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FGGE/SMMR-30 TAPE SPECIFICATION AND SHIPPING LETTER DESCRIPTION

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National Aeronautics and Space Administration

Goddard Space Flight Center
Greenbelt, Maryland 20771

FGGE/SMMR-30 TAPE SPECIFICATION AND SHIPPING LETTER DESCRIPTION

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Contract No. NAS5-26753
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FGGE/SMMR-30 TAPE SPECIFICATION AND SHIPPING LETTER DESCRIPTION

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1. INTRODUCTION

The Nimbus-7 FGGE/SMMR-30 tape contains sea ice concentration data in 30 km resolution which are extracted and reformatted from Nimbus-7 SMMR PARM-30 tapes in accordance with the FGGE level II International Exchange Format Specification.

There are three types of files on a FGGE/SMMR-30 tape. The first file on the tape is a test file. The second file on the tape is a tape header file. The remaining one or more files are data files. All files are terminated with a single end-of-file (EOF) tape mark. The last file is terminated with two EOF tape marks. All files are made up of one or more physical records. Each physical record contains 2960 bytes. Each data file contains all available values for a six-hour synoptic time period.

2. DATA SET PRODUCTION

The FGGE/SMMR-30 processing system converts the sea ice concentration data extracted from Nimbus-7 SMMR PARM-30 tapes into the FGGE level II International Exchange Format Specifications.

The computer programs in the conversion system are TAPCAT, FGGE2B, and FGGEDP. Each of these programs will be described in the following sections.

2.1 TAPCAT Program

2.1.1 General Description

The TAPCAT program is used to update the SMMR PARM-30 catalog file as new SMMR PARM-30 tapes become available. The program obtains the Nimbus tape sequence number, data start, and data stop time from the tape. This information is inserted into the cataloged file and the file is sorted by the data start time.

2.1.2 Data Flow Chart

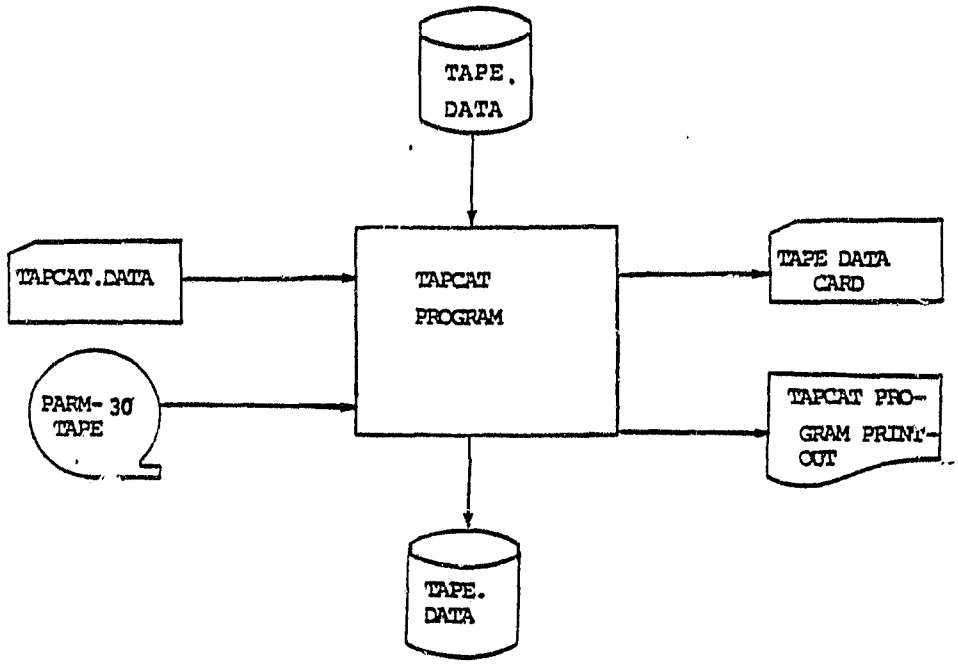

Figure 2.1 TAPCAT Data Flow

2.1.3 I/O Units List

1 - card input or disk file TAPCAT.DATA

2 - tape label input

3 - SMMR PARM-30 tape data records

4 - disk file TAPE.DATA

6 - printer

2.2 FGGE2B PROGRAM

2.2.1 General Description

The FGGE2B program is used to extract parameter data values from the Nimbus-7 SMMR PARM-30 tapes and reformat them into the FGGE level II International Exchange Format and store on a temporary tape. If there is no more data to reformat from the PARM-30 tape, then the original and backup FGGE/SMMR-30 tapes will be processed. A test file and a tape header file are written on both the original and the backup tapes, followed by the contents of the temporary tape.

