[redacted]

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SOLRAD-9

REDUCED SOLAR X-RAY FLUXES

68-017A-01E

Table of Contents

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1. INTRODUCTION:

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 This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system.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

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

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

2. ERRATA/CHANGE LOG:

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

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

Version	Date	Person	Page	Description of Change
01				
02				

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

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

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

4. CATALOG MATERIALS:

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

b. Core Catalog Materials

SOLRAD-9

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68-017A-01E SOXR-00027

This data set has been restored. There were originally 18 7-track, 556 BPI tapes written in BCD. There are 6 restored tapes written in EBCDIC. The DR tapes are 3480 cartridges and the DS tapes are 6250 BPI. The original tapes were created on a 360 computer. The DR, DS, and DD numbers along with the time spans are given as follows:

DR #	DS #	DD #	FILES	TIME SPAN
DR02923	DS02923	D-29064	1	03/14/68 - 06/30/68
		D-29065	2	07/01/68 - 09/30/68
		D-29066	3	10/01/68 - 12/31/68
DR02924	DS02924	D-29067	1	01/01/69 - 03/31/69
		D-29068	2	04/01/69 - 06/30/69
		D-29069	3	07/01/69 - 09/30/69
DR02925	DS02925	D-29070	1	10/01/69 - 12/31/69
		D-29071	2	01/01/70 - 03/31/70
		D-29072	3	04/01/70 - 06/30/70
DR02926	DS02926	D-29073	1	07/01/70 - 09/30/70
		D-29074	2	10/01/70 - 12/31/70
		D-29075	3	01/01/71 - 03/31/71
DR02927	DS02927	D-29076	1	04/01/71 - 06/30/71
		D-29077	2	07/01/71 - 09/30/71
		D-29078	3	10/01/71 - 12/31/71
DR02928	DS02928	D-29079	1	01/01/72 - 03/31/72
		D-29080	2	04/01/72 - 06/21/72
		D-29081	3	07/01/72 - 09/30/72

REQ. AGENT	RAND NO#	ACC. AGENT
DBN	RC7388	CDN

SOLRAD-9

REDUCED SOLAR X-RAY FLUXES

68-017A-01E

This data set catalog consists of Solrad-9 data tapes. The tapes are 556 BPI, BCD, 7 track, with 1 file and were created on a CDC 3800 computer.

D#	C#	TIME SPAN
D-29064	C-18735	3/14/68 - 6/30/68
D-29065	C-18736	7/01/68 - 9/30/68
D-29066	C-18737	10/01/68 - 12/31/68
D-29067	C-18738	1/01/69 - 3/31/69
D-29068	C-18739	4/01/69 - 6/30/69
D-29069	C-18740	7/01/69 - 9/30/69
D-29070	C-18741	10/01/69 - 12/31/69
D-29071	C-18742	1/01/70 - 3/31/70
D-29072	C-18743	4/01/70 - 6/30/70
D-29073	C-18744	7/01/70 - 9/30/70
D-29074	C-18745	10/01/70 - 12/31/70
D-29075	C-18746	1/01/71 - 3/31/71
D-29076	C-18747	4/01/71 - 6/30/71
D-29077	C-18748	7/01/71 - 9/30/71
D-29078	C-18749	10/01/71 - 12/31/71
D-29079	C-18750	1/01/72 - 3/31/72
D-29080	C-18751	4/01/72 - 6/30/72
D-29081	C-18752	7/01/72 - 9/30/72

68-011-01E

DESCRIPTION OF SOLRAD 9 FLUX DATA TAPE

Solar radiation measurements collected by the memory system on SOLRAD 9 were processed on a CDC-3800 computer at the Naval Research Laboratory. The reduced flux data from the various experiments are stored on standard 7-track magnetic tapes as strings of 6-bit BCD characters written in odd parity. These tapes usually contain one or more calendar months of reduced data and are unlabeled, i.e., the flux data begins in the first record. The date and time (UT) associated with each data sample are uniquely defined by appropriate fields within the format. The following paragraphs describe the layout of the data on a tape as well as the format into which the measurements have been encoded.

The overall organization of the data on a SOLRAD 9 flux data tape is shown in Figure 1. The data are partitioned into records and files according to the following scheme. Each record contains one hour of data. Each file contains one calendar day of data and is thus composed of a maximum of 24 records. The records are of variable length, since the number of minutes of data present in each hour commonly varies. The files are also of variable length since occasionally there are days during which one or more hours of data are lacking.

The satellite collected samples of data once a minute. Each minute of reduced data was encoded into a string of 80 BCD characters suitable for punching on cards. (Since the word length on the CDC-3800 is 48 bits, each word could contain 8 such BCD characters; hence, each minute of reduced data was contained in 10 computer words). The maximum length of any record is then 60 (minutes/hour) x 80 (characters/minute) = 4800 characters (or 600 CDC-3800 computer words). The several 80-character strings for an hour are simply concatenated within a record, the record ending when the data for that hour ends. The length of any record is thus an integer multiple of 80 characters (or 10 words), this multiple being the number of minutes of data available for that hour.

