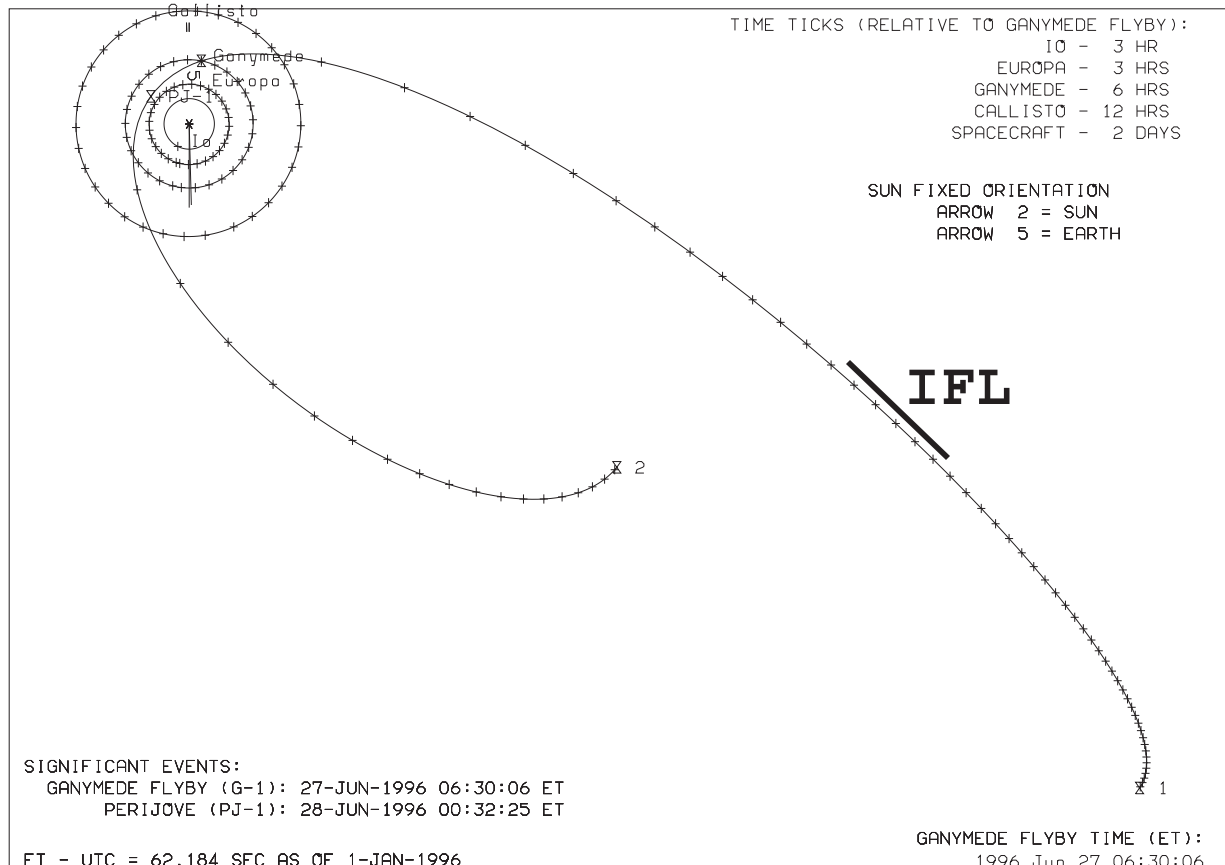# NIMS GUIDE TO THE

IN-FLIGHT LOAD

(IFL)

Original: May 1996

Revised: June 1998

Jupiter~1: North Trajectory Pole View (G-1 Apo to Apo)

```
                                          TIME TICKS (RELATIVE TO GANYMEDE FLYBY):
     Callisto                                                IO -   3 HR
                                                         EUROPA -   3 HRS
                   Ganymede                            GANYMEDE -   6 HRS
              Europa                                   CALLISTO - 12 HRS
          PJ-1                                       SPACECRAFT -  2 DAYS


                                                       SUN FIXED ORIENTATION
                                                         ARROW  2 = SUN
                                                         ARROW  5 = EARTH




                                                            IFL




                          2



SIGNIFICANT EVENTS:
   GANYMEDE FLYBY (G-1): 27-JUN-1996 06:30:06 ET                           1
       PERIJOVE (PJ-1): 28-JUN-1996 00:32:25 ET
                                                       GANYMEDE FLYBY TIME (ET):
ET - UTC = 62.184 SEC AS OF 1-JAN-1996                    1996 Jun 27 06:30:06
```

IFL starts on May 22, 1996 and ends on June 01, 1996.

VERSION DATE: 980601

Foreword to the Revised Edition

This document was originally published by the NIMS team as a preview to data acquisition for one orbit. It has has been revised and corrected after data receipt and systematic processing for inclusion on the CD-ROMs containing NIMS Experimental Data Records (EDRs) and Systematic Data Products (Cubes). It is also available on the NIMS website in both PostScript (PS) and Portable Document Format (PDF) form. Some material in the original document has been omitted, and a chapter added describing the data actually returned.

The aim of this guide is to provide detailed information on the various NIMS observations and calibrations. Also included in this document is background information on the orbit. A brief overview of the guide is given below. Please refer to the beginning of each chapter for a detailed list of contents.

Chapter 1 gives a brief introduction to the orbit. Chapter 2 gives an overview and summarizes the NIMS science objectives using tables, spreadsheets and timelines. Chapter 3 contains diagrams of various aspects of spacecraft geometry. Chapter 4 summarizes the NIMS observations in terms of a comprehensive sequence summary and a NIMS Observation Table (Obstab). Chapter 5 is a collection of the Detailed Observation Designs made up of OAPEL forms and POINTER plots. Chapter 6 contains plots of the NIMS wavelength edit tables used. Chapter 7 summarizes the NIMS data return from the orbit.

For more information, please refer to the Galileo Orbit Planning Guide (OPG) and the Galileo Orbit Activity Plan (OAP) for this orbit. Both of these documents are produced by the Galileo Project.

For more information on the NIMS instrument, please refer to the NIMS instrument paper: R.W. Carlson, P.R. Weissman, W.D. Smythe, J.C. Mahoney and the NIMS Science and Engineering Teams, "Near-infrared Mapping Spectrometer Experiment on Galileo", Space Science Reviews, Vol 60, pp 457-502, 1992.

Acknowledgements

Table of Contents

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Chapter 1 - Introduction

Contents

Introduction

From May 22, 1996 through June 01, 1996 the Galileo spacecraft will load and test the new Phase 2 CDS software. This time period is known as the In-Flight Load (IFL). NIMS will also reload its own Phase 2 software at this time. This handbook is provided to the NIMS Team as a guide to the IFL.

During this time period, NIMS will take advantage of the new Phase 2 capabilities of both NIMS and CDS to perform a series of Optical Calibrations (OPCALs) and return the data using the new real-time capabilities of the spacecraft. This series of OPCALs will give the NIMS Team an indication of how well the new Phase 2 software (both NIMS and CDS) is performing on the spacecraft. It will also give an indication of the health of the NIMS instrument as NIMS has not been used since the SL9 Encounter back in July of 1994, nearly two years ago.

The NIMS Phase 2 software has some new features, including wavelength editing and mirror blocking, which will be tested at this time. Wavelength editing will be used to select only detectors 1 and 2 for all Long Map grating positions. Mirror blocking will be used to select only mirror positions 8-11 (of 0-19). The data will then be returned using the new real-time capabilities of the spacecraft.

The new Galileo Ground Data System (GDS) and AMMOS will also be tested in preparation for Orbital Operations as well as the MIPS real time data processing. This will test the entire ground path from DSN Station to UDR to Tube.

Chapter 2 - Encounter Overview

Contents

Overview

The In-Flight Load (IFL) presents an opportunity to test the NIMS Phase 2 software as well as the CDS Phase 2 software and the new Real Time capabilities of NIMS. A simple OPCAL (Optics Calibration) test was designed to test the NIMS software. This test does not require the commanding of the scan platform nor the use of the DMS tape recorder. It only requires the commanding of the NIMS instrument and the Select and Deselect of NIMS in the Real Time data stream.

The NIMS Phase 2 software has some new features, including wavelength editing and mirror blocking, which will be tested at this time. Wavelength editing will be used to select only detectors 1 and 2 for all Long Map grating positions. Mirror blocking will be used to select only mirror positions 8-11 (of 0-19). The data will then be returned using the new real-time capabilities of the spacecraft. Only the first 12 minor frames per Rim are returned in Real Time.

There are three OPCAL sequences in total, separated by 3 and 2 days. Each OPCAL sequence turns on the OPCAL lamp twice while NIMS is Selected in Real Time for 4 Rims. The OPCAL lamp is only visible to Detectors 1 and 2, so only those detectors' data are returned.

These OPCALs will be used to calibrate the NIMS grating and also monitor any changes to Detector 1 and 2 prior to the start of G1 at the end of June, 1996. This will be the first NIMS data returned since the SL9 Encounter of July, 1994.

NIMS IN-FLIGHT LOAD (IFL)

Ganymede Flyby (G1): 27-JUN-1996 (D179) 06:29:05 UTC
      Perijove (PJ1): 28-JUN-1996 (D180) 00:31:24 UTC

Time Ticks (Relative to G1)
Spacecraft - 2 Days

APO-1

IFL .... IFL RAM LOAD
IFL IFLNIMSOCAL1
.... IFLNIMSOCAL2
.... IFLNIMSOCAL3
CHOPPER OFF

APO-2

D177

D189

G1

E
S

PJ1
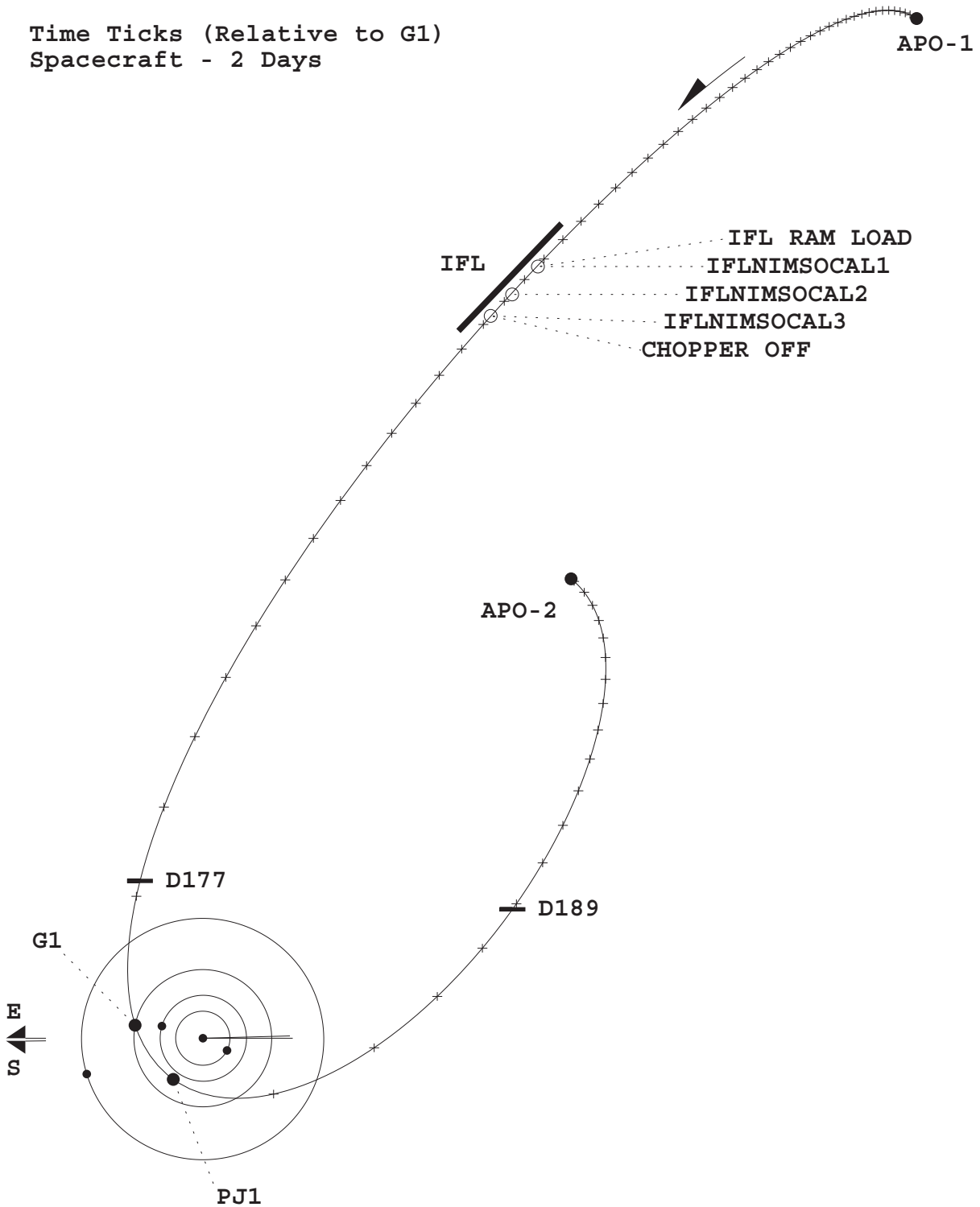
G1 North Trajectory Pole View, Apoapsis to Apoapsis

Chapter 3 - Orbit Geometries

Contents

Introduction to Chapter 3

This chapter contains diagrams of various aspects of geometry for the IFL.

The figure on page 3 is a North Trajectory Pole View of the G1 Orbit from apoapsis to apoapsis. The time period of the IFL is indicated along the orbit.

