

SLP-853-72
January 5, 1972

TO: Distribution

FROM: R. L. McCutcheon

SUBJECT: Revised Tape Format for the IMP-H CPME Experimenter's Tape.

The tape format for ID records and data records are given below, in tables I and II, respectively. Both types of records have the same length, with "fill" of zeros where it is requested.

Each experimenter tape should contain an end of file mark only at the end of the tape, to indicate just that. Hence, ID records and data records should be found continuously in the input stream, with the first word of the ID records used as an indicator.

Each logical record should be 4797 bytes (8 bits) long and they should be blocked 2 to 1 for a block size of 9,594 bytes. The last block on the tape can contain less than 2 logical records. Seven-track 800 BPI tapes are requested.



R. L. McCutcheon

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Distribution
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SLP File
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TABLE I - ID Record Format

Item Number	Item Description	Target Field Size (bits)	8-Bit Byte Offset
1	id record indicator: set to 32 ones	32	0
2	satellite ID number: eight EBCDIC characters	64	4
3	station id - binary integer	32	12
4	analog tape number 4 EBCDIC characters	32	16
5	analog file number 4 EBCDIC characters	32	20
6	record date (YMMDDbbb) 8 EBCDIC characters	64	24
7	analog start time (HHMM) 4 EBCDIC characters	32	32
8	analog stop time (HHMM) 4 EBCDIC characters	32	36
9	data type - binary integer 0 = normal 1 = encoder bypass 2 = encoder failure 3 = uncoded	32	40
10	experimenter ID 4 EBCDIC characters	32	44
11	data rate 0 = low bit rate 1 = high bit rate	32	48
12	master edit tape number 4 EBCDIC characters	32	52

TABLE I - Continued

Item Number	Item Description	Target Field Size (bits)	8-Bit Byte Offset
13	master edit file number 4 EBCDIC characters	32	56
14	fill to data record length	37895	60
14	average sequence time 6 EBCDIC characters	64	4797 60
15	Perigee counter 3 characters	32	18 68
16	day of next perigee 4 char.	32	72
17	time of day of next perigee 4 char. HHMM	32	76
18	fill	37735	80

mel Banks 4/11/72

E1

5	1,1	2,1	3,1	4,1	5,1	6,1	7,1	8,1	9,1	} page 0
1	1,2	2,2	3,2	4,2	5,2	6,2	7,2	8,2	9,2	
2	1,3	2,3	3,3	4,3	5,3	6,3	7,3	8,3	9,3	
3	1,4	2,4	3,4	4,4	5,4	6,4	7,4	8,4	9,4	
SS 0	1,5	2,5	3,5	4,5	5,5	6,5	7,5	8,5	9,5	} page 1
1	.	.	.	.	.	.	.	.	.
2	.	.	.	.	.	.	.	.	.
3	1,8	2,8	3,8	.	.	.	.	.	9,8
.	
.	
.	
SS 0	1,29	2,29	3,29	9,29	} page 7
1	1,30	2,30	3,30	.	.	.	.	.	9,30
2	1,31	2,31	3,31	.	.	.	.	.	9,31
3	1,32	2,32	3,32	.	.	.	.	.	9,32

E3

SS 0	1,1	2,1	3,1	4,1	5,1	6,1	7,1	8,1	9,1	} page 0
2	1,2	2,2	3,2	4,2	5,2	6,2	7,2	8,2	9,2	
SS 0	1,3	2,3	3,3	4,3	5,3	6,3	7,3	8,3	9,3	} page 1
2	1,4	2,4	3,4	4,4	5,4	6,4	7,4	8,4	9,4	
SS 0	1,15	2,15	3,15	4,15	5,15	6,15	7,15	8,15	9,15	} page 7
2	1,16	2,16	3,16	4,16	5,16	6,16	7,16	8,16	9,16	

E2A like E3

TABLE II - Data Record Format

Item Number	Item Description	Telemetry Sequences	Position Frames	Channel	Target Field Size (bits)	8-Bit Byte Offset
1	year ¹		time of page 0, sequence 0,		16	0
2	day		frame 0, of an even ²		16	2
3	milliseconds		album		32	4
4	spacecraft clock		same time as above		32	8
5	pseudo-sequence counter		same time as above		32	12
6	Se-1 ①	<i>E1=8</i> 2	2	8B/0, 2B/1	16	16 ³
	②	2	2	6B/1, 4B/2	16	18
	③	2	2	4B/2, 6B/3	16	20
	④	2	2	2B/3, 8B/4	16	22
	⑤	2	2	8B/11, 2B/12	16	24
	⑥	2	2	6B/12, 4B/13	16	26
	⑦	2	2	4B/13, 6B/14	16	28
	⑧	2	2	2B/14, 8B/15	16	30
	Repeat of above for sequences 6, 10, 14					
7	Se-2 ①-⑧	<i>E2A, E3, E2A, E3</i> 2, 6, 10, 14	10	same as item 6	16	80
8	Se-3 ①-⑧	<i>E4, P1, E4, P1</i> 3, 7, 11, 15	2	same as item 6	16	144
9	Se-4 ①-⑧	<i>A6, A1, Z1, P8</i> 3, 7, 11, 15	10	same as item 6	16	208
10	<i>R4(1)</i> R1 = M. ①	<i>FLAG.</i> 1	2	4B/6&7	16	272 = 110 ₁₆
11	R2 S ②	2	10	4B/6&7	16	280
12	R3 P9 ③	3	2	4B/6&7	16	288
13	<i>R4(4)</i> R4 P7 ③	3	10	4B/6&7	16	296
14	R5 Z1 ③	3	10	4B/9&10	16	304

