Chapter 2 - Orbit Overview

Contents

Introduction to Chapter 2

This chapter gives an overview of the NIMS observations in the E16 Orbit.

The text on page 3 summarizes the NIMS science objectives for E16. The NIMS calibrations are discussed on page 3. Early data return and E16 playback are also discussed on page 3.

The table on page 4 is a time-ordered listing of the NIMS Oapels for E16.

The plot on page 5 shows the geometry of the NIMS E16 observations using a north trajectory pole view projection. The plot on page 6 shows the geometry of the NIMS E16 calibrations.

The spreadsheet on page 7 summarizes the various inputs for the NIMS E16 Observations. The spreadsheet on pages 8 and 9 summarizes the resource usage for the NIMS E16 observations.

The table on page 10 lists various NIMS E16 observing parameters: target latitude/longitude, range, cone angle, incidence angle (light), emission angle (view) and phase angle.

The timeline on page 11 shows the placement of the E16 observations for all intruments during the E16 Encounter Period.

The tapemap on page 12 shows the placement of the E16 observations on the spacecraft's tape recorder.

The timeline on pages 13 through 21 shows the preliminary E16 playback schedule.

The NIMS E16 mosaic designs are summarized on page 22 and 23 in time-order.

NIMS E16 SCIENCE OVERVIEW

Jupiter Science

There are five Jupiter observations in E16. Three are realtime and two are recorded. The three realtime observations look at the North Equatorial Belt at about +7 degrees latitude. The two recorded observations look at the white oval region in the southern hemisphere.

Io Science

There is one INHRSPEC high spatial and spectral resolution Io observation in E16. INHRSPEC01, centered at 225 W. longitude, consists of a single scans across the half-lit disk.

Europa Science

There are five Europa observations planned for E16: Four regional observations and one half-disk global observation. ENSUCOMP01 looks at the Aegnor linea terrain near -41 degrees latitude, 188 degrees West longitude. ENSUCOMP02 looks at the Taliesin crater region near -21 degrees latitude, 141 degrees West longitude. ENSUCOMP03 looks at the Thrace macula region near -43 degrees latitude, 175 degrees West longitude. ENSUCOMP04 looks at the Wedge terrain near -7 degrees latitude, 196 degrees West longitude. ENGLOBAL01 covers pole to pole 140 to 240 degrees West longitude.

Ganymede Science

GNGLOBAL01 covers longitudes 230 to 360, pole to pole.

Callisto Science

Callisto was not observed in E16.

Calibration

There are three NIMS calibration observations planned for E16: one RCT cal, one PCT cal and one OPCAL.

Early Data Return

There are six realtime observations in E16: Three 408 wavelength Jupiter observations (JUPRTS), one RCT calibration, one PCT calibration and one OPCAL.

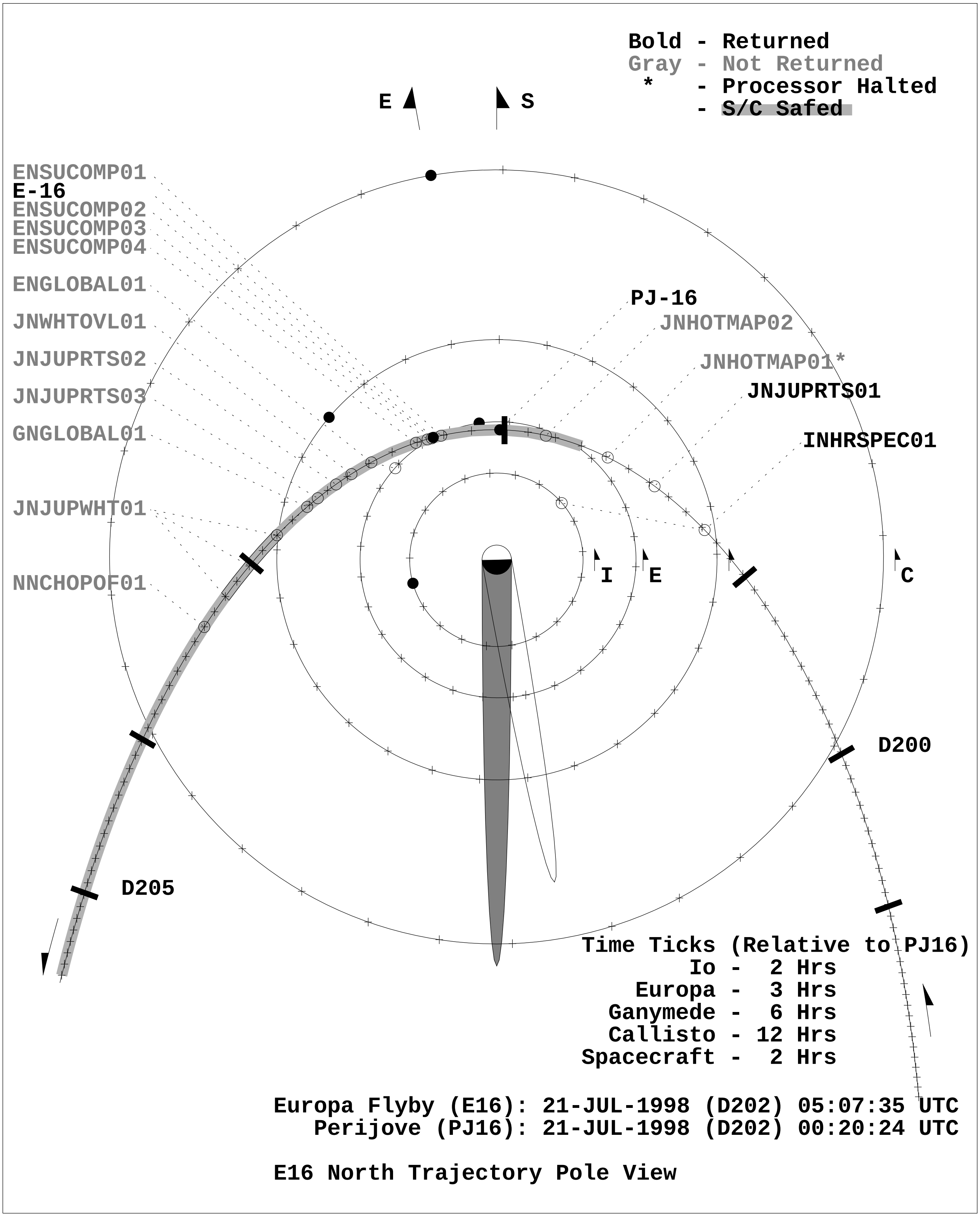
E16 Playback

E16 playback is split into two passes through the tape.

E16 Time-Ordered Listing

OAPEL	Start (UTC)	End (UTC)	Duration
16NNHRSPEC01-	98-201/05:57:01	98-201/05:59:03	000/00:02:01
16INHRSPEC01*	98-201/05:59:03	98-201/06:10:10	000/00:11:07
16NNJUPRTS01-	98-201/11:45:52	98-201/11:48:54	000/00:03:02
16JNJUPRTS01*	98-201/11:48:54	98-201/12:13:10	000/00:24:16
16NNHOTMAP01-	98-201/16:07:44	98-201/16:11:47	000/00:04:02
16JNHOTMAP01-	98-201/16:11:47	98-201/16:52:14	000/00:40:26
16NNHOTMAP02-	98-201/20:58:56	98-201/21:02:59	000/00:04:02
16JNHOTMAP02-	98-201/21:02:59	98-201/21:29:16	000/00:26:17
16NNSUCOMP01-	98-202/04:28:53	98-202/04:32:56	000/00:04:02
16ENSUCOMP01-	98-202/04:32:56	98-202/05:00:14	000/00:27:18
16NNSUCOMP02-	98-202/05:10:20	98-202/05:14:23	000/00:04:02
16ENSUCOMP02-	98-202/05:14:23	98-202/05:33:36	000/00:19:12
16ENSUCOMP03-	98-202/05:33:36	98-202/05:49:46	000/00:16:10
16NNSUCOMP04-	98-202/06:22:08	98-202/06:26:10	000/00:04:02
16ENSUCOMP04-	98-202/06:26:10	98-202/06:49:26	000/00:23:15
16NNGLOBAL01-	98-202/10:03:34	98-202/10:07:36	000/00:04:02
16ENGLOBAL01-	98-202/10:07:36	98-202/11:04:14	000/00:56:37
16NNWHTOVL01-	98-202/11:55:48	98-202/11:57:49	000/00:02:01
16JNWHTOVL01-	98-202/11:57:49	98-202/12:38:16	000/00:40:26
16NNJUPRTS02-	98-202/13:26:48	98-202/13:28:49	000/00:02:01
16JNJUPRTS02*	98-202/13:28:49	98-202/13:51:04	000/00:22:14
16NNJUPRTS03-	98-202/15:20:02	98-202/15:24:05	000/00:04:02
16JNJUPRTS03*	98-202/15:24:05	98-202/15:52:24	000/00:28:18
16NNGLOBAL02-	98-202/16:33:51	98-202/16:35:52	000/00:02:01
16GNGLOBAL01*	98-202/16:35:52	98-202/17:44:38	000/01:08:45
16NNJUPWHT01-	98-202/20:25:24	98-202/20:27:25	000/00:02:01
16JNJUPWHT01-	98-202/20:27:25	98-203/04:53:59	000/08:26:34
16NNCHOPOF01-	98-203/08:21:16	98-203/08:31:22	000/00:10:06
16HNDARKCL01-	98-211/13:39:50	98-211/14:00:00	000/00:20:10
16NNCHOPOF02-	98-211/14:01.26	98-211/14:10:06	000/00:10:06
16NNRCTRLT01-	98-243/21:00:32	98-244/10:16:17	000/13:15:44
16NNPCTRLT01-	98-255/00:00:34	98-255/07:50:44	000/07:50:10