The format of the 80-character string into which each minute of data is encoded is shown in Figure 2 along with an example of a FORTRAN Format statement that can be used to decode it. The following are general comments about the format and the measurements it contains:

(1) In each string, the date is specified by giving the last digit of the year followed by the day of the year, and the time (UT) is given in hours and minutes. The actual time at which any one measurement was collected by the satellite is usually within $\pm$ 30 seconds of the recorded time, since the recorded time has been rounded to the nearest minute.

(2) The measurements obtained from experiments 5, 6, and 7B, are given in units of energy flux, ergs/cm^2/sec, and are encoded into a modified floating-point form which consists of a 2-digit decimal fraction followed by a one-digit signed decimal exponent. This same floating-point form is used for "background" values recorded in the field labeled "EX7Q", but the units are counts. These background data were obtained from experiment 7 when its detector was pointed in the opposite direction from the sun, and are used as an indicator of the possible presence of charged particle interference in the other measurements.

(3) A zero value in any one of the floating-point fields indicates the absence of a measurement from that experiment for that minute. This will occur most often because of the presence of charged particle interference which rendered that measurement meaningless.

(4) Periods of time lasting several minutes during which no solar radiation measurements could be obtained, such as when the satellite passed through the earth's shadow or when the memory system was being read-out, will of course be missing from the tape entirely.

A more detailed explanation of each field in the format is given below:

COLUMN(s)	LABEL	CONTENTS
1		Blank
2-5	YDAY	Date of this group of measurements Col. 2 - last digit of the year Col. 3 - day of the year.
6		Blank
7-10	HRMN	Universal time for this group of measurements. Col. 7,8 - hour Col. 9,10 - minute
11		Blank
12-13	ST	Station number (usually = M1)
14-15		Blank
25-28	EXP5	Experiment 5, 8-16^{o}A x-ray flux
29		Identifies A or B detector of exp. 5
30		Blank
31-34	EXP6	Experiment 6, 1-8^{o}A x-ray flux
35		Identifies A or B detector of exp. 6
36		Blank
37-40	EX7Q	Experiment 7 Quiescent (Background) counts
41		Blank
42-45	EX7B	Experiment 7B, 0.5-3^{o}A x-ray flux
46-52		Blank
53-56	IPWA	Solar aspect angle used to normalize the data (usually =0)
57-79		Blank
80	M	Version of program used to reduce this group of measurements (usually = 1)

A typical SOLRAD 9 flux data record is shown in Figure 3 where successive blocks of 80 characters have been printed on consecutive lines until the end of the record was encountered. The record shown is the first record from the file for 1 August 1971 which contains 27 minutes of data, from 0000 UT through 0026 UT.

In the table below are listed the 6-bit codes that are used to represent the BCD characters which are written onto these SOLRAD 9 flux data tapes.

BCD CHARACTER	6-BIT OCTAL CODE	!	BCD CHARACTER	6-BIT OCTAL CODE
0	00	!	8	10
1	01	!	9	11
2	02	!	+	20
3	03	!	A	21
4	04	!	B	22
5	05	!	-	40
6	06	!	M	44
7	07	!	Blank	60

