#456

ISEE 1, 2, and 3

DATA POOL TAPES

77-102A-00H,01D,03B,04C,05B,06B,07C,08C
10C and 12B
77-102B-00F
78-079A-00D,01B,02B,03B,04B,06B,07B,08B
09B,10B and 14C

Table of Contents

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1. INTRODUCTION:

The documentation for this data set was originally on paper, kept in NSSDC's Data Set Catalogs (DSCs). The paper documentation in the Data Set Catalogs have been made into digital images, and then collected into a single PDF file for each Data Set Catalog. The inventory information in these DSCs is current as of July 1, 2004. This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system. The information existing in the DSCs is now not needed for locating the data files, but we did not remove that inventory information.

The offline tape datasets have now been migrated from the original magnetic tape to Archival Information Packages (AIP’s).

A prior restoration may have been done on data sets, if a requestor of this data set has questions; they should send an inquiry to the request office to see if additional information exists.

2. ERRATA/CHANGE LOG:

NOTE: Changes are made in a text box, and will show up that way when displayed on screen with a PDF reader.

When printing, special settings may be required to make the text box appear on the printed output.

Version	Date	Person	Page	Description of Change
01				
02				

3 LINKS TO RELEVANT INFORMATION IN THE ONLINE NSSDC INFORMATION SYSTEM:

http://nssdc.gsfc.nasa.gov/nmc/

[NOTE: This link will take you to the main page of the NSSDC Master Catalog. There you will be able to perform searches to find additional information]

4. CATALOG MATERIALS:

a. Associated Documents   To find associated documents you will need to know the document ID number and then click here.
http://nssdcftp.gsfc.nasa.gov/miscellaneous/documents/

b. Core Catalog Materials

ISEE-1

DATA POOL TAPE

77-102A-00H, 01D, 03B, 04C, 05B, 06B

07C, 08C, 09C, 10C, 12B

SPMS-00147

THIS DATA SET HAS BEEN RESTORED. THERE WERE ORIGINALLY 21 9-TRACK, 1600 BPI TAPES, WRITTEN IN BINARY. THERE ARE SIX RESTORED TAPES. THE DR TAPES ARE 3480 CARTRIDGES AND THE DS TAPES ARE 9-TRACK, 6250 BPI. THE TAPES WERE CREATED ON AN IBM 360 COMPUTER. THE DR AND DS NUMBERS ALONG WITH THE CORRESPONDING D NUMBERS AND TIME SPANS ARE AS FOLLOWS:

DR#	DS#	DD#	FILES	TIME SPAN	
DR02828	DS02828	D34003	1-49	10/22/77 - 04/29/78	
		D34004	50-89	04/30/78 - 09/16/78	
		D34005	90-140	09/17/78 - 03/17/79	
		D34006	141-190	03/18/79 - 09/08/79	
DR02829	DS02829	D35162	1-48	09/09/79 - 02/19/80	
		D41591	49-96	02/20/80 - 08/13/80	
		D42109	97-136	08/13/80 - 02/04/81	
		D45282	137-183	02/04/81 - 07/28/81	
DR02830	DS02830	D46605	1-49	07/29/81 - 01/26/82	
		D48075	50-99	01/27/82 - 07/20/82	
		D54203	100-148	07/21/82 - 01/11/83	
		D57425	149-198	01/12/83 - 07/06/83	
DR02831	DS02831	D59933	1-50	07/10/83 - 12/31/83	
		D62459	51-100	01/01/84 - 06/24/84	
		D64040	101-148	06/23/84 - 12/09/84	
DR02832	DS02832	D65453	1-49	12/09/84 - 06/01/85	
		D66728	50-99	06/02/85 - 11/26/85	
		D72485	100-149	11/27/85 - 05/21/86	(a)
DR02833	DS02833	D73890	1-50	05/21/86 - 11/12/86	(b)
		D74472	51-101	11/12/86 - 05/09/87	(b)
		D76164	102-140	05/10/87 - 11/26/87	(b)

(a) THIS TAPE DOES NOT CONTAIN 77-102A-08C, OR 09C
(b) THESE TAPES DO NOT CONTAIN 77-102A-09C

ISEE 3

DATA POOL TAPES

78-079A-00D,01B,02B,03B,04B,06B,07B,10B SPHE-00144

THIS DATA SET HAS BEEN RESTORED. ORIGINALLY THERE WERE 10 9-TRACK, 1600 BPI TAPES WRITTEN IN BINARY. THERE ARE 3 RESTORED TAPES. THE TAPES WERE CREATED ON A XDS 930 COMPUTER. THE DR TAPES ARE 3480 CARTRIDGES AND THE DS TAPES ARE 9-TRACK, 6250 BPI. THE DR AND DS NUMBERS ALONG WITH THE CORRESPONDING D NUMBERS AND THE TIME SPANS ARE AS FOLLOWS:

DR#	DS#	D#	FILES	TIME SPAN
DR03553	DS03553	D35163	1-40	08/12/78 - 05/27/79
		D35164	41-90	05/27/79 - 05/04/80
		D41592	91-122	05/04/80 - 12/14/80
DR03554	DS03554	D45283	1-50	12/14/80 - 11/28/81
		D47554	51-101	11/29/81 - 11/21/82
		D56956	102-151	11/21/82 - 11/05/83
DR03555	DS03555	D60585	1-50	11/06/83 - 10/20/84
		D65572	51-100	10/21/84 - 10/05/85
		D72299	101-152	10/06/85 - 10/25/86
		D74471	153-167	10/26/86 - 02/07/87

REQ. AGENT	RAND NO.	ACQ. AGENT
VJP	RD2732	MJT
LSM		
GLS		

ISEE 1,2 & 3

DATA POOL TAPES

THIS DATA SET CONSISTS OF ISEE 1, 2 & 3 DATA POOL TAPES. THE TAPES ARE 9 TRACK, 1600 BPI, BINARY AND ARE MULTI-FILED. THE TAPES WERE CREATED ON AN XDS/930 COMPUTER AND ARE IBM 360 FORMATTED. THE D AND C NUMBERS WITH THE TIME SPAN ARE AS FOLLOWS. THE TIME SPAN OF EACH FILE IS ON THE FOLLOWING PAGES.

ISEE 1 & 2

D#	C#	TIME SPAN
D-34003	C-20620	10/22/77 - 04/29/78
D-34004	C-20621	04/30/78 - 09/16/78
D-34005	C-20622	09/17/78 - 03/17/79
D-34006	C-20623	03/18/79 - 09/09/79
D-35162	C-20793	09/09/79 - 02/19/80
D-41591	C-21063	02/20/80 - 08/13/80
D-42109	C-21188	08/13/80 - 02/04/81
D-45282	C-21489	02/04/81 - 07/28/81
BAO D-46605	C-21730	07/29/81 - 01/27/82
D-48075	C-22234	01/27/82 - 07/20/82
D-54203	C-22782	07/21/82 - 01/11/83

ISEE 3

D#	C#	TIME SPAN
D-35163	C-20794	08/12/78 - 05/27/79
D-35164	C-20795	05/27/79 - 05/04/80
D-41592	C-21064	05/04/80 - 12/14/80
D-45283	C-21490	12/14/80 - 11/28/81
D-47554	C-22186	11/29/81 - 11/20/82

ISEE 1 con't.

D#	C#	TIME SPAN	missing data
D-57425 ✓	C-23108	01/12/83 - 07/06/83	
D-59933 ✓	C-23541	07/10/83 - 12/31/83	
D-62459	C-23895	01/01/84 - 06/24/84	
D-64040	C-24135	06/24/84 - 12/09/84	
D-65453 ✓	C-24662	12/09/84 - 06/01/85	– dys. 029-034/84
D-66728 ✓	C-24958	06/02/85 - 11/26/85	– dys. 190-195/85
D-72485	C-25504	11/27/85 - 05/21/86	
D-73890	C-25994	05/21/86 - 11/12/86	– dys 238-243/86
D-74472	C-26211	11/12/86 - 5/9/87	
D-76164	C-26569	5/10/87 - ~~[illegible]~~ 09/26/87	(39 FILES)

ISEE 3 con't.

D#	C#	TIME SPAN
D-56956	C-23083	11/21/82 - 11/05/83
D-60585	C-23703	11/06/83 - 10/20/84
D-65572	C-24674	10/21/84 - 10/05/85
D-72299	C-25439	10/06/85 - 10/25/86 - [illegible]
D-74471	C-26210	10/26/86 -

FILES	SATELLITE	TIME SPAN
1	ISEE 1	77/295 - 77/297
2	ISEE 1	77/298 - 77/304
3	ISEE 2	77/305 - 77/311
4	ISEE 1	77/322 - 77/328
5	ISEE 1	77/329 - 77/331
6	ISEE 2	77/332 - 77/334
7	ISEE 2	77/335 - 77/337
8	ISEE 2	77/338 - 77/341
9	ISEE 2	77/342 - 77/344
10	ISEE 1	77/345 - 77/347
11	ISEE 2	77/348 - 77/351
12	ISEE 1	77/352 - 77/355
13	ISEE 1	77/356 - 77/358
14	ISEE 2	77/359 - 77/361
15	ISEE 2	77/362 - 77/365
16	ISEE 1	78/001 - 78/003
17	ISEE 2	78/004 - 78/007
18	ISEE 2	78/008 - 78/010
19	ISEE 1	78/011 - 78/014
20	ISEE 1	78/015 - 78/017
21	ISEE 1	78/018 - 78/021
22	ISEE 2	78/022 - 78/024
23	ISEE 1	78/025 - 78/028
24	ISEE 1	78/029 - 78/031
25	ISEE 1	78/032 - 78/035
26	ISEE 1	78/036 - 78/038
27	ISEE 1	78/039 - 78/042
28	ISEE 1	78/043 - 78/045
29	ISEE 1	78/046 - 78/049
30	ISEE 1	78/050 - 78/052
31	ISEE 1	78/053 - 78/056
32	ISEE 1	78/057 - 78/059
33	ISEE 1	78/060 - 78/063
34	ISEE 1	78/064 - 78/066
35	ISEE 1	78/067 - 78/070
36	ISEE 1	78/071 - 78/073
37	ISEE 1	78/074 - 78/077
38	ISEE 1	78/078 - 78/080
39	ISEE 1	78/081 - 78/084
40	ISEE 1	78/085 - 78/087
41	ISEE 1	78/088 - 78/091
42	ISEE 1	78/092 - 78/094
43	ISEE 1	78/095 - 78/098
44	ISEE 1	78/099 - 78/101
45	ISEE 1	78/102 - 78/105
46	ISEE 1	78/106 - 78/108
47	ISEE 1	78/109 - 78/112
48	ISEE 1	78/113 - 78/115
49	ISEE 1	78/116 - 78/119

FILES	SATELLITE	TIME SPAN
1	ISEE 1	78/120 - 78/122
2	ISEE 1	78/123 - 78/126
3	ISEE 1	78/127 - 78/129
4	ISEE 1	78/130 - 78/133
5	ISEE 1	78/134 - 78/136
6	ISEE 1	78/137 - 78/140
7	ISEE 1	78/141 - 78/143
8	ISEE 1	78/144 - 78/147
9	ISEE 1	78/148 - 78/150
10	ISEE 1	78/151 - 78/154
11	ISEE 1	78/155 - 78/157
12	ISEE 1	78/158 - 78/161
13	ISEE 1	78/162 - 78/164
14	ISEE 1	78/165 - 78/168
15	ISEE 1	78/169 - 78/171
16	ISEE 1	78/172 - 78/175
17	ISEE 1	78/176 - 78/178
18	ISEE 1	78/179 - 78/182
19	ISEE 1	78/183 - 78/185
20	ISEE 1	78/186 - 78/189
21	ISEE 1	78/190 - 78/192
22	ISEE 1	78/193 - 78/196
23	ISEE 1	78/197 - 78/199
24	ISEE 1	78/200 - 78/203
25	ISEE 1	78/204 - 78/206
26	ISEE 1	78/207 - 78/210
27	ISEE 1	78/211 - 78/213
28	ISEE 1	78/214 - 78/217
29	ISEE 1	78/218 - 78/220
30	ISEE 1	78/221 - 78/224
31	ISEE 1	78/225 - 78/227
32	ISEE 1	78/228 - 78/231
33	ISEE 1	78/232 - 78/234
34	ISEE 1	78/235 - 78/238
35	ISEE 1	78/239 - 78/241
36	ISEE 1	78/242 - 78/245
37	ISEE 1	78/246 - 78/248
38	ISEE 1	78/249 - 78/252
39	ISEE 1	78/253 - 78/255
40	ISEE 1	78/256 - 78/259

FILES	SATELLITE	TIME SPAN
1	ISEE 1	78/260 - 78/262
2	ISEE 1	78/263 - 78/266
3	ISEE 1	78/267 - 78/269
4	ISEE 1	78/270 - 78/273
5	ISEE 1	78/274 - 78/276
6	ISEE 1	78/277 - 78/280
7	ISEE 1	78/281 - 78/283
8	ISEE 1	78/284 - 78/287
9	ISEE 1	78/288 - 78/290
10	ISEE 1	78/291 - 78/294
11	ISEE 1	78/295 - 78/297
12	ISEE 1	78/298 - 78/301
13	ISEE 1	78/302 - 78/304
14	ISEE 1	78/305 - 78/308
15	ISEE 1	78/309 - 78/311
16	ISEE 1	78/312 - 78/315
17	ISEE 1	78/316 - 78/318
18	ISEE 1	78/319 - 78/322
19	ISEE 1	78/323 - 78/325
20	ISEE 1	78/326 - 78/329
21	ISEE 1	78/330 - 78/332
22	ISEE 1	78/333 - 78/336
23	ISEE 1	78/337 - 78/339
24	ISEE 1	78/340 - 78/346
25	ISEE 1	78/347 - 78/350
26	ISEE 1	78/351 - 78/353
27	ISEE 1	78/354 - 78/357
28	ISEE 1	78/358 - 78/360
29	ISEE 1	78/361 - 78/364
30	ISEE 1	78/365 - 79/002
31	ISEE 1	79/003 - 79/006
32	ISEE 1	79/007 - 79/009
33	ISEE 1	79/010 - 79/013
34	ISEE 1	79/014 - 79/016
35	ISEE 1	79/017 - 79/020
36	ISEE 1	79/021 - 79/023
37	ISEE 1	79/024 - 79/027
38	ISEE 1	79/028 - 79/030
39	ISEE 1	79/031 - 79/034
40	ISEE 1	79/035 - 79/037
41	ISEE 1	79/038 - 79/041
42	ISEE 1	79/042 - 79/044
43	ISEE 1	79/045 - 79/048
44	ISEE 1	79/049 - 79/051
45	ISEE 1	79/052 - 79/055
46	ISEE 1	79/056 - 79/058
47	ISEE 1	79/059 - 79/062
48	ISEE 1	79/063 - 79/065
49	ISEE 1	79/066 - 79/069
50	ISEE 1	79/070 - 79/072
51	ISEE 1	79/073 - 79/076

FILES	SATELLITE	TIME SPAN
1	ISEE 1	79/077 - 79/079
2	ISEE 1	79/080 - 79/083
3	ISEE 1	79/084 - 79/086
4	ISEE 1	79/087 - 79/090
5	ISEE 1	79/091 - 79/093
6	ISEE 1	79/094 - 79/097
7	ISEE 1	79/098 - 79/100
8	ISEE 1	79/101 - 79/104
9	ISEE 1	79/105 - 79/107
10	ISEE 1	79/108 - 79/111
11	ISEE 1	79/112 - 79/114
12	ISEE 1	79/115 - 79/118
13	ISEE 1	79/119 - 79/121
14	ISEE 1	79/122 - 79/125
15	ISEE 1	79/126 - 79/128
16	ISEE 1	79/129 - 79/132
17	ISEE 1	79/133 - 79/135
18	ISEE 1	79/136 - 79/139
19	ISEE 1	79/140 - 79/142
20	ISEE 1	79/143 - 79/146
21	ISEE 1	79/147 - 79/149
22	ISEE 1	79/150 - 79/153
23	ISEE 1	79/154 - 79/156
24	ISEE 1	79/157 - 79/160
25	ISEE 1	79/161 - 79/163
26	ISEE 1	79/164 - 79/167
27	ISEE 1	79/168 - 79/170
28	ISEE 1	79/171 - 79/174
29	ISEE 1	79/175 - 79/177
30	ISEE 1	79/178 - 79/181
31	ISEE 1	79/182 - 79/184
32	ISEE 1	79/185 - 79/188
33	ISEE 1	79/189 - 79/191
34	ISEE 1	79/192 - 79/195
35	ISEE 1	79/196 - 79/198
36	ISEE 1	79/199 - 79/202
37	ISEE 1	79/203 - 79/205
38	ISEE 1	79/206 - 79/209
39	ISEE 1	79/210 - 79/212
40	ISEE 1	79/213 - 79/216
41	ISEE 1	79/217 - 79/219
42	ISEE 1	79/220 - 79/223
43	ISEE 1	79/224 - 79/226 – 09C ended
44	ISEE 1	79/227 - 79/230
45	ISEE 1	79/231 - 79/233
46	ISEE 1	79/234 - 79/237
47	ISEE 1	79/238 - 79/240
48	ISEE 1	79/241 - 79/244
49	ISEE 1	79/245 - 79/247
50	ISEE 1	79/248 - 79/251

ISEE 1 data set 77-102A-09C time coverage
ended on 08/15/79 because of experiment failure.

ISEE 1 + 2   D-35162   C-20793

FILES	SATELLITE	TIME SPAN
1	ISEE 1	79/252 - 79/254
2	ISEE 1	79/255 - 79/258
3	ISEE 1	79/259 - 79/261
4	ISEE 1	79/262 - 79/265
5	ISEE 1	79/266 - 79/268
6	ISEE 1	79/269 - 79/272
7	ISEE 1	79/273 - 79/275
8	ISEE 1	79/276 - 79/279
9	ISEE 1	79/280 - 79/282
10	ISEE 1	79/283 - 79/286
11	ISEE 1	79/287 - 79/289
12	ISEE 1	79/290 - 79/293
13	ISEE 1	79/294 - 79/296
14	ISEE 1	79/297 - 79/300
15	ISEE 1	79/301 - 79/303
16	ISEE 1	79/304 - 79/307
17	ISEE 1	79/308 - 79/310
18	ISEE 1	79/311 - 79/314
19	ISEE 1	79/315 - 79/317
20	ISEE 1	79/318 - 79/321
21	ISEE 1	79/322 - 79/324
22	ISEE 1	79/325 - 79/328
23	ISEE 1	79/329 - 79/331
24 **	ISEE 1	79/332 - 79/335
26	ISEE 1	79/339 - 79/342
27	ISEE 1	79/343 - 79/345
28	ISEE 1	79/346 - 79/349
29	ISEE 1	79/350 - 79/353
30	ISEE 1	79/353 - 79/356
31	ISEE 1	79/357 - 79/359
32	ISEE 1	79/360 - 79/363
33 ***	ISEE 1	79/364 - 79/365
35	ISEE 1	80/002 - 80/005
36	ISEE 1	80/006 - 80/008
37	ISEE 1	80/009 - 80/012
38	ISEE 1	80/013 - 80/015
39	ISEE 1	80/016 - 80/019
40	ISEE 1	80/020 - 80/022
41	ISEE 1	80/023 - 80/026
42	ISEE 1	80/027 - 80/029
43	ISEE 1	80/030 - 80/033
44	ISEE 1	80/034 - 80/036
45	ISEE 1	80/037 - 80/040
46	ISEE 1	80/041 - 80/043
47	ISEE 1	80/044 - 80/047
48	ISEE 1	80/048 - 80/050
** 25	ISEE 1	79/336 - 80/337
*** 34	ISEE 1	80/001 - 80/001

ISEE 1 D-41591 C-21063

FILES	SATELLITE	TIME SPAN
1	ISEE 1	80/051 - 80/054
2	ISEE 1	80/055 - 80/057
3	ISEE 1	80/057 - 80/061
4	ISEE 1	80/062 - 80/064
5	ISEE 1	80/065 - 80/068
6	ISEE 1	80/069 - 80/071
7	ISEE 1	80/072 - 80/075
8	ISEE 1	80/076 - 80/078
9	ISEE 1	80/079 - 80/082
10	ISEE 1	80/083 - 80/085
11	ISEE 1	80/086 - 80/089
12	ISEE 1	80/090 - 80/092
13	ISEE 1	80/093 - 80/096
14	ISEE 1	80/097 - 80/099
15	ISEE 1	80/100 - 80/103
16	ISEE 1	80/104 - 80/106
17	ISEE 1	
18	ISEE 1	80/111 - 80/113
19	ISEE 1	80/114 - 80/117
20	ISEE 1	80/118 - 80/120
21	ISEE 1	80/121 - 80/124
22	ISEE 1	80/125 - 80/127
23	ISEE 1	80/128 - 80/131
24	ISEE 1	80/132 - 80/134
25	ISEE 1	80/135 - 80/138
26	ISEE 1	80/139 - 80/141
27	ISEE 1	80/142 - 80/145
28	ISEE 1	80/146 - 80/148
29	ISEE 1	80/149 - 80/152
30	ISEE 1	80/153 - 80/155
31	ISEE 1	80/156 - 80/159
32	ISEE 1	80/160 - 80/162
33	ISEE 1	80/163 - 80/166
34	ISEE 1	80/167 - 80/169
35	ISEE 1	80/170 - 80/173
36	ISEE 1	80/174 - 80/176
37	ISEE 1	80/177 - 80/180
38	ISEE 1	80/181 - 80/184
39	ISEE 1	80/184 - 80/188
40	ISEE 1	
41	ISEE 1	80/191 - 80/194
42	ISEE 1	80/195 - 80/197
43	ISEE 1	80/198 - 80/201
44	ISEE 1	80/202 - 80/204
45	ISEE 1	80/205 - 80/208
46	ISEE 1	80/209 - 80/211
47	ISEE 1	80/212 - 80/215
48	ISEE 1	80/216 - 80/218
49	ISEE 1	80/219 - 80/223
50	ISEE 1	80/223 - 80/226

ISEE 1 D-42109 C-21188

FILES	SATELLITE	TIME SPAN
1	ISEE 1	80/226 - 80/230
2	ISEE 1	80/230 - 80/233
3	ISEE 1	80/233 - 80/237
4	ISEE 1	80/237 - 80/240
5	ISEE 1	80/240 - 80/244
6	ISEE 1	80/244 - 80/247
7	ISEE 1	80/247 - 80/251
8	ISEE 1	80/251 - 80/254
9	ISEE 1	80/254 - 80/258
10	ISEE 1	80/258 - 80/260
11	ISEE 1	80/261 - 80/264
12	ISEE 1	80/265 - 80/267
13	ISEE 1	80/268 - 80/272
14	ISEE 1	80/272 - 80/274
15	ISEE 1	80/275 - 80/278
16	ISEE 1	80/279 - 80/282
17	ISEE 1	80/282 - 80/285
18	ISEE 1	80/286 - 80/288
19	ISEE 1	80/289 - 80/292
20	ISEE 1	80/293 - 80/295
21	ISEE 1	80/296 - 80/299
22	ISEE 1	80/300 - 80/302
23	ISEE 1	80/303 - 80/306
24	ISEE 1	80/307 - 80/310
25	ISEE 1	80/310 - 80/313
26	ISEE 1	80/314 - 80/316
27	ISEE 1	80/317 - 80/320
28	ISEE 1	80/321 - 80/323
29	ISEE 1	80/324 - 80/327
30	ISEE 1	80/328 - 80/330
31	ISEE 1	80/331 - 80/334
32	ISEE 1	80/335 - 80/337
33	ISEE 1	80/338 - 80/341
34	ISEE 1	80/342 - 80/344
35	ISEE 1	80/345 - 80/348
36	ISEE 1	80/349 - 80/351
37	ISEE 1	80/352 - 80/355
38	ISEE 1	80/356 - 80/358
39	ISEE 1	80/359 - 80/362
40	ISEE 1	80/363 - 80/365
41	ISEE 1	80/365 - 81/003
42	ISEE 1	81/004 - 81/006
43	ISEE 1	81/007 - 81/011
44	ISEE 1	81/011 - 81/013
45	ISEE 1	81/014- 81/018
46	ISEE 1	81/018 - 81/021
47	ISEE 1	81/021 - 81/024
48	ISEE 1	81/025 - 81/027
49	ISEE 1	81/028 - 81/031
50	ISEE 1	81/032 - 81/035

ISEE 1 D-45282 C-21489

FILES	SATELLITE	TIME SPAN
1	ISEE-1	035/81-039/81
2		039/81-042/81
3		042/81-045/81
4		046/81-049/81
5		049/81-052/81
6		053/81-056/81
7		056/81-059/81
8		060/81-062/81
9		063/81-067/81
10		067/81-069/81
11		
12		074/81-076/81
13		077/81-081/81
14		081/81-084/81
15		
16		088/81-091/81
17		091/81-094/81
18		095/81-097/81
19		098/81-102/81
20		
21		105/81-109/81
22		109/81-112/81
23		112/81-115/81
24		116/81-119/81
25		119/81-122/81
26		123/81-126/81
27		126/81-129/81
28		130/81-133/81
29		133/81-136/81
30		136/81-140/81
31		140/81-144/81
32		144/81-146/81
33		147/81-151/81
34		151/81-153/81
35		154/81-158/81
36		158/81-161/81
37		161/81-164/81
38		165/81-167/81
39		168/81-172/81
40		172/81-175/81
41		175/81-179/81
42		179/81-182/81
43		182/81-185/81
44		186/81-188/81
45		189/81-193/81
46		193/81-195/81
47		195/81-199/81
48		200/81-202/81
49		203/81-206/81
50		207/81-209/81

ISEE 1 D-46605 C-21730

FILES	SATELLITE	TIMESPAN
1	ISEE 1	210-213/1981
2		214-216
3		217-220
4		221-223
5		224-227
6		228-230
7		231-234
8		235-237
9		238-241
10		242-244
11		245-248
12		249-251
13		252-255
14		256-258
15		259-262
16		263-265
17		266-269
18		273-276
19		277-279
20		280-283
21		
22		287-290
23		291-293
24		294-297
25		298-300
26		301-304
27		305-307
28		308-311
29		312-314
30		315-318
31		319-321
32		322-325
33		326-328
34		
35		333-335
36		336-339
37		340-342
38		343-346
39		347-349
40		350-353
41		354-356
42		357-360
43		361-363
44		364-002/1982
45		003-005
46		006-009
47		010-012
48		013-016
49		017-019
50		020-023
51		024-026

ISEE 1 D-48075 C-22234

FILES	SATELLITE	TIME SPAN
1	ISEE 1	027/82-030/82
2		031/82-033/82
3		034/82-037/82
4		038/82-040/82
5		041/82-044/82
6		045/82-048/82
7		048/82-051/82
8		052/82-054/82
9		055/82-058/82
10		059/82-061/82
11		062/82-065/82
12		066/82-068/82
13		069/82-072/82
14		073/82-075/82
15		076/82-079/82
16		080/82-082/82
17		083/82-086/82
18		087/82-089/82
19		090/82-093/82
20		094/82-096/82
21		097/82-100/82
22		101/82-103/82
23		104/82-107/82
24		108/82-110/82
25		110/82-114/82
26		115/82-117/82
27		118/82-121/82
28		122/82-124/82
29		125/82-128/82
30		129/82-131/82
31		132/82-135/82
32		136/82-138/82
33		139/82-142/82
34		143/82-145/82
35		146/82-149/82
36		150/82-152/82
37		153/82-156/82
38		157/82-159/82
39		160/82-163/82
40		164/82-166/82
41		167/82-170/82
42		171/82-173/82
43		174/82-177/82
44		178/82-180/82
45		181/82-184/82
46		185/82-187/82
47		188/82-191/82
48		192/82-194/82
49		195/82-198/82
50		199/82-201/82

ISEE 1   D-54203   C-22782

FILES	SATELLITE	TIME SPAN
1	ISEE 1	202/82-205/82
2		206/82-208/82
3		
4		213/82-215/82
5		216/82-219/82
6		220/82-222/82
7		223/82-226/82
8		227/82-229/82
9		230/82-233/82
10		234/82-236/82
11		237/82-240/82
12		241/82-243/82
13		244/82-247/82
14		248/82-250/82
15		251/82-254/82
16		255/82-257/82
17		258/82-261/82
18		262/82-264/82
19		265/82-268/82
20		269/82-271/82
21		272/82-275/82
22		276/82-278/82
23		279/82-282/82
24		283/82-285/82
25		286/82-289/82
26		290/82-292/82
27		293/82-296/82
28		297/82-299/82
29		300/82-303/82
30		304/82-306/82
31		307/82-310/82
32		311/82-313/82
33		314/82-317/82
34		318/82-320/82
35		321/82-324/82
36		325/82-327/82
37		328/82-331/82
38		332/82-334/82
39		335/82-338/82
40		339/82-341/82
41		342/81-345/82
42		346/82-348/82
43		349/82-352/82
44		353/82-355/82
45		356/82-359/82
46		360/82-362/82
47		363/82-001/83
48		002/83-004/83
49		005/83-008/83
50		009/83-011/83

ISEE 1 D-57425 C-23108

FILES	TIME SPAN
1	012/83-015/83
2	016/83-018/83
3	019/83-022/83
4	023/83-025/83
5	026/83-029/83
6	030/83-032/83
7	033/83-036/83
8	037/83-039/83
9	040/83-043/83
10	044/83-046/83
11	047/83-050/83
12	051/83-053/83
13	054/83-058/83
14	058/83-060/83
15	061/83-065/83
16	065/83-067/83
17	068/83-071/83
18	072/83-075/83
19	075/83-078/83
20	079/83-082/83
21	082/83-085/83
22	086/83-088/83
23	089/83-092/83
24	093/83-095/83
25	096/83-099/83
26	100/83-102/83
27	103/83-106/83
28	107/83-109/83
29	110/83-113/83
30	114/83-116/83
31	117/83-121/83
32	121/83-123/83
33	124/83-128/83
34	128/83-131/83
35	131/83-135/83
36	135/83-138/83
37	138/83-142/83
38	142/83-145/83
39	145/83-148/83
40	149/83-152/83
41	152/83-155/83
42	156/83-159/83
43	159/83-162/83
44	163/83-165/83
45	166/83-169/83
46	170/83-173/83
47	173/83-177/83
48	177/83-179/83
49	180/83-184/83
50	184/83-187/83

ISEE 1 D-59933 C-23541

FILES	TIME SPAN
1	191/83 - 193/83
2	194/83 - 198/83
3	198/83 - 201/83
4	201/83 - 205/83
5	205/83 - 208/83
6	208/83 - 212/83
7	212/83 - 215/83
8	215/83 - 218/83
9	219/83 - 222/83
10	222/83 - 226/83
11	226/83 - 229/83
12	229/83 - 233/83
13	233/83 - 236/83
14	236/83 - 240/83
15	240/83 - 243/83
16	243/83 - 247/83
17	247/83 - 250/83
18	250/83 - 254/83
19	254/83 - 256/83
20	257/83 - 261/83
21	262/83 - 264/83
22	264/83 - 267/83
23	268/83 - 271/83
24	271/83 - 274/83
25	275/83 - 278/83
26	278/83 - 282/83
27	282/83 - 285/83
28	285/83 - 289/83
29	289/83 - 291/83
30	291/83 - 296/83
31	296/83 - 299/83
32	299/83 - 303/83
33	303/83 - 305/83
34	306/83 - 310/83
35	310/83 - 312/83
36	313/83 - 317/83
37	317/83 - 320/83
38	320/83 - 324/83
39	324/83 - 327/83
40	327/83 - 331/83
41	331/83 - 334/83
42	334/83 - 337/83
43	338/83 - 341/83
44	341/83 - 345/83
45	345/83 - 348/83
46	348/83 - 352/83
47	352/83 - 355/83
48	355/82 - 358/83
49	359/83 - 361/83
50	362/83 - 365/83

ISEE 1 D-62459 C-23895

FILES	TIME SPAN
1	84/001-84/004
2	84/004-84/007
3	84/008-84/010
4	84/010-84/014
5	84/015-84/017
6	84/018-84/022
7	84/022-84/024
8	84/025-84/029
9	84/029-84/032
10	84/032-84/036
11	84/036-84/038
12	84/039-84/043
13	84/043-84/046
14	84/046-84/050
15	84/050-84/052
16	84/053-84/056
17	84/057-84/059
18	84/060-84/063
19	84/064-84/066
20	84/067-84/070
21	84/071-84/073
22	84/074-84-078
23	84/078-84/081
24	84/081-84/085
25	84/085-84/088
26	84/088-84/091
27	84/092-84/094
28	84/095-84/098
29	84/099-84/101
30	84/102-84/105
31	84/106-84/108
32	84/109-84/113
33	84/113-84/115
34	84/116-84/119
35	84/120-84/123
36	84/123-84/126
37	84/127-84/129
38	84/130-84/133
39	84/134-84/137
40	84/137-84/140
41	84/141-84/143
42	84/144-84/148
43	84/148-84/150
44	84/151-84/155
45	84/155-74/157
46	84/158-84/161
47	84/162-84/165
48	84/165-84/168
49	84/169-84/172
50	84/172-84/176

ISEE 1 D-64040 C-24135

FILES	TIME SPAN
1	176/84-179/84
2	179/84-183/84
3	183/84-186/84
4	186/84-190/84
5	190/84-193/84
6	193/84-197/84
7	197/84-200/84
8	200/84-204/84
9	204/84-207/84
10	207/84-211/84
11	211/84-214/84
12	214/84-218/84
13	218/84-220/84
14	221/84-225/84
15	225/84-228/84
16	228/84-232/84
17	232/84-234/84
18	235/84-239/84
19	239/84-242/84
20	242/84-246/84
21	246/84-249/84
22	249/84-253/84
23	253/84-255/84
24	256/84-260/84
25	260/84-262/84
26	263/84-266/84
27	267/84-269/84
28	270/84-273/84
29	274/84-276/84
30	277/84-280/84
31	281/84-283/84
32	284/84-287/84
33	
34	291/84-294/84
35	295/84-297/84
36	298/84-301/84
37	302/84-304/84
38	305/84-308/84
39	309/84-311/84
40	312/84-315/84
41	316/84-318/84
42	319/84-322/84
43	323/84-325/84
44	326/84-329/84
45	330/84/332/84
46	333/84/337/84
47	337/84-340/84
48	340/84-344/84
49	
50	

ISEE 1 D-65453 C-24662

FILES	TIME SPAN
1	344/84-346/84
2	347/84-351/84
3	351/84-353/84
4	354/84-358/84
5	358/84-360/84
6	361/84-364/84
7	366/84-001/85
8	002/85-005/85
9	006/85-008/85
10	009/85/013/85
11	013/85-015/85
12	016/85-019/85
13	020/85-022/85
14	023/85-027/85
15	027/85-029/85
16	
17	034/85-036/85
18	037/85-040/85
19	041/85-043/85
20	044/85-047/85
21	048/85-050/85
22	051/85-055/85
23	055/85-058/85
24	058/85-062/85
25	062/85-064/85
26	065/85-068/85
27	069/85-072/85
28	072/85-075/85
29	076/85-078/85
30	079/85-083/85
31	083/85-085/85
32	086/85-089/85
33	090/85-093/85
34	093/85-096/85
35	097/85-100/85
36	100/85-104/85
37	104/85-106/85
38	107/85-110/85
39	111/85-113/85
40	114/85-117/85
41	118/85-120/85
42	121/85-125/85
43	125/85-128/85
44	128/85-131/85
45	132/85-135/85
46	135/85-138/85
47	139/85-142/85
48	142/85-146/85
49	146/85-149/85
50	149/85-152/85

ISEE 1 D-66728 C-24958

FILES	TIME SPAN
1	153/85-156/85
2	156/85-160/85
3	160/85-163/85
4	163/85-166/85
5	167/85-169/85
6	170/85-173/85
7	174/85-177/85
8	177/85-181/85
9	181/85-184/85
10	185/85-188/85
11	188/85-190/85
12	
13	195/85-198/85
14	198/85-202/85
15	202/85-205/85
16	205/85-209/85
17	209/85-211/85
18	212/85-215/85
19	216/85-218/85
20	219/85-222/85
21	223/85-226/85
22	226/85-229/85
23	230/85-233/85
24	233/85-237/85
25	237/85-240/85
26	240/85-244/85
27	244/85-247/85
28	247/85-251/85
29	251/85-253/85
30	254/85-258/85
31	258/85-260/85
32	261/85-265/85
33	265/85-267/85
34	268/85-271/85
35	272/85-275/85
36	275/85-279/85
37	279/85-282/85
38	282/85-286/85
39	286/85-288/85
40	289/85-293/85
41	293/85-295/85
42	296/85-299/85
43	300/85-303/85
44	303/85-306/85
45	308/85-309/85
46	310/85-314/85
47	314/85-316/85
48	317/85-320/85
49	321/85-323/85
50	324/85-327/85
	328/85-330/85

ISEE 1 D-72485 C-25504

FILE	1	331/85-334/85
	2	335/85-337/85
	3	338/85-342/85
	4	342/85-344/85
	5	345/85-349/85
	6	349/85-351/85
	7	352/85-355/85
	8	356/85-358/85
	9	359/85-362/85
	10	363/85-365/85
	11	001/86-004/86
	12	005/86-007/86
	13	008/86-011/86
	14	012/86-014/86
	15	015/86-018/86
	16	019/86-021/86
	17	022/86-025/86
	18	026/86-028/86
	19	029/86-032/86
	20	033/86-035/86
	21	036/86-039/86
	22	040/86-042/86
	23	043/86-046/86
	24	047/86-049/86
	25	050/86-052/86
	26	054/86-056/86
	27	057/86-060/86
	28	061/86-063/86
	29	064/86-067/86
	30	068/86-070/86
	31	071/86-074/86
	32	075/86-077/86
	33	078/86-081/86
	34	082/86-084/86
	35	085/86-088/86
	36	089/86-091/86
	37	092/86-096/86
	38	096/86-098/86
	39	099/86-103/86
	40	103/86-105/86
	41	106/86-109/86
	42	110/86-112/86
	43	113/86-117/86
	44	117/86-120/86
	45	120/86-123/86
	46	124/86-127/86
	47	127/86-130/86
	48	130/86-134/86
	49	134/86-138/86
	50	138/86-141/86

D-73890 C-25994 ISEE 1

FILES	TIME SPAN
1	141/86-145/86
2	145/86-148/86
3	148/86-152/86
4	152/86-154/86
5	154/86-159/86
6	159/86-162/86
7	162/86-165/86
8	166/86-168/86
9	169/86-172/86
10	173/86-175/86
11	176/86-179/86
12	180/86-182/86
13	183/86-186/86
14	187/86-190/86
15	190/86-194/86
16	194/86-196/86
17	197/86-201/86
18	201/86-204/86
19	204/86-208/86
20	208/86-211/86
21	211/86-215/86
22	215/86-218/86
23	218/86-222/86
24	222/86-225/86
25	225/86-228/86
26	229/86-231/86
27	232/86-235/86
28	236/86-238/86
29	
30	243/86-245/86
31	246/86-249/86
32	250/86-252/86
33	253/86-256/86
34	257/86-259/86
35	260/86-263/86
36	264/86-266/86
37	267/86-270/86
38	271/86-273/86
39	274/86-277/86
40	278/86-280/86
41	281/86-284/86
42	285/86-287/86
43	288/86-291/86
44	292/86-294/86
45	295/86-298/86
46	299/86-301/86
47	302/86-305/86
48	306/86-308/86
49	309/86-313/86
50	313/86-316/86

