Chapter 2 - Orbit Overview

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Introduction to Chapter 2

This chapter gives an overview of the NIMS observations in the E18 Orbit.

The text on page 3 summarizes the NIMS science objectives for E18. The NIMS calibrations are discussed on page 3. Early data return and E18 playback are also discussed on page 3.

The table on page 4 is a time-ordered listing of the NIMS Oapels for E18.

The plot on page 5 shows the geometry of the NIMS E18 observations using a north trajectory pole view projection. The plot on page 6 shows the geometry of the NIMS E18 calibrations.

The spreadsheet on page 7 summarizes the various inputs for the NIMS E18 Observations. The spreadsheet on pages 8 and 9 summarizes the resource usage for the NIMS E18 observations.

The table on page 10 lists various NIMS E18 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 E18 observations for all intruments during the E18 Encounter Period.

The tapemap on page 12 shows the placement of the E18 observations on the spacecraft's tape recorder.

The timeline on pages 13 through 23 shows the preliminary E18 playback schedule.

The NIMS E18 mosaic designs are summarized on page 24 and 25 in time-order.

NIMS E18 SCIENCE OVERVIEW

Jupiter Science

There are four Jupiter observations in E18. Three are realtime and one is recorded. One of the realtime observations looks along the equator and the other two look at the daylit middle north latitude region. The one recorded observations looks at the white oval region in the southern hemisphere near -30 latitude to investigate the newly created merged white ovals.

Io Science

There is one INHRSPEC high spatial and spectral resolution Io observation in E18. INHRSPEC01, centered at 90 W. longitude, consists of a single scan across the half-lit disk.

Europa Science

There are five Europa observations planned for E18:
Three regional observations and two half-disk global observations.
ENSUCOMP01 looks at 27N 200W covering complex intersecting dark linea.
ENSUCOMP02 looks at 25N 155W covering sharply defined dark linea.
ENSUCOMP03 looks at 70N 150W in Europa's north polar region.
ENGLOBAL01 covers pole to pole 210 to 290 degrees West longitude.
ENGLOBAL02 covers pole to pole 120 to 210 degrees West longitude.

Ganymede Science

Ganymede was not observed in E18.

Callisto Science

Callisto was not observed in E18.

Calibration

There are two NIMS calibration observations planned for E18: one RCT cal, one OPCAL. A starcal was added later.

Early Data Return

There are five realtime observations in E18: Three 408 wavelength Jupiter observations (JUPRTS), one RCT calibration and one OPCAL.