Jupiter 1: North Trajectory Pole View (G-1 Apo to Apo)

TIME TICKS (RELATIVE TO GANYMEDE FLYBY):

IO   – 3 HR
EUROPA   – 3 HRS
GANYMEDE – 6 HRS
CALLISTO – 12 HRS
SPACECRAFT – 2 DAYS

SUN FIXED ORIENTATION
ARROW 2 = SUN
ARROW 5 = EARTH

IFL

GANYMEDE FLYBY TIME (ET):
1996 Jun 27 06:30:06

Callisto
Ganymede
Europa
Io

SIGNIFICANT EVENTS:
GANYMEDE FLYBY (G-1): 27-JUN-1996 06:30:06 ET
PERIJOVE (PJ-1): 28-JUN-1996 00:32:25 ET

ET – UTC = 62.184 SEC AS OF 1-JAN-1996

3-03
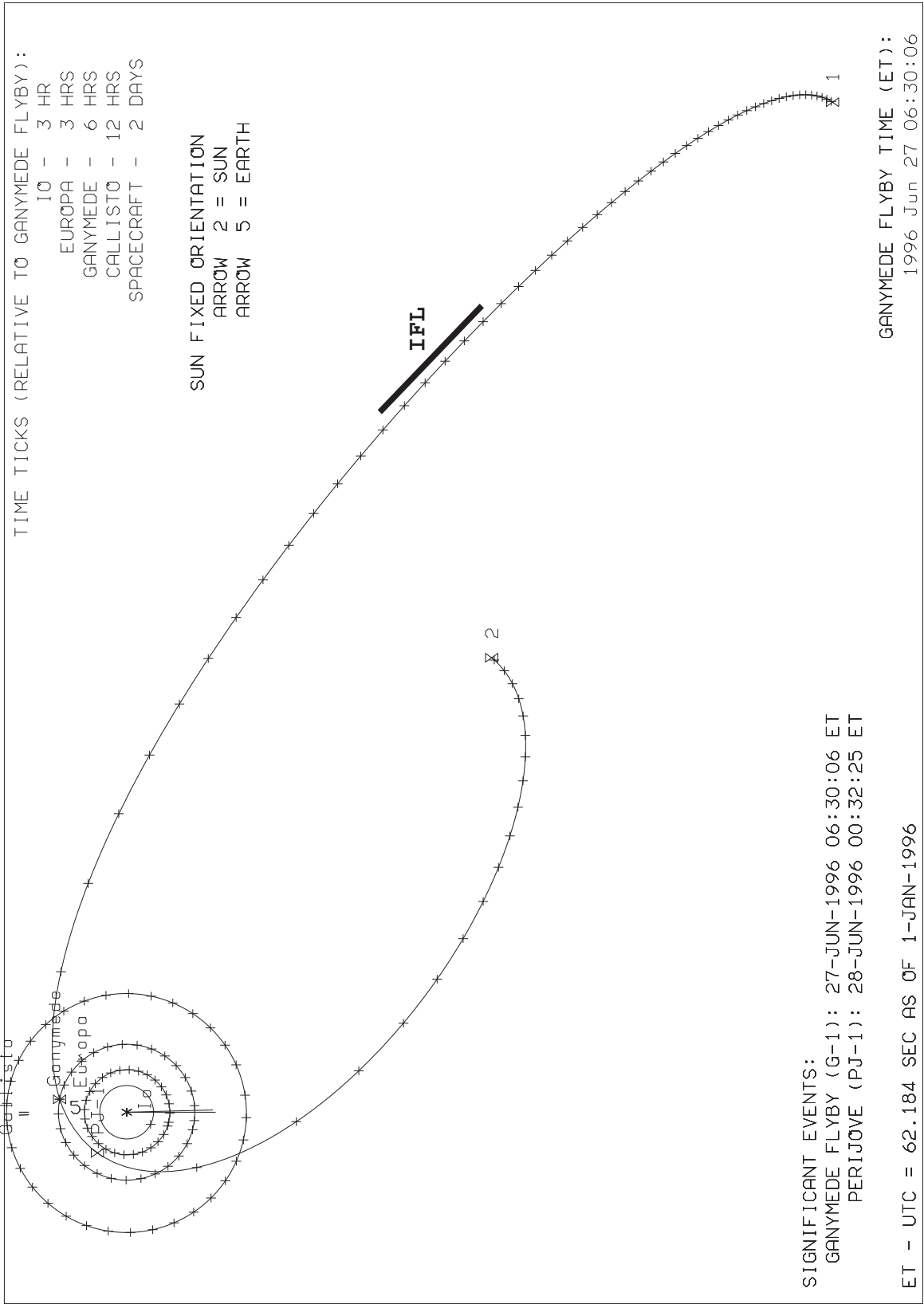
Chapter 4 - NIMS Observation Summaries

Contents

Introduction to Chapter 4

This chapter summarizes the NIMS IFL observations in terms of a comprehensive sequence summary, Individual Obstab Summaries and a NIMS Obstab (Observation Table).

The NIMS Sequence Summary is a time-ordered listing of all space-craft activity pertinent to NIMS operations for the IFL Sequence. The information in this summary is derived from the IFL SEF (Spacecraft Event File) with inputs from the NIMS Science Coordinators regarding the start time and duration of the NIMS observations. There are twelve columns of information in this table:

```
 1) Line        -  Line Count.
 2) YR          -  Year.
 3) DOY         -  Day of Year.
 4) Time        -  SCET Time (UTC).
 5) PSID        -  Parameter Set ID of the SEF line.
 6) Command     -  Command name from the SEF.
 7) Parameters  -  Parameters from the above Command Line.
 8) Description -  Description of the above Command for NIMS.
 9) GCM         -  NIMS Gain, Chopper mode, Instrument Mode.
                   Gain = 1,2,3 or 4.
                   Chopper Mode = R (Reference) or 6 (63Hz).
                   Instrement Mode = 0-15
10) GO          -  NIMS Grating Offset.
11) GS          -  NIMS Grating Start Position.
12) RIM,MF,I    -  SCLK of the Command Line (RIM:MF:RTI)
```
An additional line is inserted into this table at the start and stop times of each NIMS Observation (Oapel) to bracket the commands which affect each NIMS Observation.

The Individual Obstab Summaries are expansions of the NIMS Obstab to one page per Obstab entry for ease in reading the NIMS Obstab.

The NIMS Obstab (Observation Table) is a time-ordered listing of the NIMS obsrvation parameters for use by downlink data processing of the NIMS IFL data. It is also derived from the IFL SEF. Each Obstab entry is 512 bytes long but is presented here as 4 lines of 128 characters per entry.

	Sequence:	IIFL2N Created:	5/7/96	Begin:	96-142/15:58:00.000	Finish: 96-153/23:35:00.000

Line	YR	DOY	Time	PSID	Command	Parameters	Description	GCM	GO	GS	RIM MFI
1	96	142	15:58:00.000	20A3EY	37C1PR	Initial conditions	Optics Heater 1 OFF (primary relay)				3,445,477:75:5
2	96	142	15:58:00.000	20A3EZ	37C2PR	Initial conditions	Optics Heater 2 OFF (primary relay)				3,445,477:75:5
3	96	142	15:58:00.000	20A3FA	37F1PR	Initial conditions	Radiator Flash Heater OFF (primary relay)				3,445,477:75:5
4	96	142	15:58:00.000	20A3FB	37F2P	Initial conditions	Shield Flash Heater ON (primary relay)				3,445,477:75:5
5	96	142	15:58:00.000	20A3FC	40CPR	Initial conditions					3,445,477:75:5
6	96	142	15:58:00.000	20A3EX	37HR	Initial conditions	Replacement Heaters OFF				3,445,477:75:5
7	96	142	15:58:00.000	20A3FE	40T1PR	Initial conditions	PCT Heater 1 OFF (primary relay)				3,445,477:75:5
8	96	142	15:58:00.000	20A3FF	40T2R	Initial conditions	PCT Heater 2 OFF				3,445,477:75:5
9	96	142	15:58:00.000	20A3EW	37A	Initial conditions	NIMS Power ON	260	4	0	3,445,477:75:5
10	96	142	15:58:00.333		DMS:	: READY	RDY, TRACK 1, FWD, TIC 201.00 +/-	260	4	0	3,445,477:76:0
11	96	142	20:54:16.333	31DE3A	37F2PR		1 Shield Flash Heater OFF (primary relay)	260	4	0	3,445,770:77:0
12	96	142	20:55:17.000	31DE3B	37F2PR		2 Shield Flash Heater OFF (primary relay)	260	4	0	3,445,771:77:0
13	96	142	20:56:17.666	31DE3C	40T1P		1 PCT Heater 1 ON (primary relay)	260	4	0	3,445,772:77:0
14	96	142	20:57:18.333	31DE3D	40T1P		2 PCT Heater 1 ON (primary relay)	260	4	0	3,445,773:77:0
15	96	142	20:58:19.000	31DE3E	40T2		1 PCT Heater 2 ON	260	4	0	3,445,774:77:0
16	96	142	20:59:19.666	31DE3F	40T2		2 PCT Heater 2 ON	260	4	0	3,445,775:77:0
17	96	145	11:17:00.133	20EA5A	37PL		Program Load (halts microprocessor & unwri	260	4	0	3,449,472:41:0
18	96	145	11:18:00.800	20EA5B	37MRL		Memory Realocate (software operates from R	260	4	0	3,449,473:41:0
19	96	145	11:19:01.466	20EA4A	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,474:41:0
20	96	145	11:19:14.800	20EA4B	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,474:61:0
21	96	145	11:19:28.133	20EA4C	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,474:81:0
22	96	145	11:19:41.466	20EA4D	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,475:10:0
23	96	145	11:19:54.800	20EA4E	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,475:30:0
24	96	145	11:20:02.133	20EB4A	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,475:41:0
25	96	145	11:20:08.800	20EB4B	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,475:51:0
26	96	145	11:20:15.466	20EB4C	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,475:61:0
27	96	145	11:20:22.133	20EB4D	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,475:71:0
28	96	145	11:20:28.800	20EB4E	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,475:81:0
29	96	145	11:20:35.466	20EB4F	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,476:00:0
30	96	145	11:20:42.133	20EB4G	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,476:10:0
31	96	145	11:20:48.800	20EB4H	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,476:20:0
32	96	145	11:21:02.800	20EC4A	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,476:41:0
33	96	145	11:21:09.466	20EC4B	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,476:51:0
34	96	145	11:21:16.133	20EC4C	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,476:61:0
35	96	145	11:21:22.800	20EC4D	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,476:71:0
36	96	145	11:21:29.466	20EC4E	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,476:81:0
37	96	145	11:21:36.133	20EC4F	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,477:00:0
38	96	145	11:21:42.800	20EC4G	37DML	14BC,00,00	Direct Memory Load (loads data into NIMS R	260	4	0	3,449,477:10:0
39	96	145	11:21:49.466	20EC4H	37DML	14C0,C4,1B,FF,FF	Direct Memory Load (loads data into NIMS R	260	4	0	3,449,477:20:0
40	96	145	11:22:10.133	20ED4B	37DML	14F3,0D	Direct Memory Load (loads data into NIMS R	260	4	0	3,449,477:51:0
41	96	145	11:22:13.466	20ED4D	37DML		Direct Memory Load (loads data into NIMS R	260	4	0	3,449,477:56:0
42	96	145	11:22:16.800	20ED4C	37DML	14F6,C1,C4	Direct Memory Load (loads data into NIMS R	260	4	0	3,449,477:61:0
43	96	145	11:42:16.800	20ED5A	37IRT		Instrument Reset (goes into POR state)	260	4	0	3,449,497:41:0
44	96	145	11:43:17.466	20ED5B	37MN		Memory Normal (software operates from ROM)	260	4	0	3,449,498:41:0
45	96	145	11:44:18.133	20ED4E	37IST	1,2,0,OFF,0,0,0	Chopper ON, Sync, Chopper (Ref)	2R0	4	0	3,449,499:41:0
46	96	145	14:55:26.800	432CE6A	6RTSL1		R/T Select of DDS and	2R0	4	0	3,449,688:45:0
47	96	145	16:00:38.800	431ZL6A	6RCDSL	DDSNCG,PLSNCG,E	Record Deselect (DDS o	2R0	4	0	3,449,752:89:0
48	96	145	16:05:02.800	20ZM6A	6EUVON			2R0	4	0	3,449,757:30:0
49	96	145	16:05:43.466	431ZM6A	6RCSEL	DDSNCG,PLSNCG,E	Record Select (DDS onl	2R0	4	0	3,449,758:00:0

Strip of sequence iifl2n
prepared by NIMS engineering - A.K.S.

