

#369

IMP-H

72-073A-05A

IMP-J

73-078A-05A

30 MINUTE AVERAGED DATA OF COUNTS/SECONDS

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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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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

IMP-J

30-MIN. AVG. COUNT RATES, ALL MODES

73-078A-05A

SPHE-00089

THIS DATA SET HAS BEEN RESTORED. ORIGINALLY IT CONTAINED FOUR 9-TRACK, 800 BPI TAPES WRITTEN IN BINARY. THERE IS ONE RESTORED TAPE. THE DR TAPE IS A 3480 CARTRIDGE AND THE DS TAPE IS 9-TRACK, 6250 BPI. THE ORIGINAL TAPES WERE CREATED ON A CDC 6600 COMPUTER AND WERE RESTORED ON AN IBM 9021 COMPUTER. THE DR AND DS NUMBER ALONG WITH THE CORRESPONDING D NUMBERS AND TIME SPANS ARE AS FOLLOWS:

DR#	DS#	D#	FILES	TIME SPAN
DR004085	DS004085	D042147	1	10/30/73 - 04/16/76
		D028765	2	03/15/75 - 12/23/75
		D043795	3	04/17/76 - 10/03/78
		D047378	4	10/04/78 - 03/11/80

Refer to 72-073A-05A

IMF-H

30-MIN. AVERAGED COUNT RATES

72-073A-05A

SPHE-00515

THIS DATA SET HAS BEEN RESTORED. THERE WERE ORIGINALLY 4
9-TRACK, 1600 BPI TAPES. WRITTEN IN BINARY. THERE IS ONE
RESTORED TAPE. THE DR TAPE IS A 3480 CARTRIDGE AND THE DS
TAPE IS A 9-TRACK, 6250 BPI. THE TAPES WERE ORIGINALLY
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
DR02678	DS02678	D28154	1	09/27/72 - 03/14/75
		D28764	2	10/30/73 - 08/09/75
		D42145	3	03/15/75 - 06/19/77
		D42146	4	06/23/77 - 09/25/78

REQ. AGENT

CMP

DEW

GLS

SAR

RAND NO.

RC7008

V0130

ACQ. AGENT

JHK

RWP

HKH

RWP

IMP-J

IMP-H

30 MINUTE AVERAGED DATA OF COUNT/SECONDS

73-078A-05A

72-073A-05A

This data set catalog consists fo 4 tapes of IMP-H data and 4 tapes of IMP-J data tapes. They are written in Binary and are 9-track, 800 BPI, and have only one file of data. The tapes are created on an CDC 6600 computer, but are in IBM 32-bit format.

IMP-H

<u>D#</u>	<u>C#</u>	<u>TIME SPAN</u>
D-28154	C-18630	09/27/72 - 03/14/75
D-28764	C-18669	10/30/73 - 08/09/75
D-42145	C-21218	03/15/75 - 06/19/77
D-42146	C-21219	06/23/77 - 09/25/78

IMP-J

<u>D#</u>	<u>C#</u>	<u>TIME SPAN</u>
D-28765	C-18670	03/15/75 - 12/23/75
D-42147	C-21217	10/30/73 - 04/17/76 ¹⁶
D-43795	C-24926	04/19/76 - 10/03/78 ¹⁷
D-47378	C-22187	10/04/78 - 03/11/80

IMP-H (IMP-7 or EXPLORER 47) and IMP-J (IMP-8 or EXPLORER 50)

30-Minute-Average Data of Counts/Second

The supplied tape(s) were generated on a CDC-6600 computer. Data items (described below) have been converted to an IBM-format. Records are fixed length (1466 32-bit words) and represent one day of averages (48 averages for each of 13 channels per day - averages synchronized to the half-hour). Tape characteristics (hopefully in correct IBM terminology) are:

unlabelled
9-TRACK

RECFM=F
LRECL=5864
BLKSIZ=5864
DEN=24

<u>WORD</u>	<u>DESCRIPTION</u>	<u>TYPE</u>
1	Record Type ¹ (1 or 2)	I4
2	Year (YY)	I4
3	Day of Year (DDD, Day 1 = Jan 1)	I4
4	Orbit Number	I4
5	Number of Actual Data Items (Between 0 and 48)	I4
6-53	Half-hour of the Century ²	48*I4
54-101	30-min Ave. for Channel L1	48*R4
102-149	30-min Ave. for Channel L3	48*R4
150-197	30-min Ave. for Channel L5	48*R4
198-245	30-min Ave. for Channel L9	48*R4
246-293	30-min Ave. for Channel L2	48*R4
294-341	30-min Ave. for Channel L4	48*R4
342-389	30-min Ave. for Channel L6	48*R4
390-437	30-min Ave. for Channel L10	48*R4
438-485	30-min Ave. for Channel F	48*R4
486-533	30-min Ave. for Channel L7	48*R4
534-581	30-min Ave. for Channel L12	48*R4
582-629	30-min Ave. for Channel L11	48*R4
630-677	30-min Ave. for Channel L8	48*R4
678-725	Percent Bad Data During Average for Channel L1	48*R4
726-773	Percent Bad Data During Average for Channel L3	48*R4
774-821	Percent Bad Data During Average for Channel L5	48*R4
822-869	Percent Bad Data During Average for Channel L9	48*R4
870-917	Percent Bad Data During Average for Channel L2	48*R4
918-965	Percent Bad Data During Average for Channel L4	48*R4
966-1013	Percent Bad Data During Average for Channel L6	48*R4
1014-1061	Percent Bad Data During Average for Channel L10	48*R4
1062-1109	Percent Bad Data During Average for Channel F	48*R4
1110-1157	Percent Bad Data During Average for Channel L7	48*R4
1158-1205	Percent Bad Data During Average for Channel L12	48*R4
1206-1253	Percent Bad Data During Average for Channel L11	48*R4
1254-1301	Percent Bad Data During Average for Channel L8	48*R4
1302-1349	GSE _x	48*R4

<u>WORD</u>	<u>DESCRIPTION</u>	<u>TYPE</u>
1350-1397	GSE _y Geocentric Solar Ecliptic	48*R4
1398-1445	GSE _z Coordinates (km.)	48*R4
1446-1461	Dummy	16*R4
1462	J1 Filter Variable ³	I4
1463	J2 Filter Variable ³	I4
1464	J3 Filter Variable ³	I4
1465	J4 Filter Variable ³	I4
1466	Satellite LD (1 means IMP-H(7), 2 means IMP-J(8))	I4

1. All record-types ~~should be~~ "1", except possibly for the last record which may be "2" indicating that that record is incomplete.
2. e.g. 1257648 would be the first half-hour of day 270 of 1972.
3. See attachment 2.

IMP-7 and IMP-8

TABLE 2. EPE NORMAL DISCRIMINATOR LEVELS AND OUTPUT LOGIC

Detector	Discriminator* Levels (MeV)		Logic	Output Channels (MeV)	Design- nation	Nuclear Charge Range	Samples per spin
A	A1	0.03	$A_1 \bar{A}_2 \bar{B}_1$	0.05 - 0.22	L ₁	$Z \geq 1$	16
	A2	0.20	$A_2 \bar{A}_4 \bar{B}_1$	0.22 - 0.80	L ₂	$Z \geq 1$	16
	A3	0.50	$A_3 \bar{A}_4 B_2 \bar{B}_3 C$	4.5 - 8.5	L ₅	$Z = 1$	8
	A4	0.80	$A_4 \bar{A}_5 \bar{B}_1$	0.80 - 2.1	L ₃	$Z \geq 1$	16
	A5	2.5	$A_4 \bar{A}_5 B_1 \bar{B}_2 C$	2.1 - 4.5	L ₄	$Z = 1$	16
	A6	3.5	$A_6 B_1 \bar{C}$	8.4 - 16.0	L ₁₁	$Z = 2$	8
B			$\bar{A}_2 B_1 \bar{C}$	background	L ₉		8
	B1	0.10	$A_5 \bar{B}_1$	2.2 - 8.4	L ₁₀	$Z \geq 2$	8
	B2	3.6	$A_5 \bar{A}_6 B_2 \bar{C}$	16.0 - 35.0	L ₁₂	$Z = 2$	8
	B3	9.0					
C	C	0.10	$A_2 B_1 C$	8.5 - 25.0	L ₆	$Z = 1$	8
D	D1	0.030	$D_1 \bar{D}_2$	0.03 - 0.10	L ₇	electrons	16
	D2	0.100					
E	E1	0.100	$E_1 \bar{E}_2$	0.10 - 0.20	L ₈	electrons	16
	E2	0.200					
F	F1	0.015	F_1	>0.015	F	electrons and ions	16
G	G1	0.60	G_1	>0.6	G ₁	$Z \geq 2$	16
	G2	1.0	G_2	>1.0	G ₂	$Z \geq 2$	8
	G3	2.0	G_3	>2.0	G ₃	$Z \geq 3$	8

