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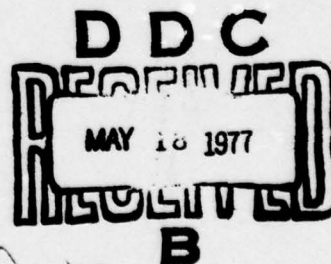
SOLRAD-11 On-Line System (SOLOLS) Applications Software ... Interim System

LEONARD S. WAGNER AND DONALD R. UFFELMAN

*Space Environment Branch
Space Systems Division*

March 1977

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The architecture of the SOLOLS applications software, is briefly discussed. The major tasks and subroutines are described in terms of functional flow diagrams. The overlay structure of the applications software, the organization of the data for status outputs and examples of all of the data displays are contained in Appendices A, B, and C.		

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SOLRAD-11 ON-LINE SYSTEM (SOLOLS)
APPLICATIONS SOFTWARE ... INTERIM SYSTEM

I. INTRODUCTION

The NRL applications software package in the "interim" system is a multi-tasking code embodying a single task overlay and is resident on a Data General NOVA 800 minicomputer. The operating tasks are a data display task, QLOOK; a data base write task, UPDTDB; a communications driver task, NLINK2; and a message processing task, PROCT. All tasks other than QLOOK are continuously core resident during operation. QLOOK, because of its size, must be overlaid with only a small root program continuously core resident.

QLOOK is the main system task in the sense that it prepares the system to receive the other tasks and then activates them. Once a task is activated, access to the CPU is determined by the RDOS (real-time disk operating system) TASK SCHEDULER according to priority. Since the data display task is of lesser urgency than the real-time data base update, QLOOK lowers its priority after activating the other tasks. The RDOS protocol for task ACTIVATE, ABORT, READY and SUSPEND is designed to make most efficient use of the CPU. Providing adequate access to the CPU for each task is largely a design factor for the code designer. ▽

II. DATA DISPLAY TASK (QLOOK)

The data display task is described in the flow diagram shown in figure 1. After activation of the other tasks, the root program embarks upon a loop which initiates software overlays as requested by the operator at the control console. In the event that there are no TTY messages then the task waits for I/O at the "read TTY" point in the code. In a multi-tasking environment, a task awaiting I/O is automatically suspended and the CPU is assigned to other operating tasks. Operator TTY intervention "READIES" the QLOOK task and upon assignment of the CPU, the data output task is executed.

More detailed flow diagrams of the overlaid applications software are given in figures 2 to 5. These flow diagrams are intended to give an accurate sense of the program flow without being accurate in their small details. The major programs and subroutines involved in each of these functions are listed

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along-side the flow diagrams. Additional details about program operation are available in the code listings which are copiously commented.

The four display programs are as follows: Status Display, Listings Display, Plotter Display and Data Base Describe.

The status display code accepts an experiment number and an observation period and provides a formatted output of experiment status for every page of telemetry data during the prescribed interval. The output device can be either a CRT display console or a line printer.

Similarly the Listings display code provides a formatted output of almost all of the data collected during the prescribed interval.. The data is output, for the most part, in telemetry page modules. There are exceptions, however, for those experiments, such as #9, 16, 17 and 25, in which a complete data record spans many telemetry pages. In such cases a data output module spans a complete experiment record. The output device is again either a CRT display or the line printer.

The Plotter display in its current configuration uses the Calcomp plotter as the output device. The plot software is presently incorporated into the overlay architecture and includes all necessary Calcomp plot subroutines. The actual experiment plot routines are largely undone with the exception of that for experiments #4, 5, 6, 12 and 13. This routine was written to demonstrate feasibility of the overlay structure for the plot routine and also because this group of experiments was of most immediate interest to users. The procedure adopted in the plot routine for experiment #4, 5, 6, 12 and 13 was to plot data in page size increments. A user request for a plot consisting of one hour of data would then involve 30 disk seeks (each page of data equals 2 minutes) and 30 calls to the plot subroutine.

The data describe program is designed to permit examination of the data base to its minutest detail. Data is output in page size increments upon operator request. The data is presented as octal-magnitude and sign for each word or in the actual binary representation. In addition to the data base, the describe program will print the data base directory in an I5 format upon operator request.

The applications software overlay is organized into 3 nodes. A node is a segment of the overlay disk file which is assigned a given area of core. Overlays within the node are shuttled into and out of the assigned core space as directed by the program. Appendix A shows a relocatable loader listing detailing the organization of the overlay file. Node 0 of this file contains

mainly output processing, formatting and print routines. Node 1 contains mainly data retrieval routines and node 2 contains primarily the display executive routines. The loader listing also provides information on subroutine and program sizes as well as overlay savefile core allocation.

The data retrieval routines deposit data relevant to an output request into three arrays the LAR, NAR and MAR arrays. The LAR array contains general information which is useful for header formulation. The NAR array contains experiment status information and the MAR array contains data. The NAR and MAR arrays are specific to a particular experiment. All three arrays are refilled each time a new telemetry page is processed. In cases where several experiments are linked in a single output format, several data seeks are required, each with a different experiment number specification.

Data retrieval is accomplished according to time and experiment number. A minute tag, appropriate to the desired time, is furnished IDBDAT which searches the data base directory for the desired time tag. A tolerance of plus or minus one minute of the time specified is allowed. Each time seek is conducted independently of and in an identical manner to every other seek. If a prescribed time tag is not found in the data base directory, a message to that effect is generated and displayed on the control console. The LAR array is generated in IDBDAT after locating and retrieving the desired page of data.

Each experiment has a specific retrieval routine called RETXX where the X's refer to the experiment number (e.g., RET19 for experiment #19). The data for the NAR array is presented in a programmed format for use by the status display routines. Generally speaking, specific locations in the NAR array are reserved for the same type of information regardless of experiment. The format of the NAR array for all 25 experiments is given in Appendix B. Knowledge of this format is very useful when trying to understand the operation of the Status Display Code.

Most of the data display programs are fairly straight forward and require only a single page of telemetry data for an output module. Certain experiment listings are more complicated, however, and these require some additional description. The most efficient form of exposition is that of the flow diagram and we will make liberal use of this device.

The data for experiment #9 may be distributed over seven telemetry pages depending on the scan mode. The starting page is distinguished by a synchronizing word. In addition, data from experiment #8 is necessary to the proper interpretation of experiment #9 data. As a consequence the code is divided into

three phases. Phase one involves search for the "sync" word. Phase two involves the collection of 7 pages of data starting with the "sync" page. Phase three involves the acquisition of experiment #8 data. Figure 6 is a flow diagram for the experiment #9 LISTING code (EXP9). Figure 7 is a flow diagram for the experiment #9, STATUS Code (STE9) which is also complicated by the distribution of relevant data over seven telemetry pages.

Experiment #15 is less complicated than experiment #9 but is distinguished by the fact that format 3 is almost totally devoted to a read-out of experiment 15 data. In this format, the data is extracted as in other formats except that the program executes 10 data "seeks" in order to extract a complete data record. A flow diagram for the experiment 15 LISTING code is given in figure 8.

Experiment 16 requires eight telemetry pages for a complete data record. It provides for output of stellar, or auroral data or both. A flow diagram for the experiment 16 LISTING code is shown in figure 9.

Each page of telemetry data provides a complete record of experiment 17 data. However, experiment #17 LISTING code allows for output of up to 16 telemetry pages of data on a single output page. In addition, the code permits the selective display of data as shown in the flow diagram of figure 10.

The experiment 25 LISTING code provides for two types of output, "State of Health" (SOH) data and Gamma data. In order to provide a short history of SOH each page of output contains data from 16 telemetry pages thereby covering 32 minutes of experiment time.

The Gamma data is available in format 2 only and consists of two pages of telemetry for a complete data record. The start of a record is always on the even telemetry page and hence the data extraction is preceded by a search for an even telemetry page number. The flow diagram for the experiment 25 LISTING code is shown in figure 11.

Finally, an exposition of the SOLOLS Applications Software would be incomplete without examples of the available displays. These are given in Appendix C. They include a complete set of STATUS and LISTING displays, a Calcomp graphics display for experiments 4, 5, 6, 12 and 13 and a Data Base Describe (one in octal and one in binary) for a page of the data base.

III. COMMUNICATIONS MULTIPLEXER DRIVER TASK (NLINK2)

In the interim version of the SOLOLS software, NLINK2 is a nonoverlaid task which constantly monitors the communications line for incoming messages. Data is received in byte size

increments. NLINK2 unpacks the data, repacks it two bytes per computer word and sets the flag for the processing task, PROCT, when a message is complete. The driver task involves subroutines MUXR2, BUFGT and UTBYT. NLINK2 and MUXR2 are responsible for the general bookkeeping functions of the task. BUFGT is responsible for the coordination with the multiplexer interrupt service routine and accepts the multiplexer output one word at a time (one data byte/word). UTBYT is responsible for extracting the data byte and reformatting two data bytes to a computer word. Figure 12 is a flow diagram illustrating the operation of the NLINK2 task.

IV. COMMUNICATIONS PROCESSING TASK (PROCT)

PROCT acts as the communications processing task. It is nonoverlaid in the interim version of SOLOLS. It examines the message header (to determine the nature of the message, the source and destination computers and devices) and routes the data accordingly. Appropriate acknowledgement is also generated and relayed to the source computer via the MUXWT subroutine. In the interim version of the SOLOLS system, the NRL computer acts as a destination computer only. For messages destined for the NRL disk, PROCT sets the "message pending" flag for the disk write task, UPDTDB. Figure 13 is a flow diagram for the PROCT task and should be self explanatory.

V. DATA BASE WRITE TASK (UPDTDB)

UPDTDB is a FORTRAN code for writing SOLRAD experiment data to disk on the Data General NOVA 800 mini-computer. Different versions of the code have been written for handling IDB (Interim Data Base) data and ADB (Archival Data Base) data. Since the ADB version is the one which will be retained in the final system, this report will discuss that version.

In the interim version of the SOLOLS applications software, UPDTDB is a separate non-overlaid task. Its function is to create the data base file on disk and to simultaneously create a file directory to facilitate data retrieval.

The data base spans a 30 hour period and is organized as a circular file. Data file records are referenced according to a minute tag stored in a file directory. The minute tags cover a range from 0 to 2879 minutes (48 hours) with an even Julian day corresponding to minute tags 0 to 1439 and an odd Julian day to minute tags 1440 to 2879.

The first four sectors of the data file contain the file directory. Words 1 to 124 are reserved for header and pointer information while words 125 through 1024 are reserved for the minute tag circular file. The next 4500 sectors are reserved

for the data base circular file. Each data record requires five sectors of data thus permitting 900 pages of data spanning 30 hours of observation. Position of the minute tag in the directory file and the position of the associated data in the data file are linearly related.

An ADB record includes a full page of telemetry data and consists of 17 words of header followed by 1024 words of data. The organization of the ADB header is given in figure 14. The organization of the 1024 words of data coincides with that of the telemetry stream. ADB information is received in five (5) installments with 240 words in each of the first four installments followed by 81 words in the final installment. Data is written to disk in groups of 256 words and requires five (5) disk sectors for one page of data. One of the functions of UPDTDB is to provide the interface between the disparate lengths of the received data block (240/81 words) and the disk write data block (256 words).

The file directory header contains information identifying the time period covered by the data base, a pointer indicating the position of the last entry in the directory (IDP), a pointer indicating the last entry in the data base file (IDBP) and a pointer to the earliest minute tag on the reference Julian day (JDTP). These pointers are essential to the proper maintenance of a circular file. The reference Julian day is always the most recent even Julian day where the Julian day is reckoned from January 1, 1976. The organization of the file directory header is shown in figure 15.

The disk write task operates in a multi-tasking environment. The procedure for accomodating the multi-task objective is that UPDTDB checks for a data flag (set by PROCT) when given control by the TASK SCHEDULER. If it finds that its flag has not been set, (implying that a data message is not waiting to be processed) it suspends itself for a programmed interval. After the prescribed interval it is readied again so as to be in a position to accept control when granted by the TASK SCHEDULER. In the event that the data flag is set when UPDTDB has control of the CPU, it performs the functions as outlined in the flow diagram of figure 16.

System constraints dictate that the size of a data message should not exceed 250 words. Of these at most 240 words are data. The remainder consist of communication control words and three words of fill.

Economical use of core memory demands that data be written to disk in comparable installments rather than queued up in memory until a complete page of data is received. A natural size for a write block is 256 words, the size of a disk sector. The disparity between the size of the receive and write blocks

results in the first write to disk occurring after receipt of the second data installment. The directory is updated at this time as well. Upon receipt of the fifth data installment, the fourth and fifth writes to disk are made.

The program automatically performs certain checks on the received message to verify that a bonafide message has been received. These checks are on the data descriptor index* and on the installment number. An error in either of these quantities results in the display of a diagnostic message on the control console and rejection of the message.

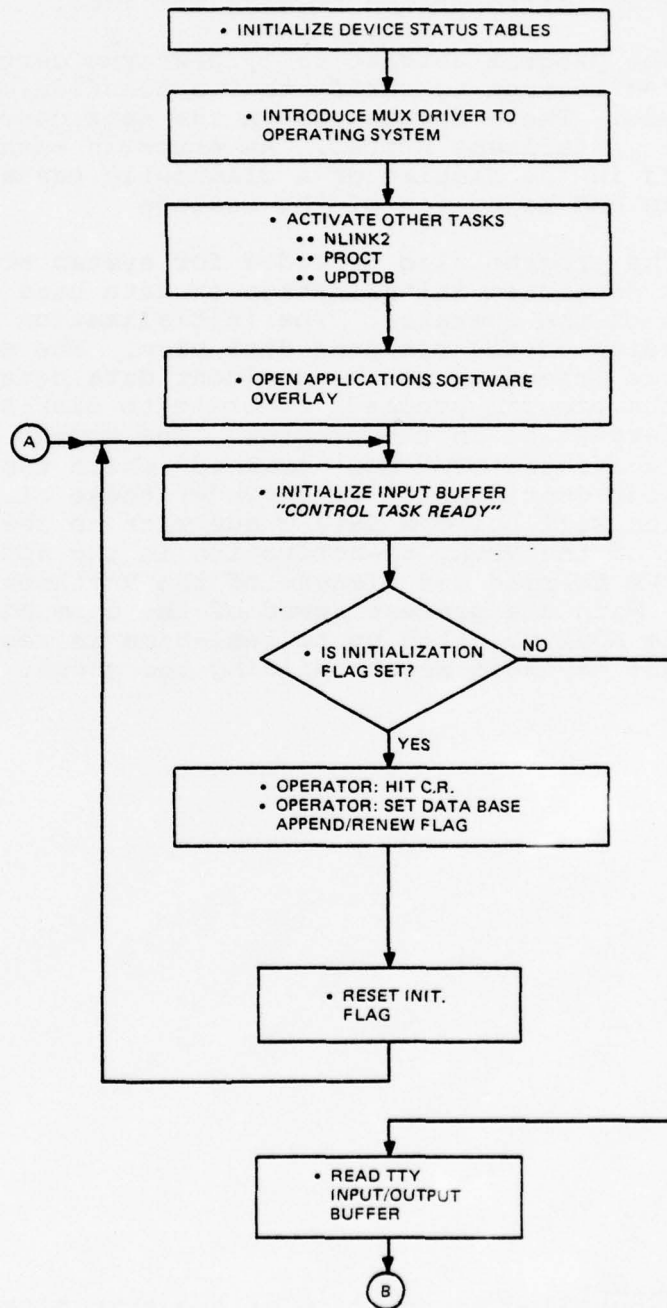
The program also provides for system activation involving either data base initialization or data base extension at the option of the operator. The initialization option involves the discarding of the resident data base. The extension option involves appending to the resident data base. In the "append" mode the program proceeds to write to disk as if there had been no interruption in the program. The append mode is useful in cases where the NOVA has "crashed" while the Raytheon pre-processor continues to run. Under these circumstances the Raytheon will build a data queue with no loss of data. Upon repair of the NOVA, re-activation in the append mode will cause the NOVA to read and dispose of the Raytheon queue at the maximum rate. With the present speed of the communication link, the time for the NOVA to catch up to real-time is roughly equal to the time the Raytheon spent building the queue.

*For a detailed description of the communications protocol refer to the documentation of the communications system.

ROUTINE/SUBROUTINE
QLOOK

SIDEF

QLOOK



ROUTINE/SUBROUTINE

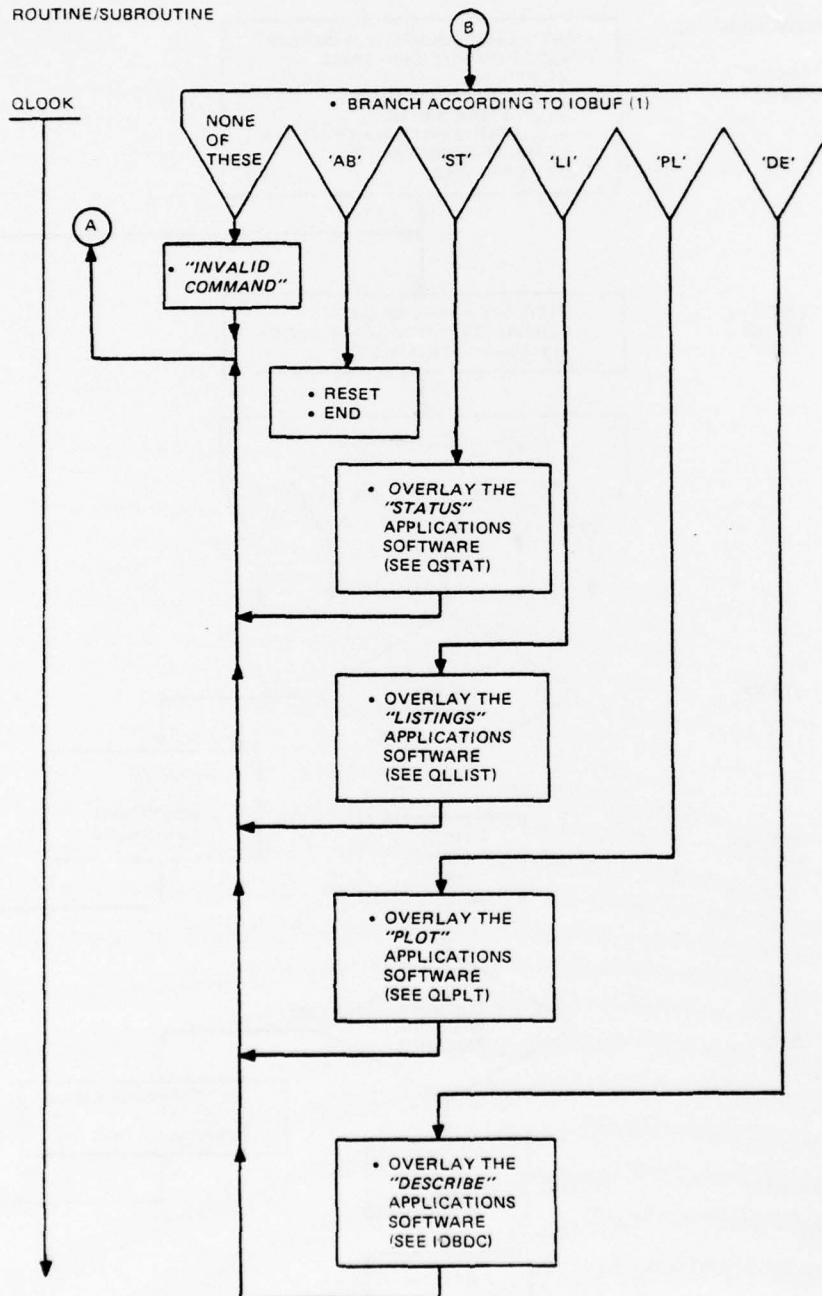


Fig. 1 — Main analysis task (QLOOK)

ROUTINE/SUBROUTINE

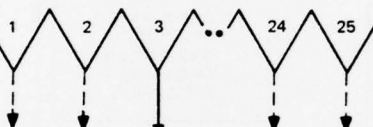
QSTAT
DFILL

- INIT. FLAGS, COUNTERS, & INDICES
- ACCEPT OUTPUT DATA SPECS.
 - EXP. NO.
 - END DATE (YY, MM, DD)
 - END TIME (HH, MM)
 - OUTPUT DEVICE (0 = TTY, 1 = LPT)
 - NO. OF RECORDS
- OPEN DATA FILE

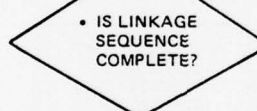
IDBDAT:
RET XX
IDBCT

- RETRIEVE A PAGE OF DATA
- FORMAT STATUS DATA FOR USE BY APPLICATIONS ROUTINES

- BRANCH ACCORDING TO EXP. NO.