Date 5/12/96

Line	YR	DOY	Time	PSID	Command	Parameters	Description	GCM	GO	GS	RIM MF
50	96	145	17:00:14.800	125DE	NIMSINIT	GS	##### GROUP START INIT	2R0	4	0	3,449,811:84:0
51	96	145	17:00:14.800	125DE4A	37IST	1,0,0,OFF,0,0,0	Chopper ON, Sync, 63Hz (Ref)	260	4	0	3,449,811:84:0
52	96	145	17:01:15.466	125DE4B	37IST	1,2,0,OFF,0,0,0	Chopper ON, Sync, Chopper (Ref)	2R0	4	0	3,449,812:84:0
53	96	145	17:02:16.133	125DE4C	37IST	0,0,0,OFF,0,1,1	Gain State 4	4R0	4	0	3,449,813:84:0
54	96	145	17:03:16.800	125DE4D	37MB	1B,1B,0,0,0,0	Selects mirror (spatial) edit table	4R0	4	0	3,449,814:84:0
55	96	145	17:03:16.800	125DE11A	NIMSINIT	GE	##### GROUP END INIT	4R0	4	0	3,449,817:84:0
56	96	145	17:06:18.800	127DE	NIMSTAB	GS	%%%%% GROUP START TAB	4R0	4	0	3,449,817:84:0
57	96	145	17:06:18.800	127DE4A	37IOP	3,0	Long Map, Grating Start Position =0	4R3	4	0	3,449,817:84:0
58	96	145	17:06:19.466	127DE4B	37ETB	07,C7,31,80,00,0	Loads wavelength edit table	4R3	4	0	3,449,817:85:0
59	96	145	17:06:55.466	127DE11A	NIMSTAB	GE	%%%%% GROUP END TAB	4R3	4	0	3,449,818:48:0
60	96	145	17:07:24.133	432DE6A	6RTSL2	NIMSEL,AACNCG,R1	NIMS R/T SELECT	4R3	4	0	3,449,819:00:0
61	96	145	17:08:20.133	125DF4A	37IST	0,2,1,OFF,1,0,1	OPCAL	4R3	4	0	3,449,819:84:0
62	96	145	17:08:20.133	125DF11A	NIMSINIT	GE	##### GROUP END INIT	4R3	4	0	3,449,819:84:0
63	96	145	17:08:20.133	125DF	NIMSINIT	GS	##### GROUP START INIT	4R3	4	0	3,449,819:84:0
64	96	145	17:10:21.466	125DG	NIMSINIT	GS	##### GROUP START INIT	4R3	4	0	3,449,821:84:0
65	96	145	17:10:21.466	125DG4A	37IST	0,2,1,OFF,1,0,1	OPCAL	4R3	4	0	3,449,821:84:0
66	96	145	17:10:21.466	125DG11A	NIMSINIT	GE	##### GROUP END INIT	4R3	4	0	3,449,821:84:0
67	96	145	17:11:25.466	432DF6A	6RTDS2	NIMDSL,AACNCG,R1	NIMS R/T DESELECT	4R3	4	0	3,449,822:89:0
68	96	145	18:38:24.133	432ME6A	6RTSL1		R/T Select of DDS and	4R3	4	0	3,449,909:00:0
69	96	145	20:26:34.800	432MF431A6A	6RCDSL	DDSDSL,PLSNCG,EP	Record Deselect (DDS o	4R3	4	0	3,450,015:90:0
70	96	145	20:26:35.466	432MF6A	6RTSL1		R/T Select of DDS and	4R3	4	0	3,450,016:00:0
71	96	145	21:27:22.800	488AI6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4R3	4	0	3,450,076:11:0
72	96	146	00:14:26.800	488AI6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4R3	4	0	3,450,241:32:0
73	96	146	00:19:07.466	432A6A	6RTDS2	NIMNCG,AACNCG,R1	R/T ENG DESELECT	4R3	4	0	3,450,245:89:0
74	96	146	00:36:20.133	432B6A	6RTSL2	NIMNCG,AACNCG,R1	R/T ENG SELECT	4R3	4	0	3,450,263:00:0
75	96	146	05:12:24.800	488AJ6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4R3	4	0	3,450,536:04:0
76	96	146	08:08:00.133	20AD6A	6RTDS2	NIMNCG,AACNCG,R1	R/T ENG DESELECT	4R3	4	0	3,450,709:64:0
77	96	146	10:54:49.466	20AD6B	6RTSL2	NIMNCG,AACNCG,R1	R/T ENG SELECT	4R3	4	0	3,450,874:63:0
78	96	146	10:59:29.466	488AJ6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4R3	4	0	3,450,879:28:0
79	96	146	21:57:28.733	488AK6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4R3	4	0	3,451,530:06:0
80	96	147	00:14:32.733	488AK6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4R3	4	0	3,451,665:57:0
81	96	147	05:12:30.733	488AL6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4R3	4	0	3,451,960:29:0
82	96	147	06:59:34.733	488AL6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4R3	4	0	3,452,066:19:0
83	96	147	18:21:50.666	432BJ6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4R3	4	0	3,452,740:89:0
84	96	147	21:57:34.666	488AM6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4R3	4	0	3,452,954:31:0
85	96	148	00:07:39.333	432AK431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4R3	4	0	3,453,082:90:0
86	96	148	00:07:40.000	432AK6A	6RTSL1		R/T Select of DDS and	4R3	4	0	3,453,083:00:0
87	96	148	00:07:40.000	432AK6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4R3	4	0	3,453,083:00:0
88	96	148	00:14:38.666	488AM6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4R3	4	0	3,453,089:82:0
89	96	148	03:45:02.000	432BK6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4R3	4	0	3,453,297:89:0
90	96	148	04:57:36.666	488AN6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4R3	4	0	3,453,369:69:0
91	96	148	06:37:56.666	432AL431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4R3	4	0	3,453,468:90:0
92	96	148	06:37:57.333	432AL6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4R3	4	0	3,453,469:00:0
93	96	148	06:37:57.333	432AL6A	6RTSL1		R/T Select of DDS and	4R3	4	0	3,453,469:00:0
94	96	148	06:44:40.666	488AN6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4R3	4	0	3,453,475:59:0
95	96	148	15:59:02.666	127DM	NIMSTAB	GS	%%%%% GROUP START TAB	4R3	4	0	3,454,023:84:0
96	96	148	15:59:02.666	127DM4A	37IOP	3,0	Long Map, Grating Start Position =0	4R3	4	0	3,454,023:84:0
97	96	148	15:59:03.333	127DM4B	37ETB	07,C7,31,80,00,0	Loads wavelength edit table	4R3	4	0	3,454,023:85:0
98	96	148	15:59:26.666	127DM11A	NIMSTAB	GE	%%%%% GROUP END TAB	4R3	4	0	3,454,024:29:0
99	96	148	16:01:04.000	125DL4A	37IST	0,2,1,OFF,1,0,1	OPCAL	4R3	4	0	3,454,025:84:0
100	96	148	16:01:04.000	125DL11A	NIMSINIT	GE	##### GROUP END INIT	4R3	4	0	3,454,025:84:0
101	96	148	16:01:04.000	125DL	NIMSINIT	GS	##### GROUP START INIT	4R3	4	0	3,454,025:84:0
102	96	148	16:01:08.666	432DL6A	6RTSL2	NIMSEL,AACNCG,R1	NIMS R/T SELECT	4R3	4	0	3,454,026:00:0

Strip of sequence iifl2n
prepared by NIMS engineering - A.K.S.

Date 5/12/96

4-04

Line	YR	DOY	Time	PSID	Command	Parameters	Description	GCM	GO	GS	RIM MF
103	96	148	16:03:05.333	125DN4A	371ST	0,2,1,OFF,1,0,1	OPCAL	4R3	4	0	3,454,027:84:0
104	96	148	16:03:05.333	125DN	NIMSINIT	GS	##### GROUP START INIT	4R3	4	0	3,454,027:84:0
105	96	148	16:03:05.333	125DN11A	NIMSINIT	GE	##### GROUP END INIT	4R3	4	0	3,454,027:84:0
106	96	148	16:05:10.000	432DN6A	6RTDS2	NIMDSL,AACNCG,R1	NIMS R/T DESELECT	4R3	4	0	3,454,029:89:0
107	96	148	18:07:30.666	432BL6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4R3	4	0	3,454,150:89:0
108	96	148	21:57:40.666	488AO6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4R3	4	0	3,454,378:56:0
109	96	148	23:52:18.600	432AM431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4R3	4	0	3,454,491:90:0
110	96	148	23:52:19.266	432AM6A	6RTSL1		R/T Select of DDS and	4R3	4	0	3,454,492:00:0
111	96	148	23:52:19.266	432AM6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4R3	4	0	3,454,492:00:0
112	96	148	23:59:44.600	488AO6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4R3	4	0	3,454,499:31:0
113	96	149	03:40:48.600	432BM6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4R3	4	0	3,454,717:89:0
114	96	149	04:57:42.600	488AP6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4R3	4	0	3,454,794:03:0
115	96	149	06:37:45.933	432AN431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4R3	4	0	3,454,892:90:0
116	96	149	06:37:46.600	432AN6A	6RTSL1		R/T Select of DDS and	4R3	4	0	3,454,893:00:0
117	96	149	06:37:46.600	432AN6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4R3	4	0	3,454,893:00:0
118	96	149	06:44:46.600	488AP6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4R3	4	0	3,454,899:84:0
119	96	149	09:57:43.266	488AP6C	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4R3	4	0	3,455,090:68:0
120	96	149	10:44:47.266	488AP6D	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4R3	4	0	3,455,137:27:0
121	96	149	18:33:37.266	432BO6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4R3	4	0	3,455,600:89:0
122	96	149	21:12:46.600	488AQ6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4R3	4	0	3,455,758:35:0
123	96	149	23:53:08.600	432AP431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4R3	4	0	3,455,916:90:0
124	96	149	23:53:09.266	432AP6A	6RTSL1		R/T Select of DDS and	4R3	4	0	3,455,917:00:0
125	96	149	23:53:09.266	432AP6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4R3	4	0	3,455,917:00:0
126	96	149	23:59:50.600	488AQ6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4R3	4	0	3,455,923:56:0
127	96	150	03:41:38.600	432BP6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4R3	4	0	3,456,142:89:0
128	96	150	04:57:47.200	488AR6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4R3	4	0	3,456,218:26:0
129	96	150	06:22:25.200	432AQ431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4R3	4	0	3,456,301:90:0
130	96	150	06:22:25.866	432AQ6A	6RTSL1		R/T Select of DDS and	4R3	4	0	3,456,302:00:0
131	96	150	06:22:25.866	432AQ6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4R3	4	0	3,456,302:00:0
132	96	150	06:29:52.533	488AR6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4R3	4	0	3,456,309:33:0
133	96	150	11:41:57.200	488AS6A	6TMSED	NORM,AH5	Sci, Eng, and D/L Chan	4R3	4	0	3,456,618:01:0
134	96	150	15:00:02.533	127DL4A	37IOP	3,0	Long Map, Grating Start Position =0	4R3	4	0	3,456,813:84:0
135	96	150	15:00:02.533	127DL	NIMSTAB	GS	%%%%% GROUP START TAB	4R3	4	0	3,456,813:84:0
136	96	150	15:00:03.200	127DL4B	37ETB	07,C7,31,80,00,0	Loads wavelength edit table	4R3	4	0	3,456,813:85:0
137	96	150	15:00:26.533	127DL11A	NIMSTAB	GE	%%%%% GROUP END TAB	4R3	4	0	3,456,814:29:0
138	96	150	15:02:03.866	125DM4A	37IST	0,2,1,OFF,1,0,1	OPCAL	4R3	4	0	3,456,815:84:0
139	96	150	15:02:03.866	125DM	NIMSINIT	GS	##### GROUP START INIT	4R3	4	0	3,456,815:84:0
140	96	150	15:02:03.866	125DM11A	NIMSINIT	GE	##### GROUP END INIT	4R3	4	0	3,456,815:84:0
141	96	150	15:02:08.533	432DM6A	6RTSL2	NIMSEL,AACNCG,R1	NIMS R/T SELECT	4R3	4	0	3,456,816:00:0
142	96	150	15:04:05.200	125DO	NIMSINIT	GS	##### GROUP START INIT	4R3	4	0	3,456,817:84:0
143	96	150	15:04:05.200	125DO11A	NIMSINIT	GE	##### GROUP END INIT	4R3	4	0	3,456,817:84:0
144	96	150	15:04:05.200	125DO4A	37IST	0,2,1,OFF,1,0,1	OPCAL	4R3	4	0	3,456,817:84:0
145	96	150	15:05:05.866	125DH4A	37MB	0,0,0,0,0,0	Selects mirror (spatial) edit table	4R3	4	0	3,456,818:84:0
146	96	150	15:05:05.866	125DH	NIMSINIT	GS	##### GROUP START INIT	4R3	4	0	3,456,818:84:0
147	96	150	15:06:06.533	125DH4B	37IST	1,0,0,OFF,0,0,0	Chopper ON, Sync, 63Hz (Ref)	463	4	0	3,456,819:84:0
148	96	150	15:06:09.866	432DO6A	6RTDS2	NIMSEL,AACNCG,R1	NIMS R/T DESELECT	463	4	0	3,456,819:89:0
149	96	150	15:07:07.200	125DH4C	37IST	1,1,0,OFF,0,0,0	Chopper OFF, N/A, 63Hz (Ref)	4O3	4	0	3,456,820:84:0
150	96	150	15:08:07.866	125DH4D	37IOP	0,0	Safe, Grating Start Position =0	4O0	4	0	3,456,821:84:0
151	96	150	15:08:07.866	125DH11A	NIMSINIT	GE	##### GROUP END INIT	4O0	4	0	3,456,821:84:0
152	96	150	15:48:03.866	31DF3A	40T1PR		1 PCT Heater 1 OFF (primary relay)	4O0	4	0	3,456,861:38:0
153	96	150	15:49:04.533	31DF3B	40T1PR		2 PCT Heater 1 OFF (primary relay)	4O0	4	0	3,456,862:38:0
154	96	150	15:50:05.200	31DF3C	40T2R		1 PCT Heater 2 OFF	4O0	4	0	3,456,863:38:0
155	96	150	15:51:05.866	31DF3D	40T2R		2 PCT Heater 2 OFF	4O0	4	0	3,456,864:38:0

Strip of sequence iifl2n
prepared by NIMS engineering - A.K.S.