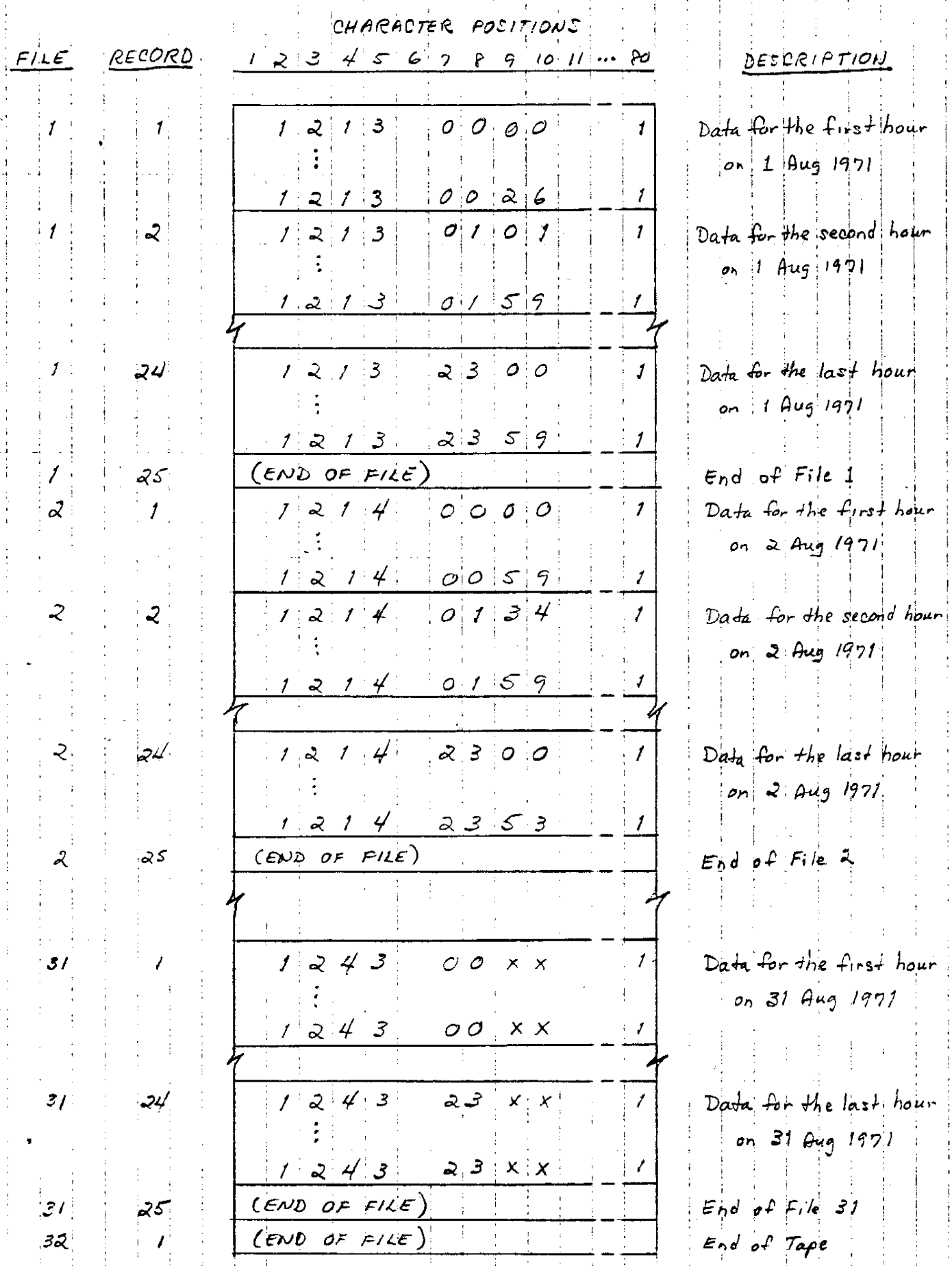

Fig. 1 - DIAGRAM of SOLRAD 9 X-ray Flux Data Tape

```
                                                                    //
COLS      1         2         3         4         5                 //7         8
123456789012345678901234567890123456789012345678901234567890123456789//0123456789
                                                                    //
 YDAY HRMN ST               EXP5  EXP8  EX7S EX7B        IPNA       //
                                                                    //
 DDDD DDDD M1               DDSDL DDSDL DDSD DDSD           0       //         1
                                                                    //
```

```
COLS      1         2         3         4         5         6         7
123456789012345678901234567890123456789012345678901234567890123456789012

C
C...FORTRAN FORMAT STATEMENT FOR ONE MINUTE OF SOLRAD 9 DATA
C
C      FORMAT (1X,I1,I3,1X,2I2,1X,R2,11X,2(E4.0,R1,1X),2(E4.0,1X),
C     *  6X,F4.1,23X,I1)
C
```

Figure 2. Format for One Minute of SOLRAD 9 Flux Data

FILE 1 RECD 1 HAS 2160 CHARACTERS OF SOLRAD 9 DATA

1213 0000 M1	79-4B 44-5F 13+0 11-6	0	2
1213 0001 M1	79-4B 52-5F 14+0 00+0	0	2
1213 0002 M1	85-4B 52-5F 14+0 00+0	0	2
1213 0003 M1	79-4B 52-5F 13+0 11-6	0	2
1213 0004 M1	79-4B 52-5F 14+0 00+0	0	2
1213 0005 M1	82-4B 26-5F 14+0 00+0	0	2
1213 0006 M1	77-4B 96-5F 14+0 00+0	0	2
1213 0007 M1	79-4B 44-5F 13+0 11-6	0	2
1213 0008 M1	82-4B 52-5F 14+0 00+0	0	2
1213 0009 M1	79-4B 44-5F 14+0 00+0	0	2
1213 0010 M1	79-4B 52-5F 17+0 00+0	0	2
1213 0011 M1	82-4B 70-5F 96+0 00+0	0	2
1213 0012 M1	79-4B 17-5F 50+0 00+0	0	2
1213 0013 M1	79-4B 35-5F 27+0 45-6	0	2
1213 0014 M1	77-4B 35-5F 17+0 00+0	0	2
1213 0015 M1	82-4B 52-5F 14+0 11-6	0	2
1213 0016 M1	79-4B 35-5F 14+0 00+0	0	2
1213 0017 M1	77-4B 26-5F 15+0 00+0	0	2
1213 0018 M1	79-4B 35-5F 14+0 00+0	0	2
1213 0019 M1	11-3B 44-5F 14+0 00+0	0	2
1213 0020 M1	79-4B 35-5F 17+0 00+0	0	2
1213 0021 M1	79-4B 44-5F 57+0 00+0	0	2
1213 0022 M1	79-4B 87-5F 60+0 00+0	0	2
1213 0023 M1	79-4B 52-5F 14+0 00+0	0	2
1213 0024 M1	79-4B 52-5F 14+0 00+0	0	2
1213 0025 M1	64-4F 26-5F 14+0 00+0	0	2
1213 0026 M1	00+0B 00+0F 14+0 00+0	0	2