STE XX



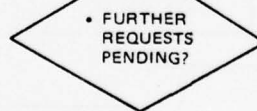
NO

- CHANGE EXP. NO. ACCORDING TO LINKAGE

STE XX
SPE XX

- PRINT OUTPUT DATA

STE XX
QSTAT



YES

- RESET LINKAGE INDEX
- RESET EXP. #
- DECREMENT TIME TAG

NO

- CLOSE DATA FILE

- RETURN

Fig. 2 — Status display executive (QSTAT)

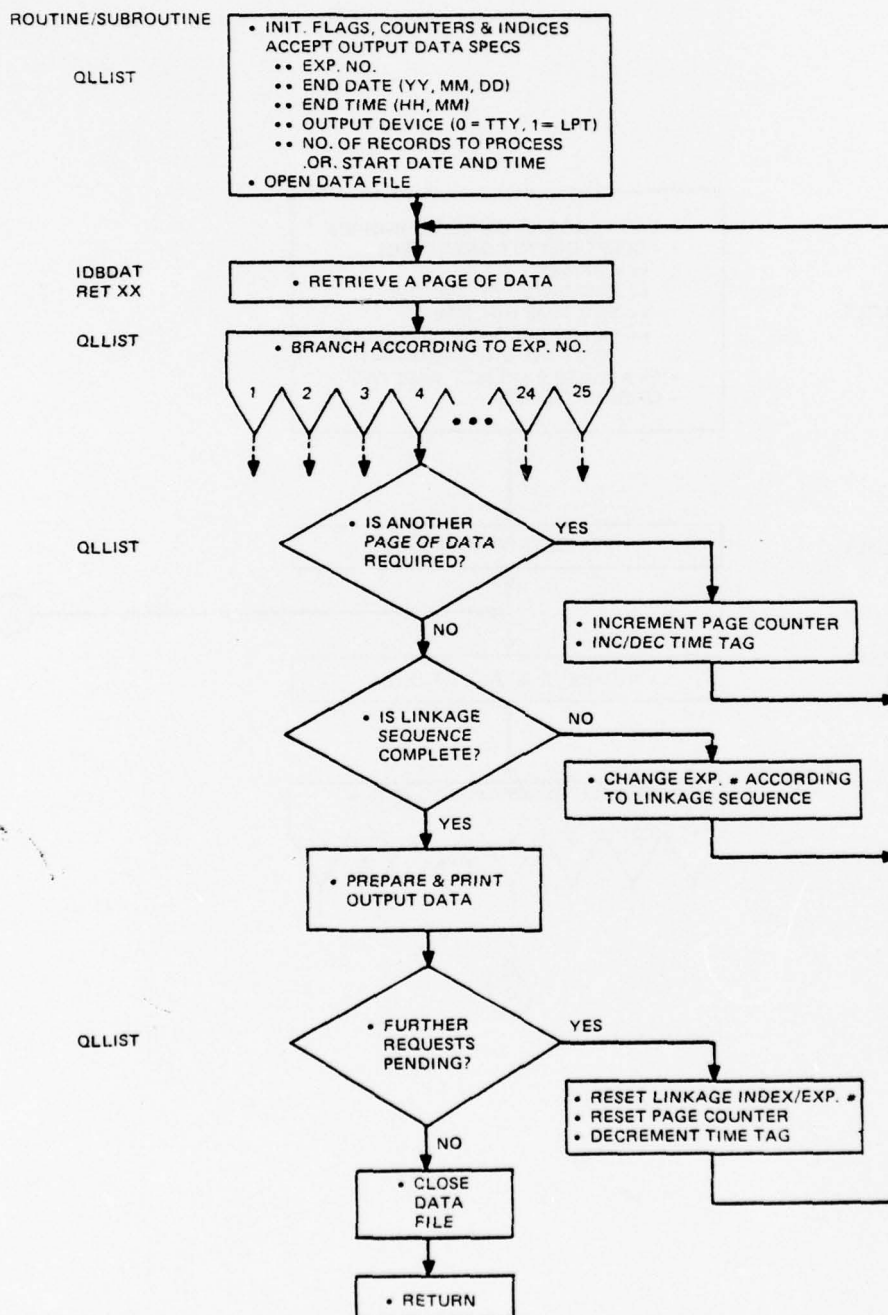
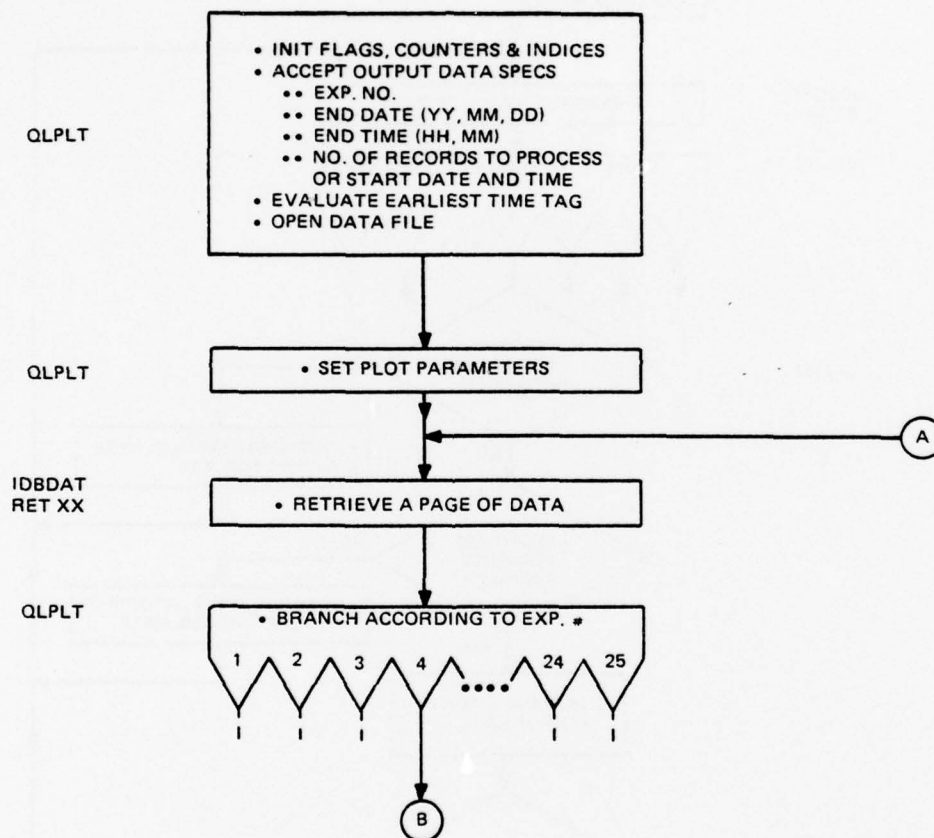


Fig. 3 — Listings display executive (QLLIST)



ROUTINE/SUBROUTINE

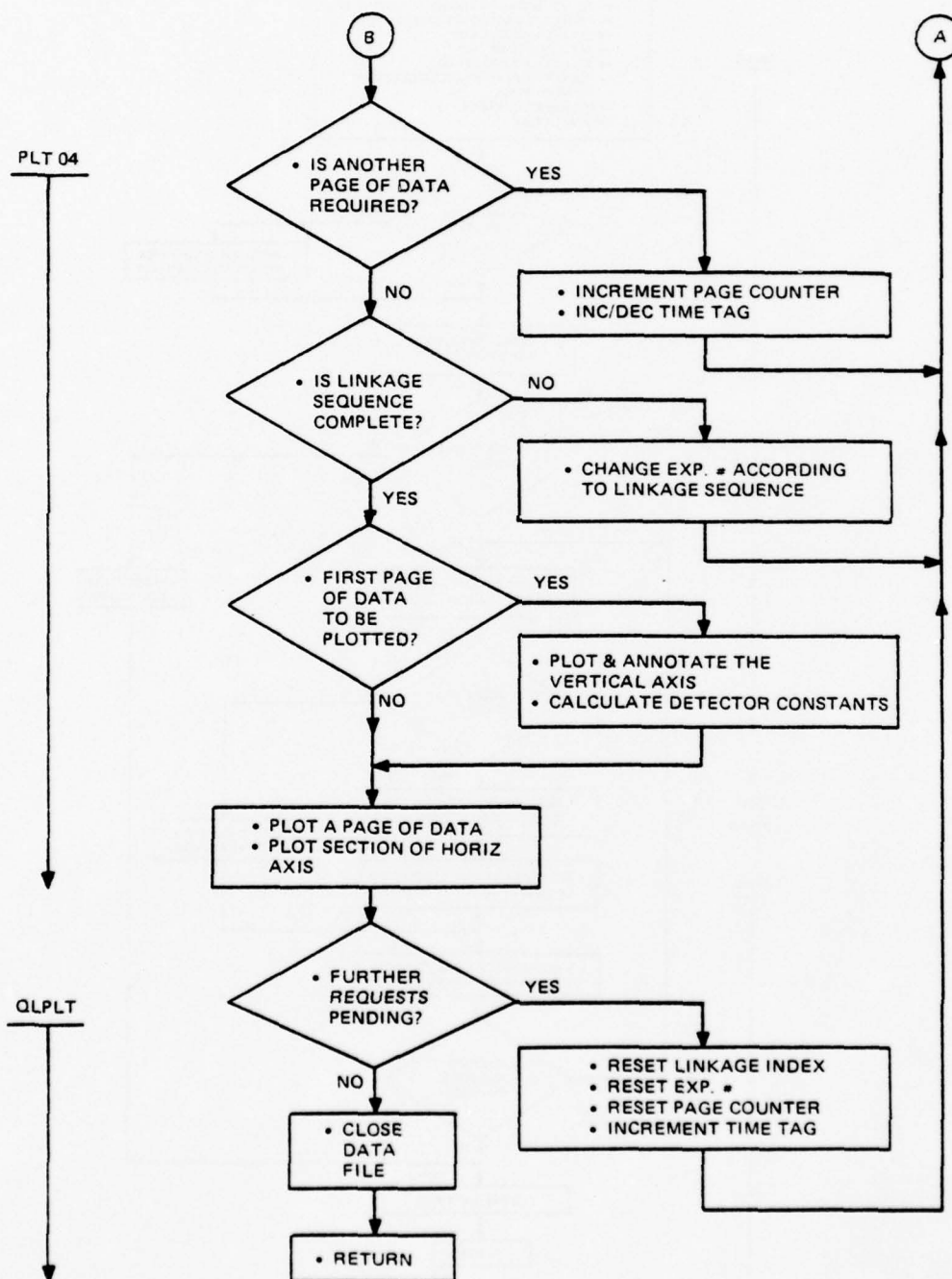


Fig. 4 — Graphical display executive (QLPLT)

ROUTINE/SUBROUTINE

IDBDC

NIBBLE
BINREP

IDBDC

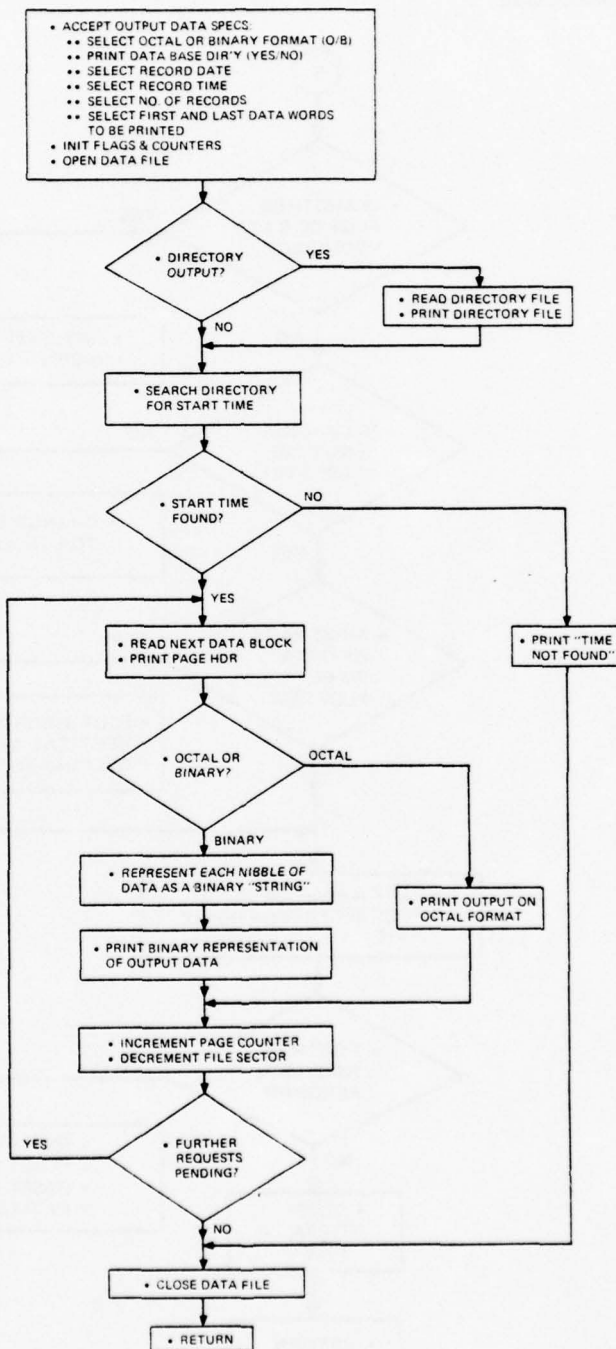


Fig. 5 — Data describe task (IDBDC)

ROUTINE/SUBROUTINE

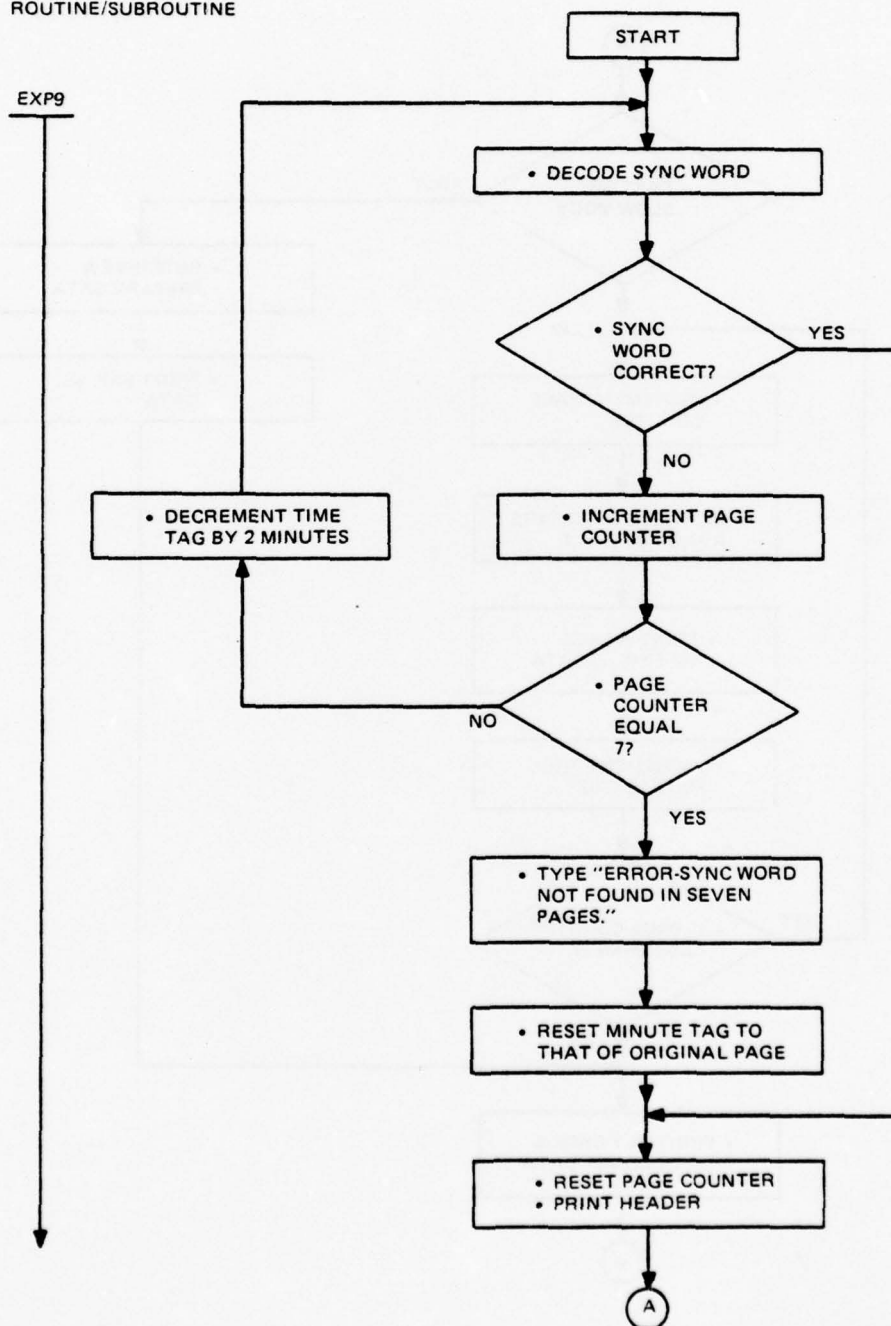
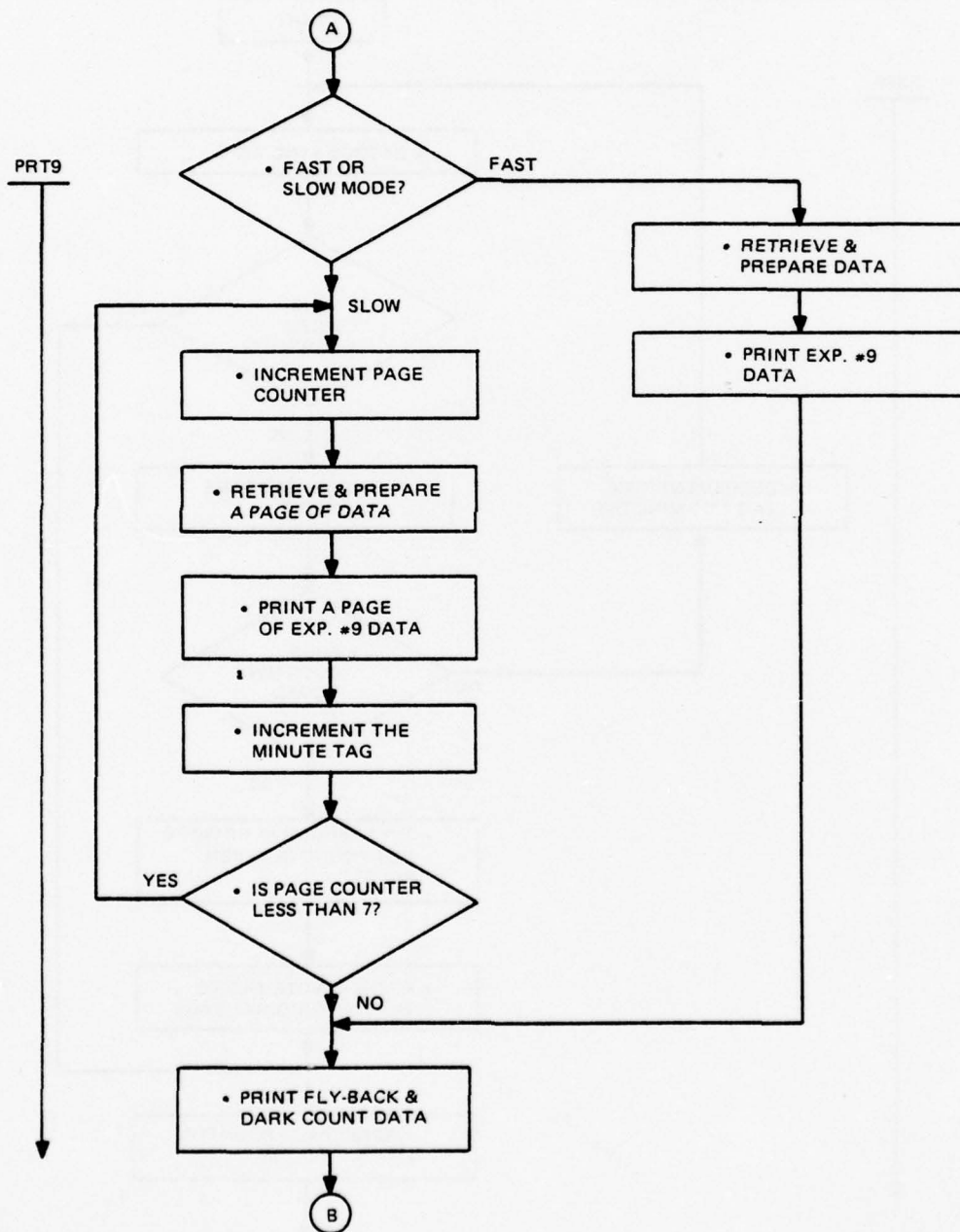


Fig. 6 — Experiment #9 (UV spectrometer) listing (EXP9) (Continues)



ROUTINE/SUBROUTINE

B8TO9

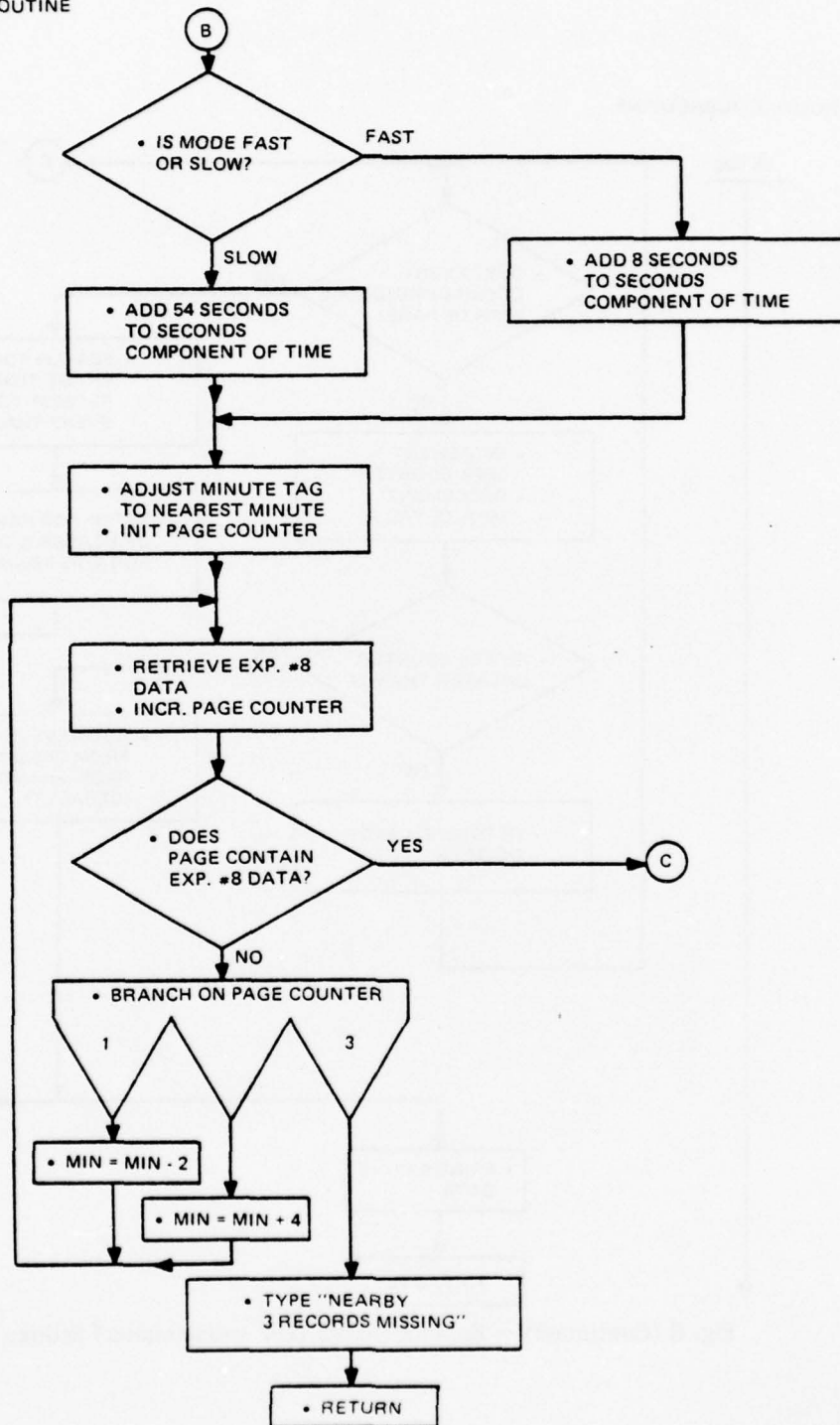


Fig. 6 (Continued) — Experiment #9 (UV spectrometer) listing (EXP9)

ROUTINE/SUBROUTINE

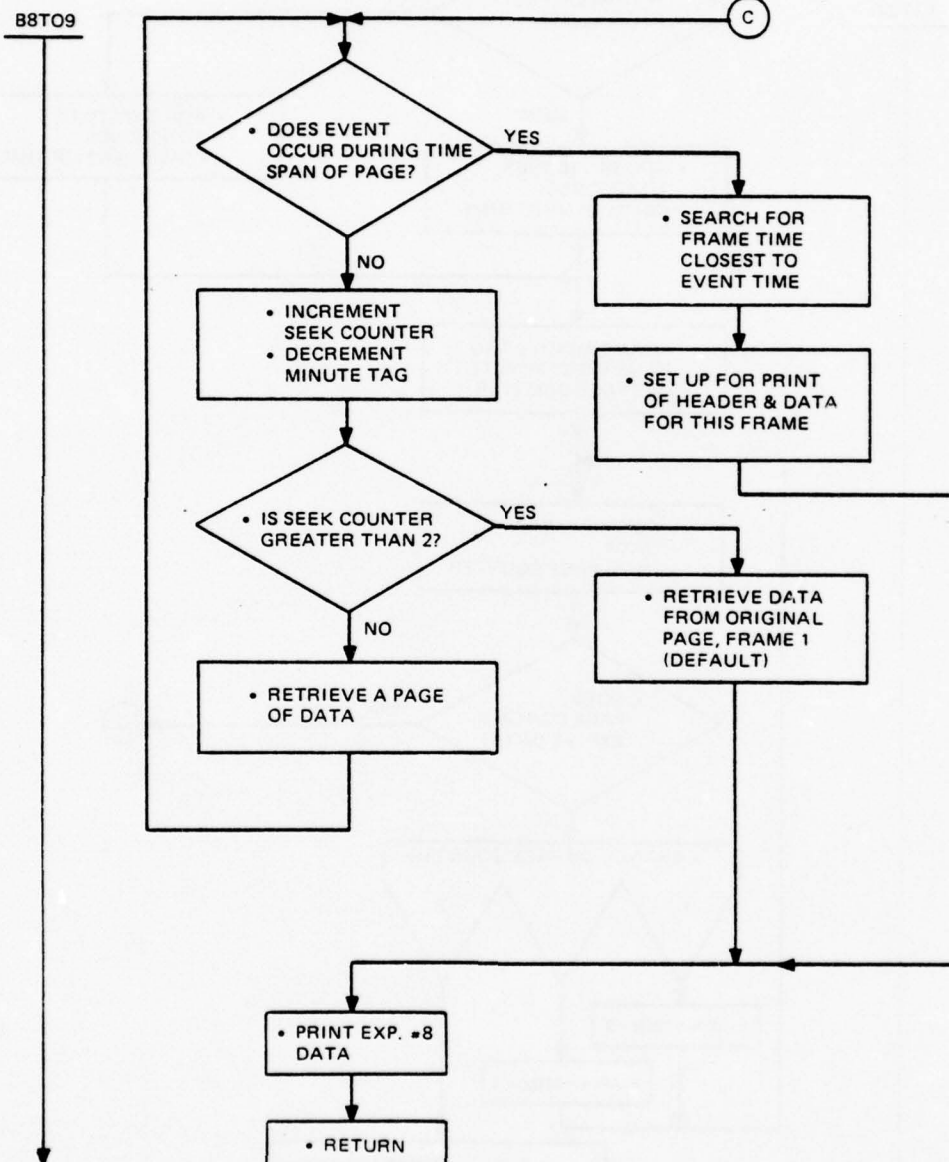


Fig. 6 (Continued) — Experiment #9 (UV spectrometer) listing (EXP9)

