THE JOHNS HOPKINS UNIVERSITY
APPLIED PHYSICS LABORATORY
8621 GEORGIA AVENUE
SILVER SPRING, MARYLAND 20910

TELEPHONE
953-7100
589-7700
AREA CODE 301

JUN 2 1 1971

Please refer to:
TSSD-2499

Director
National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

Attention: Mr. B. H. Ferer, Code ~~724~~ 701.1

Subject: IMP-H CPME Experimenter's Tape

Enclosure: (1) APL Memo S1P-757-71, Required Items for the IMP-H CPME Experimenter's Tape

Dear Sir:

The enclosure specifies the items that are required on the IMP-H CPME experimenter's tape. A detailed description of the tape format will be submitted after the enclosed list of items is approved.

If further information is required, please contact R. L. McCutcheon at telephone number 953-7100, extension 2441.

Very truly yours,
Original signed by
R.W. Larson for
R.B. Kershner
R. B. Kershner
Space Development
Department Head

RBK:RLM:cy
Distribution
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SILVER SPRING, MARYLAND

SIP-757-71
June 16, 1971

TO: Distribution

FROM: R. L. McCutcheon

SUBJECT: Required Items for the IMP-H CPME Experimenter's Tape

The IMP-H CPME experimenter's tape should contain only one end of file for the entire tape, with an ID record preceding each "file" of data rather than an end of file mark following it. Here, a "file" is equated to the contents of an analog tape. Each ID record should contain the following information:

1. orbit number
2. recording station number
3. analog tape number
4. analog to digital converter ID
5. start time for this station
6. stop time for this station
7. quick look flag
8. experimenter ID
9. satellite ID
10. edit tape number
11. edit reel number
12. date of generation of experimenter tape

A data record should consist of two albums of telemetry data, starting with an even album and should also contain orbit and attitude data as listed below. In the event that only a part of a logical record is available, fill characters should be generated and the corresponding quality flags set accordingly.

1. U. T. (year, day, milliseconds)
2. album number (spacecraft clock with least significant bit incrementing at album rate)
3. quality flags for U. T. and spacecraft clock

4. orbital data
   a. geocentric latitude, longitude (degrees), and radial distance (kilometers) of the spacecraft
   b. solar ecliptic X_{SE}, Y_{SE}, Z_{SE} coordinates of the spacecraft in ~~earth radii~~
   c. solar magnetospheric X, Y, Z coordinates of the spacecraft in ~~earth radii~~
   d. sun-earth-spacecraft angle in degrees
   e. spacecraft velocity in geocentric solar ecliptic coordinates $\dot{X}_{SE}$, $\dot{Y}_{SE}$, $\dot{Z}_{SE}$, in earth radii/hour
   f. right ascension and declination of spacecraft in celestial coordinates
   g. orbit, no orbit data flag
5. attitude data
   a. spin period in milliseconds
   b. ~~U. T. of last spin period determination~~
   c. ~~spin axis θ_{SE} (solar ecliptic) in degrees~~
   d. spin axis ϕ_{SE} (solar ecliptic) in degrees
   e. spin axis right ascension in degrees
   f. spin axis declination in degrees
   g. ~~U. T. of last spin axis determination~~
   h. optical aspect flag (1 - normal, 0 - failed)
   i. optical aspect eclipse flag (1 - eclipse, 0 - no eclipse)
   j. sun time in milliseconds from beginning of snapshot to centered sun pulse
   k. attitude, no attitude data flag
6. APL-CPME Data: Table I gives a list of the CPME data outputs. All CPME data is to appear in "expanded" form on the experiment tape. Column 3 specifies the readout positions of the various items in the telemetry in terms of Snapshot, Sequence, Frame, Channel (with fractional channels denoted as: e.g., 4B/6 and 7 = last 4 bits of

channel 6 and all 8 bits of channel 7, or 6B/12 and 4B/13 = last 6 bits of channel 12 and first four bits of channel 13. The number of times each of the various outputs appear in a logical record is:

APL-R1 through R-7	32
APL-R8 through R-25	16
APL-Sel through Se-4	32
APL-DP	16
APL-AP	8
TOTAL	104

7. Data Quality Flags: One flag, to be defined by GSFC, indicating the probable reliability of the data should be included for each output of APL data each time it appears.

