 0, 0, 0)
3873      WRITE OUTPUT TAPE NP, 1010
3874      CALL SETLCH (20.0, YTICK(11), 1, 0, 0, 0)
3875      WRITE OUTPUT TAPE NP, 1012
3876      CALL SETLCH (20.0, YTICK(21), 1, 0, 0, 0)
3877      WRITE OUTPUT TAPE NP, 1014
3878      CALL SETLCH (20.0, YTICK(31), 1, 0, 0, 0)
3879      WRITE OUTPUT TAPE NP, 1016
3880      CALL SETLCH (20.0, YTICK(41), 1, 0, 0, 0)
3881      WRITE OUTPUT TAPE NP, 1018

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3882 CALL SETLCH (20.0, YTIME(51), 1, 0, 0, 0)
3883 WRITE OUTPUT TAPE NP, 1020
3884 CALL SETLCH (20.0, YLMAX, 1, 0, 0, 0)
3885 WRITE OUTPUT TAPE NP, 1022
3886
3887 RETURN
3888
3889 1000 FORMAT (1H-)
3890
3891 1010 FORMAT (6H 0.1)
3892 1012 FORMAT (6H 1)
3893 1014 FORMAT (6H 10)
3894 1015 FORMAT (6H 100)
3895 1016 FORMAT (6H 1000)
3896 1020 FORMAT (6H 10000)
3897 1022 FORMAT (6H100000)
3898
3899 END
174
175 SUBROUTINE ASTAPE
176
177 USE TWENTY
178
179 C RESET BUFFER.
180
181 DO 12 N = 1, 1472
182 12 BUFTAP(N) = 0.0
183
184 C WRITE MAGNETIC ASPECT ANGLE DATA TAPE.
185 C WORDS IN GROUPS OF 4. 4 * 60 = 5 * 48
186
187 C CONTROL WORDS.
188
189 NGRECD = NGRECD + 1
190
191 BUFTAP( 1) = NORBIT
192 BUFTAP( 2) = NSYEAR
193 BUFTAP( 3) = NSDAY
194 BUFTAP( 4) = NSRUN
195 BUFTAP( 5) = NSREEL
196 BUFTAP( 6) = NSFILF
197 BUFTAP( 7) = NSRECD
198 BUFTAP( 8) = NKILO
199 BUFTAP( 9) = NSYAC
200 BUFTAP(10) = NSSTAT
201 BUFTAP(11) = NURECD
202 BUFTAP(12) = KILO
203 BUFTAP(13) = MSYAC
204 BUFTAP(14) = NNMCM
205 BUFTAP(15) = HSDAY
206 BUFTAP(16) = NLDAY
207 BUFTAP(17) = NSHIFT
208 BUFTAP(18) = IDATE(4)
209 BUFTAP(19) = IDATE(3)
210 BUFTAP(20) = IDATE(6)
211
212 C DETECTOR TIME VALUES.
213 C THE TIME VALUES CORRESPOND TO THE BEGINNING OF A FRAME.
214 C 32 VALUES FOR E1 E3 P1
215 C 8 PB1 EB1 EB3 EB5
216
217 M = 28
218 DO 102 J = 1, 32
219 M = M + 1
220 102 BUFTAP(M) = DTHOUR(1,J) E1
221
222 DO 104 J = 1, 32
223 M = M + 1
224 104 BUFTAP(M) = DTHOUR(3,J) E3
225
226 DO 106 J = 1, 32
227 M = M + 1
228 106 BUFTAP(M) = DTHOUR(16,J) P1
229