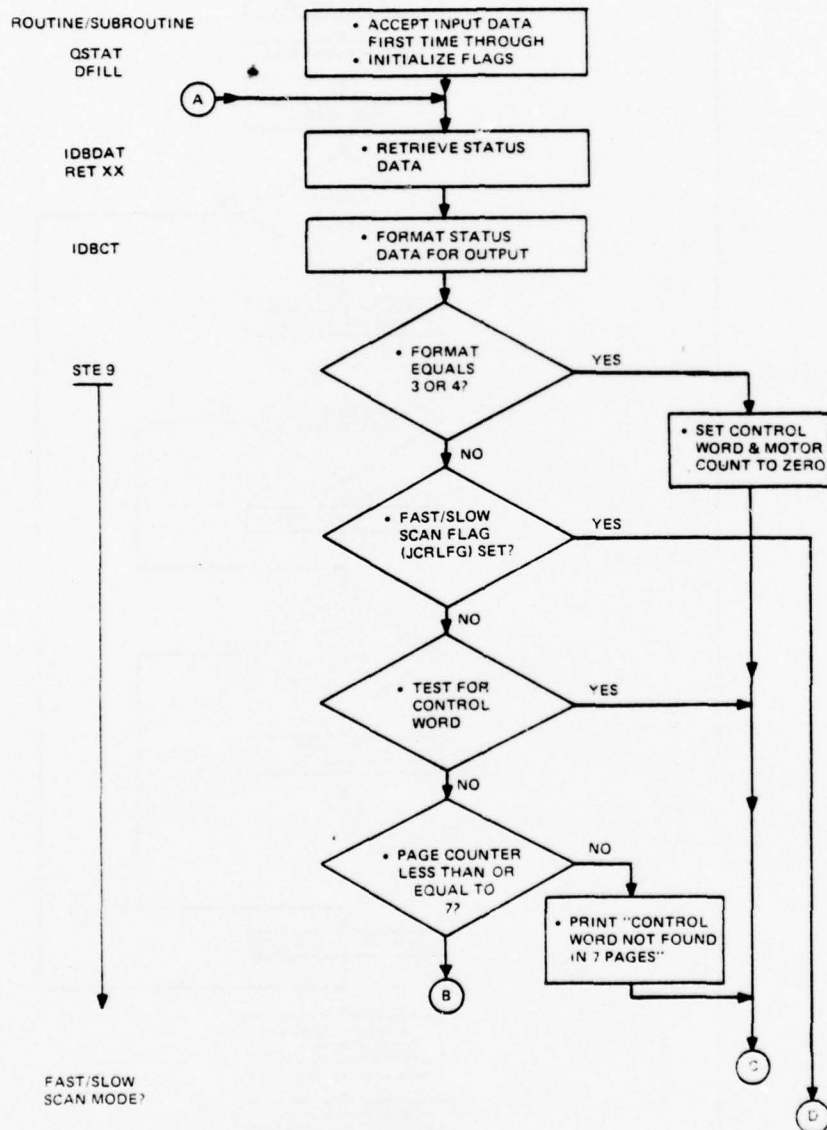
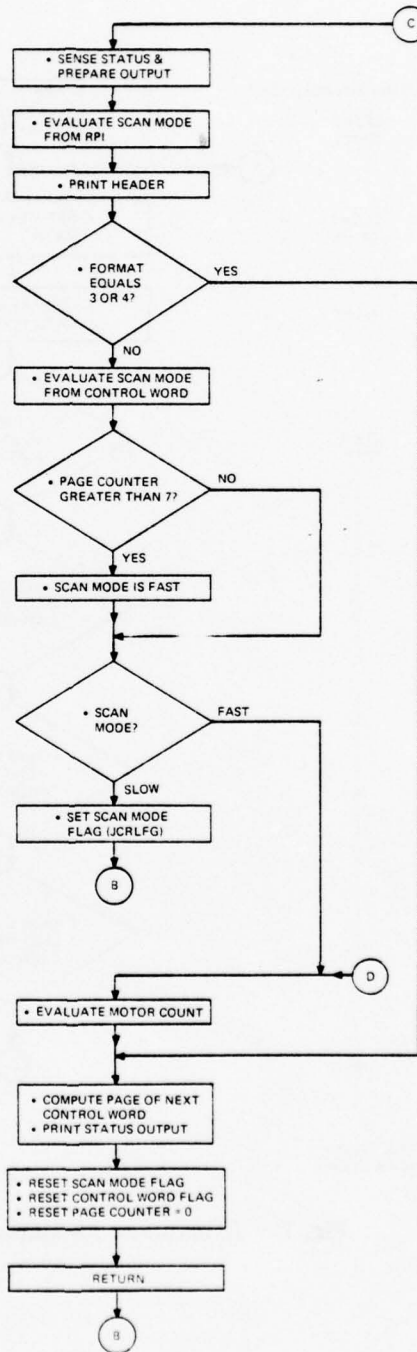


Fig. 7 — Experiment #9 status (STE9) (Continues)

ROUTINE/SUBROUTINE

STE9

STE9



ROUTINE/SUBROUTINE

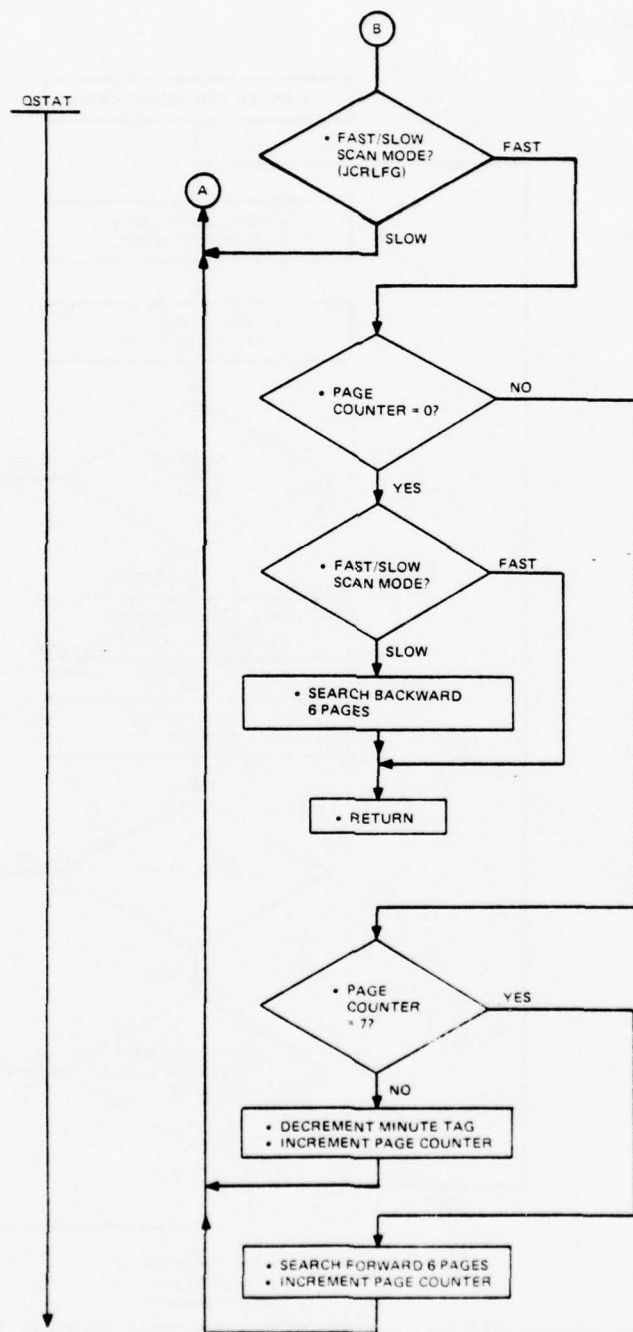


Fig. 7 (Continued) - Experiment #9 status (STE9)

ROUTINE/SUBROUTINE

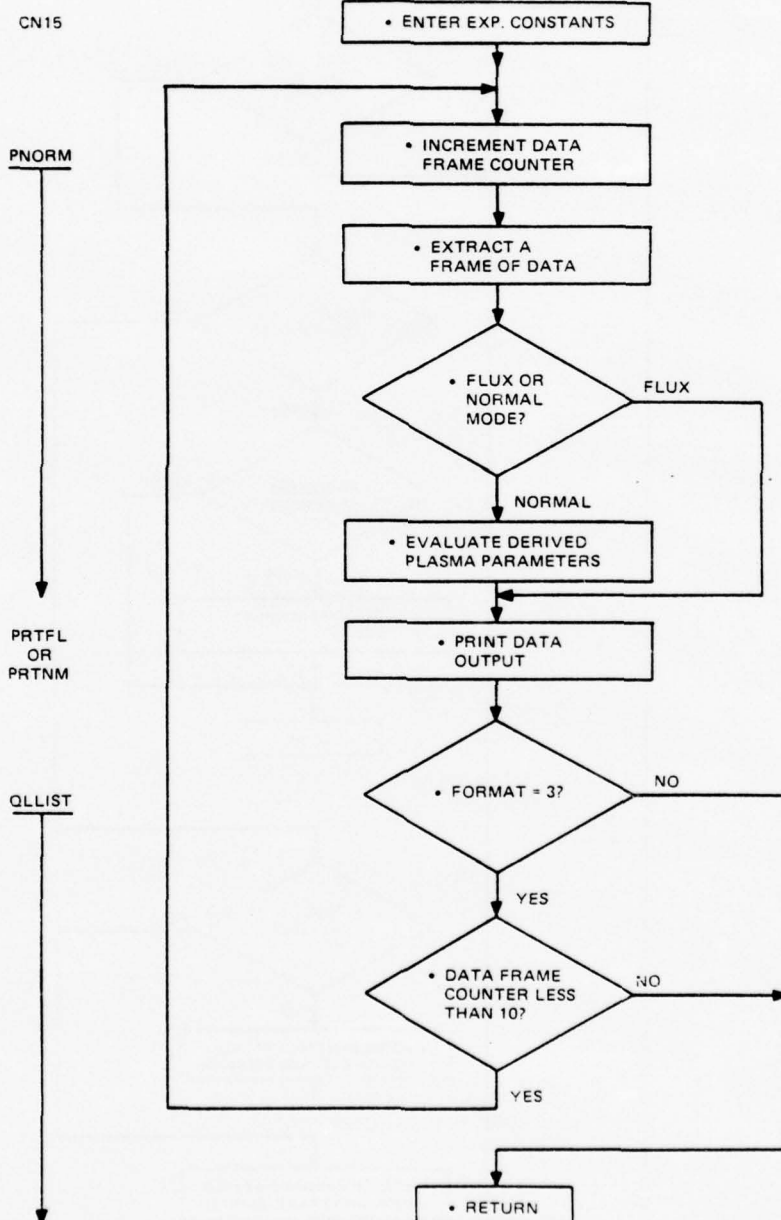


Fig. 8 — Experiment #15 (solar wind) listing (PNORM, PRTNM, PRTFL)

ROUTINE/SUBROUTINE

EXP16

IOBDAT
RET 16

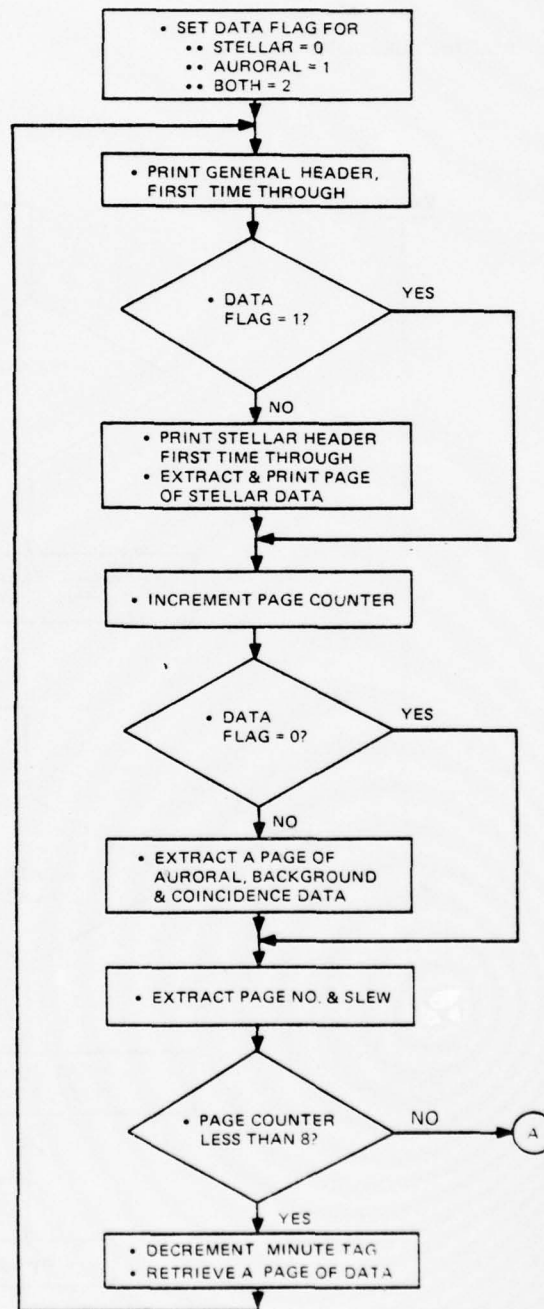


Fig. 9 — Experiment #16 (stellar/auroral x-rays) listing (EXP16) (Continues)

ROUTINE/SUBROUTINE

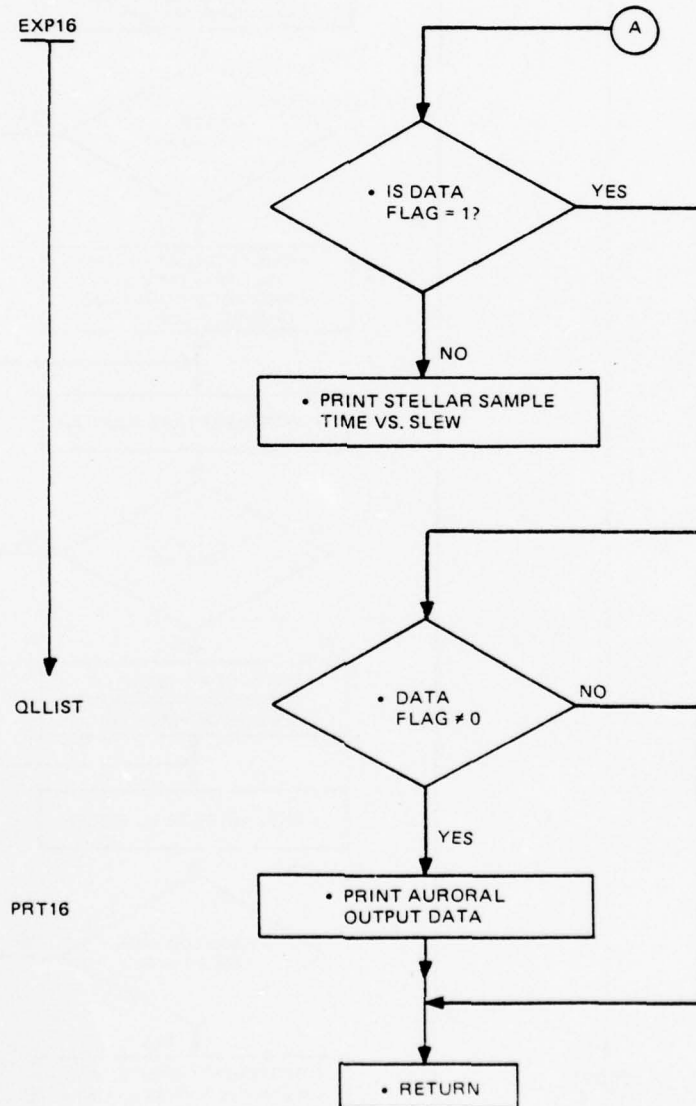


Fig. 9 (Continued) — Experiment #16 (stellar/auroral x-rays) listing (EXP16)

ROUTINE/SUBROUTINE

EXP 17

ID8DAT
RET17

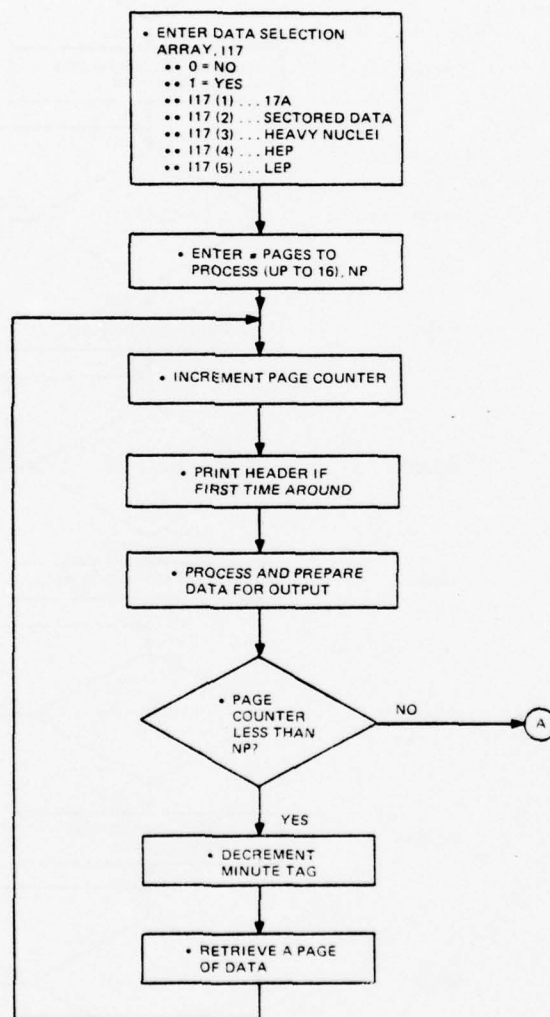


Fig. 10 — Experiment #17 (omni solar protons) listing (EXP17) (Continues)

ROUTINE/SUBROUTINE

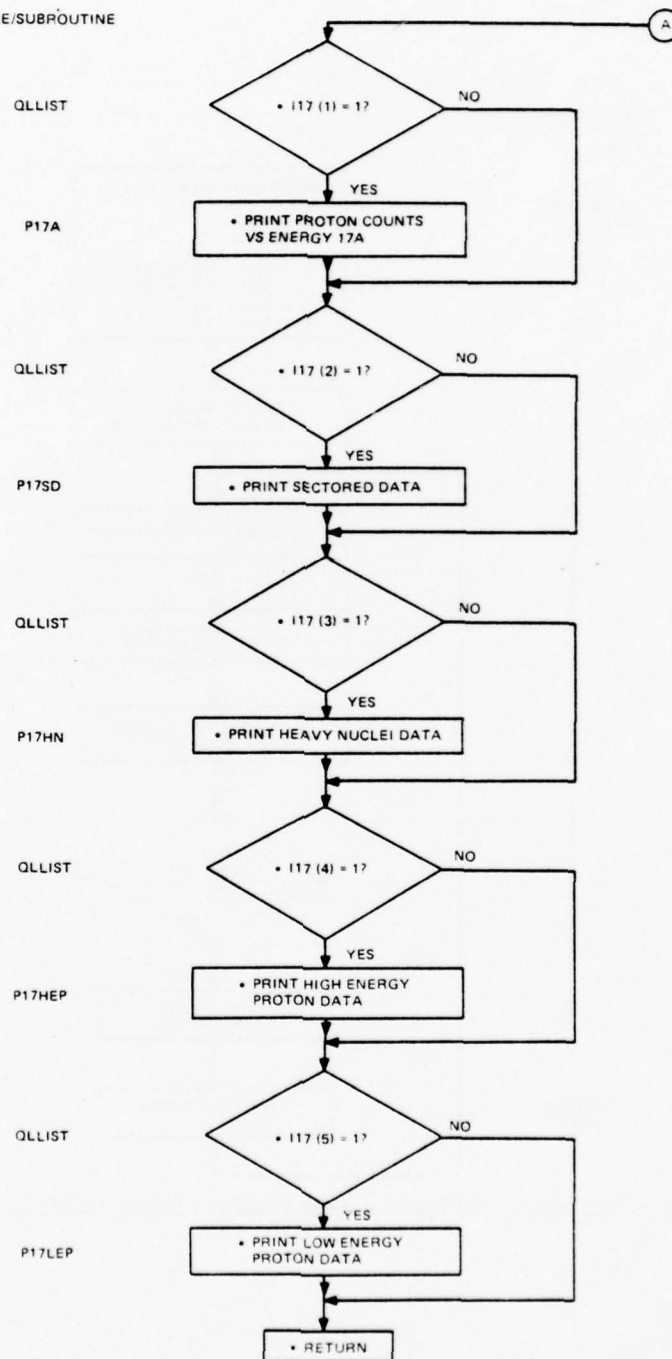


Fig. 10 (Continued) — Experiment #17 (omni solar protons) listing (EXP17)

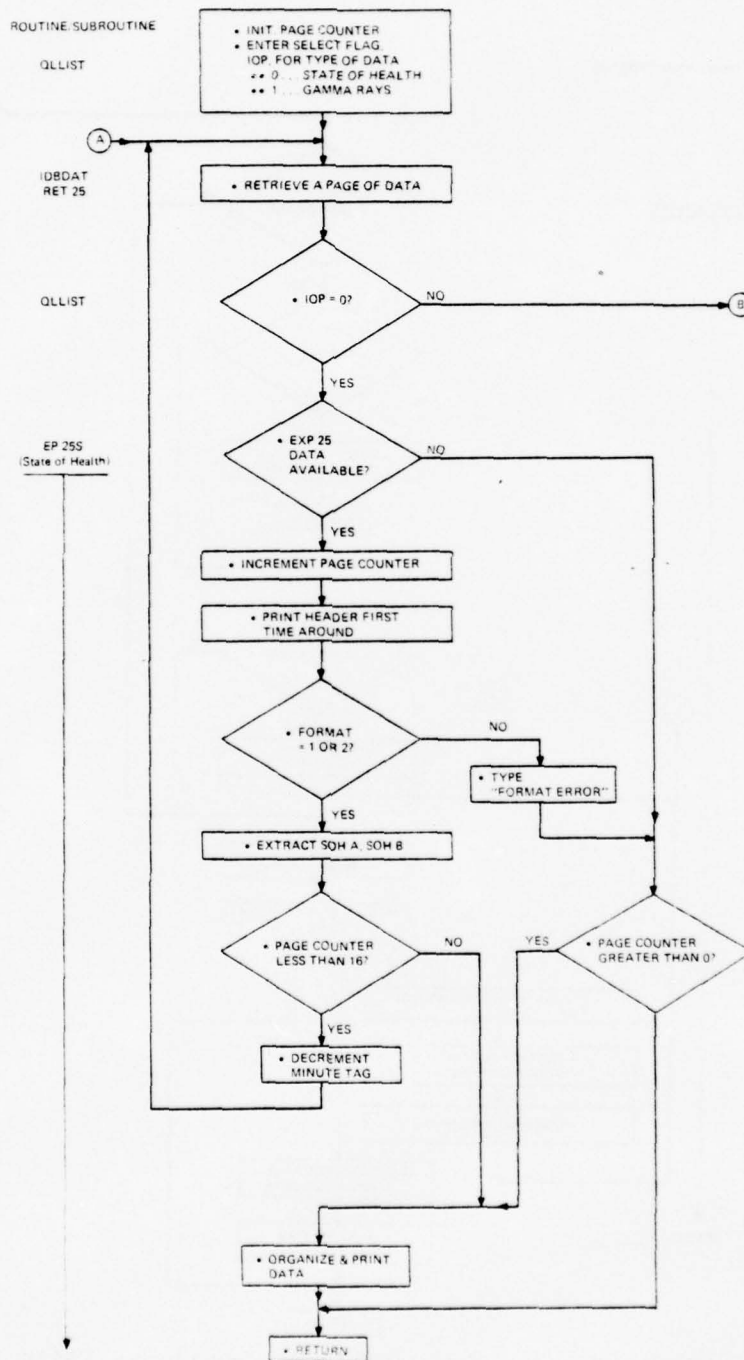


Fig. 11 — Experiment #25 (gamma rays) listing (EP25S, EP25G) (Continues)