2.2.2 Data Flow Chart

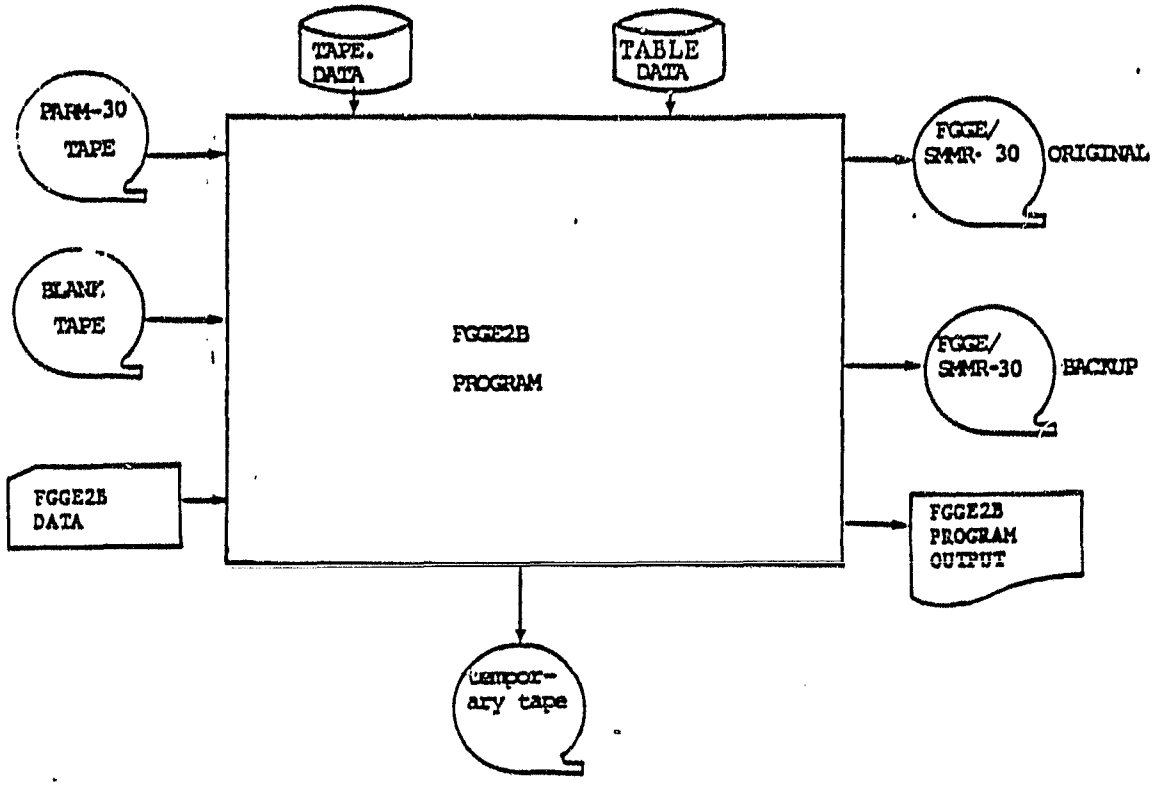

Figure 2-2. FGGE2B Data Flow

2.2.3 I/O Units List

1 - FGGE/SMMR-30 tape: backup
2 - sea ice concentration temporary tape
3 - PARM-30 tape: header record
4 - FGGE/SMMR-30 tape: original
6 - printer
15 - PARM-30 tape: data records
17 - FGGE/SMMR-30 tape: original
18 - FGGE/SMMR-30 tape: backup
19 - disk file TAPE.DATA

2.3 FGGEDP PROGRAM

2.3.1 General Description

The FGGEDP Program is to generate shipping letter and diagnostic printouts of the FGGE/SMMR-30 tape. Special printout options are available for detailed analysis of the data.

2.3.2 Data Flow Chart

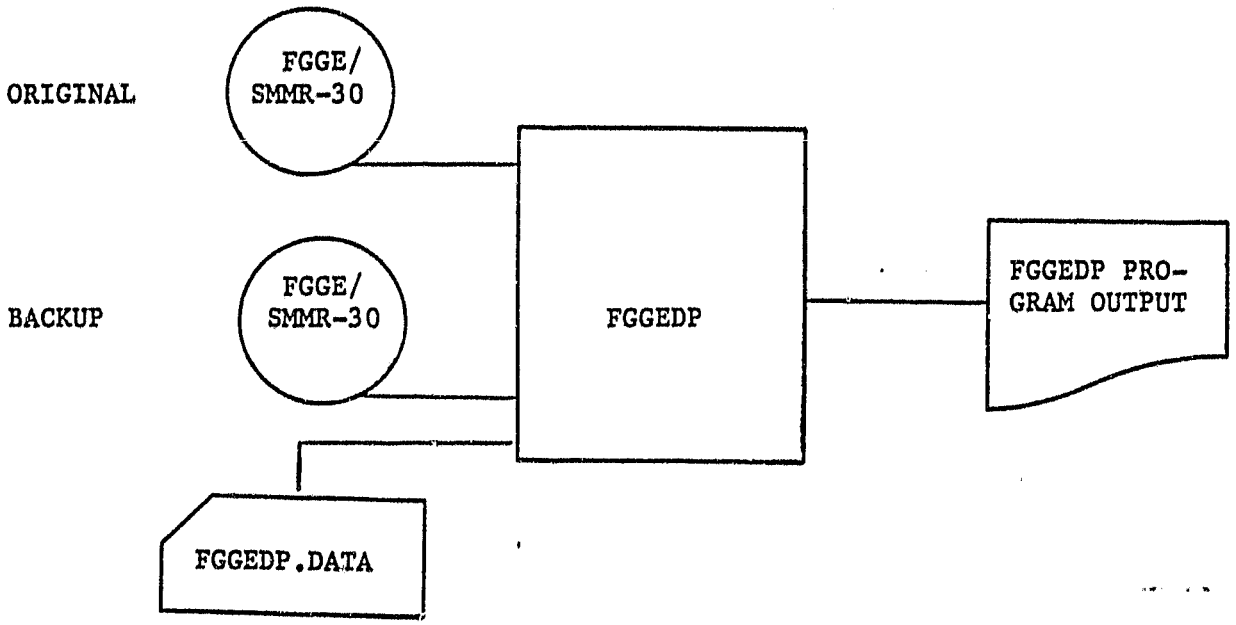

Figure 2.3 FGGEDP Data Flow

2.3.3 I/O Units List

1 - FGGE/SMMR-30 tape label input: original

2 - FGGE/SMMR-30 tape label input: backup

3 - FGGE/SMMR-30 tape: original

4 - FGGE/SMMR-30 tape: backup

5 - card reader

6 - printer

3. FGGE/SMMR-30 TAPE DESCRIPTION

3.1 TAPE SPECIFICATION

3.1.1 Physical Tape Characteristics

The physical characteristics of the FGGE/SMMR-30 tape are:

	WDC-A	WDC-B
Density:	1600 bpi	800 bpi
Mode of Recording:	PE	NRZI
Recording Code:	EBCDIC	EBCDIC
Number of Tracks:	9	9
Parity:	Odd	Odd

3.1.2 Gross Format

The gross format of the tape is shown in Figure 3-1. It has three kinds of files on the tape. The first file on the tape is a test file, the second file on the tape is a tape header file, and the remaining one or more files are data files. Each file terminates with an EOF mark and the last file terminates with two EOF marks.

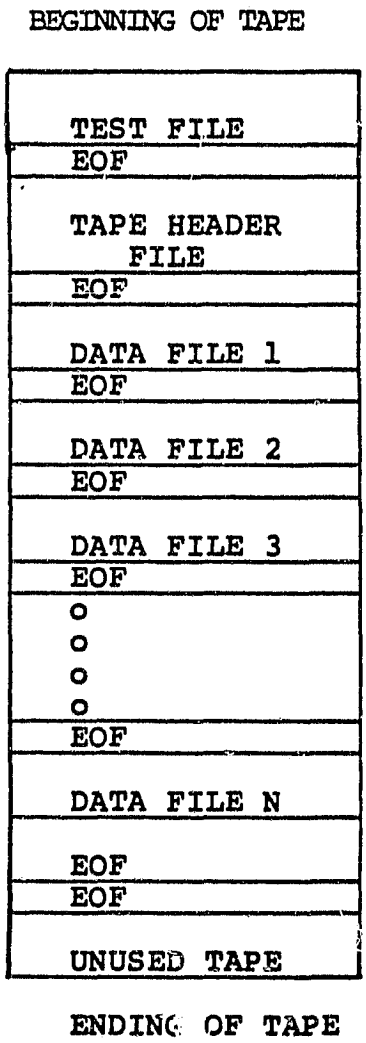

Figure 3-1. TAPE ORGANIZATION

3.2 File Specifications

There are three file types. The first file on the tape is the test file. The second file on the tape is the tape header file. The remaining files are the data files. Each of these file types is described in the following section.

3.2.1 Test File

The test file is the first file on the tape. It contains 350 physical records on 1600 BPI tapes and 200 physical records on 800 BPI tapes. Each physical record contains 80 logical records. Each logical record contains 37 bytes. Each byte contains a hexadecimal FF (binary 11111111).

3.2.2 Tape Header File

The tape header file is the second file on the tape. It contains 27 physical records. Each physical record contains 37 logical records. Each logical record contains 80 bytes. Each byte contains an EBCDIC coded character. The tape header file contains information about the data stored on the FGGE/SMMR-30 tape. The first fifteen logical records are shown in Figure 3-2. The contents of these fifteen logical records are stored exactly as depicted in Figure 3-2 with the exception of the underlined areas. The underlined areas designate variable fields which will change between FGGE/SMMR-30 tapes. The contents of these logical records are as follows:

LOGICAL RECORD CONTENTS

Logical Record Number	
1	FGGEbb4564YFMFDFHFYLMLDLHLbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
2	NAME:bbbbbNATIONALbAERONAUTICSbANDbSPACEbADMINISTRATIONb(NASA)bbbbbbbbbbbbbbbbb
3	bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
4	ADDRESS:bbGODDARDbSPACEbFLIGHTbCENTERb(GSFC)bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
5	bbbbbbbbbbGREENBELTbbMARYLANDb20771bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
6	bbbbbbbbbbUNITEDbSTATESbOFbAMERICAb(USA)bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
7	SCIENTIST:GARYbWOLFORDbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
8	DATE:bbbbbWWWbMMMbDD,YYYYbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
9	0123456789=:>b 5TUVWXYZ,(-JKLMNOPQR*);+ABCDEFGHI.)(<bbbbbbbbbbbbbbbbbbbbbbbbb
10	TAPEbCHARACTERISTICS:b9bTRACK,1600bBPI,CODEbEBCDIC,MODEbPE,PARITYbODDbbbbbbbbbb
11	TAPEbCONTENTS:bTHISbTAPEbCONTAINSbSEAbICEbCONCENTRATIONbbbbbbbbbbbTHATbWASbbbbbb
12	DERIVEDbFROMbTHEbSMMRbINSTRUMENTbFLOWNbONbTHEbNIMBUS-7bEXPERIMENTALbSATELLITE.bb
13	THISbTAPEbCONFORMSbWITHbTHEbFGGEbLEVEL2BbINTERNATIONALbEXCHANGEbFORMAT.bbbALLbbb
14	AVAILABLEbDATAbFROMbYBbMBbDBbHBbNBbTObYEbMEbDEbHEbNEbISbSUPPLIED.bbbbbbbbbbbbbb
15	bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb

FIGURE 3-2. TAPE HEADER FILE - FIRST FIFTEEN 80 BYTE LOGICAL RECORDS

Record 1: The first logical record contains the project title (FGGEbb), the producer code (4564), and the beginning and ending synoptic time periods contained on the tape.