ISEE 1 D-74472 C-26211

FILES	TIME SPAN
1	316/86-320/86
2	320/86-323/86
3	323/86-327/86
~~4~~ 5	330/86-333/86
~~5~~ 6	334/86-336/86
~~6~~ 7	337/86-340/86
~~7~~ 8	341/86-343/86
~~8~~ 9	344/86-348/86
~~9~~ 10	348/86-350/86
~~10~~ 11	351/86-355/86
~~11~~ 12	355/86-358/86
~~12~~ 13	358/86-362/86
~~13~~ 14	362/86-365/86
~~14~~ 15	362/86-365/86
~~15~~ 16	004/87-007/87
~~16~~ 17	007/87-011/87
~~17~~ 18	011/87-014/87
~~18~~ 19	014/87-018/87
~~19~~ 20	018/87-020/87
~~20~~ 21	021/87-025/87
~~21~~ 22	025/87-027/87
~~22~~ 23	028/87-032/87
~~23~~ 24	032/87-034/87
~~24~~ 25	035/87-039/87
~~25~~ 26	039/87-042/87
~~26~~ 27	042/87-046/87
~~27~~ 28	046/87-048/87
~~28~~ 29	049/87-053/87
~~29~~ 30	053/87-055/87
~~30~~ 31	056/87-059/87
~~31~~ 32	060/87-062/87
~~32~~ 33	063/87-066/87
~~33~~ 34	067/87-069/87
~~34~~ 35	070/87-073/87
~~35~~ 36	074/87-076/87
~~36~~ 37	077/87-080/87
~~37~~ 38	081/87-083/87
~~38~~ 39	084/87-088/87
~~39~~ 40	088/87-090/87
~~40~~ 41	091/87-094/87
~~41~~ 42	095/87-097/87
~~42~~ 43	098/87-101/87
~~43~~ 44	102/87-104/87
~~44~~ 45	105/87-108/87
~~45~~ 46	109/87-111/87
~~46~~ 47	112/87-115/87
~~47~~ 48	116/87-118/87
~~48~~ 49	119/87-122/87
~~49~~ 50	123/87-125/87
~~50~~ 51	126/87-129/87

file 4 327/86 - 330/86

ISEE 1 D-76164 C-26569

FILES	TIME SPAN
1	130 - 132/87
2	133 - 136/87
3	137 - 139/87
4	140 - 143/87
5	144 - 146/87
6	147 - 151/87
7	151 - 153/87
8	154 - 157/87
9	158 - 160/87
10	161 - 164/87
11	165 - 168/87
12	168 - 172/87
13	172 - 174/87
14	174 - 179/87
15	179 - 182/87
16	186 - 189/87
17	189 - 193/87
18	193 - 196/87
19	196 - 199/87
20	200 - 203/87
21	203 - 207/87
22	207 - 210/87
23	210 - 214/87
24	214 - 217/87
25	217 - 221/87
26	221 - 224/87
27	224 - 228/87
28	228 - 231/87
29	231 - 235/87
30	235 - 238/87
31	238 - 242/87
32	242 - 245/87
33	245 - 249/87
34	249 - 252/87
35	252 - 256/87
36	256 - 259/87
37	259 - 263/87
38	263 - 266/87
39	266 - 269/87
~~40~~	~~327 - 330/87~~

FILES	SATELLITE	TIME SPAN
1	ISEE 3	78/224 - 78/231
2	ISEE 3	78/232 - 78/238
3	ISEE 3	78/239 - 78/245
4	ISEE 3	78/246 - 78/252
5	ISEE 3	78/253 - 78/259
6	ISEE 3	78/260 - 78/266
7	ISEE 3	78/267 - 78/273
8	ISEE 3	78/274 - 78/280
9	ISEE 3	78/281 - 78/288
10	ISEE 3	78/288 - 78/295
11	ISEE 3	78/295 - 78/302
12	ISEE 3	78/302 - 78/309
13	ISEE 3	78/309 - 78/316
14	ISEE 3	78/316 - 78/323
15	ISEE 3	78/323 - 78/330
16	ISEE 3	78/330 - 78/337
17	ISEE 3	78/337 - 78/343
18	ISEE 3	78/351 - 78/358
19	ISEE 3	78/358 - 78/365
20	ISEE 3	78/365 - 79/007
21	ISEE 3	79/007 - 79/014
22	ISEE 3	79/014 - 79/021
23	ISEE 3	79/021 - 79/028
24	ISEE 3	79/028 - 79/035
25	ISEE 3	79/035 - 79/042
26	ISEE 3	79/042 - 79/049
27	ISEE 3	79/049 - 79/056
28	ISEE 3	79/056 - 79/063
29	ISEE 3	79/063 - 79/070
30	ISEE 3	79/070 - 79/077
31	ISEE 3	79/077 - 79/084
32	ISEE 3	79/084 - 79/091
33	ISEE 3	79/091 - 79/098
34	ISEE 3	79/098 - 79/105
35	ISEE 3	79/105 - 79/112
36	ISEE 3	79/112 - 79/119
37	ISEE 3	79/119 - 79/126
38	ISEE 3	79/126 - 79/133
39	ISEE 3	79/133 - 79/140
40	ISEE 3	79/140 - 79/147

ISEE 3 D-35164 C-20795

FILES	SATELLITE	TIME SPAN
1	ISEE 3	79/147 - 79/154
2	ISEE 3	79/154 - 79/161
3	ISEE 3	79/161 - 79/168
4	ISEE 3	79/169 - 79/174
5	ISEE 3	79/175 - 79/182
6	ISEE 3	79/182 - 79/189
7	ISEE 3	79/189 - 79/196
8	ISEE 3	79/196 - 79/203
9	ISEE 3	79/203 - 79/210
10	ISEE 3	79/210 - 79/217
11	ISEE 3	79/217 - 79/224
12	ISEE 3	79/224 - 79/231
13	ISEE 3	79/231 - 79/238
14	ISEE 3	79/238 - 79/245
15	ISEE 3	79/245 - 79/252
16	ISEE 3	79/252 - 79/259
17	ISEE 3	79/259 - 79/266
18	ISEE 3	79/266 - 79/273
19	ISEE 3	79/273 - 79/280
20	ISEE 3	79/279 - 79/286
21	ISEE 3	79/287 - 79/293
22	ISEE 3	79/294 - 79/300
23	ISEE 3	79/301 - 79/307
24	ISEE 3	79/308 - 79/314
25	ISEE 3	79/315 - 79/321
26	ISEE 3	79/322 - 79/328
27	ISEE 3	79/329 - 79/335
28	ISEE 3	79/336 - 79/342
29	ISEE 3	79/343 - 79/349
30	ISEE 3	79/350 - 79/356
31	ISEE 3	79/357 - 79/363
32	ISEE 3	79/364 - 79/365
33	ISEE 3	80/001 - 80/005
34	ISEE 3	80/006 - 80/012
35	ISEE 3	80/013 - 80/020
36	ISEE 3	80/020 - 80/026
37	ISEE 3	80/027 - 80/033
38	ISEE 3	80/034 - 80/040
39	ISEE 3	80/041 - 80/048
40	ISEE 3	80/048 - 80/054
41	ISEE 3	80/055 - 80/062
42	ISEE 3	80/062 - 80/069
43	ISEE 3	80/069 - 80/076
44	ISEE 3	80/076 - 80/083
45	ISEE 3	80/083 - 80/089
46	ISEE 3	80/090 - 80/097
47	ISEE 3	80/097 - 80/104
48	ISEE 3	80/104 - 80/110
49	ISEE 3	80/111 - 80/117
50	ISEE 3	80/118 - 80/125

D-41592 C-21064 ISEE 3

FILES	SATELLITE	TIME SPAN
1	ISEE 3	80/125 - 80/132
2	ISEE 3	80/132 - 80/138
3	ISEE 3	80/139 - 80/146
4	ISEE 3	80/146 - 80/153
5	ISEE 3	80/153 - 80/159
6	ISEE 3	80/160 - 80/166
7	ISEE 3	80/167 - 80/173
8	ISEE 3	80/174 - 80/181
9	ISEE 3	80/181 - 80/187
10	ISEE 3	80/187 - 80/194
11	ISEE 3	80/195 - 80/201
12	ISEE 3	80/202 - 80/209
13	ISEE 3	80/209 - 80/215
14	ISEE 3	80/215 - 80/223
15	ISEE 3	80/223 - 80/229
16	ISEE 3	80/230 - 80/237
17	ISEE 3	80/237 - 80/244
18	ISEE 3	80/244 - 80/251
19	ISEE 3	80/251 - 80/258
20	ISEE 3	80/258 - 80/265
21	ISEE 3	80/265 - 80/272
22	ISEE 3	80/272 - 80/278
23	ISEE 3	80/279 - 80/285
24	ISEE 3	80/286 - 80/293
25	ISEE 3	80/293 - 80/300
26	ISEE 3	80/300 - 80/307
27	ISEE 3	80/307 - 80/314
28	ISEE 3	80/314 - 80/321
29	ISEE 3	80/321 - 80/328
30	ISEE 3	80/328 - 80/334
31	ISEE 3	80/334 - 80/341
32	ISEE 3	80/342 - 80/349
33	ISEE 3	
34	ISEE 3	
35	ISEE 3	
36	ISEE 3	
37	ISEE 3	
38	ISEE 3	
39	ISEE 3	
40	ISEE 3	
41	ISEE 3	

ISEE-3 D-45283 C-21490

FILES	SATELLITE	TIME SPAN
1	ISEE-3	349/80-355/80
2		356/80-363/80
3		363/80-004/81
4		004/81-011/81
5		011/81-018/81
6		018/81-025/81
7		025/81-031/81
8		032/81-038/81
9		039/81-045/81
10		046/81-052/81
11		053/81-060/81
12		060/81-067/81
13		067/81-073/81
14		074/81-080/81
15		081/81-088/81
16		088/81-095/81
17		095/81-101/81
18		102/81-109/81
19		109/81 116/81
20		116/81-123/81
21		123/81 129/81
22		130/81 137/81
23		137/81 144/81
24		144/81-150/81
25		151/81-158/81
26		158/81 165/81
27		165/81-171/81
28		172/81-179/81
29		179/81-186/81
30		186/81-193/81
31		193/81-199/81
32		200/81-206/81
33		207/81-213/81
34		214/81-220/81
35		221/81-227/81
36		228/81-234/81
37		235/81-241/81
38		242/81-248/81
39		249/81-255/81
40		256/81-262/81
41		263/81-269/81
42		270/81-276/81
43		277/81-283/81
44		284/81-290/81
45		291/81-297/81
46		298/81-304/81
47		305/81-311/81
48		312/81-318/81
49		319/81-325/81
50		326/81-332/81

ISEE 3 D-47554 C-22186

FILES	SATELLITE	TIME SPAN
1	ISEE-3	333/81-339/81
2		340/81-346/81
3		347/81-353/81
4		354/81-360/81
5		361/81-002/82
6		003/82-009/82
7		010/82-016/82
8		017/82-023/82
9		024/82-030/82
10		031/82-037/82
11		038/82-044/82
12		045/82-051/82
13		051/82-058/82
14		059/82-065/82
15		066/82-072/82
16		073/82-079/82
17		080/82-086/82
18		087/82-093/82
19		094/82-100/82
20		101/82-107/82
21		108/82-114/82
22		115/82-121/82
23		122/82-128/82
24		129/82-135/82
25		136/82-142/82
26		143/82-149/82
27		150/82-156/82
28		157/82-163/82
29		164/82-170/82
30		171/81-177/82
31		178/82-184/82
32		185/82 191/82
33		192/82-198/82
34		199/82-205/82
35		206/82-212/82
36		213/82-219/82
37		220/82-226/82
38		227/82-233/82
39		234/82-240/82
40		241/82-247/82
41		248/82-255/82
42		255/82-261/82
43		262/85-268/82
44		269/82-275/82 ←
45		276/85-282/85
46		283/82-289/82
47		290/82-296/82
48		297/82-303/82
49		304/82-310/82
50		311/82/317/82
51		318/82/325/82

ISEE 3 D-56956 C-23083

FILES	TIME SPAN
1	325/82-331/82
2	332/82-338/82
3	339/82-345/82
4	346/82-352/82
5	353/82-359/82
6	360/82-001/83
7	002/83-009/83
8	009/83-016/83
9	016/83-023/83
10	023/83-030/83
11	030/83-037/83
12	037/83-043/83
13	043/83-051/83
14	051/83-058/83
15	058/83-065/83
16	065/83-072/83
17	072/83-079/83
18	079/83-086/83
19	086/83-093/83
20	093/83-100/83
21	100/83-107/83
22	107/83-114/83
23	114/83-121/83
24	121/83-128/83
25	128/83-135/83
26	135/83-142/83
27	142/83-149/83
28	149/83-155/83
29	156/83-163/83
30	163/83-169/83
31	170/83-177/83
32	178/83-184/83
33	185/83-191/83
34	192/83-198/83
35	199/83-205/83
36	206/83-212/83
37	213/83-219/83
38	220/82-226/83
39	227/83-233/83
40	234/83-240/83
41	240/83-246/83
42	247/83-254/83
43	254/83-260/83
44	261/83-268/83
45	268/83-275/83
46	275/83-282/83
47	282/83-288/83
48	289/83-296/83
49	296/83-303/83
50	303/82-309/83

3

ISEE 3 D-60585 C-23703

FILES	TIME SPAN
1	310/83-317/83
2	317/83-324/83
3	324/83-331/83
4	331/83-337/83
5	338/83-345/83
6	345/83-352/83
7	352/83-358/83
8	359/83-365/83
9	001/84-008/84
10	008/84-014/84
11	015/84-021/84
12	022/84-028/84
13	029/84-035/84
14	036/84-042/84
15	043/84-049/84
16	050/84-057/84
17	057/84-063/84
18	064/84-070/84
19	071/84-078/84
20	078/84-084/84
21	085/84-092/84
22	092/84-099/84
23	099/84-106/84
24	106/84-112/84
25	113/84-120/84
26	120/84-127/84
27	127/84-134/84
28	134/84-140/84
29	141/84-147/84
30	148/84-154/84
31	155/84-161/84
32	162/84-168/84
33	169/84-175/84
34	176/84-182/84
35	183/84-189/84
36	190/84-196/84
37	197/84-203/84
38	204/84-210/84
39	211/84-217/84
40	218/84-224/84
41	225/84-231/84
42	232/84-239/84
43	239/84-246/84
44	246/84-253/84
45	253/84-259/84
46	260/84-266/84
47	266/84-273/84
48	274/84-280/84
49	281/84-287/84
50	288/84-294/84

ISEE 3 D-65572 C-24674

	TIME SPAN
FILE 1	295/84-301/84
2	302/84-308/84
3	309/84/315/84
4	316/84-322/84
5	323/84-329/84
6	330/84-336/84
7	337/84-343/84
8	344/84-350/84
9	351/84-357/84
10	358/84-364/84
11	365/84-005/85
12	006/85-012/85
13	013/85-018/85
14	020/85-026/85
15	027/85-033/85
16	034/85-040/85
17	041/85-047/85
18	048/85-054/85
19	055/85-061/85
20	062/85-068/85
21	069/85-076/85
22	076/85-082/85
23	084/85-090/85
24	090/85-097/85
25	098/85-103/85
26	102/85-110/85
27	111/85-117/85
28	118/85-125/85
29	125/85-132/85
30	132/85-139/85
31	139/85-144/85
32	146/85-151/85
33	153/85-159/85
34	160/85-165/85
35	167/85-173/85
36	174/85-180/85
37	181/85-187/85
38	188/85-194/85
39	195/85-201/85
40	202/85-208/85
41	209/85-215/85
42	216/85-222/85
43	223/85-229/85
44	230/85-236/85
45	237/85-243/85
46	244/85-250/85
*47	251/85-257/85
48	258/85-264/85
49	265/85-271/85
50	272/85-278/85

* Do not send 9/11/85 Encounter Data untill 9/11/86.

ISEE 3 D-72299 C-25439

FILES	TIME SPAN
1	279 - 285/85
2	286 - 292/85
3	293 - 299/85
4	300 - 306/85
5	307 - 313/85
6	314 - 320/85
7	321 - 327/85
8	328 - 334/85
9	335 - 341/85
10	342 - 348/85
11	350 - 355/85
12	357 - 361/85
13	363 - 004/86
14	006 - 010/86
15	033 - 039/86
16	042 - 045/86
17	052 - 052/86
18	052 - 060/86
19	061 - 067/86
20	068 - 074/86
21	075 - 081/86
22	081 - 088/86
23	088 - 096/86
24	096 - 103/86
25	103 - 110/86
26	110 - 117/86
27	117 - 123/86
28	124 - 130/86
29	131 - 136/86
30	138 - 144/86
31	145 - 151/86
32	152 - 158/86
33	159 - 165/86
34	166 - 172/86
35	173 - 178/86
36	180 - 186/86
37	187 - 193/86
38	194 - 200/86
39	201 - 207/86
40	208 - 214/86
41	215 - 221/86
42	222 - 227/86
43	229 - 235/86
44	236 - 242/86
45	243 - 249/86
46	250 - 256/86
47	257 - 263/86
48	264 - 270/86
49	271 - 276/86
50	278 - 280/86
51	286 - 291/86
52	292 - 298/86

ISEE 3 D-74471 C-26210

FILES	TIME SPAN
1	299/86 - 305/86
2	306/86 - 312/86
3	313/86 - 319/86
4	320/86 - 326/86
5	327/86 - 333/86
6	335/86 - 340/86
7	341/86 - 347/86
8	348/86 - 354/86
9	356/86 - 361/86
10	363/86 - 003/87
11	004/87 - 010/87
12	013/87 - 015/87
13	020/87 - 024/87
14	025/87 - 031/87
15	032/87 - 038/87

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NOTES ON THE ISEE A + B DATA POOL TAPE

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AUGUST 1977

GSFC

GODDARD SPACE FLIGHT CENTER

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INTRODUCTION

The purpose of the data pool tape is to act as a low-cost but reasonably effective alternative to a full interactive data de-commutation system. In the latter, data users are linked by means of terminals to a central computer, and call out data from a large store for their immediate use. The data pool tape acts as a co-located store of a fraction of the data from the spacecraft. The time resolution and selection of the data is limited, but the tape lends itself to a number of uses, for example

(1) An experimenter can use it as an index, and to identify interesting time periods. He can then obtain data from other experimenters for a collaborative study.

(2) A non-experimenter can use it, or the plots to be derived from it, to correlate with ground observations, or observations from other spacecraft.

For these, or any of the other uses which will easily come to mind, the user needs a good description of the tape and of the algorithms used to generate the quantities on the tape. He also needs a description of the experiments to enable him to make an informed judgment of the uses to which data derived from them can legitimately be put. It is intended that these will be supplied in part by this document.

Following this introduction, we have included a description of the tape itself. This precedes sections which have short descriptions of each instrument and the method by which the corresponding data are reduced to yield the quantities on the tape. Finally there is a list of Principal Investigators, with addresses, and telephone numbers.

Data Pool Quantities From Preliminary Algorithms

Original Proposal	Preliminary Algorithm
(1) Magnetic Field, 3 Components/Min. (3 Words)	<u>Russell</u> 3 Spin Corrected Magnetic Field Components, Payload Coord's. (1 Minute Intervals) 25 Parameters (Hourly)
(2) Plasma-Velocity, Density, Temperature. (3 Words)	<u>Bame</u> 4 Electron Energy Levels 1 Ion Pseudo Density 1 Ion Average Energy 1 Solar Wind Peak Speed 1 Solar Wind Pseudo Density (5 Minute Intervals)
(3) 20-50 keV and 50-100 keV Electrons and Protons (4 Words)	<u>Williams</u> 1 32-50 keV e's 1 32-50 keV p's 1 80-126 keV e's 1 80-126 keV p's (5 Minute Intervals)
(4) Number Density and Energy Density of Low Energy Electrons and Ions (4 Words)	<u>Frank</u> 1 Spin Averaged Proton Number Density. 1 10 keV Electron Flux 1 Energy Range Indicator (5 Minute Intervals) <u>Anderson</u> 1 8-200 keV Electron Flux. 1 8-200 keV Proton Flux. (5 Minute Intervals)
(5) E-Field Bandpass Channel, 400 Hz.	<u>Gurnett</u> 1 562 Hz Wave Electric Field Magnitude. (5 Minute Intervals)

Data Pool Quantities From Preliminary Algorithms (Continued)

Original Proposal	Preliminary Algorithm
(6) B-Field Bandpass Channel, 400 Hz.	Gurnett 1 562 Hz Wave Magnetic Field Magnitude (5 Minute Intervals)
(7) Harvey On-Off	Harvey 1 6-Level Status Word. (1 Minute Intervals)
(8) Electron Gun On-Off	Mozer 1 Gun On or Off Indicator. (1 Minute Intervals)
(9) Electron Density from Sharp	Sharp 1 Cold Plasma Density 1 Flow Angle Indicator 1 Temperature Indicator (5 Minute Intervals)
(10) 15 Minute Averages of Higher Energy Counting Rates. 300 keV-1 meV 10-30 meV* 30-60 meV*	Hovestadt 1 0.17-0.4 MeV Protons 1 0.12-0.25 MeV Alphas 1 Heavies (Z > 2) Greater than 100 keV/Nucleon 1 5-10 MeV Protons 1 10-20 MeV Protons (15 Minute Intervals)

*Simpson was to have provided these.

CONTENTS

CONTENTS (Continued)

CONTENTS (Continued)

CONTENTS (Continued)

NOTES ON THE ISEE A + B DATA POOL TAPE

GENERAL DESCRIPTION AND USAGE

I. Structure of the Data Pool Tape

(A) Tapes

Each data pool user receives one reel of tape per week. This tape may be 7-track 556 cpi or 9-track 1600 cpi, depending upon the user's preference. All tapes are odd parity. Inter-record gaps are 1/2 inch for 9-track tapes and 3/4 inch for 7-track tapes.

(B) Files

Data pool information for a 7-day period is presented as a single tape file, beginning with a label record and ending with a standard tape mark (EOF mark). All tape records, including the label, are of the same length. The data pool file contains approximately 160 data records spanning 7 days of telemetry data. Redundant telemetry data (due to overlap in ground station coverage) has been removed. The data pool file coincides in time with a "shipping group" of the usual telemetry data (decom tapes) which is sent to each experimenter.

The data pool file appears 3 times on the tape for redundancy backup. See Figure 1.

(C) Data Words

(1) Word Size

Each data pool tape is written in computer words of a length compatible with the intended user's computer. Tapes thus constructed can be read directly into the user's computer with no reformatting. This holds true for both 7-track and 9-track tapes. For example, records intended for use with a CDC 6000 series computer would appear as packed strings of 60-bit fields. On a 9-track tape, each such 60-bit field occupies 7-1/2 tape characters. But the total number of words per record is an even number, so that the 60-bit fields can all be written in pairs, 15 tape characters per pair, and thus can be read normally by the CDC. (Other combinations of word size and tape type work out in a similar fashion.)

- ONE TAPE PER 7-DAY DATA GROUP.
- ONE FILE PER DATA GROUP, REPEATED 3 TIMES FOR BACKUP.
- DATA POOL QUANTITIES ARE IN USER COMPATIBLE FLOATING POINT AND USER WORD LENGTH.
- DATA RECORDS ARE APPROXIMATELY 1 HOUR.

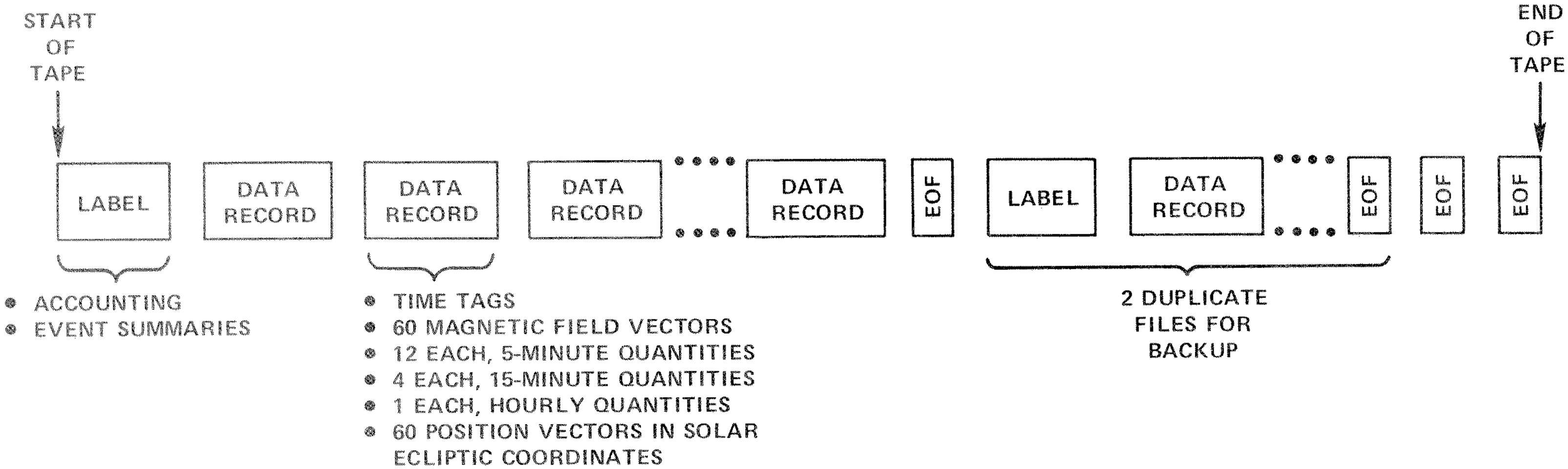


Figure 1. Data Pool Tape

(2) Floating Point Format

The entire data pool tape, the file label record and all data records, are in floating point format. (This provides a uniform, standard appearance of all information, facilitates conversion to the various computer word sizes, and simplifies tape printing and verification.) The floating point representation used on each tape is specified by the user, and, like the word size, is compatible with the computer which will process the tape.

Most data pool tape quantities are originally computed in floating point and should be interpreted as such. Certain items, however, are obvious as integer values converted to floating point representation (day-of-year, seconds-of-day, clock, various indicator flags, etc.). The user may interpret such items either as floating point (in which case tests for equality may be invalid) or as integer (in which case appropriate precautions should be taken to prevent possible truncation during conversion to integer).

(3) Missing Data

Missing data items are indicated by a negative value fill code in place of the missing item. The exact value of the fill code is dependent on the type of floating point used, but will in all cases be outside the legitimate range of any data item.

Missing data pool items may be the result of gaps in data recovery at the ground station, or the result of data being rejected by one of the experiment processing algorithms.

It is possible that uncertain conditions may lead to a data pool result of questionable validity. Rather than be rejected, such results may, in certain cases, be presented as the negative of the actual result. Thus, a negative number other than the fill code, if in a field which should normally be positive, represents a doubtful result and may be used, but with caution. (Note that this does not apply to those values which may normally be negative, such as magnetic field components.)

II. Contents of the Data Pool Tape

(A) Time

The time values given on the data pool tape are UTC (Universal Time Code) at the time the data was transmitted from the spacecraft (i.e. transmission lag time has been removed). Times have been smoothed to remove random errors and then verified by intercomparison among all the ground stations. Time is given as Julian day (1-366) and seconds-of-day.

(B) Clock

The clock used on the data pool tape is a minor frame counter, at both the high and the low bit rates, having a cycle time of approximately 97 days. It is constructed by combining the 24-bit raw spacecraft clock with part of the frame counter. (This is the same clock as used on the telemetry data tapes.) Maximum clock size is 25 bits at low bit rate and 27 bits at high bit rate.

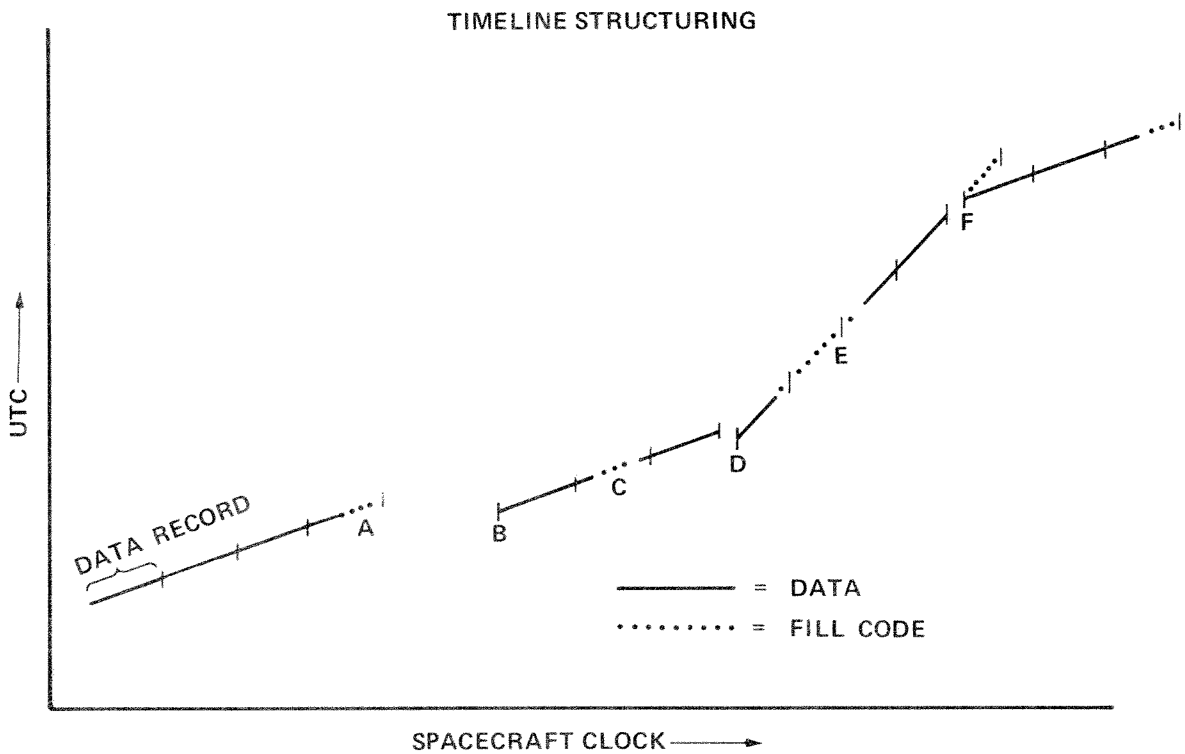
Since the full clock will not fit in all types of floating point words without truncation, it is broken into 2 pieces, the low order 21 bits in one word, the remaining high order portion in another. The full clock can be reconstructed by converting both clock pieces to integer, then adding them together.

It should be noted that time, rather than clock, is the primary reference for data pool items. Clock is subject to rollover within the data pool file, as well as to unpredicted jumps forward or backward.

(C) Timelines

The time versus clock relationship may not be linear throughout the entire data pool file. Breaks occur when the bit rate changes, at end-of-year, and if the clock jumps or rolls over. A segment of data in which time versus clock is linear is defined as a time/clock baseline or "timeline."

Data accumulation intervals for experiment algorithms do not continue across timelines; that is, each data pool quantity is computed using data which begins and ends in the same timeline. See Figure 2.



Spacecraft Clock

A. Last record of timeline contains fill beyond the end of the timeline.

B. A new timeline begins due to a clock reset. No gap in data coverage.

C. Data gap within a record results in fill code.

D. New timeline begins due to a bit rate change.

E. Large data gap results in an entire record of fill code. Note that the record following the all-fill record begins with fill, but has a start time assigned as if data were present.

F. New timeline begins due to a bit rate change.

Figure 2. Timeline Structuring

(D) Data Records

Data records are fixed length, 810 words long. A full record holds 64 minutes of information, taken from 60 major frames of data at low bit rate or from 240 major frames at high bit rate.

Within a timeline, each data record represents a 64-minute partition in time. Data items are positioned within the records by time, relative to the start of the record (see "Time Tagging," below). Fill code is substituted where data is unavailable. If a gap in data coverage greater than 64 minutes occurs, it is possible that an entire record will be fill code. In this case the dummy record indicator is turned on.

When a new timeline starts, the uniform 64-minute spacing of records is interrupted and a new sequence of 64-minute records is established. The first record of the new timeline will not, in general, increment by 64 minutes from the previous record. Subsequent records will increment by 64 minutes until another timeline begins. Data records which begin a new timeline are flagged both in the records themselves and in the file label.

The format of the data record is given in Table 3.

(E) Time Tagging

There are four types of data pool information, according to frequency of readout: (1) 60 per record, 1-minute intervals; (2) 12 per record, 5-minute intervals; (3) 4 per record, 15-minute intervals; (4) once per record, hourly interval. ("Minute," as used here, is more correctly an "ISEE minute," or 64 seconds, which is the time period of one major frame at low bit rate.)

The start time of the data record (words 1 and 2) is the start time of sampling interval number 1 at all four frequencies of readout. The start times of subsequent intervals are computed relative to interval number 1.

Examples (Refer to Table 3):

Example 1 — Words 227 through 406 of the data record contain 60 magnetic field vectors labeled {Bp(1), Bx(1), By(1)} through {Bp(60), Bx(60), By(60)}. The vector {Bp(1), Bx(1), By(1)}, in words 227-229, was computed over the 64-second interval beginning at the record start time.

The vector $\{Bp(60), Bx(60), By(60)\}$, in words 404-406, was computed over the 64-second interval beginning at t = (record start time) + (59 x 64 seconds). Similarly, vector $\{Bp(3), Bx(3), By(3)\}$, words 233-235, was computed over the 64-second interval beginning at t = (record start time) + (128 seconds).

Example 2 — Find the 8-200 keV proton flux at a point in time 20 minutes from the start of the record.

The required information set is from the Anderson algorithm, words 635-646, labeled PFLUX (1) - PFLUX (12). This data is given at intervals of 5 ISEE-minutes or every 320 seconds. Let RST equal the record start time. Then,

$$\text{RST} + 20\,\text{min} = \text{RST} + 1200\,\text{sec} = \text{RST} + 3.75\ \text{intervals}$$

The desired value would thus be best approximated by interval No. 4, word 638.

(F) File Label

The file label record, Table 1, contains identification and accounting information for the data pool file. It also contains the minimum and maximum spin periods encountered over the 7-day file period, a summary of the shadow periods, and an index to all timelines in the file. The record is padded to the length of the data records.

As indicated in Table 1, the first 1440 bits should be ignored by the user. These bits are used for internal accounting purposes by Goddard Space Flight Center.

EXPERIMENT DESCRIPTION - ANDERSON EXPERIMENT

The Anderson experiment on ISEE/A and B consists of identical pairs of of solid state telescopes and two fixed voltage analyzers. The solid state telescopes are mounted on cold plates and operate around -50°C. The experiments are mounted to view along the spin axis of the spacecrafts.

The solid state experiment is designed to detect electrons and protons from about 8 to 200 keV. The separation of electron and proton fluxes above $\gtrsim$8 keV is accomplished by the use of two identical semiconductor detectors, one of which is covered by a thin low-Z absorber foil which stops low-energy protons. Electrons

Table 1

Data Pool File Label

Word Number*	Description (All Values are Floating Point)
1 . . . n	1440 bits for Goddard Space Flight Center internal use. (1440 bits = n words, where n depends on the word size used.)
n+1	Satellite ID number.
n+2	Intended recipient of this tape. (See Table 2.)
n+3	YY, start of file, 2 digits of year.
n+4	DDD, start of file, Julian day 1-366.
n+5	SSSSS, start of file, seconds of day.
n+6	YY, end of file, 2 digits of year.
n+7	DDD, end of file, Julian day 1-366.
n+8	SSSSS, end of file, seconds of day.
n+9	High order bits — Clock at start of the data pool file.
n+10	Low order 21 bits — Clock at start of the data pool file.
n+11	Group number (corresponds to telemetry data tape group numbers).
n+12	Minimum value of spin period found within this file, seconds.
n+13	Maximum value of spin period found within this file, seconds.
n+14 . . . . n+29	Spares.

*Word size is dependent on the intended recipient.

Table 1 (Continued)

Word Number	Description (All Values are Floating Point)	
n+30	Number of shadow periods (maximum 10)	Up to 10 shadow periods
n+31	Day of year — Start time of shadow period (1)	
n+32	Seconds of day — Start time of shadow period (1)	
n+33	Day of year — Stop time of shadow period (1)	
n+34	Seconds of day — Stop time of shadow period (1)	
n+35	Start record number of shadow period (1)	
.	.	
.	.	
.	.	
n+76	Day of year — Start time of shadow period (10)	
n+77	Seconds of day — Start time of shadow period (10)	
n+78	Day of year — Stop time of shadow period (10)	
n+79	Seconds of day — Stop time of shadow period (10)	
n+80	Start record number of shadow period (10)	
n+81	Number of time lines (maximum 80)	Up to 80 time lines
n+82	Start day of year (1)	
n+83	Start seconds of day (1)	
n+84	High order bits of start spacecraft clock (1)	
n+85	Low order 21 bits of start spacecraft clock (1)	
n+86	Bit rate (1–low bit rate; 4–high bit rate) (1)	
n+87	Start record number (1)	
.	.	
.	.	
.	.	
n+656	Start day of year (80)	
n+657	Start seconds of day (80)	
n+658	High order bits of start spacecraft clock (80)	
n+659	Low order 21 bits of start spacecraft clock (80)	
n+660	Bit rate (1–low bit rate; 4–high bit rate) (80)	
n+661	Start record number (80)	
n+662 . . 810	Fill to equal data record length	

Table 2

Experimenter Identification Codes

Experimenter ID Code	Experimenter Name
201	Anderson (ISEE-A/B)
202	Bame (ISEE-A)
203	Frank (ISEE-A/B)
204	Gurnett (ISEE-A/B)
205	Harvey (ISEE-A/B)
206	Helliwell (ISEE-A)
207	Hovestadt (ISEE-A)
208	Heppner (ISEE-A)
209	Mozer (ISEE-A)
210	Ogilvie (ISEE-A)
211	Russell (ISEE-A/B)
212	Sharp (ISEE-A)
213	Williams (ISEE-A)
215	Egidi (ISEE-B)
219	Keppler (ISEE-B)
220	Paschmann (ISEE-B)

Table 3

Data Pool Record

Word Number*	Description (All Values are Floating Point)	
1	Day-of-year, record start	
2	Seconds-of-day, record start	
3	Clock, record start. High order portion.	
4	Clock, record start. Low order 21 bits.	
5	Recovery factor: For LBR = (minor frames processed)/(60. x 256.) For HBR = (minor frames processed)/(240. x 256.)	
6	Bit rate: 1.0 = LBR (Low Bit Rate) 4.0 = HBR (High Bit Rate)	
7	Dummy record indicator: 0. = at least one minor frame of data within this record's span. 7.0 = no data within the span of this record. The record is a dummy.	
8	Timeline indicator 0. = this record lies on an existing timeline 7.0 = this record begins a new timeline	
9	Data record number	
10-21	Spares	
22	GSEX(1)	Satellite position in GSE coordinates, interval No. 1 (of 60)
23	GSEY(1)	
24	GSEZ(1)	
.	.	.
.	.	.
.	.	.
199	GSEX(60)	Satellite position in GSE coordinates, interval No. 60 (of 60)
200	GSEY(60)	
201	GSEZ(60)	

*Word size is dependent on the intended recipient.