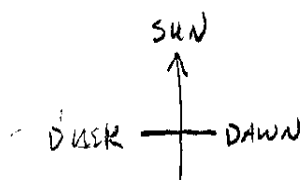
* Levels A₁ and D₁ are commandable to 50 keV. Level F₁ is commandable to 30 keV.

**Low energy proton response is 50 keV due to aluminum dead layer.

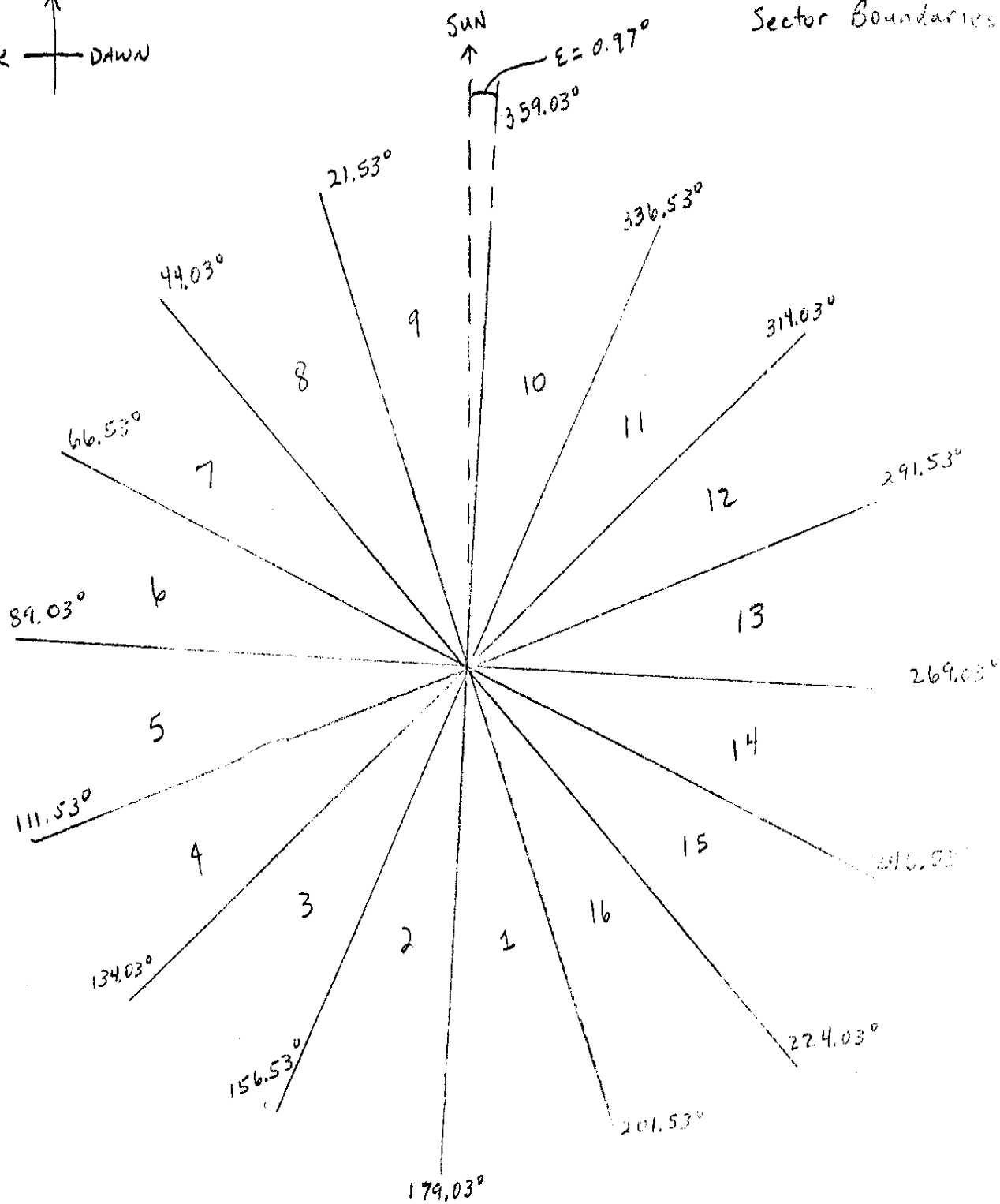
For the same reason, detector F low energy proton response is 0.024 MeV and 0.038 MeV on IMP 7 and 8 respectively.