TABLE II - Continued

Item Number	Item Description	Telemetry Sequences	Position Frame	Channel	Target Field Size (bits)	8-Bit Byte Offset
15	R6 AA63	3,7,11,15	2	4B/6&7	all 47 16	312
16	R7 A6 A5	3,7,11,15	10	4B/6&7	16	320
17 R8(1)	R8 A6 Z3	1,9	4	4B/6&7	16	328 ¹⁶⁴
18	R9 A4	4,12	8	4B/6&7	12 bits 16	332
19	R10 A3	0,8	8	4B/6&7	16	336
20	R11 A2	5,13	4	4B/6&7	16	340
21	R12 P11	0,8	4	11&2B/12	16	344
22 R12	R13 P10	0,8	4	6B/12&4B/13	16	348
23	R14 E4	1,9 SS 0#2	4	11&2B/12	16	352
24	R15 E5	1,9 SS 0#2	4	6B/12 & 4B/13	16	356
25	R16 E6 3	4,12 S 1#3	8	11&2B/12	16	360
26 R17(1)	R17 E2B 4	4,12 SS 1#3	8	6B/12&4B/13	16	364
27	R18 E2C 5	0,8 SS 0#2	8	11&2B/12	16	368
28 R19(1)	R19 P2 3	0,8 SS 0#2	8	6B/12&4B/13	16	372
29	R20 P3	5,13 SS 1#3	4	11&2B/12	16	376
30	R21 P4	5,13 SS 1#3	4	6B/12&4B/13	16	380
31	R22 P5	0,8	12	11&2B/12	16	384
32	R23 P6	0,8	12	6B/12&4B/13	16	388
33	R24 P8	4,12	12	11&2B/12	16	392
34 R25(1)	R25 Z2	4,12 SS 1#3	12	6B/12&4B/13	16	396
35	data quality flags - 16 sequences ⁴				8	400 = 190 ₁₆
36	time quality flag - sequence 0				8	416

TABLE II - Continued

Item Number	Item Description	Telemetry Sequences	Position Frame	Channel	Target Field Size (Bits)	8-Bit Byte Offset
37	spacecraft clock	quality flag	sequence 0		8	417
38	DPP-a3,1-4	0,8	4	4	8	418
39	DPP-a3,13-16	0,8	8	4	8	420
40	DPP-a3,21-24	0,8	12	4	8	422 ^{1A6}
41	DPP-a3,5-8	1,9	4	4	8	424
42	DPP-a2,5-8	1,5,9,13	8	4	8	426
43	DPP-a2,9-12	1,5,9,13	12	4	8	430
44	DPP-a2,13-16	2,6,10,14	4	4	8	434
45	DPP-a2,17-20	2,6,10,14	8	4	8	438
46	DPP-a2,21-24	2,6,10,14	12	4	8	442
47	DPP-a2,25-28	3,7,11,15	4	4	8	446
48	DPP-a2,29-32	3,7,11,15	8	4	8	450
49	DPP-a2,33-36	3,7,11,15	12	4	8	454
50	DPP-a3,9-12	4,12	8	4	8	458
51	DPP-a3,17-20	5,13	4	4	8	460
52	AP16, & 1-15	ALL	0	4	8	462 ^{1CE16}
53	AP32, & 17-31	ALL	0	5	8	478
	or AP48, & 33-47	ALL	0	5	8	
54	OA data	4,12	4	4-15	8/chan	494
55	fill				16	518
56	repeat of items 1 thru 54 for page 1 of an "even" album					520-20816
57	repeat of items 1 thru 54 for page 2 of an "even" album					1040
58	repeat of items 1 thru 54 for page 3 of an "even" album					1560

Data Performance Parameter
Analog Parameter
Optical Aspect

TABLE II- Continued

Item Number	Item Description	Telemetry Sequence	Position Frame	Channel	Target Field Size (bits)	8-Bit Byte Offset
59	items 1 thru 79 of attitude/orbit/ephemeris table- see attachment 1 of reference a				32	2080
60	repeat of items 1 thru 60 ⁵³ for the next album, an "odd" one					$\begin{array}{r} 2396 = 95C16 \\ 2396 \\ \hline 4792 \end{array}$
61	five 8-bit byte to pad to a multiple of 36 bits					$\begin{array}{r} 5 \\ \hline 4797 \end{array}$

*logical record size = 4797 bytes = 1066 36-bit words

Notes

- 1 All items are binary integers except for the attitude/orbit/ephemeris data, which is in IBM 360 floating point format.
- 2 An even album is one in which satellite clock lines \bar{a}_5 , \bar{a}_6 , and \bar{a}_7 are all ones. Note that $\bar{a}_7 = \bar{C}_{25}$ at 1600 BPS and $\bar{a}_7 = \bar{C}_{27}$ at 400 BPS.
- 3 Items 6 through 34 are telemetry data and should appear in the 16 bit target field as a 10 or 12 bit integer as they are specified. This should be the floating point compressed form as described in Appendix C, sheets 7-11 of the IMP H&J Encoder document.
- 4 Each quality flag should be a 2 bit integer right-justified in the 8 bit target field with the left-most 6 bits as zeros.
- 5 The DPP's should remain four to a channel as they appear in the telemetry read-out: $D_1D_2D_3D_4D_1D_2D_3D_4$; i.e., each one repeats.
- 6 The AP's should be placed in 8 bit fields so that the conversion to volts is as follows:

$$\text{VOLTS} = 5.75 - .025*(8 \text{ bit count});$$

i.e., 230 counts = 0. volts and
30 counts = 5. volts.