Table 3 (Continued)

Word Number	Description (All Values are Floating Point)	
Russell Algorithm:		
202	A_1	Hourly parameters from magnetometer algorithm.
203	$R_{21} = AM_2/AM_1$	
204	$R_{31} = AM_3/AM_1$	
205	S_{21}	
206	C_{21}	
207	S_{31}	
208	C_{31}	
209	A_{IA}	
210	T_1	
211	T_2	
212	FS	
213	AS, Analog status	
214	AP, Flipper state	
215	MD-SD, Mag delay-Sun delay	
216	SP, Sun period	
217	MP, Mag period	
218	SE, Sun elevation	
219	DS (of first sample in hour)	
220	T	
221	O_1	
222	O_2	
223	O_3	
224	RS_1	
225	RS_2	
226	RS_3	

Table 3 (Continued)

Word Number	Description (All Values are Floating Point)	
227	Bp(1) - spin axis coordinate	Magnetic field vector, interval No. 1 (of 60)
228	Bx(1) - satellite-sun line coordinate	
229	By(1) - 3rd coordinate of triad	
.	.	
.	.	
.	.	
404	Bp(60)	Magnetic field vector, interval No. 60 (of 60)
405	Bx(60)	
406	By(60)	
Harvey Status:		
407	HASTAT(1)	Status during interval No. 1 (of 60)
.	.	.
.	.	.
.	.	.
466	HASTAT(60)	Status during interval No. 60 (of 60)
Mozer Status:		
467	MOSTAT(1)	Electron gun status during interval No. 1 (of 60)
.	.	.
.	.	.
.	.	.
526	MOSTAT(60)	Electron gun status during interval No. 60 (of 60)
Bame Algorithm:		
527	ESPEC1(1)	4-level electron spectrum for interval No. 1 (of 12)
528	ESPEC2(1)	
529	ESPEC3(1)	

Table 3 (Continued)

Word Number		Description (All Values are Floating Point)
530	ESPEC4(1)	4-level electron spectrum for interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
571	ESPEC1(12)	4-level electron spectrum for interval No. 12 (of 12)
572	ESPEC2(12)	
573	ESPEC3(12)	
574	ESPEC4(12)	
575	IONPD(1)	Ion pseudo-density, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
586	IONPD(12)	Ion pseudo-density, interval No. 12 (of 12)
587	IONAE(1)	Ion average energy, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
598	IONAE(12)	Ion average energy, interval No. 12 (of 12)
599	WINDPS(1)	Solar wind peak speed, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
610	WINDPS(12)	Solar wind peak speed, interval No. 12 (of 12)

Table 3 (Continued)

Word Number		Description (All Values are Floating Point)
611	WINDEN(1)	Solar wind pseudo-density, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
622	WINDEN(12)	Solar wind pseudo-density, interval No. 12 (of 12)
Anderson Algorithm:		
623	EFLUX(1)	8-200 keV electron flux, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
634	EFLUX(12)	8-200 keV electron flux, interval No. 12 (of 12)
635	PFLUX(1)	8-200 keV proton flux, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
646	PFLUX(12)	8-200 keV proton flux, interval No. 12 (of 12)
Gurnett Algorithm:		
647	EF562(1)	Wave electric field, 562 Hz, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
658	EF562(12)	Wave electric field, 562 Hz, interval No. 12 (of 12)

Table 3 (Continued)

Word Number		Description (All Values are Floating Point)
659	MF562(1)	Wave magnetic field, 562 Hz, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
670	MF562(12)	Wave magnetic field, 562 Hz, interval No. 12 (of 12)
Williams Algorithm:		
671	ELOW(1)	32-50 keV electrons, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
682	ELOW(12)	32-50 keV electrons, interval No. 12 (of 12)
683	EHIGH(1)	80-126 keV electrons, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
694	EHIGH(12)	80-126 keV electrons, interval No. 12 (of 12)
695	PLOW(1)	21-50 keV protons, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
706	PLOW(12)	32-50 keV protons, interval No. 12 (of 12)
707	PHIGH(1)	80-126 keV protons, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
718	PHIGH(12)	80-126 keV protons, interval No. 12 (of 12)

Table 3 (Continued)

Word Number		Description (All Values are Floating Point)
Sharp Algorithm:		
719	PLADEN(1)	Cold plasma density, interval No. 1 (of 12)
720	PLANGL(1)	Plasma flow angle indicator, interval No. 1 (of 12)
721	PLATEM(1)	Plasma temperature indicator, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
752	PLADEN(12)	Cold plasma density, interval No. 12 (of 12)
753	PLANGL(12)	Plasma flow angle indicator, interval No. 12 (of 12)
754	PLATEM(12)	Plasma temperature indicator, interval No. 12 (of 12)
Frank Algorithm:		
755	PRODEN(1)	Proton density, interval No. 1 (of 12)
756	EFLX10(1)	10 keV electron flux, interval No. 1 (of 12)
757	FRANGE(1)	Energy range indicator, interval No. 1 (of 12)
.	.	.
.	.	.
.	.	.
788	PRODEN(12)	Proton density, interval No. 12 (of 12)
789	EFLX10(12)	10 keV electron flux, interval No. 12 (of 12)
790	FRANGE(12)	Energy range indicator, interval No. 12 (of 12)

Table 3 (Continued)

Word Number		Description (All Values are Floating Point)
Hovestadt Algorithm:		
791	PROLP(1)	0.17-0.4 MeV protons, interval No. 1 (of 4)
.	.	.
.	.	.
.	.	.
794	PROLP(4)	0.17-0.4 MeV protons, interval No. 4 (of 4)
795	ALFLA(1)	0.12-0.25 MeV alphas, interval No. 1 (of 4)
.	.	.
.	.	.
.	.	.
798	ALFLA(4)	0.12-0.25 MeV alphas, interval No. 4 (of 4)
799	HEAVYS(1)	Heavies ($Z > 2$) greater than 0.1 MeV, interval No. 1 (of 4)
.	.	.
.	.	.
.	.	.
802	HEAVYS(4)	Heavies ($Z > 2$) greater than 0.1 MeV, interval No. 4 (of 4)
803	PROHP1(1)	5-10 MeV protons, interval No. 1 (of 4)
.	.	.
.	.	.
.	.	.
806	PROHP1(4)	5-10 MeV protons, interval No. 4 (of 4)
807	PROHP2(1)	10-20 MeV protons, interval No. 1 (of 4)
.	.	.
.	.	.
.	.	.
810	PROHP2(4)	10-20 MeV protons, interval No. 4 (of 4)

lose very little energy in the foil. The foil is chosen so that it stops protons up to the energy of electrons which just penetrate the detector. In the absence of protons energetic enough to penetrate the foil, the foil-covered detector counts only electrons while the open detector counts both electrons and protons. When the energetic protons are present, their fluxes are obtained by subtracting the foil detector counting rate from the open detector counting rates.

Two fixed electric field analyzers complement the solid state telescopes to detect electrons and protons below ~8keV. The analyzers consist of cylindrical plates, and the particles are detected by means of channel multipliers. One array is made up of funnel-mouthed multipliers (for large geometry factors) while another is made up with multipliers without funnels (small geometry factor).

Relevant information concerning the geometry factors, apertures, dynamic range, temporal resolution, and energies of the particles detected is summarized in Table 1. Some of the numbers shown are preliminary and may be modified at a later date. It is highly recommended that all users of the Anderson experimental data verify and/or clarify with the Principal Investigator any uncertainties or peculiarities concerning the data.

Algorithm for Processing the Pool Data from the Anderson Experiment

From the Anderson Energetic Particle Fluxes Experiment, the data pool contains the following quantities:

a. energy-integrated electron fluxes in the energy range of 8-200keV, designated EFLUX in the data pool format.

b. energy-integrated proton fluxes in the same energy range, designated PFLUX in the data pool format.

The fluxes are averaged every 5 minutes and 20 seconds, which precisely covers 5 major frames at low bit rate. Only the measurements from the mother spacecraft are included in the data pool. The electron fluxes are directly measured by the foil telescope, labeled in the experiment as FT8. Besides the foil telescope, the experiment has an open telescope, OT8, which measures both electron and proton fluxes. The proton fluxes are then deduced by taking the difference of OT8 and FT8, OT8 - FT8.

OT8 and FT8 can be located in the telemetry stream as follows:

(1) Note that the experiment can be operated either in slow or fast telemetry format. For each format, the telemetry structure is different. The

Table 1

Measurements, Geometric Factors, Dynamic Ranges, Temporal Resolution
(Mother and Daughter)

Detector	Geometric Factor (cm^2 ster)	Aperture	Dynamic Range	Particle Species	Energy Range (keV)	Temporal Resolution (sec)
Open Telescope (OT)	0.1	40° FWHM Cone	0 to 10^9	e, p e, p p	8-200 30-200 200-380	1/4 2 2
Foil Telescope (FT)	0.1	40° FWHM Cone	0 to 10^9	e e	8-200 30-200	1/4 2
Fixed Voltage Analyzers (FVA)						
FMSEM	10^{-2} E	5 x 8° FWHM	Up to 2.10^9	p	$\Delta E/E$ 50%	1/2
SEM	5.10^{-5} E		(cm^2 sr ske V)	p		1/2
FMSEM	10^{-2} E	5 x 8° FWHM	Up to 2.10^9	e	$\Delta E/E$ 50%	1/2
SEM	5.10^{-5} E			e		1/2

operation mode can be checked every 16 seconds or 64 minor frames. To know the telemetry mode, first obtain the housekeeping bits at the word 39 of minor frame 14. Counting from left to right, the last bit specifies the mode. Note that each word has 8 bits.

(2) Acquire the 24 bits of the data select word, DSEL. DSEL consists of three words, word 39 of minor frames 30, 46, 62. These three words are assembled from left to right as received to form a 24 bit word.

(3) Divide DSEL into 8 3-bit groups. The content of the 3-bit group specifies the detector and its experimental condition. Eight possible types of measurements can be assigned for each group. It is therefore necessary to check through DSEL to find out which group has the measurements FT8 and OT8. FT8 is specified as 010 and OT8 specified as 000.

(4) Corresponding to each 3-bit group, the telemetry stream has a preassigned word, called data accumulator, containing the measured data from the specified detector. Dividing DSEL from left to right in sequence, the corresponding eight accumulators are called F1, F2, F3, F4, F5, S1, S2 for the slow mode. For the fast mode, the eight accumulators in sequence are called F1, F2, F3, S3, S4, S5, S1, S2. Table 1 and Table 2 give locations of the accumulators per 64 minor frames.

(5) The eight bit output of each accumulator comes from a type 623 converter, operating in the "19 to 8 bit," "clock normally low" mode. To recover the original 19 bit count rate, a decoding algorithm is needed. For completeness, the decoding algorithm is included.

(6) Multiply the count rate by a detector efficiency factor to obtain the particle flux. The efficiency factor is determined empirically.

(7) Note that the content of accumulators depends on the telemetry mode (slow or fast). The average algorithm should also consider the fact that FT8 and OT8 can be contained in either F-accumulators or S-accumulators. NOTE: Zero is represented by "0", the letter "oh" is represented by "O". All counts start with 0.

CONVERSION ALGORITHM FOR 623

The following algorithm is used to recover the original binary count (C) from the telemetered values of X and Y. In the serial data the value of Y is shifted out first followed by X. The most significant bit of each is transmitted first.

Table 1

Slow Mode

Accumulator	Location	
	Word Number	Minor Frame
F1	36	All
F2	37	All
F3	38	All
F4	100	All
F6	101	All
F6	102	All
S1	39	0, 8, 16, 24, 32, 40, 48, 56
S2	39	2, 10, 18, 26, 34, 42, 50, 58

Table 2

Fast Mode

Accumulator	Location	
	Word Number	Minor Frame
F1	36	All
F2	37	All
F3	38	All
F1	100	All
F2	101	All
F3	102	All
S3	39	0, 16, 32, 48
S4	39	2, 18, 34, 50
S5	39	4, 20, 36, 52
S1	39	6, 22, 38, 54
S2	39	8, 24, 40, 56

For the 19 to 8 bit mode:

(a) if n, X are 14, 15 C = 0

(b) if n = -0 C = X + 1

(c) Otherwise, $C = 1 + (X + 16)\,2^n$ where n is given in Table 1.

For count values less than 129 only the last value of X given in the Table should ever occur.

Table 1

Y to n/P Conversion for 19 to 8 Mode

Y	n
0	0
1	11
2	10
3	1
4	12
5	-0
6	14
7	13
8	8
9	3
10	2
11	9
12	4
13	7
14	6
15	5

FAST PLASMA EXPERIMENT

MOTHER AND DAUGHTER

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EXPERIMENT DESCRIPTION

The primary focus of the joint Max Planck Institute - Los Alamos Scientific Laboratory experiment is an investigation of the thicknesses, motions, and structures of the permanent and transient plasma discontinuities found in space about the earth. Nearly identical plasma instruments on the Mother and Daughter spacecraft comprise the whole experiment designed to discriminate between permanent and transient structures. Primary interest is devoted both to permanent structures such as the bow shock, magnetosheath, magnetopause, plasma sheet, neutral sheet, and plasmapause and to transient structures such as shock waves, tangential discontinuities, and the various types of waves which are found in the solar wind, magnetosheath, and plasma sheet. Only an incomplete list can be given here of the specific phenomena which can be studied with the combined observations from the plasma analyzers on the Mother and Daughter spacecraft: (1) Evolution of structures in the solar wind propagating over 0.01 AU from the Heliocentric spacecraft to M/D. (2) Alfven waves in the interplanetary medium. (3) Phenomena in the solar wind caused by the downstream bow shock, such as bow shock protons, solar wind electron heat flux from the bow shock and upstream waves. (4) Discontinuities and waves in the solar wind propagating into the magnetosheath and magnetosphere regions probed by M/D. (5) Bow shock thickness, structure, and velocity. (6) Magnetosheath structure and propagation of waves and discontinuities within it. (7) Magnetopause thickness, structure, and velocity. (8) Reflection of ions and electrons at the magnetopause. (9) Boundary layer of the near magnetotail. (10) Thickness, structure, and motions of the plasma sheet and its boundaries. (11) Plasma flow within the plasma sheet. (12) Thickness, structure, and motions of the plasma-pause, etc.

Measurements of the electron and ion velocity distributions in one-, two-, and three-dimensional form are made as fast as possible and repeated as often as possible. The determinations are made on both spacecraft using identical experiments. The fast plasma experiment package consists of three 90° spherical section electrostatic analyzers. Two of the analyzers have oppositely directed look angles and are devoted to making two-dimensional measurements as fast as possible. These analyzers have an electron multiplier counter with an added special large first dynode which accepts analyzed particles over a ±55° polar angle range. Complete energy distributions with 16 levels are made at 16 evenly spaced angles for both electrons and protons in one spacecraft revolution, 3 sec. The measurements are repeated every 3 seconds at the high bit rate. A single energy spectrum is obtained in 0.16 sec. At the low bit rate there are two commandable modes. With one, the same 16 x 16, E and P measurements are made in a single revolution but measurements from only every 4th revolution can be telemetered. With the second mode, interleaved sets of counts at 8 levels and 8 equally spaced angles are telemetered, so that partial data are obtained every revolution and a full set every 4 revolutions.

A third 90° spherical section analyzer has its first dynode divided into four parts in front of the multiplier which detects the analyzed particles. Secondary electrons are separately counted from the four parts, on which the polar angle distribution is imaged, giving three-dimensional measurements. These measurements take longer than 2-D, of course, being completed in 24 sec. At the low bit rate data are acquired four times slower.

All three 90° analyzers operate over two commandable energy ranges, $50\,eV \leqslant E_p \leqslant 10\,keV$ and $5\,eV \leqslant E_e \leqslant 3\,keV$ for solar wind and magnetosheath measurements, and $70\,eV \leqslant E_p \leqslant 40\,keV$ and $11\,eV \leqslant E_e \leqslant 20\,keV$ for magnetosheath and magnetosphere measurements.

To support the fast plasma experiment studies as well as the other experiments on M/D, the Mother package includes a solar wind experiment. This instrument consists of a single 150° electrostatic analyzer with two entrance apertures and two multiplier-counting systems. Ions entering the entrance apertures from fan-shaped acceptance solid angles are analyzed and counted in four sets of energy sweeps of 14 levels each. The sweeps are made at 8 angles centered on the solar direction. Two sets of interleaved angles are used so that by combining sets of measurements, a total of 16 angles are covered. The acceptance fans are tilted in opposite directions from the vertical (spin axis) by 45°. Combining data from the two counters permits determination of the 3-D flow vector of the solar wind and information on the 3-D moments of the velocity distributions. The experiment operates over a proton energy range of 180 eV to 7 keV and has a sweep energy resolution of 6%. At the high bit rate the complete range of 56 energy levels at 16 angles is acquired in 24 sec. Eight-angle subsets of data usually sufficient for determining the parameters are obtained in 12 sec. At the low bit rate subsets of the data are selected to be transmitted so that a complete set is acquired in 24 x 4 = 96 sec and a subset usually sufficient for parameter calculation is obtained in 48 sec.

FAST PLASMA EXPERIMENT PARAMETERS SUPPLIED FOR THE DATA POOL

It must be emphasized that rather sophisticated data manipulations and editing are generally required to construct accurate plasma parameters from the data acquired with plasma instrumentation. Data processing at these levels is too complicated and lengthy to be appropriate for the pool data so somewhat simplified "pseudo" parameters are supplied. Caution should be exercised in the use of these parameters because at best they are only rough preliminary approximations to the parameters which are obtained with more sophisticated treatments and at worst the pseudo-parameters could be seriously misleading. It should be kept in mind that main objectives of the data supplied are to permit identification of the regions of space through which the spacecraft is passing and to identify times of particular interest for which more accurate values of the plasma parameters may be of particular importance.

For FPE the parameters are derived from basic sets of data consisting of electron counts $C_E(i, j)$ and ion counts $C_P(i, j)$ at 16 energy levels, E_i, and 16 measurement angles, ϕ_j. The energy levels extend from 5 eV to 3 keV for electrons and from 50 eV to 10 keV for protons when the lower ranges, appropriate for the solar wind and magnetosheath are used. When the higher ranges, appropriate for the magnetosphere, are used, the levels extend from 10 eV to 20 keV for electrons and from 67 eV to 39 keV for protons. Angular separations between measurements are ~22.5°.

FPE ELECTRON SPECTRA

For enabling identification of the spatial region a 4-level spectrum is supplied. Data from 16 consecutive electron sweeps are generated as follows:

$$\sum_{i=m}^{n} \sum_{j=1}^{16} C_E(i,j); \quad m = 1, 5, 9, 13; \quad n = m + 3$$

In the data pool format, these numbers are designated ESPEC1, ESPEC2, ESPEC3, and ESPEC4 for m = 1, 5, 9, and 13 respectively. After some experience, experimenters should be able to look at these four numbers and tell whether the S/C is in the solar wind, magnetosheath, plasma sheet, or high latitude tail.

For the low energy sweep the energy bands are approximately 5 eV to 21 eV, 21 eV to 86 eV, 86 eV to 355 eV, and 355 eV to 3.0 keV. When the experiment is operating from the high sweep level, the bands are 10 eV to 52 eV, 52 eV to 287 eV, 287 eV to 1.57 keV, and 1.57 keV to 20 keV.

FPE PSEUDO-DENSITY

$$N_P = K_N \sum_{i=1}^{16} \frac{1}{\sqrt{E_i}} \sum_{j=1}^{16} C_P(i, j)$$

In the data pool format this is designated IONPD.

FPE COUNTS-AVERAGED AVERAGE ION ENERGY

$$\overline{E}_P = \frac{K_E \sum_{i=1}^{16} E_i \sum_{j=1}^{16} C_P(i, j)}{\sum_{i=1}^{16} \sum_{j=1}^{16} C_P(i, j)}$$

In the data pool format this is designated as IONAE.

SOLAR WIND EXPERIMENT PARAMETERS

For the SWE a basic set of data consists of a matrix of counts $C_{wa}(i, j)$ from two counters (a = counter 1 or 2) at 56 energy levels E_i and 16 angles ϕ_j centered on the sun. This experiment is expected to generate useful data only when the spacecraft is in the solar wind because of the limited angular range of measurements.

SWE PEAK COUNT SPEED V_p

In order to ascertain that the experiment is probably in the solar wind, the maximum count $C_{wa\ max}(i, j)$ is determined for a complete cycle. This count is then compared to the sum of all the counts obtained during the cycle. If $C_{wa\ max}$ exceeds a certain fraction K_W of the summed counts, the proton spectrum is relatively cool and the experiment is probably in the solar wind instead of the magnetosheath or magnetosphere where the energy distributions are much broader. The energy level E_i associated with $C_{wa\ max}$ is then used to calculate the peak count speed V_p.

SOLAR WIND PSEUDO-DENSITY

When in the solar wind, a pseudo-density is calculated.

$$N_{WP} = K_{WN} \sum_{i=1}^{16} \frac{1}{\sqrt{E_i}} \sum_{j=1}^{16} C_{W1}(i, j)$$

K_{WN} is a constant related to the analyzer geometry. Solar wind pseudo-density is designated WINDEN in the data pool format.

QUADRISPHERICAL LEPEDEA

FRANK EXPERIMENT

(ISEE Mother and Daughter Spacecraft)

The observational objectives of the Quadrispherical LEPEDEAs on the ISEE Mother and Daughter spacecraft are (1) to obtain directional, differential intensities of electrons and positive ions, separately and simultaneously, over the energy (E/Q) range of 1 eV to 50,000 eV, (2) to measure the angular distributions of electron and positive-ion intensities over all but 2% of the 4π-steradian solid angle at the satellite position with good angular resolution, (3) to provide adequate sensitivities, dynamic ranges and energy resolution for comprehensive measurements of these plasmas in the magnetosheath and all regions of the magnetosphere accessible to the spacecraft, and (4) to obtain these plasma observations with meaningful temporal resolution.

The mechanical configuration of the Quadrispherical LEPEDEA comprises three concentric, quadrispherical plates with radii of curvature 10.8 cm, 11.2 cm, and 11.7 cm, respectively. The outer two plates are grounded and the center plate is biased with a stepped, programmed voltage. This electrostatic analyzer geometry allows simultaneous determinations of the directional, differential intensities of electrons and positive ions as well as determination of their angular distributions within a fan-shaped field of view, 162° x 6°, via suitable positioning of individual detectors at the exit apertures of the electrostatic analyzer. For the ISEE Quadrispherical LEPEDEAs, seven continuous-channel electron multipliers are employed at each of the exit apertures (electron and positive ion) to divide the fan-shaped solid angle into seven contiguous segments. A thin-windowed Geiger-Mueller tube has been included in each of the Quadrispherical LEPEDEAs for determinations of the directional intensities of electrons $E \gtrsim 45$ keV and protons $E \gtrsim 600$ keV in directions perpendicular to the spacecraft spin axis. The field-of-view of each Geiger-Mueller tube is conical with full-angle 25°. The capabilities for plasma measurements of the two ISEE Quadrispherical LEPEDEAs are identical in all important aspects such as energy range, angular coverage and temporal resolution.

The energy range and resolution of the Quadrispherical LEPEDEAs are $1\,\text{eV} \lesssim E \lesssim 50{,}000\,\text{eV}$ and $\Delta E/E = 0.17$, respectively. E is the energy per unit charge. The entire energy range is spanned by 63 contiguous energy passbands. Four sequences of energy passbands are available: all 63 energy passbands, every other passband, the lower 32 energy passbands and the higher 32 passbands. The desired sequence of energy passbands is selected by ground command.

Intensity ranges and thresholds have been chosen to yield definitive measurements of all the known divers plasmas in the earth's magnetosphere and its environs, excluding only the solar wind ions and electrons. These plasmas within the capabilities of the Quadrispherical LEPEDEAs include those in the ring current, plasma sheet, high-latitude magnetotail, and magnetosheath. The practical threshold intensities for positive ions are 7×10^3 and 1.5×10^{-1} $(cm^2\text{-sec-sr-eV})^{-1}$ at 1 eV and 50 keV, respectively. The corresponding threshold electron intensities are 2×10^4 and 4×10^{-1} $(cm^2\text{-sec-sr-eV})^{-1}$ at 1 eV and 50 keV, respectively. These threshold intensities vary approximately as E^{-1} over the instruments' energy range. The maximum positive-ion and electron intensities within the ranges of the Quadrispherical LEPEDEA are a factor of 3×10^5 greater than the above corresponding thresholds.

Comprehensive coverage of the angular distributions is provided by the combination of the wide field-of-view, 162° x 6°, of the Quadrispherical LEPEDEAs and the spin motion of the spacecraft. The axes of the fields-of-view are directed perpendicular to the spin axis with the 162° dimension lying in a plane parallel to the spin axis. The seven fields-of-view comprising each of the two wide fans of acceptance, one each for positive ions and electrons, sweep out seven latitudinal bands on a unit sphere as the satellite rotates. If latitude is measured from the spin axis direction at 0°, these seven latitude ranges are 9°-18°, 18°-39°, 39°-71°, 71°-109°, 109°-141°, 141°-162°, and 162°-171°. The only portions of the 4π-steradian solid angle for charged-particle velocity directions at the satellite position that are not sampled by the Quadrispherical LEPEDEA are thus two small cones with half-angle 9° and directed parallel and antiparallel to the spin axis, respectively. All but 2% of this 4π-steradian solid angle is sampled by these plasma analyzers. Each of the above latitudinal bands is further divided into sectors as the spacecraft rotates. This sectoring can be slaved to a sun-referenced pulse or to the spacecraft clock pulses via ground command. Typical inflight operation of the instrument will yield 16 sun-referenced sectors. Hence the angular distributions of electron and positive-ion intensities would be usually telemetered for 7 x 16 = 112 directions.

The temporal resolution of the Quadrispherical LEPEDEAs for measurements of various plasma parameters is dependent upon the spacecraft telemetry rates, the energy passband sequence, the sectoring mode and the specific parameter of interest. Specific examples of plasma measurements and the corresponding temporal resolutions are (electron and positive-ion intensities, separately and simultaneously): pitch-angle distribution at fixed energy, 250 ms; full coverage of angular distributions at fixed energy, 4 seconds; three-dimensional bulk velocities of ions, 128 seconds; comprehensive (7056-sample) three-dimensional distribution functions, 256 seconds. The combination of operational modes, and hence the temporal resolution, is tailored by ground commands for specific plasma regimes and phenomena.

ALGORITHM FOR PROCESSING THE POOL DATA FROM THE FRANK EXPERIMENT

GENERAL DESCRIPTION

The Quadrispherical LEPEDEA provided by the University of Iowa supplies two measurements to the Data Pool tape: (1) spin averaged proton number density, designated PRODEN in the data pool format, and (2) spin averaged flux of electrons $E_e \approx 10\,keV$, designated EFLX10. The data are obtained from detectors measuring charged particle intensities perpendicular to the spin axis of the spacecraft ($71° \leqslant \theta \leqslant 109°$) and are read out once per minor frame. All data during a given energy step are averaged to obtain a spin averaged flux at that energy.

The number density is obtained by numerically integrating the spin averaged proton differential flux over the energies sampled by the instrument. Depending on the instrumental operating mode this energy range is $1\,eV \leqslant E_p \leqslant 50,000\,eV$, $1\,eV \leqslant E_p \leqslant 200\,eV$, or $200\,eV \leqslant E_p \leqslant 50,000\,eV$, and is identified by the "energy range flag" (designated FRANGE in the data pool format) values of 1, 2, or 3 respectively. The time required to obtain observations at all energies can be as long as 1024 seconds and limits the temporal resolution of the proton number density to that time period. The units of the number density are ions $(cm)^{-3}$; isotropy is assumed.

The spin averaged flux of electrons, $E_e \approx 10\,keV$, is available whenever the instrumental operating mode includes that energy, i.e. whenever the "energy range flag" is equal to 1 or 3. Depending on the instrumental mode the average is obtained from 16 or 64 samples during a 4 or 16 second time period. The units of the electron flux are electrons $(cm^2\text{-sec-eV})^{-1}$; isotropy is assumed.

At the high bit rate, data pool measurements for the Frank experiment are computed over intervals of approximately 5 minutes. At low bit rate, the same measurements are computed over intervals of approximately 20 minutes. The data pool tape format specifies 12 time intervals for the Frank measurements. At high bit rate, all 12 will be used. At low bit rate, only one of every 4 intervals will be used, with the other 3 set to the negative fill code. The intervals used at low bit rate are No.'s 1, 5, and 9. These represent 3 intervals of approximately 20 minutes each.

METHOD OF COMPUTATION OF DATA POOL QUANTITIES

The University of Iowa Quadrispherical LEPEDEA (FRM) is to provide two quantities for the data pool type, the spin averaged proton number density and the flux of 10 keV electrons, and a flag (= 1, 2, or 3) indicating the energy range covered. The following items in the telemetry stream are used in the algorithm: (a) words 15 and 63 of Analog Subcom 1 (word 58) provide experiment ON/OFF status, (b) word 28 of the Digital Subcom (word 59) provides the instrument mode/stepping sequence, (c) telemetry word 103 from frames 6 and 7 (modulo 8) provides the energy step number, (d) telemetry word 2 provides the electron data, and (e) word 3 provides the proton data.

The spin averaged proton number density basically consists of a weighted sum of the decompressed data from word 3 of every minor frame. To perform the sum three vectors of 64 floating point numbers each are required. The first vector consists of 64 constants to be supplied following final calibration of the flight instrument. The second vector contains the sums of all data for each of the 64 possible energy steps, and the third contains the number of samples comprising each of the above sums for each of the energy steps. The energy step number (0-63) associated with each datum (in word 3) is obtained from word 103 (see Appendix A). The conversion to decompressed counts is given in the attached table. When decompressed data from a minimum of 4096 minor frames have been accumulated the number density is computed as follows:

$$\text{DENSITY} = M\ B \sum_{i=0}^{63} \frac{C_i A_i}{N_i}$$

where

$B = 1$ for low bit rate

$= 4$ for high bit rate

$M = 1$ for stepping sequences 1, 2, and 3

$= 2$ for stepping sequence 4 (see Appendix B)

C_i = constant to be supplied for step i

A_i = accumulated decompressed counts for step i

N_i = number of samples for step i

Note that the arrays A_i and N_i must be cleared to zero before starting each accumulation interval of 4096 minor frames.

The spin averaged electron flux at $E_e \approx 10\,\mathrm{keV}$ is obtained from telemetry word 2 as follows:

$$\mathrm{FLUX} = \frac{B\,C_e\,R}{N}$$

where

$B = 1$ for low bit rate

$= 4$ for high bit rate

C_e = constant to be supplied

R = accumulated decompressed counts for step 53 (provisional)

N = number of samples in R

Depending on telemetry mode, stepping sequence, and bit rate this energy step will occur once every 512, 1024, 2048, 4096 minor frames, or, in stepping sequence 2, it will not appear at all.

The energy range flag is determined by the stepping sequence obtained from word 28 of the Digital Subcom (word 59).

Energy range flag = 1 for stepping sequences 1 and 4

= 2 for stepping sequence 2

= 3 for stepping sequence 3 (see Appendix B)

EXPERIMENT OFF/ON STATUS

Word 15 of Analog Subcom 1 (word 58) contains the "A system" power monitor and word 63 of Analog Subcom 1 (word 58) contains the "B system" power monitor. For each monitor an analog voltage of 0.00 volts is OFF and a voltage of either 1.00, 2.00, 3.00, or 4.30 volts (±5%) is ON. For the purposes of this algorithm a voltage greater than ~0.50 volts may be considered "ON".

System A must be ON for the algorithm to be valid. In addition, if either bit 6 or bit 14 of the housekeeping word described in Appendix A is "1" then "System B" must also be ON.

APPENDIX A

DETERMINATION OF ENERGY STEP NUMBER

Construct one 16-bit binary number from word 103 of minor frame number 6 (modulo 8) and from word 103 of minor frame number 7 (modulo 8) as follows:

	Word 103 Minor Frame 6 (modulo 8)								Word 103 Minor Frame 7 (modulo 8)							
Bit No.	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
				B									A			
									EGP							

If bit 6 is zero (0) save counter A (bits 5-0) for subsequent operations. If bit 6 is one (1) save counter B (bits 13-8) for subsequent operations. Let us call this resulting 6-bit binary number "S".

Next perform an "inclusive OR' operation of bit 7 (EGP) with the most significant bit of S. Thus bit 7 will be "ORed" with bit 5 (if counter A was selected) or with bit 13 (if counter B was selected). The resulting 6-bit binary number is the step number, i, associated with the eight values of word 2 and of word 3 occurring in minor frame numbers 0-7 modulo 8.

APPENDIX B

DETERMINATION OF STEPPING SEQUENCE

The stepping sequence is obtained from word 28 of the digital Subcom (word 59) as follows:

Bit No.	7	6	5	4	3	2	1	0
	Step Seq.		TM Mode		Step Seq.		TM Mode	
	"B System Status"				"A System Status"			

If bit 14 in Appendix A is "0" use the A stepping sequence. If bit 14 in Appendix A is "1" use the B stepping sequence, where

00 = stepping sequence 4

01 = stepping sequence 1

10 = stepping sequence 2

11 = stepping sequence 3

Table 1

ISEE LEPEDEA FRM/FRD

Conversion of Log Compressed 8 Bit Word
into Counts (19 Bit Equiv.)

Format

1st Bit							8th Bit
0	0	0	0	0	0	0	0
MSB	Y		LSB	MSB	X		LSB

Counts = $(X + 16)\, 2^{N} + 1$

except if Y = 5; C = X + 1
if Y = 6 and X = 15; C = 0

where N is listed below

Y	N
0	0
1	11
2	10
3	1
4	12
5	-0
6	14
7	13
8	8
9	3
10	2
11	9
12	4
13	7
14	6
15	5

III. Experiment/Instrument Description - Gurnett Experiment

A. Brief Description

1. Antenna System

a. The plasma wave antenna system consists of three orthogonal search coil type magnetic antennas and three electric field antenna inputs. The electric antennas consist of the following:

E_x — (Heppner Antenna) Long Wire Dipole ≈215 meters tip-to-tip. Preamp frequency range (5 Hz-2 MHz).

E_y — (Mozer Antenna) Cable mounted spheres ≈80 m tip-to-tip. Mozer will buffer the signal, inside his main electronics. Preamp frequency range (0-100 kHz).

E_s — (Short Electric Antenna) A short dipole consisting of two spheres 61 cm between centers mounted on rigid booms. The entire assembly including preamp is mounted on the search coil boom ≈61 cm inches inboard from the tip mounted triaxial search coils. The unit will be oriented parallel to the spin plane when deployed. Preamp frequency range (5.6 Hz-100 kHz).

The triaxial magnetic field sensors are mounted on the -x axis boom tip ≈3 m from the spacecraft as shown in Figure 1. Each search coil consists of a high permeability core 40.64 cm long wound with approximately 5,000 turns of #40 copper wire. The experiment can be connected by ground command to one electric field antenna and one of the search coils.

2. Electronics Instrumentation

A block diagram of the plasma wave instrumentation for ISEE A is shown in Section III (B). A brief description of each block follows.

a. Wide-band Receiver

The wide-band receiver is an important and essential element of this experiment. The purpose of the wide-band receiver is to transmit wide-band radio noise signals to the ground via the special purpose analog transmitter so that detailed high resolution frequency-time analyses of these signals can be performed. The signals will be transmitted to the ground in one of 4 ground selectable spectrums selected via CMD's 9 and 10 [P 94, P95]. See Figure 2.

(1) 650 Hz-40 kHz baseband only.

(2) 650 Hz-10 kHz baseband only.

(3) 13.5 kHz FM subcarrier only (1 kHz BW).

(4) 650 Hz-10 kHz baseband and 13.5 kHz FM subcarrier (1 kHz BW).

In addition a low level pilot carrier (F_{ref}) of 62.5 kHz is added to the output signal for constant monitoring of the 4 MHz Master Oscillator frequency. An automatic gain control is used to maintain a nearly constant signal strength into the wide-band transmission link. Since this removes signal strength information, the AGC gain voltages are included as part of the science data. The broadband AGC receiver can be commanded by CMD's 6, 7, and 8 [P91, 92, and 93] to one of 8 frequency ranges as shown below:

	Lower Freq.		Lower Freq.
1	baseband	5	250 kHz
2	31.2 kHz	6	500 kHz
3	62.5 kHz	7	1 MHz
4	125 kHz	8	2 MHz

The bandwidths are determined by the four selectable modes listed at the top of this page.

(The frequencies include those used on the IMP-J Plasma Wave Experiment.) The wide-band receiver can be switched to any one of the 3 orthogonal electric antennas or the Z axis magnetometer.

b. Wave-Normal and Poynting Flux Analyzer

The wave-normal and Poynting flux analyzer consists of five narrow-band receivers all tuned to the same frequency. The relative phase of the signals in all five receivers is preserved by using the same frequency conversion signal to each receiver. Each receiver channel produces two outputs which correspond to the Cosine and Sine (or real and imaginary parts) of the signal being detected by that channel. The Sine output is obtained by shifting the Phase of the frequency conversion signal by 90° relative to the frequency conversion signal for the Cosine output. The ten Sine and Cosine outputs from the five receivers are all sampled simultaneously and held for transmission by sample and hold circuits.

The bandwidth of the individual receiver channels of the wave-normal analyzer is 20 Hz and the center frequency can be tuned to any one of the 32 frequencies from 100 Hz to 5 kHz or can be commanded to automatically sweep from 100 Hz to 5 kHz in 32 logarithmic related steps at a 32 second/step rate. The electric and magnetic field channels of the wave-normal analyzer each have an automatic gain control which maintains the output amplitudes within the proper dynamic range. The automatic gain control has 16 discrete gain settings and is updated once every second. In addition there is a final gain switch (gain of 8) that is activated just prior to the hold function of the sample hold.

c. Multi-Channel Spectrum Analyzers

Two multi-channel spectrum analyzers covering the frequency range from 5 Hz to 311 kHz and 5 Hz to 10 kHz are used to determine electric and magnetic field amplitudes. These spectrum analyzers have relatively coarse frequency resolution, with four frequency channels per decade and bandwidths of ±15% up to the 10 kHz channel and ±7.5% 10 kHz and above, and very good time resolution (~ 0.1 sec) to resolve spatial and temporal variations of phenomena observed by the two satellites. The inputs to the two spectrum analyzers can be connected to various antennas via the antenna selection switches shown in the block diagram. Normally one spectrum analyzer is used for electric field measurements and the other is used for magnetic field measurements. Each spectrum analyzer channel provides a 0 to 5 volt analog voltage proportional to the logarithm of the signal strength in that channel with a 100 dB dynamic range.

d. Narrow-Band Sweep Frequency Receiver

The narrow-band sweep frequency receiver is intended to provide high resolution frequency spectrum measurements of electric fields above the frequency range of the wide-band receiver. The sweep frequency receiver has 32 frequency steps in each of 4 bands covering the frequency range from approximately 100 Hz to 400 kHz as shown below:

(1) 50 kHz-400 kHz

(2) 6.7 kHz-50 MHz

(3) 830 Hz-6.7 kHz

(4) 100 Hz-830 Hz

The primary scientific purpose of this receiver is to make high frequency resolution measurements. Such measurements can be used, for example, to obtain very accurate (±1%) electron density measurements within the magnetosphere from the frequency of upper hybrid resonance noise. Power to the SFR can be removed by a single ground command if required to reduce experiment power consumption.

e. (Impedance Measurement)

The Z measurement function occurs 8m 32s when not inhibited by serial command 6 [Z Measurement inhibit]. This function lasts ≈ 2 seconds [8 minor frames at low bit rate]. During this time the Heppner Angennas (E_X) and the Triaxial search coil inputs are stimulated at 30 Hz and ≈ 970 Hz respectively. The Heppner antenna is differentially driven at ≈ 100 mV RMS through a small, <10 pf, capacitance and the magnetic preamps via a calibration winding on each search coil.

f. Interface with other experiments

The GUM unit interfaces with two other experiments, MOM and HEM.

(1) MOM

The E_y electric field preamp output is buffered by Mozer in his main electronics unit and supplied to the [GU-01] main electronics unit. The signal is differential.

(2) HEM

Helliwell also uses the output of the Long E Antenna preamps [GU-01].

g. Rapid Sample

The Analog Output (prior to sample and hold) of one of 16 electric field spectrum analyzer channels is sampled at equally spaced intervals at a rate of 2 times/minor frame. The channels to be sampled can either be selected manually via 4 serial command bits or stepped sequentially at 16 sec intervals. The sequential advance resets to zero when commanded from lock mode (manual) to sweep (sequential).

h. DPU (Digital Processing Unit)

The majority of the GUM interface with the spacecraft is via the DPU. This unit is furnished by GSFC but powered by the GUM power converter. The DPU performs two main functions:

(1) Multiplexes the Science Analog Data and Digital Parameter converting them from parallel to serial outputs. This function is described in the enclosed GUM Requirements for Digital Processing Unit.

(2) Protects the experiment from RFI. Virtually every line leaving or entering the main box must pass through a filter feedthrough of $\approx$1000 pf. Many of the spacecraft signals (clock line, pulses, serial commands, etc.) cannot drive this capacitance. The DPU receives these lines and processes them before they reach the experiment.

DESCRIPTION OF THE GUM DATA POOL TAPE ALGORITHM

INTRODUCTION

The GUM plasma wave experiment on ISEE A uses two identical frequency spectrum analyzers to perform on-board frequency spectrum analysis of both electric and magnetic field waves in the earth's magnetosphere and the solar wind. These spectrum analyzers provide coverage in the frequency range 5.6 Hz to 311 kHz in 20 filter channels (electric spectrum analyzer) and 5.6 Hz to 10 kHz in 14 filter channels (magnetic spectrum analyzer). The electric spectrum analyzer will usually be connected to one of the three electric dipole antennas on ISEE A, and the magnetic spectrum analyzer will usually be connected to one of the three orthogonal search coil magnetometers. The antennas used are selected by ground command. The spectrum analyzers are logarithmic detectors that convert an input signal with a dynamic range of about 100 db into a dc output voltage between 0 and 5 volts, which is subsequently sampled by the spacecraft encoder.

Two science data words will be included on the data pool tape from the GUM experiment. These words consist of instantaneous samples from the 562 Hz filter channels of the two frequency spectrum analyzers in the GUM experiment. These words are identified in the algorithm by the notation E8 and M8. In the data pool format they are designated EF562 and MF562, respectively. In addition to the science data it is necessary to determine which of the six antennas is connected to each of the spectrum analyzers. This information is given by the state of the GUM digital parameters DP1-DP4.