Date 5/12/96

Line	YR	DOY	Time	PSID	Command	Parameters	Description	GCM	GO	GS	RIM	MF
156	96	150	15:52:06.533	31DF3E	37F2P		1 Shield Flash Heater ON (primary relay)	4OO	4	0	3,456,865:38:0	0
157	96	150	15:53:07.200	31DF3F	37F2P		2 Shield Flash Heater ON (primary relay)	4OO	4	0	3,456,866:38:0	0
158	96	150	17:56:01.866	432BR6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4OO	4	0	3,456,987:89:0	0
159	96	150	21:07:17.200	488AT6A	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4OO	4	0	3,457,177:12:0	0
160	96	150	21:47:51.200	488AT6B	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4OO	4	0	3,457,217:23:0	0
161	96	150	23:37:47.866	432AS431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4OO	4	0	3,457,325:90:0	0
162	96	150	23:37:48.533	432AS6A	6RTSL1		R/T Select of DDS and	4OO	4	0	3,457,326:00:0	0
163	96	150	23:37:48.533	432AS6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4OO	4	0	3,457,326:00:0	0
164	96	150	23:44:56.533	488AT6C	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4OO	4	0	3,457,333:05:0	0
165	96	151	03:37:25.200	432BS6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4OO	4	0	3,457,562:89:0	0
166	96	151	04:57:53.200	488AU6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4OO	4	0	3,457,642:51:0	0
167	96	151	06:23:15.200	432AT431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4OO	4	0	3,457,726:90:0	0
168	96	151	06:23:15.866	432AT6A	6RTSL1		R/T Select of DDS and	4OO	4	0	3,457,727:00:0	0
169	96	151	06:23:15.866	432AT6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4OO	4	0	3,457,727:00:0	0
170	96	151	06:29:57.866	488AU6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4OO	4	0	3,457,733:57:0	0
171	96	151	08:56:55.866	432BT6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4OO	4	0	3,457,878:89:0	0
172	96	151	09:47:54.466	488AU6C	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4OO	4	0	3,457,929:36:0	0
173	96	151	10:22:53.133	432AU431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4OO	4	0	3,457,963:90:0	0
174	96	151	10:22:53.800	432AU6A	6RTSL1		R/T Select of DDS and	4OO	4	0	3,457,964:00:0	0
175	96	151	10:22:53.800	432AU6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4OO	4	0	3,457,964:00:0	0
176	96	151	10:29:58.466	488AU6D	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4OO	4	0	3,457,971:00:0	0
177	96	151	18:52:28.466	432BU6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4OO	4	0	3,458,467:89:0	0
178	96	151	21:42:57.800	488AV6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4OO	4	0	3,458,636:54:0	0
179	96	151	23:37:37.133	432AV431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4OO	4	0	3,458,749:90:0	0
180	96	151	23:37:37.800	432AV6A	6RTSL1		R/T Select of DDS and	4OO	4	0	3,458,750:00:0	0
181	96	151	23:37:37.800	432AV6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4OO	4	0	3,458,750:00:0	0
182	96	151	23:45:01.800	488AV6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4OO	4	0	3,458,757:29:0	0
183	96	152	03:38:15.133	432BV6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4OO	4	0	3,458,987:89:0	0
184	96	152	04:57:59.800	488AW6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4OO	4	0	3,459,066:77:0	0
185	96	152	06:23:04.466	432AW431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4OO	4	0	3,459,150:90:0	0
186	96	152	06:23:05.133	432AW6A	6RTSL1		R/T Select of DDS and	4OO	4	0	3,459,151:00:0	0
187	96	152	06:23:05.133	432AW6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4OO	4	0	3,459,151:00:0	0
188	96	152	06:30:03.800	488AW6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4OO	4	0	3,459,157:82:0	0
189	96	152	08:52:42.466	432BW6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4OO	4	0	3,459,298:89:0	0
190	96	152	09:43:00.466	488AW6C	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4OO	4	0	3,459,348:66:0	0
191	96	152	10:22:42.466	432AX431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4OO	4	0	3,459,387:90:0	0
192	96	152	10:22:43.133	432AX6A	6RTSL1		R/T Select of DDS and	4OO	4	0	3,459,388:00:0	0
193	96	152	10:22:43.133	432AX6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4OO	4	0	3,459,388:00:0	0
194	96	152	10:30:04.466	488AW6D	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4OO	4	0	3,459,395:25:0	0
195	96	152	18:53:18.400	432BX6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4OO	4	0	3,459,892:89:0	0
196	96	152	21:43:03.733	488AX6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4OO	4	0	3,460,060:79:0	0
197	96	152	23:23:17.066	432AY431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4OO	4	0	3,460,159:90:0	0
198	96	152	23:23:17.733	432AY6A	6RTSL1		R/T Select of DDS and	4OO	4	0	3,460,160:00:0	0
199	96	152	23:23:17.733	432AY6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4OO	4	0	3,460,160:00:0	0
200	96	152	23:30:07.733	488AX6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4OO	4	0	3,460,166:69:0	0
201	96	153	03:34:01.733	432BY6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4OO	4	0	3,460,407:89:0	0
202	96	153	04:58:04.400	488AX6A	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4OO	4	0	3,460,491:09:0	0
203	96	153	06:07:43.733	432AZ431A6A	6RCDSL	DDSDSL,PLSDSL,EP	Record Deselect (DDS o	4OO	4	0	3,460,559:90:0	0
204	96	153	06:07:44.400	432AZ6A	6RTSL1		R/T Select of DDS and	4OO	4	0	3,460,560:00:0	0
205	96	153	06:07:44.400	432AZ6B	6RTSL2	NIMNCG,AACSEL,RT	AACS SELECT	4OO	4	0	3,460,560:00:0	0
206	96	153	06:15:09.733	488AY6B	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4OO	4	0	3,460,567:31:0	0
207	96	153	10:29:35.733	432MH6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4OO	4	0	3,460,818:89:0	0
208	96	153	10:55:01.066	488AY6C	6TMSED	NORM,AH5	Sci, Eng, and D/L Chan	4OO	4	0	3,460,844:11:0	0

Strip of sequence iifl2n
prepared by NIMS engineering - A.K.S.

Date 5/12/96

Line	YR	DOY	Time	PSID	Command	Parameters	Description	GCM	GO	GS	RIM	MF
209	96	153	19:04:15.000	432BZ6B	6RTDS2	NIMNCG,AACDSL,RT	AACS DESELECT	4OO	4	0	3,461,327:89:0	
210	96	153	21:07:17.000	488AZ6A	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4OO	4	0	3,461,449:60:0	
211	96	153	21:38:08.333	488AZ6B	6TMSED	FILL,AL3	Sci, Eng, and D/L Chan	4OO	4	0	3,461,480:16:0	
212	96	153	23:30:13.000	488AZ6C	6TMSED	NORM,AH3	Sci, Eng, and D/L Chan	4OO	4	0	3,461,591:02:0	
213	96	153	23:35:00.000	20A3FC	40CPR	Final conditions		4OO	4	0	3,461,595:68:5	
214	96	153	23:35:00.000	20A3EW	37A	Final conditions	NIMS Power ON	260	4	0	3,461,595:68:5	
215	96	153	23:35:00.000	20A3EX	37HR	Final conditions	Replacement Heaters OFF	260	4	0	3,461,595:68:5	
216	96	153	23:35:00.000	20A3EY	37C1PR	Final conditions	Optics Heater 1 OFF (primary relay)	260	4	0	3,461,595:68:5	
217	96	153	23:35:00.000	20A3EZ	37C2PR	Final conditions	Optics Heater 2 OFF (primary relay)	260	4	0	3,461,595:68:5	
218	96	153	23:35:00.000	20A3FA	37F1PR	Final conditions	Radiator Flash Heater OFF (primary relay)	260	4	0	3,461,595:68:5	
219	96	153	23:35:00.000	20A3FF	40T2R	Final conditions	PCT Heater 2 OFF	260	4	0	3,461,595:68:5	
220	96	153	23:35:00.000	20A3FE	40T1PR	Final conditions	PCT Heater 1 OFF (primary relay)	260	4	0	3,461,595:68:5	
221	96	153	23:35:00.000	20A3FB	37F2P	Final conditions	Shield Flash Heater ON (primary relay)	260	4	0	3,461,595:68:5	
222	96	153	23:35:00.333		DMS:	: READY	RDY, TRACK 1, FWD, TIC 201.00 +/-	260	4	0	3,461,595:69:0	

Strip of sequence iifl2n
prepared by NIMS engineering - A.K.S.

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IFLNIMSOCAL1

```
OAPEL:   IFLNIMSOCAL1              ALIAS:   IFLNIMSOCAL1
EXT:     R                        PSID:    DE
SCLK1:   03449819:00:0            SCLK2:   03449819:90:0
SCET1:   1996-145/17:07:24.133    SCET2:   1996-145/17:08:24.133
TARGET: CAL                       PARTITION: 1


MODE:    3                        GAIN:       4
CHOP:    1                        GRAT_OFF:   4
PTAB_A:  1 1 0 0 124              PTAB_B:     1 1 0 0 124
ECAL:    0                        OPCAL:      0
R/T:     1                        RECORD:     0


MB_DOWN:  11011                   MB_UP:      11011
COMP_FLAG: 0
EST_COMP:  0.0                    EST_COMPV: 0.0
RATE_CON1: 00000                  RATE_CON2: 00000
NWAVETOT:  002                    TLMFMT:     RT


THRESHOLD_SEL: 0
THRESHOLD_VALUES:  000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000


WETGID:    0302048000          03   02   048   000
WTGRP_SIZ:  2
```

EDIT TABLE

GRATING STEP	HEX MASK	DETECTOR MASK
0	18000	1,1000,0000,0000,0000
1	18000	1,1000,0000,0000,0000
2	18000	1,1000,0000,0000,0000
3	18000	1,1000,0000,0000,0000
4	18000	1,1000,0000,0000,0000
5	18000	1,1000,0000,0000,0000
6	18000	1,1000,0000,0000,0000
7	18000	1,1000,0000,0000,0000
8	18000	1,1000,0000,0000,0000
9	18000	1,1000,0000,0000,0000
10	18000	1,1000,0000,0000,0000
11	18000	1,1000,0000,0000,0000
12	18000	1,1000,0000,0000,0000
13	18000	1,1000,0000,0000,0000
14	18000	1,1000,0000,0000,0000
15	18000	1,1000,0000,0000,0000
16	18000	1,1000,0000,0000,0000
17	18000	1,1000,0000,0000,0000
18	18000	1,1000,0000,0000,0000
19	18000	1,1000,0000,0000,0000
20	18000	1,1000,0000,0000,0000
21	18000	1,1000,0000,0000,0000
22	18000	1,1000,0000,0000,0000
23	18000	1,1000,0000,0000,0000
24	00000	0,0000,0000,0000,0000
25	00000	0,0000,0000,0000,0000

IFLNIMSOCAL1

OAPEL: IFLNIMSOCAL1   ALIAS: IFLNIMSOCAL1
EXT: S   PSID: DE
SCLK1: 03449820:00:0   SCLK2: 03449820:90:0
SCET1: 1996-145/17:08:24.800   SCET2: 1996-145/17:09:24.800
TARGET: CAL   PARTITION: 1

MODE: 3   GAIN: 4
CHOP: 1   GRAT_OFF: 4
PTAB_A: 1 1 0 0 124   PTAB_B: 1 1 0 0 124
ECAL: 0   OPCAL: 1
R/T: 1   RECORD: 0

MB_DOWN: 11011   MB_UP: 11011
COMP_FLAG: 0
EST_COMP: 0.0   EST_COMPV: 0.0
RATE_CON1: 00000   RATE_CON2: 00000
NWAVETOT: 002   TLMFMT: RT

THRESHOLD_SEL: 0
THRESHOLD_VALUES: 000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000

WETGID: 0302048000   03 02 048 000
WTGRP_SIZ: 2

EDIT TABLE

GRATING STEP	HEX MASK	DETECTOR MASK
0	18000	1,1000,0000,0000,0000
1	18000	1,1000,0000,0000,0000
2	18000	1,1000,0000,0000,0000
3	18000	1,1000,0000,0000,0000
4	18000	1,1000,0000,0000,0000
5	18000	1,1000,0000,0000,0000
6	18000	1,1000,0000,0000,0000
7	18000	1,1000,0000,0000,0000
8	18000	1,1000,0000,0000,0000
9	18000	1,1000,0000,0000,0000
10	18000	1,1000,0000,0000,0000
11	18000	1,1000,0000,0000,0000
12	18000	1,1000,0000,0000,0000
13	18000	1,1000,0000,0000,0000
14	18000	1,1000,0000,0000,0000
15	18000	1,1000,0000,0000,0000
16	18000	1,1000,0000,0000,0000
17	18000	1,1000,0000,0000,0000
18	18000	1,1000,0000,0000,0000
19	18000	1,1000,0000,0000,0000
20	18000	1,1000,0000,0000,0000
21	18000	1,1000,0000,0000,0000
22	18000	1,1000,0000,0000,0000
23	18000	1,1000,0000,0000,0000
24	00000	0,0000,0000,0000,0000
25	00000	0,0000,0000,0000,0000

IFLNIMSOCAL1

OAPEL: IFLNIMSOCAL1   ALIAS: IFLNIMSOCAL1
EXT: T   PSID: DE
SCLK1:   03449821:00:0   SCLK2:   03449821:90:0
SCET1:   1996-145/17:09:25.466   SCET2:   1996-145/17:10:25.466
TARGET: CAL   PARTITION: 1

MODE: 3   GAIN: 4
CHOP: 1   GRAT_OFF: 4
PTAB_A: 1 1 0 0 124   PTAB_B: 1 1 0 0 124
ECAL: 0   OPCAL: 0
R/T: 1   RECORD: 0

MB_DOWN: 11011   MB_UP: 11011
COMP_FLAG: 0
EST_COMP: 0.0   EST_COMPV: 0.0
RATE_CON1: 00000   RATE_CON2: 00000
NWAVETOT: 002   TLMFMT: RT

THRESHOLD_SEL: 0
THRESHOLD_VALUES: 000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000

WETGID: 0302048000   03   02   048   000
WTGRP_SIZ: 2

EDIT TABLE

GRATING STEP	HEX MASK	DETECTOR MASK
0	18000	1,1000,0000,0000,0000
1	18000	1,1000,0000,0000,0000
2	18000	1,1000,0000,0000,0000
3	18000	1,1000,0000,0000,0000
4	18000	1,1000,0000,0000,0000
5	18000	1,1000,0000,0000,0000
6	18000	1,1000,0000,0000,0000
7	18000	1,1000,0000,0000,0000
8	18000	1,1000,0000,0000,0000
9	18000	1,1000,0000,0000,0000
10	18000	1,1000,0000,0000,0000
11	18000	1,1000,0000,0000,0000
12	18000	1,1000,0000,0000,0000
13	18000	1,1000,0000,0000,0000
14	18000	1,1000,0000,0000,0000
15	18000	1,1000,0000,0000,0000
16	18000	1,1000,0000,0000,0000
17	18000	1,1000,0000,0000,0000
18	18000	1,1000,0000,0000,0000
19	18000	1,1000,0000,0000,0000
20	18000	1,1000,0000,0000,0000
21	18000	1,1000,0000,0000,0000
22	18000	1,1000,0000,0000,0000
23	18000	1,1000,0000,0000,0000
24	00000	0,0000,0000,0000,0000
25	00000	0,0000,0000,0000,0000