NIMS E16 OBSERVATIONS

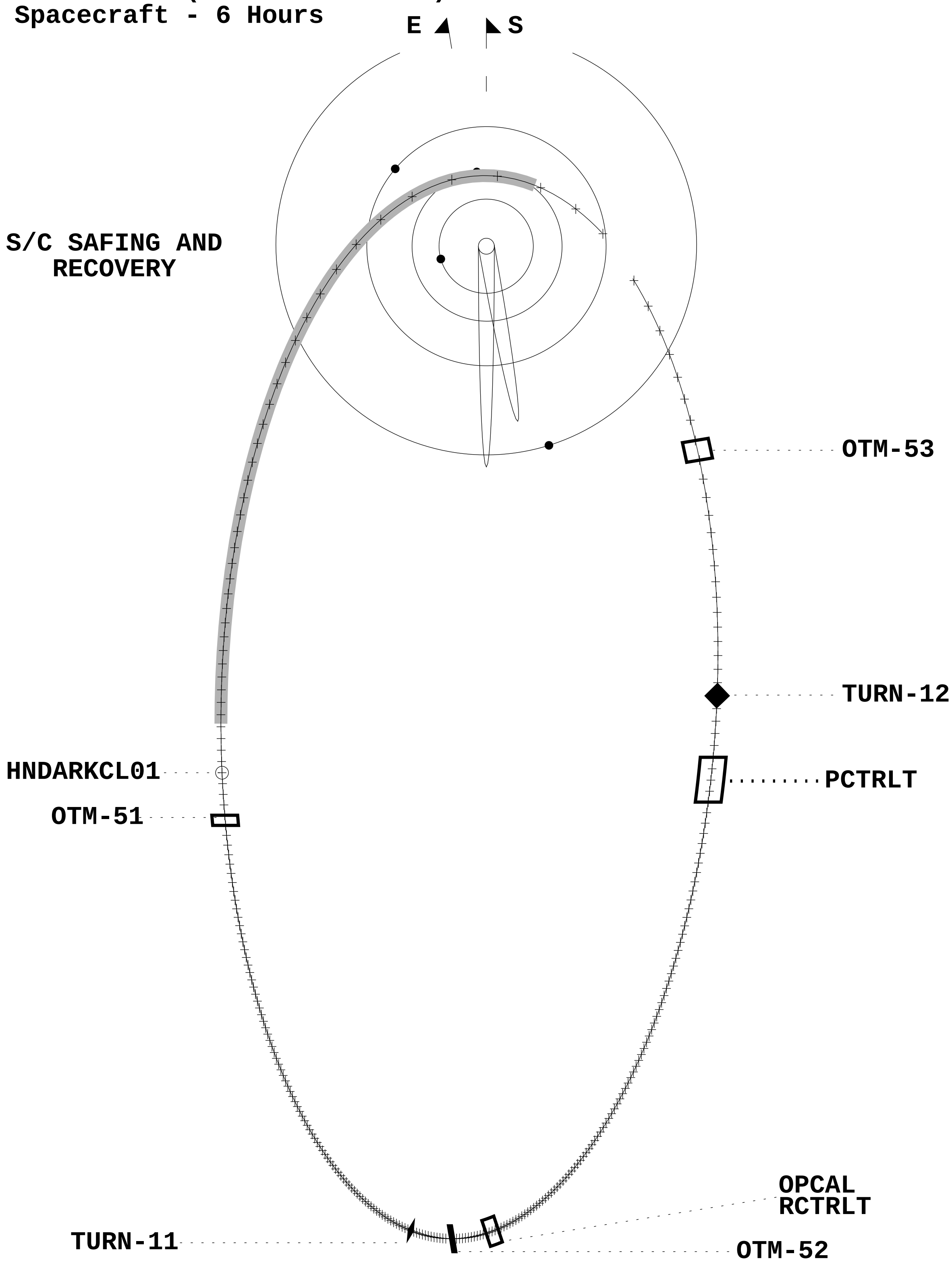


NIMS - FEL - 12/06/99

NIMS E16 CRUISE CALIBRATIONS

Europa Flyby (E16): 21-JUL-1998 (D202) 05:07:35 UTC
Perijove (PJ16): 21-JUL-1998 (D202) 00:20:24 UTC
Apojove (AJ16): 23-Aug-1998 (D235) 16:00:00 UTC

Time Ticks (Relative to E16)
Spacecraft - 6 Hours



E16 North Trajectory Pole View, Perijove to Perijove

E16 NIMS INPUTS

Activity ID	Observation Title	NIMS Edit Table	NIMS PB Table	Mode	Gain	Grating Start	Grating Offset	Record Format	PSID
16NNHRSPEC01	NIMS Software Reload								
16INHRSPEC01	Io Monitoring at High Spectral Resolution	E16ILM243C	E16ILM228C	LM	2	0	4	LPU	DA
16NNJUPRTS01	NIMS Software Reload								
16JNJUPRTS01	Jupiter Realtime Observation	E16JLM442/MB	R/T	LM	2	0	4	R/T	DB
16NNHOTMAP01	NIMS Software Reload								
16JNHOTMAP01	NIMS Jupiter Hotmap	E16JHT238A		LM	2	0	4	LPU	DC
16NNHOTMAP02	NIMS Software Reload								
16JNHOTMAP02	NIMS Software Reload	E16JHT238A		LM	2	0	4	LPU	DD
16NNSUCOMP01	NIMS Software Reload								
16ENSUCOMP01	Europa Surface Composition	E16ELM442	E16ELM360	LM	4	0	4	MPW	DE
16NNSUCOMP02	NIMS Software Reload								
16ENSUCOMP02	Europa Surface Composition	E16ELM442	E16ELM360	LM	3	0	4	MPW	DF
16ENSUCOMP03	Europa Surface Composition	E16ELM442	E16ELM360	LM	3	0	4	MPW	DG
16NNSUCOMP04	NIMS Software Reload								
16ENSUCOMP04	Europa Surface Composition	E16ELM243C	E16B_ELM228C_0	LM	3	0	4	LPU	DH
16NNGLOBAL01	NIMS Software Reload								
16ENGLOBAL01	Europa Global Observation	E16ELM243C	E16B_ELM228C_0	LM	3	0	4	LPU	DI
16NNWHTOVL01	NIMS Software Reload								
16JNWHTOVL01	Jupiter White Oval	E16JSB253B	E16JSB253B	LM	2	0	4	LPU	EA
16NNJUPRTS02	NIMS Software Reload								
16JNJUPRTS02	Jupiter Realtime Observation	E16JLM442/MB	R/T	LM	4	0	4	R/T	DJ
16NNJUPRTS03	NIMS Software Reload								
16JNJUPRTS03	Jupiter Realtime Observation	E16JLM442/MB	R/T	LM	2	0	4	R/T	DK
16NNGLOBAL01	NIMS Software Reload								
16GNGLOBAL01	Ganymede Global Map	E16GLM243K	E16GLM228K	LM	3	0	4	LPU	DL
16JNJUPWHT01	NIMS Software Reload								
16JNJUPWHT01	Ride-along with SSI	E16JFE442A	E16JFE360A	LM	2	0	4	MPW	DM
16HNDARKCL01-	Dark Calibration	HN442	HN408	LM	1,2,3,4	0	4	MPW	DA
16NNRCTRLT01-	NIMS RCT Real-Time Calibration	E14RCT252	R/T	LM	1	0	4	R/T	XE
14NNPCTRLT01-	NIMS Real-Time PCT Calibration	E14PCT252	R/T	LM	4	0	4	R/T	FB