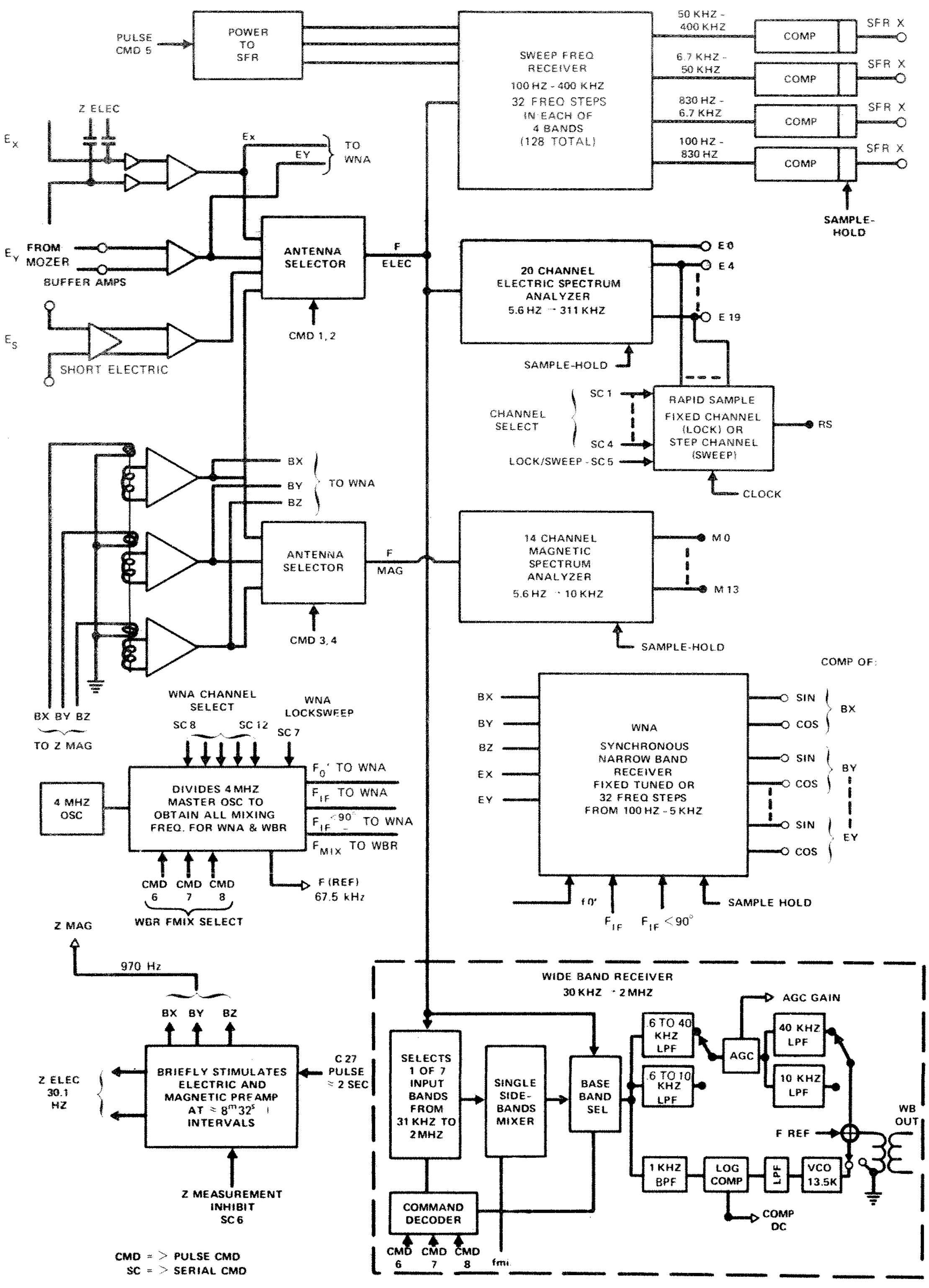
LOCATION IN THE SPACECRAFT TELEMETRY

Designation	Word No.	Minor Frame No.
E8	76	1, 5, 9 . . . 253 (every 4 minor frames)
M8	12	2, 6, 10 . . . 254 (every 4 minor frames)
DP1-DP4	79	11, 27, 43 . . . 251 (every 16 minor frames)

NOTE: All numbering conventions for frames, bits, etc. are per ISEE Project Document ISEE-730-75-603, Telemetry Formats and Telemetry List.

CODING OF WORD IN SPACECRAFT TELEMETRY

Designation	Coding
E8 and M8	8 bit binary word (256 level digital representation of 0-5 volt dc analog output signal)



Simplified Block Diagram, GUM - ISEE

Designation	Coding
DP1	Binary Bit 7 of word 79
DP2	Binary Bit 6 of word 79
DP3	Binary Bit 5 of word 79
DP4	Binary Bit 4 of word 79

CONVERSION SCIENTIFIC UNITS

The calibration of the spectrum analyzer filter channels is performed in two steps. The first step requires conversion of E8 and M8 into the equivalent rms differential voltage at the input of the experiment (the point at which the antenna is connected to the GUM experiment). This conversion is performed with a look-up table for each channel based on the instrument calibration. The actual numbers in these tables are subject to change following spacecraft level systems testing.

The second step of the conversion to scientific units requires the multiplication of the input voltage by a constant factor. This constant factor is different for each antenna. For the electric dipole antennas it is equal to the inverse of the product of the effective antenna length and the square root of the noise bandwidth of the filter channel. The antenna length may change as a function of time after launch. For the search coil antenna it is determined from the measured sensitivity of the search coil antenna divided by the square root of the noise bandwidth. Because there are six different antennas on ISEE A, the proper constant must be selected by monitoring DP1-DP4. These digital parameters identify the antenna that is connected to each spectrum analyzer. The following table shows the antenna configuration for each state of DP1-DP4.

DP1	DP2	E8 Antenna Configuration (Electric Spectrum Analyzer)
0	0	EX
1	0	EY
0	1	ES
1	1	BZ

DP3	DP4	M8 Antenna Configuration (Magnetic Spectrum Analyzer)
0	0	EX
1	0	BX
0	1	BY
1	1	BZ

In addition to the parameters given above, the encoder calibration voltages must be checked in order to verify that the 256 digitizing levels correspond to the proper 0-5 volt dc analog input to the encoder. If the encoder calibration changes with time, it may be necessary to change the look-up tables to compensate for changes in the encoder.

PRELIMINARY REMARKS

The conversion described here will give measurements of electric field spectral density in units of volts meters $Hz^{-1/2}$ and magnetic field spectral density in units of $gamma^2\ Hz^{-1}$. These calculations are made with the assumption that the effective electric antenna length is equal to one-half the tip-to-tip length for the long wire antenna and equal to the sphere separation for the spherical antennas. Corrections due to antenna impedance are not performed. For some types of wave phenomena these criteria may be violated, and, because the task of making such corrections is interpretive in nature, it is left to the user to supply these corrections if needed.

In addition, the spectral density calculations are performed with the assumption that the wave phenomena are of greater bandwidth than the bandwidth of the filter channels ($\pm$15%). For some types of wave phenomena this assumption will be invalid; however, it is not possible to make this determination in a routine fashion from the spectrum analyzer data.

ALGORITHM FOR THE DATA FLAG FROM THE HARVEY EXPERIMENT

The floating point word will be written on to the ISEE A data pool tape every 64 s, to indicate the activity of the HAM experiments during the corresponding 64 s block of data. The word is designated HASTAT in the data pool format.

DESCRIPTION OF WORD

This word will be the floating point conversion of an integer in the range

$$0 \leqslant N \leqslant 2^{10} - 1$$

The ten bits in this word will be split up into three groups, as follows:

$$b_9 \ b_8 \qquad b_7 \ b_6 \ b_5 \ b_4 \qquad b_3 \ b_2 \ b_1 \ b_0$$

The two most significant bits are derived from the other eight bits, and have the following significance:

$b_9 = 0$ if the sounder transmitter has not been active at any time during the 64 s of data being processed

$b_9 = 1$ otherwise

$b_8 \rightarrow$ same thing for propagation experiment transmitter

The remaining eight bits are used to localize the transmission activity if either b_9 or b_8 are not zero.

$b_{4+i} = 0$ if the sounder has not been active at any time during the period $16\,i \leqslant t \leqslant 16\,(i + 1)$ seconds, measured from the start of the 64 s interval

$= 1$ otherwise

$b_i \rightarrow$ same thing for propagation experiment transmitter

Thus b_9 and b_8 are given by

$b_9 = 1$ if $b_4 + b_5 + b_6 + b_7 > 0$

$= 0$ otherwise

$b_8 = 1$ if $b_0 + b_1 + b_2 + b_3 > 0$

$= 0$ otherwise

If ever this word cannot be evaluated owing (for example), to a telemetry drop-out, N will be assigned a negative value.

For many purposes the following simple tests will be adequate

if $N \leqslant 511$ the sounder transmitter has not been active

if $N \leqslant 255$ neither the sounder nor the propagation transmitters have been active

ALGORITHM TO EVALUATE WORD

The word is derived from the six-level HAM signal in step 39 of analog Subcom 1 (word 58). This word indicates, once per sequence of 64 minor frames, whether the sounder nor the propagation experiment has been active during the current sequence, as follows:

$V < 0.44$ HAM experiments OFF

$0.44 \leqslant V < 1.28$ Propagation OFF, sounder passive (receiver only)

$1.28 \leqslant V < 2.04$ Propagation ON, sounder OFF

$2.04 \leqslant V < 2.82$ Propagation ON, sounder passive

$2.82 \leqslant V < 4.01$ Propagation OFF, sounder active (receiver + transmitter)

$4.01 \leqslant V$ Propagation ON, sounder active

In low bit-rate each 64 minor frame sequence takes 16 s, and therefore can be used for determining b_i and b_{i+4} directly. In high bit-rate data compression by a factor of 4 is to be effected by "OR"ing the bits four at a time.

DESCRIPTION OF THE QUASI-STATIC ELECTRIC FIELD EXPERIMENT

SUMMARY

The description of the Quasi-DC Electric Field Experiment (MOM) on the ISEE A spacecraft is divided into two sections. The first, included here, describes the analog circuitry and gives an indication of the operation of the experiment. The second, given in the appendix to the MOM ERD, lists the capabilities of the digital control processor which performs all experiment control functions and interfaces with the ISEE A spacecraft. The references to Section 2 in the following description refer to the appendix of the MOM ERD. For a description of the ISEE A telemetry format and interface, refer to GSFC document number ISEE-733-74-001, "International Sun-Earth Explorer-A/C Electrical Interface Specification, Revision B," 20 March 1976.

I. Description of the Analog Circuitry

The MOM experiment is designed to measure dc and low frequency electric fields in the magnetosphere. This is accomplished by measuring the potential difference between two conducting spherical probes, each of which is connected to the S/C by about 40 meters of cable, and which are stabilized by centrifugal force. The surface of each sphere is connected to a high input impedance unity gain preamplifier which is inside the sphere, and this signal is transmitted to the MOM electronics package in the S/C. The preamplifier band width is about 200 kHz, and the differential signal dynamic range is ±16 volts. The two preamplifiers are operated from a common ±12 volt power supply, the common terminal of which is floating with respect to the experiment signal ground. The voltages on the spheres, which are called V_1 and V_2, are averaged and this signal is used to drive a unity gain amplifier which operates from a ±50 volt supply fixed with respect to the experiment ground, which drives the common terminal of the floating preamplifier supply. This circuit allows the common mode voltage of V_1 and V_2 to be plus or minus 50 volts with respect to the spacecraft. To reduce power consumption, the band width of the signal which drives the power supply is limited to 100 Hz. The effect of this is that the differential mode dynamic range of the preamplifiers is reduced as the slewing rate and amplitude of any common mode signal present is increased.

These voltages V_1 and V_2, referenced to the experiment signal ground (which is essentially the S/C skin potential), are each multiplied by 0.07115 and called V_{1S} and V_{2S} respectively. V_{1S} and V_{2S} are two of sixteen voltages in the MOM experiment which can be addressed by an analog multiplexer, digitized to 12 bit accuracy and transferred to the S/C telemetry system as digital data. This operation is under the control of the digital processor, and is described in Section 2.3. The overall block diagram of the MOM experiment is shown in Figure 1.1.

The sphere voltages V_1 and V_2 are connected to a high accuracy dc coupled differential amplifier with a gain of 0.3122, which is called V_{12L} and is another of the voltages which can be digitized and telemetered. V_{12L} is amplified by a factor of -50.11 to become V_{21H}. The output of the differential amplifier is also connected to the input of a 6 pole high pass filter which has its -3 dB point at 1.5 Hz. This filter greatly reduces the signal at the spin rate and so allows further

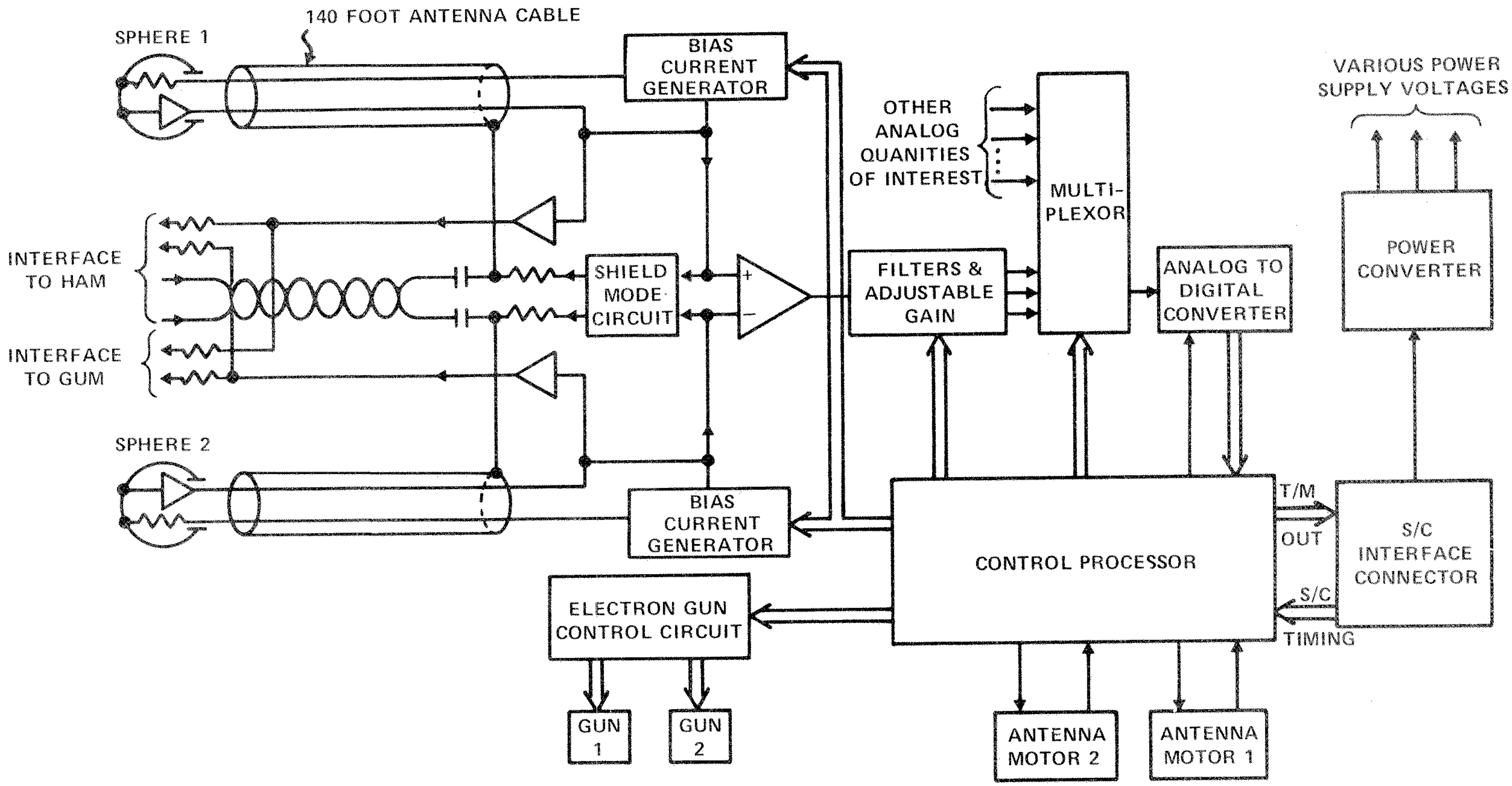


Figure 1.1. Block Diagram of the MOM Experiment

amplification of V_{21}. The filter has a fixed gain of 50 and its output is connected to the input of a bank of 3 bandpass filters with center frequencies at 6 Hz, 32 Hz, and 256 Hz. Each of these filters consists of a 2 pole bandpass function followed by a logarithmic amplifier, a full wave rectifier, and an integrator. The Q of the bandpass filters is 0.4. This value is chosen to make the overall response of the filter bank constant in the frequency range from 4 Hz to 256 Hz; i.e., the filter band widths are made sufficiently large that there is no loss of signals with frequencies between the center frequencies of the filters. The result of this is to provide for each of the 3 frequency ranges a voltage which is proportional to the logarithm of the power in that frequency range. These voltages are called V_{f1}, V_{f2}, and V_{f3}, which correspond to the 4, 32, and 256 Hz filters respectively. The output of the filter which suppresses the spin rate signal is also connected to an amplifier in which setting 2 latching relays selects one of 4 possible gains. These gains, referred to $V_{21} = V_2 - V_1$, are: 10, 80, 640, and 5120 to within a measuring accuracy of 3%. The output of this circuit is connected to an anti-aliasing filter, which is a 2 pole low pass 1 dB Chebychev, the upper 3 dB frequency of which is either 50 Hz or 800 Hz, depending on the setting of a latching delay. The output of this circuit is called V_{burst}. The V_{burst} circuit is used to collect short bursts of AC data in a manner which is described in Section 2.8.

The MOM antennas are also used by the AC experimenters, HAM and GUM, to detect AC electric fields. This is the reason that the preamplifier response extends to 200 kHz. The interface between MOM and HAM and GUM consists of a pair of LM110 voltage followers which are AC coupled to V_1 and V_2 with a 50 Hz roll-off. The output of each voltage follower is connected to a pair of 100 ohm resistors in a series with 0.068 microfarad capacitors, one of which drives a coaxial cable connected to the HAM experiment, and the other a coaxial cable connected to the GUM experiment.

The cable which supports the MOM spheres consists of a number of wires which supply various voltages to the preamplifier surrounded by a stainless steel braid which acts both as an electrically conducting outer shield, and as the mechanical member which supports the centrifugal force load of the probes. The outer shield is broken electrically at a connector which is one meter from the sensor sphere. The section closest to the sphere, which is called the guard section, is normally electrically connected to the preamplifier output so as to force its potential to be equal to that of the sphere and thus minimize the perturbing effect of the cable on the plasma. To guard against the possibility of oscillations being set up by this arrangement due to resonances in the plasma, it is possible to insert a low pass RC filter with 100 Hz roll-off between the preamplifier and the guard section, by actuating a ground command latching relay in the sphere. The remainder of the outer shield is shared by the MOM and HAM experiments. About 90% of the time it is controlled by the MOM experiment in a similar manner to that described above, but with some additional options which are described in Section 2.1. The remaining 10% of the time it is used as a transmitting antenna by the HAM active plasma experiment. The interface which accomplishes this sharing consists of the HAM sounder being connected to the shield through a 0.1 microfarad capacitor and the shield being connected to the MOM experiment through a resistance of 2 k ohms.

An important capability of the MOM experiment is that of putting a bias current on the sensor spheres. The impedance between the sphere and the plasma is a non-linear function of the current flowing between them and in fact exhibits a rather strong minimum for some optimum value of bias current which depends on the plasma conditions. Thus, the accuracy of the electric field measurement can be maximized by applying the optimum value of bias current to the sensor spheres. The analog circuitry which accomplishes this consists of an 8 bit DAC which floats with the preamplifier supply, connected to the appropriate amplifiers so as to produce a voltage which can vary from +36.00 volts to -35.78 volts, fixed with respect to the preamplifier output. This voltage is connected to the sensor sphere through a 2×10^8 ohm resistor which is inside the sphere. A ground commanded latching relay inside the sphere, in series with the resistor, gives the option of disabling this circuit. The DAC is driven by the digital control circuitry through a set of logic translators. Thus, the digital control circuitry can program a bias current to the spheres which ranges from $+1.8 \times 10^{-7}$ amperes to -1.79×10^{-7} amperes, in 256 linear steps. The value of the bias current can be either set by ground command, or set to an optimum value determined by the digital control circuitry using the algorithm described in Section 2.9.

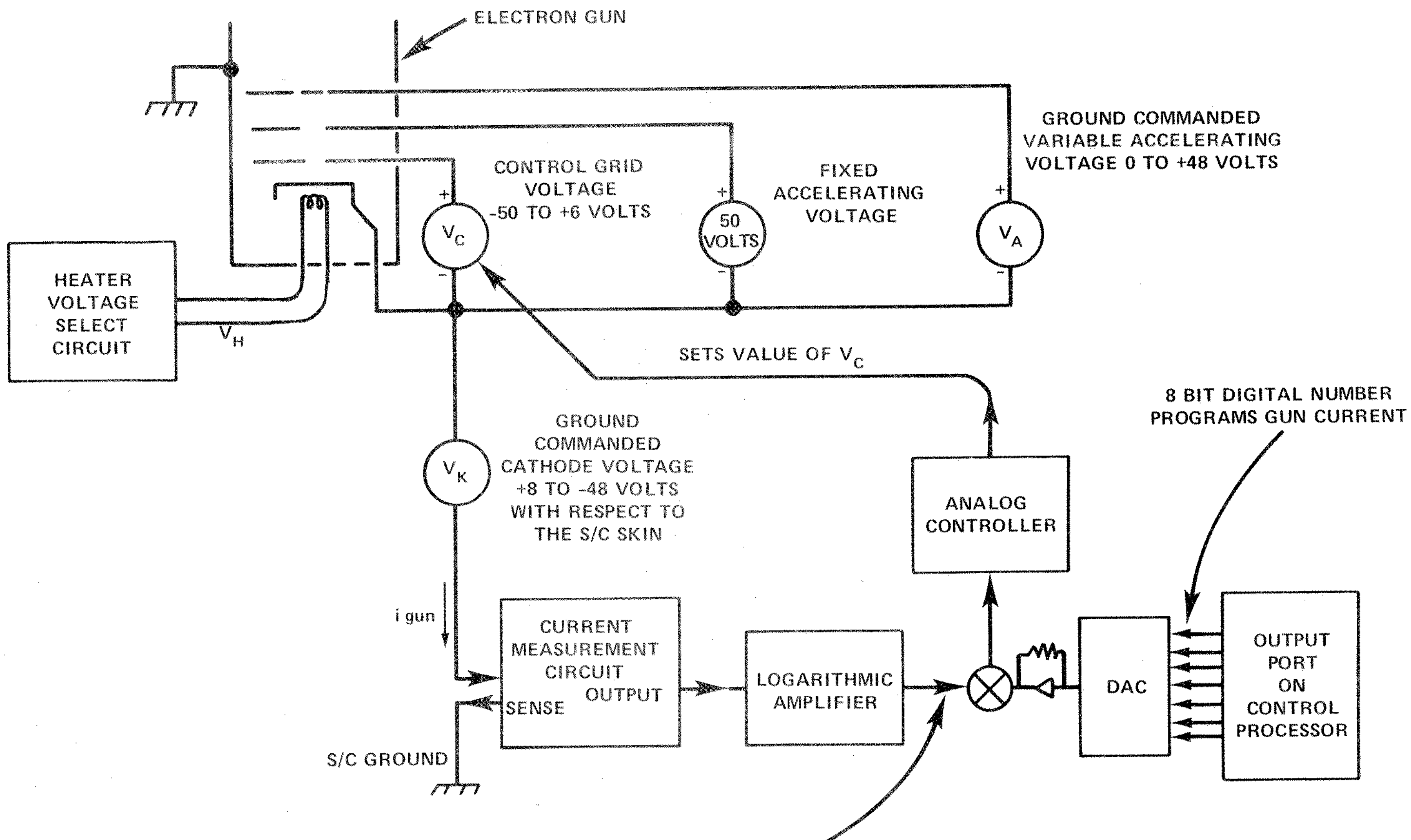
Two electron guns under the control of the MOM experiment are used to control the ISEE A S/C potential. This is desirable for two reasons. During plasma conditions in which the hot electron current exceeds the emission due to the photoelectric effect, the S/C will charge to large negative potentials, much exceeding the 50 volt common mode range of the preamplifiers, and thus preventing any electric field measurement entirely. The emission of a beam from the electron guns will raise the S/C potential, so that the guns may be used to maintain the S/C potential near the plasma potential. Even when the S/C floats positive or only slightly negative, the guns are useful because by raising the S/C potential, the asymmetric cloud of photoelectrons which exists in the vicinity of the S/C can be collapsed, and thus its effect in perturbing the electric field measurement minimized.

Figure 1.2 is a schematic representation of the electron gun and its associated control circuitry. There are four voltages which control the operation of the gun: V_H, V_K, V_A, and V_C. V_H, the heater voltage, can be set independently for each gun, to one of eight values (one of which is zero) which are selected by ground command and stored in the RAM. This allows compensation for reduced emission efficiency as the filaments age. The desired voltage is generated by setting 3 latching relays which select the appropriate tap on a special winding of the power converter transformer. When a gun is turned on (see Section 2.1 command 7) V_H is first set to the lowest value, then increased one step every 8 seconds until the value stored in the RAM is reached. This algorithm, which is performed by the digital control processor, is intended to minimize thermal stresses on the filament. The highest filament voltage is used to reactivate the emitting surface, should that be necessary after the satellite is in orbit.

V_K is the potential between the gun cathodes and the S/C skin. It is generated by amplifying the output voltage of a DAC which is driven by the control processor so as to obtain a voltage which can vary between +8 and -45 volts. V_A, a focusing voltage which defines the electron beam energy at the point where it emerges from the gun is similarly obtained, and can vary from 0 to +48 volts. The voltages V_K and V_A are the same for both guns, and are set to fixed values by ground command.

V_C is the control grid voltage which regulates the gun beam current. Values from -50 to +6 volts for V_C cause the gun current to vary between 0 and its maximum value. The gun current is regulated by a feedback control system with a logarithmic response such that an 8 bit digital input from the control processor programs a gun current which varies between 0.05 and 500 microamperes. The beam current may be set either to a fixed value determined by ground command, or to a value calculated by the control processor using the algorithm described in Section 2.9 which is intended to optimize the S/C potential.

A final analog circuit is used to give an indication of the S/C altitude. This is desirable because the algorithms described in Section 2 which automatically set the sphere bias currents, electron gun currents, shield voltages, and the AGC operation, must be modified at low altitudes where the particle densities, magnetic field, and S/C velocity become higher. The circuit consists of a bandpass filter with band width of 10% tuned to the spin frequency, the input of which is V_{12L}, followed by a full wave rectifier, and an integrator with a time constant of 30 seconds. The output of the integrator is called $V_{V \times B}$. The gain of the circuit is such that the dc voltage $V_{V \times B}$ is 0.505 times the amplitude of V_{21}. It is proportional to the average value of the magnitude of the electric field present. Since at low altitudes the largest contribution to this field is that due to the $\overline{V} \times \overline{B}$ term (the cross product of the S/C velocity with the local magnetic



i gun (μA)	LOG AMP OUTPUT (VOLTS)
500.0	0.0
50.0	1.0
5.0	2.0
0.5	3.0
0.05	4.0

Figure 1.2. Schematic Representation of Electron Gun and Associated Control Circuitry

field), and since both the S/C velocity and the magnetic field increase with decreasing altitude, the voltage $V_{V \times B}$ can be used to indicate when the S/C is at low altitudes. In addition to being used to turn off the electron guns, sphere bias currents, shield voltages, and modify the AGC algorithm at low altitudes, $V_{V \times B}$ is used at high altitude to offset the shield voltages with respect to their preamplifier outputs (see Section 2.1 command 11).

ALGORITHM FOR THE POOL DATA FROM THE MOZER EXPERIMENT

The status of the Mozer electron guns is given on the data pool tape every 64 seconds. This status word is designated MOSTAT in the data pool format, and is interpreted as follows:

MOSTAT = 0., if Mozer electron guns were OFF throughout the entire 64 seconds.

MOSTAT = 7., if Mozer electron guns were ON at any time during the 64 seconds.

MOSTAT < 0., if insufficient data.

At low bit rate, the Mozer indicator can only be computed once every 128 seconds. Since the data pool format provides for 64 second intervals regardless of bit rate, the Mozer indicators will each be written 2 times when in low bit rate.

The electron gun status is derived from the telemetry data as follows:

One or both electron guns are turned ON if the Goddard Project Relay is closed (it will normally be closed), and the following logical expression is true:

$$\overline{(B_{101} \wedge B_{94})} \wedge (B_{123} \vee B_{122} \vee B_{121} \vee B_{115} \vee B_{114} \vee B_{113})$$

Where $\wedge$ signifies a logical AND, and $\vee$ is a logical OR.

The description of the MOM digital subcommutator is contained in the document, "A Description of the Quasi-static Electric Field Experiment (MOM) for the ISEE A Satellite," which is included as Appendix I of the MOM ERD.

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OBJECTIVES

To measure low energy charged particles in the earth's vicinity.

DESCRIPTION

The instrument, carried on the Mother spacecraft only, consists of two sensors and associated electronics:

- An Ultra Low Energy nuclear charge (Z), total energy (E), and ionic charge (Q) assembly (ULEZEQ); this sensor consists of two physically separated units.
- An Ultra Low Energy Wide Angle Telescope designated ULEWAT.

THE ULEZEQ SENSOR

Charged particles entering the large area (200 cm^2) collimators, are electrostatically deflected in four different deflection systems, with deflection voltages and spacings of the deflection plates to cover the energy range 3 keV/charge to 2 MeV/charge. The total energy of the particles is measured by 7 silicon detectors. The positions of the L and M detectors determine the particle deflection, while the deflection in the MP and H channels are measured by position sensitive solid state detectors. The deflection voltages are: -600 to 1800 V in 32 steps for the L, +3 kV for the M, +20 kV for the H, -12 kV and +3 kV for the MP section.

The L, MP and M detectors are backed by solid state detector anticoincidence detectors.

In a range from 200 keV/charge to 2 MeV/charge, a thin window proportional counter in front of a position-sensitive silicon detector serve as a dE/dx-E device for the additional determination of the nuclear charge of the deflected particles. This detector system is able, therefore, to determine simultaneously the nuclear charge (Z), the total energy (E), and the ionic charge (Q). The view direction of ULEZEQ is perpendicular to the spin axis with the long edge of the collimator along the spin axis.

THE ULEWAT SENSOR

Two position sensitive multiwire proportional counters pos 1 and pos 2 determine the geometrical factor of ~ 1 cm^2 ster. Two proportional counters P_1 and P_2 for double dE/dx measurement are placed in between the multiwire counters. The residual energy of the incoming particles is determined with two solid state detectors D1 (200μ thick) and D2 (2000μ thick).

The detector assembly is surrounded by an anti-coincidence detector (A) and an array of proportional counters (AP). The entrance window of 120μ g polypropylene confines the isobutane gas in the proportional counters.

The ULEWAT will be mounted with its axis perpendicular to the satellite spin. The angular range out of the ecliptic plane is ±55 degrees and the resolution in elevation is ~ 5 degrees. The opening angle is azimuth of 20 degrees (half angle) is matched to the 22.5 degree angular resolution obtained from the 16 sector analysis.

THE GAS SYSTEM

All three proportional counters (P1 and P2 of ULEWAT and PC of ULEZEQ) use a gas supply system similar to the one now being used for the ULET telescope of the University of Maryland IMP-H/-J experiment.

The function of the gas system is to actively stabilize the gas density (isobutane) to within ±0.5 percent. (The operating gas pressure is 35 torr at 23°C.)

A small ionization chamber with a built-in Am^{241} -60μc source produces a current related to the gas density. This current is sensed by appropriate electronics and converted to signals controlling a low power thermal valve which transmits the gas from a tank containing about 100 g of liquefied isobutane to the proportional counters.

For redundancy, the ULEWAT counters and the PC counter of ULEZEQ will have separate gas control and valve systems.

DATA POOL QUANTITIES FROM THE HOVESTADT EXPERIMENT

The HOM experimenters will provide 5 rate channels for the data pool tape. All 5 rates are from the ULEWAT sensor of the HOM experiment. They are accumulated continuously over the S/C spin and will be included on the tape approximately every 15 minutes. The rates are coincidence rates and require up to 7 logic conditions. The detectors included in the event selection logic of each rate are listed in Column 3 of Table I. The response of all 5 rates in nuclear charge, energy and direction is summarized in Table I, and a schematic cross-section of the ULEWAT sensor is given in Figure 1.

The ~15 minutes averaging time corresponds to the 4096 bps bit rate of the S/C.

During high speed mode (16384 bps) the averaging time is ~15 min/4. For the proper use of the data some notes should be recognized.

(1) The ULEWAT sensor will be switched OFF inside the earth's magnetosphere. Therefore, there will be no data from the HOM experiment during these time periods on the data pool tape.

(2) It is possible to change the response of the sensor by ground command (in case of detector noise, etc.). If this will be the case an updated version of Table I will be provided for all who get the data pool tapes or plots from the project.

(3) The rates do not include dead time corrections. The proper corrections for rates $\gtrsim 5.10^4$ cts/sec will be provided later.

The rate ID's shown in Column 1 of Table I correspond to the data pool tape format as follows:

Rate ID	Pool Tape Designator
LP	PROLP
LA	ALFLA
MH	HEAVYS
HP1	PROHP1
HP2	PROHP2

Table I

Rate ID	Particle	Detectors**	Energy (MeV/Nucleon)	ϑ*	Geom. Factor (cm^2 ster)
LP	Proton	P1, P2, D1, D2, A, AP	0.17-0.4	~20°	~0.6
LA	Alpha	P1, P2, D1, D2, A, AP	0.12-0.25	~20°	~0.6
MH	Z > 2	P2, D1, D2, A, AP	>0.1	~20°	~0.6
HP1	Proton	D1, D2, A, AP	5-10	~60°	~2.0
HP2	Proton	D1, D2, A, AP	10-20	~60°	~2.0

*Full acceptance angle perpendicular to the ecliptic plane

**P1, P2 Proportional counters

AP Anticoincidence Proportional counter

D1, D2 Silicon surface barrier detectors

A Anticoincidence surface barrier detector

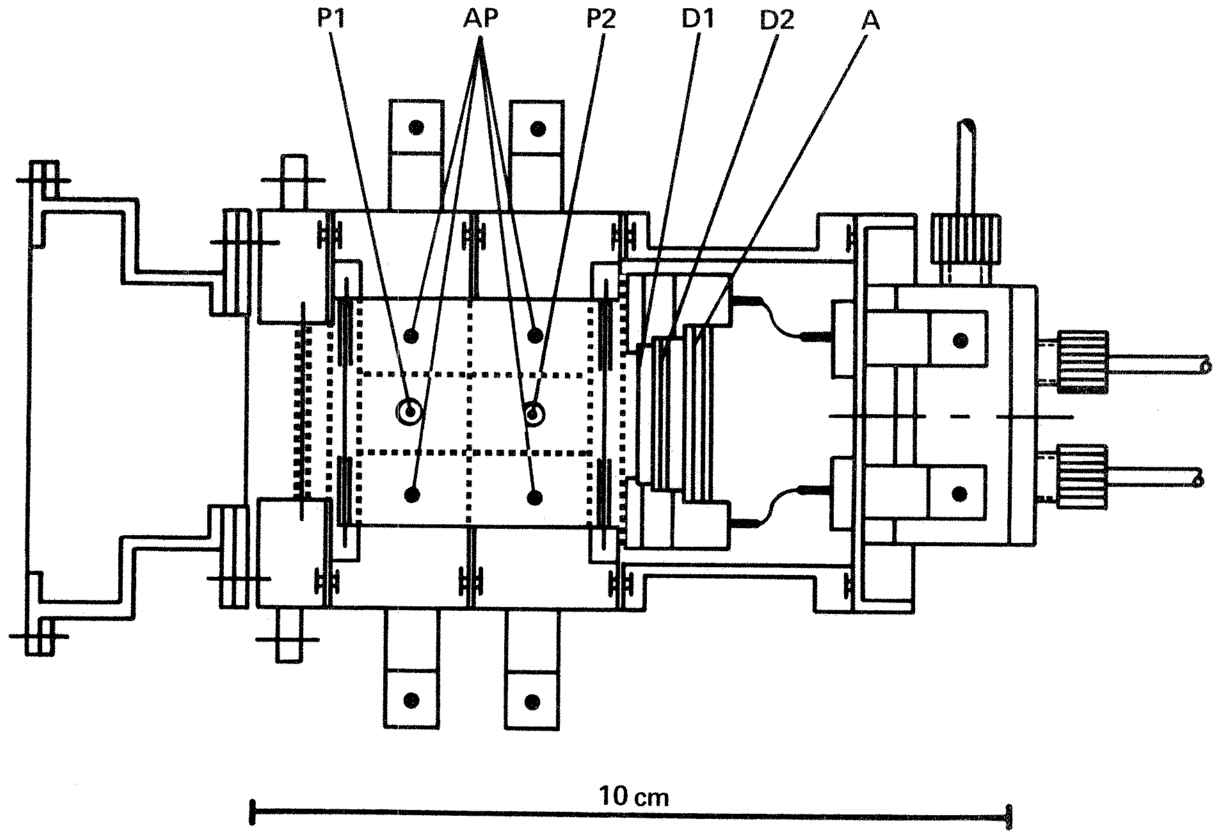

Figure 1. ULEWAT Sensor

ISEE FLUXGATE MAGNETOMETER INSTRUMENT

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The ISEE fluxgate magnetometers are designed to measure both the static and time-varying magnetic fields with identical instrumentation on both the Mother and Daughter spacecraft. Among the phenomena to be studied are: solar wind discontinuities, waves upstream from the bow shock, the structure of the bow shock, magnetosheath structure, the magnetopause, magnetospheric wave particle interactions, plasma sheet dynamics, and magnetospheric substorms. The measurements will be correlated both with spacecraft within the magnetosphere (e.g., GEOS) and without. The magnetometer is also a service instrument providing on-board magnetic sectoring to energetic particle experiments, pitch angle measurements and $\overline{V} \times \overline{B}$ measurements for the electric field experiment.

Three Naval Ordnance Laboratory ring core sensors in an orthogonal triad are enclosed in a flipper mechanism at the end of the magnetometer boom, with the main electronics unit on the main body of the spacecraft at the foot of the boom. The basic magnetometers are capable of measuring fields in two commandable ranges of ±8192 γ and ±256 γ to an accuracy of 0.025% (equivalent to one part in 2^{13}). The data are digitized within the instrument by a 12-bit analog to digital converter which is accurate to one-quarter of the least significant bit. The analog data from each magnetometer axis is continuously sampled at the rate of 512 times per second and averaged in a digital averaging circuit by adding and right shifting to obtain samples which are accurately averaged to 16-bits for read-out. The 16-bit read-out reduces quantization noise to insignificant values even in the quietest fields.

Averaging is also a filtering function. Thus, the rate at which data is shifted out of the averaging register automatically controls the effective filtering to restrict the bandwidth of the data and reduce aliasing. Six averaging registers, two for each axis, are used to provide overlapped averages which results in the averaging filter having an exact zero at the Nyquist frequency for all modes and data rates. In fact the transfer function of all three sensors is identical for all modes, ranges and data rates when referenced to the Nyquist filter.

The data system has two modes, termed double precision and single precision. In the double precision mode the entire 16-bits are transferred from the output buffer to the spacecraft in two successive 8-bit words resulting in sample rates of 4 and 16 samples per second at the low and high telemetry rates respectively. In the single precision mode any 8 adjacent bits of the averaging register may be selected for transmission. This gives a sample rate twice as fast as the double precision rate.

ALGORITHM FOR PROCESSING THE POOL DATA FROM THE RUSSELL EXPERIMENT

INTRODUCTION

This algorithm produces a vector measure of the magnetic field at a rate of 1 sample every 64 seconds, in spacecraft coordinates, from the output of the Mother (ISEE A) fluxgate magnetometer. Vector components are designated Bp, Bx, and By in the data pool format. In addition a number of quantities useful in the interpretation of the data are produced with one hour sample periods.

TECHNIQUE

The raw telemetry is decoded to form four times every second one 3 component vector with either 16 or 8 bits per component if the instrument is in double precision or single precision modes, respectively. The output from each of the three sensors are averaged and multiplied by sine and cosine ωt where $\omega = 2\pi /$ spin period and averaged over 64 seconds. The sine and cosine weighted output from the fixed sensor in the spin plane (sensor 1) is used to measure the two components of the magnetic field in the spin plane. Comparison of the sine and cosine weighted outputs of the other two sensors with the former output tells which of the other two sensors is along the spin axis. The average field along the spin axis gives the third component of the field.

Hourly Quantities

1. A_1 Average field of sensor 1
2. R_{21} Ratio of amplitude of signal at spin frequency on sensor 2 to the amplitude on sensor 1.
3. R_{31} Ratio of amplitude of signal at spin frequency on sensor 3 to the amplitude on sensor 1.
4. S_{21} Sine of phase angle between sensor 2 and sensor 1.
5. C_{21} Cosine of phase angle between sensor 2 and sensor 1.
6. S_{31} Sine of phase angle between sensor 3 and sensor 1.
7. C_{31} Cosine of phase angle between sensor 3 and sensor 1.