ROUTINE SUBROUTINE

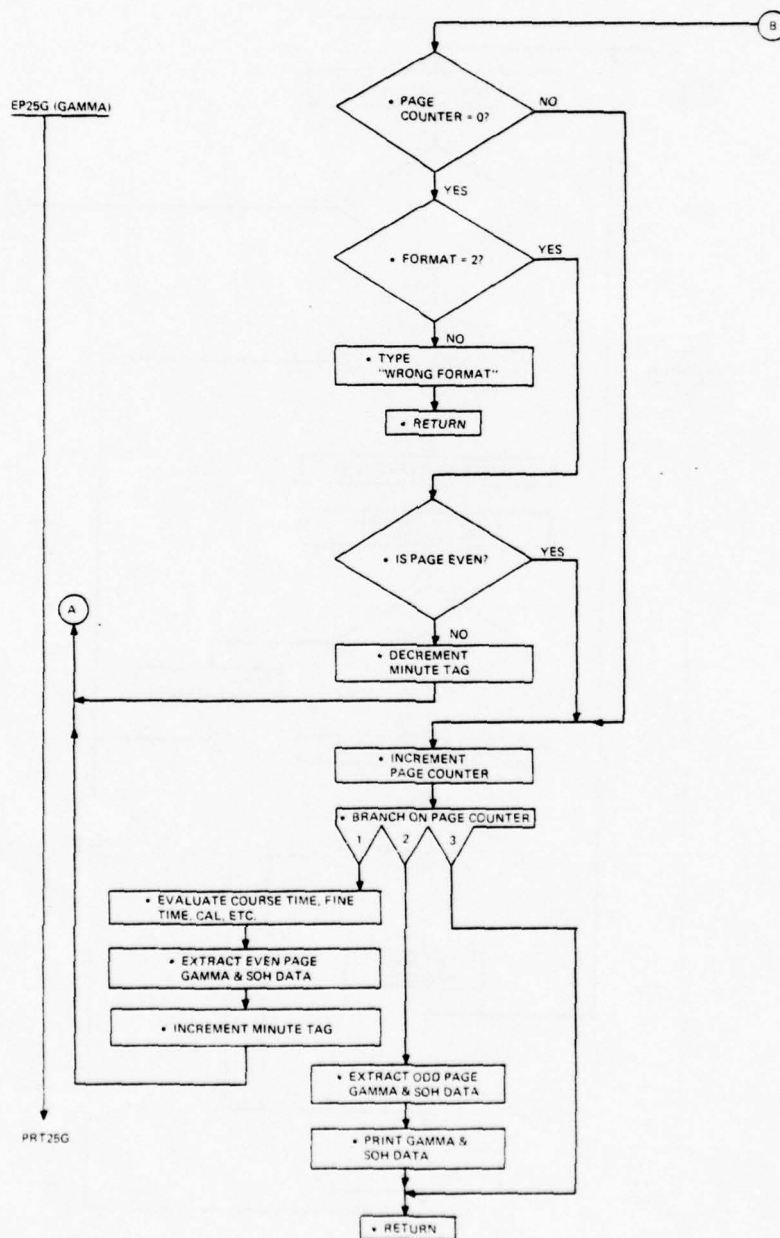


Fig. 11 (Continued) — Experiment #25 (gamma rays) listing (EP25S, EP25G)

ROUTINE/SUBROUTINE

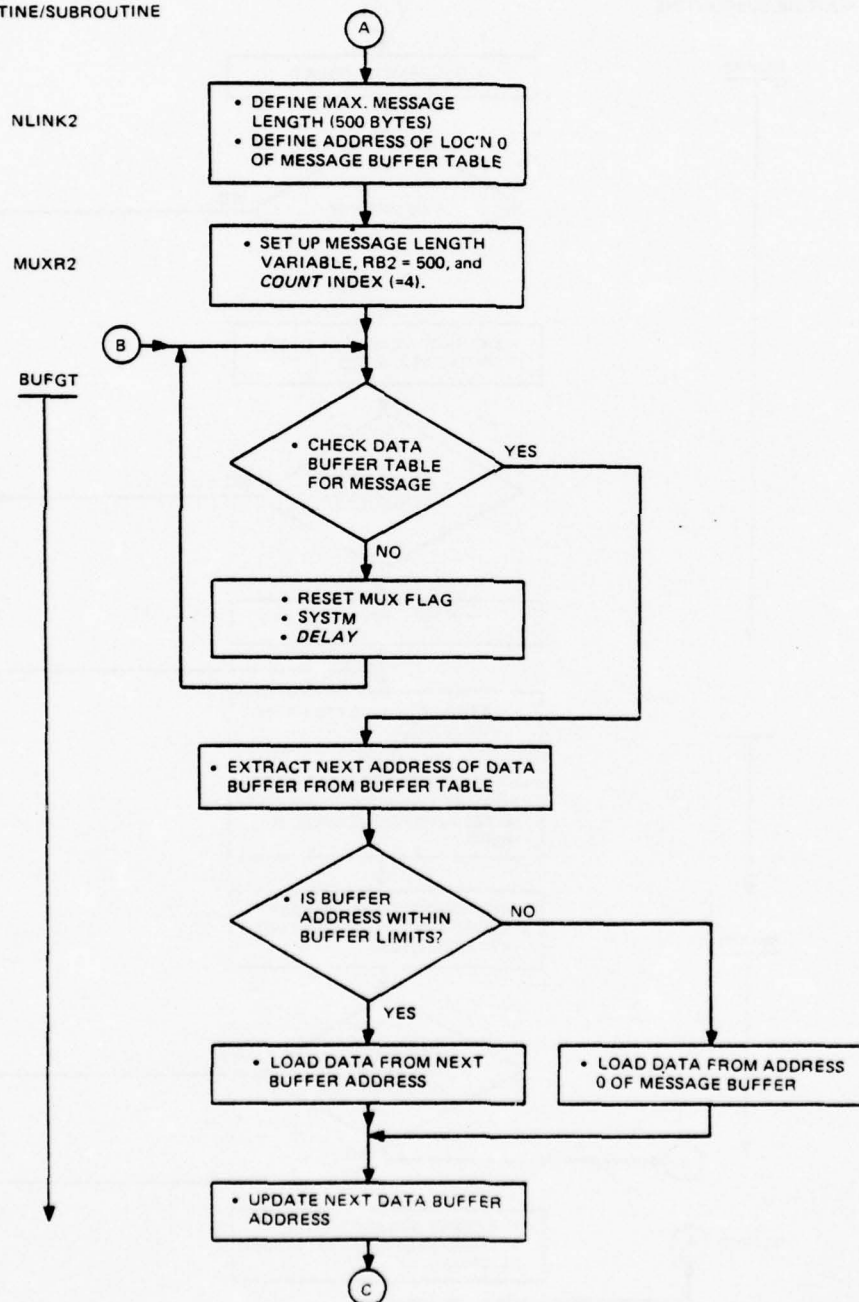


Fig. 12 — Communications driver task (NLINK2) (Continues)

ROUTINE/SUBROUTINE

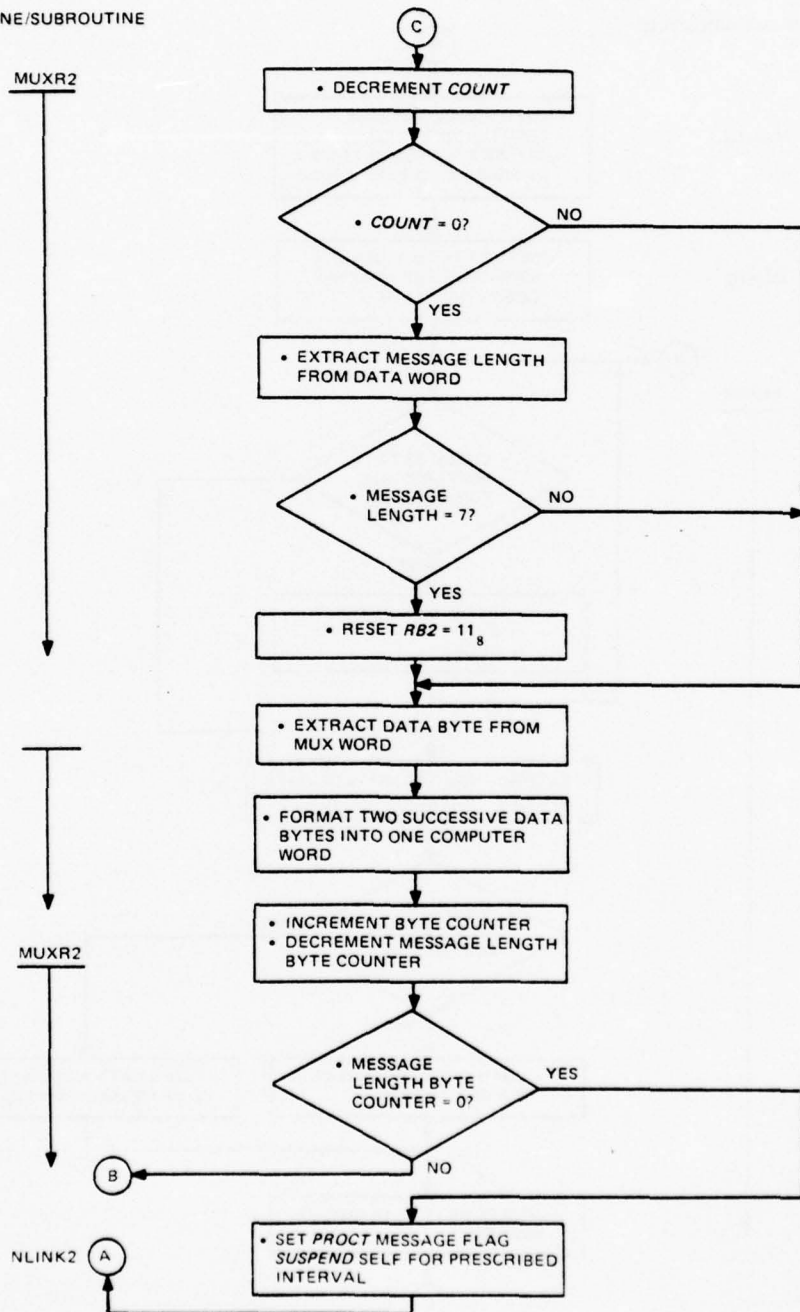


Fig. 12 (Continued) — Communications driver task (NLINK2)

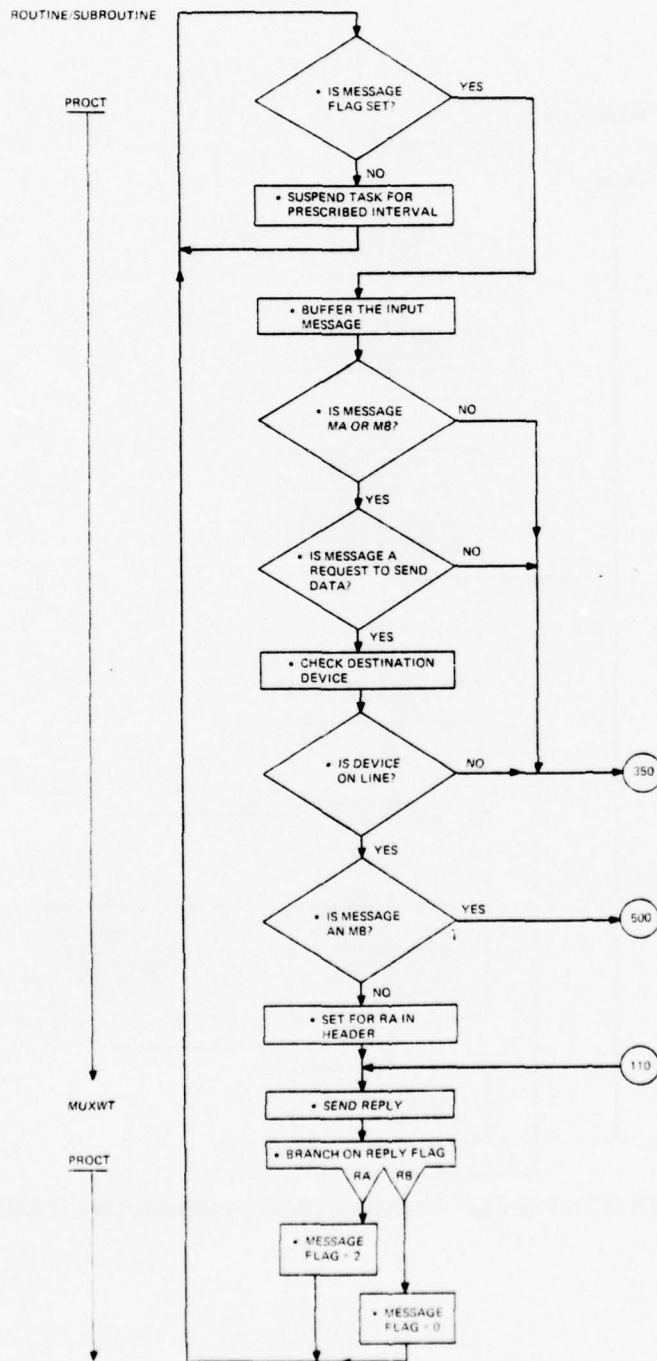


Fig. 13 — Communications processing task (PROCT) (Continues)

ROUTINE SUBROUTINE

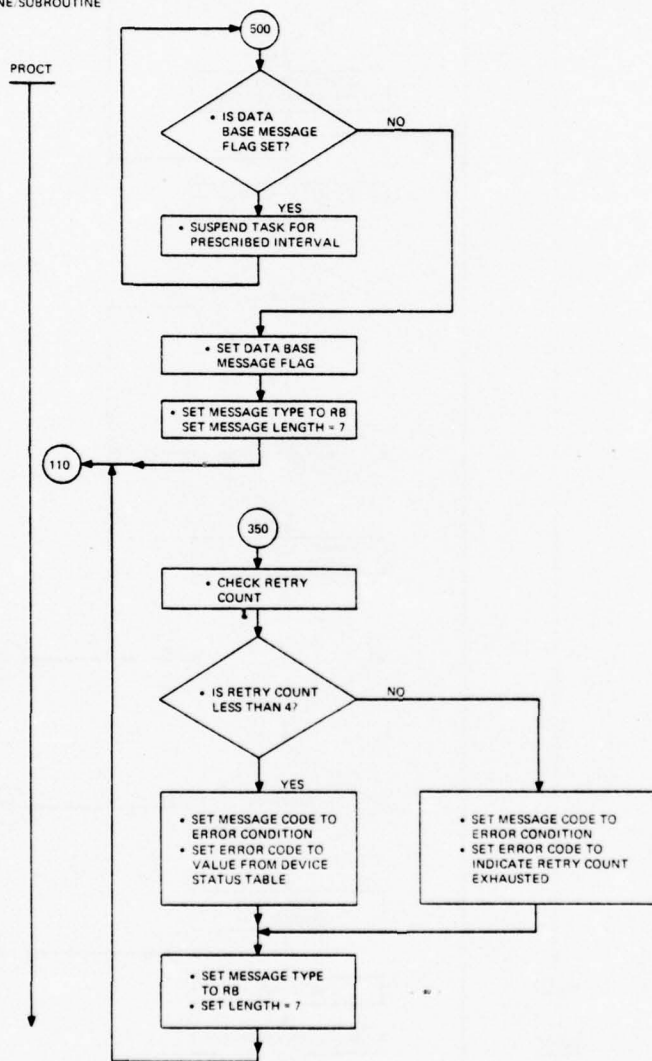


Fig. 13 (Continued) — Communications processing task (PROCT)

WORD #	BIT CONFIGURATION															PARAMETER (S)	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	X	X	NO. FRAMES PROCESSED					X	YEAR (LAST 2 DIGITS)							DATE, TIME AND NO. OF FRAMES PROCESSED	
2	X	DAY OF YEAR								X	HOUR						
3	X	X	MINUTE					X	X	SECOND							
4	X	X	FRACTION OF SECOND $\times 10^4$														
5	S	MSB														X COORD. OF SATELLITE (m)	
6	X																
7	S	MSB														Y COORD. OF SATELLITE (m)	
8	X																
9	S	MSB														Z COORD. OF SATELLITE (m)	
10	X																
11	S	MSB														X COMP. OF SATELLITE VELOCITY (m sec) $\cdot 10^3$	
12	X																
13	S	MSB														Y COMP. OF SATELLITE VELOCITY (m sec) $\cdot 10^3$	
14	X																
15	S	MSB														Z COMP. OF SATELLITE VELOCITY (m sec) $\cdot 10^3$	
16	X																
17	X	X	SAT	NELC MESSAGE NUMBER												SATELLITE ID AND NELC MESSAGE NO	

X SIGNIFIES UNUSED BIT
S SIGNIFIES SIGN BIT
MSB SIGNIFIES MOST SIGNIFICANT BIT
LSB SIGNIFIES LEAST SIGNIFICANT BIT

Fig. 14 — Archival data base header

<u>WORD #</u>	<u>FORMAT</u>	<u>PARAMETER</u>
1	Integer	Reference Julian Day
2	Integer	Directory Pointer (IDP)
3	Integer	Julian Date Pointer (JDTP)
4	Integer	Data Base Pointer (IDBP)

Fig. 15 — Data base directory header

ROUTINE/SUBROUTINE

UPDTDB

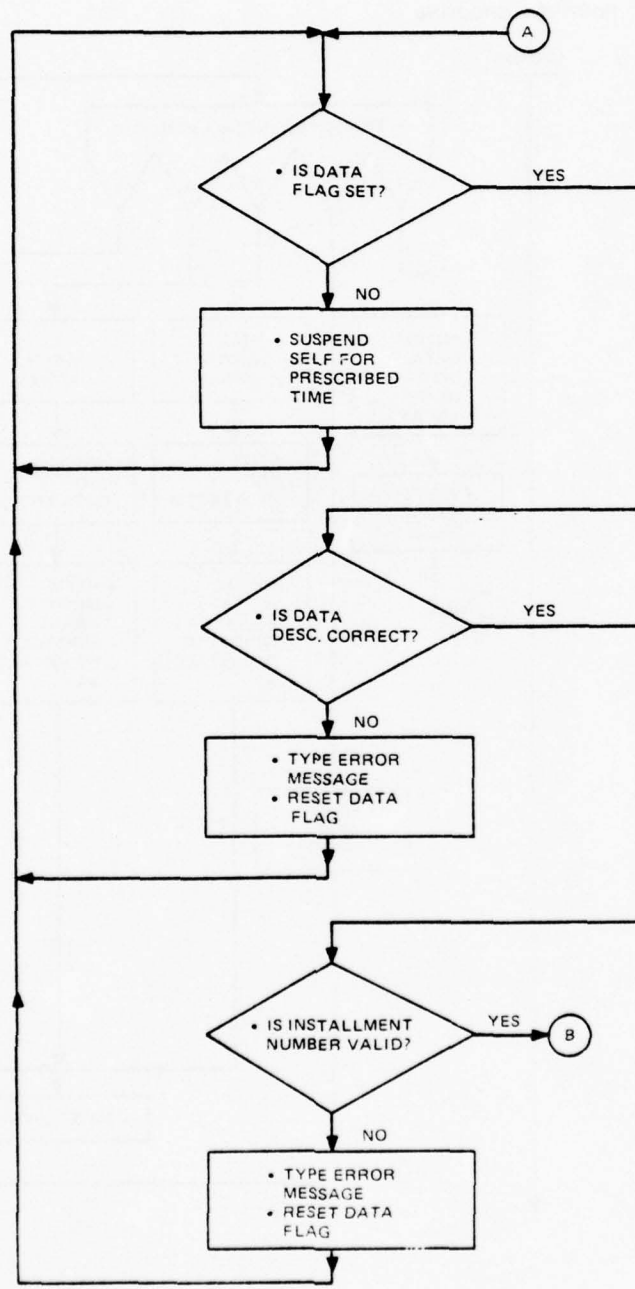
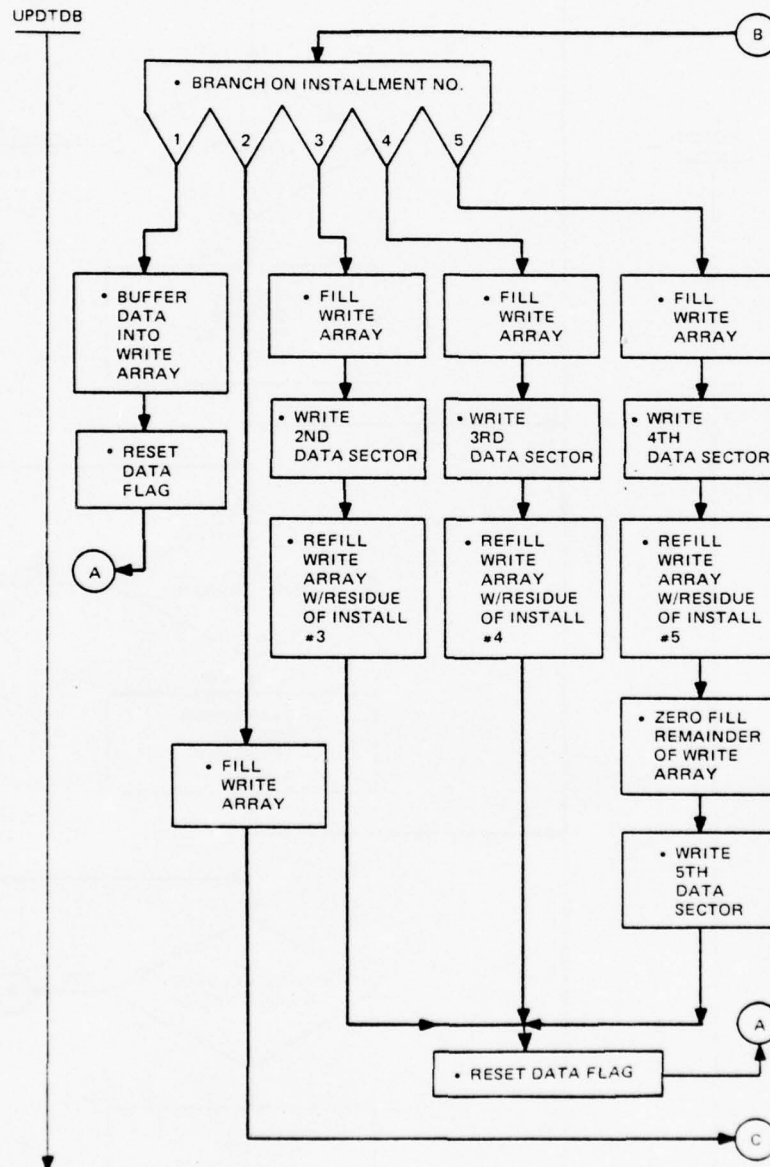


Fig. 16 — Disk data base write task (UPDTDB) (Continues)