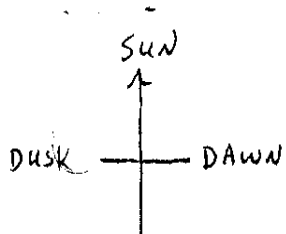
As a safeguard against possible failure in the logic circuitry, a commandable mode was incorporated into the EPE whereby all discriminator levels could be routed to the multiplexers, thereby giving discriminator output counts only. Further safeguards include commandable low-level discriminators on detectors A, D, and F to protect against possible

detector noise increases, and bias voltages commandable in four steps from normal operating bias to one-half that value to guard against excessive detector bias current. None of these safeguard modes has been required to date. For reference, routinely monitored EPE status and housekeeping functions are listed in Tables 3 and 4.

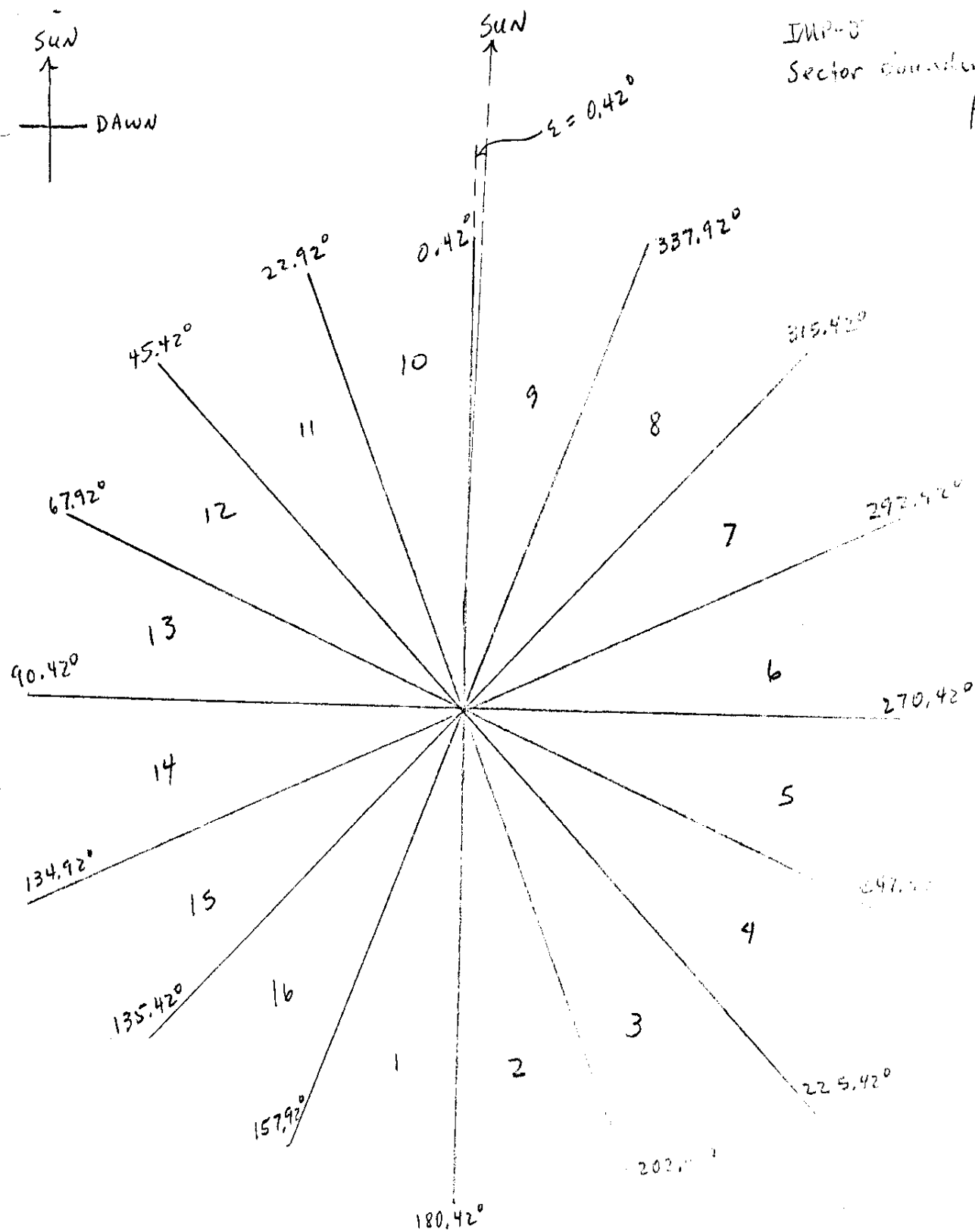


IMP-H
Sector Boundaries p.1





IMP-3
Sector boundaries
p. 2



DRIVER 2:

This package plots 30-minute averages of COUNTS/SECOND for all 16 channels. 30-minute averages are synchronized on the half-hour. Values are plotted on a logarithmic scale. Four days of averages are plotted per microfilm frame.

(a) Converting COUNTS/SECTOR to COUNTS/SECOND:

For a given 30-minute period let LREC represent the number of IMP-H pages encountered during that 30 minutes. For each channel k ($k=1,2,\dots,16$), let LSKIP_k denote the number of pages ignored for channel k during the 30 minutes (specifically, pages are ignored for a given channel if any sector has a value of -99, or if MODE= CAL RUN). Thus LREC-LSKIP_k is the number of pages actually used for channel k in accumulating an average for the given 30 minutes.

For each page i ($i=1,2,\dots,LREC$) and each channel k

$$N_{i,k} \text{ cnts/second} = (t \text{ cnts}/r_1 \text{ channel})(1 \text{ spin}/k_2 \text{ millisec}) \\ (1000 \text{ millisec/sec})(1 \text{ channel}/r_3 \text{ spins})$$

where: t = sum of counts over $16 \times r_1$ sectors of channel k for 1 page

$$r_1 = 11/16 \text{ for channel L7} \\ = 1 \text{ otherwise}$$