IFLNIMSOCAL1

```
OAPEL:   IFLNIMSOCAL1              ALIAS:   IFLNIMSOCAL1
EXT:     U                        PSID:    DE
SCLK1:   03449822:00:0            SCLK2:   03449822:89:0
SCET1:   1996-145/17:10:26.133    SCET2:   1996-145/17:11:25.466
TARGET: CAL                       PARTITION: 1

MODE:      3                      GAIN:       4
CHOP:      1                      GRAT_OFF:   4
PTAB_A:    1 1 0 0 124            PTAB_B:     1 1 0 0 124
ECAL:      0                      OPCAL:      1
R/T:       1                      RECORD:     0

MB_DOWN:   11011                  MB_UP:      11011
COMP_FLAG: 0
EST_COMP:  0.0                    EST_COMPV: 0.0
RATE_CON1: 00000                  RATE_CON2: 00000
NWAVETOT:  002                    TLMFMT:     RT

THRESHOLD_SEL: 0
THRESHOLD_VALUES:  000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000

WETGID:    0302048000        03   02   048   000
WTGRP_SIZ: 2
```

EDIT TABLE

GRATING STEP	HEX MASK	DETECTOR MASK
0	18000	1,1000,0000,0000,0000
1	18000	1,1000,0000,0000,0000
2	18000	1,1000,0000,0000,0000
3	18000	1,1000,0000,0000,0000
4	18000	1,1000,0000,0000,0000
5	18000	1,1000,0000,0000,0000
6	18000	1,1000,0000,0000,0000
7	18000	1,1000,0000,0000,0000
8	18000	1,1000,0000,0000,0000
9	18000	1,1000,0000,0000,0000
10	18000	1,1000,0000,0000,0000
11	18000	1,1000,0000,0000,0000
12	18000	1,1000,0000,0000,0000
13	18000	1,1000,0000,0000,0000
14	18000	1,1000,0000,0000,0000
15	18000	1,1000,0000,0000,0000
16	18000	1,1000,0000,0000,0000
17	18000	1,1000,0000,0000,0000
18	18000	1,1000,0000,0000,0000
19	18000	1,1000,0000,0000,0000
20	18000	1,1000,0000,0000,0000
21	18000	1,1000,0000,0000,0000
22	18000	1,1000,0000,0000,0000
23	18000	1,1000,0000,0000,0000
24	00000	0,0000,0000,0000,0000
25	00000	0,0000,0000,0000,0000

IFLNIMSOCAL2

```
OAPEL:  IFLNIMSOCAL2              ALIAS:  IFLNIMSOCAL2
EXT:    R                        PSID:   DE
SCLK1:  03454026:00:0            SCLK2:  03454026:90:0
SCET1:  1996-148/16:01:08.666    SCET2:  1996-148/16:02:08.666
TARGET: CAL                      PARTITION: 1

MODE:     3                      GAIN:      4
CHOP:     1                      GRAT_OFF:  4
PTAB_A:   1 1 0 0 124            PTAB_B:    1 1 0 0 124
ECAL:     0                      OPCAL:     1
R/T:      1                      RECORD:    0

MB_DOWN:  11011                  MB_UP:     11011
COMP_FLAG: 0
EST_COMP:  0.0                   EST_COMPV: 0.0
RATE_CON1: 00000                 RATE_CON2: 00000
NWAVETOT:  002                   TLMFMT:    RT

THRESHOLD_SEL: 0
THRESHOLD_VALUES:  000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000

WETGID:   0302048000        03  02  048  000
WTGRP_SIZ: 2
```

EDIT TABLE

GRATING STEP	HEX MASK	DETECTOR MASK
0	18000	1,1000,0000,0000,0000
1	18000	1,1000,0000,0000,0000
2	18000	1,1000,0000,0000,0000
3	18000	1,1000,0000,0000,0000
4	18000	1,1000,0000,0000,0000
5	18000	1,1000,0000,0000,0000
6	18000	1,1000,0000,0000,0000
7	18000	1,1000,0000,0000,0000
8	18000	1,1000,0000,0000,0000
9	18000	1,1000,0000,0000,0000
10	18000	1,1000,0000,0000,0000
11	18000	1,1000,0000,0000,0000
12	18000	1,1000,0000,0000,0000
13	18000	1,1000,0000,0000,0000
14	18000	1,1000,0000,0000,0000
15	18000	1,1000,0000,0000,0000
16	18000	1,1000,0000,0000,0000
17	18000	1,1000,0000,0000,0000
18	18000	1,1000,0000,0000,0000
19	18000	1,1000,0000,0000,0000
20	18000	1,1000,0000,0000,0000
21	18000	1,1000,0000,0000,0000
22	18000	1,1000,0000,0000,0000
23	18000	1,1000,0000,0000,0000
24	00000	0,0000,0000,0000,0000
25	00000	0,0000,0000,0000,0000

IFLNIMSOCAL2

```
OAPEL:  IFLNIMSOCAL2                ALIAS:   IFLNIMSOCAL2
EXT:    S                           PSID:    DE
SCLK1:  03454027:00:0               SCLK2:   03454027:90:0
SCET1:  1996-148/16:02:09.333       SCET2:   1996-148/16:03:09.333
TARGET: CAL                         PARTITION: 1

MODE:       3                       GAIN:       4
CHOP:       1                       GRAT_OFF:   4
PTAB_A:     1 1 0 0 124             PTAB_B:     1 1 0 0 124
ECAL:       0                       OPCAL:      0
R/T:        1                       RECORD:     0

MB_DOWN:    11011                   MB_UP:      11011
COMP_FLAG: 0
EST_COMP:  0.0                      EST_COMPV: 0.0
RATE_CON1: 00000                    RATE_CON2: 00000
NWAVETOT:  002                      TLMFMT:     RT

THRESHOLD_SEL: 0
THRESHOLD_VALUES:  000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000

WETGID:    0302048000           03   02   048   000
WTGRP_SIZ:  2
```

EDIT TABLE

GRATING STEP	HEX MASK	DETECTOR MASK
0	18000	1,1000,0000,0000,0000
1	18000	1,1000,0000,0000,0000
2	18000	1,1000,0000,0000,0000
3	18000	1,1000,0000,0000,0000
4	18000	1,1000,0000,0000,0000
5	18000	1,1000,0000,0000,0000
6	18000	1,1000,0000,0000,0000
7	18000	1,1000,0000,0000,0000
8	18000	1,1000,0000,0000,0000
9	18000	1,1000,0000,0000,0000
10	18000	1,1000,0000,0000,0000
11	18000	1,1000,0000,0000,0000
12	18000	1,1000,0000,0000,0000
13	18000	1,1000,0000,0000,0000
14	18000	1,1000,0000,0000,0000
15	18000	1,1000,0000,0000,0000
16	18000	1,1000,0000,0000,0000
17	18000	1,1000,0000,0000,0000
18	18000	1,1000,0000,0000,0000
19	18000	1,1000,0000,0000,0000
20	18000	1,1000,0000,0000,0000
21	18000	1,1000,0000,0000,0000
22	18000	1,1000,0000,0000,0000
23	18000	1,1000,0000,0000,0000
24	00000	0,0000,0000,0000,0000
25	00000	0,0000,0000,0000,0000

IFLNIMSOCAL2

OAPEL: IFLNIMSOCAL2   ALIAS: IFLNIMSOCAL2
EXT: T   PSID: DE
SCLK1: 03454028:00:0   SCLK2:   03454028:90:0
SCET1: 1996-148/16:03:10.000   SCET2:   1996-148/16:04:10.000
TARGET: CAL   PARTITION: 1

MODE: 3   GAIN: 4
CHOP: 1   GRAT_OFF: 4
PTAB_A: 1 1 0 0 124   PTAB_B: 1 1 0 0 124
ECAL: 0   OPCAL: 1
R/T: 1   RECORD: 0

MB_DOWN: 11011   MB_UP: 11011
COMP_FLAG: 0
EST_COMP: 0.0   EST_COMPV: 0.0
RATE_CON1: 00000   RATE_CON2: 00000
NWAVETOT: 002   TLMFMT: RT

THRESHOLD_SEL: 0
THRESHOLD_VALUES: 000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000

WETGID: 0302048000   03 02 048 000
WTGRP_SIZ: 2

                         EDIT TABLE

      GRATING STEP   HEX MASK   DETECTOR MASK

           0   18000   1,1000,0000,0000,0000
           1   18000   1,1000,0000,0000,0000
           2   18000   1,1000,0000,0000,0000
           3   18000   1,1000,0000,0000,0000
           4   18000   1,1000,0000,0000,0000
           5   18000   1,1000,0000,0000,0000
           6   18000   1,1000,0000,0000,0000
           7   18000   1,1000,0000,0000,0000
           8   18000   1,1000,0000,0000,0000
           9   18000   1,1000,0000,0000,0000
          10   18000   1,1000,0000,0000,0000
          11   18000   1,1000,0000,0000,0000
          12   18000   1,1000,0000,0000,0000
          13   18000   1,1000,0000,0000,0000
          14   18000   1,1000,0000,0000,0000
          15   18000   1,1000,0000,0000,0000
          16   18000   1,1000,0000,0000,0000
          17   18000   1,1000,0000,0000,0000
          18   18000   1,1000,0000,0000,0000
          19   18000   1,1000,0000,0000,0000
          20   18000   1,1000,0000,0000,0000
          21   18000   1,1000,0000,0000,0000
          22   18000   1,1000,0000,0000,0000
          23   18000   1,1000,0000,0000,0000
          24   00000   0,0000,0000,0000,0000
          25   00000   0,0000,0000,0000,0000

IFLNIMSOCAL2

```
OAPEL:   IFLNIMSOCAL2            ALIAS:   IFLNIMSOCAL2
EXT:     U                       PSID:    DE
SCLK1:   03454029:00:0           SCLK2:   03454029:89:0
SCET1:   1996-148/16:04:10.666   SCET2:   1996-148/16:05:10.000
TARGET: CAL                      PARTITION: 1

MODE:    3                       GAIN:     4
CHOP:    1                       GRAT_OFF: 4
PTAB_A:  1 1 0 0 124             PTAB_B:   1 1 0 0 124
ECAL:    0                       OPCAL:    0
R/T:     1                       RECORD:   0

MB_DOWN:  11011                  MB_UP:     11011
COMP_FLAG: 0
EST_COMP:  0.0                   EST_COMPV: 0.0
RATE_CON1: 00000                 RATE_CON2: 00000
NWAVETOT:  002                   TLMFMT:    RT

THRESHOLD_SEL: 0
THRESHOLD_VALUES:  000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000

WETGID:   0302048000          03  02  048  000
WTGRP_SIZ:  2
```

EDIT TABLE

GRATING STEP	HEX MASK	DETECTOR MASK
0	18000	1,1000,0000,0000,0000
1	18000	1,1000,0000,0000,0000
2	18000	1,1000,0000,0000,0000
3	18000	1,1000,0000,0000,0000
4	18000	1,1000,0000,0000,0000
5	18000	1,1000,0000,0000,0000
6	18000	1,1000,0000,0000,0000
7	18000	1,1000,0000,0000,0000
8	18000	1,1000,0000,0000,0000
9	18000	1,1000,0000,0000,0000
10	18000	1,1000,0000,0000,0000
11	18000	1,1000,0000,0000,0000
12	18000	1,1000,0000,0000,0000
13	18000	1,1000,0000,0000,0000
14	18000	1,1000,0000,0000,0000
15	18000	1,1000,0000,0000,0000
16	18000	1,1000,0000,0000,0000
17	18000	1,1000,0000,0000,0000
18	18000	1,1000,0000,0000,0000
19	18000	1,1000,0000,0000,0000
20	18000	1,1000,0000,0000,0000
21	18000	1,1000,0000,0000,0000
22	18000	1,1000,0000,0000,0000
23	18000	1,1000,0000,0000,0000
24	00000	0,0000,0000,0000,0000
25	00000	0,0000,0000,0000,0000

IFLNIMSOCAL3

```
OAPEL:  IFLNIMSOCAL3              ALIAS:   IFLNIMSOCAL3
EXT:    R                         PSID:    DE
SCLK1:  03456816:00:0             SCLK2:   03456816:90:0
SCET1:  1996-150/15:02:08.533     SCET2:   1996-150/15:03:08.533
TARGET: CAL                       PARTITION: 1

MODE:      3                      GAIN:       4
CHOP:      1                      GRAT_OFF:   4
PTAB_A:    1 1 0 0 124            PTAB_B:     1 1 0 0 124
ECAL:      0                      OPCAL:      1
R/T:       1                      RECORD:     0

MB_DOWN:   11011                  MB_UP:      11011
COMP_FLAG: 0
EST_COMP:  0.0                    EST_COMPV: 0.0
RATE_CON1: 00000                  RATE_CON2: 00000
NWAVETOT:  002                    TLMFMT:     RT

THRESHOLD_SEL: 0
THRESHOLD_VALUES:  000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000

WETGID:    0302048000          03  02  048  000
WTGRP_SIZ: 2
```

EDIT TABLE

GRATING STEP	HEX MASK	DETECTOR MASK
0	18000	1,1000,0000,0000,0000
1	18000	1,1000,0000,0000,0000
2	18000	1,1000,0000,0000,0000
3	18000	1,1000,0000,0000,0000
4	18000	1,1000,0000,0000,0000
5	18000	1,1000,0000,0000,0000
6	18000	1,1000,0000,0000,0000
7	18000	1,1000,0000,0000,0000
8	18000	1,1000,0000,0000,0000
9	18000	1,1000,0000,0000,0000
10	18000	1,1000,0000,0000,0000
11	18000	1,1000,0000,0000,0000
12	18000	1,1000,0000,0000,0000
13	18000	1,1000,0000,0000,0000
14	18000	1,1000,0000,0000,0000
15	18000	1,1000,0000,0000,0000
16	18000	1,1000,0000,0000,0000
17	18000	1,1000,0000,0000,0000
18	18000	1,1000,0000,0000,0000
19	18000	1,1000,0000,0000,0000
20	18000	1,1000,0000,0000,0000
21	18000	1,1000,0000,0000,0000
22	18000	1,1000,0000,0000,0000
23	18000	1,1000,0000,0000,0000
24	00000	0,0000,0000,0000,0000
25	00000	0,0000,0000,0000,0000