TABLE 1

DATA LABELS AND POSITIONS

APL-Name	S/C Accum #	Position in TM Readout SS	SEQ	FR	CHANNEL	Descriptive Name
APL-R1	LR12 a_2 - 6	All	1	2	4B/6 & 7	M
APL-R2	LR12 a_2 - 10	All	1	10	4B/6 & 7	S
APL-R3	LR12 a_2 - 14	All	2	2	4B/6 & 7	P9
APL-R4	LR12 a_2 - 18	All	2	10	4B/6 & 7	P7
APL-R5	LR12 a_2 - 20	All	2	10	4B/9 & 10	Z1
APL-R6	LR12 a_2 - 22	All	3	2	4B/6 & 7	A7
APL-R7	LR12 a_2 - 26	All	3	10	4B/6 & 7	A6
APL-R8	LR12 a_3 - 6	Even	1	4	4B/6 & 7	A5
APL-R9	LR12 a_3 - 10	Odd	0	8	4B/6 & 7	A4
APL-R10	LR12 a_3 - 14	Even	0	8	4B/6 & 7	A3
APL-R11	LR12 a_3 - 18	Odd	1	4	4B/6 & 7	A2
APL-R12	LR10 a_3 - 1	Even	0	4	11 & 2 B/12	P11
APL-R13	LR10 a_3 - 2	Even	0	4	6B/12 & 4B/13	P10
APL-R14	LR10 a_3 - 5	Even	1	4	11 & 2B/12	E4
APL-R15	LR10 a_3 - 6	Even	1	4	6B/12 & 4B/13	E5
APL-R16	LR10 a_3 - 9	Odd	0	8	11 & 2B/12	E6
APL-R17	LR10 a_3 - 10	Odd	0	8	6B/12 & 4B/13	E2B
APL-R18	LR10 a_3 - 13	Even	0	8	11 & 2B/12	E2C
APL-R19	LR10 a_3 - 14	Even	0	8	6B/12 & 4B/13	P2
APL-R20	LR10 a_3 - 17	Odd	1	4	11 & 2B/12	P3
APL-R21	LR10 a_3 - 18	Odd	1	4	6B/12 & 4B/13	P4
APL-R22	LR10 a_3 - 21	Even	0	12	11 & 2B/12	P5
APL-R23	LR10 a_3 - 22	Even	0	12	6B/12 & 4B/13	P6
APL-R24	LR10 a_3 - 25	Odd	0	12	11 & 2B/12	P8
APL-R25	LR10 a_3 - 26	Odd	0	12	6B/12 & 4B/13	Z2

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TABLE 1 (Cont'd)

APL-Name	S/C Accum #	Position in TM Readout SS	SEQ	FR	CHANNEL
APL-Se1	APL Se-1 $(1)_8$ - $(8)_8$	All	2	2	0 - 4 & 11 - 15
APL-Se2	APL Se-2 $(1)_8$ - $(8)_8$	All	2	10	0 - 4 & 11 - 15
APL-Se3	APL Se-3 $(1)_8$ - $(8)_8$	All	3	2	0 - 4 & 11 - 15
APL-Se4	APL Se-4 $(1)_8$ - $(8)_8$	All	3	10	0 - 4 & 11 - 15
APL-DP	APL DP 3 - 21	Even	0	12	1st Bit of Ch4
APL-AP	AP #1	SS0	1	0	4

Descriptive Name			
SS0	SS1	SS2	SS3
E1	E1	E1	E1
E3*	E2A	E3*	E2A
P1	E4	P1	E4
~~A1~~ A7	~~P11~~ A1	~~P10~~ P2	A6
** APP	X	X	X

*E3 is divided into 32 subsectors and repeats with a 2 page period.

**APP has 8 subcommutated signals: Starting from PG 0 of even albums they are P3d P2B P1A P0G P3F P0E P1E P2E
CD, PM, GA, HV, TP, D1, D2, D3.

For per Tables { E1, E2A, E3 - "BIG" }

When making R vs r corrs, check raw counts against a threshold value and use 1 of 2 power series. Initial runs - only 1 power series (CW- 6/24/71)

R L McCutcheon
R. L. McCutcheon

RLM:cy
Distribution
AKossiakoff (2)
RWLarson
COBostrom
SMKrimigis
JWKohl
RLMcCutcheon (2)
SDO Central File
Archives (2)
File