The synoptic times are variable data and contain the major synoptic times of the first and last data files on the tape. There are two-byte fields for the year (YF, YL), the month (MF, ML), the day (DF, DL), and the hour (HF, HL) of the first and last major synoptic times. (The character F indicates the first major synoptic time and L the last major synoptic time.) The year field represents the last two digits of the year. As an example, 1978 would be represented by an EBCDIC-coded 78. The month values range from 01 to 12. The day values range from 01 to 31. The hour values are either 00, 06, 12, or 18.

Record 2: The second logical record contains the name of the producing office.

Record 3: The third logical record is filled with EBCDIC coded blanks.

Records 4-6: The fourth through the sixth logical records contain the address and country of the producing office.

Record 7: The seventh logical record contains the name of the scientist make the data available. This person is also the person to contact for more information about the data.

Record 8: The eighth logical record contains the date the tape was written. The data is variable data. The day name field (WWW) contains the first three characters of the day of the week (e.g., TUE). The month field (MMM) contains the first three characters of the name of the month (e.g., JAN). The day number field (DD) contains the numeric day within the month; its values range from 01 to 31. The year field (YYYY) contains four bytes which represent the year.

Record 9: The ninth logical record contains a translation table which will be stored exactly as shown in Figure 3-2.

Record 10: The tenth logical record contains information on the physical tape characteristics.

Record 11-15: The eleventh through the fifteenth logical records contain a description of the tape contents. The variable field in the eleventh logical record will contain the following character string to describe parameter type stored on the tape.

SEAbICEbCONCENTRATIONbbbbbbb

The variable fields in the fourteenth logical record contain the beginning and ending year (YB, YE), month (MB, ME), day (DB, DE) hour (HB, HE), and minute (NB, NE) of the time period represented by the tape. These beginning and ending times represent the search interval used in producing the tape. They differ from the first and last major synoptic times stored in the first logical record of the tape header file, as illustrated by the following example:

Example

A FGGE/SMMR sea surface temperature tape is produced for the time span 79/01/05/03:01 to 79/01/08/21:00, with all data collected on January 7, 1979 excluded, by specifying the following search time intervals:

[79/01/05/03:01 to 79/01/06/23:59] and
[79/01/08/00:00 to 79/01/08/21:00]

During this time period, the SMMR is operating only on January 6 and 8: no data is collected on January 5 and 7. The resulting FGGE/SMMR tape will contain data files for the following major synoptic times:

Data File No.	Contains all available data for time period	Major synoptic time of the file
1	79/01/06/00:00 to 79/01/06/03:00 (no data collected from 79/01/05/21:01 to 79/01/05/23:59)	79/01/06/00:00
2	79/01/06/03:01 to 79/06/09:00	79/01/06/06:00
3	79/01/06/09:01 to 79/06/15:00	79/01/06/12:00
4	79/01/06/15:01 to 79/06/21:00	79/01/06/18:00
5	79/01/06/21:01 to 79/06/23:59 (data collected from 79/01/07/00:00 to 79/07/03:00 excluded)	79/01/07/00:00
6	79/01/08/00:00 to 79/01/08/03:00 (data collected from 79/01/07/21:00 to 79/07/23:59 excluded)	79/01/08/00:00
7	79/01/08/03:01 to 79/01/08/09:00	79/01/08/06:00

8	79/01/08/09:01 to 79/01/08:15:00	79/01/08/12:00
9	79/01/08/15:01 to 79/01/08/21:00	79/01/08/18:00

The first logical record of the tape header file will contain YFMFDFHF = 79010600 (major synoptic time of file 1). The fourteenth logical record of the tape header file will contain YBMBDBHBNB = 7901050301 (beginning search time represented by the tape contents) and YEMEDEHENE = 7901082100 (ending search time represented by the tape contents).

The sixteenth to the Nth logical records (N = 989) in the tape header file contain a list of the tables of codes presented in Appendix 10, Appendix A of the FGGE International Data Management Plan.[1] These tables are arranged in increasing numerical order. The titles for the tables are stored in separate logical records surrounded by blank filled logical records. Each title record is followed by a sequence of logical records describing the table codes. The code value is stored in the first five bytes and the code description is stored in bytes seven through eighty. If a code description is longer than 74 bytes, it is continued in bytes seven through eighty of the next logical record. The tables of codes are followed by seven logical records containing descriptions of the formats required to read the logical records comprising the reports on the tape. The contents of these logical records are shown in Figure 3-3. The fields in the last two records (numbered N + 6 and N + 7) contain the following:

(N + 6) SEAbICEbCONCENTRATION,FORMAT:bbbbbbb

(N + 7) 2I2,2F4.1,F3.0,I3,2I2,2F4.1,F3.0,I3,1X

---

[1]Because of the large volume of tables involved, these logical records are not explicitly depicted in this document.

LOGICAL RECORD NUMBER:	LOGICAL RECORD CONTENTS
N+1:	LOGICALbRECORDbFORMATS:bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
N+2:	bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
N+3:	bbbbREPORTbIDENTIFICATIONbFORMAT:bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
N+4:	bbbbbbbA1,2I2,17X,6I2,I3bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
N+5:	bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
N+6:	bbbbSEAbICEbCONCENTRATIONbFORMAT:bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb
N+7:	bbbbbbbb3I3,I5,2I2,3I3,I5,2I2,bbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbbb

Note: Logical records 16 through 989 contain a list of the tables of codes in Appendix 10, Appendix A of the FGGE International Data Management Plan; 989 is the required number of logical records for FGGE tables of codes.