IFLNIMSOCAL3

```
OAPEL:   IFLNIMSOCAL3            ALIAS:   IFLNIMSOCAL3
EXT:     S                       PSID:    DE
SCLK1:   03456817:00:0           SCLK2:   03456817:90:0
SCET1:   1996-150/15:03:09.200   SCET2:   1996-150/15:04:09.200
TARGET: CAL                      PARTITION: 1

MODE:     3                      GAIN:      4
CHOP:     1                      GRAT_OFF:  4
PTAB_A:   1 1 0 0 124            PTAB_B:    1 1 0 0 124
ECAL:     0                      OPCAL:     0
R/T:      1                      RECORD:    0

MB_DOWN:  11011                  MB_UP:     11011
COMP_FLAG: 0
EST_COMP: 0.0                    EST_COMPV: 0.0
RATE_CON1: 00000                 RATE_CON2: 00000
NWAVETOT: 002                    TLMFMT:    RT

THRESHOLD_SEL: 0
THRESHOLD_VALUES:  000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000

WETGID:   0302048000         03   02   048   000
WTGRP_SIZ:  2
```

EDIT TABLE

GRATING STEP	HEX MASK	DETECTOR MASK
0	18000	1,1000,0000,0000,0000
1	18000	1,1000,0000,0000,0000
2	18000	1,1000,0000,0000,0000
3	18000	1,1000,0000,0000,0000
4	18000	1,1000,0000,0000,0000
5	18000	1,1000,0000,0000,0000
6	18000	1,1000,0000,0000,0000
7	18000	1,1000,0000,0000,0000
8	18000	1,1000,0000,0000,0000
9	18000	1,1000,0000,0000,0000
10	18000	1,1000,0000,0000,0000
11	18000	1,1000,0000,0000,0000
12	18000	1,1000,0000,0000,0000
13	18000	1,1000,0000,0000,0000
14	18000	1,1000,0000,0000,0000
15	18000	1,1000,0000,0000,0000
16	18000	1,1000,0000,0000,0000
17	18000	1,1000,0000,0000,0000
18	18000	1,1000,0000,0000,0000
19	18000	1,1000,0000,0000,0000
20	18000	1,1000,0000,0000,0000
21	18000	1,1000,0000,0000,0000
22	18000	1,1000,0000,0000,0000
23	18000	1,1000,0000,0000,0000
24	00000	0,0000,0000,0000,0000
25	00000	0,0000,0000,0000,0000

IFLNIMSOCAL3

```
OAPEL:   IFLNIMSOCAL3              ALIAS:   IFLNIMSOCAL3
EXT:     T                         PSID:    DE
SCLK1:   03456818:00:0             SCLK2:   03456818:90:0
SCET1:   1996-150/15:04:09.866     SCET2:   1996-150/15:05:09.866
TARGET: CAL                        PARTITION: 1


MODE:      3                       GAIN:      4
CHOP:      1                       GRAT_OFF:  4
PTAB_A:    1 1 0 0 124             PTAB_B:    1 1 0 0 124
ECAL:      0                       OPCAL:     1
R/T:       1                       RECORD:    0


MB_DOWN:   11011                   MB_UP:       11011
COMP_FLAG: 0
EST_COMP:  0.0                     EST_COMPV: 0.0
RATE_CON1: 00000                   RATE_CON2: 00000
NWAVETOT:  002                     TLMFMT:     RT


THRESHOLD_SEL: 0
THRESHOLD_VALUES:  000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000


WETGID:    0302048000         03   02   048   000
WTGRP_SIZ:  2
```

EDIT TABLE

GRATING STEP	HEX MASK	DETECTOR MASK
0	18000	1,1000,0000,0000,0000
1	18000	1,1000,0000,0000,0000
2	18000	1,1000,0000,0000,0000
3	18000	1,1000,0000,0000,0000
4	18000	1,1000,0000,0000,0000
5	18000	1,1000,0000,0000,0000
6	18000	1,1000,0000,0000,0000
7	18000	1,1000,0000,0000,0000
8	18000	1,1000,0000,0000,0000
9	18000	1,1000,0000,0000,0000
10	18000	1,1000,0000,0000,0000
11	18000	1,1000,0000,0000,0000
12	18000	1,1000,0000,0000,0000
13	18000	1,1000,0000,0000,0000
14	18000	1,1000,0000,0000,0000
15	18000	1,1000,0000,0000,0000
16	18000	1,1000,0000,0000,0000
17	18000	1,1000,0000,0000,0000
18	18000	1,1000,0000,0000,0000
19	18000	1,1000,0000,0000,0000
20	18000	1,1000,0000,0000,0000
21	18000	1,1000,0000,0000,0000
22	18000	1,1000,0000,0000,0000
23	18000	1,1000,0000,0000,0000
24	00000	0,0000,0000,0000,0000
25	00000	0,0000,0000,0000,0000

IFLNIMSOCAL3

```
OAPEL:  IFLNIMSOCAL3              ALIAS:   IFLNIMSOCAL3
EXT:    U                         PSID:    DE
SCLK1:  03456819:00:0             SCLK2:   03456819:84:0
SCET1:  1996-150/15:05:10.533     SCET2:   1996-150/15:06:06.533
TARGET: CAL                       PARTITION: 1

MODE:      3                      GAIN:      4
CHOP:      1                      GRAT_OFF:  4
PTAB_A:    1 1 0 0 124            PTAB_B:    1 1 0 0 124
ECAL:      0                      OPCAL:     0
R/T:       1                      RECORD:    0

MB_DOWN:   11011                  MB_UP:       11011
COMP_FLAG: 0
EST_COMP:  0.0                    EST_COMPV: 0.0
RATE_CON1: 00000                  RATE_CON2: 00000
NWAVETOT:  002                    TLMFMT:      RT

THRESHOLD_SEL: 0
THRESHOLD_VALUES:  000, 000, 000, 000, 000, 000, 000, 000, 000
                   000, 000, 000, 000, 000, 000, 000, 000

WETGID:    0302048000          03   02   048   000
WTGRP_SIZ: 2
```

EDIT TABLE

GRATING STEP	HEX MASK	DETECTOR MASK
0	18000	1,1000,0000,0000,0000
1	18000	1,1000,0000,0000,0000
2	18000	1,1000,0000,0000,0000
3	18000	1,1000,0000,0000,0000
4	18000	1,1000,0000,0000,0000
5	18000	1,1000,0000,0000,0000
6	18000	1,1000,0000,0000,0000
7	18000	1,1000,0000,0000,0000
8	18000	1,1000,0000,0000,0000
9	18000	1,1000,0000,0000,0000
10	18000	1,1000,0000,0000,0000
11	18000	1,1000,0000,0000,0000
12	18000	1,1000,0000,0000,0000
13	18000	1,1000,0000,0000,0000
14	18000	1,1000,0000,0000,0000
15	18000	1,1000,0000,0000,0000
16	18000	1,1000,0000,0000,0000
17	18000	1,1000,0000,0000,0000
18	18000	1,1000,0000,0000,0000
19	18000	1,1000,0000,0000,0000
20	18000	1,1000,0000,0000,0000
21	18000	1,1000,0000,0000,0000
22	18000	1,1000,0000,0000,0000
23	18000	1,1000,0000,0000,0000
24	00000	0,0000,0000,0000,0000
25	00000	0,0000,0000,0000,0000

This is a time-ordered ASCII TABLE (listing) of GALILEO NIMS observation parameters for use by downlink data processing of the NIMS IFL data. Each Obstab entry is 512 bytes long but is presented here as 4 lines of 128 characters per entry. Included items come from NIMS commands in (1) the Standard Sequence Data File (SSDF) and (2) the Playback Table Update Process (PTUP), plus some items from (3) the NIMS/CDS software load.

Note that SCLK1, SCLK2, SCET1 and SCET2 of non-realtime observations reflect the amount of data actually played back, rather than the amount recorded on tape. Likewise, the wavelength edit table pointers of non-realtime observations point to the playback edit table masks, rather than the ones used during recording.

Some of these items are needed for MIPS realtime processing of NIMS data, others for NIMSMERGE generation of the EDR and still others by NIMS/ISIS and MIPS systematic processing of EDRs into cubes. Missing non-required items will not interfere with a processing step. For completeness, almost all uplinked parameters are included in the table. (Only those items which will almost certainly remain constant have been omitted; e.g. Rice decision tables.)

The source below is one of:
SEF for the Standard Sequence Data File (SSDF), specifying parameters of one of the NIMS (37) commands
PBK for the Playback Table Update Process (PTUP), specifying parameters of the NIMPBK SINGLE command
S/W for the NIMS/CDS software load process
NIMS for NIMS team systematic processing requests to MIPS

* indicates item absolutely required for UDR generation (decompression, wavelength edit processing)
# indicates item useful for UDR generation (for checking)
unmarked items needed for cube generation or useful for general information
<tbd> indicates more details will be forthcoming

name	nchar	columns	.description	.source
OAPEL	12	1 - 12	.Oapel Name from SEF (no aliases yet)	SEF: activity ID, 1st 12 chars should be unique
ALIAS	12	13 - 24	.NIMS alias name for OAPEL	NIMS:
EXT	1	25 - 25	.Extension, for split OAPELs, A,B,C... for playback, R,S,T... for realtime. Required for realtime.	NIMS: if breaking activity into several cubes
PSID	2	26 - 27	.Parameter Set IDentification	SEF: <tbd>
* SCLK1	13	28 - 40	.Start time of played-back OBS in SCLK	PBK (except realtime data: SEF)
* SCLK2	13	41 - 53	.Stop time of played-back OBS in SCLK	PBK (except realtime data: SEF)
* PARTITION	1	54 - 54	.Partition for SCLK1 and SCLK2.	
<spare>	9	55 - 63	.	
TARGET	8	64 - 71	.Primary Target of OBS	SEF: translate from 3rd char in OAPEL (activity ID)

MODE	2	72 - 73	.NIMS Instrument MODE (0-15)	SEF: 37IOP, data byte 2, bits 5-8
GAIN	1	74 - 74	.Gain State (true value)	SEF: 37IST, data byte 3, bits 7-8 (if bit 6 = 1) 0=gs2, 1=gs4, 2=gs3, 3=gs1
CHOP	1	75 - 75	.Chopper State (1=Ref,2=63Hz,3=FreeRun,4=Off)	SEF: 37IST, data byte 2, bits 7-8 (if bit 6 = 1) 0=63hz, 1=off, 2=ref, 3=freerun
GRAT_OFF	1	76 - 76	.Grating Offset (0-7, default 4)	SEF: 37GOF, data byte 2, bits 5-8
PTAB_A(6)	12	77 - 88	.First PTAB |repeat count,mirror op,autobias...	SEF: functions of MODE (from 37IOP) as modified by
PTAB_B(6)	12	89 - 100	.Second PTAB |...grating start, grating delta... ...number of grating positions)	37MPT, unless special sequence (modes 12-15) in which case values come from 37SS parameters <tbd>
ECAL	1	101 - 101	.Electronics Calibration Active (1=yes)	SEF: 37IST, data byte 3, bit 4 (1=on)
OPCAL	1	102 - 102	.Optics Calibration active (1=yes)	SEF: 37IST, data byte 3, bit 5 (1=on)
# REAL_TIME	1	103 - 103	.NIMS in Real-Time Telemetry (1=yes)	SEF: track RT_INST_SEL .and. 37RT
# RECORD	1	104 - 104	.NIMS in Record Telemetry (1=yes)	SEF: track DMS status event: RECORD, REVERSE, RESUME, RUNDOWN <tbd>
* THRESHSEL	1	105 - 105	.Threshold value select (>0 = yes)	PBK: THRESHLD_TBL > 0 (i.e. 1-3)
<spare>	1	106 - 106	.	
# RTISELDN	5	107 - 111	.RTI select, 5 binary bits (for mirror position blocking, down scan)	SEF: 37MB data byte 1, bits 4-8 <tbd>
# RTISELUP	5	112 - 116	.RTI select, 5 binary bits (for mirror position blocking, up scan)	SEF: 37MB data byte 2, bits 4-8 <tbd>
<spare>	1	117 - 117	.	
* RICEFLAG	1	118 - 118	.Rice compression flag	PBK: 0 no compression 1 Rice compression, ref vals each mirror scan 3 Rice compression, ref vals each RIM rollover
<spare>	1	119 - 119	.	
ESTCOMP	3	120 - 122	.Rice estimated compression ratio (m.n)	PBK: CMPR_DVSR <tbd>
ESTCOMPV	3	123 - 125	.Rice estimated error in compression ratio (m.n)	PBK: CMPR_UNC <tbd>
# RATECON1	5	126 - 130	.Rate control lower limit	PBK: | S/W table entry indexed by LOSSY_COMP (1-7)
# RATECON2	5	131 - 135	.Rate control upper limit	PBK: | or 0 if LOSSY_COMP = 0 (no rate control)
<spare>	17	136 - 152	.	
NWAVETOT	3	153 - 155	.Total number of wavelengths selected	Compute from relevant Wavelength Edit Table group
TLMFMT	3	156 - 158	.Telemetry format (MPW et al, LPU or LNR)	SEF: 6TMREC command
SCET1	21	159 - 179	.Start time of played-back OBS in UTC	PBK (except realtime data: SEF)
SCET2	21	180 - 200	.Stop time of played-back OBS in UTC	PBK (except realtime data: SEF)
<spares>	67	201 - 267	.Start time of played-back OBS in UTC	PBK (except realtime data: SEF)
* THRESH	51	268 - 318	.Threshold values (17 3-digit values, 0-999)	PBK: S/W table indexed by THRESH_TBL > 0, else 0s

```
--------------------------------------------------------------------------------
# WETGID      10 319 - 328   .Wavelength selection group ID (unique)    PBK: WET_GID     (realtime <tbd>)
                                Rule of formation: mmeelllnnn where
                                  mm  = instrument mode (0-15)
                                  ee  = # entries in group
                                  lll = number of wavelengths selected
                                  nnn = sequence number

* WETGRPSIZ    2 329 - 330   .# Wavelength Edit entries (1-26)          PBK: ED_GRP_LEN  (realtime SEF: 37ETB <tbd>)
* WETGRP     182 331 - 512   .Wavelength Edit Table group: WETGRPSIZ    PBK: ED_GRP      (realtime SEF: 37ETB data bytes 2..)
                                entries, each one has 7 characters.  The
                                first 2 characters are the repeat count
                                (01-26).  The other 5 characters contain
                                5 hex digits, representing the detector
                                mask in the form BHHHH where B is 0 or 1
                                and H has range 0-15.  (These entries are
                                from the 37ETB instrument edit group for
                                realtime data and from the logical AND of
                                corresponding entries in the instrument
                                and playback edit groups for playback data.)
--------------------------------------------------------------------------------
.The TARGET names used are:
  CAL      - N - non-science targets, usually calibration targets
  EARTH    - W - Earth
  MOON     - L - Moon
  SKY      - H - Stellar Space (space and stars)
  VENUS    - V - Venus
  GASPRA   - P - Gaspra
  IDA      - U - Ida
  JUPITER  - J - Jupiter
  IO       - I - Io
  EUROPA   - E - Europa
  GANYMEDE - G - Ganymede
  CALLISTO - C - Callisto
  RING     - R - Jupiter rings
  (the single letter abbreviation appears as the third character in the OAPEL name ).
--------------------------------------------------------------------------------
```