8. A_{IA} Average field along spin axis.

9. T_1 Electronics Temperature

10. T_2 Sensor Temperature

11. FS Flipper state. 0 = flip right entire hour, 56 = flip left entire hour. Intermediate values between 1 and 55 indicate flip has occurred part way through hour.

12. AS Experiment analog status word.

13. AP Flipper power on.

14. MD-SD Mag delay minus sun delay.

15. SP Sun period

16. MP Mag period

17. SE Sun elevation

18. DS Digital status word, first sample of hour.

19. T Spin period assumed in analysis.

20. O_1 Sensor 1 offsets assumed.

21. O_2 Sensor 2 offsets assumed.

22. O_3 Sensor 3 offsets assumed.

23. RS_1 Sensor 1 scale factors assumed.

24. RS_2 Sensor 2 scale factors assumed.

25. RS_3 Sensor 3 scale factors assumed.

III. Experiment/Instrument Description - Sharp

A. Brief Description

A major outstanding problem in magnetospheric physics is the determination of the source, transport and energization of the magnetospheric plasma. For example, the recent discovery of 0^+ ions with energies in the keV range has shown that the ionosphere as well as the solar wind is a significant source of energetic magnetospheric plasma. The energetic ion mass spectrometer is a high-sensitivity (10^{-2} cm^2-ster) high-resolution analyzer designed to measure the ionic composition over the mass-per-unit-charge region from 1 to 138 AMU in the energy-per-unit-charge range from zero to 17 keV. A schematic diagram of one of the spectrometers is shown in Figure 1. It consists of an entrance collimation section, a retarding potential analyzer, a curved-plate electrostatic energy analyzer and a set of energy analyzer detectors followed by a combined electrostatic-magnetic mass analyzer system with associated detector. The experiment consists of two complete spectrometers which are referred to throughout this document as Sensor A and Sensor B. The two sensors are required outside the magnetosphere to provide adequate elevation angle coverage. Inside the magnetosphere it is planned to devote one sensor to measurements of the cold plasma.

The spectrometers have 2 basic modes of ion energy analysis. After passing through the retarding potential analyzer (RPA), all ions are accelerated by a 3-kV potential before entering the curved plate electrostatic analyzer (ESA) section. In the cold plasma mode of operation, the RPA potential is programmable to any one of 32 values covering the range between 0 and approximately 100 volts. In this mode, the ESA plate potentials are set to transmit the ions with energies between 3.0 keV and about 3.15 keV so that the combination of the RPA and ESA pass ions whose energies prior to the acceleration section were between the RPA setting and 150 eV per unit charge. In the normal mode of operation, the RPA voltage is fixed and the ESA plate potential is controllable in 32 steps. Depending on the RPA setting, this covers the range from the RPA level to the maximum energy.

For each energy setting, the total mass range of the spectrometer, from less than one AMU to greater than 138 AMU is covered in 64 steps on the mass analyzer plate voltages. Thus, the entire mass energy range of the instrument includes 4096 combinations of voltages. Because large sections of the mass range are expected to be void of measurable fluxes much of the time and relatively coarse energy resolution is adequate for many studies, it is desirable to have the capability of wide latitude in selecting the sub-set of these 4096 possibilities to be covered during any given period. To accomplish this, each sensor is controlled by a command reprogrammable 1024 x 6-bit random access memory which permits nearly random selection of the mass-energy combinations to be covered. This memory can be programmed for optimum coverage in each region of the environment covered during each orbit.

ALGORITHM FOR PROCESSING THE POOL DATA FROM THE PLASMA COMPOSITION EXPERIMENT

The total cold plasma ion density will be derived from the Lockheed Plasma Composition Experiment while the instrument is operating in a retarding potential analyzer/ion mass spectrometer mode. In general, at least one of the two sensor heads of the instrument will be operating in this mode within the earth's magnetosphere. Specifically, operation in this mode will begin in the vicinity of the magnetopause inbound and will continue through instrument saturation at the high density levels of the inner plasmasphere. After perigee the instrument will be again turned on for measurement of cold ion density from the inner plasmasphere across the plasma trough to the vicinity of the magnetopause outbound.

The analysis routine begins with the data sorting required to identify and select points taken in the direction of maximum flow and following this, makes a determination of the relation between this maximum flow direction and the spacecraft velocity vector. A detected difference between these two directions will be assumed to be due to the presence of a significant bulk flow in the plasma.

The program then solves for density in the expression

$$\text{Particle Count Rate} = F(T)\, N\, V_S \cos\theta$$

where

$F(T)$ is a temperature dependent geometric factor describing the fraction of ambient ions which reach the detector

θ is the angle between the instrument normal direction and the direction of the maximum flow

T is the ion temperature

N is the ambient odd ion density (ions/cm^3)

V_S is the velocity of incoming flow (taken to be the satellite velocity)

The above analysis applies only to the routine "quick-look" calculations in the data pool tape. This analysis is subject to uncertainties introduced by bulk motion of the plasma relative to the spacecraft, spacecraft charging and particle focusing effects caused by the spacecraft sheath in regions of large Debye length (of the order of one meter or more). All of these uncertainties will be addressed in the more detailed analysis which will be carried out using the full information from the experiment's operation. The necessary inflexibility and automatic nature of the "quick-look" analysis does not allow these more involved portions of the analysis to be accomplished.

To aid in the interpretation of the simplified data pool density, two flags based on intermediate calculations within the analysis routine will be provided along with the density calculation. These will be set on indications of high ion temperatures and on an indication of the presence of bulk flow in the cold plasma.

Specifically, the temperature flag will be set when estimates indicate the assumption of short Debye lengths is violated and the bulk flow flag will be set when the angle between the spacecraft velocity vector and the estimated direction of maximum flow becomes sufficiently large to violate the assumption that the plasma ram velocity is equal to the spacecraft velocity.

In summary three quantities are provided - a number proportional to the cold plasma density ($E < 150\,eV$), a flag indicating a deviation from cold ion temperatures and an angle which indicates the presence of bulk flow in the cold plasma. These three quantities have been designated PLADEN, PLATEM, and PLANGL, respectively, in the data pool format.

III. Experiment Description - Williams-Keppler

A. Brief Description

The major scientific objectives of this experiment are to identify and study plasma instabilities responsible for acceleration, source, and loss mechanisms and boundary and interface phenomena throughout the orbital range of the Mother-Daughter pair. This includes studies of geomagnetic storms, substorms, and aurora along with magnetopause, magnetosheath, bow shock, and near-earth interplanetary phenomena. The use of two satellites is required for this initial attempt to uniquely separate spatial and temporal variations. Mother-Daughter observations over the planned separation distances of 100 to 5,000 km will allow not only the determination of spatial gradients but also the propagation velocity of these gradients as well as any differences of particle behavior across surfaces such as the magnetopause or interplanetary shocks. Measurements of the azimuthal asymmetry in the pitch angle distribution over the energy range stated above afford a unique determination of spatial gradients traveling with high velocities even for spacecraft separations of 100 km.

These objectives will be accomplished by flying solid state detector systems on both the Mother and Daughter spacecraft to measure detailed energy spectra and angular distributions of protons in the energy range 20 keV to 2 MeV and electrons in the energy range 20 keV to 1 MeV. In addition to the above, the Mother's instrument contains a solid state time-of-flight detector system to measure the energy spectra and pitch angle distributions of alpha particles and heavy ions in the energy range above 150 keV per nucleon. The NOAA Space Environment Laboratory is responsible for Mother instrument hardware and integration, and the Max-Planck Institute for Aeronomy is responsible for Daughter instrument hardware and integration.

Particle identification is accomplished through combinations of magnetic analysis, threshold discrimination and dE/dx by E coincidence techniques. Energy analysis is provided by the detector-preamplifier combination and associated electronics. Angular analysis is provided by a combination of satellite spin and a scan platform on the Mother spacecraft and a combination of satellite spin and various detector orientations on the Daughter spacecraft.

The basic instrumentation consists of three separate analyzing configurations of solid state detectors: (1) the proton telescope, (2) the electron spectrometer, and (3) the heavy ion telescope. The proton telescope and the electron spectrometer are mounted in the same physical structure and take advantage of a single magnet assembly.

ALGORITHM FOR PROCESSING THE POOL DATA FROM THE WILLIAMS-KEPPLER EXPERIMENT

A. EXPERIMENT DESCRIPTION

The contribution of the Medium Energy Particles Experiment (WIM) to the data pool tape will consist of data derived from the electron/proton spectrometer on the Mother spacecraft only and will exclude data from other parts of this experiment. The experiment observes particles in the energy domain essentially from 20 keV to 1 MeV for electrons and 20 keV to 2.0 MeV for protons. The "proton" sensor is actually sensitive to all positive ions with the same or slightly higher energy indicated by the passband. The use of the word "proton" implies the expected major response but this may not be true at all times or in all regions of the magnetosphere.

The WIM data to be written on the data pool tape, however, will be particle flux observations from two energy bands, nominally 32-50 keV and 80-126 keV for both the electrons and protons. The energy passbands and absolute intensity for these channels will remain unchanged in either high or low bit rate operation (although the details of data handling will be somewhat different for the two bit rates). The above energy ranges are nominal and the exact values will be available after the sensor calibration. In the data pool format, the low range measurements are designated ELOW and PLOW, while the high range measurements are designated EHIGH and PHIGH.

The primary purpose of this experiment is to investigate the energy spectra and pitch angle distributions of electrons and protons in the energy ranges noted above. To accomplish this objective the electron spectrometer and the proton telescope are integrated into a single instrument which is mounted on a scan platform and uses magnetic focusing to separate the two species onto their respective detectors. A three-dimensional distribution function is obtained by scanning the platform and attached instruments in a plane containing the spacecraft's spin axis as the spacecraft spins at a nominal rate of 20 rpm about an axis that is nominally aligned with the ecliptic polar axis. The data are further sectored at either eight or sixteen sectors/spin depending on the current telemetry bit rate. Scanning may be carried out in an automatic mode in which one full cycle (up and down) is accomplished in 24 spins, or a manual mode in which the scan platform may be commanded to one of 14 discrete positions in 11.5° steps with respect to the spacecraft spin (Z) axis. The scan limits the telescope principal axis to 10° from the ±Z axis. A calibration position (15) is located 15° from the Z axis on the inboard side of the spacecraft.

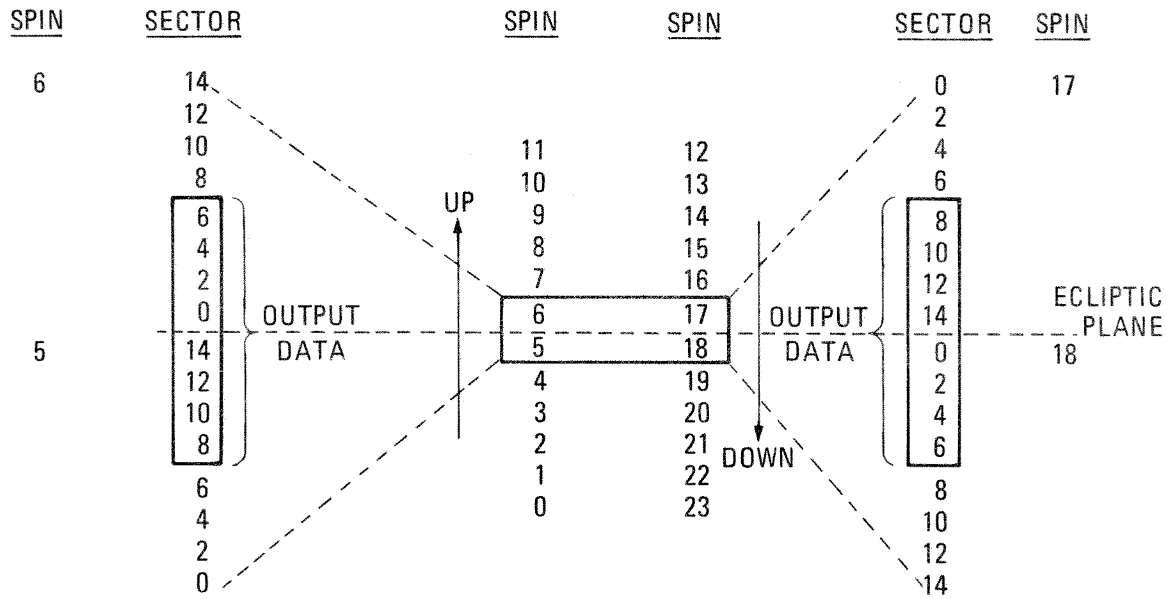
The routine experiment data are accumulated using the "623-C", 19 bit to eight bit floating point processor/accumulator hybrid. The measured data consists of read-outs of particle counts/energy range/scan position/sector. The particle counts that are recorded span the range one to 507,900 for the sensed number of physical events that occur within a counting period.

The data that will appear on the data pool tape, however, will be formatted as particles/(cm^2 sec steradian keV) and will be averaged over all ecliptic longitudes for a limited interval near the ecliptic plane. It will be necessary, therefore, to extract only those data observed in or near the spin-normal plane (nominally the ecliptic), and to average these data over all complete spins, taken one spin at a time for each five-minute period. After the data have been extracted as "counts/second" for the specified energy channel, a constant multiplicative factor on the order of 1.5 to 60 will be used to convert the data to obtain the above required dimensions. Negative values indicates that proper data are not available which meet the conditions for that portion of data pool tape.

B. DETAILED MEASUREMENT PROCESSING

Data are collected spin synchronously. One full cycle of the scan platform is 24 spins which are numbered zero through 23. One full spin contains eight sectors, numbered zero through 14 by two's in the low data rate, or 16 sectors, numbered zero through 15 in the high data rate. This information is registered in the WIM telemetry and is used to identify the appropriate data pertinent to the data pool tape.

Since data pool tape measurements are to be centered on the spin-normal plane for one complete spin, data collection in the low data rate will commence with sector eight of spin five and end with sector six of spin six on the up-scan. Similarly, data collection will begin with sector eight of spin 17 and with sector six of spin 18 on the down-scan. These operations are demonstrated schematically in the following frame for the low data rate.



In the high data rate the starting sector is eight in spins five and 17 and the last sector is seven in spins six and 18.

As long as the spacecraft spin axis is maintained perpendicular to the ecliptic plane, the sample recorded for the data pool tape is within ±12° of the ecliptic. The sensor has a conical field-of-view with a 5° half angle; therefore, all WIM data samples on the tape will represent particles incident on the detectors within ±17° of the ecliptic plane.

Since each spacecraft spin takes about three seconds, one full scan cycle will take 72 seconds. In the five-minute data pool period approximately eight spins in the nominal ecliptic plane will be averaged to obtain one data point/energy band/particle species. If the data pool period happens to begin or end with an incompleted spin, meeting the other geometric conditions (i.e. in the ecliptic plane), that data will not be accepted for the data pool tape.

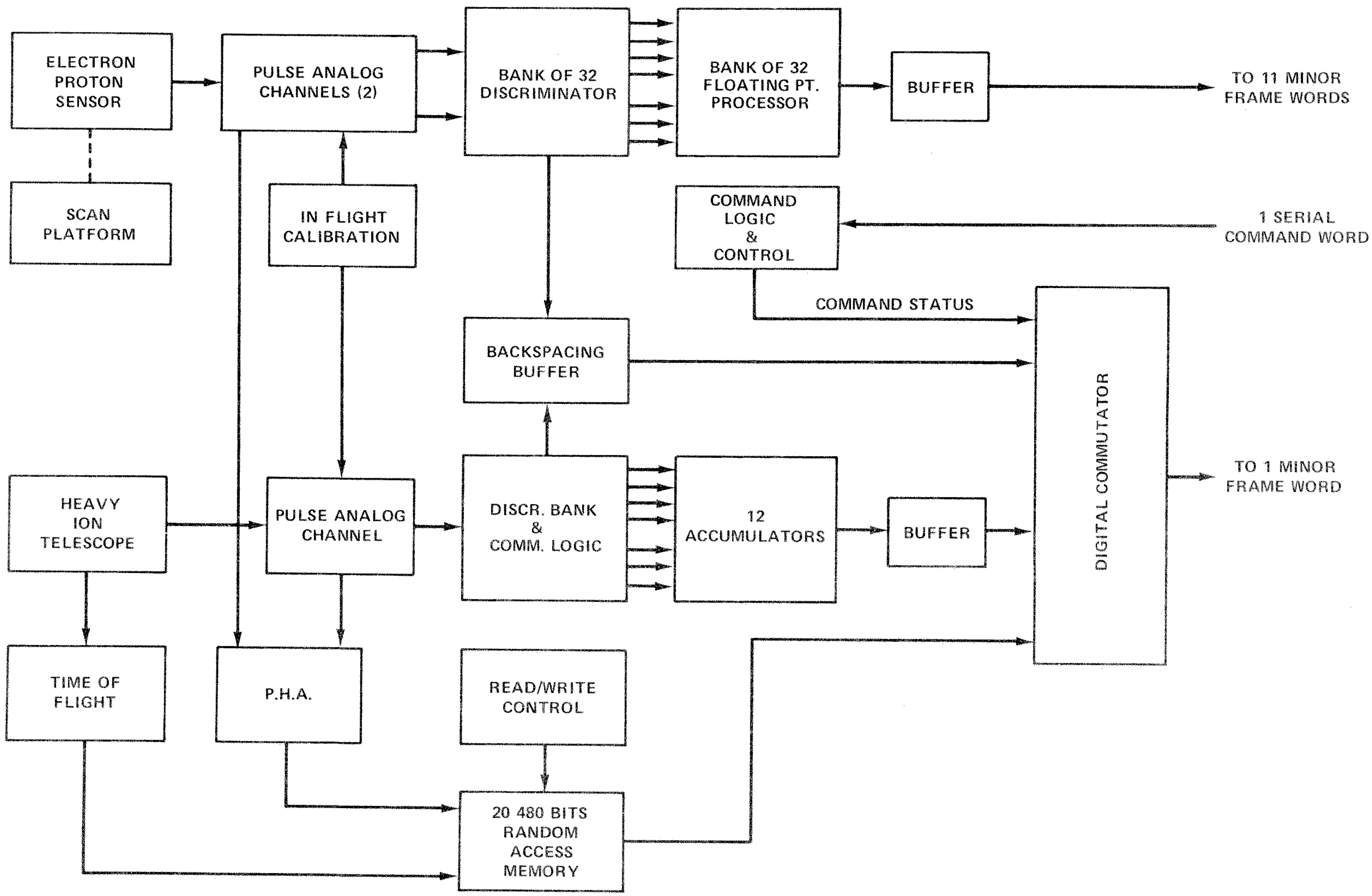
If the scan platform is in the manual mode, the data is acceptable for the data pool tape for certain discrete scan positions that correspond roughly with the ecliptic. Position number seven is nominally in the ecliptic; however, position numbers six and eight are also acceptable. The scan position is monitored at all times and is used in the generation of data pool information.

The electron/proton spectrometer normally operates with both the electron and proton detectors activated. However, it is possible for one or the other particle detectors to be turned off in which case those data cells will be filled with negative fill code, signifying that the data is unavailable.

The experiment may experience certain calibration periods, either in an automatic or a commanded mode. The automatic calibration occurs about every 17 hours, during which period the data pool tape input is a negative number set. Moreover, the commanded mode calibrations may not be automatically deleted by the algorithm and may contaminate the experiment output for about ten minutes. At present commanded calibrations are not part of any normal operation sequence and will be used only when the experimenter is examining the experiment progress using the real time data display. Unless serious problems are detected, the commanded calibration will probably be invoked on less than four days a year. On these occasions, however, several commanded calibrations may be required for which the appropriate records will be maintained.

In addition to the normal operational modes and the other qualifications as noted, the users of the data pool tape are cautioned that electronic noise associated with solid-state experiments is very dependent on the sensor temperature and the amount of radiation damage incurred by the detectors. As the ISEE mission enters its second year the data from both or either of the lowest energy channels (electrons and protons) could become badly contaminated by noise. The same is also true if the sensor operating temperature exceeds its design specifications.

If any uncertainty concerning these matters should arise, please contact the experimenter or his authorized representatives.



Block Diagram

Table III-A-1. Energy Passbands

	Protons		Electrons	
	Passband	Range	Passband	Range
Spin Sectored (8 or 16)	Δ P1	18-25 keV	Δ E1	18-25 keV
	Δ P2	25-32	Δ E2	25-32
	Δ P3	32-40	Δ E3	32-40
	Δ P4	40-50	Δ E4	40-50
	Δ P5	50-63	Δ E5	50-63
	Δ P6	63-80	Δ E6	63-80
	Δ P7	80-100	Δ E7	80-100
	Δ P8	100-126	Δ E8	100-126
	Δ P9	126-159	Δ E9	126-159
	Δ P10	159-201	Δ E10	159-201
	Δ P11	201-253	Δ E11	201-253
	Δ P12	253-318	Δ E12	253-318
	Δ P13	318-504	Δ E13	318-400
	Δ P14	504-800	Δ E14	400-504
	Δ P15	800-1270	Δ E15	504-635
	Δ P16	1270-2000	Δ E16	635-800
12 Scan Sectored 128 Channel PHAs	18-200 keV		18-80 keV	
	18-500 keV		18-400 keV	
	500-1000 keV		400-800 keV	
	1.0-1.5 MeV			
	1.5-2.0 MeV			

	Alpha and Heavier Nuclei		
	Passband	Particle Energy	Elemental Sensitivity
36 Sec Average (In Low Data Rate)	Δ α 1	500-900 keV	$Z \geq 2$
	Δ α 2	0.9-1.25 MeV	$Z \geq 2$
	He	1.4-6.0 MeV	$Z = 2$
	L1	1.25-4.0 MeV	$Z \geq 6$
	M1	4.0-7.0 MeV	$Z \geq 6$
	C	4.5-46 MeV	$Z = 6$
	A5	> 7.0 MeV	$Z \geq 9$
	0	6.0-47 MeV	$Z = 8$
8/Spin Sectored	Δ α 1	500-900 keV	$Z \geq 2$
	Δ α 2	0.9-1.05 MeV	$Z \geq 2$
Multiparameter Analysis 2.7 or 10.8 Minute Average	Each Event: (1) ΔE (front el., 4.7 μ): 500 keV-8 MeV; (2) E (second el., 150 μ): 225 keV-40 MeV; (3) TOF (10 cm): 2-200 ns; (4) Mass or E_T: 3-18 AMU or 1-50 MeV; (5) ID ($\propto M^g Z$, M = Mass, Z = Charge, $0 < g < 1$); Not dependent on incident ion energy. ID distribution displayed in 64 channel PHA. Mass or E_T distributions are displayed in seven 64 channel PHAs for seven selected ID values. (16 possible sets of seven, by command.)		
	Rare Events: ΔE, E, TOF, ID stored for each of two events.		

M/D Medium Energy Particles: Instrumentation Summary

Item	Mother Instrument	Daughter Instrument
Weight	Exp. 3.2 kg DPU 2.7 kg 5.9 kg (Exclusive of Scan Platform)	3.8 kg
Power	Exp. 3.0 W DPU 5.5 W 8.5 W (Exclusive of Scan Platform)	4.5 W
Bit Rate	384; 1536 (12 words)	224; 896 (14 words)
Energy:		
Range P	20 keV–2 MeV	20 keV–2 MeV
Range E	20 keV–1 MeV	20 keV–250 keV (to 1 MeV for 90° unit)
Resolution P	~50%; 25%; 10%–1% (PHA)	~30%
Resolution E	~25%; 15%; 10%–1% (PHA)	~20%
Angular Resolution	Continuous sweep along spin axis, $\bar{s}$ 8 sectors around $\bar{s}$; 16 sectors around $\bar{s}$	4 directions with respect to $\bar{s}$ 4 sectors around $\bar{s}$; 16 sectors around $\bar{s}$
Time Resolution P and E	Complete / Energy / Sample: one direction 0.75 sec; 0.19 sec two dimensions 3.0 sec; 3.0 sec three dimensions 36 sec; 36 sec	Complete / Energy / Sample: one direction 9 sec; 0.75 sec; 3 sec; 0.19 sec two dimensions 9 sec; 0.75 sec; 3 sec; 0.19 sec three dimensions 36 sec; 3.0 sec; 12 sec; 3.0 sec
Geometric Factor	$\leqslant 10^{-2}$ cm^2 ster	$\leqslant 5\,(10)^{-2}$ cm^2 ster
Thermal:		
Operate	-40°–+30°C	-40°–+30°C
Preferred	-30°–0°C	-30°–0°C
Storage	-60°–+60°C (+40°C for detectors)	-60°–+60°C (+40°C for detectors)

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Include this For every request For Isee-3 Data Pool tapes.

NOTES ON THE ISEE-3 DATA POOL TAPE

M..D. Banks, Jr.
T. von Rosenvinge

May 1979

I. Introduction

The International Sun-Earth Explorer Mission is a joint NASA/ESA project intended to study the earth's magnetosphere and its response to disturbances in the solar wind. The ISEE-3 spacecraft is positioned ~240 earth radii upstream of the earth's bow-shock and observes the solar wind flowing towards the earth while the ISEE-1 and 2 spacecraft make observations in or near the magnetosphere. This project has been described in detail by Ogilvie, et al. (1977).* The primary purpose of the ISEE-3 data pool tape is to make basic quantities measured at ISEE-3 readily available beyond the individual experiment groups making the measurements. This is particularly desirable since the emphasis of this mission is on utilizing simultaneous data from all three spacecraft. The data pool tape does have some limitations, however. For example, the time resolution and selection of data is limited. Also, the algorithms for transforming measured quantities into physical units are generally not as complex as those that experimenters may eventually use in reducing their data. On the other hand, many users will profit more by quick access to somewhat imperfect data than by eventual access to more refined data. For instance, an experimenter can use the data pool tape to identify interesting time periods and hence greatly reduce the volume of refined data which he may request from another experimenter.

The data pool tape is produced at Goddard Space Flight Center by the Information Processing Division (IPD) using algorithms provided by each experimenter. IPD does its best to process the data accordingly, but it is staffed by programmers and not scientists and hence cannot be held responsible for identifying, for example, subtle changes in instrument performance, limitations of experiment response, or interference to an experiment.

In order, then, for a user to make sensible use of the data pool tape he requires a good description of each experiment, a description of the tape format and a description of the algorithms used. The first of these has been provided in the IEEE transactions on Geoscience Electronics, July 1978, Volume GE-16. It is intended that the remaining items be supplied in part by the present document. Following this introduction, we have provided notes on the ISEE-3 data pool tape together with the tape format. This precedes sections which have short write-ups from each experimenter regarding the method by which their data is reduced to yield the quantities on the tape and appropriate caveats. Finally there is a list of Principal Investigators with addresses and telephone numbers.

* Ogilvie, K. W., von Rosenvinge, T. T. and Durney, A. C., Science, 198, #131, 1977.

NOTES ON THE ISEE-3 DATA POOL TAPE

GENERAL DESCRIPTION AND USAGE

1. Structure of the Data Pool Tape

(A) Tapes

Each data pool user receives one reel of tape per week. This tape may be 7-track 556 cpi, 9-track 1600 cpi, or 9-track 800 cpi, depending upon the user's preference. All tapes are odd parity. Inter-record gaps are .65 inch for 9-track tapes and .75 inch for 7-track tapes.

(B) Files

Data pool information for a 7-day period is presented as a single tape file, beginning with a label record and ending with a standard tape mark (EOF mark). All records, including the label, are of the same length. The data pool file contains approximately 160 data records spanning 7 days of telemetry data. Redundant telemetry data (due to overlap in ground station coverage) has been removed. The data pool file coincides in time with a "shipping group" of the usual telemetry data (decom tapes) which is sent to each experimenter.

The data pool file appears 3 times on the tape for redundancy backup. See Figure 1.

(C) Data Words

(1) Word Size

Each data pool tape is written in computer words of a length compatible with the intended user's computer. Tapes thus constructed can be read directly into the user's computer with no reformatting. This holds true for both 7-track and 9-track tapes. For example, records intended for use with a CDC 6000 series computer would appear as packed strings of 60-bit fields. On a 9-track tape, each such 60-bit field occupies 7-1/2 tape characters. But the total number of words per record is an even number, so that the 60-bit fields can all be written in pairs, 15 tape characters per pair, and thus can be read normally by the CDC. (Other combinations of word size and tape type work out in a similar fashion).

- ONE TAPE PER 7-DAY DATA GROUP.
- ONE FILE PER DATA GROUP, REPEATED 3 TIMES FOR BACKUP.
- DATA POOL QUANTITIES ARE IN USER COMPATIBLE FLOATING POINT AND USER WORD LENGTH.
- DATA RECORDS ARE APPROXIMATELY 1 HOUR.

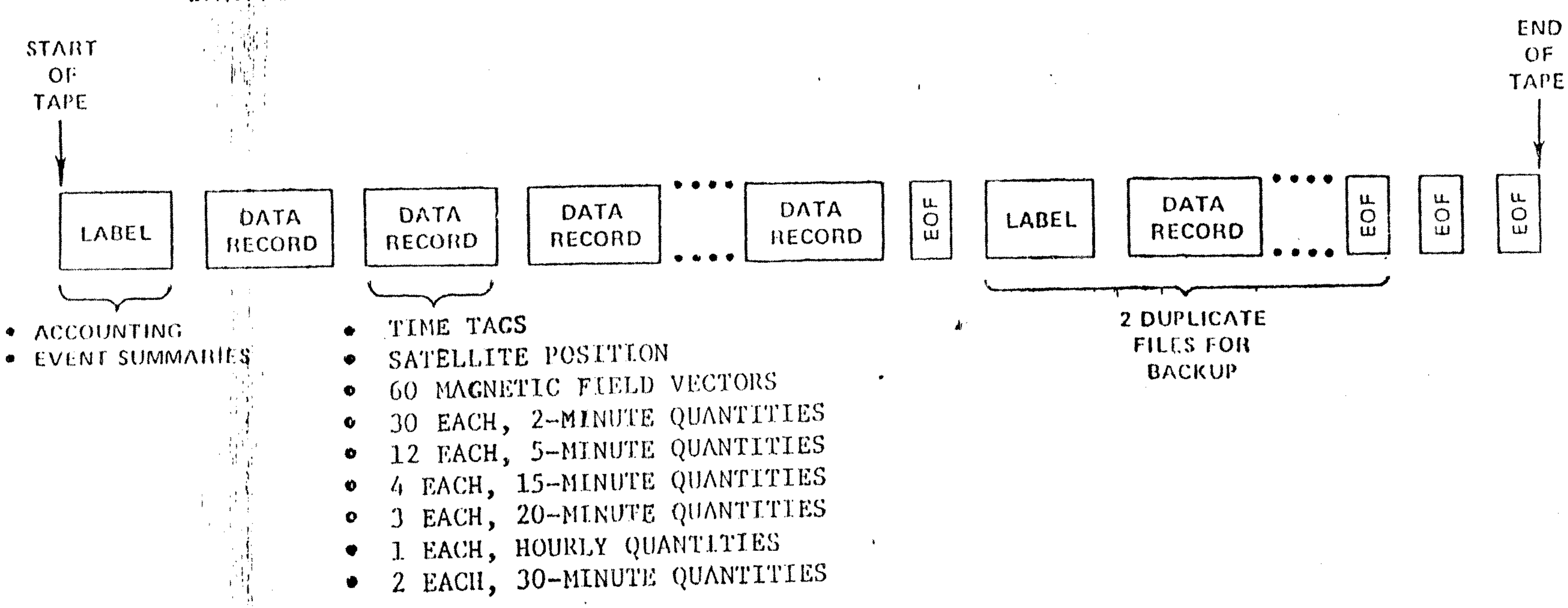


Figure 1. Data Pool Tape

(2) Floating Point Format

The entire data pool tape, the file label record and all data records, are in floating point format. (This provides a uniform, standard appearance of all information, facilitates conversion to the various computer word sizes, and simplifies tape printing and verification). The floating point representation used on each tape is specified by the user, and, like the word size, is compatible with the computer which will process the tape.

Most data pool tape quantities are originally computed in floating point and should be interpreted as such. Certain items, however, are obvious as integer values converted to floating point representation (day-of-year, seconds-of-day, clock, various indicator flags, etc.). The user may interpret such items either as floating point (in which case appropriate precautions should be taken to prevent possible truncation during conversion to integer).

(3) Missing Data

Missing data items are indicated by a negative value fill code in place of the missing item. The exact value of the fill code is dependent on the type of floating point used, but will in all cases be outside the legitimate range of any data item.

Missing data pool items may be the result of gaps in data recovery at the ground station, or the result of data being rejected by one of the experiment processing algorithms.

It is possible that uncertain conditions may lead to a data pool result of questionable validity. Rather than be rejected, such results may, in certain cases, be presented as the negative of the actual result. Thus, a negative number other than the fill code, if in a field which should normally be positive, represents a doubtful result and may be used, but with caution. (Note that this does not apply to those values which may normally be negative, such as magnetic field components).

Data taken when the spacecraft is in engineering format is rejected by the data pool program.

II. Contents of the Data Pool Tape

(A) Time

The time values given on the data pool tape are UTC (Universal Time Code) at the time the data was transmitted from the spacecraft (i.e. transmission lag time has been removed). Times have been smoothed to remove random errors and then verified by intercomparison among all the ground stations. Time is given as Julian day (1-366) and seconds-of-day.

(B) Clock

The clock used on the data pool tape is a minor frame counter. It is constructed by combining the 24-bit raw spacecraft clock with part of the frame counter. (This is the same clock as used on the telemetry data tapes).

Since the full clock will not fit in all types of floating point works without truncation, it is broken into 2 pieces, the low order 21 bits in one word, the remaining high order portion in another. The full clock can be reconstructed by converting both clock pieces to integer, then adding them together.

It should be noted that time, rather than clock, is the primary reference for data pool items. Clock is subject to rollover within the data pool file, as well as to unpredicted jumps forward or backward.

(C) Timelines

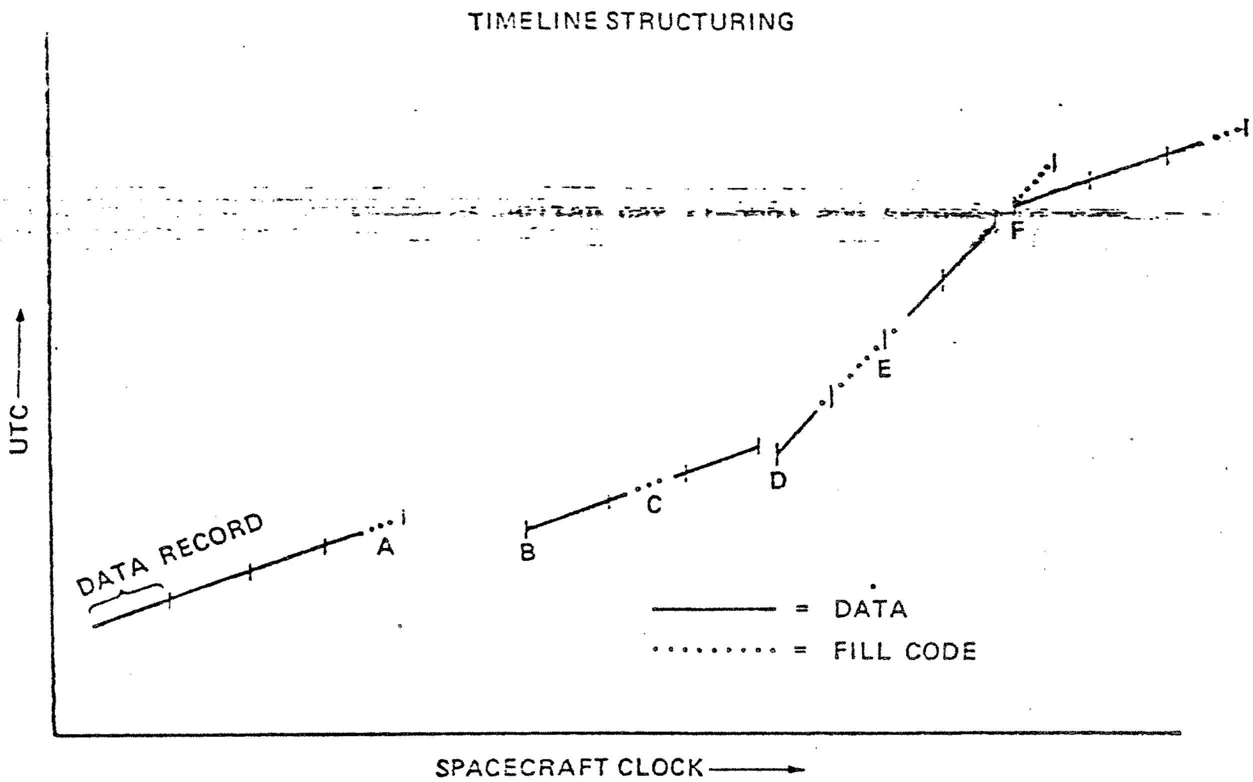
The time versus clock relationship, may not be linear throughout the entire data pool file. Breaks occur if the bit rate changes, at end-of-year, and if the clock jumps or rolls over. A segment of data in which time versus clock is linear is defined as a time/clock baseline or "timeline."

Data accumulation intervals for experiment algorithms do not continue across timelines; that is, each data pool quantity is computed using data which begins and ends in the same timeline. See Figure 2.

(D) Data Records

Data records are fixed length, 810 words long. A full record holds 64 minutes of information.

Within a timeline, each data record represent
tition in time. Data items are positioned within the records by time, relative to the start of the record (see "Time Tagging," below). Fill code is substituted where data is unavailable. If a gap in data coverage greater than 64 minutes occurs, it is possible that an entire record will be fill code. In this case the dummy record indicator is turned on.



Spacecraft Clock

A. Last record of timeline contains fill beyond the end of the timeline.

B. A new timeline begins due to a clock reset. No gap in data coverage.

C. Data gap within a record results in fill code.

D. New timeline begins due to a bit rate change.

E. Large data gap results in an entire record of fill code. Note that the record following the all-fill record begins with fill, but has a start time assigned as if data were present.

F. New timeline begins due to a bit rate change.

Figure 2. Timeline Structuring

The format of the data record is given in Table 2.

(E) Time Tagging

There are seven types of data pool information, according to frequency of readout: (1) 60 per record, 1-minute intervals, (2) 30 per record, 2-minute intervals; (3) 12 per record, 5-minute interval; (4) 4 per record, 15-minute intervals; (5) 3 per record, 20-minute intervals; (6) 2 per record, 30-minute intervals; (7) once per record. ("Minute," as used here, means an ISEE minute," or 64-seconds independent of bit-rate.

The start time of the data record (words 1 and 2) is the start time of sampling interval number at all seven frequencies of readout. The start times of subsequent intervals are computed relative to interval number 1.

Examples (Refer to Table 3):

Example 1 — The magnetic field vector {Bz(1), Bx(1), By(1)}, in words 201-203 was computed for the 64-second interval beginning at the record start time.

The vector {Bz(60), Bx(60), By(60)} , in words 555-557, was computed over the 64-second interval beginning at t=(record start time) + (59 x 64 seconds). Similarly, vector {Bz(3), Bx(3), By(3)} , words 213-215, was computed over the 64-second interval beginning at t=(record start time) + (128 seconds).

Example 2 -- Find the energetic particles flux, energy >15 MeV, at a point in time 20 minutes from the start of the record.

The required information set is from the Anderson algorithm, words 681-682, labeled EFLUX (1) - EFLUX (12). This data is given at intervals of 5 ISEE-minutes or every 320 seconds. Let RST equal the record start time. Then,

RST + 20 min = RST + 1200 sec = RST + 3.75 intervals

The desired value would thus be best approximated by interval No. 4, word 684.

(F) File Label

The file label record, Table 1, contains identification and accounting information for the data pool file. It also contains the minimum and maximum spin periods encountered over the 7-day file period, an index to all timelines in the file, and magnetometer parameters. The record is padded to the length of the data records.

As indicated in Table 1, the first 1440 bits should be ignored by the user. These bits are used for internal accounting purposes by Goddard Space Flight Center.