E16 RESOURCES

Activity ID	Mode	Record Mode	Obs. Cost (tracks)	Obs. Cost (ticks)	Number Wavelengths Returned	Obs Record (sec.)	Obs PB (sec.)	Selected Bits to Tape sBOT (MBITS)	Bits to Tape MBOT (Mbit)	Mode Cycle time (sec)
16INHRSPEC01	LM	LPU	0.0077	45	228	184	179.33	1.11	1.13	8.667
16JNJUPRTS01	LM				360					
16JNHOTMAP01	LM	LPU	0.0594	346	228	1468.68	1464	9.03	9.06	8.667
16JNHOTMAP02	LM	LPU	0.0322	187	228	791	778.68	4.80	4.88	8.667
16ENSUCOMP01	LM	MPW	0.1724	1004	360	1140	1145.67	13.20	13.13	8.667
16ENSUCOMP02	LM	MPW	0.1353	788	360	894	899.67	10.36	10.30	8.667
16ENSUCOMP03	LM	MPW	0.1374	801	360	908	779.67	8.98	10.46	8.667
16ENSUCOMP04	LM	LPU	0.0395	230	228	974	978.33	6.03	6.01	8.667
16ENGLOBAL01	LM	LPU	0.1004	585	228	2487	2458.68	15.17	15.34	8.667
16JNWHTOVL01	LM	LPU	0.0282	164		693			4.27	8.667
16JNJUPRTS02	LM				360					
16JNJUPRTS03	LM				360					
16GNGLOBAL01	LM	LPU	0.1433	835	228	3555	1801.33	11.11	21.93	8.667
16JNJUPWHT01	LM	MPW			360					
16NNRCTRLT01	LM	R/T								
16NNPCTRLT01	LM	R/T								
Total			**0.7565**	4987						

E16 RESOURCES

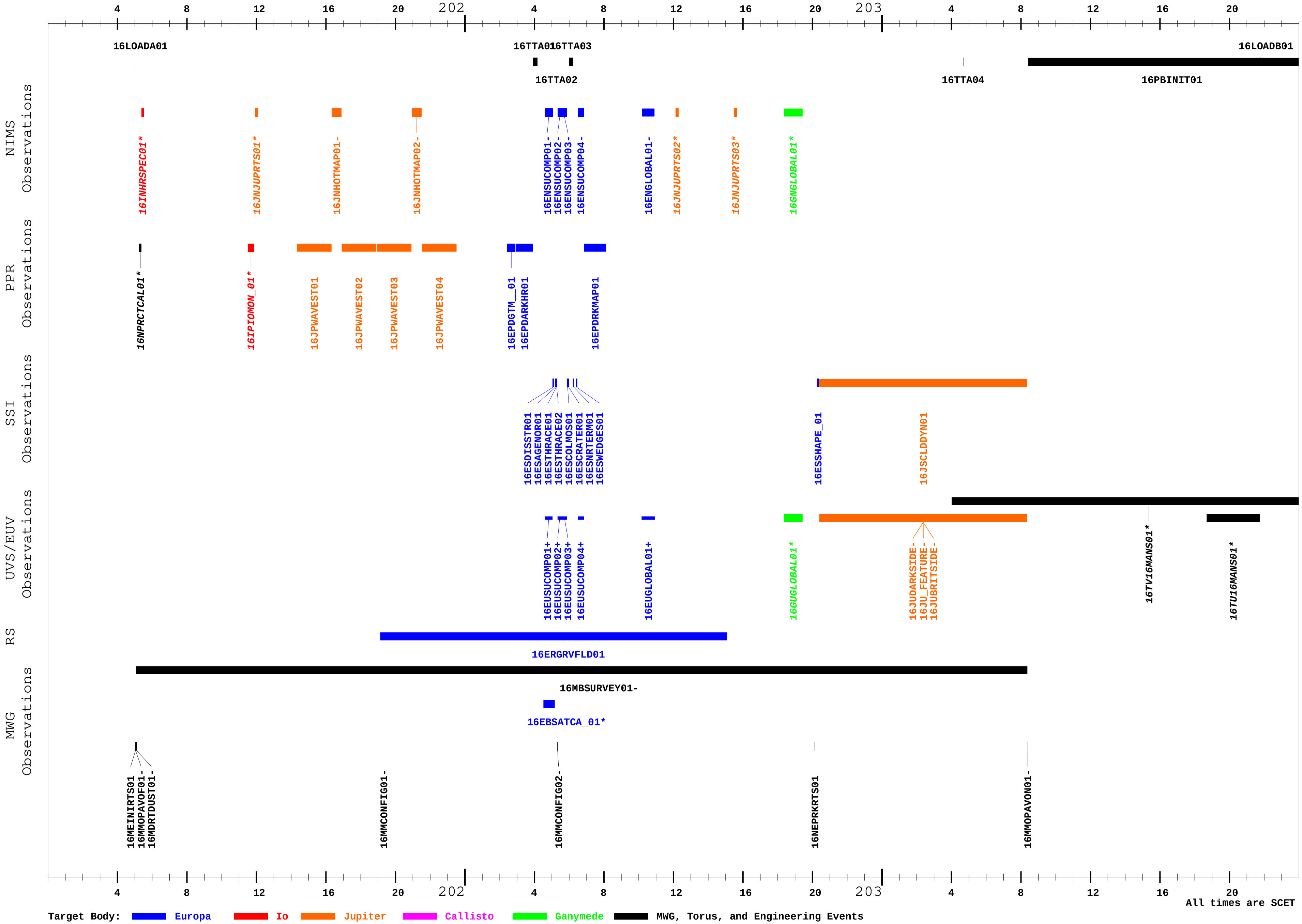
Activity ID	AACS	Thold	Comp	Total BTG Mbits	Data Reduction	Pass
	Mbits			(w/4% overhead)	Factor	
	c 2.5				(sBOT/BTG)	
16INHRSPEC01	0.01	0	1.2	0.8177	1.4	1
16JNJUPRTS01						
16JNHOTMAP01	0.08	0	1.25	6.4086	1.4	1,2
16JNHOTMAP02	0.04	0	1.25	3.4086	1.4	1,2
16ENSUCOMP01	0.07	0	1.3	7.6140	1.7	1,2
16ENSUCOMP02	0.05	0	1.3	5.9791	1.7	1,2
16ENSUCOMP03	0.04	0	1.3	5.1816	1.7	1,2
16ENSUCOMP04	0.06	0	1.3	4.1179	1.5	1,2
16ENGLOBAL01	0.14	0	1.4	9.6096	1.6	1,2
16JNWHTOVL01		0				
16JNJUPRTS02						
16JNJUPRTS03						
16GNGLOBAL01	0.10	0	2	4.9282	2.3	1,2
16JNJUPWHT01		0				
16NNRCTRLT01				0.14		
16NNPCTRLT01				0.20		
			Total	**48.4053**		
			Alloc	**47.9480**		
			Over/u	**0.4573**		