FIGURE 3-3. TAPE HEADER FILE-LOGICAL RECORDS DESCRIBING REPORT FORMATS

Following the format descriptions, a sufficient number of blank-filled logical records are stored to complete the current physical record.

3.2.3 Data Files

The data files contain a variable number of physical records. Each physical record contains 80 logical records. Each logical record contains 37 bytes. Each byte contains an EBCDIC-coded character. There are several types of logical records in a data file as can be seen in Figure 3-4. Each of these logical record types is shown in Figure 3-5. As in the preceding figures, all underlined areas represent variable data fields.

3.2.3.1 File Header Logical Record

The first logical record of any data file is the file header logical record. This logical record contains information about the data in the file.

The first byte contains an EBCDIC coded H to indicate that this logical record is a file header.

The second and third bytes (FF) contain the data format indicator. This field indicates the format in which the data are stored. The value for Nimbus-7 data types is shown in Table 3.1.

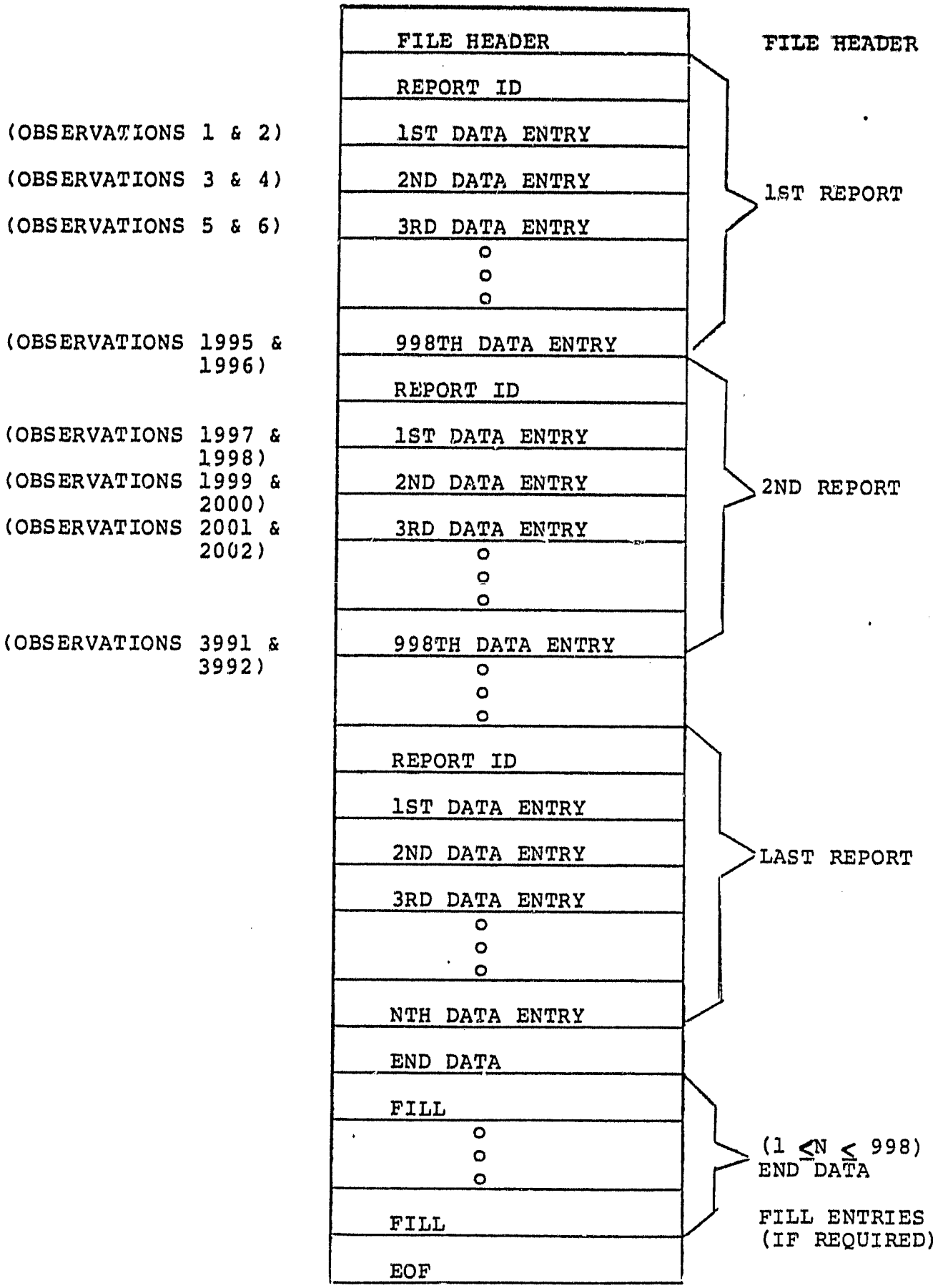

FIGURE 3-4. DATA ORGANIZATION WITHIN A DATA FILE

The fourth through the eleventh bytes (YYMMDDHH) contain the major synoptic time of the data in the file. This time is expressed the same way as in the first logical record of the tape header file.

The fourteenth and fifteenth bytes (SS) contain the data source indicator. The values for Nimbus-7 data types is shown in Table 3-1.

The sixteenth through the thirty-third bytes are filled with EBCDIC-coded zeroes.

The thirty-fourth through the thirty-seventh bytes are filled with EBCDIC-coded blanks.

Table 3-1.