Figure 3. One record of SOLRAD 9 Flux Data

```
$E
NO PROCEDURE
$NOP
$NOP
$NOP
$NOP
$NOP
$NOP ***************************** LIST OF CN1 ********************************
$EXE TPLIST BS

INPUT PARAMETERS ARE:  ED SR=1=2 1 1 1

 TAPE NO.    1                  FILE NO.    1
 RECORD    1                    LENGTH    12[illegible]
8[illegible]74[illegible]75625-5[illegible]+061+[illegible]+08[illegible]74[illegible]75755-434-513+1[illegible]+08[illegible]74[illegible]75858-417-513+1[illegible]+08074[illegible]75948-451-596+0[illegible]0+[illegible]807
4[illegible]80[illegible]68-485-626+[illegible]33-6

 TAPE NO.    1                  FILE NO.    1
 RECORD    2                    LENGTH    12[illegible]
8[illegible]74[illegible]8[illegible]15[illegible]-417-513+[illegible]+08[illegible]74[illegible]80253-417-512+[illegible]+08[illegible]74[illegible]80359-485-512+011-68074[illegible]80453-434-513+000+0807
4[illegible]80553-426-512+[illegible]11-6

***** JOB DONE.
$EXE TPLIST BS

INPUT PARAMETERS ARE:  ED SR=18222=2 1 1 3

 TAPE NO.    1                  FILE NO.    3
 RECORD    18222                LENGTH    120
8366235118-312-413+[illegible]+08366235217-313-413+011-68366235317-313-413+00[illegible]+08366235417-313-413+000+0836
6235517-314-413+[illegible]11-6

 TAPE NO.    1                  FILE NO.    3
 RECORD    18223                LENGTH    120
8366235617-313-413+011-68366235717-315-413+011-68366235817-313-413+00[illegible]+08366235917-312-416+000+0

***** JOB DONE.
$WEO LPS
```

3/14/68 — 12/31/68

DR 02923

```
$$
$NOP
$NOP
```

```
$JOB  19:05:22
$ASS IN MS5 SI TY
$NOP ****************** LIST N1OUT-8 **************************
$NOTE BOJ   19:06:42
$EXEC LIST BS

INPUT PARAMETERS ARE:  BC FL=3=3

 TAPE NO.   1              FILE NO.   1
 RECORD   1                LENGTH   120
2183000400+000+014+000+02183000500+087-614+000+02183000674-435-514+000+02183000787-452-513+011-6218
3000885-452-515+000+0

 TAPE NO.   1              FILE NO.   1
 RECORD   2                LENGTH   120
2183000985-461-514+000+02183001082-479-514+000+02183001185-461-514+000+02183001282-444-513+011-6218
3001385-461-514+000+0

 TAPE NO.   1              FILE NO.   1
 RECORD   3                LENGTH   120
2183001485-426-514+000+02183001582-452-514+000+02183001685-461-514+000+02183001785-461-513+000+0218
3001890-435-514+000+0

 TAPE NO.   1              FILE NO.   1
 RECORD   15033            LENGTH   120
2274232169-444-514+000+02274232267-444-514+000+02274232369-487-614+000+02274232464-435-514+000+0227
4232567-426-515+000+0

 TAPE NO.   1              FILE NO.   1
 RECORD   15034            LENGTH   120
2274232667-417-517+000+02274232764-426-516+000+02274232862-417-517+000+02274232967-435-517+000+0227
4233067-417-517+000+0

 TAPE NO.   1              FILE NO.   1
 RECORD   15035            LENGTH   120
2274233167-444-518+000+02274233264-426-521+000+02274233326-587-622+000+0


***** JOB DONE.
$NOTE EOJ   19:11:13
```

7/1/72 – 9/30/72

0-29081

$$