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230      DO 108 J = 1, 8
231      M = M + 1
232      103 BUFTAP(M) = DTHOUR(23,J)      P81
233
234      DO 110 J = 1, 8
235      M = M + 1
236      110 BUFTAP(M) = DTHOUR(9,J)      E81
237
238      DO 112 J = 1, 8
239      M = M + 1
240      112 BUFTAP(M) = DTHOUR(11,J)      E83
241
242      DO 114 J = 1, 8
243      M = M + 1
244      114 BUFTAP(M) = DTHOUR(13,J)      E85
245
246      BUFTAP(149) = DTHOUR(36,1) - DTHOUR(22,1)      02 - P7
247
248      C DETECTOR COUNTS/SECOND DATA.
249
250      M = 152
251      DO 132 I = 1, 36
252      JEND = IODET(I,6)
253      DO 132 J = 1, JEND
254      M = M + 1
255      132 BUFTAP(M) = EXPDAT(I,J)
256
257      C MAGNETIC ASPECT ANGLE TIME VALUES.
258      C      THE TIME VALUES CORRESPOND TO THE LAST BIT OF WORD 108 IN EACH FRAME.
259
260      M = 792
261      DO 142 J = 1, 128
262      M = M + 1
263      142 BUFTAP(M) = ASHOUR(J)
264
265      C MAGNETIC ASPECT ANGLE DATA.
266
267      M = 920
268      DO 152 J = 1, 128
269      M = M + 1
270      152 BUFTAP(M) = ASPECT(J)
271
272      C ATTITUDE-ORBIT AND MAGNETOMETER DATA.
273      C 1<8 THE TIME VALUES CORRESPOND TO THE FIRST BIT IN FRAMES 3, 7, 11, ETC.
274      C 2<8 THE TIME VALUES CORRESPOND TO THE FIRST BIT IN FRAMES 5, 13, 21, ETC.
275      C      THE OTHER VALUES ARE COMPUTED FOR THIS TIME.
276
277      M = 1048
278      IF (KILD - 1) 162, 162, 164
279      162 JEND = 32
280      KDEL = 4
281      K = -1
282      GO TO 166
283      164 JEND = 16
284      KDEL = 8
285      K = -3
286
287      165 DO 168 J = 3, JEND
288      K = K + KDEL
289      BUFTAP(M+ 1) = SCHOUR(K)
290      BUFTAP(M+ 2) = ORVALU(J)
291      BUFTAP(M+ 3) = OLVALU(J)
292      BUFTAP(M+ 4) = OPGLAT(J)
293      BUFTAP(M+ 5) = GSEPHI(J)
294      BUFTAP(M+ 6) = GSETHE(J)
295      BUFTAP(M+ 7) = GSPHII(J)
296      BUFTAP(M+ 8) = GSTHE(J)
297      BUFTAP(M+ 9) = BMGSC(1,1,J)
298      BUFTAP(M+10) = BMGSC(1,2,J)
299      BUFTAP(M+11) = BMGSC(1,3,J)
300      BUFTAP(M+12) = BMGSC(1,4,J)
301      168 M = M + 12
302
303      C ORIGINAL ATTITUDE-ORBIT VALUES.

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```

304
305      M = 1432
306      DO 180 J = 1, 6
307      IF (AORDAT(J,1) - EBTIME) 180, 180, 172
308      *72 K = J + 3
309      IF (K - 6) 176, 176, 174
310      174 K = 6
311      175 DO 178 L = J, K
312      M = M + 1
313      BUFTAP(M) = AORDAT(L,1) / 3600.0      TIME
314      BBTIME = AORDAT(L,1)
315      M = M + 1
316      178 BUFTAP(M) = AORDAT(L,15)      B/80
317      GO TO 182
318      180 CONTINUE
319      182 CONTINUE
320
321      M = 1440
322      BUFTAP(M+1) = AORDAT(6,1) / 3600.0      A-O TIME
323
324      M = 1441
325      DO 192 N = 1, 9
326      M = M + 1
327      192 BUFTAP(M) = AORDAT(6,N+25)      TGEI
328
329      DO 194 N = 1, 9
330      M = M + 1
331      194 BUFTAP(M) = ACPDAT(6,N+34)      TGSE
332
333      DO 196 N = 1, 9
334      M = M + 1
335      196 BUFTAP(M) = AORDAT(6,N+43)      TGSN
336      M = 1468
337
338      C WRITE THE MAGNETIC ASPECT DATA RECORD ON TAPE.
339
340      BUFFER OUT (NG, 1) (BUFTAP(1), BUFTAP(1472))
341
342      C END THE MAGNETIC ASPECT DATA TAPE.
343
344      IF (LGRECD - NGRECD) 202, 202, 204
345      202 WRITE (NT, 1000) NGRECD
346      PRINT 1002, NGRECD
347      END FILE NG
348      END FILE NG
349      END FILE NG
350      UNLOAD NG
351      CALL ASSIGN (NG, 1, SPNEXTG)
352      WRITE OUTPUT TAPE 33, 1004
353      204 CONTINUE
354
355      C PRINT ONE OUTPUT RECORD.
356
357      IF (INRSCD) 216, 216, 212
358      212 WRITE OUTPUT TAPE NT, 1100
359      DO 214 N = 1, 1472
360      214 WRITE (NT, 1102) N, BUFTAP(N)
361      WRITE OUTPUT TAPE NT, 1100
362      216 CONTINUE
363
364      RETURN
365
366      1003 FORMAT (///31H THE ASPECT TAPE WAS ENDED WITH, I6, 9H RECORDS.///)
367      1002 FORMAT ( / 31H THE ASPECT TAPE WAS ENDED WITH, I6, 9H RECORDS.///)
368      1004 FORMAT (40H OGO - TAKEDOWN UNLOADED ASPECT TAPE AND,
369      2      26H HANG THE NEXT ASPECT TAPE)
370
371      1103 FORMAT (1H1//)
372      1102 FORMAT (1X, I5, F18.9)
373
374      END

```