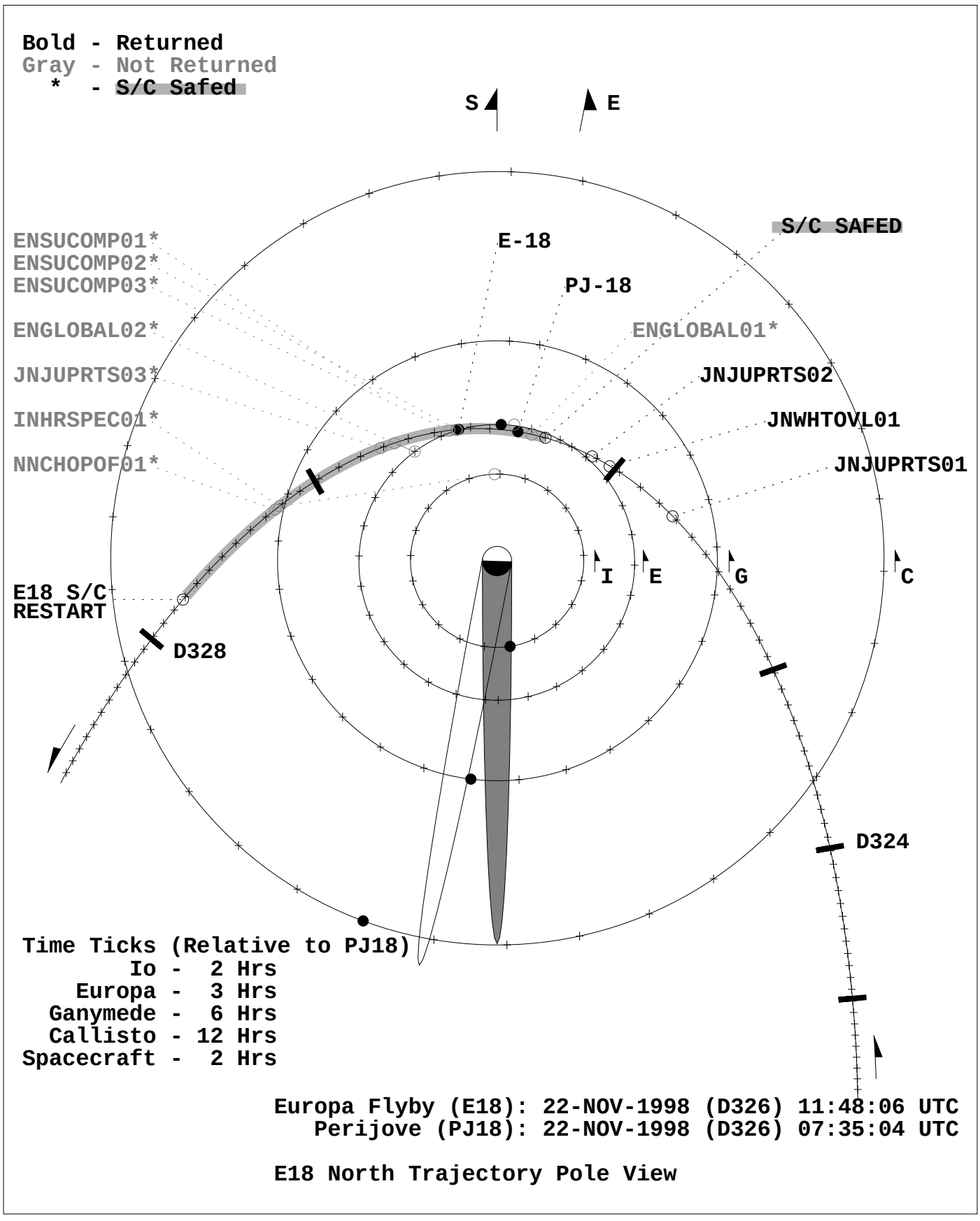
E18 Playback

E18 playback is split into two passes through the tape.

E18 Time-Ordered Listing

OAPEL	Start (UTC)	End (UTC)	Duration
18NNJUPRTS01-	98-325/17:50:58	98-325/18:01:05	000/00:10:06
18JNJUPRTS01*	98-325/18:02:05	98-325/18:26:21	000/00:24:16
18NNWHTOVL01-	98-326/00:16:12	98-326/00:26:19	000/00:10:06
18JNWHTOVL01-	98-326/00:27:19	98-326/00:48:33	000/00:21:14
18NNJUPRTS02-	98-326/01:46:11	98-326/01:56:18	000/00:10:06
18JNJUPRTS02*	98-326/01:57:19	98-326/02:11:28	000/00:14:09
18NNGLOBAL01-	98-326/06:25:15	98-326/06:35:22	000/00:10:06
18ENGLOBAL01-	98-326/06:35:22	98-326/07:11:46	000/00:36:24
18NNSUCOMP01-	98-326/11:40:43	98-326/11:50:50	000/00:10:06
18ENSUCOMP01-	98-326/11:51:51	98-326/11:56:54	000/00:05:03
18ENSUCOMP02-	98-326/11:56:54	98-326/12:29:15	000/00:32:21
18NNSUCOMP03-	98-326/12:18:08	98-326/12:28:15	000/00:10:06
18ENSUCOMP03-	98-326/12:29:15	98-326/12:37:21	000/00:08:05
18NNGLOBAL02-	98-326/15:42:23	98-326/15:52:29	000/00:10:06
18ENGLOBAL02-	98-326/16:42:02	98-326/17:27:32	000/00:45:30
18NNJUPRTS03-	98-326/17:38:39	98-326/17:48:46	000/00:10:06
18JNJUPRTS03*	98-326/17:49:47	98-326/18:03:56	000/00:14:09
18NNHRSPEC01-	98-327/03:46:20	98-327/03:56:27	000/00:10:06
18INHRSPEC01-	98-327/03:56:27	98-327/04:05:22	000/00:08:55
18NNCHOPOF01-	98-327/04:28:48	98-327/04:38:55	000/00:10:06
18NNRCTRLT01-	99-007/14:00:05	99-008/03:15:50	000/13:15:44