ROUTINE/SUBROUTINE

UPDTDB



ROUTINE/SUBROUTINE

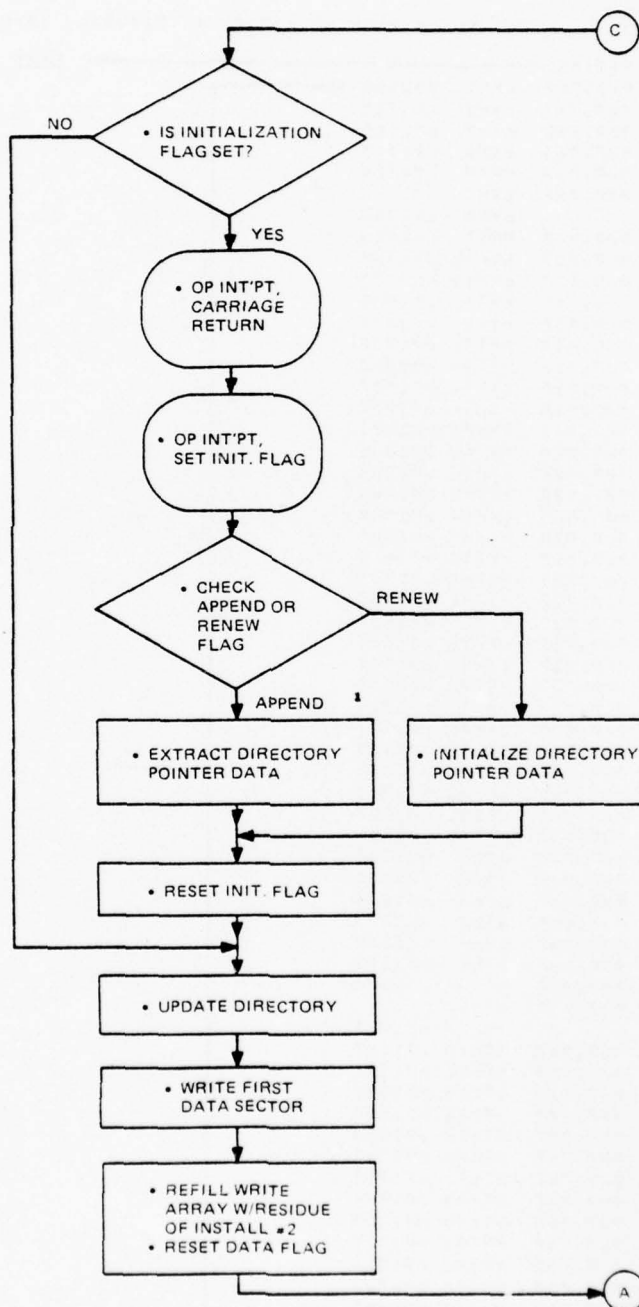


Fig. 16 (Continued) — Disk data base write task (UPDTDB)

BEST AVAILABLE COPY

APPENDIX A: RELOCATABLE LOADER LISTING (SOLOLS)

QLOOK.SV
MAIN

LOADED BY RLOC REV 03.01 AT 21:33:11 12/22/75

LAST ADDRESS OF QLOOK-MAIN
(OCTAL)

011162
000,000 EXP1 002000
000,001 EXP2 001715
000,002 EXP3 002125
000,003 EXP4 001713
000,004 PRT4 001774
000,005 EXP7
EXP8 002344
PRT7 001615
000,006
000,007 EXP10 001340
000,008 EXP11 000403
000,009 PRT10 001605
000,010 EXP9 001230
000,011 PRT9 001707
000,012
000,013
000,014 PRT09 002023
000,015 EXP14 001637
000,016 PRT08 001237
000,017 PRTFL 001071
000,018 PRTNM 001435
000,019 EXP15 002245
000,020 PRT16 001404
000,021 EXP17 001502
000,022 P17A 001206
000,023 P17SD 001172
000,024 P17HN 001034
000,025 P17HE 001036
000,026 P17LE 001057
000,027 EXP18 001301
000,028 EXP20 001631
000,029 PRT20 002205
000,030 EXP21 001734
000,031 EXP22 002124
000,032 PRT22 001755
000,033 EXP24 001672
000,034 EP25G 002201
000,035 EP25S 002105
000,036 PRT25 002331
000,037 STE1 001346
000,038 STE2 002006
000,039 STE3 001204
000,040 STE4 001370
000,041 SPE4 001245
000,042 STE7 002173
000,043 STE9 002170
000,044 STE14
TMP17 001717
000,045 STE10 001107
000,046 SPE10 001501
000,047 STE15 001831
000,048 STE16 001916
000,049 STE18 001825
000,050 STE20 002240
000,051 STE21 001736
000,052 STE25 001721
000,053 STE24 001250
000,054 PRT31 001770
000,055 PRT42 001213
000,056 PRTA3 000705
000,057 PLTT1 000001
000,058 PLT2 000001
000,059 PLT3 000001

NODE 0

BEST AVAILABLE COPY

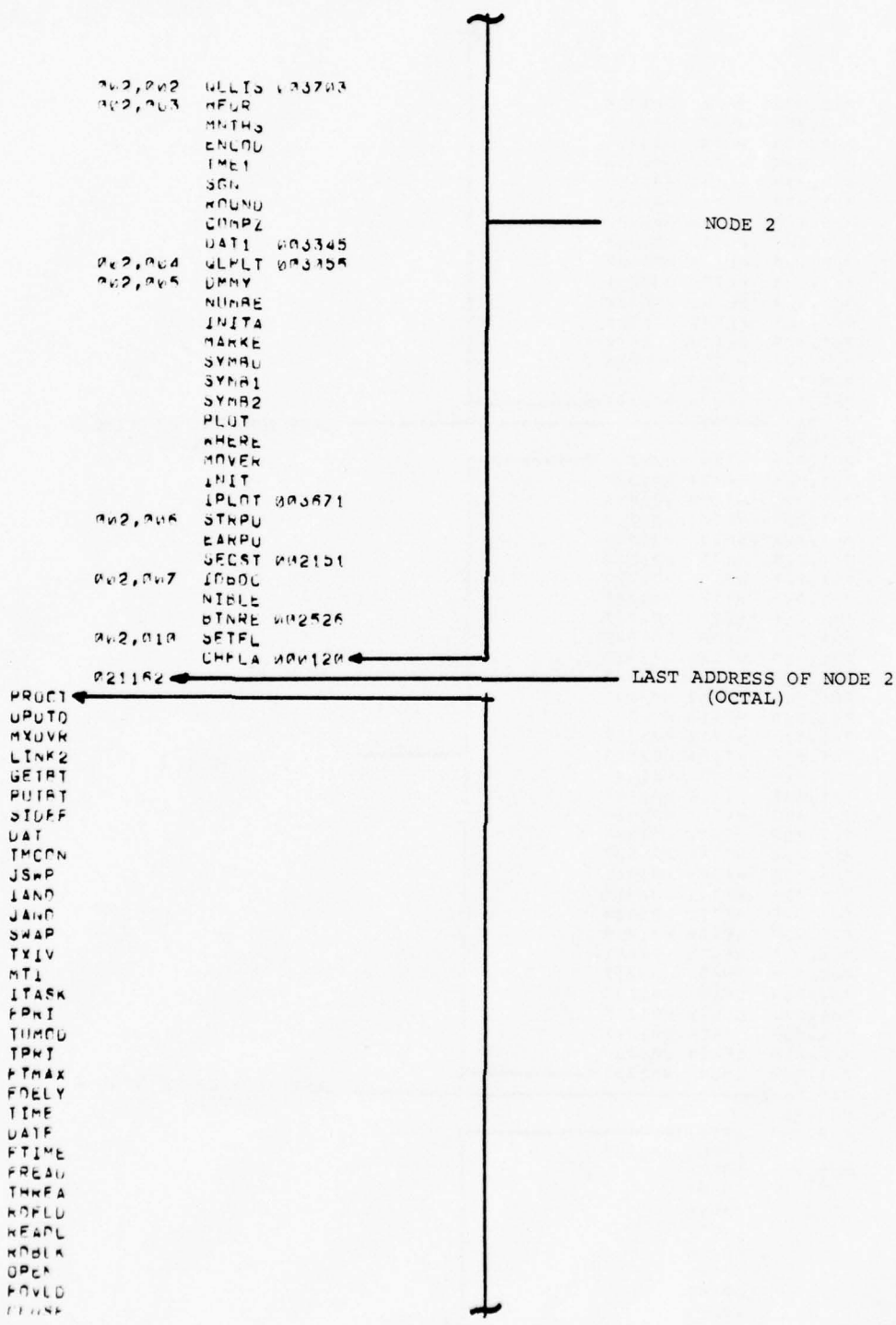
000,072	PLT4	002326
000,073	PLT7	000002
000,074	PLT9	000001
000,075	PLT10	000003
000,076	PLT14	000003
000,077	PLT15	000001
000,100	PLT16	000001
000,101	PLT17	000001
000,102	PLT18	000003
000,103	PLT20	000001
000,104	PLT21	000001
000,105	PLT22	000001
000,106	PLT24	000077
000,107	PLT25	000001
000,110	INBCI	000232
000,111	INBDA	002171
013562		
013562		
001,000	NET1	000700
001,001	NET2A	001322
001,002	NET2B	000204
001,003	NET3	000720
001,004	NET4	001000
001,005	NET5	001032
001,006	NET6	000722
001,007	NET7	001310
001,010	NET8	000717
001,011	NET9	000647
001,012	NET10	001217
001,013	NET11	000643
001,014	NET12	000741
001,015	NET13	000701
001,016	NET14	000359
001,017	NET15A	000642
001,020	NET15B	001141
001,021	NET16	001107
001,022	NET17	000610
001,023	NET18A	001043
001,024	NET18B	000547
001,025	NET20	001001
001,026	NET21	000425
001,027	NET22	001034
001,030	NET24	001000
001,031	NET25	000601
001,032	THP9	000217
001,033	LN15	001107
001,034	CN212	001377
001,035	DTNCR	001047
001,036	SFMA	000720
001,037	LRLJ	001356
015162		
015162		
002,000	USTAT	
002,001	UFILL	003772
002,001	ADTOM	
	ADUPT	
	CONVE	
	UNOFF	
	EPACN	
	BTNRH	
	UPSHI	
	RTURN	
	UTLFC	001707

LAST ADDRESS OF NODE 0
(OCTAL)

NODE 1

LAST ADDRESS OF NODE 1
(OCTAL)

BEST AVAILABLE COPY



BEST AVAILABLE COPY

RESFT
 ITESF
 FREN1
 FALOC
 ARYSZ
 FSRF
 UGT
 NOU
 IASB
 SMFY
 SDVF
 AMUD
 IFIX
 SIGR
 ARSLT
 IPWER
 RTHWR
 ALG
 PLY1
 FLIP
 ARGUM
 FRGLU
 FANGU
 FL
 STNFG
 LONFG
 MVST
 LOM
 STUPR
 FLINK
 KTER
 WRCH
 BRASC
 BASC
 COUT
 LDSTB
 MOVEF
 CPYAR
 MAD
 FPZER
 KPTRS
 DUMMY
 NULT

NON-OVERLAYED TASKS AND
SUBROUTINES

XN PLTU 077777
 XN FHMA 027455
 XN FRTSK 027454

NMAX 041356
 ZMAX 000263
 CSZE 000000
 EST 000000
 SSI 000000

LAST ADDRESS OF PROGRAM
 SAVEFILE IN CORE (OCTAL)

APPENDIX B: DATA LAYOUT IN STATUS RETRIEVAL ARRAY

The status retrieval arrays for experiments 1 to 25 are labelled NARXX where the experiment numbers appear in the XX position. Status retrieval arrays for experiments 19 and 23 are not included since their status data is combined with that of experiments 18 and 14, respectively. Mnemonics used in NARXX arrays are defined in Table B:1.

TABLE B:1 MNEMONIC GLOSSARY

1A - HV1A Voltage Setting
1B - HV1B Voltage Setting
2A - HV2A Voltage Setting
2B - HV2B Voltage Setting
A1 - Wide-Fine Sensor Select
AB - A/B Select
AC - Attitude Control System On/Off
AD - Analog Reference Monitor
AS - Analog Monitor Identification
CA - Calibration A On/Off
CB - Calibration B On/Off
CT - Calibration Timer On/Off
DA - Data Crossing A
DB - Data Crossing B
EA - Electronics A On/Off
EB - Electronics B On/Off
EC - Electronics C On/Off
EF - Event Flag
EO - Earth Aspect On/Off
EV - Event Counter
FS - Fast-Slow Scan Rate
G1 - Visible Earth Gate 1
G2 - IR Earth Gate 2
G3 - Earth Gate 3
G4 - Earth Gate 4
G5 - Solar Gate 5
G6 - Star Gate 6
G7 - Earth Gate 7
G8 - Star Gate 8
G9 - Solar Gate 9
HA - High Voltage A On/Off
HB - High Voltage B On/Off
H1 - High Voltage Monitor A
H2 - High Voltage Monitor B

LG - Logic On/Off
 L1 - Low Voltage Monitor A
 L2 - Low Voltage Monitor B
 MA - A Auto/Manual Select
 MB - B Auto/Manual Select
 MC - C Auto/Manual Select
 ME - Memory Identification
 MT - High-Low Motor Torque Setting
 M1 - Normal-Optional Sampling Mode
 M2 - Normal-Optional Sampling Mode
 PTD1(R) - Programmable Time Delay 1 (Right Byte)
 PTD1(L) - Programmable Time Delay 1 (Left Byte)
 PTD2(R) - Programmable Time Delay 2 (Right Byte)
 PTD2(L) - Programmable Time Delay 2 (Left Byte)
 PTD3(R) - Programmable Time Delay 3 (Right Byte)
 PTD3(L) - Programmable Time Delay 3 (Left Byte)
 PTD4(R) - Programmable Time Delay 4 (Right Byte)
 PTD4(L) - Programmable Time Delay 4 (Left Byte)
 PTD5(R) - Programmable Time Delay 5 (Right Byte)
 PTD5(L) - Programmable Time Delay 5 (Left Byte)
 RA - A Range
 RB - B Range
 RC - C Range
 RM - Ratemeter
 RR - RC Register
 SH - Shutter Position
 SI - Stellar Lock Indicator
 SO - Stellar Aspect On/Off
 SS - Sector Identification
 ST - State-Of-Health (SOH) Data
 TA - Temperature Monitor A
 TB - Temperature Monitor B
 TC - Temperature Monitor C
 TD - Temperature Monitor D

TBR1 - Time Between Register 1
TBR2 - Time Between Register 2
TBR3 - Time Between Register 3
TBR5 - Time Between Register 5
TH - Threshold Control
TM - Temperature Minco
VA - HVA1-2 Select
VB - HVB1-2 Select
WP - Wheel Position

Table B:2 Status Array, Exp #1

[illegible]

Table B:3 Status Array, Exp #2

C*****NAR ARRAY*****

BIT NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1																CA
2							CB									
3							EA									
4																EB
5							HA									
6																HB
7																
8																
9															M2	M1
10																
11							UE									UA
12																
13																
14																
15																
16						DB								DA		
17																
18						1A										
19						2A								1B		
20														2B		
21						H2							H1			
22						L2							L1			
23																
24																
25																
26																
27																

Table B:4 Status Array, Exp #3

[illegible]

Table B:5 Status Array, Exp #4

[illegible]

Table B:6 Status Array, Exp #5

[illegible]

BIT NUMBER // 0// 1// 2// 3// 4// 5// 6// 7// 8// 9// 10// 11// 12// 13// 14// 15//

[illegible]

Table B:7 Status Array, Exp #6

C*****COUNCIL OF APPALACHIAN STATES*****

BIT NUMBER // 0 // 1 // 2 // 3 // 4 // 5 // 6 // 7 // 8 // 9 // 10 // 11 // 12 // 13 // 14 // 15 //

[illegible]

Table B:8 Status Array, Exp #7

C*****NAR ARRAY*****																											
BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7/ 8/ 9/10/11/12/13/14/15//																											
C*****	1	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	CA	//	//
C*****	2	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	3	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	4	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	5	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	6	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	MB	//	//
C*****	7	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	8	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	9	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	10	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	11	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	12	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	RA	//	//
C*****	13	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	RC	//	//
C*****	14	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	15	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	16	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	17	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	18	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	19	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	20	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	21	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	22	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	23	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	24	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	TA	//	//
C*****	25	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	TC	//	//
C*****	26	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//
C*****	27	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//	//

Table B:9 Status Array, Exp #8

[illegible][illegible]

Table B:10 Status Array, Exp #9

*****HAR ARRAY*****																											
BIT NUMBER																											
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

[illegible][illegible]

Table B:12 Status Array, Exp #11

BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7/ 8/ 9/ 10/ 11/ 12/ 13/ 14/ 15//

C*****	/					G7//	1	//
C*****	/					G8//	2	//
C*****	/					E9//	3	//G9
C*****	/						4	//
C*****	/					HA//	5	//
C*****	/					EO//	6	//
C*****	/					SI//	7	//
C*****	/					AC//	8	//
C*****	/					H1//	9	//
C*****	/						10	//
C*****	/						11	//
C*****	/					**//IB R1//**//**//**//*	12	//
C*****	/						13	//**//**//**//**//**//**//*
C*****	/						14	//
C*****	/						15	//
C*****	/						16	//
C*****	/						17	//
C*****	/					**1A**//**//	18	//
C*****	/						19	//
C*****	/						20	//
C*****	/					**//H1//**//**//**//**//**//**//*	21	//
C*****	/						22	//
C*****	/						23	//
C*****	/						24	//
C*****	/					**//PT/D4/(L)*//**//**//	25	//
C*****	/					**//PT/D4/(R)*//**//**//	26	//
C*****	/					**//PT/D5/(L)*//**//**//**//**//**//**//**//*	27	//PT/D5/(R)*//**//**//**//**//*

Table B:13 Status Array, Exp #12

[illegible]

[illegible]

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Table B:15 Status Array, Exp #14

C*****HAR ARRY*****

[illegible]

Table B:16 Status Array, Exp #15

*****NAR ARRAY*****

BIT NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1																G7
2																
3																G9
4																
5																FS
6																
7																G3
8																G4
9																M1
10																G5
11																
12																G1
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																
23																
24																
25																
26																
27																

Table B:17 Status Array, Exp #16

[illegible][illegible]

Table B:18 Status Array, Exp #17

BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7/ 8/ 9/10/11/12/13/14/15//

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Table B:19 Status Array, Exp #18

[illegible]

C*****HR ARMY*****

[illegible]

Table B:21 Status Array, Exp #21

*****HRR HRRY*****																											
BIT NUMBER // 0/ 1/ 2/ 3/ 4/ 5/ 6/ 7/ 8/ 9/10/11/12/13/14/15//																											
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
27	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table B:22 Status Array, Exp #22

[illegible]

Table B:23 Status Array, Exp #24

*****NOR ARRAY*****																										
BIT NUMBER	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15										
1																										
2																									CA	
3																									CI	
4																										
5																										
6																										
7																										
8																									ME	
9																										
10																										
11																										
12																										
13																										
14																										
15																										
16																										
17																										
18																										
19																										
20																										
21																										
22																										
23																										
24																										
25																										
26																										
27																										

[illegible]68

APPENDIX C: DATA DISPLAY SUMMARY

This appendix contains a complete set of status, listing and describe outputs. It contains graphical output for experiments 4,5,6,12 and 13 only.

APPENDIX C DATA DISPLAYS

1. Sample Status Outputs

The status outputs contain in a plain language format the status indicators for the experiments specified by the header. The date/time group in the extreme upper left hand corner indicates the time at which the operator made the request for the data. The date/time group in the heading is the start time of the two minute telemetry page requested. The header also contains the satellite (A or B) and the experiment number and title. The telemetry format (1-5) and the telemetry page number (0-31) are indicated just below and to the left of the header. All data in the output are the last available in the particular telemetry page requested. "Most recent" sensor data is in counts. Any idiosyncrasies of the status displays will be noted with that display in the following sections. Unless otherwise noted the number of telemetry pages per output is 1.

12 070/18:30:23

SOLRAD 110 EXP STATUS FOR 701114/ 4:45: 7
EXPERIMENT 1: HIGH ENERGY X-RAY MONITOR

FORMAT: 1 PAGE: 2

ELECTRONICS:	ON	RATEMETER:	1.26 VOLTS
HIGH VOLTAGE:	ON		
HV SELECT:	1		
MODE:	NORM	MOST RECENT FPA DATA	
CALIBRATION:	OFF	CHANNEL 1:	27.
HV1 SETTING:	0111	CHANNEL 2:	35.
HV2 SETTING:	1011	CHANNEL 3:	89.
HV MONITOR:	2.78 VOLTS	CHANNEL 4:	119.

Table Cl.1 - Sample status output for experiment 1. HVx settings are given in terms of the binary switch positions.

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12 070/18:30:53

SOLRAD 11R EXP STATUS FOR 761110/ 4145: 7
EXPERIMENT 2: X-RAY PROPORTIONAL COUNTER

FORMAT: 1 PAGE: 2

	SIDE A	SIDE B	MODE: NORM
ELECTRONICS:	ON	ON	
HIGH VOLTAGE:	ON	ON	
HV SELECT:	1	2	
CALIBRATE:	OFF	OFF	
LV MONITOR:	3.48 VOLTS	3.70 VOLTS	
HV MONITOR:	3.70 VOLTS	2.50 VOLTS	
HV1 SETTING:	1001	1100	
HV2 SETTING:	1001	1100	
DATA XING:	0010	0010	
			MOST RECENT FPA DATA
			FPA 1: 204.
			FPA 2: 1309.
			FPA 3: 311.
			FPA 4: 1753.

Table Cl.2 - Sample status output for experiment 2. The

HVx settings are given in terms of the binary switch positions.

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12 070/19:31:23

SOLRAD 118 EXP STATUS FOR 761110/ 4:45: 7
EXPERIMENT 3: MAGNESIUM XI, XII MONITOR

FORMAT: 1 PAGE: 2

ELECTRONICS:	ON	MOST RECENT DATA	
HIGH VOLTAGE:	ON	CONTINUUM:	117
HV SELECT:	1	MAG11:	146
HV1 SETTING:	1010	MAG12:	153
HV2 SETTING:	1010		
HV MONITOR:	3.40 VOLTS		
STAR PULSES/MIN.:	10		

Table C1.3 - Sample status output for experiment 3. The HVx settings are given in terms of the binary switch positions.

12 876/19:31:59

SOLRAD 11B EXP STATUS FOR 761110/ 4:45: 7
EXPERIMENTS 4,5,6,12,13: X-RAY PHOTOMETERS

FORMAT: 1 PAGE: 2

ELECTRONICS:	ON	TEMP (DEG.C)	MOST RECENT DATA
CALIBRATE:	OFF	X4A 53.20	X4 1
X4 A/R SELECT:	R	X4B 45.80	X5 22
X4 RNGCHG: (AUTO)	1	X5A 45.80	X6 49
X5 A/R SELECT:	R	X5B 45.20	X12 143
X5 RNGCHG: (AUTO)	2	X6 45.80	X13 153
X5 SHUTTER:	COVERED	X12 43.98	
X6 RNGCHG: (AUTO)	2	X13 45.60	
X12 RNGCHG: (AUTO)	1		
X13 RNGCHG: (AUTO)	1		

RC REG 0000

Table C1.4 - Sample status output for experiments 4,5,6,
12 and 13.

12 870/18:32:44

SOLRAD 118 EXP STATUS FOR 761110/ 4:45: 7
EXPERIMENTS 7,8 - UV ION CHAMBERS (170-1050A, 1000-1350A)

FORMAT: 1 PAGE: 2

ELECTRONICS:	ON	TEMP (DEG.C)	MUST RECENT DATA
CALIBRATE:	OFF	X7A 41.71	X7A 1488
X7A RENGCHG: (AUTO)	3	X7B 43.98	X7B 3978
X7B RENGCHG: (AUTO)	2	X7C 45.20	X7C 2448
X7C RENGCHG: (AUTO)	2	X8 49.00	X8 13
X8 RENGCHG: (AUTO)	1		
X8A SHUTTER: UNVERFD (OK)		KC REG 0000	
X8 A/B SELECT:	B		

Table C1.5 - Sample status output for experiments 7 and 8.