NIMS E16 OBSERVING GEOMETRY

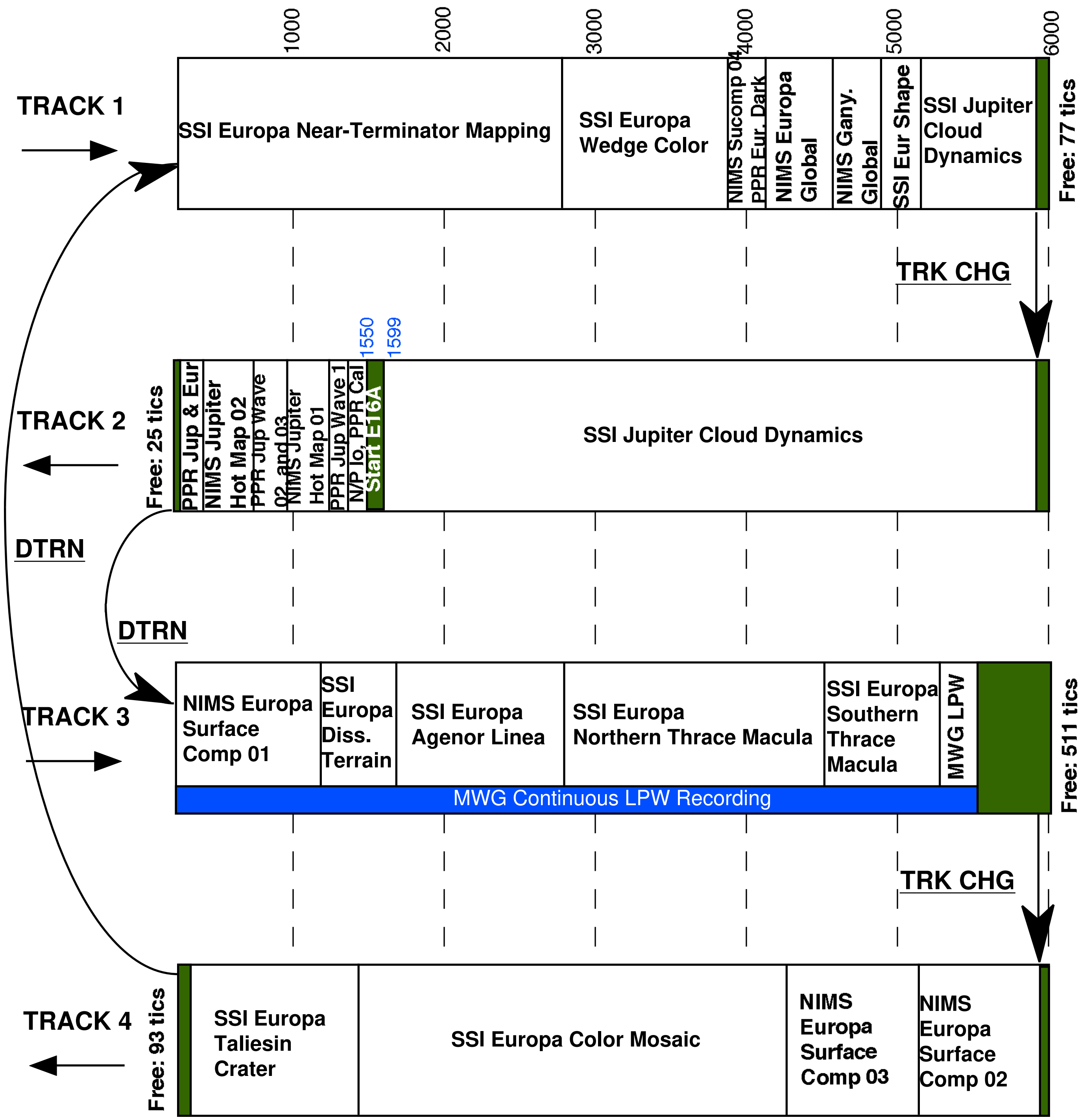
OAPEL	Latitude (deg)	Longitude (deg)	Range (km)	Cone (deg)	Light (deg)	View (deg)	Phase (deg)
16INHRSPEC01	-90 to +90	140 to 320	700K	70	23 to 170	0 to 90	100
16JNJUPRTS01	+6 to +8	316 to 337	770K	106	62 to 88	8 to 27	62
16JNHOTMAP01	+0 to +10	122 to 144	660K	127	64 to 86	22 to 44	42
16JNHOTMAP02	+3 to +13	263 to 273	580K	152	33 to 44	11 to 27	18
16ENSUCOMP01	-19 to -16	253 to 263	5K	74 to 124	47 to 58	11 to 43	48 to 96
16ENSUCOMP02	-45 to -40	178 to 191	8K	128 to 140	46 to 53	46 to 50	50 to 61
16ENSUCOMP03	-50 to -40	168 to 186	13K	126	51 to 61	48 to 54	63
16ENSUCOMP04	-12 to +5	147 to 190	34K	118 to 121	26 to 69	5 to 45	70
16ENGLOBAL01	-90 to +90	116 to 252	125K	119	13 to 103	13 to 90	71
16JNWHTOVL01	-40 to -25	0 to 30	780K	127	48 to 58	36 to 47	62
16JNJUPRTS02	-10 to +10	350 to 10	816K	127	98 to 106	35 to 44	63
16JNJUPRTS03	-10 to +10	120 to 144	870K	116	36 to 51	23 to 38	74
16GNGLOBAL01	-90 to +90	220 to 40	183K	126 to 135	10 to 120	9 to 90	35
16JNJUPWHT01	-40 TO -30	355 TO 20	1100K	101	39 TO 56	53 TO 74	89

E16 ENCOUNTER
Plot Time: 98-201/00:00:00.000 to 98-204/00:00:00.000
Date of Plot: 17-Sep-97 8:27:24