NIMS E18 OBSERVATIONS

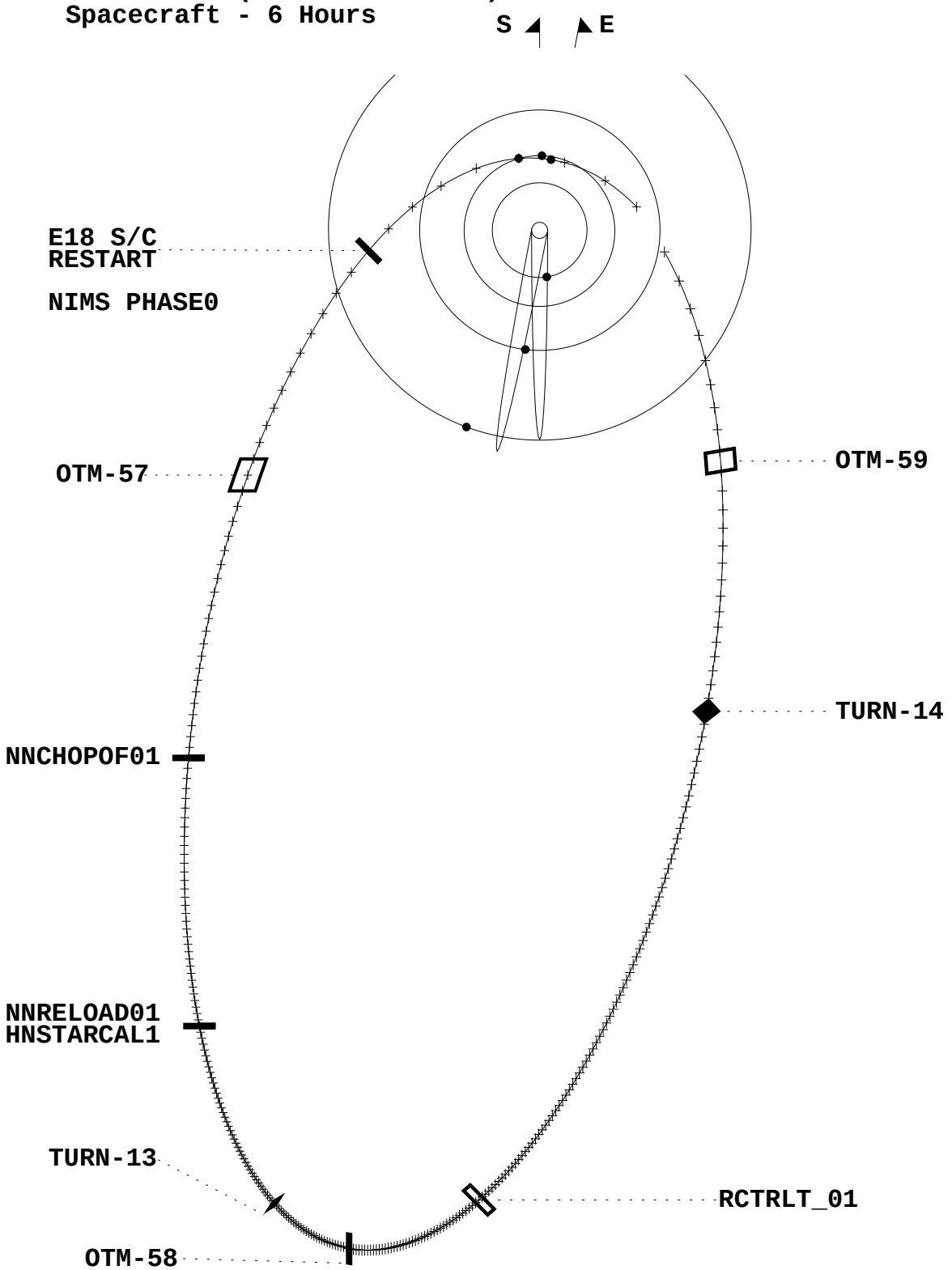


NIMS - FEL - 12/06/98

NIMS E18 CRUISE CALIBRATIONS

Europa Flyby (E18): 22-NOV-1998 (D326) 11:48:06 UTC
Perijove (PJ18): 22-NOV-1998 (D326) 07:35:04 UTC
Apojove (AJ18): 27-DEC-1998 (D361) 17:00:00 UTC

Time Ticks (Relative to E18)
Spacecraft - 6 Hours



E18 North Trajectory Pole View, Perijove to Perijove

E18 NIMS INPUTS

Activity ID	Observation Title	NIMS Edit Table	NIMS PB Table	Mode	Gain	Grating Start	Grating Offset	Record Format	PSID
18NNJUPRTS01-	NIMS Software Reload								
18JNJUPRTS01*	Jupiter Realtime Observation	E18JLM408/MB	R/T	LM	2	0	4	R/T	DA
18NNWHTOVL01-	NIMS Software Reload								
18JNWHTOVL01-	Jupiter White Oval	E18JSB253B	E18JSB253B	LM	2	0	4	LPU	DJ
18NNJUPRTS02-	NIMS Software Reload								
18JNJUPRTS02*	Jupiter Realtime Observation	E18JLM408/MB	R/T	LM	2	0	4	R/T	DB
18NNGLOBAL01-	NIMS Software Reload								
18ENGLOBAL01-	Europa Global Observation	E18ELM442	E18ELM360	LM	3,4	0	4	MPW	DC
18NNSUCOMP01-	NIMS Software Reload								
18ENSUCOMP01-	Europa Surface Composition	E18ELM442	E18ELM360	LM	3	0	4	MPW	DD
18ENSUCOMP02-	Europa Surface Composition	E18ELM442	E18ELM360	LM	3	0	4	MPW	DE
18NNSUCOMP03-	NIMS Software Reload								
18ENSUCOMP03-	Europa Surface Composition	E18ELM442	E18ELM360	LM	4	0	4	MPW	DF
18NNGLOBAL02-	NIMS Software Reload								
18ENGLOBAL02-	Europa Global Observation	E18ELM442	B_E18ELM228C_1	LM	3,4	0	4	MPW	DG
18NNJUPRTS03-	NIMS Software Reload								
18JNJUPRTS03*	Jupiter Realtime Observation	E18JLM408/MB	R/T	LM	2	0	4	R/T	DH
18NNHRSPEC01-	NIMS Software Reload								
18INHRSPEC01-	Io Monitoring at High Spectral Resolutio	E18ILM442	E18ILM360	LM	2	0	4	MPW	DI
18NNCHOPOF01-	NIMS Chopper Off								
18HNSTRCAL01-	NIMS Star Calibration	STRCAL17	STRCAL15	XM	4	0	4	MPW	FA
18NNRCTRLT01-	NIMS RCT Real Time Calibration	E18RCT252	R/T	LM	1	0	4	R/T	XE
18NNROPCAL01-	NIMS OPCAL	E18OPCAL48	R/T	LM	4	0	4	R/T	DC