Table 1: DATA POOL FILE LABEL

WORD NUMBER*	DESCRIPTION (ALL VALUES ARE FLOATING POINT)
1	
	1440 BITS FOR GSFC INTERNAL USE.
N	
N+1	SATELLITE ID NUMBER
N+2	INTENDED RECIPIENT OF THIS TAPE. (SEE TABLE 2)
N+3	YY,START OF FILE, 2 DIGITS OF YEAR.
N+4	DDD,START OF FILE,DAY OF YEAR.
N+5	SSSSS,START OF FILE,SECONDS OF DAY.
N+6	YY,END OF FILE,2 DIGITS OF YEAR.
N+7	DDD,END OF FILE,DAY OF YEAR.
N+8	SSSSS,END OF FILE,SECONDS OF DAY.
N+9	HIGH ORDER BITS. CLOCK AT START OF THE DATA POOL FILE.
N+10	LOW ORDER 21 BITS. CLOCK AT START OF THE DATA POOL FILE.
N+11	GROUP NUMBER (CORRESPONDING TO THE TELEMETRY DATA TAPE GROUP NUMBE
N+12	MINIMUM VALUE OF SPIN PERIOD FOUND WITHIN THIS FILE IN SECONDS.
N+13	MAXIMUM VALUE OF SPIN PERIOD FOUND WITHIN THIS FILE IN SECONDS.
N+14	SMH1 Z-OFFSET USED FOR THIS RUN.
N+15	SMH2 NUMBER OF ESTIMATES MADE FOR Z-OFFSET ABOVE.
N+16	SMH3 ALPHA USED FOR Z-OFFSET ABOVE.
N+17	SMH4 GROUP NUMBER OF THE DATA GROUP USED TO DETERMINE Z-OFFSET.
N+18	
•	
•	SPARES.
•	
N+80	
N+81	NUMBER OF TIME LINES (MAXIMUM OF 80)
N+82	START DAY OF YEAR (1).
N+83	START SECONDS OF DAY (1).
N+84	HIGH ORDER BITS OF THE SPACECRAFT CLOCK (1).
N+85	LOW ORDER 21 BITS OF START SPACECRAFT CLOCK (1).
N+86	BIT RATE (1.0 FOR 512 BPS, 2.0 FOR 1024 BPS AND, 4.0 FOR 2048 BPS)
N+87	START RECORD NUMBER.
•	
•	
•	
N+656	START DAY OF YEAR (80).
N+657	START SECONDS OF DAY (85).
N+658	HIGH ORDER BITS OF START SPACECRAFT CLOCK (80).
N+659	LOW ORDER 21 BITS OF START SPACECRAFT CLOCK (80).
N+660	BIT RATE (1.0 FOR 512 BPS, 2.0 FOR 1024 BPS AND, 4.0 FOR 2048 BPS)
N+661	START RECORD NUMBER (80).
N+662	
•	FILL TO EQUAL DATA RECORD LENGTH.
810	

Table 2: DATA POOL - DATA RECORD

WORD NUMBER	DESCRIPTION (ALL VALUES ARE FLOATING POINT)		
1	DAY OF YEAR,RECORD START		
2	SECONDS OF DAY,RECORD START		
3	CLOCK,RECORD START. HIGH ORDER PORTION		
4	CLOCK,RECORD START. LOW ORDER 21 BITS		
5	RECOVERY FACTOR: (MINOR FRAMES PROCESSED)/(7.5 X 256.),FOR 512 BPS (MINOR FRAMES PROCESSED)/(15 X 256.),FOR 1024 BPS (MINOR FRAMES PROCESSED)/(30 X 256.),FOR 2048 BPS		
6	BIT RATE: 1.0 = 512 BPS (BACKUP) 2.0 = 1024 BPS (LOW) 4.0 = 2048 BPS (HIGH)		
7	DUMMY RECORD INDICATOR: 0.0 = AT LEAST ONE MINOR FRAME OF DATA WITHIN THIS RECORD'S 7.0 = NO DATA WITHIN THE SPAN OF THIS RECORD. A DUMMY RECO		
8	TIMELINE INDICATOR: 0.0 = THIS RECORD LIES ON AN EXISTING TIMELINE 7.0 = THIS RECORD BEGINS A NEW TIMELINE		
9	DATA RECORD NUMBER		
10 - 12	SPARES		
13	BO-X	OFFSET USED FOR SMH BX	
14	BO-Y	OFFSET USED FOR SMH BY	
15			
16	WORDS 15 TO 19 FOR SMH USE ONLY		
17			
18			
19			
20	SPIN PERIOD AVERAGE,PREVIOUS HOUR.		
21	GSE-X		
22	GSE-Y SATELLITE POSITION VECTOR IN GSE COORDINATES		
23	GSE-Z (AT TIME OF FIRST POINT IN THIS RECORD)		
24-168	SPARES		
	* * * * * * * * * HOVESTADT ALGORITHM * * * * * * * * * *		
169	PROLP(1)	0.17-0.4MEV PROTONS	1ST OF 4
.			
.			
172	PROLP(4)	0.17-0.4MEV PROTONS	4TH OF 4
173	ALFLA(1)	0.12-0.25MEV ALPHAS	1ST OF 4
.			
.			
176	ALFLA(4)	0.12-0.25MEV ALPHAS	4TH OF 4
177	HEAVYS(1)	HEAVIES (Z>2) GT 0.1MEV	1ST OF 4
.			
.			
180	HEAVYS(4)	HEAVIES (Z>2) GT 0.1MEV	4TH OF 4
181	PROHP1(1)	5-10MEV PROTONS	1ST OF 4
.			
.			
184	PROHP1(4)	5-10MEV PROTONS	4TH OF 4

185	PROHP2(1)	10-20MEV PROTONS	1ST OF 4
.			
.			
188	PROHP2(4)	10-20MEV PROTONS	4TH OF 4
* * * * * * * * * MANEUVER INFORMATION * * * * * * * * * *			
189	MANUVR(1)	MANEUVER INDICATORS FOR EACH OF THE TWELVE	
190	MANUVR(2)	5 MINUTE(APPROX) INTERVALS OF THIS RECORD:	
191	MANUVR(3)	0.0 = NO MANEUVER IN THIS INTERVAL	
192	MANUVR(4)	7.0 = MANEUVER INDICATED DURING THIS INTERVA	
193	MANUVR(5)		
194	MANUVR(6)		
195	MANUVR(7)		
196	MANUVR(8)		
197	MANUVR(9)		
198	MANUVR(10)		
199	MANUVR(11)		
200	MANUVR(12)		
* * * * * * * * * SMITH ALGORITHM (MAGNETOMETER) * * * * * * * * * *			
201	BZ(1)	SPIN AXIS COMPONENT	
202	BX(1)	SATELLITE-SUN LINE COMPONENT	MAG FIELD VECTOR
203	BY(1)	3RD COMPONENT OF TRIAD	1ST OF 60 VECT
204	BMAG(1)	MAGNITUDE	
205	BDELTA(1)	LATITUDE	MAGNETIC FIELD VECTOR
206	BPHI(1)	LONGITUDE	1ST OF 60 VECTORS
207-554	2ND THROUGH 59TH MAGNETIC FIELD VECTORS.		
555	BZ(60)	SPIN AXIS COMPONENT	
556	BX(60)	SATELLITE-SUN LINE COMPONENT	MAG FIELD VECTOR
557	BY(60)	3RD COMPONENT OF TRIAD	60TH OF 60 VEC
558	BMAG(60)	MAGNITUDE	
559	BDELTA(60)	LATITUDE	MAGNETIC FIELD VECTOR
560	BPHI(60)	LONGITUDE	60TH OF 60 VECTORS
* * * * * * * * * STEINBERG ALGORITHM * * * * * * * * * *			
561	RAMAP1(1)	AVERAGE VOLTAGE AND RMS (1000KHZ.)	
562	RARMS1(1)	1ST OF 30 SETS	
.			
.			
619	RAMAP1(30)	AVERAGE VOLTAGE AND RMS (1000KHZ.)	
620	RARMS1(30)	30TH OF 30 SETS	
621	RAMAP2(1)	AVERAGE VOLTAGE AND RMS (200KHZ.)	
622	RARMS2(1)	1ST OF 30 SETS	
.			
.			
679	RAMAP2(30)	AVERAGE VOLTAGE AND RMS (200KHZ.)	
680	RARMS2(30)	30TH OF 30 SETS	

Table 2 (Continued)

	* * * * * * * * * ANDERSON ALGORITHM * * * * * * * * * *		
681	EFLUX(1)	PARTICLE FLUX, ENERGY > 15KEV	1ST OF 1[illegible]
.			
.			
.			
692	EFLUX(12)	PARTICLE FLUX, ENERGY > 15KEV	12TH OF 12
693	XRAY(1)	COUNTS PER SECOND,20-37 KEV	1ST OF 12
.			
.			
.			
704	XRAY(12)	COUNTS PER SECOND,20-37 KEV	12TH OF 1[illegible]
	* * * * * * * * * BAME ALGORITHM * * * * * * * * * *		
705	IONPD(1)	ION PSEUDO-DENSITY (PARTICLES/CC)	1ST O[illegible]
.			
.			
.			
716	IONPD(12)	ION PSEUDO-DENSITY (PARTICLES/CC)	12TH O[illegible]
717	WINDPS(1)	SOLAR WIND PSEUDO-SPEED (KM/SEC)	1ST O[illegible]
.			
.			
.			
728	WINDPS(12)	SOLAR WIND PSEUDO-SPEED (KM/SEC)	12TH O[illegible]
729	WINDPA(1)	SOLAR WIND PSEUDO FLOW ANGLE (DEG)	1ST O[illegible]
.			
.			
.			
740	WINDPA(12)	SOLAR WIND PSEUDO FLOW ANGLE (DEG)	12TH O[illegible]
	* * * * * * * * * SCARF ALGORITHM * * * * * * * * * *		
741	PLA31(1)	PLASMA WAVE 31HZ MAX. VOLTAGE	1ST OF
742	PLA1K(1)	PLASMA WAVE 1KHZ MAX VOLTAGE	1ST OF
743	PLA31K(1)	PLASMA WAVE 31KHZ MAX VOLTAGE	1ST OF
744	PLANT(1)	PLASMA WAVE ANTENNA STATUS	1ST OF
.			
.			
.			
785	PLA31(12)	PLASMA WAVE 31HZ MAX. VOLTAGE	12TH OF
786	PLA1K(12)	PLASMA WAVE 1KHZ MAX VOLTAGE	12TH OF
787	PLA31K(12)	PLASMA WAVE 31KHZ MAX VOLTAGE	12TH OF
788	PLANT(12)	PLASMA WAVE ANTENNA STATUS	12TH OF
	* * * * * * * * * VON ROSENVINGE ALGORITHM * * * * * * * * * *		
789	PARTLO(1)	PARTICLES, LOW RANGE 4-57MEV/NUCLEON	1ST [illegible]
.			
.			
792	PARTLO(4)	PARTICLES, LOW RANGE 4-57MEV/NUCLEON	4TH [illegible]
793	PARTHI(1)	PARTICLES, HIGH RANGE 18-70MEV/NUCLEON	1[illegible]
.			
.			
796	PARTHI(4)	PARTICLES, HIGH RANGE 18-70MEV/NUCLEON	4TH [illegible]

Table 2 (Continued)

(HYNDS)

* * * * * * * * * DE FEITER ALGORITHM * * * * * * * * * *			
797	PROLO1(1)	PROTONS 78-205 KEV	1ST OF 3
798	PROLO2(1)	PROTONS 536-1400KEV	1ST OF 3
799	ISOTRO(1)	ISOTROPY INDEX	1ST OF 3
800	QUAD(1)	QUADRANT	1ST OF 3
.			
.			
.			
805	PROLO1(3)	PROTONS 78-205 KEV	3RD OF 3
806	PROLO2(3)	PROTONS 536-1400KEV	3RD OF 3
807	ISOTRO(3)	ISOTROPY INDEX	3RD OF 3
808	QUAD(3)	QUADRANT	3RD OF 3
* * * * * * * * * MEYER ALGORITHM * * * * * * * * * *			
809	LOWEE(1)	LOW ENERGY 5-150MEV ELECTRONS RATE	1 OF
810	LOWEE(2)	LOW ENERGY 5-150MEV ELECTRONS RATE	2 OF

ISEE-3

MAGNETIC FIELD INVESTIGATION:

A Brief Description

of the

Experiment

and the

Data Pool

Processing Algorithm

A. M. A. Frandsen

2 October, 1978

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MAGNETIC FIELD INVESTIGATION

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Jet Propulsion Laboratory

A. BRIEF EXPERIMENT DESCRIPTION

1. Experiment Objectives

The objectives of the ISEE-3 magnetic field experiment are to investigate the following:

(a) The effect of solar activity on the interplanetary magnetic field and solar wind parameters.

(b) The persistence, as well as changing character, of corotating features in the solar wind.

(c) Changes in large scale solar wind features over great distances, by correlating with data from planetary missions (Pioneer Venus, Pioneer Saturn and Voyager).

(d) Waves and other irregularities in the solar wind, their frequency content and phase relationships.

(e) The velocity of propagation and dispersion of field fluctuations between ISEE-3 and ISEE-1 & 2, while the latter are in the interplanetary medium.

(f) Plasma instabilities in the solar wind.

(g) The response of the magnetosphere to solar wind variations.

(h) The relationship between solar wind parameters and the extent and properties of the earth's magnetosheath.

2. Instrument Description

The ISEE-3 magnetometer experiment consists of a sensor mounted at the outboard end of a 3-meter boom and an electronics package located within the main body of the spacecraft. A Project-supplied data processing unit (DPU) provides 2-way buffering between the vector helium magnetometer (VHM) electronics package and the spacecraft data system. It conditions the spacecraft command and control signals for use by the instrument and it buffers the magnetometer outputs as they are read into the main telemetry stream. In addition, the DPU generates a magnetic sector pulse for on-board use by other experiments.

To simplify data reduction, the VHM sensor is mounted with its sensitive axes parallel to the principal axes of the spacecraft. The sensor detects the three components of the ambient steady-state magnetic field vector and fluctuations in these components up to 3 Hz. The operating principles of the VHM sensor are based on the effect of an external magnetic field upon the efficiency with which a population of metastable helium atoms may be optically pumped. Figure 1 illustrates

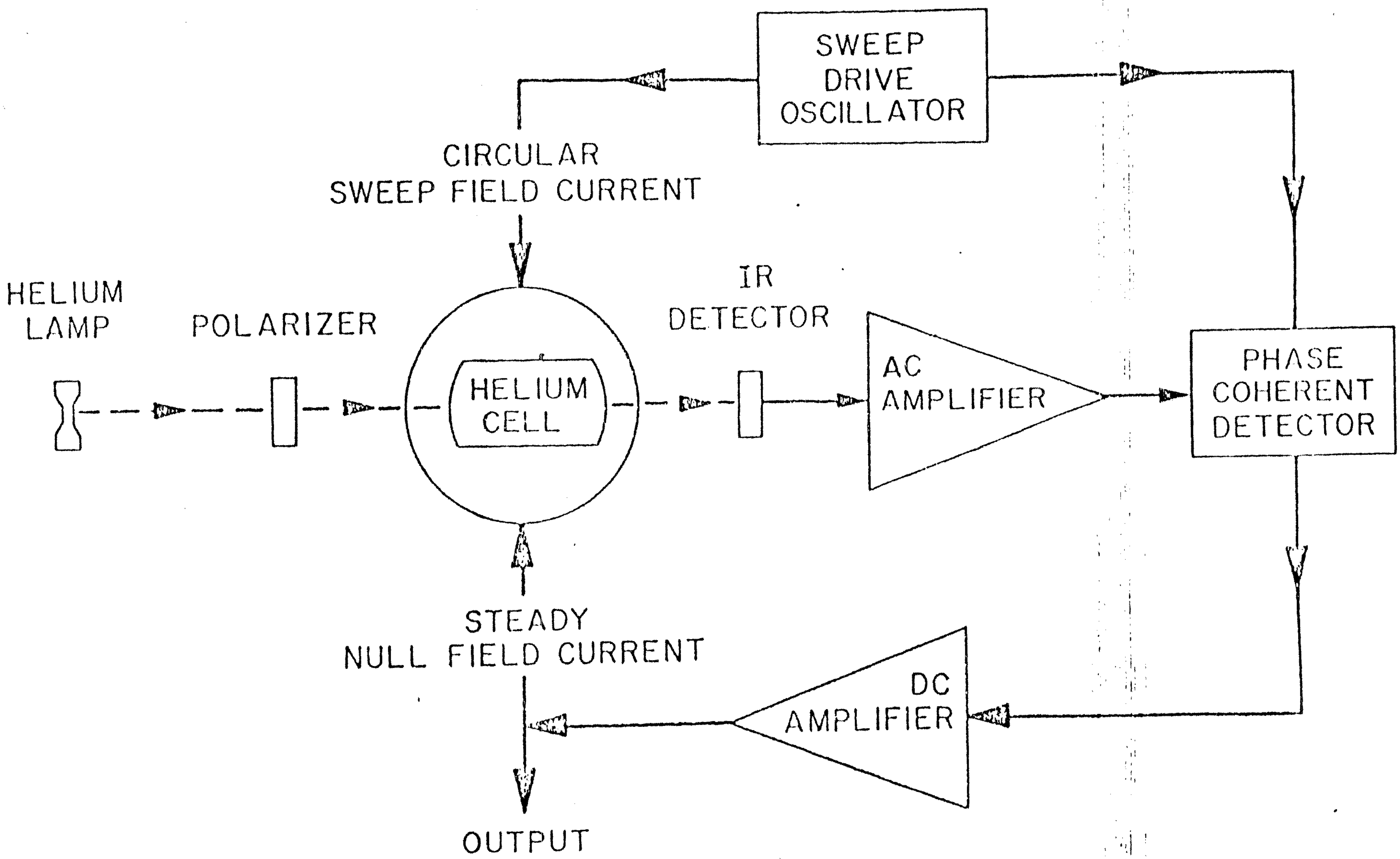


FIGURE 1 VECTOR HELIUM MAGNETOMETER SIMPLIFIED SCHEMATIC

several of the essential parts of the instrument. In the sensor, a collimated beam of infrared (IR) radiation from a helium lamp is circularly polarized to optically pump metastable helium atoms in the absorption cell. Properly phased sweep currents drive three mutually orthogonal coil pairs surrounding the cell and create a constant-amplitude rotating field vector. The sweep vector intensity modulates the emerging IR radiation. Brightness variations are then converted into a low frequency electrical signal at the IR detector. When no external magnetic field is present, only the second harmonic of the applied sweep frequency appears at the detector output. The main electronic assembly is designed to sense departures from the pure second harmonic signal. Synchronous demodulators are used to generate currents that are fed back to the helmholtz coils at the sensor. In this closed loop mode of operation, the ambient magnetic field acting upon the sensor is nulled to zero, and the three feedback currents accomplishing the nulling action are read as outputs. A multiplexer and a 9-bit analog-to-digital converter (ADC) are used in the process.

The three field components are sampled in rapid succession with less than 10 milliseconds of skewing. Each 9-bit conversion includes the sign of the component and eight bits of amplitude information. A 27-bit vector measurement is then combined with three additional bits that convey which of eight ranges the instrument is operating on. These data are held in a 30-bit storage register until a readout is requested by the spacecraft data system. At the nominal telemetry rate, (2048 information bits per second), six vector readings are acquired each second. They are nearly equally spaced in time (e.g., to within 4 milliseconds at 2048 bps). The instrument's sampling rate scales directly with the prevailing telemetry rate.

The VHM has eight linear operating ranges giving a wide, effective dynamic range. Normally, it is operated in a mode where the upranging and downranging take place automatically. However, it can be commanded to any specific range through a sequence of ground commands. In either mode, all three axes switch range at the same time. Table I lists the eight operating ranges and the number of nanotesla (gamma) per least significant bit (LSB).

The instrument's calibration is checked in flight on a weekly basis by commanding the VHM in-flight calibration (IFC) sequence. Prelaunch mechanical alignment of the sensor was determined within 0°1.

B. MAGNETOMETER DATA POOL ALGORITHM DESCRIPTION

1. Data Conversion

The ISEE-3 data pool algorithm for the magnetometer experiment converts telemetry counts into field units, performs intermediate calculations and averages the results. The basic relationship used for the conversion is:

$$B_i = K_{i,r} \times (M_i - 255.5) - O_{i,r}, \text{ for } i = X, Y \text{ or } Z, \text{ and } r = 0, 1, \ldots 7$$

Where:

(a) M_i is the telemetry count of the ith component of a given measurement.

(b) $K_{i,r}$ is the *ith* axis scale factor (gamma/count) for VHM operating range r.

TABLE I

VHM OPERATING RANGES

Range Number	Full-Scale gamma (1 gamma = 10^{-9} tesla)	Sensitivity gamma/LSB
0	±4	0.015
1	±13	0.051
2	±43	0.17
3	±145	0.57
4	±632	2.5
5	±3,870	15.0
6	±22,630	88.0
7	±136,000	530.0

(c) 255.5 is the nominal zero level count for each 9-bit component measurement.

(d) $O_{i,r}$ is the offset field (gamma) at the sensor location with respect to the nominal zero level.

Both $K_{i,r}$ and $O_{i,r}$ are stored as 3 x 8 arrays. Provision is made in the algorithm for automatically updating the elements of $O_{i,r}$ using the magnetometer data from the previous time interval processed. The scale factors $K_{i,r}$ are checked weekly in flight but are not automatically updated since they have been found on earlier missions using similar instruments not to change significantly.

Once the measurements have been converted from telemetry counts into magnetic field units, each vector is transformed into an inertial coordinate system based upon the spacecraft spin axis and the direction toward the sun. At the nominal 2048 ibps telemetry rate, the data pool algorithm acquires updated atitude information from the spacecraft's sun sensor once every 32 seconds. For each field measurement, the time difference is determined between it and the last occurring valid sun pulse readout. Using telemetered knowledge of the spacecraft spin rate, the algorithm then performs a matrix multiplication which rolls each measurement back through an angle corresponding to the time difference. Vector-by-vector, the components are transformed into the inertial coordinate system based upon $\hat{S}$, the direction toward the sun and $\hat{I}$, the + Z spin axis of the ISEE spacecraft. These inertial coordinates are called the ISEE Inertial (IS) system and are illustrated in Figure 2.

After the magnatometer data have been despun into ISEE inertial coordinates, a vector magnitude and two angles are computed for every set of component values. Every vector measurement is

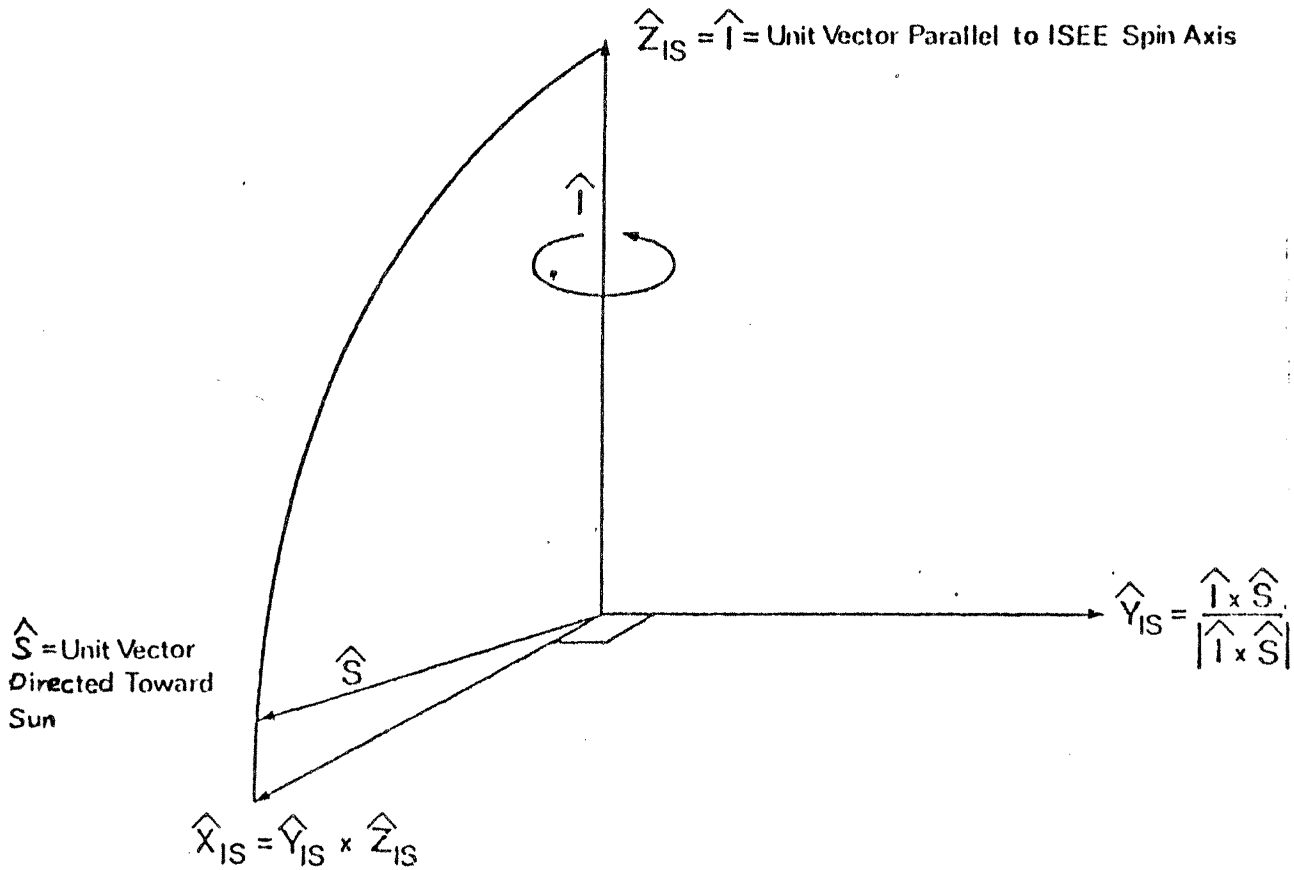


FIGURE 2 INERTIAL (IS) COORDINATE SYSTEM

therefore represented in both rectangular and spherical form. The angle δ_B is the field latitude in the IS system and ϕ_B the longitude angle. The six quantities thus determined are then separately averaged to form 1-minute averages appearing on the data pool tape:

$$\overline{B_{XIS}},\quad \overline{B_{YIS}},\quad \overline{B_{ZIS}},\qquad \overline{|B|},\quad \overline{\delta_B},\quad \overline{\phi_B}$$

Precautions are taken to avoid errors which can result from averaging azimuth angles that lie in the semicircle containing the 0°/360° branch cut.

Both spherical and rectangular field component averages are included in the pooled data because the two representations convey different information. The average field magnitude, for example, could be large and nearly constant during a natural disturbance while at the same time the field direction is so variable that the cartesian components average to small values. Thus, the field magnitude determined from the three component averages could be quite small. The difference in the two representations of B magnitude gives the power in the fluctuations, i.e.,

$$\sigma_B^2 = \left[\overline{|B|}\right]^2 - \left[\bar{B}_{XIS}^2 + \bar{B}_{YIS}^2 + \bar{B}_{ZIS}^2\right]$$

The user of the pooled data should be aware however that the six field averages are liable to be somewhat in error owing to the preliminary nature of the offset estimates used in the data reduction.

2. Offset Determinations

It is expected that when the pooled data are processed, the magnetometer offset will be known to 0.1 gamma. However, the precise values will always be lagging because an extended interval of data is required to determine them accurately, (e.g., ~ 1 month). When the algorithm uses biased estimates of the offset field components, the spacecraft spin frequency modulates B_{XIS} and B_{YIS}. The spin modulation is averaged out in the pooled data variables $\bar{B}_{XIS}$ and $\bar{B}_{YIS}$, but not in

23

$\overline{|B|}$, the average of the instantaneous vector magnitudes. Futhermore, biased estimates of the Z axis offset field component are reflected directly in the quantity $\bar{B}_{ZIS}$.

In order to keep the offset errors low, the algorithm computes hourly estimates of the two offset field components in the spacecraft spin plane by separately averaging the X and Y axis measurements. The new values are then used to update the spin plane offsets in the next hour's processing. The offset component parallel to the spacecraft spin axis is also estimated hourly by determining the value of Z axis field which minimizes the variance in the square of the field magnitude. However, from hour to hour these estimates are characterized by a fair amount of statistical scatter. Thus, the hourly spin axis offset field estimates are themselves averaged over one week and the result is used as the Z axis offset in the next week's processing. Many of the magnetometer parameters on the data pool tape are sums or products of the instantaneous vector components used in determining the offsets to be used on the following tape. The offset values used in creating the current tape are also given so that, if it becomes necessary, results may be corrected when more accurate values become available.

Attempts have been made in the data pool algorithm to subtract small interference fields known to originate on the spacecraft. Telemetered knowledge of the state of interfering subsystems is used for accessing a look-up table that gives the values to be subtracted from the magnetometer data. The algorithm also edits out data for time intervals during which the instrument is undergoing an in-flight calibration sequence, or when a spacecraft attitude maneuver is underway.

3. **Sources of Error**

Errors in the apparent field direction can come about not only when incorrect offset field estimates are used,

$$(e.g., \tan^{-1}\left[0.1\gamma \text{ error}/5\gamma \;|B|\right] \approx 1°),$$

but also through timing errors. Incorrect determinations of the occurrence of a sun pulse, or the time at which a vector sample was acquired, or an incorrect estimate of the spacecraft spin period can all lead to an error in the inertial field longitude. The algorithm assumes the nominal values for the spacecraft clock frequency and for the telemetry frame rate. Early indications are that the actual values are within 0.1% of the nominal frequencies. The resulting roll error in the pooled data is therefore less than 0.001 x 360° (max), or less than one-third of a degree due to this cause.

The algorithm also assumes the nominal mechanical alignment of the two oppositely directed spacecraft sun sensors, and of the VHM sensor itself. Prelaunch optical sighting and electronic calibrations showed the pulse coming from each sun sensor to be within 0.35° of nominal. Furthermore, all three magnetometer axes were found to be within 0°.1 of nominal. Generally speaking then, the probable error in field direction determined from the data pool tapes is approximately a degree or two. Larger errors can occur, however, when the ambient field becomes small compared to the typical interplanetary value at 1 AU. This error comes about because, in a fixed analysis time on a multirange instrument, the uncertainty in the offset field estimates is not necessarily reduced in direct proportion to the ambient field.

THE 3-D RADIO MAPPING EXPERIMENT -- STEINBERG

Experiment Description

The principal purpose of this experiment is to map the trajectories of type III solar bursts by determining the angular coordinates of a localized source as a function of frequency and time. The radial distance may be obtained by triangulation with observations from another satellite, or from assumptions about the density of the interplanetary medium.

Two perpendicular dipole antennas are used. A 90 m tip-to-tip antenna in the spin plane of ISEE-3, referred to as the S antenna, sees a signal which is modulated because of the changing aspect of the source due to the spacecraft's rotation. The Z antenna is 14 m tip-to-tip, along the spin axis. From the S measurements, the azimuth and strength of the source are obtained. Comparison of S and Z observations provides the elevation of the source from the spin plane and an estimate of its angular diameter.

Measurements are made in 12 frequency channels, between 30 and 1980 kHz, in each of two bandwidths, 10 kHz (B), and 3kHz (N). Every 1.5 seconds (which is nearly one-half spin), one measurement of Z and 11 of S are made for one frequency channel in each bandwidth, interleaving B and N observations This provides nearly the full range of modulation possible from the S antenna. (At data rates lower than 2048 bps, proportionally fewer S samples are taken.) The frequency channel is selected according to a fixed 72 step program, designed to observe each frequency at uniform intervals but with shorter intervals for the higher frequencies. Alternate modes of observation are possible using only the B or only the N bandwidth.

For any single measurement, the signal passes a logarithmic square-law detector so that the output receiver voltage V is roughly proportional to the logarithm of the antenna temperature T_A. V is digitized into 256 steps between 0 and 5.

Algorithm for the Data Pool Tape

Average voltages at two frequencies and the rms values are supplied on the data pool tape. The averages are made of all the S B samples at the selected frequency which were obtained in successive 128 second intervals (one major frame at the top data rate). The tape record contains 30 averages (one "ISEE hour") at 1000 kHz, each followed by its rms value, after which come 30 averages at 233kHz, each followed by its rms value. (if only N band observations are being made, averages are of all S N samples, and the lower frequency is 188kHz. There is no flag on the tape to denote this.)

The average voltage measures the strength of the signal. The rms values are a good indicator of the degree of modulation present; the larger the rms value, the more deeply modulated is the signal, denoting a narrow source near the spin plane. The full data record is needed for direction finding.

An approximate transformation between voltage and antenna temperature is

$$\log T_A = 5.938 + 0.712*V + 0.132*V^2 \qquad 1000 \text{ kHz}$$

$$\log T_A = 6.217 + 0.712*V + 0.132*V^2 . \qquad 233 \text{ kHz}$$

NOTES ON THE SOLAR WIND PLASMA PARAMETERS ON THE ISEE-3 DATA POOL TAPE

Quantities have been derived by approximate algorithms only; to distinguish these from more accurate quantities have referred to these quantities as the pseudo wind speed, pseudo density, etc. The following caveats and comments apply:

1) IONPD (ion density) is in units of cm^{-3} and can have values ranging from 0 to 100 cm^{-3}. Because of a number of factors, including the fact that only relatively simple-minded algorithms can be used for the data pool tape, we can't quote an accuracy any better than a factor of two for the ion density.

2) WINDPS (speed) is in km sec^{-1} and we expect values ranging from 250 to 850 km sec^{-1}, with an accuracy of $\pm$ 5%.

3) WINDPA (direction in the plane of the ecliptic) is in degrees, and we expect values ranging between $\pm$ 15° of the solar direction with an accuracy of $\pm$ 3°.

No background corrections are made and the values are instantaneous as opposed to averages.

DESCRIPTIVE EXPLANATION - PLASMA WAVE DATA ON THE ISEE-3 COMMON DATA POOL TAPE

by

Frederick L. Scarf

The ISEE-C plasma wave instrument has three spectrum analyzers with a total of 19 different frequency channels that cover the range from 0.3 Hz to 100 kHz. The main analyzer, which uses 16 continuously active automatic gain control amplifiers, gives two complete spectral scans per second in each of 16 filter channels. The instrument sensors include a high sensitivity magnetic search coil (B), and electric antennas with effective lengths of 45 meters (U-axis or V-axis) and 0.6 meter (short-E) [see Scarf et al. (1978) for a detailed description of the instrumentation]. The plasma wave output on the common data pool tape contains the peak values (uncalibrated output voltages; 5-minute accumulations) from three channels of the main 16-channel analyzer (31 Hz, 1 kHz and 31 kHz), along with an indicator of the antenna in use (U, V, short-E or B). The calibration data and a brief interpretation of the ISEE-3 plasma wave output on the data pool tape are given below.

The top part of Figure 1 contains a typical production plot of the <u>full</u> output from the 16-channel analyzer, and this serves as a reference for the data pool tape explanation. For all channels, this production plot has both peaks (isolated dots) and averages (the tops of the blackened regions) computed using 128-second accumulations of telemetry output values ($0 \leq \phi \leq 5$ volts), and the sensor-in-use is indicated below the time axis. This plot shows whistler mode activity (17.8, 31 and 56 Hz channels), impulsive ion acoustic wave bursts (sporadic activity with high peak-to-average ratios in the 311 Hz to 5.6 kHz channels) along with solar radio bursts, electron plasma oscillations and auroral kilometric radiation (on the 31 kHz, 56 kHz and 100 kHz channels). The bottom figure contains a plot of the common data pool tape output from the same day, and a comparison of the two drawings gives a general indication of the way to interpret the data pool plots.

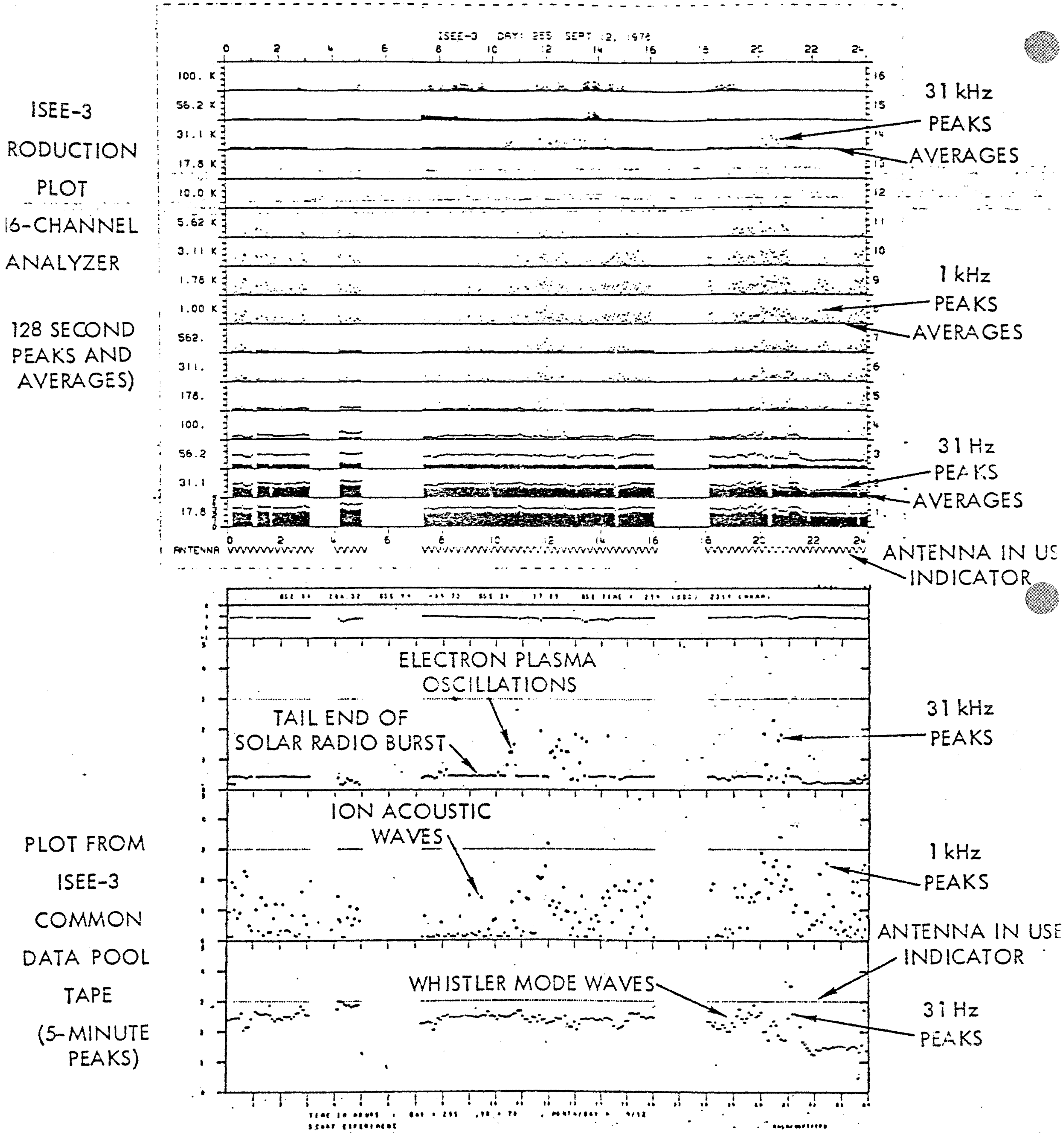
The calibrated E-field spectral densities can readily be derived from the telemetry output plots because for each channel the E value [in volts/meter $(Hz)^{1/2}$] is related to the telemetry output (ϕ - 0 to 5 volts) by

$$E = ae^{b\phi}$$

For either of the long (U- or V-axis) antennas, the calibration table is

Channel	31 Hz	1 kHz	31 kHz
a	1.06×10^{-7}	1.97×10^{-8}	3.26×10^{-9}
b	1.9217	1.9567	1.9616

For the short antenna, we must use E(short) = 74 x E(long). The B-sensor can be connected to the 16-channel analyzer and in this case we can use the same b-values with $a(B) = 3.2 \times 10^{-5}\ \gamma/(Hz)^{1/2}$ at 31 Hz and $a(B) = 9.7 \times 10^{-7}\ \gamma/(Hz)^{1/2}$ at 1 kHz (the search coil is not sensitive at 31 kHz). For the common data pool plots the sensor-in-use is given by the horizontal dotted line, according to the following code: 1 volt level for short electric, 2 volt level for U antenna, 3 volt level for V antenna, and 4 volt level for search coil.