4-22

IFLNIMSOCAL1IFLNIMSOCAL1RDE03449819:00:003449819:90:01   CAL   3414 1 1 0 0 124 1 1 0 0 12400100 1101111011 0 0.00.0000
          002RT 1996-145/17:07:24.1331996-145/17:08:24.133
          0000000000000000000000000000000000000000302048000 22418000200000
0000000

IFLNIMSOCAL1IFLNIMSOCAL1SDE03449820:00:003449820:90:01   CAL   3414 1 1 0 0 124 1 1 0 0 12401100 1101111011 0 0.00.0000
          002RT 1996-145/17:08:24.8001996-145/17:09:24.800
          0000000000000000000000000000000000000000302048000 22418000200000
0000000

IFLNIMSOCAL1IFLNIMSOCAL1TDE03449821:00:003449821:90:01   CAL   3414 1 1 0 0 124 1 1 0 0 12400100 1101111011 0 0.00.0000
          002RT 1996-145/17:09:25.4661996-145/17:10:25.466
          0000000000000000000000000000000000000000302048000 22418000200000
0000000

IFLNIMSOCAL1IFLNIMSOCAL1UDE03449822:00:003449822:89:01   CAL   3414 1 1 0 0 124 1 1 0 0 12401100 1101111011 0 0.00.0000
          002RT 1996-145/17:10:26.1331996-145/17:11:25.466
          0000000000000000000000000000000000000000302048000 22418000200000
0000000

IFLNIMSOCAL2IFLNIMSOCAL2RDE03454026:00:003454026:90:01   CAL   3414 1 1 0 0 124 1 1 0 0 12401100 1101111011 0 0.00.0000
          002RT 1996-148/16:01:08.6661996-148/16:02:08.666
          0000000000000000000000000000000000000000302048000 22418000200000
0000000

IFLNIMSOCAL2IFLNIMSOCAL2SDE03454027:00:003454027:90:01   CAL   3414 1 1 0 0 124 1 1 0 0 12400100 1101111011 0 0.00.0000
          002RT 1996-148/16:02:09.3331996-148/16:03:09.333
          0000000000000000000000000000000000000000302048000 22418000200000
0000000

IFLNIMSOCAL2IFLNIMSOCAL2TDE03454028:00:003454028:90:01   CAL   3414 1 1 0 0 124 1 1 0 0 12401100 1101111011 0 0.00.0000
          002RT 1996-148/16:03:10.0001996-148/16:04:10.000
          0000000000000000000000000000000000000000302048000 22418000200000
0000000

IFLNIMSOCAL2IFLNIMSOCAL2UDE03454029:00:003454029:89:01   CAL   3414 1 1 0 0 124 1 1 0 0 12400100 1101111011 0 0.00.0000
          002RT 1996-148/16:04:10.6661996-148/16:05:10.000
          0000000000000000000000000000000000000000302048000 22418000200000
0000000

IFLNIMSOCAL3IFLNIMSOCAL3RDE03456816:00:003456816:90:01   CAL   3414 1 1 0 0 124 1 1 0 0 12401100 1101111011 0 0.00.0000
          002RT 1996-150/15:02:08.5331996-150/15:03:08.533
          0000000000000000000000000000000000000000302048000 22418000200000
0000000

IFLNIMSOCAL3IFLNIMSOCAL3SDE03456817:00:003456817:90:01   CAL   3414 1 1 0 0 124 1 1 0 0 12400100 1101111011 0 0.00.0000
          002RT 1996-150/15:03:09.2001996-150/15:04:09.200
          0000000000000000000000000000000000000000302048000 22418000200000
0000000

```
--------------------------------------------------
IFLNIMSOCAL3IFLNIMSOCAL3TDE03456818:00:003456818:90:01          CAL          3414 1 1 0 0 124 1 1 0 0 12401100 1101111011 0 0.00.0000
0000000          00000000000000000000000000000000000000000000000302048000 22418000020000
          002RT 1996-150/15:04:09.8661996-150/15:05:09.866

IFLNIMSOCAL3IFLNIMSOCAL3UDE03456819:00:003456819:84:01          CAL          3414 1 1 0 0 124 1 0 0 12400100 1101111011 0 0.00.0000
0000000          00000000000000000000000000000000000000000000000302048000 22418000020000
          002RT 1996-150/15:05:10.5331996-150/15:06:06.533
--------------------------------------------------
```

Chapter 5 - Detailed Observation Designs

Contents

Introduction to Chapter 5

Detailed Observation Designs

Each NIMS Detailed Observation Design consists of an OAPEL form and a Pointer plot. The OAPEL form is a brief description of the design of the observation. The Pointer plot is a plot of the target body with the NIMS footprint incorporated in the mosaic design super-imposed on the target body. The size and orientation of the target body is plotted as it appears at the time of the first NIMS footprint plotted. For long observations, the target body may rotate or move relative to the spacecraft during the observation. Some observations, such as calibrations, do not have Pointer plots.

In the IFL, only calibrations are performed so that there are no Pointer Plots.

```
NIMS OPCAL                              ACTIVITY ID:   IFLNIMSOCAL1-
                                        START TIME:    96-145/17:00:14.800

Activity ID: Orbit IF  Target L  Inst N  OAPEL IMSOCA  SeqNo L1 -

Title        NIMS OPCAL                        Instrument        NIMS
Requestor    NIMS-CWG/F. Leader      Team  NIMS Working Group    CWG

Time System  UTC         Load ID  IFL     Calendar Date  05/24/96  Week  21

Start        OC1-CDS    0:00:0     96-145/17:00:14.400   OC1-000/00:00:00.000
End          OC1-CDS   11:05:0     96-145/17:11:25.466   OC1-000/00:11:25.466
Duration               11:05:0        000/00:11:11.066       000/00:11:11.006

Top Label     IFLNIMSOCAL1-
Bottom Label  NIMS initialization

Plot Key      NIMS        Type               SCI
CDS Bytes                 Report Options              Scan Platform     No
CDS Source                Spin State                  DMS               No
```

Observation Objective

To perform Optical Calibrations of the NIMS instrument.

This is the first in-flight test of the NIMS Phase 2 software
and Phase 2 CDS real-time capabilities.

Data Returned

Design Detail

```
Long Map
Gain State 4
Mirror Block 1B,1B (11011,11011) (select miror positions 8-11)
ETB selects Detectors 1 and 2 only

1) 1 Rim of OPCAL (mf 0-11 only).
2) 1 Rim of Dark  (mf 0-11 only).
3) 1 Rim of OPCAL (mf 0-11 only).
4) 1 Rim of Dark  (mf 0-11 only).

NIMS is selected in Real Time for a total of 4 Rims.
Only one grating cycle per Rim is returned.


Long Map (LM), Gain 4, Grating Start 0, RT, OPCAL48
```

Galileo Activity Plan Form   05/22/96 12:00:00   rev 6/95

```
NIMS OPCAL   ACTIVITY ID: IFLNIMSOCAL2-
                                        START TIME: 96-148/15:59:02.666
```

```
Activity ID: Orbit IF  Target L  Inst N  OAPEL IMSOCA  SeqNo L2 -

Title         NIMS OPCAL                          Instrument      NIMS
Requestor     NIMS-CWG/F. Leader      Team   NIMS Working Group   CWG
```

```
Time System  UTC         Load ID  IFL     Calendar Date  05/27/96  Week  22

Start        OC2-CDS     0:00:0   96-148/15:59:02.666   OC1-000/00:00:00.000
End          OC2-CDS     6:05:0   96-148/16:05:10.006   OC1-000/00:06:07.340
Duration                 6:05:0      000/00:06:07.340       000/00:06:07.340
```

```
Top Label     IFLNIMSOCAL2-
Bottom Label  NIMS initialization

Plot Key      NIMS        Type             SCI
CDS Bytes                 Report Options         Scan Platform    No
CDS Source                Spin State             DMS              No
```

Observation Objective

To perform Optical Calibrations of the NIMS instrument.

This is the second in-flight test of the NIMS Phase 2 software
and Phase 2 CDS real-time capabilities.

Data Returned

Design Detail

Long Map
Gain State 4
Mirror Block 1B,1B (11011,11011) (select miror positions 8-11)
ETB selects Detectors 1 and 2 only

1) 1 Rim of Dark (mf 0-12 only).
2) 1 Rim of OPCAL (mf 0-12 only).
3) 1 Rim of Dark (mf 0-12 only).
4) 1 Rim of OPCAL (mf 0-12 only).

NIMS is selected in Real Time for a total of 4 Rims.
Only one grating cycle per Rim is returned.

Long Map (LM), Gain 4, Grating Start 0, RT, OPCAL48

```
Galileo Activity Plan Form                 05/22/96  12:00:00   rev 6/95
```

```
NIMS OPCAL                              ACTIVITY ID:   IFLNIMSOCAL3-
                                        START TIME:    96-150/15:00:02.533

Activity ID: Orbit IF  Target L  Inst N  OAPEL IMSOCA  SeqNo L3 -

Title         NIMS OPCAL                          Instrument      NIMS
Requestor     NIMS-CWG/F. Leader       Team  NIMS Working Group   CWG

Time System  UTC          Load ID  IFL    Calendar Date  05/27/96  Week  22

Start        OC2-CDS    0:00:0    96-150/15:00:02.533   OC1-000/00:00:00.000
End          OC2-CDS    8:00:0    96-150/15:08:07.866   OC1-000/00:08:05.333
Duration                8:00:0       000/00:08:05.333      000/00:08:05.333

Top Label     IFLNIMSOCAL3-
Bottom Label  NIMS initialization

Plot Key      NIMS       Type            SCI
CDS Bytes                Report Options            Scan Platform   No
CDS Source               Spin State                DMS             No
```

Observation Objective

To perform Optical Calibrations of the NIMS instrument.

This is the third in-flight test of the NIMS Phase 2 software
and Phase 2 CDS real-time capabilities.

Data Returned

Design Detail

```
Long Map
Gain State 4
Mirror Block 1B,1B (11011,11011) (select miror positions 8-11)
ETB selects Detectors 1 and 2 only

1) 1 Rim of Dark  (mf 0-11 only).
2) 1 Rim of OPCAL (mf 0-11 only).
3) 1 Rim of Dark  (mf 0-11 only).
4) 1 Rim of OPCAL (mf 0-11 only).

NIMS is selected in Real Time for a total of 4 Rims.
Only one grating cycle per Rim is returned.


Long Map (LM), Gain 4, Grating Start 0, RT, OPCAL48
```

Galileo Activity Plan Form   05/22/96 12:00:00   rev 6/95

Chapter 6 - Edit Tables

Contents

Introduction to Chapter 6

NIMS Edit Table Plots

       This chapter contains plots of the NIMS Edit Tables used in IFL.
The representative spectra used in these plots are observational
reference spectra for the target body as obtained from telescopic
observations from the Earth. Each reference spectrum is a composite
of multiple published sources. Vertical lines below the reference
curves mark the wavelengths selected for return. Where no spectral
information is available, the selected wavelengths are shown as lines
with amplitude equal to .05 on the vertical axis.

OPCAL48.ETB

Wavelength (Microns)

(Arbitrary Units)
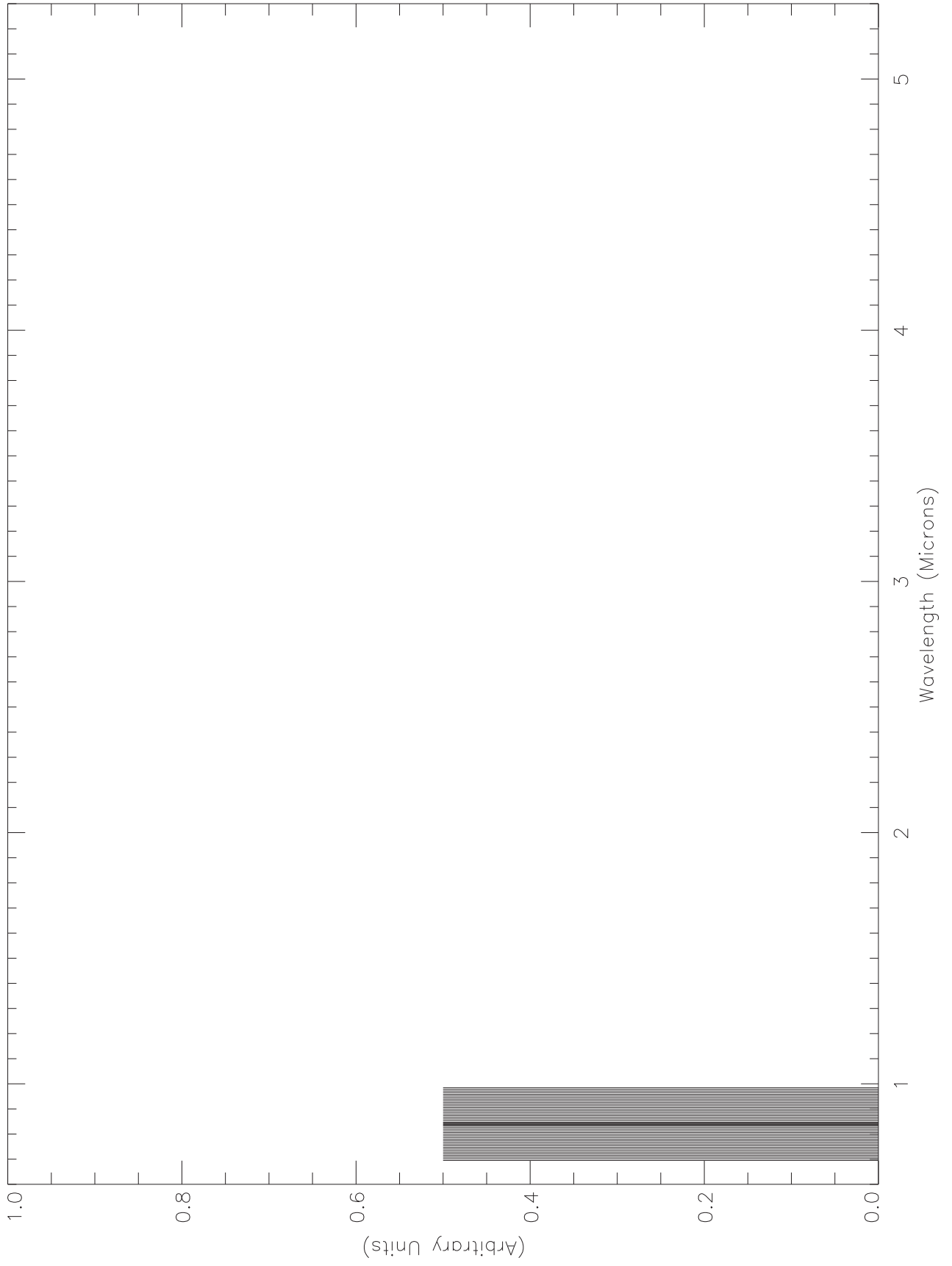
Chapter 7 - Data Return

Contents

This chapter is a report on the NIMS data return for the In-Flight Load (IFL). The IFL was the time period between J0 and G1 when the NIMS phase2 RAM software was first loaded from the ground and tested.