E18 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)
18JNJUPRTS01	LM				360					
18JNWHTOVL01	LM	LPU	0.0393	229	253	969	967.33	5.97	5.98	8.667
18JNJUPRTS02	LM				360					
18ENGLOBAL01	LM	MPW	0.3172	1848	360	2100	1057.33	12.18	24.19	8.667
18ENSUCOMP01	LM	MPW	0.0366	213	360	240	219.33	2.53	2.76	8.667
18ENSUCOMP02	LM	MPW	0.2810	1637	360	1860	832	9.58	21.43	8.667
18ENSUCOMP03	LM	MPW	0.0638	372	360	420	416.67	4.80	4.84	8.667
18ENGLOBAL02	LM	MPW	0.4016	2340	228	2660	1386.67	15.97	30.64	8.667
18JNJUPRTS03	LM				360					
18INHRSPEC01	LM	MPW	0.0436	254	360	286	126.67	1.46	3.29	8.667
18ENGLOBAL01	LM	MPW	0.3172	1848	360	2100	1031.33	11.88	24.19	8.667
18ENSUCOMP02	LM	MPW	0.2810	1637	360	1860	934	10.76	21.43	8.667
18ENGLOBAL02	LM	MPW	0.4016	2340	228	2660	1270	14.63	30.64	8.667
18INHRSPEC01	LM	MPW	0.0436	254	360	286	156	1.80	3.29	8.667
18NNRCTRLT01	LM	R/T								
18NNROPCAL01	LM	R/T								
Resource Totals			**1.1002**	**6411**				**52.49**	**93.14**	