GEM OPG: E16

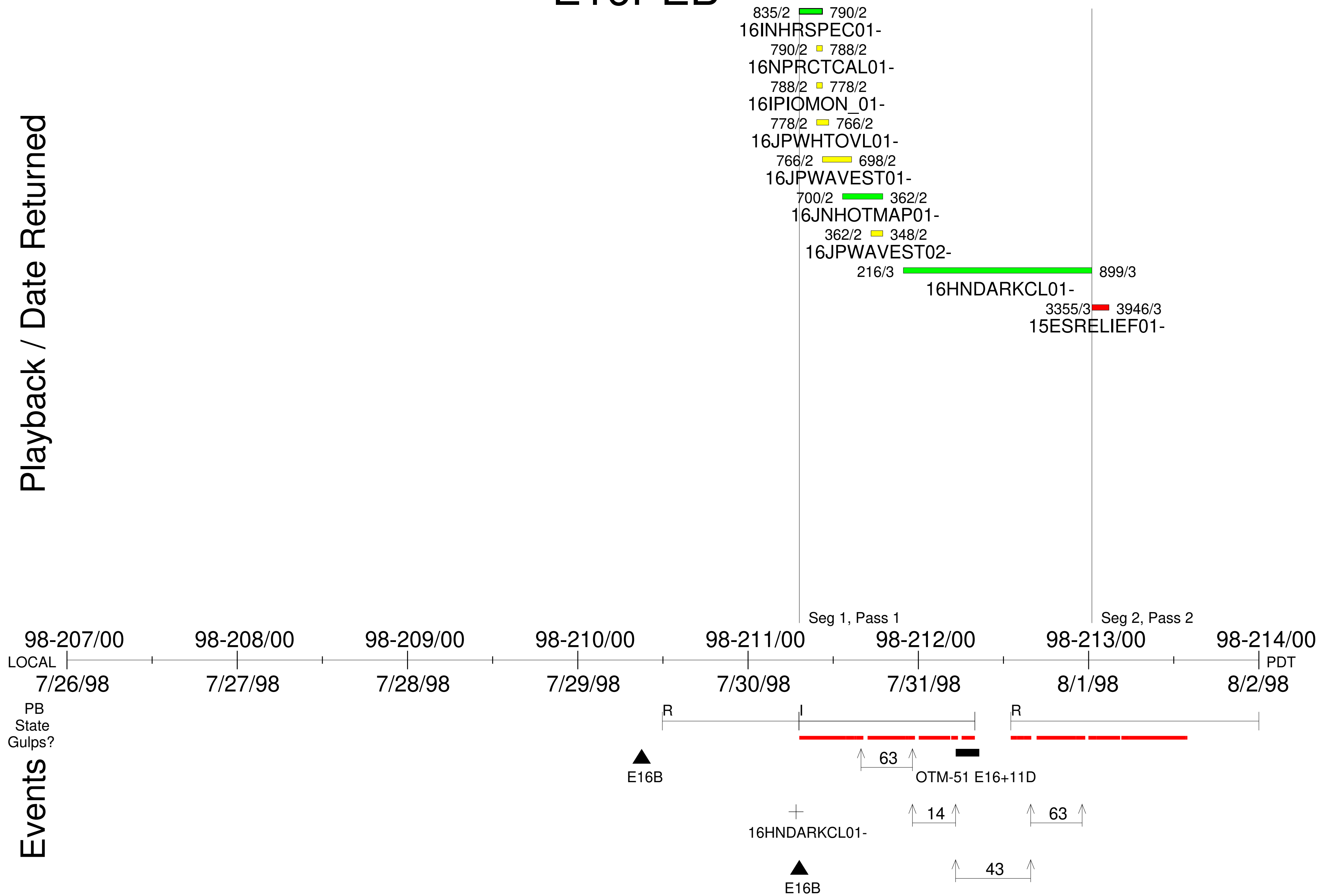


E16 HIGH-LEVEL TAPEMAP



J. Gross, 8/13/97

E16PEB



2-13

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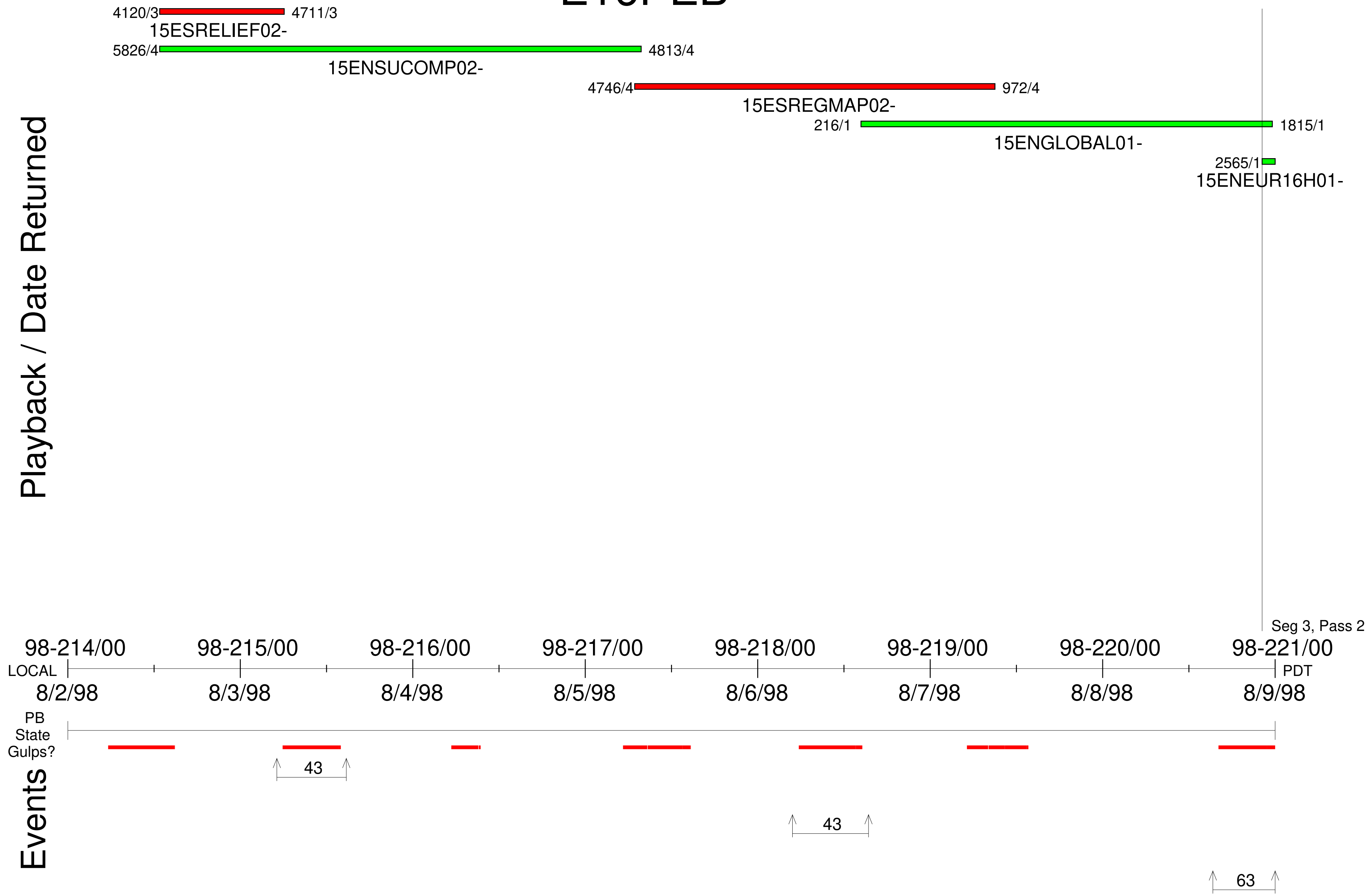
E16PEB


Playback / Date Returned
4120/3
4711/3
15ESRELIEF02-
5826/4
4813/4
15ENSUCOMP02-
4746/4
972/4
15ESREGMAP02-
216/1
1815/1
15ENGLOBAL01-
2565/1
15ENEUR16H01-
Seg 3, Pass 2
98-214/00
98-215/00
98-216/00
98-217/00
98-218/00
98-219/00
98-220/00
98-221/00
LOCAL
PDT
8/2/98
8/3/98
8/4/98
8/5/98
8/6/98
8/7/98
8/8/98
8/9/98
PB
State
Gulps?
43
43
63
Events

E16PEB

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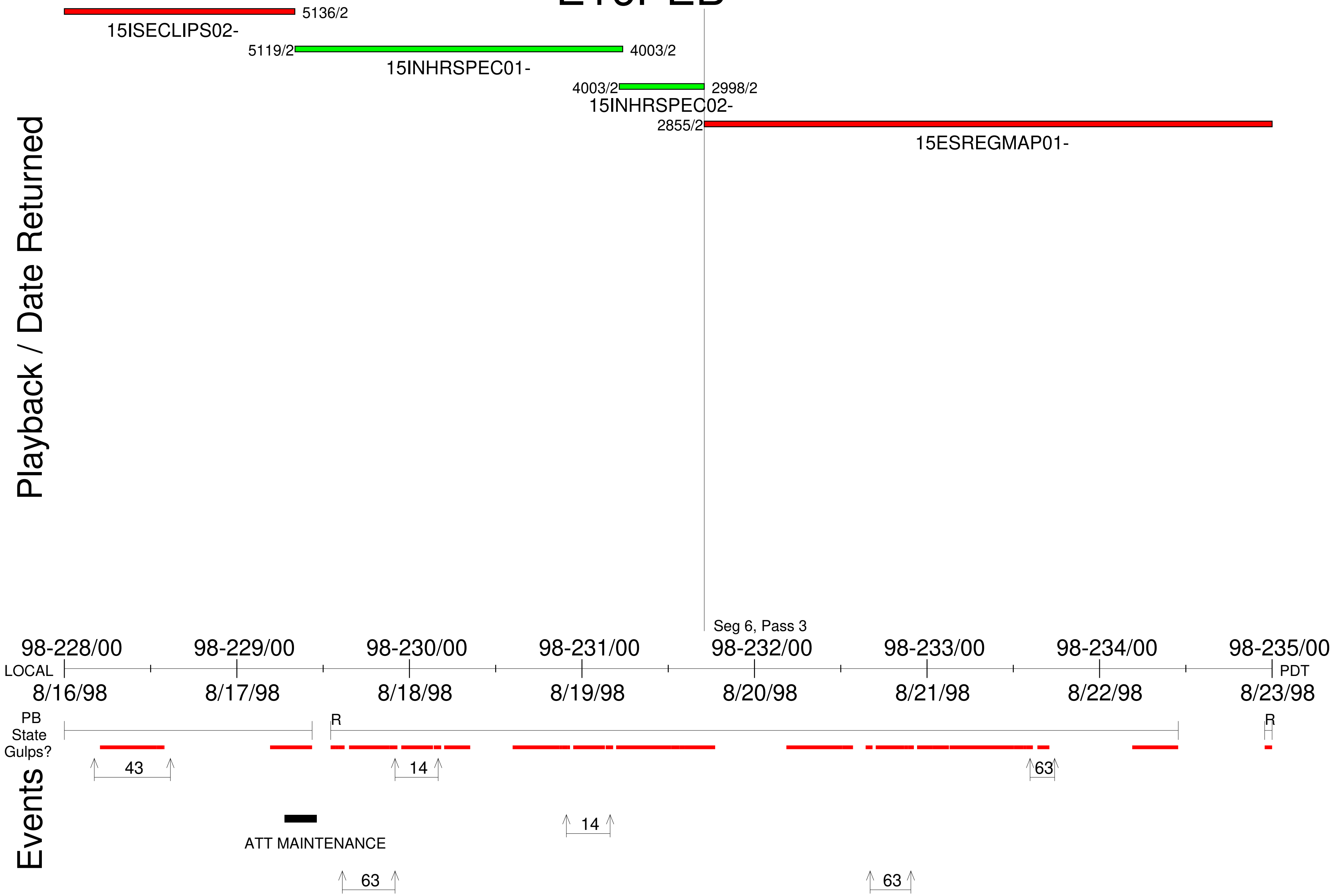
E16PEB