After the phase2 software was loaded, three OPCAL sequences were performed and returned in realtime. These OPCALs were used to verify that the software had loaded properly and to also test the new phase2 capabilities, such as real-time data return, wavelength editing and mirror blocking.

The new Galileo Ground Data System (GDS) and AMMOS were also tested in preparation for Orbital Operations as well as the MIPS real time data processing. This tested the entire ground path from DSN Station to UDR to Tube.

The plot on the page 3 shows the geometry of the NIMS IFL observations using a north trajectory pole projection.

The text on pages 4 gives a brief discussion of the NIMS data files. Additional information about NIMS data formats, data types, data labels and data access is given on pages 5 and 6.

The text on page 7 is a guide to understanding the NIMS MASK.

NIMS IN-FLIGHT LOAD (IFL)

Ganymede Flyby (G1): 27-JUN-1996 (D179) 06:29:05 UTC
        Perijove (PJ1): 28-JUN-1996 (D180) 00:31:24 UTC

Time Ticks (Relative to G1)
Spacecraft - 2 Days

APO-1

IFL .... IFL RAM LOAD
IFL IFLNIMSOCAL1
.... IFLNIMSOCAL2
.... IFLNIMSOCAL3
CHOPPER OFF

APO-2

D177

D189

G1

E
S

PJ1
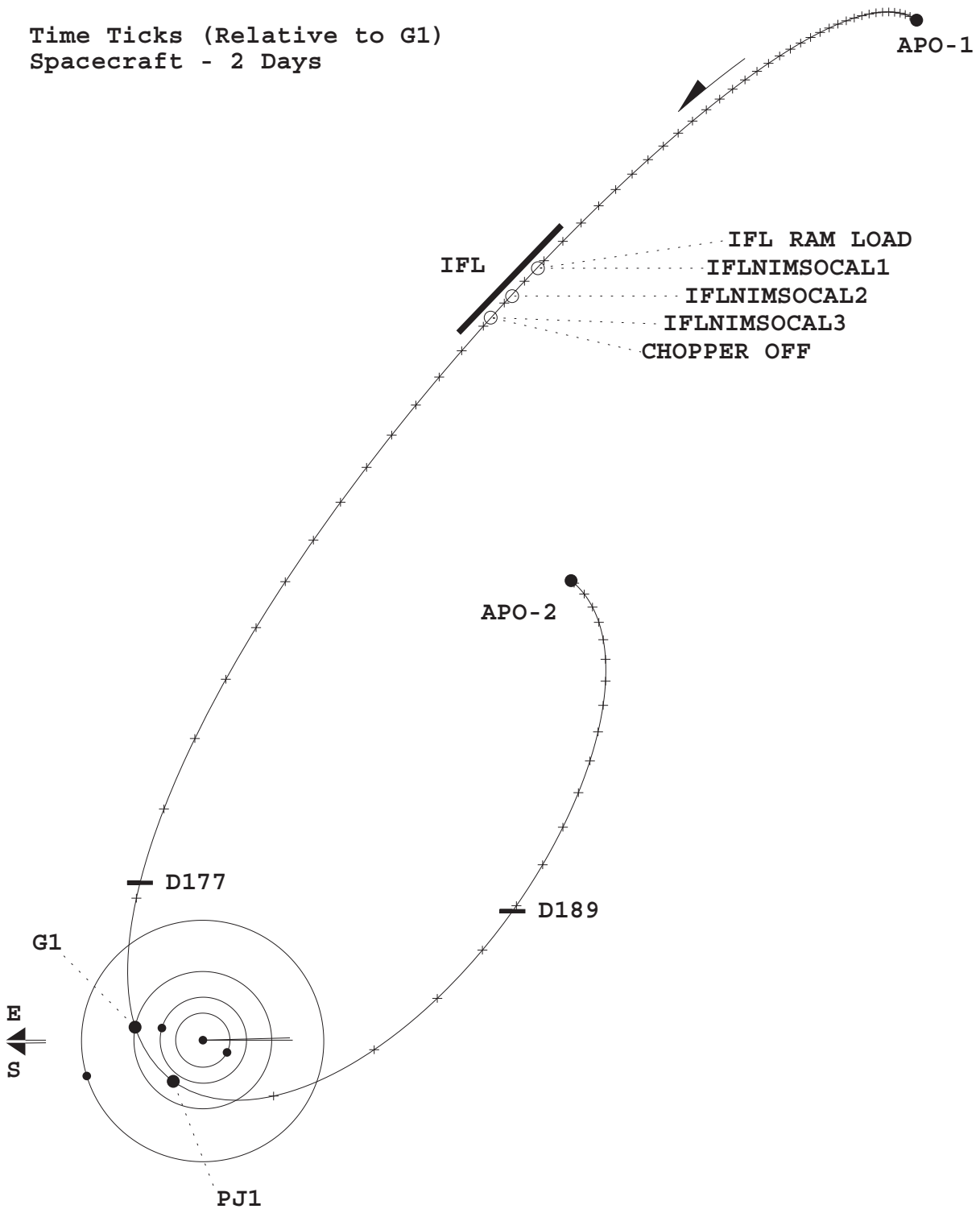
G1 North Trajectory Pole View, Apoapsis to Apoapsis

NIMS - FEL - 10/16/98

NIMS Archived EDRs and CUBEs

The NIMS data are stored in EDRs (Experimental Data Records) produced by JPL-MIPS (Multi-mission Image Processing System). The NIMS Phase2 EDR is described in the NIMS EDR SIS (Software Interface Specification) Number 232-08. The same information is available in both human and machine-readable form in the PDS (Planetary Data System) structure files EDRHDR.FMT and EDRDATA.FMT in the LABEL directory of the NIMS EDR CD-ROM. Each observation has at least one EDR. The EDR file name is derived from the 12 character observation name plus a single character which allows an observation to be broken up into multiple EDRs. The EDRs have a Vicar label, followed by a PDS/ISIS label, binary header records and the data records. For archiving on CD-ROM, the Vicar labels are detached from the EDR (but kept separately on CD) and the file is renamed so as to conform to the 8.3 DOS file-naming convention. The 8.3 EDR name consists of a 2 character orbit identifier, a single character target identifier, a 3 digit counter and the suffix EDR. For example, the MIPS EDR G1GNGLOBAL01A.1 becomes G1G001.EDR. More information about NIMS EDRs can be found in the VOLINFO.TXT file on the EDR CD-ROM.

NIMS EDR data typically require considerable processing before they are readily amenable to science analysis. Normally, the EDRs are processed into spectral image cubes by one of several sets of software. MIPS systematically processes the EDRs into CUBEs (band sequential image files) and MASKs (spatial/spectral summary images) which are distributed on the NIMS CUBE CD-ROMs. Information about the structure of the NIMS CUBEs can be found in the VOLINFO.TXT file on the CUBE CD-ROM. The name of the CUBE file is derived from the input EDR filename. For archiving on CD-ROM, the CUBE files are renamed so as to conform to the 8.3 DOS file-naming convention. The 8.3 CUBE name consists of a 2 character orbit identifier, a single character target identifier, a 3 digit counter, a single character cube-type identifier, a single character data unit-type (DN, radiance or IOF) and the suffix QUB. For example, the MIPS IOF radiance cube for the observation G1GNGLOBAL01A.1 (G1G001) becomes G1G001CR.EDR. The summary MASKs on the CD-ROM have the same 6 character name as the EDR name with the suffix JPG or GIF to denote its graphics format.

Data Format

All data files have PDS labels. The raw data (EDR) file contains
time-sequential, 16 bit integers. Reduced data files (TUBES and
CUBES) may be viewed as images or spectra. They contain VAX real
numbers, are band sequential (BSQ - the images are stacked in band
order) and have geometry information appended as backplanes after
the last NIMS band.

Data Types

Mask files contain summary images (3 band BSQ) and spectra of up to
six selected regions that provide a quick indication of data location,
data quality and spectral content. A Guide to understanding the NIMS
mask is available.

Cube files contain data that have been projected and resampled. The
core data are BSQ - spatial in the first two dimensions, and spectral
in the third. Cubes of the satellites are projected in point-of-view,
and, with few exceptions have no photometric correction applied.
Cubes of Jupiter are (generally) projected as simple cylindrical.
Cubes of Europa, Ganymede, and Callisto have been despiked. The cubes
are available both in radiance and I/F (intensity divided by flux)
form.

Tube files contain data in (almost) time order and normally have
a NIMS-related 20 pixel spatial dimension (20 x n or n x 20).
Projection coordinates are contained in backplanes, but the data
have not been resampled. The data are in units of radiance and no
despiking has been applied. All data in cubes are also available in
tube form. Some data (such as spatially undersampled data) appear in
tube form only.

A spike file contains a list of pixels that have been identified as
spikes, but not replaced, in the tube. Spike files can be used to
remove spikes from both tube and EDR files.

EDR files contain the most primitive form of the data available.
They should be used only for advanced data analysis. The format is
complex and the files do not form images or spectra without prior
processing.

Data Labels

A data label (PDS form) is attached to the front of each file (except masks, which have an attached VICAR label and a detached PDS label). The labels are in ASCII keyword=value format and contain pointers to various data objects in the file, descriptions of the data objects and descriptions of the observation associated with the file. A history object in similar format follows and describes the processing steps that produced the file. Much of this information is necessary for understanding and viewing the cube. In particular, the label contains the offset to the cube, the dimensions of the cube, axes labels, and explicit wavelength information.

Data Access

Software for processing this data is called ISIS and is available for DEC VAX VMS, SUN Solaris, DEC Alpha Digital Unix, Silicon Graphics Unix and PC LINUX systems. The Unix versions are available from the USGS Astrogeology team. Images from NIMS cubes and tubes can be viewed with any image display program which allows an offset from the beginning of the file to the selected image. Packages tested include ISIS, VICAR, ENVI, SAO IMAGE, and NASAVIEW. ISIS and ENVI (and soon NASAVIEW) additionally display spectra. The ISIS viewer is named CV (UNIX) or QL3 (VMS).

Labels may be displayed with some editors (eg DOS edit), and with most "type" and "search" functions. Some editors do not recognize the PDS line termination conventions. The label may be listed by the ISIS function LHLIST (VMS) or LABEL (UNIX).

Software for converting EDRs to cubes exist in both ISIS (DEC VAX VMS) and VICAR (DEC Alpha VMS) versions only. A primitive list of values in an EDR may be obtained with the program EDRDMP2.

Understanding the NIMS Mask

The NIMS mask is designed to provide a quick summary of the contents of a NIMS data cube (or tube). It displays a view of both the spatial and spectral content of the data.

The mask has four regions. Starting from the upper left and proceeding clockwise: a spatial display; six or fewer representative spectra; annotation; and a spectral histogram.

The spatial display of an observation which has been projected and resampled (a cube) has a maximum size of 600x600 pixels. This is overlaid with surface coordinates and is embedded in a 700x700 grid of pixel coordinates. It is accompanied by two 1-dimensional histograms describing the raw image and the image stretched for display. The data image can range from a simple combination of up to 3 NIMS bands displayed in the RGB planes, to complicated arithmetic functions of NIMS bands displayed in the RGB planes. (The formulas appear as annotation below the histograms.) The graphics directly below the image show the input and output data histograms for the three color planes. The "shortest" color for each bin displays in front. The image also contains from one to six numbered rectangles, which show the from which averaged spectra (displayed on the right) were taken.

The spatial display of an observation in time sequence (a tube) is a graphic showing a footprint of the observation over a grid of surface coordinates on the target body. Numerals 1-6 on the graphic mark the locations of the average spectra displayed on the right.

The spectra to the right of the image may display either BDRF or radiance (or both). If both are displayed, then a vertical "radiance fence" line will appear where the breakpoint occurs. This permits display of both atmospheric data, which have significant reflectance and thermal components, and I/F satellite surface data which have strong absorptions at longer wavelengths (such as water spectra.) The spectra are labelled with wavelength in microns and location in both pixel and latitude-longitude space.

The annotation provides information about the observation, including its name, a brief description, its geometry, instrument and projection parameters. TCA is the time from Galileo's closest approach to the target body.

The 2-dimensional spectral histogram in the lower left corner shows the number of pixels at a given radiance for each wavelength. If a surface contains spatial mixtures with significantly different spatial fractions for several components, the spectra of the components will be evident in this display.