121776/16:44:36

SOLRAD 11A EXP STATUS FOR 7512 9/ 1:32: 4
EXPERIMENT 9: UV SPECTROMETER

FORMAT: 2 PAGE: 20

EXPERIMENT: ON
SCAN RATE: FAST
TORQUE: HIGH
HV SETTING: 0000
HV MONITOR: 2.62 VOLTS
LV MONITOR: 5.08 VOLTS
TEMP: -99.99 DEG.C

CONTROL WORD: 1111111100001
MOTOR COUNT: 4
FPA DATA: 24.

THE NEXT CONTROL WORD WILL
OCCUR IN PAGE 27

Table C1.6 - Sample status output for experiment 9. The HV setting is given as binary switch positions. The control word is output as a binary code. Currently this experiment yields valid data only when it is operating in the HIGH torque mode. In the slow scan mode, the number of telemetry pages per output is 7. In the fast scan mode, the number of telemetry pages per output is 1. All data (except the motor count) are taken from the page where the control word is found. If no control word is found, the data are taken from the page corresponding to the start time designated by the operator. In the slow scan mode the motor count is found six pages later than the page containing the control word.

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121476/15:45: 1

SOLRAD 11B EXP STATUS FOR 7610 77 9:59:29

FORMAT: 1 PAGE: 12

EXPERIMENT 10
THOMSON X-RAY POLARIMETER
ELECTRONICS: ON
CALIBRATE: OFF
HIGH VOLTAGE-A: ON
HIGH VOLTAGE-B: ON
HVA SETTING: 0101
HVB SETTING: 0101
HVA MONITOR: 3.38 VOLTS
HVB MONITOR: 3.30 VOLTS

SAMPLE PERIOD: 5.62 SEC

MOST RECENT DATA
BKGD/ANTICOUNT: 0.
145 FPA: 1.
185 FPA: 10.
245 FPA: 3.
285 FPA: 0.

*****STAR PULSE*****
EARTH GATE 7 OPEN
EARTH DELAY 4 0.9 DEG
STAR GATE 6 SHUT
SOLAR GATE 9 SHUT
SOLAR DELAY 5 0.0 DEG

EXPERIMENT 11
BRAGG X-RAY POLARIMETER
ELECTRONICS: ON
HIGH VOLTAGE: ON
HV SETTING: 1010
HV MONITOR: 4.56 VOLTS

SAMPLE PERIOD: 12.66 SEC

MOST RECENT DATA
SECTOR 1 FPA: 54.
SECTOR 2 FPA: 37.
SECTOR 3 FPA: 56.
SECTOR 4 FPA: 99.
SECTOR 5 FPA: 42.
SECTOR 6 FPA: 78.
SECTOR 7 FPA: 0.
SECTOR 8 FPA: 125.

*****SECTOR STATUS*****
EARTH ASPECT ON
STELLAR ASPECT OFF /UNLOCKED
ACS ON
ACS ANGLE SENSOR FINE
SPIN PERIOD 3.8379 SEC
ASPECT ANGLE 0.0 DEG

Table C1.7 - Sample status output for experiments 10 and 11.
High voltage settings are given in terms of binary switch
positions. The most recent data in experiment 10 is from
sector 5.

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12 070/18:33:59

SOLRAD 110 EXP STATUS FOR 701110/ 4:45: 7
EXPERIMENTS 14,23: SOLAR AND ANTISOLAR PROTONS
EXPERIMENT 17: OMNIDIRECTIONAL PROTONS
EXPERIMENT 22: SOLAR FLARE ELECTRONS

FORMAT: 1 PAGE: 2

EXP 14,23	ON	EXP 17C TEMP	40.34 DEG.C
EXP 17A	ON	EXP 17C HV MONITOR	2.40 VOLTS
EXP 17C	ON	EXP 17C LV MONITOR	2.94 VOLTS
EXP 17D	ON	EXP 22 TEMP	53.24 DEG.C
EXP 22	ON	EXP 22 HV MONITOR	1.96 VOLTS
		EXP 22 LV MONITOR	2.58 VOLTS

*****STAR PULSE*****
EARTH GATE 7 OPEN
EARTH DELAY 4 0.9 DEG
STAR GATE 8 SHUT
SOLAR GATE 9 SHUT
SOLAR DELAY 5 0.0 DEG

*****SECTOR STATUS*****
EARTH ASPECT ON
STELLAR ASPECT OFF / LOCKED
ACS ON
ACS ANGLE SENSOR FINE
SPIN PERIOD 3.8428 SEC
ASPECT ANGLE 0.0 DEG

Table C1.8 - Sample status output for
experiments 14,17,22 and 23.

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12 876/18:36:20

SOLRAD 11R EXP STATUS FOR 761110/ 4:45: 7
EXPERIMENT 15: SOLAR WIND

FORMAT: 1 PAGE: 2

ELECTRONICS:	ON	TEMP	42.28 DEG.C
HIGH VOLTAGE:	ON	TPMOD	51.04 DEG.C
RATE:	SLOW	TLUG	50.32 DEG.C
MODE:	NORM	TPMC	53.20 DEG.C
FSP-STAR PULSE	0.9521 SEC	X-ASPECT	0.0 DEG
FSP-EARTH PULSE	0.9424 SEC	Y-ASPECT	0.0 DEG
FSP-SOLAR PULSE	0.9302 SEC		

*****SECTOR STATUS*****

EARTH ASPECT ON
STELLAR ASPECT OFF / LOCKED
ACS ON
ACS ANGLE SENSOR FINE
SPIN PERIOD 3.8428 SEC
ASPECT ANGLE 0.00 DEG

*****STAR PULSE*****

EARTH GATE 7 OPEN
EARTH DELAY 4 0.9 DEG
STAR GATE 8 SHUT
SOLAR GATE 9 SHUT
SOLAR DELAY 5 0.0 DEG

*****EARTH PULSE*****

EARTH DELAY 1 214.1 DEG
EARTH GATE 3 SHUT
EARTH GATE 4 SHUT
SOLAR GATE 5 OPEN
SOLAR DELAY 2 0.9 DEG
STAR GATE 6 SHUT
STAR DELAY 3 0.0 DEG
VIS EARTH GATE 1 SHUT
IR EARTH GATE 2 SHUT

Table C1.9 - Sample status output for experiment 15.

This experiment has a fast and a slow sampling rate. The fast rate produces 10 times as much data per telemetry page as the slow rate and it is used only in format 3. The experiment also has a normal mode and a flux mode. Data channels are partitioned differently in the flux mode than in the normal mode. The X- and Y- aspect data currently lack the proper algorithm and are set to 0.

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12 876/18:36:53

SOLRAD 11B EXP STATUS FOR 761110/ 4:45: 7
EXPERIMENT 16: STELLAR/AURORAL X-RAYS

FORMAT: 1 PAGE: 2

ELECTRONICS	ON	ACCUM 1	270
HIGH VOLTAGE-A	ON	ACCUM 2	307
TEMP 1	33.56 DEG.C	ACCUM 3	303
TEMP 2	34.52 DEG.C	ACCUM 4	320
SLEW	2	ACCUM 5	337
COUNTING DATA	30977.	ACCUM 6	447
SAMPLE PERIOD	1.5826 SEC	ACCUM 7	327
		ACCUM 8	322
		ACCUM 9	694

*****SECTOR STATUS*****
EARTH ASPECT ON
STELLAR ASPECT OFF / LOCKED
ACS ON
ACS ANGLE SENSOR FINE
SPIN PERIOD 3.8429 SEC
ASPECT ANGLE 0.00 DEG

*****STAR PULSE*****
EARTH GATE 7 OPEN
EARTH DELAY 4 0.9 DEG
STAR GATE 8 SHUT
SOLAR GATE 9 SHUT
SOLAR DELAY 5 0.0 DEG

*****EARTH PULSE*****
EARTH DELAY 1 214.1 DEG
EARTH GATE 3 SHUT
EARTH GATE 4 SHUT
SOLAR GATE 5 OPEN
SOLAR DELAY 2 0.9 DEG
STAR GATE 6 SHUT
STAR DELAY 3 0.0 DEG
VIS EARTH GATE 1 SHUT
IR EARTH GATE 2 SHUT

Table C1.10 - Sample status output for experiment 16.

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121076/16:36:46

SOLRAD 11B EXP STATUS FOR 761215Z 7:44:51
EXPERIMENTS 18,19: GEOCORONAL, EXTRATERRESTRIAL EUV

FORMAT: 1 PAGE: 5

ELECTRONICS: OFF
HIGH VOLTAGE: OFF
TEMP 1: 34.04 DEG.C
TEMP 2: 40.61 DEG.C
HV SELECT: 1
HV MONITOR: 0.70 VOLTS

WHEEL POSITION: 1.88 VOLTS
HV1 SET: 0011
HV2 SET: 0000
EXP 18 FILTER:
EXP 19 FILTER:

*****STAR PULSE*****
EARTH GATE 7 OPEN
EARTH DELAY 4 0.9 DEG
STAR GATE 8 SHUT
SOLAR GATE 9 SHUT
SOLAR DELAY 5 0.4 DEG

*****SECTOR STATUS*****
EARTH ASPECT ON
STELLAR ASPECT OFF /UNLOCKED
ACS ON
ACS ANGLE SENSOR FINE
SPIN PERIOD 3.7427 SEC
ASPECT ANGLE 0.0 DEG

NO DATA AVAILABLE

Table C1.11 - Sample status output for experiments 18 and 19.

These experiments output data from sensors in telemetry format 2 only. If another format is in effect, the status output shows a "NO DATA AVAILABLE" note. High voltage settings are in terms of the binary switch positions. The filter indicators do not yet have a designated output.

12 070/18:30:18

SOLRAD 11R EXP STATUS FOR 761110/ 4145: 7
EXPERIMENT 20: PHOTON-ALPHA TELESCOPE

FORMAT: 1 PAGE: 2

ELECTRONICS:		ON	28V REF:	4.00 VOLTS
5V REF:	4.98 VOLTS		15V REF:	3.02 VOLTS
2.5V REF:	2.48 VOLTS		10V REF:	2.04 VOLTS
0V REF:	0.00 VOLTS		-5V REF:	1.00 VOLTS
BIAS:	2.78 VOLTS			
FLEL IFMP:	5.10 VOLTS			
DET TEMP:	4.70 VOLTS			

THRESHOLD LEVELS							
CHAN 1	CHAN 2	CHAN 3	CHAN 4	CHAN 5	CHAN 6	CHAN 7	CHAN 8
200LI	11	0	4	113	72	29	18
200UL	10	11	6	186	113	47	28
750LI	17	9	5	32	113	8	28
750UL	37	10	9	113	241	27	60

Table Cl.12 - - Sample status output for experiment 20.

12 070/13:50:14

SOLRAD 11B EXP STATUS FOR 761110/ 3:29: 7
EXPERIMENT 21: LOW ENERGY PROTON SPECTROMETER

FORMAT: 1 PAGE: 26

ELECTRONICS: ON

ANALOG MONITOR STATUS: VOLTS

7	3.76
6	3.02
5	0.92
4	0.00
3	2.18
2	0.54
1	5.10
1	5.10

ANALOG MONITOR 0 = 0.00 FOR THE PREVIOUS 64 MIN
ANALOG MONITOR 4 = 0.00 FOR THE PREVIOUS 64 MIN

Table C1.13 - Sample status output for experiment 21.

Since one cycle through eight analog monitors is required, the number of telemetry pages per record is 8. The program searches backward through four such records to check for times when analog monitors 0 or 4 are not zero.

12.876/18:40:30

SOLRAD 11R EXP STATUS FOR 761110/ 4:45: 7
EXPERIMENT 24: BACKGROUND X-RAY SPECTROMETER

FORMAT: 1 PAGE: 2

ELECTRONICS:	OFF	RATEMETER:	2.00 VOLTS
HV STATUS:	OFF	CAL TITER:	OFF
TEMP 1:	-156.67 DEG.C	MEM ID:	1
TEMP 2:	41.14 DEG.C	SHUTTER:	COVERED
CALIBRATE:	OFF		
HV MONITOR:	0.92 VOLTS		

Table C1. 14 - Sample status output for experiment 24.

This experiment is not working but the output is included for the sake of completeness.

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122375/19: 4: 9

SOLRAD 116 EXP STATUS FOR 75 927/20: 1:20
EXPERIMENT 25: GAMMA RAY BURST DETECTION

FORMAT: 1 PAGE: 25

DETECTORS:	ON	THRESHOLD SET:	1111
LOGIC:	ON	SOH A:	2953.
HVA STATUS:	ON	SOH B:	2937.
HVB STATUS:	ON	SOH SEL:	1-4
HVA SET:	1001	DATA SEL:	1-4
HVB SET:	1101	AMT SEG:	12
EVENT ID:	0		

NO DATA AVAILABLE

Table C1.15 - Sample status output for experiment 25.
HVx and threshold settings are in terms of binary switch
positions.

2. Sample Data Listings

The data listings contain a partial output in counts of the primary sensors for the experiment specified by the header. The data selected for display is that corresponding to the highest periodic sampling rate and always comprises at least 75% of the available data. The date/time group in the extreme upper left hand corner indicates the time at which the operator requested the particular data segment. The date/time group in the heading states the start and end times of the data displayed in the output. The header also indicates the satellite (A or B) and the experiment number and title. The telemetry format (1-5) and the telemetry page number (0-31) are indicated just below and to the left of the header. The time is indicated in the left most column with a resolution Δt , where Δt is the telemetry repetition interval for that sample. The maximum discrepancy between time tag and time of the data is $\Delta t/2$. Any idiosyncrasies in the data listings will be noted with that display in the appendix. Unless otherwise noted, the number of telemetry pages per output is 1.

0 OFL 76/18:30:30

SOLRAD 11R DATA REPORT FOR 761110/ 4:45: 7 TO 10/ 4:46:59
EXPERIMENT 1: HIGH ENERGY X-RAY MONITOR

FORMAT: 1 PAGE: 2 NORMAL MODE

DATE/TIME	CAL	CHANNEL 1	CHANNEL 2	CHANNEL 3	CHANNEL 4	RATE/MPH
761110/ 445 7	3.200+1	3.300+1	6.800+1	1.210+2		
761110/ 44514	2.500+1	2.900+1	7.100+1	1.460+2		
761110/ 44522	2.300+1	4.100+1	7.300+1	1.180+2		
761110/ 44529	2.500+1	2.200+1	9.500+1	1.310+2		
761110/ 44537	2.600+1	2.900+1	9.700+1	1.570+2		
761110/ 44544	1.900+1	3.100+1	8.400+1	1.190+2		51
761110/ 44552	2.200+1	3.700+1	7.800+1	1.380+2		
761110/ 44559	1.600+1	3.000+1	8.200+1	1.220+2		
761110/ 446 7	2.200+1	2.800+1	8.300+1	1.490+2		
761110/ 44614	2.400+1	3.900+1	8.700+1	1.410+2		
761110/ 44622	2.500+1	2.400+1	8.600+1	1.300+2		
761110/ 44629	2.600+1	2.900+1	8.400+1	1.150+2		
761110/ 44637	2.600+1	4.200+1	8.000+1	1.090+2		
761110/ 44644	2.000+1	2.900+1	8.900+1	1.250+2		63
761110/ 44652	2.500+1	3.900+1	8.600+1	1.350+2		
761110/ 44659	2.700+1	3.500+1	8.900+1	1.190+2		

Table C2.1 - Sample data listing for experiment 1. Data column headings will change, depending on the experiment mode (i.e., normal or optional). In the optional mode, channels 1, 3 and 4 are omitted while channel #2 is output four times more frequently than in the normal mode.

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8 DEC 76/18:31: 7

SOLRAD 116 DATA REPORT FOR 761110/ 4:45: 7 TO 10/ 4:46:59
EXPERIMENT 2: X-RAY PROPORTIONAL COUNTER

FORMAT: 1 PAGE: 2 NORMAL MODE

DATE/TIME	CAL	CHANNEL 1	CHANNEL 2	CHANNEL 3	CHANNEL 4
761110/ 445 7		2.080+2	1.297+3	3.230+2	1.777+3
761110/ 44514		1.990+2	1.201+3	3.010+2	1.725+3
761110/ 44522		2.200+2	1.281+3	3.290+2	1.677+3
761110/ 44529		2.170+2	1.229+3	3.050+2	1.753+3
761110/ 44537		1.890+2	1.281+3	3.010+2	1.709+3
761110/ 44544		2.080+2	1.305+3	3.130+2	1.725+3
761110/ 44552		2.070+2	1.253+3	2.630+2	1.740+3
761110/ 44559		2.120+2	1.317+3	3.070+2	1.765+3
761110/ 446 7		2.010+2	1.273+3	3.150+2	1.661+3
761110/ 44614		1.980+2	1.285+3	3.410+2	1.841+3
761110/ 44622		2.110+2	1.273+3	2.910+2	1.641+3
761110/ 44629		1.980+2	1.373+3	2.810+2	1.709+3
761110/ 44637		1.810+2	1.273+3	3.000+2	1.673+3
761110/ 44644		1.820+2	1.313+3	3.230+2	1.701+3
761110/ 44652		1.850+2	1.253+3	3.110+2	1.701+3
761110/ 44659		2.040+2	1.369+3	3.110+2	1.753+3

Table C2.2 — Sample data listing for experiment 2.

The data column headings will change depending on the mode in which the experiment is operating (normal, optional 1, or optional 2). In the optional 1 mode, channels 3 and 4 are eliminated and channels 1 and 2 are sampled twice as fast as in the normal mode. In the optional 2 mode, channel 1 is output in place of channels 2, 3, and 4.

8 DEC 76/18:31:37

SOLRAD 11R DATA FOR 761110/ 4:45: 7 TO 10/ 4:46:59
EXPERIMENT 3: MAGNESIUM XI, XII MONITOR

FORMAT: 1 PAGE: 2

DATE/TIME	COUNT	MGXI	MGXII	STP	MG11FL	MG12FL	XI1/XI	XI1/CLFL
761110/ 445 7	80	141	149	10	6.51+1	7.36+1	1.13+0	9.53-1
761110/ 446 7	117	146	153	10	3.40+1	3.84+1	1.24+0	2.87-1

Table C2.3 - Sample data listing for experiment 3. Columns

1-3 of the data are in counts. Column 4 is the number of
star pulses/min and columns 5-6 are photon flux in units of
photons $\text{cm}^{-2} \text{sec}^{-1}$.

8 DFL 76/10:32:20

SOLRAD 115 DATA FOR 761110/ 4:45: 7 IN 10/ 4:40:59
EXPERIMENTS 4,5,6,12,13: X-RAY PHOTOMETERS

FORMAT: 1 PAGE: 2

EXP#	12	4	5	13	6
TIME	CAL 0.5-3A RM	1-8A RM	8-10A RM	2-10A RM	44-60A RM
10/ 445 7	1.27+2 1A	1.00+0 B1A		1.49+2 1A	4.90+1 2A
10/ 44514	1.92+2 1A	3.00+0 B1A	2.20+1 B2A		
10/ 44522	1.33+2 1A	9.00+0 B1A		1.50+2 1A	
10/ 44529	1.08+2 1A	1.00+0 B1A	2.20+1 B2A		
10/ 44537	1.93+2 1A	1.00+0 B1A		1.51+2 1A	4.90+1 2A
10/ 44544	1.76+2 1A	1.00+0 B1A	2.20+1 B2A	1.52+2 1A	
10/ 44552	1.92+2 1A	3.00+0 B1A			
10/ 44559	1.40+2 1A	1.00+0 B1A	2.20+1 B2A	1.51+2 1A	4.90+1 2A
10/ 446 7	1.35+2 1A	1.00+0 B1A			
10/ 44614	1.56+2 1A	1.00+0 B1A	2.20+1 B2A	1.52+2 1A	
10/ 44622	1.25+2 1A	1.00+0 B1A			
10/ 44629	1.31+2 1A	1.00+0 B1A	2.20+1 B2A		
10/ 44637	2.16+2 1A	1.00+0 B1A		1.53+2 1A	4.90+1 2A
10/ 44644	2.07+2 1A	1.00+0 B1A	2.20+1 B2A		
10/ 44652	1.43+2 1A	1.00+1 B1A		1.53+2 1A	
10/ 44659	1.43+2 1A	1.00+0 B1A	2.20+1 B2A		

Table C2.4 — Sample data listing for experiments 4, 5, 6, 12, and 13.

The experiment number and associated wavelength range in angstroms are indicated in the column headings. The calibration is indicated by "on" or a blank (off). The selected detector for the experiments which have two detectors appear after the data in the column marked "A". The detector range is indicated under "R" and the automatic (A) or manual (M) indication is contained in the columns marked "A".

8 UFC 76/18:33: 2

SOLRAD 11R DATA REPORT FOR 761110/ 4:45: 7 TO 10/ 4:46:59
EXPERIMENTS 7,8: UV ION CHAMBERS

FORMAT: 1 PAGE: 2

EXP #	DATE/TIME	CAL	7A	A	7B	A	7C	A	8	A
			170-500 RM		450-850 RM		725-1050 RM		1080-1350 RM	
761110/ 445 7			1.512+3 3A		3.980+3 2A		2.456+3 2A		1.300+1 B1A	
761110/ 44514			1.520+3 3A		3.974+3 2A		2.460+3 2A			
761110/ 44522			1.520+3 3A		3.960+3 2A		2.405+3 2A		1.300+1 B1A	
761110/ 44529			1.508+3 3A		3.950+3 2A		2.409+3 2A			
761110/ 44537			1.500+3 3A		3.937+3 2A		2.408+3 2A		1.300+1 B1A	
761110/ 44544			1.496+3 3A		3.932+3 2A		2.472+3 2A			
761110/ 44550			1.500+3 3A		3.929+3 2A		2.475+3 2A		1.300+1 B1A	
761110/ 44559			1.496+3 3A		3.928+3 2A		2.476+3 2A			
761110/ 446 7			1.490+3 3A		3.931+3 2A		2.476+3 2A		1.300+1 B1A	
761110/ 44614			1.481+3 3A		3.934+3 2A		2.475+3 2A			
761110/ 44622			1.480+3 3A		3.933+3 2A		2.474+3 2A		1.300+1 B1A	
761110/ 44629			1.484+3 3A		3.949+3 2A		2.469+3 2A			
761110/ 44637			1.490+3 3A		3.950+3 2A		2.464+3 2A		1.300+1 B1A	
761110/ 44644			1.492+3 3A		3.960+3 2A		2.459+3 2A			
761110/ 44652			1.488+3 3A		3.973+3 2A		2.455+3 2A		1.300+1 B1A	
761110/ 44659			1.468+3 3A		3.976+3 2A		2.448+3 2A			

Table C2.5 — Sample data listing for experiments 7 and 8.

The experiment number is indicated as the first horizontal row. Beneath that is the wavelength range in angstroms for the designated experiment. Immediately to the right of the data are the detector range (column marked R) and the automatic (A)/manual (M) mode indicators. Experiment #8 contains two detectors (A and B) and the selected detector is indicated to the left of the range. The calibration is either "on" or blank (off).