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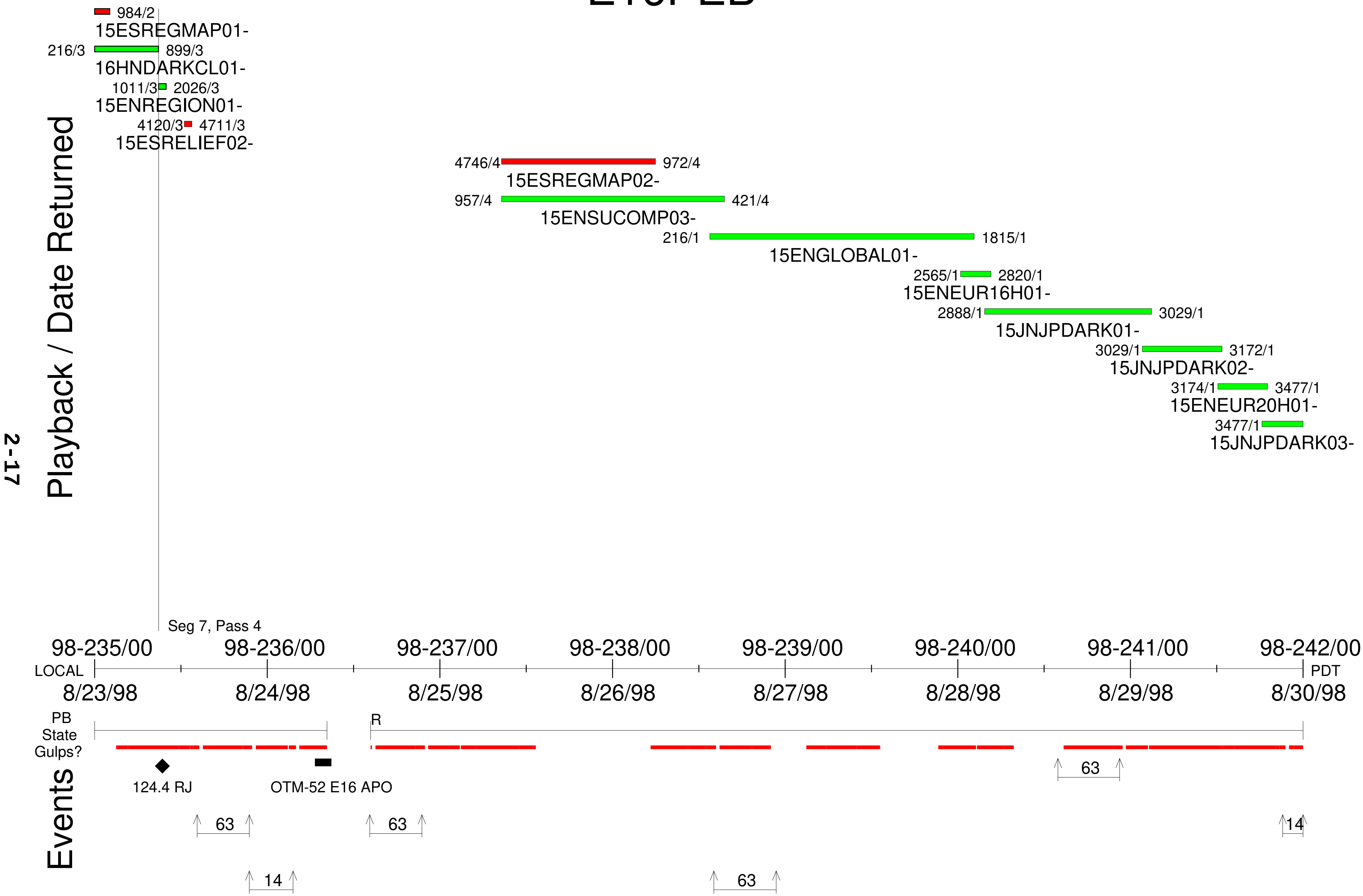

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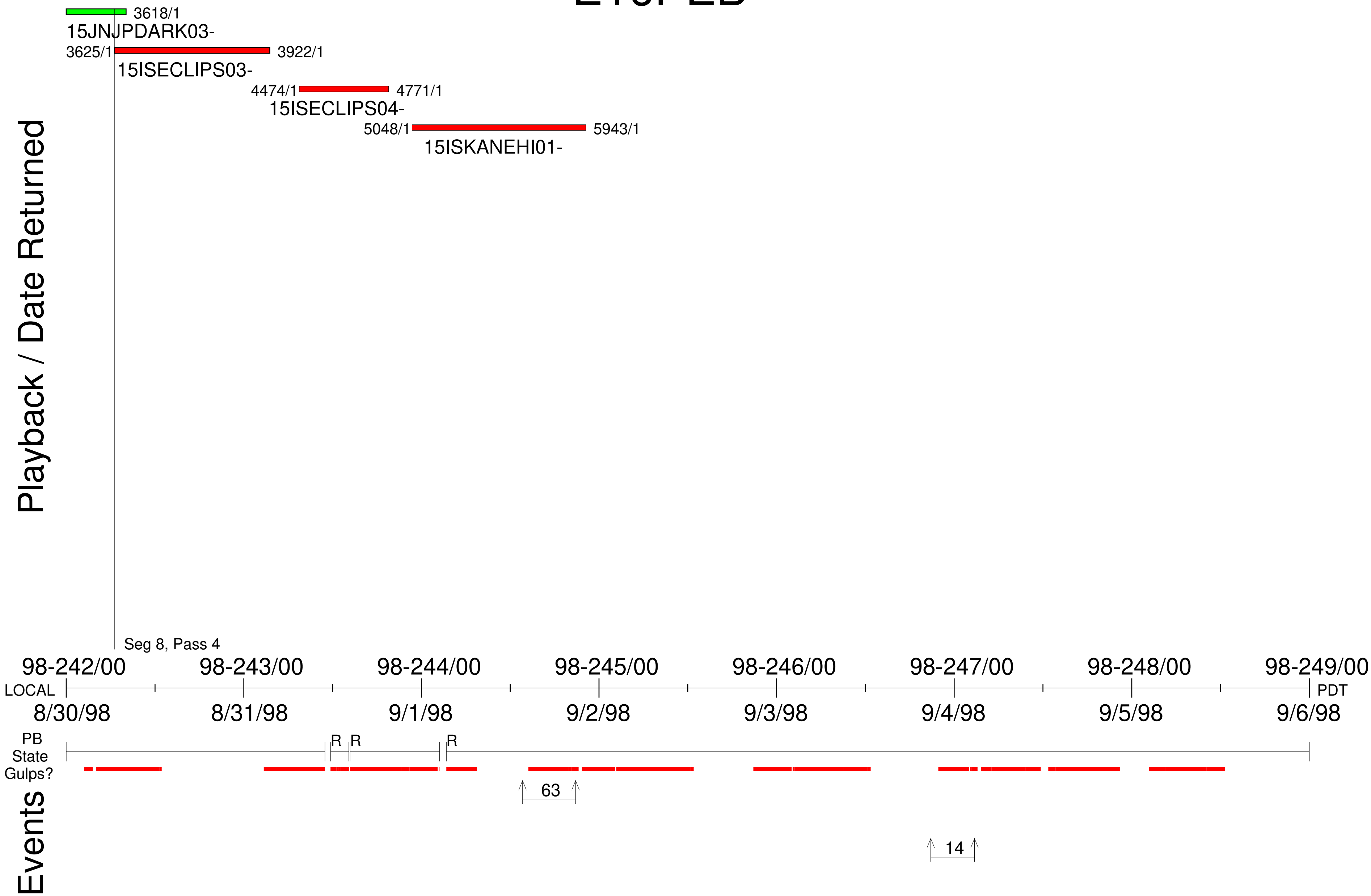

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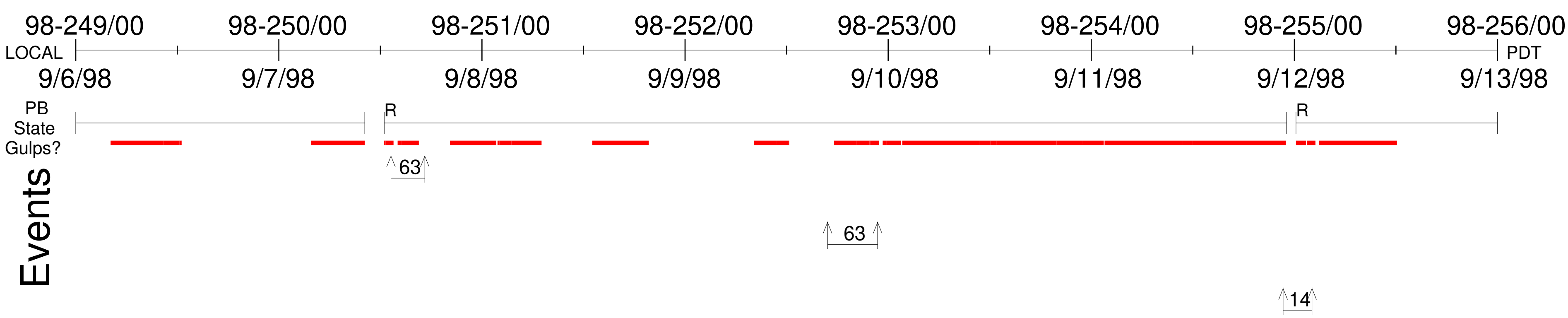
E16PEB