E18 RESOURCES

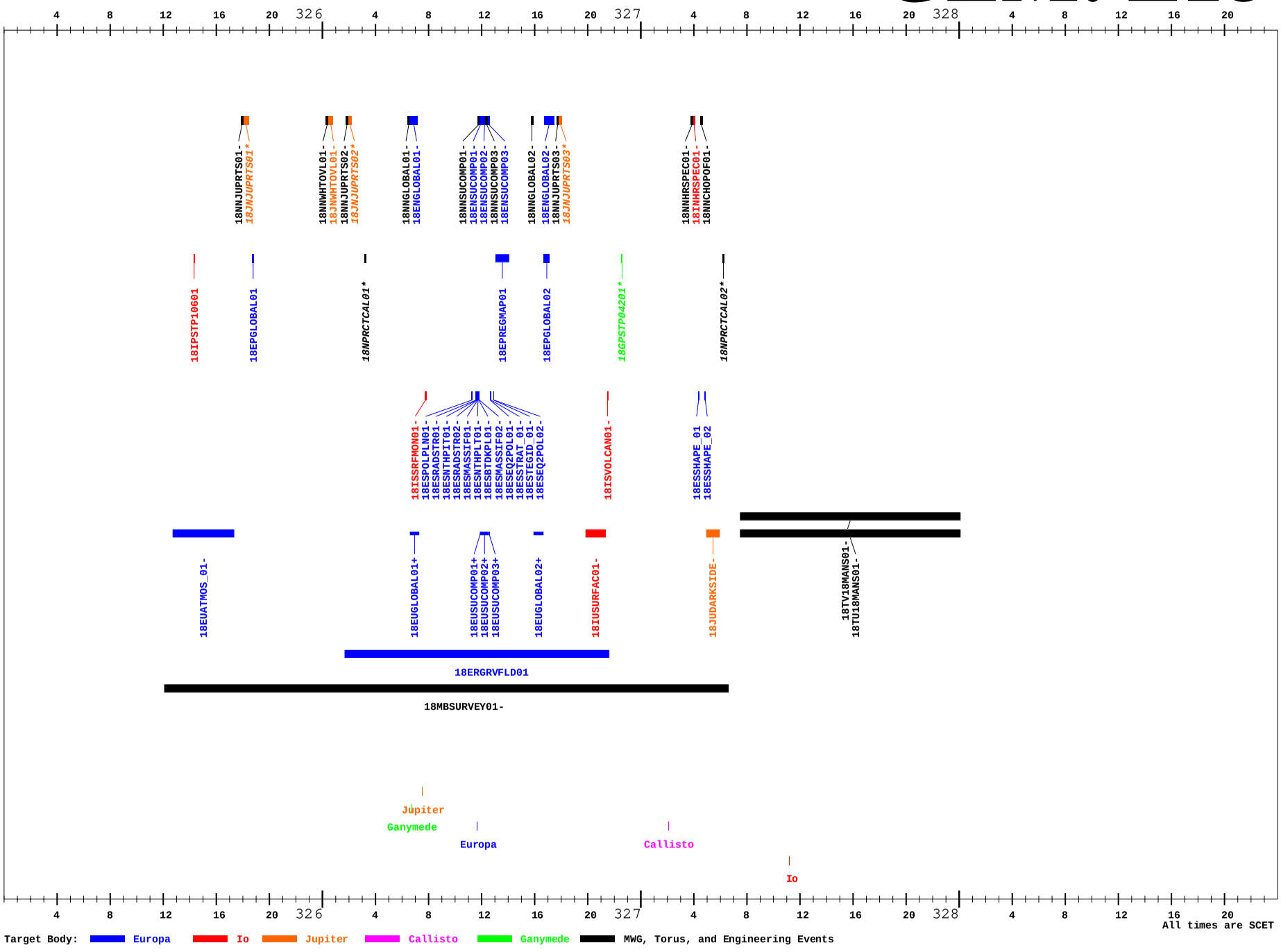
Activity ID	AACS Mbits c 2.5	Comp	Thold	RT BTG MBits	Total BTG Mbits (4% ohead)	Data Reduction Factor (sBOT/BTG)	Pass
18JNJUPRTS01				0.16			
18JNWHTOVL01	0.06	1.9	0		3.0913	1.9	1
18JNJUPRTS02				0.16			
18ENGLOBAL01	0.06	1.4	0		6.5250	1.9	1
18ENSUCOMP01	0.01	1.3	0		1.4576	1.7	1
18ENSUCOMP02	0.05	1.3	0		5.5294	1.7	1
18ENSUCOMP03	0.02	1.3	0		2.7691	1.7	1
18ENGLOBAL02	0.08	1.4	0		5.4197	2.9	1
18JNJUPRTS03				0.16			
18INHRSPEC01	0.01	1.6	2		0.6840	2.1	1
18ENGLOBAL01	0.06	1.4	0		6.3645	1.9	2
18ENSUCOMP02	0.05	1.3	0		6.2073	1.7	2
18ENGLOBAL02	0.07	1.4	0		4.9637	2.9	2
18INHRSPEC01	0.01	1.6	2		0.8424	2.1	2
18NNRCTRLT01				0.13			
18NNROPCAL01							
Resource Totals					**43.8540**		
	Alloc.				**44.2440**		
	Over.				**-0.3900**		