1/ UFL / 8/10:41:18

SOLRAD 11A DATA REPORT FOR 7012 9/ 1:32: 4 TO 9/ 1:46: 4
EXPERIMENT 9: UV SPECTROMETER

FORMAT: 2 PAGE: 20

STEP WAVELENGTHS		COUNTS/SEC	FLUX	STEP WAVELENGTHS	COUNTS/SEC	FLUX	FAST SCAN
2	1200-1225	5.120+ 1		14	1500-1525	5.760+ 1	
3	1225-1250	5.120+ 1		15	1525-1550	5.333+ 1	
4	1250-1275	5.973+ 1		16	1550-1575	5.973+ 1	
5	1275-1300	5.347+ 1		17	1575-1600	5.120+ 1	
6	1300-1325	5.120+ 1		18	1600-1625	3.627+ 1	
7	1325-1350	5.120+ 1		19	1625-1650	3.627+ 1	
8	1350-1375	5.120+ 1		20	1650-1675	5.333+ 1	
9	1375-1400	5.120+ 1		21	1675-1700	5.333+ 1	
10	1400-1425	5.120+ 1		22	1700-1725	5.333+ 1	
11	1425-1450	5.120+ 1		23	1725-1750	5.120+ 1	
12	1450-1475	5.750+ 1		24	1750-1775	5.120+ 1	
13	1475-1500	5.750+ 1		25	1775-1800	5.120+ 1	

FLY-BACK DATA: 5.120+ 1 5.120+ 1

DARK COUNTS: 5.120+ 1 5.120+ 1 5.120+ 1

STEPPING MOTOR PULSE COUNT: 4

EXP 8 FLUX FOR SOLRAD 11A IS 2.550+ 2 ON 9 AT 1:32: 8

Table C2.6 - Sample data listing for experiment 9. (Fast Scan)

This experiment yields valid data only when the motor is in the HIGH torque mode. If the control word is not found in seven pages, data is output for the seventh page back from the time requested by the operator and the output is treated as though the experiment is in the fast scan mode. If the control word is found and the slow scan mode is detected, 1 complete output takes seven telemetry pages. Experiment 8 flux is obtained at a time corresponding to that of the 1200 Å data in experiment #9. This is to provide a comparison between the two detectors.

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23 DEC 76/19:53:15

SOLRAD 11R DATA REPORT FOR 761220/22:28:48 TO 20/22:42:48
EXPERIMENT 9: UV SPECTROMETER

FORMAT: 1 PAGE: 24

SLOW SCAN

STEP	WAVELENGTHS	COUNTS/SEC	FLUX	STEP	WAVELENGTHS	COUNTS/SEC	FLUX
2	1178-1181	0.013+ 1		17	1225-1228	1.771+ 2	
3	1181-1184	0.000+ 0		18	1228-1231	1.685+ 2	
4	1184-1187	0.000+ 0		19	1231-1234	2.219+ 2	
5	1187-1190	0.000+ 0		20	1234-1237	2.779+ 2	
6	1190-1193	0.760+ 1		21	1237-1240	2.669+ 2	
7	1193-1196	4.907+ 1		22	1240-1243	2.795+ 2	
8	1196-1200	7.640+ 1		23	1243-1246	1.523+ 3	
9	1200-1203	0.187+ 1		24	1246-1250	4.608+ 2	
10	1203-1206	3.221+ 2		25	1250-1253	2.246+ 3	
11	1206-1209	2.197+ 2		26	1253-1256	8.547+ 4	
12	1209-1212	7.467+ 1		27	1256-1259	1.312+ 3	
13	1212-1215	0.533+ 1		28	1259-1262	4.267+ 2	
14	1215-1218	0.533+ 1		29	1262-1265	3.499+ 2	
15	1218-1221	9.640+ 1		30	1265-1268	2.731+ 2	
16	1221-1225	1.301+ 2		31	1268-1271	2.389+ 2	

STEP	WAVELENGTHS	COUNTS/SEC	FLUX	STEP	WAVELENGTHS	COUNTS/SEC	FLUX
32	1271-1275	2.069+ 2		48	1321-1325	2.539+ 2	
33	1275-1278	2.197+ 2		49	1325-1328	1.579+ 2	
34	1278-1281	4.309+ 2		50	1328-1331	2.859+ 2	
35	1281-1284	2.155+ 2		51	1331-1334	2.517+ 2	
36	1284-1287	0.000+ 0		52	1334-1337	2.197+ 2	
37	1287-1290	0.000+ 0		53	1337-1340	3.285+ 2	
38	1290-1293	0.000+ 0		54	1340-1343	3.648+ 2	
39	1293-1296	2.349+ 2		55	1343-1346	2.758+ 3	
40	1296-1300	2.389+ 2		56	1346-1350	4.354+ 3	
41	1300-1303	4.459+ 2		57	1350-1353	1.542+ 3	
42	1303-1306	3.264+ 2		58	1353-1356	7.232+ 2	
43	1306-1309	0.624+ 2		59	1356-1359	3.707+ 2	
44	1309-1312	1.664+ 2		60	1359-1362	4.928+ 2	
45	1312-1315	1.635+ 2		61	1362-1365	4.992+ 2	
46	1315-1318	2.987+ 2		62	1365-1368	3.840+ 2	
47	1318-1321	3.081+ 2		63	1368-1371	3.712+ 2	

STEP	WAVELENGTHS	COUNTS/SEC	FLUX	STEP	WAVELENGTHS	COUNTS/SEC	FLUX
64	1371-1375	0.421+ 2		80	1421-1425	0.000+ 0	
65	1375-1378	4.267+ 2		81	1425-1428	0.000+ 0	
66	1378-1381	1.200+ 4		82	1428-1431	0.000+ 0	
67	1381-1384	0.085+ 2		83	1431-1434	0.000+ 0	
68	1384-1387	4.416+ 2		84	1434-1437	0.043+ 2	
69	1387-1390	0.720+ 2		85	1437-1440	2.589+ 3	
70	1390-1393	7.787+ 2		86	1440-1443	2.346+ 3	
71	1393-1396	0.000+ 0		87	1443-1446	1.184+ 3	
72	1396-1400	0.000+ 0		88	1446-1450	3.125+ 3	
73	1400-1403	0.000+ 0		89	1450-1453	1.278+ 3	
74	1403-1406	0.000+ 0		90	1453-1456	1.050+ 3	
75	1406-1409	0.000+ 0		91	1456-1459	1.184+ 3	

AD-A039 604

NAVAL RESEARCH LAB WASHINGTON D C

F/G 9/2

SOLRAD-11 ON-LINE SYSTEM (SOLOLS), APPLICATIONS SOFTWARE...INTE--ETC(U)

MAR 77 L S WAGNER, D R UFFELMAN

NRL-MR-3466

NL

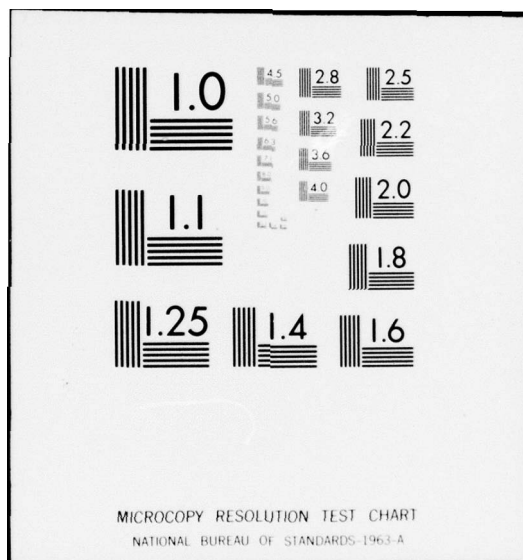
UNCLASSIFIED

2 of 2
ADA039 604



END

DATE
FILMED
6-77



Slow Scan (Continued)

76 1469-1412 0.000+ 0
77 1412-1415 0.000+ 0
78 1415-1418 0.000+ 0
79 1418-1421 0.000+ 0

92 1459-1462 1.103+ 3
93 1462-1465 1.069+ 3
94 1465-1468 1.039+ 3
95 1468-1471 1.423+ 3

STEP	WAVELENGTHS	COUNTS/SEC	FLUX
96	1471-1475	1.137+ 3	
97	1475-1478	1.235+ 3	
98	1478-1481	1.513+ 3	
99	1481-1484	1.359+ 3	
100	1484-1487	1.239+ 3	
101	1487-1490	1.372+ 3	
102	1490-1493	1.355+ 3	
103	1493-1496	1.383+ 3	
104	1496-1500	1.367+ 3	
105	1500-1503	1.466+ 3	
106	1503-1506	1.487+ 3	
107	1506-1509	1.589+ 3	
108	1509-1512	1.611+ 3	
109	1512-1515	2.033+ 3	
110	1515-1518	2.839+ 3	
111	1518-1521	2.127+ 3	

STEP	WAVELENGTHS	COUNTS/SEC	FLUX
112	1521-1525	1.751+ 3	
113	1525-1528	2.298+ 3	
114	1528-1531	2.067+ 3	
115	1531-1534	1.777+ 3	
116	1534-1537	1.948+ 3	
117	1537-1540	1.854+ 3	
118	1540-1543	2.033+ 3	
119	1543-1546	2.084+ 3	
120	1546-1550	2.025+ 3	
121	1550-1553	2.110+ 3	
122	1553-1556	2.271+ 3	
123	1556-1559	2.076+ 3	
124	1559-1562	2.118+ 3	
125	1562-1565	2.204+ 3	
126	1565-1568	3.104+ 3	
127	1568-1571	2.298+ 3	

STEP	WAVELENGTHS	COUNTS/SEC	FLUX
128	1571-1575	3.134+ 3	
129	1575-1578	2.647+ 3	
130	1578-1581	2.485+ 3	
131	1581-1584	2.878+ 3	
132	1584-1587	2.460+ 3	
133	1587-1590	7.426+ 3	
134	1590-1593	2.690+ 3	
135	1593-1596	0.000+ 0	
136	1596-1600	0.000+ 0	
137	1600-1603	0.000+ 0	
138	1603-1606	0.000+ 0	
139	1606-1609	2.903+ 3	
140	1609-1612	3.040+ 3	
141	1612-1615	3.364+ 3	
142	1615-1618	2.468+ 3	
143	1618-1621	2.562+ 3	

STEP	WAVELENGTHS	COUNTS/SEC	FLUX
144	1621-1625	2.827+ 3	
145	1625-1628	2.878+ 3	
146	1628-1631	2.656+ 3	
147	1631-1634	2.750+ 3	
148	1634-1637	4.821+ 2	
149	1637-1640	2.827+ 3	
150	1640-1643	2.579+ 3	
151	1643-1646	3.074+ 3	
152	1646-1650	3.381+ 3	
153	1650-1653	2.758+ 3	
154	1653-1656	3.108+ 3	
155	1656-1659	3.415+ 3	
156	1659-1662	3.637+ 3	
157	1662-1665	3.424+ 3	
158	1665-1668	3.842+ 3	
159	1668-1671	3.607+ 3	

STEP	WAVELENGTHS	COUNTS/SEC	FLUX
160	1671-1675	4.764+ 3	
161	1675-1678	4.013+ 3	
162	1678-1681	3.765+ 3	
163	1681-1684	4.289+ 3	
164	1684-1687	0.000+ 0	
165	1687-1690	0.000+ 0	
166	1690-1693	0.000+ 0	
167	1693-1696	0.000+ 0	
168	1696-1700	0.000+ 0	
169	1700-1703	5.313+ 3	
170	1703-1706	4.849+ 3	
171	1706-1709	4.730+ 3	
172	1709-1712	4.969+ 3	
173	1712-1715	4.595+ 3	
174	1715-1718	5.000+ 3	

STEP	WAVELENGTHS	COUNTS/SEC	FLUX
175	1721-1725	6.419+ 3	
177	1725-1728	7.136+ 3	
178	1728-1731	6.965+ 3	
179	1731-1734	0.000+ 0	
180	1734-1737	0.000+ 0	
181	1737-1740	0.000+ 0	
182	1740-1743	0.000+ 0	
183	1743-1746	0.000+ 0	
184	1746-1750	0.000+ 0	
185	1750-1753	0.000+ 0	
186	1753-1756	0.000+ 0	
187	1756-1759	0.000+ 0	
188	1759-1762	0.000+ 0	
189	1762-1765	0.000+ 0	
190	1765-1768	0.000+ 0	

Slow Scan (Continued)

173 1718-1721 0.061+ 3

191 1768-1771 0.000+ 0

STEP WAVELENGTHS COUNTS/SEC FLUX

STEP WAVELENGTHS COUNTS/SEC FLUX

192 1771-1775 0.000+ 0

197 1787-1790 0.000+ 0

193 1775-1778 0.000+ 0

198 1790-1793 0.000+ 0

194 1778-1781 0.000+ 0

199 1793-1796 0.000+ 0

195 1781-1784 0.000+ 0

200 1796-1800 0.000+ 0

196 1784-1787 0.000+ 0

FLY-BACK DATA: 0.000+ 0 0.000+ 0 0.000+ 0 0.000+ 0 0.000+ 0 0.000+ 0
 0.000+ 0 0.000+ 0 0.000+ 0 0.000+ 0 7.853+ 3 0.046+ 3
 7.443+ 3 0.022+ 3 0.048+ 3 7.034+ 3
 DARK COUNTS: 0.621+ 3 0.014+ 3 0.805+ 3 0.112+ 3 0.129+ 3 0.453+ 3
 STEPPING MOTOR PULSE COUNT: 940

EXP 8 FLUX FOR SOLRAD 116 IS 0.000+ 0 ON 20 AT 22:40:40

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14 DEC /6/10:43:20

SOLRAD 116 DATA REPORT FOR 7010 7/ 9:59:29 TO 7/10: 1:21
EXPERIMENTS 10,11: THOMPSON/HKAGG X-RAY PULSAR METERS

FORMAT: 1 PAGE: 12

DATA	SECT 1	SECT 2	SECT 3	SECT 4	SECT 5	SECT 6	SECT 7	SECT 8
11	5.400+1	3.700+1	5.600+1	9.900+1	4.200+1	7.800+1	0.000+0	1.250+2
10A1	1.300+1	2.000+0	3.900+1	2.000+1	6.000+0	4.000+0	7.000+0	7.000+0
10A2	1.400+1	4.000+0	4.300+1	2.500+1	3.000+0	5.000+0	5.000+0	5.000+0
10B1	2.700+1	8.000+0	1.100+2	5.500+1	1.000+1	9.000+0	1.900+1	1.300+1
10B2	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0
10A1	4.000+0	5.000+0	6.000+0	7.000+0	1.000+0	4.000+0	3.000+0	3.000+0
10A2	4.000+0	2.000+0	2.000+0	1.000+0	3.000+0	4.000+0	8.000+0	8.000+0
10B1	1.000+1	1.100+1	1.700+1	5.000+0	1.000+1	1.700+1	1.400+1	1.600+1
10B2	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0	0.000+0

DETECTOR	COINC	HKAGG
A	0.000+0	0.000+0
B	0.000+0	0.000+0

Table C2.7 - Sample Data listing for experiments 10 and 11.

6 DEC 76/16:34:22

SOLRAD 11K DATA REPORT FOR 761110/ 41451 7 TO 10/ 4146:59
EXPERIMENTS 14 & 23

FORMAT: 1 PAGE: 2

EXPERIMENT 14: SOLAR PROTONS

DATE/TIME	2 MEV	10 MEV	4.5 MEV	7.5 MEV	HEAVY NUCLEI
761110/ 445 7	1.100+1	7.600+1	0.000+0	0.000+0	0

EXPERIMENT 23: ANTI-SOLAR PROTONS

DATE/TIME	2 MEV	10 MEV	4.5 MEV	7.5 MEV	HEAVY NUCLEI
761110/ 445 7	0.000+0	8.300+1	0.000+0	0.000+0	0

Table C2.8 - Sample data listing for experiments 14 and 23.

23 DEC 16/19: 7:50

SOLRAD 118 DATA REPORT FOR 70 927/20: 1320 TO 27/20: 3:12
EXPERIMENT 15: SOLAR WIND

FORMAT: 1 PAGE: 25 NORMAL SAMPLE 1

POSITIVE ION CHANNELS (OCTAL)
377 377 377 377 315 160 100 74 122 142 241
270 177 263 306 355 377 377 377 377 377 376 372

ELFECTRON CHANNELS (OCTAL)	COLLECTORS	SUM	SPEDU (KM/SEC)	TEMP (WFG K)	DENSITY (N/CC)	THETA (DEG)	PHI	ALPHA/PROTON RATIO
100 175 220 247	106 145 151	142	7601.	-7.3/149	6.7			

Table C2.9 - Sample data listing for experiment 15.

The data are output in octal counts. In the flux mode, the data channels are partitioned differently with seven electron flux samples, seven ion flux samples and six samples each from the three 120° sectors of the collector plate. The fast sampling mode produces ten outputs per telemetry page and the sample number will increment appropriately. The derived plasma parameters require algebraic contents that have not yet been defined for theta, phi and the alpha/proton ration.

A DEC 76/14:37:14

SOLRAD 11R DATA REPORT FOR 761114/ 4:31: 7 TO 10/ 4:46:59
EXPERIMENT 16: STELLAR AND AURORAL X-RAYS

FORMAT: 1 PAGE: 2

STELLAR DATA							
SECTORS 1-8	SECTIONS 9-16	SECTORS 17-24	SECTIONS 25-32	SECTORS 33-40	SECTORS 41-48	SECTIONS 49-56	SECTIONS 57-64
2.700+2	3.070+2	3.030+2	3.200+2	3.370+2	4.470+2	3.270+2	3.220+2
2.800+2	3.100+2	3.170+2	2.770+2	2.000+2	4.690+2	3.760+2	3.140+2
2.850+2	2.970+2	3.300+2	2.800+2	4.130+2	3.930+2	3.100+2	3.040+2
3.000+2	2.710+2	2.970+2	3.020+2	3.000+2	3.550+2	2.980+2	2.870+2
2.990+2	3.050+2	2.790+2	2.910+2	3.340+2	3.250+2	3.180+2	2.980+2
2.980+2	2.940+2	2.950+2	2.970+2	3.200+2	3.550+2	3.110+2	3.240+2
2.970+2	2.860+2	2.860+2	3.000+2	3.070+2	3.960+2	3.060+2	3.330+2
3.080+2	2.050+2	2.720+2	3.030+2	2.880+2	3.820+2	2.900+2	2.740+2

STELLAR SAMPLING TIME (SST) FOR EACH SLEW

PAGE #	2	1	0	31	30	29	28	27
SLEW	2	1	0	7	6	5	4	3
SST	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58

AURORAL DATA

DATE/TIME	AST	AURORAL CPS	BGND CPS	COINC CPS
10/ 445 7	3.16	6.940+2		3.090+4
10/ 443 7	3.16	6.770+2	4.190+4	
10/ 441 7	3.16	7.340+2		3.050+4
10/ 439 7	3.16	6.690+2	4.237+4	
10/ 437 7	3.16	7.160+2		3.085+4
10/ 435 7	3.16	6.690+2	4.211+4	
10/ 433 7	3.16	6.930+2		3.091+4
10/ 431 7	3.16	7.250+2	4.106+4	

Table C2.10 - Sample data listing for experiment 16.

In this output, the operator has the option to output stellar data, auroral data or both. This example shows both. The first row of stellar data corresponds to the first page number, slew and SST indicated under "Stellar Sampling Time for each Slew". The second row of data corresponds to the second page number indicated and so on. One complete data record is made up of 8 telemetry pages.

Table C2.10 (Continued)

8 OFC 78/18134155

SOLRAD 11R DATA REPORT FOR 701110/ 4139: 7 TO 10/ 4146:59
EXPERIMENT 17: OMNIDIRECTIONAL PROTONS

FORMAT: 1 PAGE: 2

EXPERIMENT 17A: PHOTON PARTICLES (COUNTS VS. ENERGY)					
CHANNEL	P1	P2	P3	P4	P5
DATE/TIME	5-26 (MEV)	10-40 (MEV)	20-48 (MEV)	40-60 (MEV)	80-116 (MEV)
10/ 445 7	0.000+ 0	3.000+ 0	6.000+ 0	6.000+ 0	7.000+ 0
10/ 443 7	0.000+ 0	2.000+ 0	6.000+ 0	2.000+ 0	1.100+ 1
10/ 441 7	0.000+ 0	4.000+ 0	5.000+ 0	3.000+ 0	3.000+ 0
10/ 439 7	1.000+ 0	4.000+ 0	4.000+ 0	5.000+ 0	3.000+ 0

EXPERIMENT 17A: ALPHA PARTICLES (COUNTS VS. ENERGY)					
CHANNEL	A1	A2	A3	A4	A5
DATE/TIME	25-68 (MEV)	50-100 (MEV)	80-150 (MEV)	160-244 (MEV)	320-380 (MEV)
10/ 445 7	0.000+ 0	0.000+ 0	0.000+ 0	1.000+ 0	0.000+ 0
10/ 443 7	0.000+ 0	0.000+ 0	0.000+ 0	0.000+ 0	3.000+ 0
10/ 441 7	0.000+ 0	0.000+ 0	1.000+ 0	0.000+ 0	0.000+ 0
10/ 439 7	0.000+ 0	3.000+ 0	0.000+ 0	0.000+ 0	0.000+ 0

EXPERIMENT 17C: ALPHA PARTICLES WITH ENERGY > 0.5 MEV				
CHANNEL A12				
DATE/TIME	SECTION 1	SECTION 2	SECTION 3	SECTION 4
10/ 445 7	1.700+ 1	7.000+ 0	1.600+ 1	1.400+ 1
10/ 443 7	1.600+ 1	1.600+ 1	9.000+ 0	9.000+ 0
10/ 441 7	0.000+ 0	1.700+ 1	1.600+ 1	1.500+ 1
10/ 439 7	1.700+ 1	1.700+ 1	1.400+ 1	9.000+ 0

EXPERIMENT 17C: HEAVY NUCLEI (10>Z>6) WITH ENERGY > 0.6 MEV				
CHANNEL H6				
DATE/TIME	SECTION 1	SECTION 2	SECTION 3	SECTION 4
10/ 445 7	1.700+ 1	1.500+ 1	1.500+ 1	1.400+ 1
10/ 443 7	0.000+ 0	1.700+ 1	1.600+ 1	1.600+ 1
10/ 441 7	0.000+ 0	2.200+ 1	9.000+ 0	1.500+ 1
10/ 439 7	2.200+ 1	9.000+ 0	1.600+ 1	1.500+ 1

EXPERIMENT 17D: PROTONS WITH ENERGY > 1.0 MEV				
CHANNEL P11				
DATE/TIME	SECTION 1	SECTION 2	SECTION 3	SECTION 4
10/ 445 7	0.000+ 0	0.000+ 0	0.000+ 0	0.000+ 0
10/ 443 7	0.000+ 0	0.000+ 0	0.000+ 0	1.000+ 0
10/ 441 7	1.000+ 0	0.000+ 0	1.000+ 0	0.000+ 0
10/ 439 7	0.000+ 0	0.000+ 0	1.000+ 0	0.000+ 0

EXPERIMENT 17D: PROTONS WITH ENERGY OF 36-74 KEV
CHANNEL 12

DATE/TIME	SECTOR 1	SECTOR 2	SECTOR 3	SECTOR 4
10/ 445 7	2.350+ 2	3.650+ 2	3.970+ 2	2.470+ 2
10/ 443 7	2.210+ 2	2.530+ 2	2.440+ 2	2.330+ 2
10/ 441 7	1.930+ 2	2.100+ 2	1.910+ 2	1.700+ 2
10/ 439 7	1.950+ 2	3.010+ 2	3.390+ 2	3.330+ 2

EXPERIMENT 17C: HEAVY NUCLEI (COUNTS VS. ENERGY)				
CHANNEL	S(A12)	S(M6)	(M7)	(M8)
DATE/TIME	ALPHAS	10>Z>6	10>Z>12	Z>18
10/ 445 7	5.400+ 1	6.100+ 1	6.000+ 0	3.500+ 1
10/ 443 7	5.000+ 1	5.700+ 1	3.000+ 0	4.000+ 1
10/ 441 7	5.600+ 1	5.400+ 1	9.000+ 0	3.800+ 1
10/ 439 7	5.700+ 1	6.200+ 1	7.000+ 0	3.900+ 1

EXPERIMENT 17D: HIGH ENERGY PROTONS (COUNTS VS. ENERGY)				
CHANNEL	(P14)	(P10)	S(P11)	(P12)
DATE/TIME	>0.5 MEV	>0.5 MEV	>1.0 MEV	>1.5 MEV
10/ 445 7	1.810+ 2	1.000+ 0	0.000+ 0	0.000+ 0
10/ 443 7	2.010+ 2	2.000+ 0	1.000+ 0	1.000+ 0
10/ 441 7	2.010+ 2	3.000+ 0	2.000+ 0	2.000+ 0
10/ 439 7	2.000+ 2	5.000+ 0	1.000+ 0	2.000+ 0

EXPERIMENT 17D: LOW ENERGY PROTONS (COUNTS VS. ENERGY)					
CHANNEL	L1	L2	L3	L4	L5
DATE/TIME	20-36 (KEV)	36-74 (KEV)	74-150 (KEV)	150-280 (KEV)	280-500 (KEV)
10/ 445 7	6.257+ 3	1.242+ 3	2.250+ 2	1.700+ 1	6.000+ 0
10/ 443 7	4.977+ 3	9.510+ 2	1.590+ 2	8.000+ 0	0.000+ 0
10/ 441 7	4.225+ 3	7.640+ 2	1.370+ 2	1.600+ 1	0.000+ 0
10/ 439 7	4.901+ 3	1.168+ 3	1.710+ 2	3.500+ 1	8.000+ 0

Table C2.11 - Sample data listing for experiment 17.