ISEE-3 DAY: 255 SEPT 12, 1978
ISEE-3
RODUCTION
PLOT
16-CHANNEL
ANALYZER
128 SECOND
PEAKS AND
AVERAGES)
31 kHz
PEAKS
AVERAGES
1 kHz
PEAKS
AVERAGES
31 Hz
PEAKS
AVERAGES
ANTENNA IN US
INDICATOR
ANTENNA
ELECTRON PLASMA
OSCILLATIONS
TAIL END OF
SOLAR RADIO BURST
ION ACOUSTIC
WAVES
WHISTLER MODE WAVES
31 kHz
PEAKS
1 kHz
PEAKS
ANTENNA IN USE
INDICATOR
31 Hz
PEAKS
PLOT FROM
ISEE-3
COMMON
DATA POOL
TAPE
(5-MINUTE
PEAKS)

NOTES ON THE 4-57 MeV AND 18-70 MeV PROTON + ALPHA COUNTING RATES

by
T. von Rosenvinge

The ISEE-3 Medium Energy Cosmic Ray Experiment has two High Energy Telescopes (HETs) which are designed to measure the charge composition of energetic particles from charge 1 to charge 26 over an energy range from a few MeV/nucleon to several hundred MeV/nucleon. One of these telescopes is shown schematically in Figure 1; the telescope i cyli drically symmetric around the vertical axis in the figure. Protons (and alphas) which enter A_1 and A_2 but not C_4 or the guard lie in the energy interval 4-57 MeV/nucleon (the guard "detector" is the composite of the ring detectors which encircle each of the "C" detectors; cf. Figure ¯). Such events are counted by rate counters during the half of the time when each telescope is in high gain. This rate is characterized by the coincidence condition $A_1 \cdot A_2 \cdot \overline{C_4} \cdot \overline{G_1}$. Particles detected to satisfy this condition are referred to as A-Stopping (or AST) events. Protons (and alphas) which enter B1 and B_2 but not C_1 or the guard lie in the energy interval 18-70 MeV/nucleon. Such B-stopping (or BST) events are characterized by the coincidence conditions $B_1 \cdot B_2 \cdot SB \cdot \overline{C_1} \cdot \overline{G_1}$. These rates are also available less frequently as sectored rates.

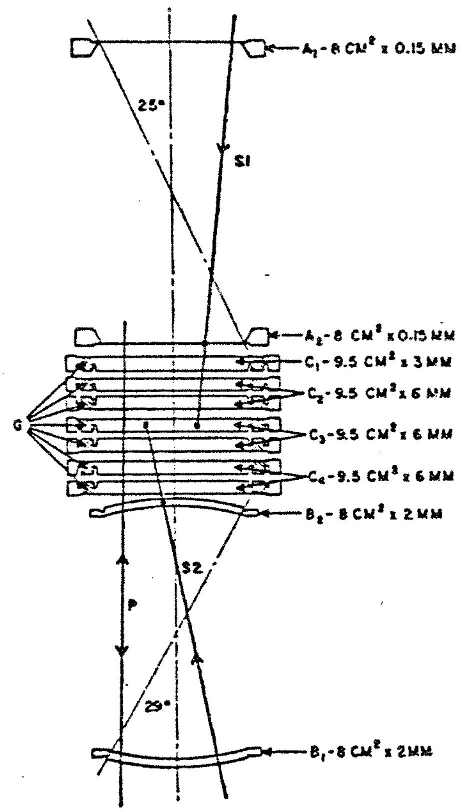


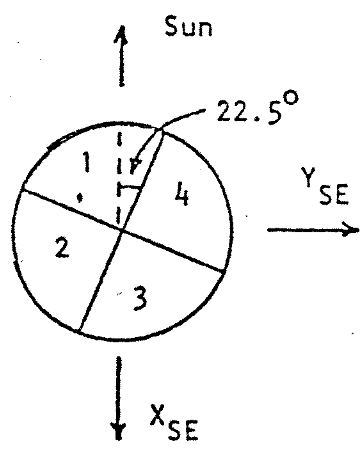
Figure 1

The spirit of the data pool tapes is that it should be "quick and dirty", i.e. in return for simplified algorithms for data analysis it will be possible for a wide community to gain access to data from a variety of experiments simultaneously and long before detailed data reduction can be completed. In this spirit we provide 15 minute averaged values of the counting rates $A_1 \cdot A_2 \cdot \overline{C_4} \cdot \overline{G_1}$ and $B_1 \cdot B_2 \cdot SB \cdot \overline{C_1} \cdot \overline{G_1}$ from one of the HETs (HET-II). In our own detailed data reduction we will use pulseheight analysis data for the A-stopping and B-stopping events to remove background events, to separate each charge, to correct for edge effects, and to take into account the energy dependence of the geometry factor (for AST the geometry factor for each telescope varies from .82 to 1.24cm^2-steradian and for BST the geometry factor for each telescope varies from .82 to 1.69cm^2-steradian). We will also examine sectored rates to determine spin aliassing and we will assess dead-time corrections at high counting rate levels (≳5,000 counts/sec). None of these is considered in the algorithm which has been used for the Data Pool Tape.

The low energy proton experiment on ISEE-3 consists of three identical telescopes, inclined at 30°, 60° and 135° respectively, to the spin axis of the spacecraft. Each telescope measures protons in the energy range 35 keV to 1. MeV, in 8 logarithmically spaced channels. The output of each telescope is separately stored for each of 8 equi-angular sectors, and this applies to every energy channel except channel 8, which has only 4 equi-angular sectors. A general outline of the experiment is given by Balogh et al (Geoscience Electronics GE16, 176, 1978). Detailed descriptions are to be found in Balogh and Iversen (Space Sci.Instrum. 3, 187, 1977) and van Rooijen et al (Space Sci.Instrum. - to be published 1979).

The data on the Data Pool tape is taken from the telescope inclined at 60° to the spin axis i.e. 30° from the equatorial plane of the spacecraft. Two particle fluxes are supplied, obtained from the spin-averaged values for Channel 3 and Channel 4 combined, and from Channel 8. These correspond to energy ranges 91-237 keV, and 1.0 MeV to 1.6 MeV, respectively. The data are averaged over 21 minutes and 20 seconds, so that three sets of values are supplied per data record on the tape. The start of the first averaging period corresponds to the first time in the record. The fluxes are expressed in p cm^{-2} $sterad^{-1}$ sec^{-1}, using a geometrical factor of 0.05 cm^2 sterad.

A measure of particle anisotropy is also supplied. It is taken from Channel 8 and consists of the value $\frac{I_{MAX} - I_{MIN}}{I_{MAX} + I_{MIN}}$, where I_{MAX} and I_{MIN} are the maximum and minimum counting rates observed in the four sectors of Channel 8. Also given is the number of the quadrant in which I_{MAX} was observed i.e. 1 to 4. If $I_{MAX} \sim I_{MIN}$, the number 5 is inserted in this value. The convention for the numbering of quadrants with respect to the spacecraft-sun line is shown in figure 1, which is a projection in the ecliptic plane, looking down from the positive Z direction (S.E co-ordinate system).



In interpreting the data caution needs to be used, and it is strongly recommended that all users of the data verify and/or clarify with the Principle Investigator any uncertainties or peculiarities concerning the data.

To assess the statistical accuracy of the data it should be remembered that converting the flux back into a counting rate, using the geometric factor and the time averaging period will only give the minimum error, since some data may have been rejected in forming the average.

So far as the physical significance of the data is concerned it should be remembered that many of the events seen by this experiment are strongly collimated in azimuth as well as longitude, so that the intensity seen by one telescope may be significantly lower than the intensity observed in the direction of maximum intensity relative to the ecliptic plane. With regard to the anisotropy measurement it should be remembered that many of the events observed have steep energy spectra, so that the statistics in Channel 8 may be insufficient to record a very strong anisotropy which exists in the lower energy channels.

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'HECA 1/16/81

TO: All Recipients of ISEE-3 Data Pool Tapes

FROM: John H. Schmidt

SUBJECT: Reshipment of ISEE-3 Data Pool Data

The Bame ION Solar Wind Experiment algorithm became ineffective on February 19, 1980 when the ION portion of the Bame experiment failed. The GSFC data pool algorithm has been changed to use Bame's electron data as input and we are producing the solar wind speed and density for inclusion on the data pool tapes. The angular information is no longer available and is an unused field on the tapes since the format is not changed.

Some of these tapes have already been shipped without this announcement.

John H. Schmidt

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* Do not have data on the ISEE-3 Data Pool Tape
** Algorithm Descriptions are not included in this Document

DATA POOL - DATA RECORD

DESCRIPTION
(ALL VALUES ARE FLOATING POINT)

WORD NUMBER			
1	Day of Year, Record Start		
2	Seconds of Day, Record Start		
3	Clock, Record Start. High Order Portion		
4	Clock, Record Start. Low Order 21 Bits		
5	Recovery Factor: (Minor Frames Processed)/(7.5 x 256.), For 512 BPS (Minor Frames Processed)/(15 x 256.), For 1024 BPS (Minor Frames Processed)/(30 x 256.), For 2048 BPS		
6	Bit Rate: 1.0 = 512 BPS (Backup) 2.0 = 1024 BPS (Low) 4.0 = 2048 BPS (High)		
7	Dummy Record Indicator: 0.0 = At least one Minor Frame of Data within this Record's Span 7.0 = No Data within the Span of this Record. A dummy Record.		
8	Timeline Indicator: 0.0 = This Record lies on an Existing Timeline 7.0 = This Record begins a new Timeline		
9	Data Record Number		
10-12	Spares		
13	BO-X	Offset used for SMH BX	
14	BO-Y	Offset used for SMH BY	
15			
16	Words 15 to 19 for SMH use only		
17			
18			
19			
20	Spin Period Average, Previous Hour.		
21	GSE-X		
22	GSE-Y Satellite Position Vector in GSE Coordinates		
23	GSE-Z (At Time of First Point in this Record)		
24-~~168~~ 166-168	Sat. Pos vectors at time of 60th point in rec.		

* * * * * * * * * * * * Hovestadt Algorithm * * * * * * * * * * * *

169	PROLP(1)	0.17-0.4MEV Protons	1st of 4
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172	PROLP(4)	0.17-0.4MEV Protons	4th of 4
173	ALFLA(1)	0.12-0.25 MEV Alphas	1st of 4
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.			
176	ALFLA(4)	0.12-0.25MEV Alphas	4th of 4
177	HEAVYS(1)	Heavies (Z>2) GT 0.1MEV	1st of 4
.			
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180	HEAVYS(4)	Heavies (Z>2) GT 0.1MEV	4th of 4
181	PROHP1(1)	5-10MEV Protons	1st of 4
.			
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184	PROHP1(4)	5-10MEV Protons	4th of 4
185	PROHP2(1)	10-20MEV Protons	1st of 4

DATA POOL FILE LABEL

DESCRIPTION
(ALL VALUES ARE FLOATING POINT)

WORD NUMBER*	
1	
	1440 Bits for GSFC Internal use.
N	
N+1	Satellite ID Number
N+2	Intended Recipient of this Tape. (See Table 2)
N+3	YY, Start of File, 2 Digits of Year.
N+4	DDD, Start of File, Day of Year.
N+5	SSSSS, Start of File, Seconds of Day.
N+6	YY, End of File, 2 digits of Year.
N+7	DDD, End of File, Day of Year.
N+8	SSSSS, End of File, Seconds of Day.
N+9	High Order Bits. Clock at Start of the Data Pool File.
N+10	Low Order 21 Bits. Clock at Start of the Data Pool File.
N+11	Group Number (Corresponding to the Telemetry Data Tape Group Number)
N+12	Minimum Value of Spin Period Found within this File in Seconds.
N+13	Maximum Value of Spin Period Found within this File in Seconds.
N+14	SMH1 Z-Offset used for this run.
N+15	SMH2 Number of Estimates made for Z-Offset above.
N+16	SMH3 Alpha used for Z-Offset above.
N+17	SMH4 Group Number of the Data Group used to Determine Z-Offset.
N+18	
.	
.	Spares.
.	
N+80	
N+81	Number of Time Lines (Maximum of 80)
N+82	Start Day of Year (1).
N+83	Start Seconds of Day (1).
N+84	High Order Bits of the Spacecraft Clock (1).
N+85	Low Order 21 Bits of Start Spacecraft Clock (1).
N+86	Bit Rate (1.0 for 512 BPS, 2.0 for 1024 BPS and , 4.0 for 2048 BPS)
N+87	Start Record Number.
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N+656	Start Day of Year (80).
N+657	Start Seconds of Day (80).
N+658	High Order Bits of Start Spacecraft Clock (80).
N+659	Low Order 21 Bits of Start Spacecraft Clock (80).
N+660	Bit Rate (1.0 for 512 BPS, 2.0 for 1024 BPS and, 4.0 for 2048 BPS)
N+661	Start Record Number (80).
N+662	
.	Fill to Equal Data Record Length.
810	

WORD NUMBER			
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188	PROHP2(4)	10-20MEV Protons	4th of 4
	* * * * * * * * * * * Maneuver Information * * * * * * * * * * * * *		
189	MANUVR(1)	Maneuver Indicators for each of the Twelve	
190	MANUVR(2)	5 Minute*approx) Intervals of this Record:	
191	MANUVR(3)	0.0 = No Maneuver in this Interval	
192	MANUVR(4)	7.0 = Maneuver Indicated during this Interval	
193	MANUVR(5)		
194	MANUVR(6)		
195	MANUVR(7)		
196	MANUVR(8)		
197	MANUVR(9)		
198	MANUVR(10)		
199	MANUVR(11)		
200	MANUVR(12)		
	* * * * * * * * * * * Smith Algorithm (Magnetometer) * * * * * * * * *		SEE-1 04C BEE-3 02I Magnetic field
201	BZ(1)	Spin Axis Component	
202	BX(1)	Satellite-Sun Line Component	Mag Field Vector
203	BY(1)	3rd Component of Triad	1st of 60 Vectors
204	BMAG(1)	Magnitude	
205	BDELTA(1)	Latitude	Magnetic Field Vector
206	BPHI(1)	Longitude	1st of 60 Vectors
207-554	2nd Through 59th Magnetic Field Vectors.		
555	BZ(60)	Spin Axis Component	
556	BX(60)	Satellite-Sun Line Component	Mag Field Vector
557	BY(60)	3rd Component of Triad	60th of 60 Vector
558	BMAG(60)	Magnitude	
559	BDELTA(60)	Latitude	Magnetic Field Vector
560	BPHI(60)	Longitude	60th of 60 vectors
	* * * * * * * * * * * Steinberg Algorithm * * * * * * * * * * * *		Radio Mapping BEE-3-10B
561	RAMAP1(1)	Average Voltage and RMS (1000KHZ.)	
562	RARMS1(1)	1st of 30 Sets	
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619	RAMAP1(30)	Average Voltage and RMS (1000KHZ.)	
620	RARMS1(30)	30th of 30 Sets	
621	RAMAP2(1)	Average Voltage and RMS (200KHZ.)	
622	RARMS2(1)	1st of 30 Sets	
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679	RAMAP2(30)	Average Voltage and RMS (200KHZ.)	
680	RARMS2(30)	30th of 30 Sets	

WORD NUMBER			
		* * * * * * * * * * * * * * * * * Anderson Algorithm * * * * * * * * * * *	
681	EFLUX(1)	Particle Flux, Energy > 15KEV	1st of 12
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692	EFLUX(12)	Particle Flux, Energy > 15KEV	12th of 12
693	XRAY(1)	Counts per Second, 20-37 KEV	1st of 12
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704	XRAY(12)	Counts per Second, 20-37 KEV	12th of 12
		* * * * * * * * * * * * * * * Bame Algorithm * * * * * * * * * * * * *	
705	IONPD(1)	Ion Pseudo-Density (Particles/CC)	1st of 12
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716	IONPD(12)	Ion Pseudo-Density (Particles/CC)	12th of 12
717	WINDPS(1)	Solar Wind Pseudo-Speed (KM/SEC)	1st of 12
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728	WINDPS(12)	Solar Wind Pseudo-Speed (KM/SEC)	12th of 12
729	WINDPA(1)	Solar Wind Pseudo Flow Angle (Deg)	1st of 12
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740	WINDPA(12)	Solar Wind Pseudo Flow Angle (Deg)	12th of 12
		* * * * * * * * * * * * * * * Scarf Algorithm * * * * * * * * * * * *	
741	PLA31(1)	Plasma Wave 31HZ Max. Voltage	1st of 12
742	PLA1K(1)	Plasma Wave 1KHZ Max. Voltage	1st of 12
743	PLA31K(1)	Plasma Wave 31KHZ Max. Voltage	1st of 12
744	PLANT(1)	Plasma Wave Antenna Status	1st of 12
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785	PLA31(12)	Plasma Wave 31HZ Max. Voltage	12th of 12
786	PLA1K(12)	Plasma Wave 1KHZ Max. Voltage	12th of 12
787	PLA31K(12)	Plasma Wave 31KHZ Max. Voltage	12th of 12
788	PLANT(12)	Plasma Wave Antenna Status	12th of 12
		* * * * * * * * * * * * * * * Von Rosenvinge Algorithm * * * * * * * *	
789	PARTLO(1)	Particles, Low Range 4-57MEV/Nucleon	1st of 4
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792	PARTLO(4)	Particles, Low Rnage 4-57MEV/Nucleon	4th of 4
793	PARTHI(1)	Particles, High Range 18-70MEV/Nucleon	1st of 4
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796	PARTHI(4)	Particles, High Range 18-70MEV/Nucleon	4th of 4

WORD
NUMBER

* * * * * * * * * * * * * De Feiter Algorithm * * * * * * * * * * * * * *

797	PROLO1(1)	Protons 78-205 KEV	1st of 3
798	PROLO2(1)	Protons 536-1400KEV	1st of 3
799	ISOTRO(1)	Isotropy Index	1st of 3
800	QUAD(1)	Quadrant	1st of 3
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805	PROLO1(3)	Protons 78-205 KEV	3rd of 3
806	PROLO2(3)	Protons 536-1400KEV	3rd of 3
807	ISOTRO(3)	Isotropy Index	3rd of 3
808	QUAD(3)	Quadrant	3rd of 3

* * * * * * * * * * * * * Meyer Algorithm * * * * * * * * * * * * * * *

809	LOWEE(1)	Low Energy 5-150MEV Electrons Rate	1 of 2
810	LOWEE(2)	Low Energy 5-150MEV Electrons Rate	2 of 2

Cosmic ray electrons & nuclei

End of Data Record

DATA POOL FILE LABEL

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N+16	SMH3 Alpha used for Z-Offset above.
N+17	SMH4 Group Number of the Data Group used to Determine Z-Offset.
N+18	
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.	Spares.
.	
N+80	
N+81	Number of Time Lines (Maximum of 80)
N+82	Start Day of Year (1).
N+83	Start Seconds of Day (1).
N+84	High Order Bits of the Spacecraft Clock (1).
N+85	Low Order 21 Bits of Start Spacecraft Clock (1).
N+86	Bit Rate (1.0 for 512 BPS, 2.0 for 1024 BPS and , 4.0 for 2048 BPS)
N+87	Start Record Number.
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N+656	Start Day of Year (80).
N+657	Start Seconds of Day (80).
N+658	High Order Bits of Start Spacecraft Clock (80).
N+659	Low Order 21 Bits of Start Spacecraft Clock (80).
N+660	Bit Rate (1.0 for 512 BPS, 2.0 for 1024 BPS and, 4.0 for 2048 BPS)
N+661	Start Record Number (80).
N+662	
.	Fill to Equal Data Record Length.
810	

DATA POOL - DATA RECORD

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14	BO-Y	Offset used for SMH BY	
15			
16	Words 15 to 19 for SMH use only		
17			
18			
19			
20	Spin Period Average, Previous Hour.		
21	GSE-X		
22	GSE-Y	Satellite Position Vector in GSE Coordinates	
23	GSE-Z	(At Time of First Point in this Record)	
24-168			
	* * * * * * * * * * * * Hovestadt Algorithm * * * * * * * * * * * *		
169	PROLP(1)	0.17-0.4MEV Protons	1st of 4
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172	PROLP(4)	0.17-0.4MEV Protons	4th of 4
173	ALFLA(1)	0.12-0.25 MEV Alphas	1st of 4
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176	ALFLA(4)	0.12-0.25MEV Alphas	4th of 4
177	HEAVYS(1)	Heavies (Z>2) GT 0.1MEV	1st of 4
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180	HEAVYS(4)	Heavies (Z>2) GT 0.1MEV	4th of 4
181	PROHP1(1)	5-10MEV Protons	1st of 4
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184	PROHP1(4)	5-10MEV Protons	4th of 4
185	PROHP2(1)	10-20MEV Protons	1st of 4

WORD
NUMBER

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188	PROHP2(4)	10-20MEV Protons	4th of 4

* * * * * * * * * * * Maneuver Information * * * * * * * * * * * * *

189	MANUVR(1)	Maneuver Indicators for each of the Twelve
190	MANUVR(2)	5 Minute*approx) Intervals of this Record:
191	MANUVR(3)	0.0 = No Maneuver in this Interval
192	MANUVR(4)	7.0 = Maneuver Indicated during this Interval
193	MANUVR(5)	
194	MANUVR(6)	
195	MANUVR(7)	
196	MANUVR(8)	
197	MANUVR(9)	
198	MANUVR(10)	
199	MANUVR(11)	
200	MANUVR(12)	

* * * * * * * * * * * Smith Algorithm (Magnetometer) * * * * * * * * *

201	BZ(1)	Spin Axis Component	
202	BX(1)	Satellite-Sun Line Component	Mag Field Vector
203	BY(1)	3rd Component of Triad	1st of 60 Vectors
204	BMAG(1)	Magnitude	
205	BDELTA(1)	Latitude	Magnetic Field Vector
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555	BZ(60)	Spin Axis Component	
556	BX(60)	Satellite-Sun Line Component	Mag Field Vector
557	BY(60)	3rd Component of Triad	60th of 60 Vector
558	BMAG(60)	Magnitude	
559	BDELTA(60)	Latitude	Magnetic Field Vector
560	BPHI(60)	Longitude	60th of 60 vectors

* * * * * * * * * * * Steinberg Algorithm * * * * * * * * * * * *

561	RAMAP1(1)	Average Voltage and RMS (1000KHZ.)
562	RARMS1(1)	1st of 30 Sets
.		
.		
619	RAMAP1(30)	Average Voltage and RMS (1000KHZ.)
620	RARMS1(30)	30th of 30 Sets
621	RAMAP2(1)	Average Voltage and RMS (200KHZ.)
622	RARMS2(1)	1st of 30 Sets
.		
.		
679	RAMAP2(30)	Average Voltage and RMS (200KHZ.)
680	RARMS2(30)	30th of 30 Sets

WORD
NUMBER

* * * * * * * * * * * * * * * Anderson Algorithm * * * * * * * * * * *

681	EFLUX(1)	Particle Flux, Energy > 15KEV	1st of 12
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.			
.			
692	EFLUX(12)	Particle Flux, Energy > 15KEV	12th of 12
693	XRAY(1)	Counts per Second, 20-37 KEV	1st of 12
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.			
704	XRAY(12)	Counts per Second, 20-37 KEV	12th of 12

* * * * * * * * * * * * * * * Bame Algorithm * * * * * * * * * * * * *

705	IONPD(1)	Ion Pseudo-Density (Particles/CC)	1st of 12
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.			
.			
716	IONPD(12)	Ion Pseudo-Density (Particles/CC)	12th of 12
717	WINDPS(1)	Solar Wind Pseudo-Speed (KM/SEC)	1st of 12
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.			
.			
728	WINDPS(12)	Solar Wind Pseudo-Speed (KM/SEC)	12th of 12
729	WINDPA(1)	Solar Wind Pseudo Flow Angle (Deg)	1st of 12
.			
.			
.			
740	WINDPA(12)	Solar Wind Pseudo Flow Angle (Deg)	12th of 12

* * * * * * * * * * * * * * * Scarf Algorithm * * * * * * * * * * * *

741	PLA31(1)	Plasma Wave 31HZ Max. Voltage	1st of 12
742	PLA1K(1)	Plasma Wave 1KHZ Max. Voltage	1st of 12
743	PLA31K(1)	Plasma Wave 31KHZ Max. Voltage	1st of 12
744	PLANT(1)	Plasma Wave Antenna Status	1st of 12
.			
.			
.			
785	PLA31(12)	Plasma Wave 31HZ Max. Voltage	12th of 12
786	PLA1K(12)	Plasma Wave 1KHZ Max. Voltage	12th of 12
787	PLA31K(12)	Plasma Wave 31KHZ Max. Voltage	12th of 12
788	PLANT(12)	Plasma Wave Antenna Status	12th of 12

* * * * * * * * * * * * * * * Von Rosenvinge Algorithm * * * * * * * *

789	PARTLO(1)	Particles, Low Range 4-57MEV/Nucleon	1st of 4
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.			
792	PARTLO(4)	Particles, Low Rnage 4-57MEV/Nucleon	4th of 4
793	PARTHI(1)	Particles, High Range 18-70MEV/Nucleon	1st of 4
.			
.			
796	PARTHI(4)	Particles, High Range 18-70MEV/Nucleon	4th of 4

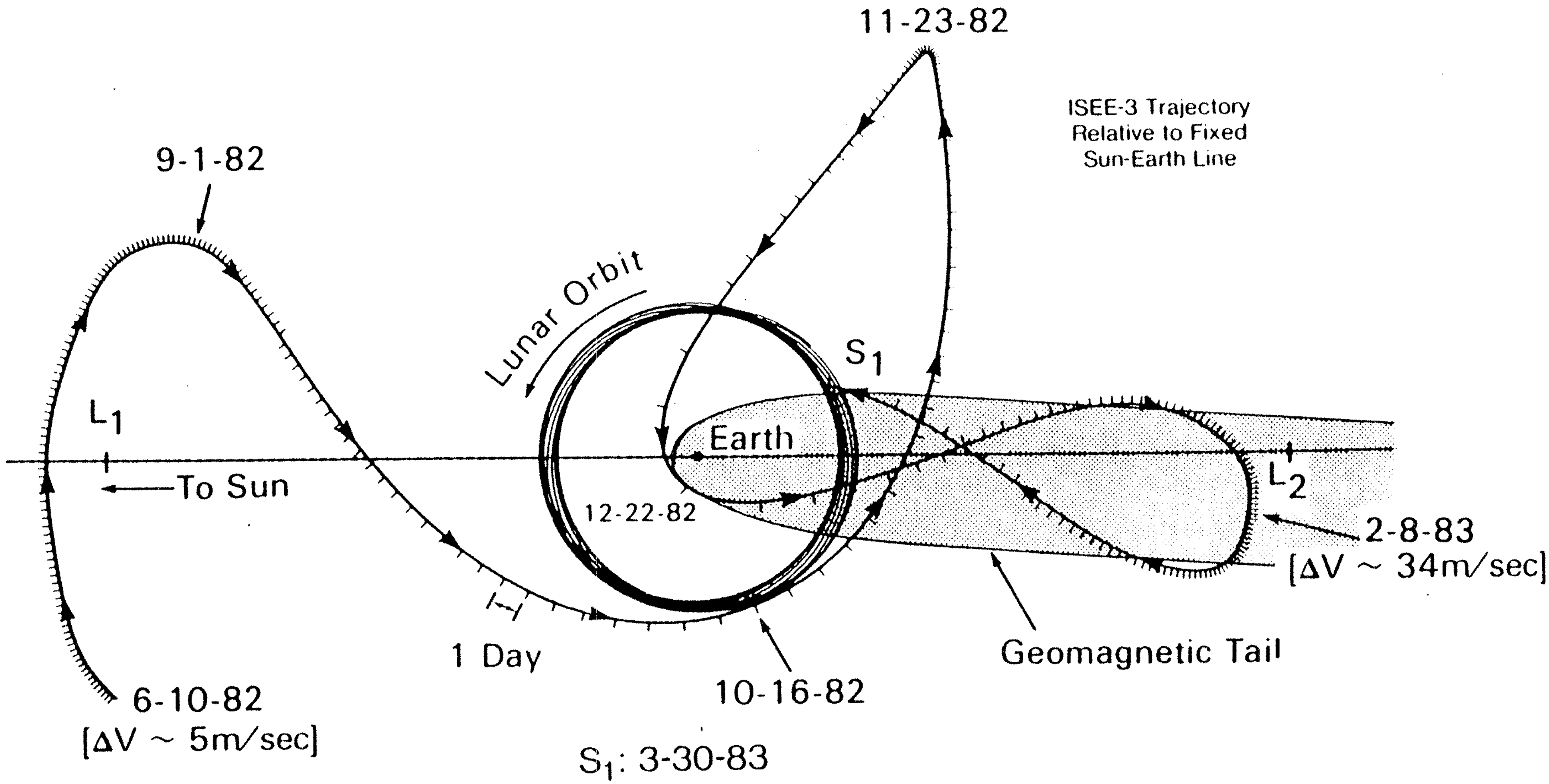
WORD NUMBER	(Hynds)		
* * * * * * * * * * * * * De Feiter Algorithm * * * * * * * * * * * * *			
797	PROLO1(1)	Protons 78-205 KEV	1st of 3
798	PROLO2(1)	Protons 536-1400KEV	1st of 3
799	ISOTRO(1)	Isotropy Index	1st of 3
800	QUAD(1)	Quadrant	1st of 3
.			
.			
.			
805	PROLO1(3)	Protons 78-205 KEV	3rd of 3
806	PROLO2(3)	Protons 536-1400KEV	3rd of 3
807	ISOTRO(3)	Isotropy Index	3rd of 3
808	QUAD(3)	Quadrant	3rd of 3
* * * * * * * * * * * * * Meyer Algorithm * * * * * * * * * * * * * * *			
809	LOWEE(1)	Low Energy 5-150MEV Electrons Rate	1 of 2
810	LOWEE(2)	Low Energy 5-150MEV Electrons Rate	2 of 2

End of Data Record

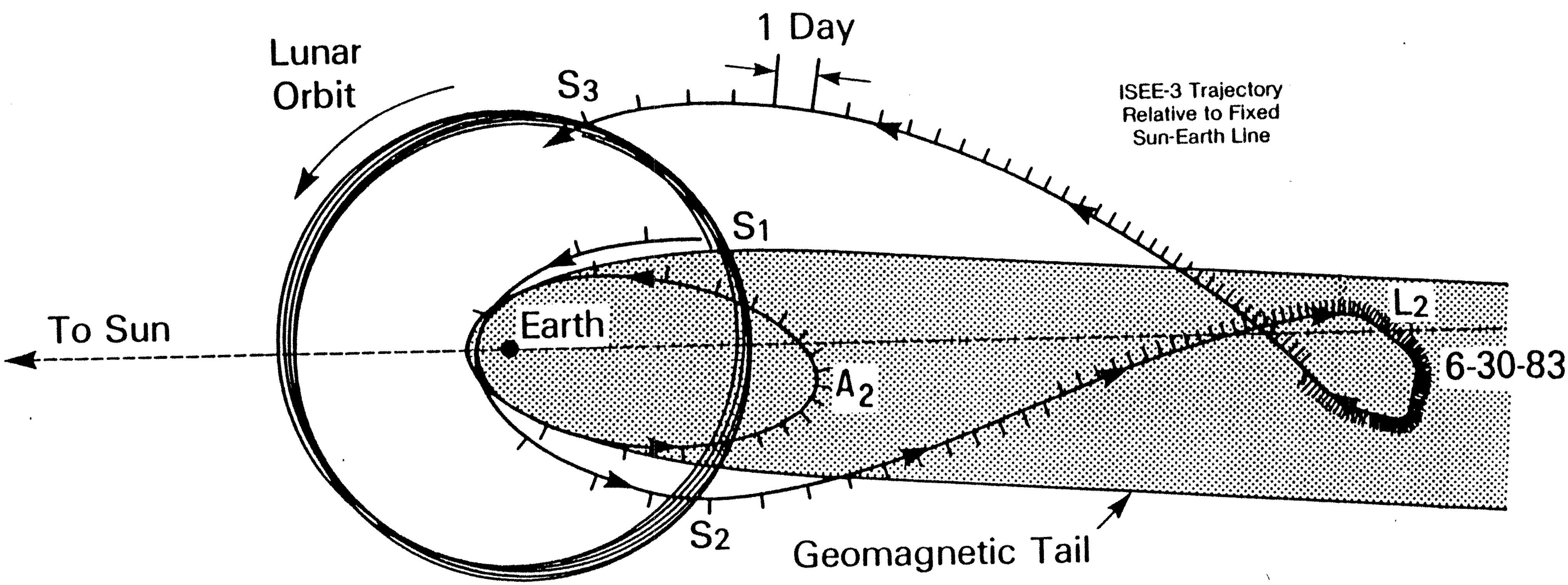
Fr DRRC presenta
Feb. '84

ISEE 3 (ICE after 12/22/83)
International
Cometary
Explorer

TRANSFER FROM L1 HALO ORBIT TO GEOMAGNETIC TAIL



EOS
Transactions, American Geophysical Union
Vol. 64 No. 46 November 15, 1983



S_1: 3-30-83
S_2: 4-23-83
S_3: 9-27-83

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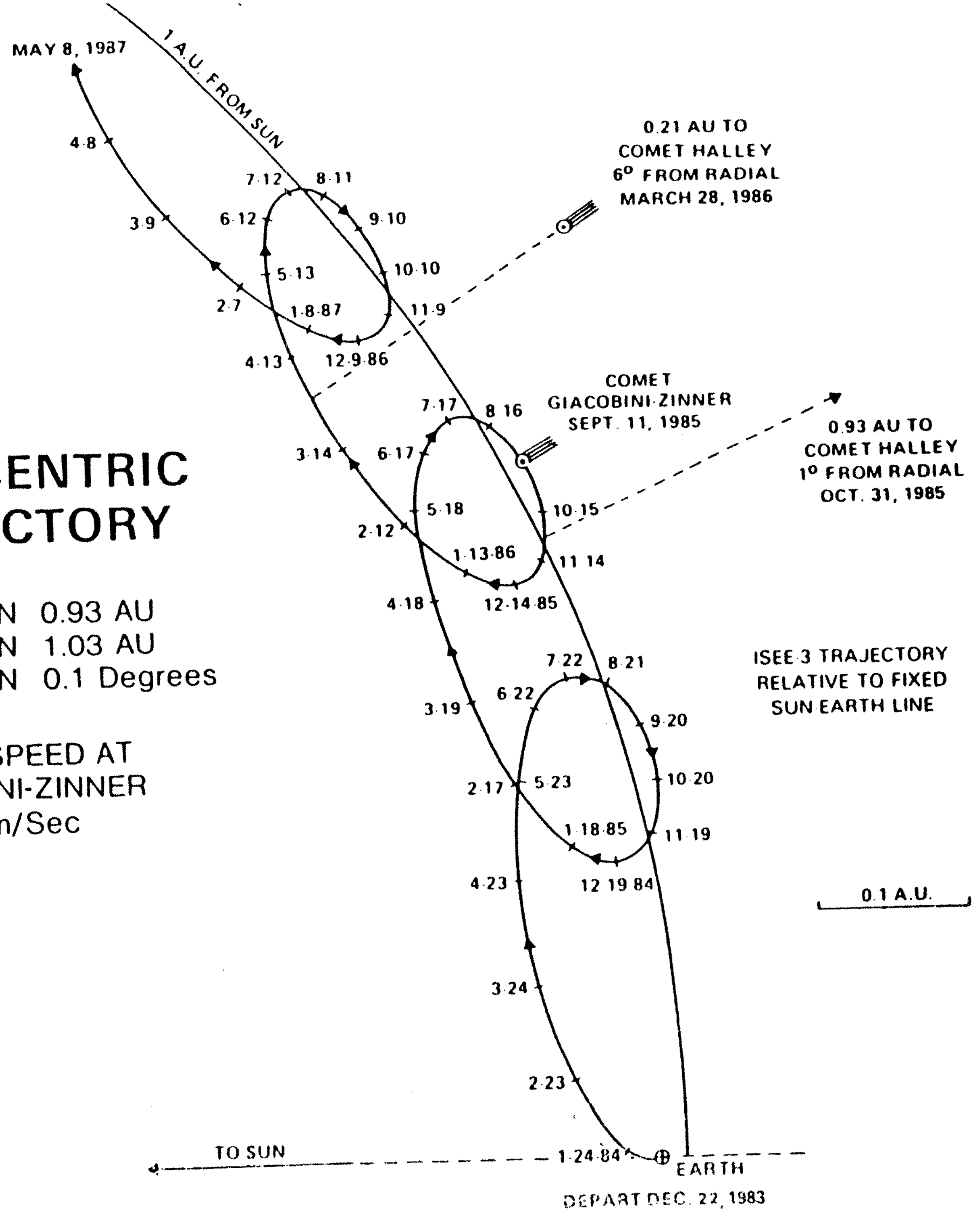
Pres[illegible]tation
[illegible], 1984

HELIOCENTRIC TRAJECTORY

PERIHELION 0.93 AU
APHELION 1.03 AU
INCLINATION 0.1 Degrees

FLYBY SPEED AT GIACOBINI-ZINNER 21 Km/Sec



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```
      PROGRAM DPOOL
C ***
C * THIS PROGRAM CONVERTS A DATA POOL TAPE FROM IBM BINARY TO ASCII
C ***
      INTEGER*2 QNUM,ZFILL(6)
      DIMENSION BUF(815),ASCBUF(2500)
      DATA NTREC/0/,NFILE/1/,NRECW/1/
      DATA BLANK/'    '/
      DATA ZFILL/' 0','.0','00','00','E-','01'/
    1 CONTINUE
      NREC = 0
      JSTART = 46
      NBYTE = 9361
      DO 3 I = 1,30
      CALL MOVECH(ZFILL,1,ASCBUF,NBYTE,12)
      NBYTE = NBYTE + 12
    3 CONTINUE
    5 CONTINUE
      NREC = NREC + 1
      NTREC = NTREC + 1
      CALL READT(BUF,3240,KSTAT)
      IF(KSTAT) 10,20,
      IF(KSTAT .NE. 3240)GO TO 10
      GO TO 50
   10 WRITE(6,5100)NFILE,NREC,KSTAT
      GO TO 999
   20 CONTINUE
      CALL EOF
      NREC = NREC - 1
      NTREC = NTREC - 1
      NEOF = NEOF + 1
      WRITE(6,5200)NFILE,NREC
      NFILE = NFILE + 1
      IF(NEOF .LT. 2)GO TO 1
      NFILE = NFILE - 2
      NRECW = NRECW - 1
      WRITE(6,5900)NFILE,NTREC,NRECW
      GO TO 999
   50 CONTINUE
      NEOF = 0
C ***
C * CONVERT FROM IBM 3081 TO MODCOMP BINARY
C ***
      DO 60 J = JSTART,810
      BUF(J) = A360(BUF(J))
   60 CONTINUE
      IF(NREC .GT. 1)GO TO 80
C ***
C * FIRST RECORD OF EACH FILE IS A HEADER RECORD
C ***
      DO 65 K = 1,45
      ASCBUF(K) = BUF(K)
   65 CONTINUE
      ENCODE(9180,5001,ASCBUF(46),QNUM,ERR=700)(BUF(I),I=46,810)
      GO TO 90
   80 CONTINUE
C ***
C * DATA RECORD
```