DATA SOURCE, DATA FORMAT, AND DATA PROCESSING TECHNIQUE INDICATORS

DATA TYPE	SOURCE(1)	FORMAT(2)	TECHNIQUE(3)
Sea ice concentration	94	09	41

(1) see "FORMATS FOR THE INTERNATIONAL EXCHANGE OF LEVEL II DATA SETS DURING THE FGGE" Appendix 10, APPENDIX A, TABLE I.
(2) see TABLE XXVII of the above document.
(3) see TABLE XVIII of the above document.

3.2.3.2 Report Identification Logical Record

Following the file header logical record are one or more reports. Each report contains from 2 to 999 logical records. The first logical record is the report identification logical record. The report identification logical record contains information about the data in the report.

The first byte contains an EBCDIC coded * to indicate that this logical record is a report identification logical record.
The second and third bytes (SS) contain the data source indicator. This field has the same value as the fourteenth and fifteenth bytes of the file header logical record. The values for Nimbus-7 data types is shown in Table 3-1.
The fourth and fifth bytes (II) contain the data processing technique indicator. This field indicates how the data values were obtained. The data processing technique indicator codes for Nimbus-7 data types is shown in Table 3-1.
The sixth through the twenty-second bytes are filled with EBCDIC coded blanks.
The twenty-third and twenty-fourth bytes contain the instrument type indicator. This field will always contain an EBCDIC-coded 62 indicating that the instrument type is the Nimbus-7 SMMR.
The twenty-fifth through the thirty-second bytes (YYMMDDHH) contain the major synoptic time of the data contained in the report.

This field will have the same value as bytes four through eleven of the file header record for the file containing the report. The format for this major synoptic time is the same as in the file header logical record.

The thirty-third and thirty-fourth bytes are filled with EBCDIC-coded zeroes.

The thirty-fifth through the thirty-seventh bytes (NNN) contain the number of logical records in the report including the report identification logical record. This number can range from 002 to 999.

3.2.3.3 Data Logical Record

Following the report identification logical record are one or more data logical records. The maximum number of data logical records in one report is 998. All reports will have the maximum number of data logical records except, possibly, the last report in the file. The last report in the file will contain as many data logical records as needed to store the remaining observations occurring during the file's synoptic time period. A data logical record format contains two observations per logical record. However, in the case where there are an odd number of observations in a data file, the 1st data logical record (in the last report) in the data file will contain only a single observation. The formats used to store this final observation in such cases are also shown in Figure 3-5.

File Header logical record: HFFYYMMDDHH00SS0000000000000000000bbbb

Report identification
logical record: *SSIIbbbbbbbbbbbbbbbbb65YYMMDDHH00NNN

Data logical record format: HHMMPPPPLLLLDDDQQQHHMMPPPPLLLLDDDQQQb (two observations)

HHMMPPPPLLLLDDDQQQ-9-9-999-999-99-99b (single observation)

End data logical record: *99999999999999999999999999999999999

Fill logical record: 9999999999999999999999999999999999

FIGURE 3-5. DATA FILE LOGICAL RECORDS

Bytes one through four (HHMM) of data logical record format A contain the observation time. This is the actual time of the observation, not a major synoptic time. The first two bytes (HH) contain the hour of the observation. The values range from 00 to 23. The third and fourth bytes (MM) contain the minute of the observation. The minute values range from 00 to 59.

The fifth through eight bytes (PPPP) contain the latitude of the observation in tenths of a degree. The values will range from -900 to +900, where positive indicates north latitude. An example would be -079 which would be interpreted as 7.9 degrees south latitude.

The ninth through the twelfth bytes (LLLL) contain the longitude of the observation in tenths of a degree. The values range from 0000 to 3599. The values increase in an easterly direction from Greenwich, England.

The thirteenth through the sixteenth bytes (DDDD) contain the data value. The data value is stored in units of percent and ranges from 000 (0.0%) to 100 (100%).

The sixteenth through eighteenth bytes (QQQ) contain the quality indicator. The quality indicator codes are not defined for Nimbus-7 SMMR parameters. Therefore, these bytes are filled with the EBCDIC-coded characters 00.

The nineteenth through the thirty-sixth bytes are a repeat of bytes one through eighteen for the second observation in the data logical record. If a second observation is not available, these bytes contain the EBCDIC coded characters -9-9-999-999-99-99.

The last byte in the data logical record is filled with an EBCDIC-coded blank.

3.2.3.4 End Data Logical Record

The last data logical record (in the last report) in a data file is followed by an end data logical record. The end data logical record signifies the end of data in a file. The first byte of the end data logical record contains an EBCDIC-coded *. The remaining 36 bytes of the end data logical record contain EBCDIC-coded nines.

3.2.3.5 Fill Logical Record

The end data logical record is followed by as many fill logical records as are needed to complete the current physical record. No fill records are required if the end data logical record occurs on a physical record boundary. Each byte of a fill logical record contains an EBCDIC coded nine.

3.3 Data Specifications

This section describes the format used in storing numeric field values.

3.3.1 Signed Fields

A signed field is defined as a field which can have a negative value. The only signed fields occurring on a FGGE/SMMR-30 tape are the latitude field (PPPP) in bytes 5-8 and 23-26 of the data logical records. For the latitude field, the sign is stored in the leftmost byte. The absolute value (in units of tenths of a degree) is stored right-justified in the field. Any unused bytes in the field are filled with EBCDIC-coded zeroes. The decimal point is implicit. Some examples for storing latitudes and values are shown below.