The operator has the option to select any combination of the five different outputs for experiment 17. These are alpha particles, sector data, heavy nuclei, high energy protons and low energy protons. Usually, all five are selected as in the above example. The operator may also select the number of telemetry pages/record, up to 16. This example has four pages/record.

SOLRAD 11R DATA REPORT FUR 76 631/19:21:45 TO 31/19:23:37
 JOURNAL: 2 PAGE: 0 FILTER POSITION:

[illegible][illegible]

102

8 DEC 76/18:38:30
 SOLRAD 11R DATA REPORT FOR 761110/ 4:45: 7 TO 10/ 4:46:59
 EXPERIMENT 20: PROTON-ALPHA TELESCOPE
 FORMAT: 1 PAGE: 2

DETECTOR PIN # CHANNEL	FIRST SAMPLE		SECOND SAMPLE	
	COINC W	200 X	COINC W	200 X
0	0.000+0	0.000+0	0.000+0	0.000+0
1	0.000+0	0.000+0	0.000+0	0.000+0
2	0.000+0	0.000+0	0.000+0	0.000+0
3	0.000+0	0.000+0	0.000+0	0.000+0
4	0.000+0	0.000+0	0.000+0	0.000+0
5	0.000+0	0.000+0	0.000+0	0.000+0
6	0.000+0	0.000+0	0.000+0	0.000+0
7	0.000+0	0.000+0	0.000+0	0.000+0

MEV	COUNTS VS ENERGY		MEV	ALPHA
	PROTONS	PRUTONS		
5.5-8	0.000+0	2.09-4.03	22-32	0.000+0
8-13	0.000+0	2.01-2.60	32-52	0.000+0
13-25	0.000+0	1.56-2.01	52-100	0.000+0
25-50	0.000+0	1.35-1.56		
50-100	0.000+0	1.24-1.35		
5.5-8	0.000+0	2.09-4.03	22-32	0.000+0
8-13	0.000+0	2.01-2.60	32-52	0.000+0
13-25	0.000+0	1.56-2.01	52-100	0.000+0
25-50	0.000+0	1.35-1.56		
50-100	0.000+0	1.24-1.35		

Table C2.13 - Sample data listing for experiment 20.

8 DEC 76/16:57:40

SOLRAD 11R DATA REPORT FOR 701110/ 3:29: 7 TO 10/ 3130159
EXPERIMENT 21: LOW ENERGY PROTON SPECTROMETER

FORMAT: 1 PAGE: 28

CHANNEL #	1	2	3	4	5	6
ENERGY (KEV)	97-137	137-169	169-228	228-320	320-440	440-617
DATE/TIME	701110/ 320 7	3.013+2	4.087+1	2.472+1	1.178+1	3.667+0
						3.391+0

CHANNEL #	7	8	9	10	11	12
ENERGY (KEV)	61/-054	854-1277	1277-1774	1774-2744	2744-6020	COUNTS
DATE/TIME	701110/ 320 7	1.231+0	4.925+1	0.707-1	0.000+0	2.544-2
						3.821+1

Table C2.14 - Sample data listing for experiment 21.

6 DEC 75/16:35:52

SOLRAD 11R DATA REPORT FOR 761116/ 4:45: 7 TO 17/ 4:46:59
EXPERIMENT 22: SOLAR FLARE ELECTRONS

FORMAT: 1 PAGE: 2

CHANNEL #	ENERGY (KEV)	FLUX	CHANNEL #	ENERGY (KEV)	FLUX
2	40.2	4.305+ 4	9	874.0	6.814- 1
4	163.7	4.112+ 2	10	1116.0	3.972+ 1
5	222.0	1.168- 2	11	1357.0	1.823+ 1
6	147.0	1.448+ 4	12	1600.0	6.668- 1

PROTONS > 70 MEV: 3.353- 1

SPECTRAL INDICES: K(2,4) = -3.677+ 0 K(4,8) = -3.151+ 0

CHANNEL	KEV	SECTOR 1	SECTOR 2	SECTOR 3	SECTOR 4
1	7.7	2.274+ 7	2.267+ 7	2.267+ 7	2.267+ 7
7	385.0	1.295+ 0	9.752- 1	9.561- 1	9.943- 1

CHANNEL	KEV	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4
3	107.6	7.130+ 4	7.108+ 4	7.130+ 4	7.108+ 4
8	640.0	5.157- 1	6.798- 1	6.798- 1	6.564- 1

CHANNEL	KEV	SAMPLE 5	SAMPLE 6	SAMPLE 7	SAMPLE 8
3	107.6	7.108+ 4	7.108+ 4	7.108+ 4	7.108+ 4
8	640.0	7.736- 1	8.908- 1	7.970- 1	6.095- 1

Table C2.15 - Sample data listing for experiment 22.

8 UFG / 5/18:40:40
 SOLRAD 118 DATA REPORT FOR 761110/ 4:41: 7 TO 10/ 4:42:59
 EXPERIMENT 24: BACKGROUND X-RAY SPECTROMETER
 FURNAL: 1 PAGE: 7

CHANNEL NU.	NORMAL DATA FROM MEMORY 1										RATEMETER TEMP 2 (VOLIS) (DEG K)
	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	
0	0	0	0	0	0	0	0	0	0	0	
10	0	0	0	0	0	0	0	0	0	0	
20	0	0	0	0	0	0	0	0	0	0	1.42
30	0	0	0	0	0	0	0	0	0	0	-83.31
40	0	0	0	0	0	0	0	0	0	0	
50	0	0	0	0	0	0	0	0	0	0	2.00
60	0	0	0	0	0	0	0	0	0	0	-83.31
70	0	0	0	0	0	0	0	0	0	0	
80	0	0	0	0	0	0	0	0	0	0	2.00
90	0	0	0	0	0	0	0	0	0	0	-83.31
100	0	0	0	0	0	0	0	0	0	0	
110	0	0	0	0	0	0	0	0	0	0	2.12
120	0	0	0	0	0	0	0	0	0	0	-83.31
130	0	0	0	0	0	0	0	0	0	0	
140	0	0	0	0	0	0	0	0	0	0	2.04
150	0	0	0	0	0	0	0	0	0	0	-83.31
160	0	0	0	0	0	0	0	0	0	0	
170	0	0	0	0	0	0	0	0	0	0	2.12
180	0	0	0	0	0	0	0	0	0	0	-83.31
190	0	0	0	0	0	0	0	0	0	0	
200	0	0	0	0	0	0	0	0	0	0	2.12
210	0	0	0	0	0	0	0	0	0	0	-83.31
220	0	0	0	0	0	0	0	0	0	0	
230	0	0	0	0	0	0	0	0	0	0	2.34
240	0	0	0	0	0	0	0	0	0	0	-83.31
250	0	0	0	0	0	0	0	0	0	0	

Table C2.16 - Sample data listing for experiment 24
 This experiment is not functioning, but the output is
 included for the sake of completeness.

20 DEC 76/19: 6:2

SUMMARY 110 DATA REPORT FOR 76 927/20: 1:20
EXPERIMENT 25: GAMMA RAY BURSTS

FORMAT: 1 PAGE: 25

STATE-OF-HEALTH DATA

A:1-0	A:1-4	A:1-8	A:1-12	A:1-16	A:1-20	A:1-24	A:1-28
2.953+3	3.001+3	2.945+3	2.945+3	2.913+3	2.993+3	2.921+3	2.977+3
2.953+3	3.001+3	2.945+3	2.945+3	2.913+3	2.993+3	2.921+3	2.977+3
B:1-2	B:1-6	B:1-10	B:1-14	B:1-18	B:1-22	B:1-26	B:1-30
2.937+3	2.921+3	2.897+3	2.897+3	2.793+3	2.945+3	2.945+3	2.977+3
2.937+3	2.921+3	2.897+3	2.897+3	2.793+3	2.945+3	2.945+3	2.977+3

Table C2.17 - Sample data listing for experiment 25 (State of Health).

The state of health data is a status monitor mode for this experiment. The data is in counts and is output once per minute, but is updated only once per telemetry page. There are two detectors which are alternated on successive pages. The display contains 16 pages of data working backwards from the time requested.

14 DEC 70/18:25:02

SOLRAD 118 DATA REPORT FOR 70 831/19:21:45 TO 31/19125:45
EXPERIMENT 25: GAMMA RAY BURST DETECTOR

FORMAT: 2 PAGE: 1

EVENT	COARSE TIME (OCTAL NUMBERS)	FINE TIME	CAL	SOURCE	RETRIGGER	SEGMENT
4A	514257	2233000	3	1	1	9

GROUP	RATE DATA								TOTAL COUNT	SPECTRAL DATA				TOTALS	
	S1	S2	S3	S4	S5	S6	S7	S8		C1	C2	C3	C4	2-3	1-4
1P	2	0	0	2	1	2	0	2	9	4	1	1	3	2	9
2P	3	0	0	1	0	2	1	0	7	5	2	0	0	2	7
3P	1	0	2	1	2	0	0	2	6	2	3	2	1	5	6
4P	0	1	0	0	3	1	0	0	5	1	1	2	1	3	5
5P	0	1	0	2	0	1	0	0	4	1	1	0	2	1	4
1	1	0	1	1	1	0	1	0	11	2	0	2	7	2	11
2	0	0	0	3	2	0	0	0	5	1	1	0	3	1	5
3	0	0	1	1	0	0	0	0	2	2	0	0	0	0	2
4	0	1	0	2	1	0	0	0	4	0	1	1	2	2	4
5	0	1	0	1	0	1	0	1	4	0	1	0	3	1	4

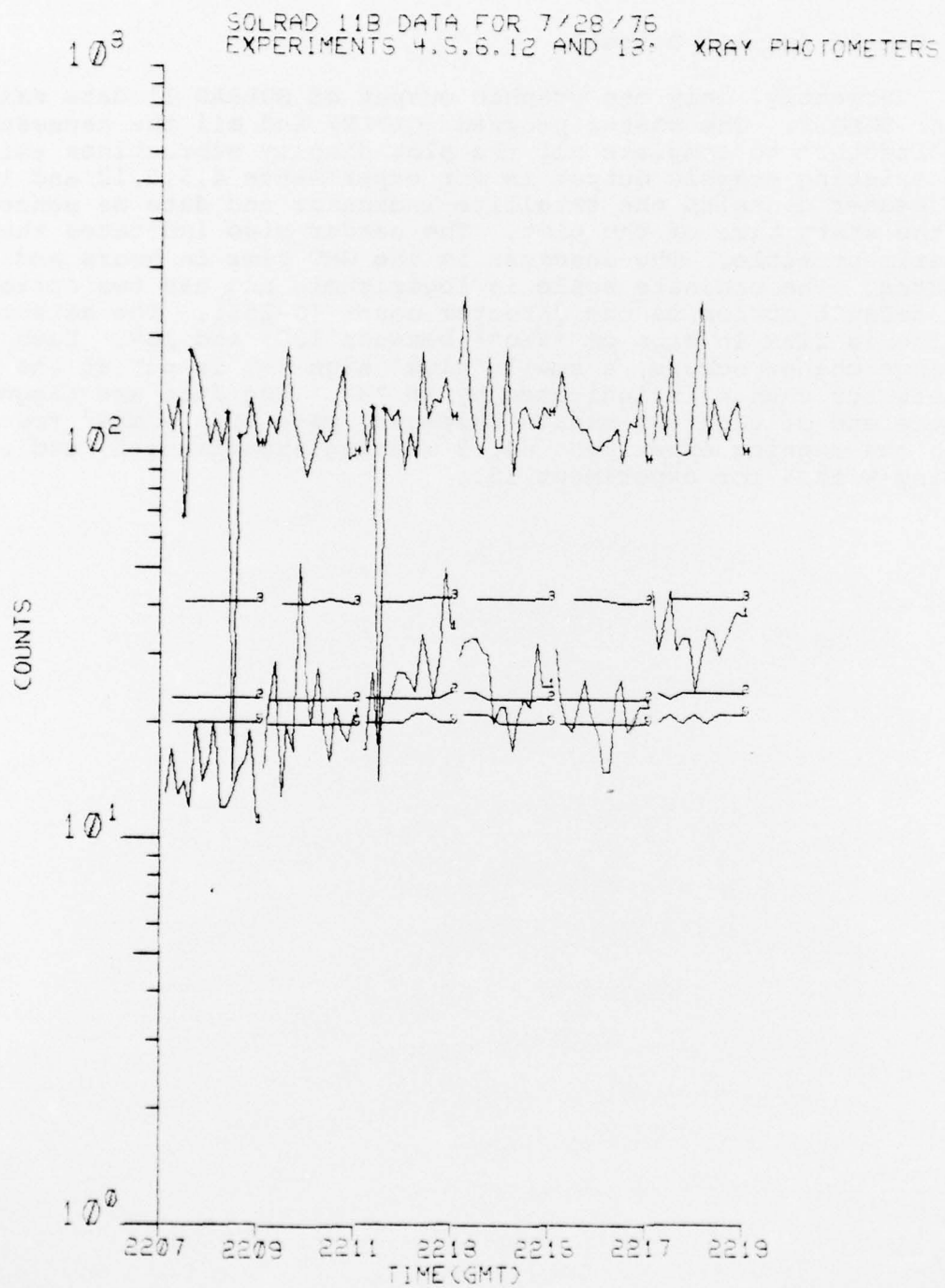
STATE-OF-HEALTH DATA

SA:1+ 0 SB:1+ 2
3.105+3 3.057+3
3.105+3 3.057+3

Table C2.18 - Sample data listing for experiment 25 (Gamma data output).

3. Sample Graphic Outputs

Currently, only one graphic output of SOLRAD 11 data exists under SOLOLS. The master program (QLPLT) and all the necessary architecture to complete all the plot display subroutines exists. The existing graphic output is for experiments 4,5,6,12 and 13. The header contains the satellite indicator and date as sensed at the start time of the plot. The header also indicates the experiment title. The abscissa is the GMT time in hours and minutes. The ordinate scale is logarithmic and has two options. The default option is the detector count (0-255). The selectable option is flux in ergs $\text{cm}^{-2}\text{sec}^{-1}$ between 10^{-7} and 10^0 . Each time a range change occurs, a small "plus" sign (+) is put at the point. A detector change is indicated by an "X". The data are tagged at the end of each two minute telemetry page by a number from 1-5 with one meaning experiment #4, 2 meaning experiment 5, and so on ending with 5 for experiment 13.



4. Sample Describe Outputs

The Describe task allows a detailed examination of the data base and its directory. Table C4.1 is a listing of the data base directory showing header data in words 1-124 and minute tags in words 125 and greater. All directory information is printed in integer decimal.

Table C4.2 illustrates the octal form of the data base output. The pure data is preceded by some header information. The data itself is given in octal magnitude and sign. The left hand column contains the word number of the first word in the corresponding row. Word number advances from left to right in a row.

Table C4.3 illustrates the binary form of the data base output. The data is again preceded by some header information. The left hand column contains the word number of the first word in the corresponding row. Word number advances from left to right in a row.

Table C4.1 Sample Data Base Directory (Describe)

390	257	183	532	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																										
2786	2789	2790	2792	2793	2796	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	2848	2849	2850	2851	2852	2853	2854	2855	2856	2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2868	2869	2870	2871	2872	2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888	2889	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901	2902	2903	2904	2905	2906	2907	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918	2919	2920	2921	2922	2923	2924	2925	2926	2927	2928	2929	2930	2931	2932	2933	2934	2935	2936	2937	2938	2939	2940	2941	2942	2943	2944	2945	2946	2947	2948	2949	2950	2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963	2964	2965	2966	2967	2968	2969	2970	2971	2972	2973	2974	2975	2976	2977	2978	2979	2980	2981	2982	2983	2984	2985	2986	2987	2988	2989	2990	2991	2992	2993	2994	2995	2996	2997	2998	2999	3000
22	24	20	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138	140	142	144	146	148	150	152	154	156	158	160	162	164	166	168	170	172	174	176	178	180	182	184	186	188	190	192	194	196	198	200	202	204	206	208	210	212	214	216	218	220	222	224	226	228	230	232	234	236	238	240	242	244	246	248	250	252	254	256	258	260	262	264	266	268	270	272	274	276	278	280	282	284	286	288	290	292	294	296	298	300	302	304	306	308	310	312	314	316	318	320	322	324	326	328	330	332	334	336	338	340	342	344	346	348	350	352	354	356	358	360	362	364	366	368	370	372	374	376	378	380	382	384	386	388	390	392	394	396	398	400																			

Table C4.2 Sample Data Base Describe Output (Octal)

```

SATELLITE #
FORMAT NO. # 1
FIRST FRAME PROCESSED # 3
YEAR # 76
DAY # 355
MONTH # 23
MINUTE # 14
SECOND # 59
FRACTIONAL SEC IN TENTHS OF MSEC # 7951
PAGE NO. # 15
TTY MESSAGE NO. # 33
1 12114 54327 7473 17417 29041 417 0 -70511
9 74012 3 -50400 0 0 5422 0 0
17 0 0 0 3053 0 0 0 7541
25 0 0 1174 1174 0 1174 273 760
33 0 760 3060 3060 0 3060 0 1200
41 0 0 0 0 0 0 6430 0452
49 0 6502 75 75 0 75 22 0
57 0 0 152 40106 -1 22065 37106 35435
65 21000 -302 0 0 0 0 100 35435
73 21000 0 267 61405 0 225 31474 35106
81 34460 72 0 0 0 0 74 35106
89 34460 0 0 74777 -23000 -50575 28000 -43343
97 400 -75975 0 0 0 0 0 -76542
105 -64000 0 -361 -20001 -201 14 0 17
113 -201 12 06635 -20704 -10043 232 0 16
121 -10043 0 5047 4475 4523 234 0 0
129 1000 340 -12426 -12426 -12426 -53000 0 340
137 -12426 340 -12426 -12426 -12426 -53000 0 340
145 -12426 0 0 6556 6556 6556 6556 6556
153 6556 6556 0 0 0 0 0 6556
161 6556 3777 3777 0 3777 0 0 0270
169 6271 6272 6273 6274 6275 6271 0 0
177 0 0 0 6274 6275 0 0 0
185 0 371 70143 0 0 50113 6065 -7611
193 74222 -7774 -7002 70173 -7032 -7413 21 0
201 0 0 74 35103 -42703 71322 37072 40403
209 32057 -60505 0 0 0 0 377 -300
217 32703 0 0 0 0 0 0 0
225 0 0 0 0 0 0 0 0
233 0 0 0 0 0 0 0 0
241 0 137 0 1503 0 0 0 0
249 0 0 0 0 0 0 0 0
257 0 0 0 -2455 -3404 -23436 -21124 -23054
265 -21143 0 0 0 0 0 0 13
273 -54105 -25756 -551 -42000 0 0 0 0
281 0 0 0 0 0 0 0 0
289 0 0 0 0 0 0 0 0
297 0 0 26 5422 0 140 156
305 355 5200 0 0 0 0 0 0
313 0 0 0 0 0 0 0 0
321 0 0 0 0 0 0 0 0
329 0 0 0 0 0 0 0 1376
337 2137 13 3100 0 0 0 0 0
345 0 34474 0 0 0 0 0 0
353 0 0 0 0 0 0 0 0
361 0 0 0 132 671 0 0 0
369 2060 5764 0 0 0 0 0 0
377 0 0 0 0 0 0 0 0

```

Table C4.3 Sample Data Base Describe Output (Binary)

SATELLITE R
 FORMAT NO. 1
 FIRST FRAME PROCESSED 3
 YEAR 76
 DAY 355
 HOUR 23
 MINUTE 14
 SECOND 59
 FRACTIONAL SEC IN TENTHS OF MSEC 7951
 PAGE NO. 15
 TTY MESSAGE NO. 35

1	0001010010111001	0111100011101111	0000111000111011	0001111000001111
5	0111000001110001	0000000100001111	0000000000000000	1000111001110111
9	0111100111001010	0000000000000001	1010111110000000	0000000000000000
13	0000000000000000	0000101100010010	0000000000000000	0000000000000000
17	0000000000000000	0000000000000000	0000000000000000	0000000000000000
21	0000000000000000	0000000000000000	0000000000000000	0000000000000000
25	0000000000000000	0000000000000000	0000000000000000	0000000000000000
29	0000000000000000	0000000000000000	0000000000000000	0000000000000000
33	0000000000000000	0000000000000000	0000000000000000	0000000000000000
37	0000000000000000	0000000000000000	0000000000000000	0000000000000000
41	0000000000000000	0000000000000000	0000000000000000	0000000000000000
45	0000000000000000	0000000000000000	0000000000000000	0000000000000000
49	0000000000000000	0000000000000000	0000000000000000	0000000000000000
53	0000000000000000	0000000000000000	0000000000000000	0000000000000000
57	0000000000000000	0000000000000000	0000000000000000	0000000000000000
61	1111111111111111	0000000000000000	0000000000000000	0000000000000000
65	0000000000000000	0000000000000000	0000000000000000	0000000000000000
69	0000000000000000	0000000000000000	0000000000000000	0000000000000000
73	0000000000000000	0000000000000000	0000000000000000	0000000000000000
77	0000000000000000	0000000000000000	0000000000000000	0000000000000000
81	0000000000000000	0000000000000000	0000000000000000	0000000000000000
85	0000000000000000	0000000000000000	0000000000000000	0000000000000000
89	0000000000000000	0000000000000000	0000000000000000	0000000000000000
93	1111111111111111	0000000000000000	0000000000000000	0000000000000000
97	0000000000000000	0000000000000000	0000000000000000	0000000000000000
101	0000000000000000	0000000000000000	0000000000000000	0000000000000000
105	0000000000000000	0000000000000000	0000000000000000	0000000000000000
109	1111111111111111	0000000000000000	0000000000000000	0000000000000000
113	1111111111111111	0000000000000000	0000000000000000	0000000000000000
117	1111111111111111	0000000000000000	0000000000000000	0000000000000000
121	1111111111111111	0000000000000000	0000000000000000	0000000000000000
125	0000000000000000	0000000000000000	0000000000000000	0000000000000000
129	0000000000000000	0000000000000000	0000000000000000	0000000000000000
133	1111111111111111	0000000000000000	0000000000000000	0000000000000000
137	1111111111111111	0000000000000000	0000000000000000	0000000000000000
141	1111111111111111	0000000000000000	0000000000000000	0000000000000000
145	1111111111111111	0000000000000000	0000000000000000	0000000000000000
149	0000000000000000	0000000000000000	0000000000000000	0000000000000000
153	0000000000000000	0000000000000000	0000000000000000	0000000000000000
157	0000000000000000	0000000000000000	0000000000000000	0000000000000000
161	0000000000000000	0000000000000000	0000000000000000	0000000000000000
165	0000000000000000	0000000000000000	0000000000000000	0000000000000000
169	0000000000000000	0000000000000000	0000000000000000	0000000000000000
173	0000000000000000	0000000000000000	0000000000000000	0000000000000000
177	0000000000000000	0000000000000000	0000000000000000	0000000000000000
181	0000000000000000	0000000000000000	0000000000000000	0000000000000000
185	0000000000000000	0000000000000000	0000000000000000	0000000000000000
189	0000000000000000	0000000000000000	0000000000000000	0000000000000000
193	0000000000000000	0000000000000000	0000000000000000	0000000000000000