```
C ***
      ENCODE(9720,5000,ASCBUF,QNUM,ERR=700)(BUF(I),I=1,810)
90    CALL HWRITE(ASCBUF,9720,IERR)
      IF(IERR .NE. 0)GO TO 800
      NRECW = NRECW + 1
      JSTART = 1
      GO TO 5
700   CONTINUE
      WRITE(6,5700)NFILE,NREC,QNUM
      GO TO 999
800   CONTINUE
      WRITE(6,5800)NFILE,NREC
999   CALL INREW
      CALL OUTREW
9999  STOP
5000  FORMAT(210(1PE12.5),200(1PE12.5),200(1PE12.5),200(1PE12.5))
5001  FORMAT(210(1PE12.5),200(1PE12.5),200(1PE12.5),155(1PE12.5))
5100  FORMAT(' ERROR DETECTED READING FILE,RECORD,KSTAT#',3(1X,I6))
5200  FORMAT(' EOF DETECTED,FILE#',I5,' READ=',I6)
5700  FORMAT(' ENCODE ERROR,FILE,REC,QNUM',3(1X,I5))
5800  FORMAT(' ERROR DETECTED WRITING FILE,RECORD#',2(1X,I5))
5900  FORMAT(' EOJ DETECTED, TOTAL   FILES     READ',I6,/,
     *        '                      TOTAL RECORDS    READ ',I6,/,
     *        '                      TOTAL RECORDS WRITTEN ',I6)
      END
ASS LO LO

$$
$ASS IN HTO
```

D-34003
10/22/77-4/28/78

DUMP OF TAPE X407

INPUT TAPE X407 ON TD3
DATA INPUT H9 NF 49 FL 1 1 1 SR 49 1 1 SR 49 LAST 1

FILE 1 RECORD 1 LENGTH 3240BYTES

(0)	00000000	10000000	DE000000	00000000	00010000	00127000	00004500	00001290	051C6AC6	00000000
(40)	00000000	0028F0F1	F7F7F2F9	F5F1F9F1	F3F0F0F0	F1000028	F0F1F7F7	F2F9F7F2	F1F4F4F0	F0F0F100
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(160)	00000000	00000000	00000000	00000000	00000000	41100000	42DE0000	424D0000	43127000	4510E4D0
(200)	424D0000	43129000	4514EF40	00000000	4551F000	41100000	4130D207	4131C3D2	00000000	00000000
(240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(280)	00000000	00000000	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	41500000	43127000	4510E4D0	00000000	4551F000
(520)	41400000	41100000	43127000	45119330	00000000	455CD800	41400000	41200000	43127000	4512A7A0
(560)	00000000	451B8800	41100000	41400000	43128000	44C23100	00000000	46157740	41400000	42140000
(600)	43128000	44EA2900	00000000	455FDC00	41100000	42170000	00000000	00000000	00000000	00000000
(640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

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(2320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

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FILE 1 RECORD 53 LENGTH 3240BYTES

(0)	43129000	45148740	00000000	45CC9C00	403C4444	41100000	00000000	00000000	42340000	C83B9ACA
(40)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(80)	C83B9ACA	442802DE	44300CAA	43BF2A87	442680E9	442FCF93	43B48E14	4424FB06	442F8D9C	43AA3F3B
(120)	4423711F	442F4680	439FADF7	4421E322	442EF9F1	43950A51	442050FD	442EA7A0	438A5472	441EBA9A
(160)	442E4F32	437F8C6E	441D1FE9	442DF049	4374B293	441B80DB	442D8A80	4369C73F	4419DD5D	442D1D67
(200)	435ECAF1	44183566	442CA887	4353BE45	441688EF	442C2B5B	4348A209	4414D7E8	442EA549	43307726
(240)	44132221	442B153F	43323E4D	441167D7	442A7B0E	4326F9CA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(600)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(640)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(680)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(720)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(760)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(800)	C83B9ACA	C243DABD	41100000	40150D0A	00000000	40FFFFFD	3FB4E808	402572D1	C3602285	4119E810
(840)	412104A7	41300000	41352D58	401485B6	402FE050	4130D2A4	4130B080	425AC000	00000000	41300260
(880)	00000000	C1600000	C1566666	4110B439	411024DD	41101893	43728F40	C27EE193	431E50B6	437959F8
(920)	C27DB573	4322416C	4380ACA0	C27D6EC7	4326AE6F	43888DCD	C27DB918	432BB2DE	43910B93	C27F722F
(960)	4331662A	439A30A6	C282AEB7	4337DBD0	43A40431	C2883CBD	433F36A3	43AEA3FC	C29155CF	43478FAC
(1000)	438A1A37	C29EDA3F	43510B46	43C67255	C281C84F	435BD399	43D3C882	C2CC36E1	436811EF	43E21E37
(1040)	C2F10888	4375FCCE	43F18B06	C3122A35	4385CA39	4410225D	C3164F82	43978139	C83B9ACA	C83B9ACA
(1080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1120)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1160)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1240)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA

(1640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1680)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1720)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1760)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1800)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1840)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	41700000	41700000	41700000	41700000
(1880)	41700000	41700000	41700000	41700000	41700000	41700000	41700000	41700000	41700000	41700000
(1920)	41700000	41700000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1960)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2000)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2040)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2120)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2160)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2240)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2600)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	3E290A9B	3E28AEC3
(2640)	3E16F529	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2680)	453ED02D	453FADE8	453E861D	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2720)	C83B9ACA	C83B9ACA	44720534	447FE298	4482BB5D	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2760)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	4395BF19	43407DE9	43187EDC	C83B9ACA	C83B9ACA	C83B9ACA
(2800)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	436B60E7	4323EBAE	42B659F5	C83B9ACA
(2840)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2880)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2920)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2960)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(3000)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	00000000	C83B9ACA	00000000	C83B9ACA	C83B9ACA	C83B9ACA
(3040)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(3080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(3120)	C83B9ACA	C83E9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(3160)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(3200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERN	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	53	54	3240	0	0	0	0	0	0

FILE 49 RECORD 1 LENGTH 3240BYTES

(0)	00000000	10000000	DE000000	00000000	002E0000	00074000	00000700	00000780	00058C40	00000000
(40)	00000000	0028F0F1	F7F8F1F1	F6F0F2F0	F9F0F0F0	F1000028	F0F1F7F8	F1F1F9F2	F3F0F7F0	F0F0F100
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(160)	00000000	00000000	00000000	00000000	00000000	41100000	42DF0000	424E0000	42740000	441E6000
(200)	424E0000	42780000	4316B000	471C0000	4612DB40	422E0000	4130A756	4130AB55	00000000	00000000
(240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(280)	00000000	00000000	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	41900000	42740000	441E6000	471C0000	4612DB40
(520)	41100000	41100000	42750000	43B95000	47740000	461F5AC0	41400000	42170000	42750000	4415F400
(560)	47760000	42C00000	41400000	42180000	42750000	4459D000	471C0000	46190FC0	41100000	42100000
(600)	42770000	444BF000	471E0000	45365800	41100000	424A0000	42770000	444F7F00	471E0000	45373C00
(640)	41100000	42480000	42770000	4466F000	47780000	45F46400	41400000	424D0000	42770000	44850C00
(680)	47780000	46112840	41400000	42500000	42770000	44A81000	47780000	461358C0	41400000	42530000
(720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

(800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

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FILE 49 RECORD 95 LENGTH 3240BYTES

(0)	42770000	4514CFC0	47780000	461DA8C0	40656000	41400000	00000000	00000000	425E0000	C8389ACA
(40)	C8389ACA	C8389ACA	C8389ACA	C8389ACA	C8389ACA	C8389ACA	C8389ACA	C8389ACA	C8389ACA	C8389ACA

(120)	C5124B20	45122F81	44A9594E	C5124AE9	451230A6	44A9715C	C5124FB4	451231F2	44A9E8C2	C512547F
(160)	45123336	44A9A01D	C5125945	4512347C	44A9B76C	C5125E0B	451235C0	44A9CEAF	C51262D1	45123701
(200)	44A9E5E5	C5126794	45123842	44A9FD0F	C5126C56	45123982	44AA142E	C5127117	45123AC1	44AA2B41
(240)	C51275D6	45123BFE	44AA4247	C5127A95	45123D39	44AA5942	C5127F53	45123E73	44AA7030	C51284DE
(280)	45123FAE	44AA8713	C51288C9	451240E5	44AA9DEA	C5128D83	4512421B	44AAB4B4	C512923A	45124351
(320)	44AACB73	C51296EF	45124487	44AAE226	C5129BA7	451245B7	44AAF8CC	C512A05A	451246EA	44AB0F67
(360)	C512A50C	4512481B	44AB25F6	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(600)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(640)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(680)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(720)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(760)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(800)	C83B9ACA	C12DC384	3F54609A	41104FDB	4067DF4A	C0E9215B	C0FFEABF	BF36B74C	41286848	411A5A8B
(840)	412147B3	41200000	41352AA1	401485B5	40B300FF	4130A7ED	4130B080	425DC000	42800000	4130A7F1
(880)	C12CCCCC	C11E6666	C1BB3333	41101893	41105604	40FFBE76	C14C2124	421D09DE	C1A8E581	C14C136E
(920)	421D09DE	C1A97BD3	C14C6D92	421D0551	C1A9EBCD	C14AA5B4	421CF745	C1AA7FE1	C14926AF	421CE5D2
(960)	C1AA5EF7	C148EA6C	421CF54D	C1AAB0E2	C14A3A10	421CFBF5	C1AB0DB0	C14A838B	421D09E5	C1AA65E7
(1000)	C14ACDAB	421D1D64	C1A9215B	C1492639	421D1A71	C1A8947E	C14701A2	421D072B	C1A9849D	C146CAD6
(1040)	421CF800	C1A99543	C147965E	421CEF99	C1A83984	C147BDD0	421CE5D6	C1A60CF9	C145F942	421CEA9F
(1080)	C1A6CFD6	C1432DFA	421CE182	C1A66888	C1426131	421CC79F	C1A3FF25	C13F8B3D	421C80ED	C1A2760F
(1120)	C141B595	421CBBC2	C19FBF19	C1425966	421CA61D	C1A01023	C142EE4C	421CA05D	C19F639F	C142218E
(1160)	421C989D	C19E8232	C143761D	421C8106	C19C66AB	C1439C03	421C6B77	C19A1D78	C83B9ACA	C83B9ACA
(1200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1240)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1600)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	00000000	00000000	00000000	00000000
(1640)	00000000	43388000	43333000	00000000	00000000	00000000	00000000	00000000	00000000	43388000
(1680)	43333000	00000000	00000000	00000000	00000000	00000000	00000000	43388000	43333000	C83B9ACA
(1720)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1760)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1800)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1840)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	41700000	41700000	41700000	41700000
(1880)	41700000	41700000	41700000	41700000	41700000	41700000	41700000	41700000	41700000	41700000
(1920)	41700000	41700000	41700000	41700000	41700000	41700000	41700000	41700000	41700000	C83B9ACA
(1960)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2000)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2040)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	41464000	41328000	414C0000	42371C00
(2120)	41448000	41398000	415B4000	42384C00	413EC000	4138C000	414D0000	4237C800	414B8000	4139C000
(2160)	41568000	42377000	41454000	41360000	414E8000	42374800	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2240)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	412A9748	412C5368	412BA48B	412BF593	412C9452	C83B9ACA
(2320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	415DA790	415BAE5D	415BB7F5	415A4274
(2360)	415C3178	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	00000000	00000000
(2400)	00000000	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2440)	00000000	00000000	00000000	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2480)	C83B9ACA	C83B9ACA	436FFEF8	4370C57F	43708C79	437468A6	4375539B	C83B9ACA	C83B9ACA	C83B9ACA
(2520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	4336393F	4332C52E	432F4902	432D6B4A	4334E46C	C83B9ACA
(2560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	3A888FA8	3AC44E09	3AA60EC5	3AA6BD5A
(2600)	3AA51E60	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	3D209EF4	3D206E19
(2640)	3D20945E	3D2098C3	3D20AEF2	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2680)	4314214F	4311CFBC	43120280	4312BBD2	4312DD8A	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA

([illegible])	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	[illegible]	41573155	41245486	41416505	413A20E0	C83B9ACA
(2800)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	41242C23	411704D1	411A4EA1	4120E252
(2840)	411704D0	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2880)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2920)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2960)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(3000)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	40357839	42D81999	41100000	40306E30	420EDA66	41100000
(3040)	4030DEDC	42CA9800	41100000	4034A893	42E59B33	41100000	402E10B7	42B65599	41100000	C83B9ACA
(3080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(3120)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(3160)	429BAE52	42A3928C	C83B9ACA	C83B9ACA	424C1A87	424D488C	C83B9ACA	C83B9ACA	40920020	40930365
(3200)	C83B9ACA	C83B9ACA	42F379FB	42F4537A	C83B9ACA	C83B9ACA	4312D9D3	431286E6	C83B9ACA	C83B9ACA

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
49	95	96	3240	0	0	0	0	0	0

READ ERROR #	FILE #	RECORD #
1	23	46

EOJ DUMP STOPPED AFTER FILE 49 # OF PERMANENT READ ERRORS 1

START TIME 01/29/82 09:55:55 STOP TIME 01/29/82 09:58:23

$$

DUMP OF TAPE GOUT-1

D 66728

06/02/85 - 08/17/85

INPUT TAPE GOUT-1 ON TB1

DATA INPUT H9 NF 21 FL 1 1 1 SR 21 1 1 SR 21 LAST 1

FILE 1 RECORD 1 LENGTH 3240BYTES

(0)	00000000	10000000	DE000000	00000000	03130000	00099000	00000000	000009C0	002D8AE8	00000000
(40)	00000000	0028F0F1	F8F5F1F5	F3F0F0F0	F1F0F0F0	F1000028	F0F1F8F5	F1F5F5F2	F3F3F8F0	F0F0F100
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(160)	00000000	00000000	00000000	00000000	00000000	41100000	42DF0000	42550000	42990000	42AA0000
(200)	42550000	429C0000	43BA8000	46800000	461B5380	43313000	4130B183	4130B374	00000000	00000000
(240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(280)	00000000	00000000	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	41700000	42990000	42AA0000	46800000	461B5380
(520)	41100000	41100000	42990000	44743B00	46800000	461D2200	41100000	41900000	42990000	451048A0
(560)	46800000	461F6380	41100000	42130000	42990000	45135940	46A00000	4427C000	41100000	42170000
(600)	429A0000	45133DB0	46A00000	45567800	41100000	422E0000	429B0000	44F79100	472A0000	456F3800
(640)	41400000	42410000	429B0000	45132550	472A0000	45AA0400	41400000	42450000	00000000	00000000
(680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

(2360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

FILE 1 RECORD 72 LENGTH 3240BYTES

(0)	42980000	45150520	472A0000	45C80400	40B5B666	41400000	00000000	00000000	42470000	C83B9ACA
(40)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(80)	C83B9ACA	C4B85686	44FAF3C9	C46A04C0	C4B8C655	44FB35CA	C469F876	C4B9360E	44FB7796	C469EC19
(120)	C4B9A57B	44FBB956	C469DFA9	C4BA14D9	44FBFADE	C469D327	C4BA841E	44FC3C34	C469C691	C4BAF33B
(160)	44FC7D62	C469B9EA	C4BB6250	44FCBE54	C469AD30	C4BBD140	44FCFF1D	C469A063	C4BC3FF5	44FD3FCE
(200)	C4699385	C4BCAE7F	44FD805C	C4698694	C4BD1D03	44FDC0AC	C4697991	C4BD8B6B	44FE00CE	C4696C7C
(240)	C4BDF9AD	44FE40C8	C4695F55	C4BE67C0	44FE80A2	C469521C	C4BED5C1	44FEC048	C46944D1	C4BF43A0
(280)	44FEFFC2	C4693774	C4BFB14E	44FF3F1E	C4692A05	C4C01EDE	44FF7E4C	C4691C84	C4C08C5F	44FFBD44
(320)	C4690EF2	C4C0F9BF	44FFFC13	C469014E	C4C166EB	451003AC	C468F399	C4C1D412	45100793	C468E5D3
(360)	C4C240FF	45100B79	C468D7FC	C83B9ACA	C83B9ACA	C83B9ACA	C4C31A8E	4510133D	C468BC19	C4C38719
(400)	4510171B	C468AE0E	C4C3F39C	45101AF6	C4689FF3	C4C45FFC	45101ECE	C46891C6	C4C4CC1C	451022A5
(440)	C4688389	C4C53844	45102678	C468753A	C4C5A430	45102A49	C46866DB	C4C60FFE	45102E18	C468586B
(480)	C4C67BD3	451031E5	C46849E6	C4C6E772	451035AE	C4683B55	C4C752F0	45103974	C4682CB3	C4C7BE36
(520)	45103D39	C4681E01	C4C82973	451040FB	C4680F3F	C4C89488	451044BA	C468006D	C4C8FF7E	45104877
(560)	C467F18A	C83B9ACA	C83B9ACA	C83B9ACA	C4C9D51B	45104FE9	C467D395	C4CA3FB3	4510539E	C467C482
(600)	C4CAAA21	45105752	C467B560	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(640)	C83B9ACA	C83B9ACA	C4CC52E0	45106605	C4677837	C4CCBCAF	451069AD	C46768C5	C4CD265B	45106D52
(680)	C4675944	C4CD900D	451070F3	C46749B3	C4CDF992	45107492	C4673A13	C83B9ACA	C83B9ACA	C83B9ACA
(720)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(760)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(800)	C83B9ACA	C15CFA9B	41100000	405D8440	00000000	40FFFFFD	401088A5	40205A00	42FF9E7A	41168BA2
(840)	411F1FFF	41300000	41336629	40126BD3	40374B82	C83B9ACA	C83B9ACA	425BC000	42800000	4130B252
(880)	C1CB3333	C19CCCCC	C26D0000	41101893	41105604	40FFBE76	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(920)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C316C9E7	C211A8B1	4211C2C4	C316C9E7	C211CC22
(960)	4213D20B	C316C9E7	C1F8095D	42142247	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1000)	C83B9ACA	C83B9ACA	C83B9ACA	C316C9E7	C1CDC76B	41C43DF0	C83B9ACA	C83B9ACA	C83B9ACA	C316C9E7
(1040)	C1BD18F6	41C3F8D4	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1120)	C316C9E7	C1D05678	41B06EF2	C83B9ACA	C83B9ACA	C83B9ACA	C316C9E7	C1F6133E	41BB5372	C316C9E7
(1160)	C1E2F1F7	41AD1905	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1240)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA

(1680)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	43230000	C83B9ACA	C83B9ACA	C83B9ACA
(1720)	C83B9ACA	C83B9ACA	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1760)	C83B9ACA	C83B9ACA	C83B9ACA	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1800)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1840)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1880)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	00000000	00000000	00000000
(1920)	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1960)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	00000000	00000000	00000000	C83B9ACA
(2000)	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA
(2040)	C83B9ACA	C83B9ACA	00000000	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C1100000	4115553E	4115553E	4115553E
(2120)	C1100000	4115553E	4115553E	4115553E	C1100000	4115553E	4115553E	4115553E	C1100000	4115553E
(2160)	4115553E	4115553E	C1100000	40AAA9F7	40AAA9F7	40B55497	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2240)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	40B5ADFC	40B5ADFC	40B5ADFC	40B5ADFC	413C977A	C83B9ACA
(2320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	411C382A	411C382A	411C382A	411C382A
(2360)	411328D6	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2480)	C83B9ACA	C83B9ACA	44BCFF8A	45186CE3	45147412	45222FAE	451828A2	4515F574	4527C40D	45249A2E
(2520)	4534145F	45313054	4533D2A3	C83B9ACA	45103E78	44825B01	44929720	451F382A	4483C2B1	45421597
(2560)	4513FCEB	452DC875	44EA31B1	44186FD4	441CFE5F	C83B9ACA	3BA85B21	3B3A83C5	3B1BD521	3B7F1199
(2600)	C83B9ACA	3B7669BF	3B295484	3BFBCFFC	3B3E4431	3B1BA712	3A9ABED4	C83B9ACA	3D20D222	3D2035E0
(2640)	3D22C24B	3D297D5E	C83B9ACA	3D22E7EF	3D991F87	3D4C3547	3D2C8A6C	3D88E4D1	3D2054B2	C83B9ACA
(2680)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2720)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2760)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2800)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2840)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2880)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2920)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2960)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(3000)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	427BA551	00000000	41300000	425663E3	00000000	41300000
(3040)	43136ECE	00000000	41300000	4318F27D	00000000	41300000	4313CAFC	4524AA57	41300000	42EAE36F
(3080)	4648FB3B	41300000	42E865A0	441BB5CB	41300000	4311B210	00000000	41300000	43285035	4634E814
(3120)	41300000	C314683F	00000000	41300000	C2E4B791	00000000	41300000	C83B9ACA	C83B9ACA	C83B9ACA
(3160)	00000000	4312B4B4	41EB0800	3F155555	432ED463	4312C916	435252AD	4334AAD5	00000000	00000000
(3200)	00000000	00000000	00000000	00000000	00000000	00000000	4313ABE7	42267C3C	42276AAA	41D92492

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	72	73	3240	0	0	0	0	0	0

FILE 21 RECORD 1 LENGTH 3240BYTES

(0)	00000000	10000000	DE000000	00000000	03280000	000E2000	00000B00	00000E50	0516BB8C	00000000
(40)	00000000	0028F0F1	F8F5F2F2	F6F0F3F0	F4F0F0F0	F1000028	F0F1F8F5	F2F2F9F2	F2F3F2F0	F0F0F100
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(160)	00000000	00000000	00000000	00000000	00000000	41100000	42DF0000	42550000	42E20000	442B0F00
(200)	42550000	42E50000	4514D7F0	00000000	461D2240	43328000	4130B90F	4130BAC9	00000000	00000000
(240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(280)	00000000	00000000	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	41D00000	42E20000	442B0F00	00000000	461D2240
(520)	41100000	41100000	42E20000	44ED3700	46200000	442B4000	41100000	41E00000	42E30000	43F79000
(560)	46200000	451FA800	41100000	42160000	42E30000	4477D800	46800000	45E70C00	41400000	421D0000
(600)	42E30000	44B9CC00	46800000	46129080	41400000	42220000	42E40000	44391E00	46800000	461F9F40
(640)	41400000	42300000	42E40000	448BAC00	46A00000	454C8C00	41400000	42360000	42E40000	44B8C700
(680)	46A00000	4579AC00	41400000	423A0000	42E40000	45121AA0	46A00000	45E29C00	41400000	42410000
(720)	42E50000	446D8F00	46A00000	46180140	41400000	424C0000	42E50000	44DFD100	46A00000	461F2640

(840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

FILE 21 RECORD 93 LENGTH 3240BYTES

(0)	42E50000	4514BEF0	46200000	46117A40	401B9555	41100000	00000000	00000000	425C0000	C83B9ACA
(40)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA

(160)	44BF0B80	C466BCAA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(240)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(600)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(640)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(680)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(720)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(760)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(800)	C83B9ACA	42FF9E7D	402EF5F5	41100000	3F3A4365	C0F7BD3F	00000000	41100000	C22DEB99	41166666
(840)	411F10CA	41200000	41356596	40130BE0	41273501	4130B9A3	4130A5CA	425BC000	42800000	4130B997
(880)	C1CB3333	C19CCCCC	C26D0000	4110C8B4	41105604	40FFBE76	42257882	C0228F4B	3EB718C0	4220C262
(920)	C022612B	BF2E0B6C	42230A40	C021D56E	BF641D5C	4224D969	C020E312	BF9B9F98	4225D87E	C01FC6E8
(960)	BFCD9D30	4224A74C	C01E31B1	C0100E0F	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1000)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1040)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1120)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1160)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1240)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1600)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	00000000	00000000	00000000	00000000
(1640)	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1680)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1720)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1760)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1800)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1840)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	00000000	00000000	00000000	00000000
(1880)	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1920)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1960)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2000)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2040)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C1100000	40AAA9F7	40AAA9F7	40AAA9F7
(2120)	C1100000	40AAA9F7	404AA9F7	40AAA9F7	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2160)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2240)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	4116B5BF	4116B5BF	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	411C382A	411C382A	C83B9ACA	C83B9ACA
(2360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	00000000	00000000
(2400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2440)	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2480)	C83B9ACA	C83B9ACA	44351AD3	443289A6	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	44188967	441C367F	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	3B1C3EC6	3AF22063	C83B9ACA	C83B9ACA
(2600)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	3D1FA0E3	3D1F7D4A
(2640)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2680)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA

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(  2800)   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA
(  2840)   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA
(  2880)   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA
(  2920)   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA
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(  3000)   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   BD624DD2   00000000   41300000   C83B9ACA   C83B9ACA   C83B9ACA
(  3040)   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA
(  3080)   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA
(  3120)   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA   C83B9ACA
(  3160)   00000000   C83B9ACA   C83B9ACA   C83B9ACA   00000000   C83B9ACA   C83B9ACA   C83B9ACA   00000000   C83B9ACA
(  3200)   C83B9ACA   C83B9ACA   00000000   C83B9ACA   C83B9ACA   C83B9ACA   42116000   C83B9ACA   C83B9ACA   C83B9ACA

        FILE   INPUT    DATA RECORDS    MAX.         READ ERROR SUMMARY          INPUT RETRIES
               RECS.       INPUT        SIZE      PERM  ZERO B   SHORT  UNDEF.  #RECS.  TOTAL#
          21      93      94            3240        0       0        0       0       0       0

 EOJ        DUMP STOPPED AFTER FILE   21        # OF PERMANENT READ ERRORS  0

START TIME 10/22/85  13:14:25        STOP TIME 10/22/85  13:16:29
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$$
$ASS IN HT1
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D-35163
8/12/78 - 5/27/79

DUMP OF TAPE X-408

INPUT TAPE X-408 ON TD3
DATA INPUT H9 NF 40 FL 1 1 1 SR 40 1 1 SR 40 LAST 1

FILE 1 RECORD 1 LENGTH 3240BYTES

(0)	00000000	60000000	EC000000	00000000	00010000	000E0000	00005300	00000E80	00602154	00000000
(40)	00000000	0028F0F6	F7F8F2F2	F4F2F3E0	F8F0F0F1	E1000028	F0F6F7F8	F2F3F1F2	F3F5F6F0	F0F0F100
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000 78	00000000 224	00000000
(160)	00000000	00000000	00000000	00000000	00000000	41300000	42FF7180	424E0008	42E00000	451456E0
(200)	424E0000	42E80000	44189B00	00000000	451D1000	41100000	418AB3B	41305FD1	00000000	00000000
(240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(280)	00000000	00000000	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	42180000	42E00000	451456E0	00000000	451D1000
(520)	41400000	41100000	42E10000	44404500	00000000	45269C00	41400000	41700000	42E10000	44664100
(560)	00000000	452B5C00	41400000	41A00000	42E10000	44961800	00000000	45315800	41400000	41E00000
(600)	42E10000	44A37A00	00000000	45330400	41400000	41F00000	42E10000	44C3D600	00000000	45371000
(640)	41400000	42120000	42E10000	44CA7500	00000000	4537E400	41400000	42130000	42E10000	44C81600
(680)	00000000	4537F800	41400000	42140000	42E10000	44E35200	00000000	453B0000	41400000	42160000
(720)	42E10000	45145C80	00000000	45475000	41400000	421D0000	42E20000	442E0100	00000000	454E6800
(760)	41400000	42210000	42E20000	444DFE00	00000000	45528800	41400000	42240000	42E20000	445D3B00
(800)	00000000	45547000	41400000	42260000	42E20000	445FFC00	00000000	4554C800	41400000	42270000
(840)	42E20000	44797800	00000000	4557F800	41400000	42290000	42E30000	444DB600	00000000	457CB400
(880)	41400000	423D0000	42E30000	44AB0D00	00000000	45886000	41400000	42440000	42E30000	44BAAA00
(920)	00000000	458A5400	41400000	42460000	42E30000	44C80A00	00000000	458C0000	41400000	42470000
(960)	42E30000	44F70300	00000000	4591E000	41400000	42480000	42E30000	44FAC400	00000000	45925800
(1000)	41400000	424C0000	42E30000	45100E30	00000000	45931C00	41400000	424D0000	42E30000	45110600
(1040)	00000000	45950C00	41400000	424F0000	42E40000	44113700	00000000	459F5800	41400000	42550000
(1080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
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(1760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

(2320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
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(2840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
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(2960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
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(3080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
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FILE 1 RECORD 176 LENGTH 3240BYTES

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(40)	C83B9ACA	C83B9ACA	C0DBBBB5	40A6E71A	4129B1D3	412D1EDF	40425BDC	3F391853	442FF200	41305FAD
(80)	45B4A3F0	C5114DD2	451341CF	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(120)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(160)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(240)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(600)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(640)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	40138E38	40188D3D
(680)	C83B9ACA	C83B9ACA	4029C71C	4033DCB0	C83B9ACA	C83B9ACA	3E4EC4EC	00000000	C83B9ACA	C83B9ACA
(720)	40197B42	4016E584	C83B9ACA	C83B9ACA	40255555	4020D3DC	C83B9ACA	C83B9ACA	00000000	00000000
(760)	00000000	00000000	00000000	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(800)	4054707C	4142246C	C1149D52	4145A835	41460490	43156820	4059365D	41429252	C1137CFF	4145B5C0
(840)	4149D03F	43157B21	4060C094	41441757	C115A175	4147E71C	414DD24D	431565EF	40483048	41446E32
(880)	C11597EC	41483971	413C3607	43156E58	402FB55B	4144AF80	C1175E66	4148CD17	4125DFDA	43155367
(920)	405AF112	4146A941	C1159B0C	414A5ED6	4146B190	4315707F	C08DFFD2	41439B0D	C1295713	414FDE7E
(960)	C1660F4A	431488E5	C0B01A0A	41430040	C12C357C	4151390F	C17C80D7	43146960	C09D143F	4144A9F8
(1000)	C129AE15	41513689	C16F22B0	4314886D	C03C5FF4	4147C82D	C123F48E	41507417	C12AE2E5	4314D651
(1040)	C047334F	4146B59B	C125AF4E	41504C46	C132C5A9	4314BF14	C03F2D25	4147CE6D	C1242091	415088C1
(1080)	C12CDD8E	4314D4A7	C07099C4	414772B1	C1248E41	41509CA0	C1500D7A	4314CE79	C04EBD85	4146A3F6
(1120)	C1238873	414F4E6B	C138C473	4314D48F	C0294875	414706AE	C122312E	414F058E	C11D9837	4314E48D
(1160)	C054B950	41458738	C1243FD3	414FD836	C13BB472	4314C771	C11026AE	414141A2	C12A3791	414F894E
(1200)	C1BB9FAD	43147196	C1116833	41420E58	C128BDDB	415065FA	C1C8192E	4314A6D	BFA53F5E	41481684
(1240)	C11FC414	414ED3A9	C0772D24	43150385	C018822D	41431ADE	C120C6A5	414F4FBF	C11187F0	4314F8FC
(1280)	403B9255	4148C8F7	C123C6F3	41513F0B	412A2AAB	4314DD2D	401C8269	41496EF1	C121A417	4150E5B6
(1320)	4114903A	4314F62C	BFD4D6BA	414858A4	C1224AC5	41502FC4	C096E9F0	4314EA18	401FDE23	4146A024
(1360)	C1215495	414E29CC	4117876E	4314E8C1	BFF72613	41456CB2	C1233944	414DEEEC	C0B420C9	4314D18E
(1400)	C0473C2A	4144750F	C1240022	414D859F	C134949B	4314C428	C01CCC18	41458372	C1218728	414D4C00
(1440)	C115460E	4314E406	C05C78A2	414374DD	C123DB5B	414CB968	C1453C01	4314BFCD	C066920C	4142019F
(1480)	C125979F	414C705D	C14CE2A2	4314A555	C028D559	4145286A	C1250479	414E9ED9	C11DF133	4314BD55
(1520)	40B5DEB6	41489049	C1217563	4150D2C0	41808963	4314F303	40E5E050	414AB222	C1217E67	415325EE
(1560)	419F5B9B	4314FD91	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA

(1640)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1680)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1720)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1760)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1800)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1840)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1880)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1920)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1960)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2000)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2040)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2120)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
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(2280)	41197004	3FB462FE	41196D38	3FB9AE00	411970A3	3FB7C1C3	411966B5	3FB7C581	41197E4A	3FB5D998
(2320)	41195F51	3FB7D375	4119731E	3FAF2FA9	411976D8	3FB6D241	41196D88	3FB25C96	41196CFA	3FBA7E03
(2360)	4119745C	3FAA6B07	41196F65	3FB4624C	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2480)	411186FB	4010BDC1	411336EC	401FA853	41153C82	4023C83A	41166489	40299A34	41165781	402883E5
(2520)	4115CA01	40260156	41191AFE	4037F087	411C8D7F	403F90AF	411F2271	403E7FA3	411F498A	403D7A7E
(2560)	411FB1CD	403B7E71	411DBED5	40393CDE	411C55A4	4034F337	411A4129	40343FAC	4119DFD3	402D6E54
(2600)	41177280	402B5D99	4117244E	402553EA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2640)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2680)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2720)	416D2318	412F0A81	414A16E6	414144F5	41250B7A	41399489	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2760)	C83B9ACA	C83B9ACA	4217E999	421864CC	42181666	4217CF33	4218D333	4218AC00	42183CA7	C83B9ACA
(2800)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	4164F962	416A0AFA	416B97FE	416B5FD6	416CC663	41656190
(2840)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	431ADAE5	431ADAE5	431ADAE5	431ADAE5
(2880)	431ADAE5	431ADAE5	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C141F891	C13C4EED
(2920)	C1408DA5	C14265DE	C142A243	C1365B71	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2960)	411E518F	41209401	41197A9F	41300000	411EF6F6	411CB4B4	401EC355	41300000	411EF6F6	40B9A75E
(3000)	401EC355	41300000	411F4992	412283A8	4023ED11	41300000	411EF6F6	41159852	406C3559	41300000
(3040)	411EA45B	41232BDF	401EC355	41300000	411EA45B	406C3559	4118D567	41300000	C83B9ACA	C83B9ACA
(3080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(3120)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	40109249	40150000
(3160)	401C0000	C83B9ACA	3FF33333	40135555	3FE00000	C83B9ACA	42C397BA	401C0644	41100000	41200000
(3200)	425FCFB5	4022B3D5	41100000	41300000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	40120571	C83B9ACA

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
1	176	177	3240	0	0	0	0	0	0

FILE 40 RECORD 1 LENGTH 3240BYTES

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(40)	00000000	0028F0F6	F7F9F1F4	F0F0F0F1	F5F0F0F0	F1000028	F0F6F7F9	F1F4F6F2	F3F5F8F0	F0F3F100
(80)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000 79	00000000 140	00000000
(160)	00000000	00000000	00000000	00000000	00000000	41300000	42FF7180	424F0008	42[illegible]C0000	433A0000
(200)	424F0000	42930000	44222C00	46E00000	4548D800	42290000	41303984	41303A19	00000000	00000000
(240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(280)	00000000	00000000	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	41100000	428C0000	433A0000	46E00000	4548D800
(520)	41400000	41100000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

(800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(1960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2240)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2280)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2320)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2360)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2400)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2440)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2480)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2520)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2560)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2600)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2640)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2680)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2720)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2760)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2800)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2840)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2880)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2920)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(2960)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3000)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3040)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3080)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3120)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3160)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
(3200)	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

FILE 40 RECORD 161 LENGTH 3240BYTES 147

(0)	42930000	44190000	46E00000	46172F80	409CBBBB	41400000	00000000	00000000	42A00000	C83B9ACA
(40)	C83B9ACA	C83B9ACA	C0D545E8	4110C6FB	C15B6A42	C12CC8DA	417B659A	3F1B4871	4436C600	41383A13

(120)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(160)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(240)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(280)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(320)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(360)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(480)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(520)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(560)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(600)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(640)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	3F2AAAAA	3F39611A
(680)	3F400000	C83B9ACA	3F12F684	3E469EE5	3EC30C30	C83B9ACA	00000000	00000000	00000000	C83B9ACA
(720)	4025097B	4021A7B9	401F3333	C83B9ACA	40238E38	4029611A	4028BA2E	C83B9ACA	00000000	00000000
(760)	00000000	00000000	00000000	00000000	00000000	00000000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(800)	409A9942	41315879	C14CD5B1	415C7ACE	4160D90F	4312EC21	C07FCD1D	4132C46C	C14E54CF	415E8428
(840)	C14D63E8	4312EF22	C077801B	412ACD19	C1519D76	415D6C7E	C1496A0D	43129B11	40627FCB	41185C72
(880)	C1583153	415C52A8	413D837E	4311D6BC	4096D42A	41179EC9	C157705E	415BDC19	415E854B	4311D204
(920)	40C2D2AC	40F13846	C157299C	415AA60F	417D5FBC	43117EF3	C05971D5	40FF4068	C158D94D	415BFB7C
(960)	C136E47C	431182B9	4088E58C	40C55989	C154366A	4159D3D2	41811F60	43115813	3FEBAF7A	40CAE857
(1000)	C1544F72	415AA7C4	40E47EFF	43116DBD	C13C5A99	4121F509	C13AB0FF	415EF521	C228991D	4312D598
(1040)	C0D63BB3	41258531	C14FC1D2	415B2C8E	C18550C9	431270F7	C01F8BED	412E59FC	C14C49C1	415AC9B7
(1080)	C11217A3	4312D135	4118328C	41273D60	C141C666	4155818F	42115071	4312EAB6	41275FDE	413E4CE5
(1120)	C12855B6	415542E8	421BAB4C	431475E3	41307E0C	4139292D	C129C118	4156BA38	422229D7	4314451D
(1160)	4123C20D	41329309	C140B7CF	415A69C8	421770E6	431342E7	411E601F	412B693E	C145F122	41596DE7
(1200)	4214471A	4312E014	411AF5C5	411C62CD	C152B816	415C30F4	4211139E	43120DDD	409C7764	412D524B
(1240)	C152A122	415FE457	41605485	4312AA41	4112AF69	4129EC3B	C152214E	415E867A	41B7282C	43129027
(1280)	41103305	412777E5	C153EC9D	415EB099	419ED36D	43127319	C111D7B5	41304BAE	C14A46FF	4162197C
(1320)	C19FDF91	4312EE39	C149A065	4129D379	C137C8BF	41678A56	C22E21D6	431332B9	C15654A5	41278251
(1360)	C123F792	41678BE6	C239D974	4313DB38	C1550810	412FDE27	C11C7089	41670EA7	C2389AFE	4314A2A1
(1400)	C133C8FA	412DAE6B	C12DD19E	4161ADC3	C2219D8B	43143BBD	C15BF751	41306F9F	C01BA03D	4168A937
(1440)	C23DB207	43165655	C15109F5	41324891	C120C63E	41664E9B	C234A29A	43147CA4	C14E28D9	413260A4
(1480)	C1271024	4165D115	C2326058	43142DF7	C14DC88F	412F1E9B	C121FB09	4163F518	C2340BDA	43147253
(1520)	3F8D9895	407B47B3	C14845FC	4154A21E	40E934BF	43116142	4088FE79	40DA064D	C15A0A60	415BE638
(1560)	4157F485	431167AC	40758E70	41116AA0	C15CF222	415F130C	41472D07	431189E4	411E5D58	4112EF2F
(1600)	C154C9E7	415CE8D4	42134595	4311AA1E	4121EA03	4112F0CC	C1531AF3	415C8D45	42159246	4311AF83
(1640)	41224A4D	405F98D8	C1547A1D	415C4178	42160C99	43112178	41125D83	C0E3683A	C15A66A3	415E28A5
(1680)	41B65629	43104F5F	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1720)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1760)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1800)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1840)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1880)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1920)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(1960)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2000)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2040)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2080)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2120)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2160)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2200)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2240)	411994A2	3FA50BAE	41198F0C	3F9AFF1F	4119A91D	3F9E8382	4119985B	3FA6A64C	4119BBBB	3F9C342D
(2280)	41199364	3FAEF294	411992C5	3F9F72A9	4119A2E8	3F9ABFBB	4119A249	3FA49367	4119B12E	3F87A886
(2320)	41198BF1	3FADEDF5	41199403	3FA7F0BC	4119C32D	3F97B22A	411997BC	3FA93FAC	4119AD75	3F9C8EF3
(2360)	41199CB3	3FA21B53	4119ACD6	3FA9F6EA	411A08AF	3FC5A55F	411D971D	4028A9FA	C83B9ACA	C83B9ACA
(2400)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2440)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2480)	41336EC6	40378E80	413239B7	4033026C	412FBB1C	40343FB0	412E1833	40325F18	412ACAEF	403080A4
(2520)	41295692	402F9CF7	41281657	402AABE1	41261833	402C5C61	4124C37D	402AE95D	412401DC	40289448
(2560)	41214F20	402B8332	4120E500	402A3AB5	411F6577	402BDA4E	411EEA96	402F8F9A	411F5FE1	402E6714
(2600)	411E6A1F	4035BE80	411EC37D	4031DE46	411D639B	40318A94	411D9403	4032FA70	C83B9ACA	C83B9ACA
(2640)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2680)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA

(2760)	C83B9ACA	C83B9ACA	4215CC00	4215A555	4215B266	42157C00	4215CF33	42169999	42151D99	C83B9ACA
(2800)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	4175912E	4172AB8D	4172660C	4176A2E5	C83B9ACA	C83B9ACA
(2840)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	4325C079	4326B002	4325C079	4325C079
(2880)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C12C5D6E	C11DC090
(2920)	C1232DF9	C1300517	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(2960)	41204165	40F79C2E	40146FDD	41300000	4120E69D	4117DD94	40146FDD	41300000	4120E69D	40C92492
(3000)	40146FDD	41300000	4121B6D4	406C3559	40146FDD	41300000	4120E69D	40E2F53E	40146FDD	41300000
(3040)	4120E69D	411E82CB	40146FDD	41300000	41209401	41173030	40146FDD	41300000	41204165	3F4F2A9[illegible]
(3080)	40146FDD	41300000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA
(3120)	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	4075C000	407FC000
(3160)	40890000	C83B9ACA	40100000	4010AAAA	3FAAAAAA	C83B9ACA	417CA663	4027F7C9	40555555	41400000
(3200)	419DAC75	3F515F34	41100000	41100000	C83B9ACA	C83B9ACA	C83B9ACA	C83B9ACA	40119A63	3FAF2C00

FILE	INPUT RECS.	DATA RECORDS INPUT	MAX. SIZE	READ ERROR SUMMARY PERM	ZERO B	SHORT	UNDEF.	INPUT RETRIES #RECS.	TOTAL#
40	161	162	3240	0	0	0	0	0	0

READ ERROR #	FILE #	RECORD #
1	4	60
2	29	139

EOJ DUMP STOPPED AFTER FILE 40 # OF PERMANENT READ ERRORS 2

START TIME 01/29/82 09:46:39 STOP TIME 01/29/82 09:50:25

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$AVR CI