NIMS E18 OBSERVING GEOMETRY

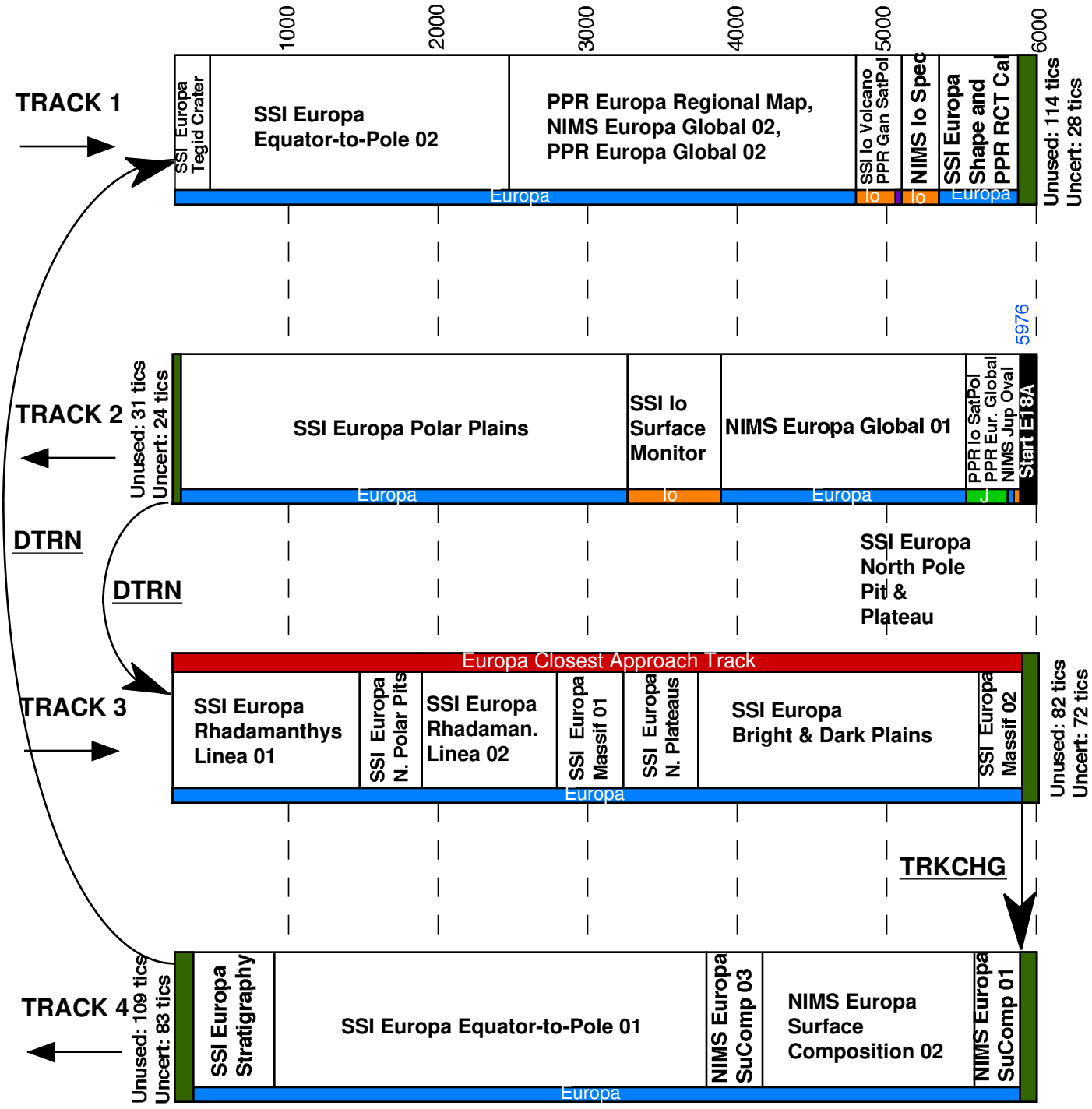
OAPEL	Latitude (deg)	Longitude (deg)	Range (km)	Cone (deg)	Light (deg)	View (deg)	Phase (deg)
18JNJUPRTS01	+10 to +25	113 to 133	808K	114	2 to 79	14 to 32	75
18JNWHTOVL01	-33 to -27	344 to 6	657K	143	59 to 86	32 to 49	46
18JNJUPRTS02	+5 to +15	14 to 21	617K	148	37 to 44	6 to 18	41
18ENGLOBAL01	-90 to +90	201 to 290	100K	76	25 to 112	9 to 90	113
18ENSUCOMP01	+25 to +28	198 to 201	6K	118	24 to 25	27 to 50	53
18ENSUCOMP02	+20 to +30	147 to 163	10K	116	40 to 55	10 to 24	48 to 59
18ENSUCOMP03	+60 to +70	139 to 159	19K	110	69 to 76	62	60
18ENGLOBAL02	-90 to +90	120 to 241	100K	105	13 to 103	10 to 90	65
18JNJUPRTS03	+6 to +8	130 to 156	726K	124	40 to 61	1 to 16	46
18INHRSPEC01	-90 to +90	0 to 180	1062K	72	8 to 171	0 to 90	98

E18 ENCOUNTER
Plot Time: 98-325/00:00:00.000 to 98-329/00:00:00.000
Date of Plot: 17-Nov-98 15:12:36