Playback / Date Returned

Events



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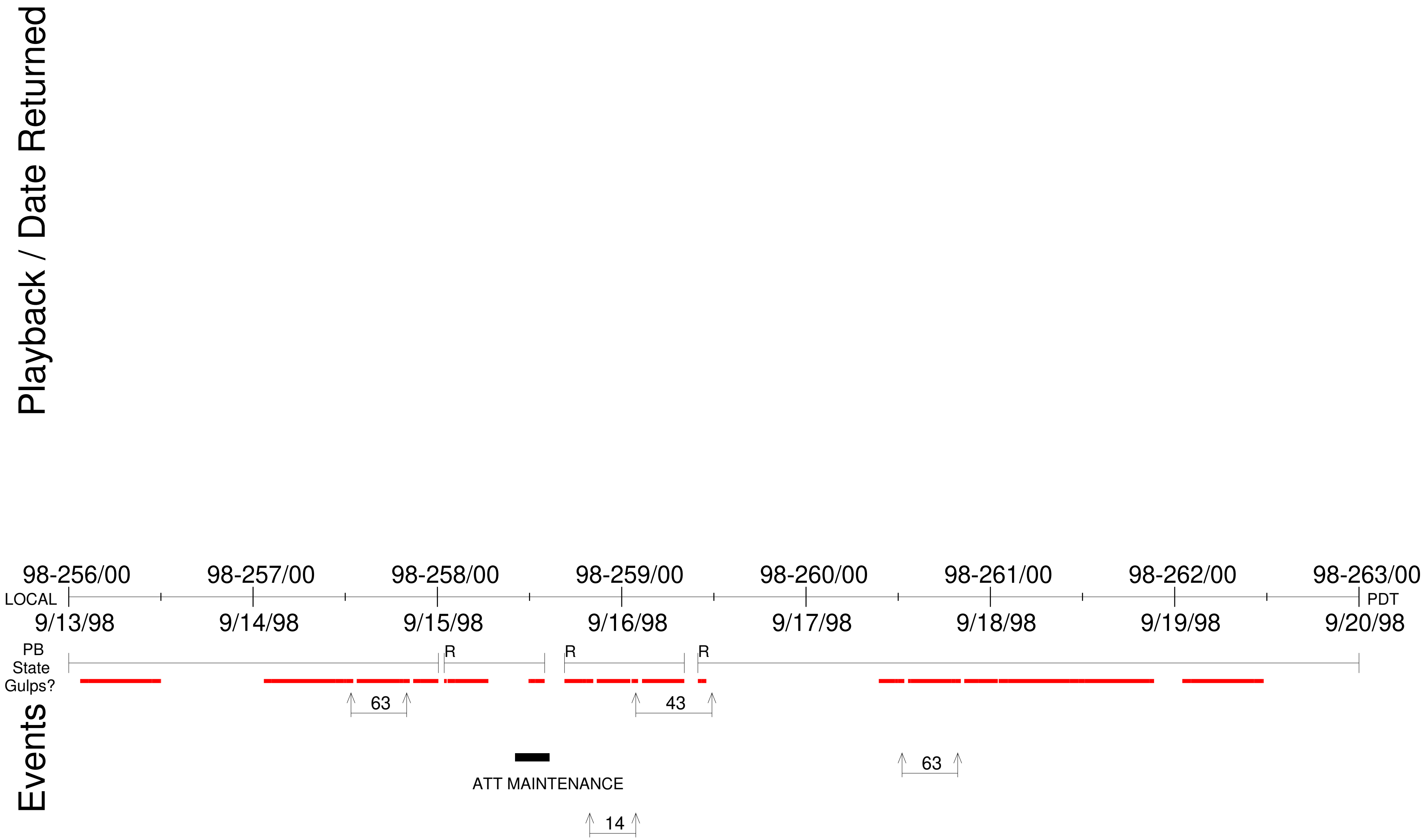

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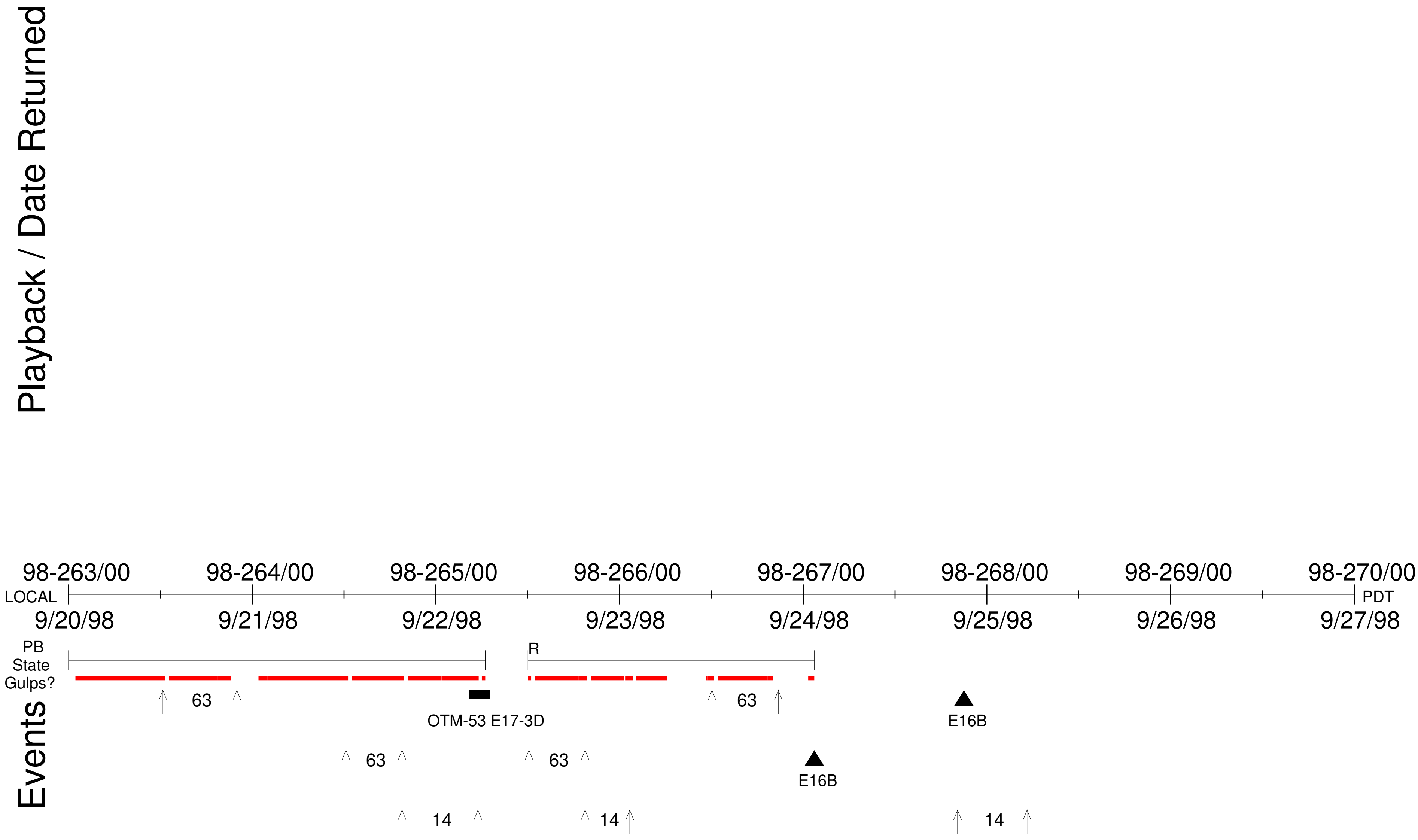
E16PEB



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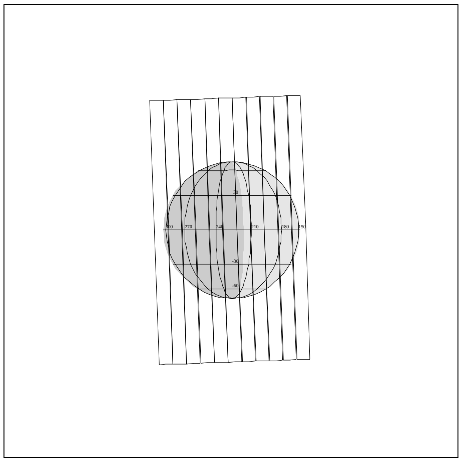
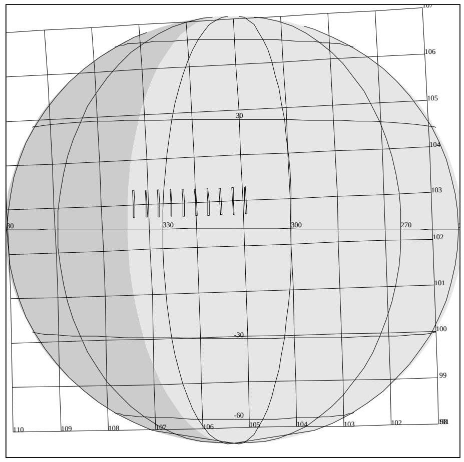
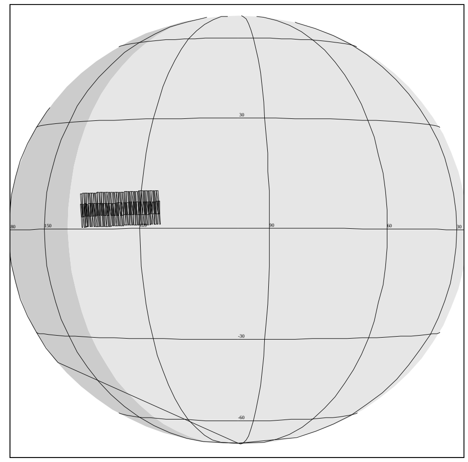
E16 NIMS A