LATITUDE	STORED VALUE
9.9°N	+097
9.7°S9	-097
35.3°N	+353
35.3°S	-353

3.3.2 Unsigned Fields

An unsigned field is defined as a numeric field which can have only positive values. All numeric fields on a FGGE/SMMR-30 tape, except the latitude fields; sea ice concentration; time fields such as year, month, day, hour, and minute; the record count stored in the report identification logical records; numeric codes such as the data source indicator, and quality indicators.

For unsigned fields, the value is stored right-justified. Any unused bytes in the field are filled with EBCDIC-coded zeroes. All decimal points are implicit and depend on the data value being stored. Some examples are shown below:

	DATA VALUE	STORED VALUE
Longitude:	9.7°	0097
(4-byte field; units = 10^{-1} degrees)	294.1°E	2941
Sea Ice Concentration	8%	008
(3-byte field; units = %)	100%	100
Hour:	3 a.m.	03
(2-byte field)	10 a.m.	10
	2 p.m.	14
	midnight	00

4. SHIPPING LETTER DESCRIPTION

The shipping letter of a FGGE/SMMR-30 tape is the printout of the FGGE-DP program with option 0. There are three major parts in the shipping letter.

The first part contains the information on the tape identifier, slot number, and the printout option.

The second part contains the information on the characteristics and the contents of the tape.

The third part has several data files. Each data file contains all available data values for a six-hour synoptic time period for sea surface wind speed, sea surface temperature, or total atmospheric water vapor parameter. A sample shipping letter is included in the following pages.

F G G E D P P R O G R A M

CARD DECK READ WAS
TAPE-DESIGNATOR-NUMBER IS UA -- 2
VERIFY FLAG IS 0
PRINT FLAG IS 0
VOLUME SERIAL NUMBER OF ORIGINAL TAPE IS L2636

****
* TAPE DESIGNATOR IS UA0002 *
****

T E S T F I L E

FILE= 1 -TEST FILE- PHYSICAL RECORDS= 350

T A P E H E A D E R F I L E

FGGE 45647902210079022200
NAME: NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

ADDRESS: GODDARD SPACE FLIGHT CENTER (GSFC)
GREENBELT, MARYLAND 20771
UNITED STATES OF AMERICA (USA)
SCIENTIST:KAREN W POSEY
DATE: WED JUN 30,1982
0123456789=:> /STUVWXYZ.(-JKLMNOPQR)!;+ABCDEFGHI.$(<
TAPE CHARACTERISTICS: 9 TRACK,1600 BPI,CODE EBCDIC,MODE PE,PARITY ODD
TAPE CONTENTS: THIS TAPE CONTAINS SEA ICE CONCENTRATION DATA THAT WAS
DERIVED FROM THE SMMR INSTRUMENT FLOWN ON THE NIMBUS G EXPERIMENTAL SATELLITE.
THIS TAPE CONFORMS WITH THE FGGE LEVEL 2B INTERNATIONAL EXCHANGE FORMAT. ALL
AVAILABLE DATA FROM 79 02 21 00 00 TO 79 02 23 00 00 IS SUPPLIED.

FILE= 2 -TAPE HEADER FILE- PHYSICAL RECORDS= 27

D A T A F I L E

FILE NUMBER	FILE HEADER LOGICAL RECORD	PHYSICAL RECORDS	DATA ENTRIES
3	H0979022100009400000000000000000	50	7955
4	H0979022106009400000000000000000	91	14520
5	H0979022112009400000000000000000	87	13882
6	H0979022118009400000000000000000	105	16740
7	H0979022200009400000000000000000	69	10876

TOTAL NUMBER OF FILES ON TAPE 7
TOTAL NUMBER OF PHYSICAL RECORDS ON TAPE 779
TOTAL NUMBER OF DATA ENTRIES ON TAPE 63973

END PROCESSING
END PROCESSING
END PROCESSING
END PROCESSING
END PROCESSING

APPENDIX A

ABBREVIATIONS AND ACRONYMS

BPI:	Bits per Inch
EBCDIC:	Extended Binary Coded Decimal Interchange Code
EOF:	End of File
FGGE:	First GARP Global Experiment
GSFC:	Goddard Space Flight Center
I/O:	Input/Output
NASA:	National Aeronautics and Space Administration
PE:	Phase Encoding
SMMR:	Scanning Multichannel Microwave Radiometer
PARM-30:	30 km resolution parameter tape

Appendix B

Sample Run Printouts

B.1 TAPCAT Program Printout

This section gives a sample normal TAPCAT program printout. (Printout begins on next page).

ORIGINAL PAGE IS
OF POOR QUALITY

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                                        T A P C A T   P R O G R A M

PARM33 TAPE P30221
*NIMBUS-7 NOPS SPEC NO T234041 SO NO UG90521-2 SMMR SACC TO IPD  START 1979  52 003552 TO 19 0   0 0
00000 GEN 1982  57 104425
       79   52 2152   79   5C86137
BEGINNING TIME            79          2         21          0          35
ENDING TIME               79          2         25         23          55
*** WARNING *** OVERLAPPING TIMES