$$k_2 = \text{spin period in millisec (item \#77 of ORBIT TAPE records)}$$

$$r_3 = 1 \text{ if SLAVE=TM} \\ = 3 \text{ if SLAVE=OA and ID=IMP-H} \\ = 1 \text{ if SLAVE=OA and ID=IMP-C}$$

Thus, the average counts/second, x_k , for channel k over the given 30 minutes is:

$$x_k = \left\{ \sum_{i=1}^{LREC-LSKIP_k} N_{i,k} \right\} / \{LREC-LSKIP_k\}$$

(b) Data filtering:

In the following description, the phrase "channel total" refers to the total counts for a given channel where the counts are summed over one page. During the accumulation of a 30-minute average, data is then filtered for each separate channel by the following process:

- i) Ignore total if any sector has a value of -99.
- ii) If present channel total exceeds last good channel by a factor of $J1$ * discard it (if last good channel total is zero use an increase of $J1$ counts instead of factor).
- iii) If the present channel total exceeds the last good channel total by a factor greater than $J3$ ($J4$ for channels G2 and G3) hold it

*Initially we are setting $J1=10,000$, $J2=10$, $J3=100$, and $J4=10$.

temporarily. Check last good total against next total. If the same situation holds, use present and next total, then proceed. If next total is less than or equal to a factor of J2 discard present total. (If last good channel total was zero use increases of J2, J3, and J4 instead of factors).

To start this process (ie. - recognize "good" channel totals for the first time), for each channel do the following:

- i) Calculate 5 consecutive channel totals from data which is not in CAI RUN mode nor which has any sectors containing values of -99.
- ii) Take the square root of the maximum and minimum of the 5 values.
If $\sqrt{\text{MAX}} \leq 5\sqrt{\text{MIN}}$ then the channel total is good. Otherwise repeat.

73-078A-05A

D-47378 / C-22187

D-47378 / C-22487

FILE	1	RECORD	1	LENGTH	5865BYTES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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