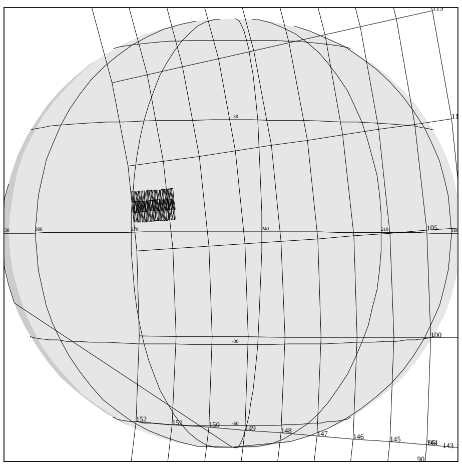
16INHRSPEC01
98-201 05:59:03



16JNJUPRTS01
98-201 11:48:54



16JNHOTMAP01
98-201 16:11:47



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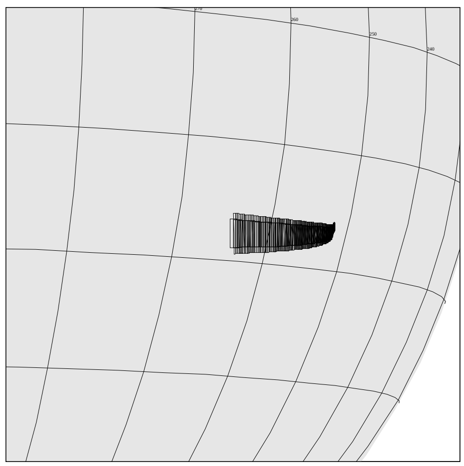
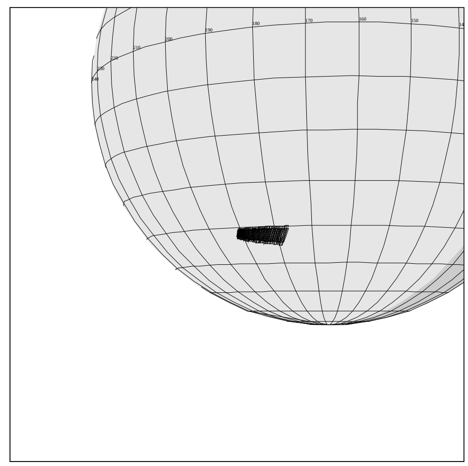
98-201 21:02:59



16ENSUCOMP01
98-202 04:32:56



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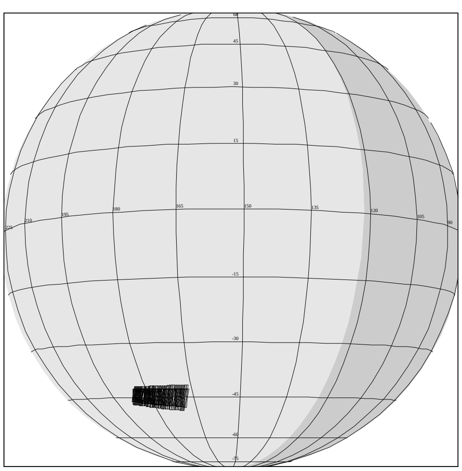

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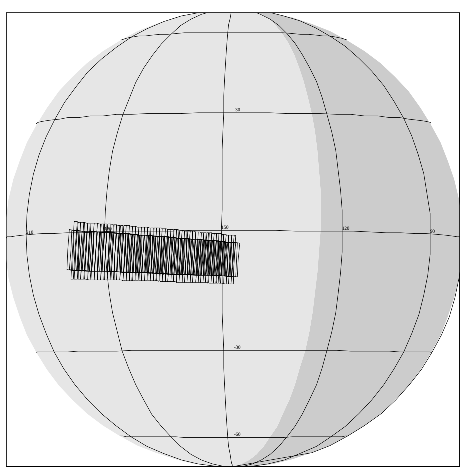

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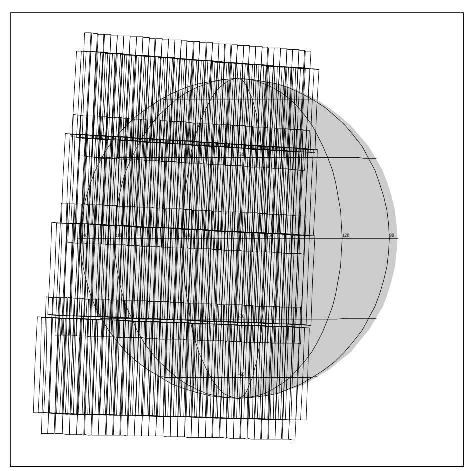
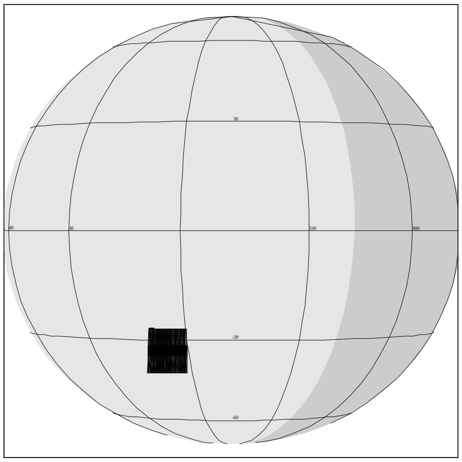
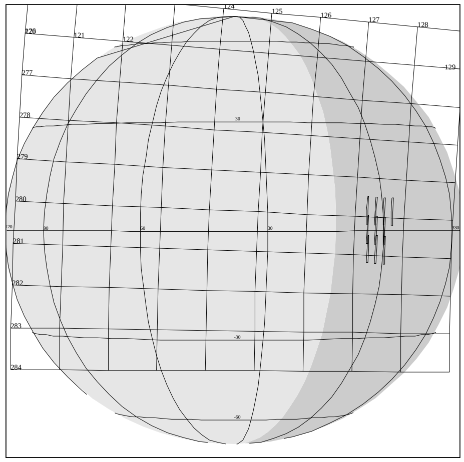


16ENGLOBAL01
98-202 10:07:36

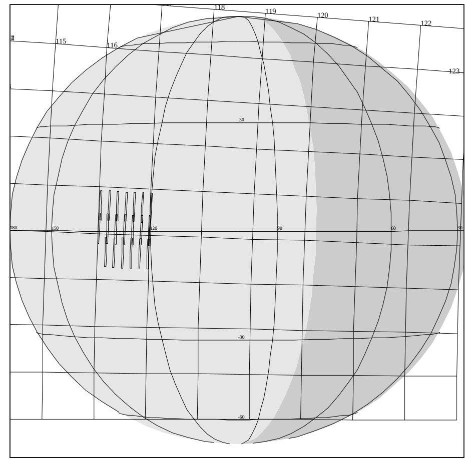
E16 NIMS B



16JNWHTOVL01
98-202 11:57:49



16JNJUPRTS02
98-202 13:28:49



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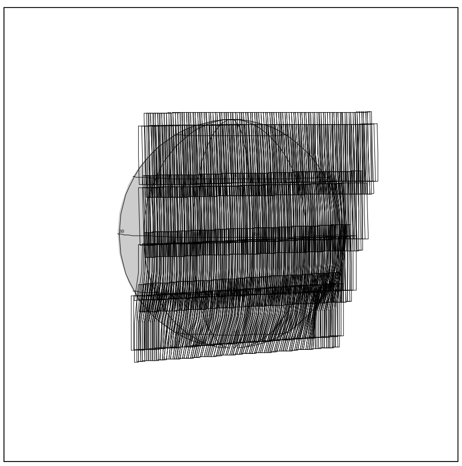
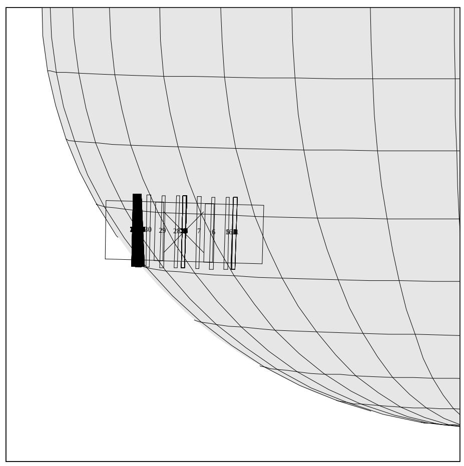


16GNGLOBAL01
98-202 16:35:52



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