L2613      6579 215 02379 2252359
P30221   9052179 221 03579 2252355

                                        ZMKJW.TAPE.DATA FILE CONTENTS

                                        NUMBER OF TAPE ENTRIES IS      2

              TAPE - L2613      SEQUENCE -    65  BEGINNING - 79   2 15   0 23  ENDING - 79   2 25 23 59
              TAPE - P30221     SEQUENCE - 90521  BEGINNING - 79   2 21   0 35  ENDING - 79   2 25 23 55
END PROCESSING
END PROCESSING
END PROCESSING
END PROCESSING
END PROCESSING
```

FIGURE B-1
SAMPLE TAPCAT PROGRAM PRINTOUT (Continued)

B.2 FGGE2B Program Printout

This section gives a sample normal FGGE2B program printout. (Printout begins on next page).

PROGRAM FGGE2B

SPACE ICE IS TO BE REFORMATTED

TIME SPANS

78 12 1 0 0 78 12 10 23 59

AVAILABLE TAPES

L3429
L3430
88888
LLLLL
WWWWW
EEEEE
ZZZZZ
XXXXX
YYYYY

PARM30 TAPES SEARCHED

TAPE - P38B29 SEQUENCE - 83331 BEGINNING - 78 11 29 1 25 ENDING - 78 12 9 16 34
TAPE - P38C05 SEQUENCE - 83431 BEGINNING - 78 12 9 16 36 ENDING - 78 12 10 0 56

PARM30 TAPE MOUNTED - VOLUME SERIAL NUMBER P38B29 SEQUENCE NUMBER - 83331
TEMPORARY TAPE VOLUME SERIAL NUMBER L3429 MOUNTED
PARM30 TAPE MOUNTED - VOLUME SERIAL NUMBER P38C05 SEQUENCE NUMBER - 83431
*** WARNING *** NO MORE PARM30 TAPES TO MOUNT
LAST OBSERVATION WAS 78 12 10 0 58
ORIGINAL SMMR/FGGE SICE TAPE L3430 MOUNTED
BACKUP SMMR/FGGE SICE TAPE 88888 MOUNTED

END PROCESSING
END PROCESSING
END PROCESSING
END PROCESSING
END PROCESSING

********** DATA SUMMARY **********

PARAMETER	GOOD	BAD	FILL
SICE	577862	0	0

****

SICE

FLAG	TOTAL	BAD
00	0	0
01	0	0
02	0	0
03	0	0
04	0	0
05	0	0
06	0	0
07	0	0
08	0	0
09	0	0
0A	0	0
0B	0	0
0C	0	0
0D	0	0
0E	0	0
0F	0	0
10	0	0

12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
1A	0	0
1B	0	0
1C	0	0
1D	0	0
1E	0	0
1F	0	0
20	577862	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
2A	0	0
2B	0	0
2C	0	0
2D	0	0
2E	0	0
2F	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0
37	0	0
38	0	0
39	0	0
3A	0	0
3B	0	0
3C	0	0
3D	0	0
3E	0	0
3F	0	0
40	0	0
41	0	0
42	0	0
43	0	0
44	0	0
45	0	0
46	0	0
47	0	0
48	0	0
49	0	0
4A	0	0
4B	0	0
4C	0	0
4D	0	0
4E	0	0
4F	0	0
50	0	0
51	0	0
52	0	0
53	0	0
54	0	0
55	0	0
56	0	0
57	0	0
58	0	0
59	0	0
5A	0	0
5B	0	0
5C	0	0
5D	0	0
5E	0	0
5F	0	0
60	0	0
61	0	0
62	0	0
63	0	0

B.3 FGGEDP Program Printout

This section gives a sample normal FGGEDP program printout. (Printout begins on next page).

F G G E D P P R O G R A M

CARD DECK READ WAS
TAPE DESIGNATOR NUMBER IS UA 2
VERIFY FLAG IS 0
PRINT FLAG IS 0
VOLUME SERIAL NUMBER OF ORIGINAL TAPE IS L2636

```
**************************
* TAPE DESIGNATOR IS UA0002 *
**************************
```

T E S T F I L E

FILE= 1 -TEST FILE- PHYSICAL RECORDS= 350

T A P E H E A D E R F I L E

FGGE 4584790221007902220 0
NAME: NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

ADDRESS: GODDARD SPACE FLIGHT CENTER (GSFC)
GREENBELT, MARYLAND 20771
UNITED STATES OF AMERICA (USA)
SCIENTIST:KAREN W POSEY
DATE: WED JUN 30,1982
0123456789=:> /STUVWXYZ,(-JKLMNOPQR*)];+ABCDEFGHI.)(<
TAPE CHARACTERISTICS: 9 TRACK,1600 BPI,CODE EBCDIC,MODE P6,PARITY ODD
TAPE CONTENTS: THIS TAPE CONTAINS SEA ICE CONCENTRATION DATA THAT WAS
DERIVED FROM THE SMMR INSTRUMENT FLOWN ON THE NIMBUS G EXPERIMENTAL SATELLITE.
THIS TAPE CONFORMS WITH THE FGGE LEVEL 2B INTERNATIONAL EXCHANGE FORMAT. ALL
AVAILABLE DATA FROM 79 02 21 00 00 TO 79 02 23 00 00 IS SUPPLIED.

FILE= 2 -TAPE HEADER FILE- PHYSICAL RECORDS= 27

D A T A F I L E

FILE NUMBER	FILE HEADER/ LOGICAL RECORD	PHYSICAL RECORDS	DATA ENTRIES
3	H0979022100009400000000000000000	50	7985
4	H0979022106009400000000000000000	91	14520
5	H0979022112009400000000000000000	87	13882
6	H0979022118009400000000000000000	105	16740
7	H0979022200009400000000000000000	69	10876

TOTAL NUMBER OF FILES ON TAPE 7
TOTAL NUMBER OF PHYSICAL RECORDS ON TAPE 779
TOTAL NUMBER OF DATA ENTRIES ON TAPE 63973

END PROCESSING
END PROCESSING
END PROCESSING
END PROCESSING
END PROCESSING