GEM: E18



E18 HIGH-LEVEL TAPEMAP

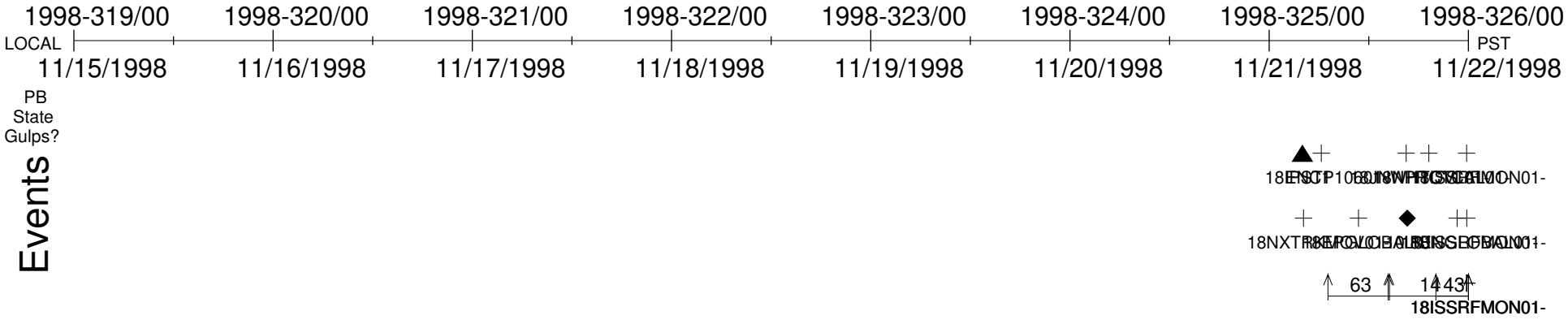


J. Gross, 11/03/98

E18PDB

2-13

Playback / Date Returned



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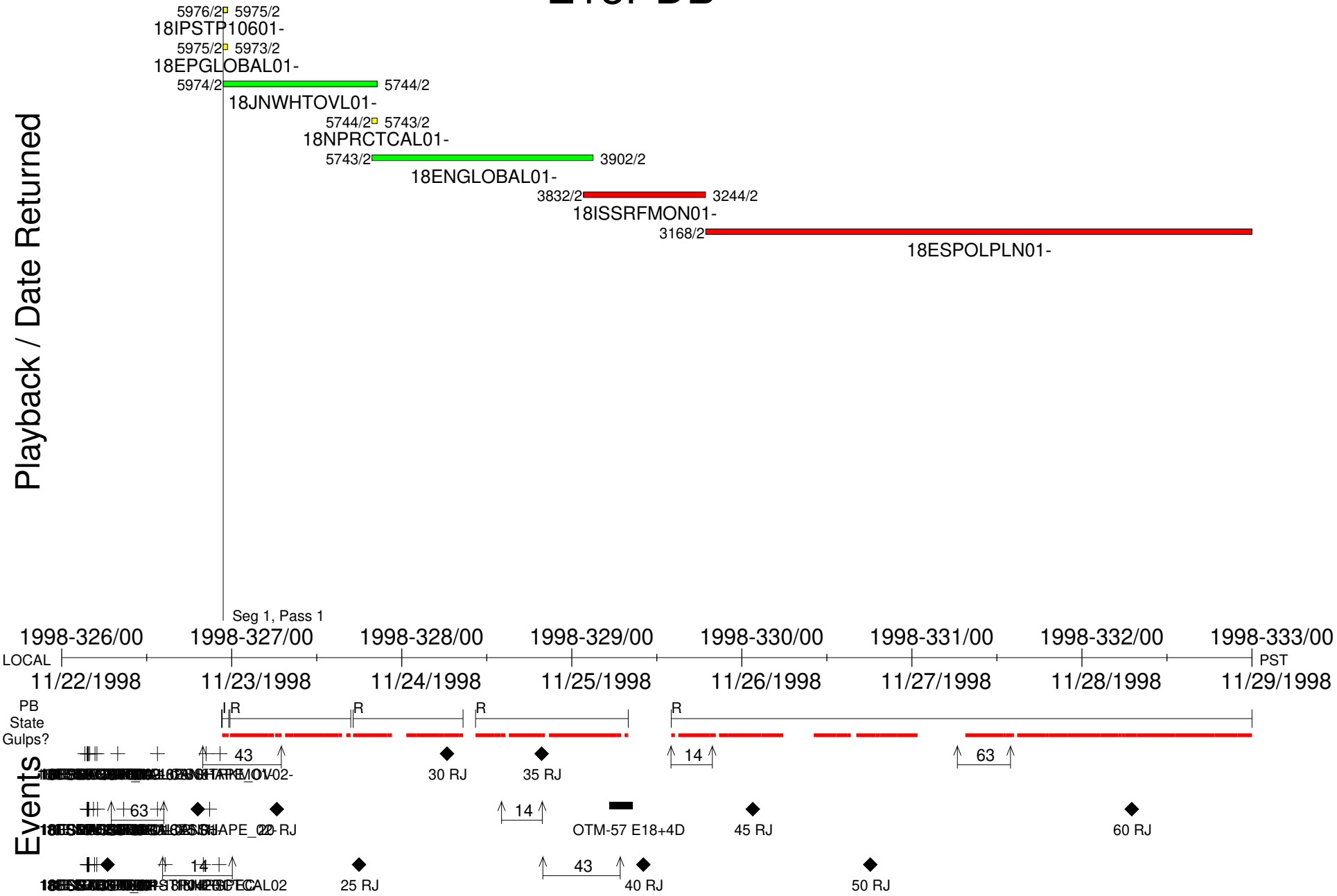
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5975/2 5973/2
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5974/2 5744/2
18JNWHTOVL01-
5744/2 5743/2
18NPRCTCAL01-
5743/2 3902/2
18ENGLOBAL01-
3832/2 3244/2
18ISSRFMON01-
3168/2
18ESPOLPLN01-
Playback / Date Returned
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1998-329/00
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11/27/1998
11/28/1998
11/29/1998
PB
State
Gulps?
R
Events
43
30 RJ
35 RJ
14
63
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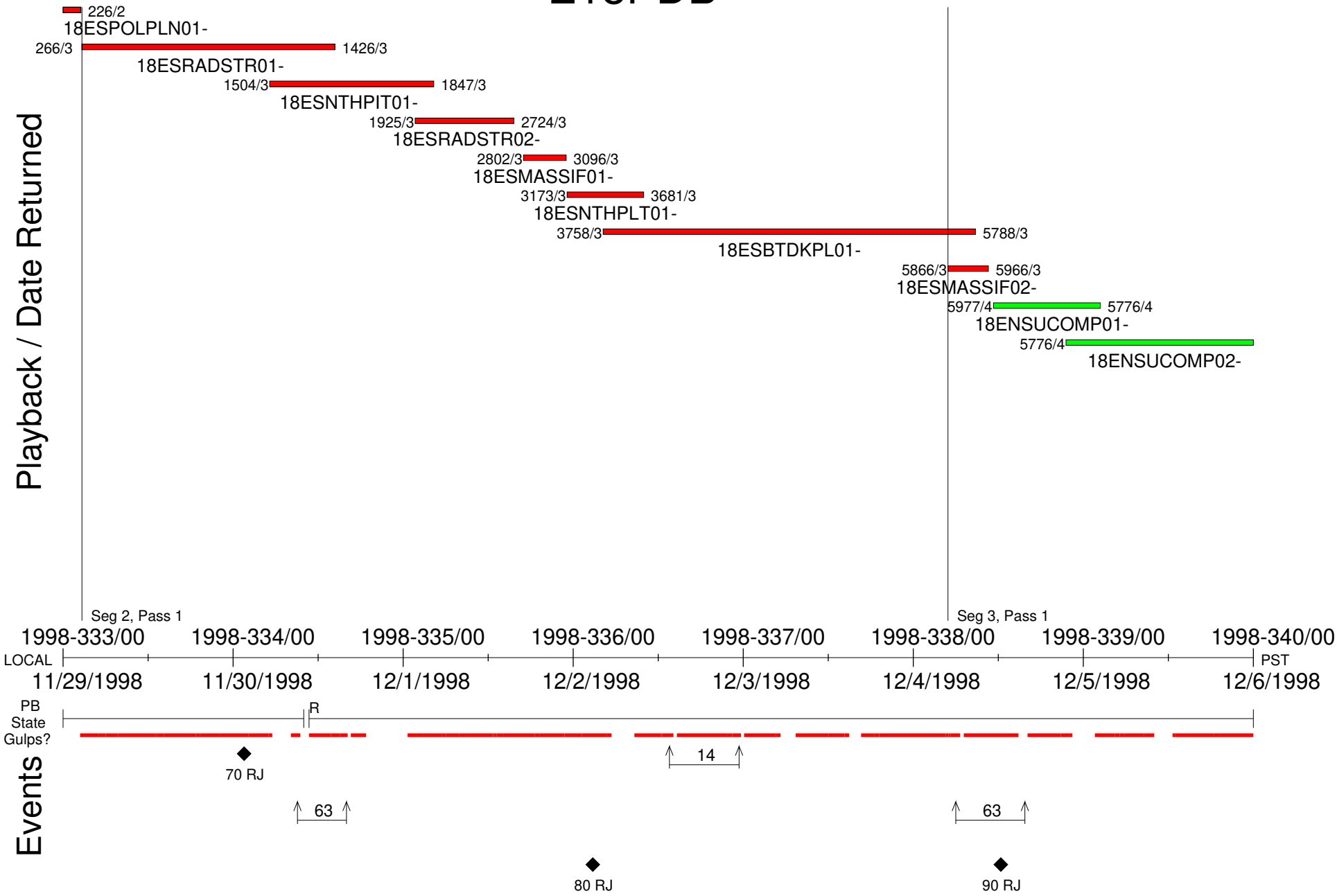
14
OTM-57 E18+4D
45 RJ
60 RJ
14
25 RJ
43
40 RJ
50 RJ

E18PDB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1925/3
2724/3
18ESRADSTR02-
2802/3
3096/3
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3173/3
3681/3
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3758/3
5788/3
18ESBTDKPL01-
5866/3
5966/3
18ESMASSIF02-
5977/4
5776/4
18ENSUCOMP01-
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18ENSUCOMP02-
Seg 2, Pass 1
Seg 3, Pass 1
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1998-334/00
1998-335/00
1998-336/00
1998-337/00
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LOCAL
PST
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11/30/1998
12/1/1998
12/2/1998
12/3/1998
12/4/1998
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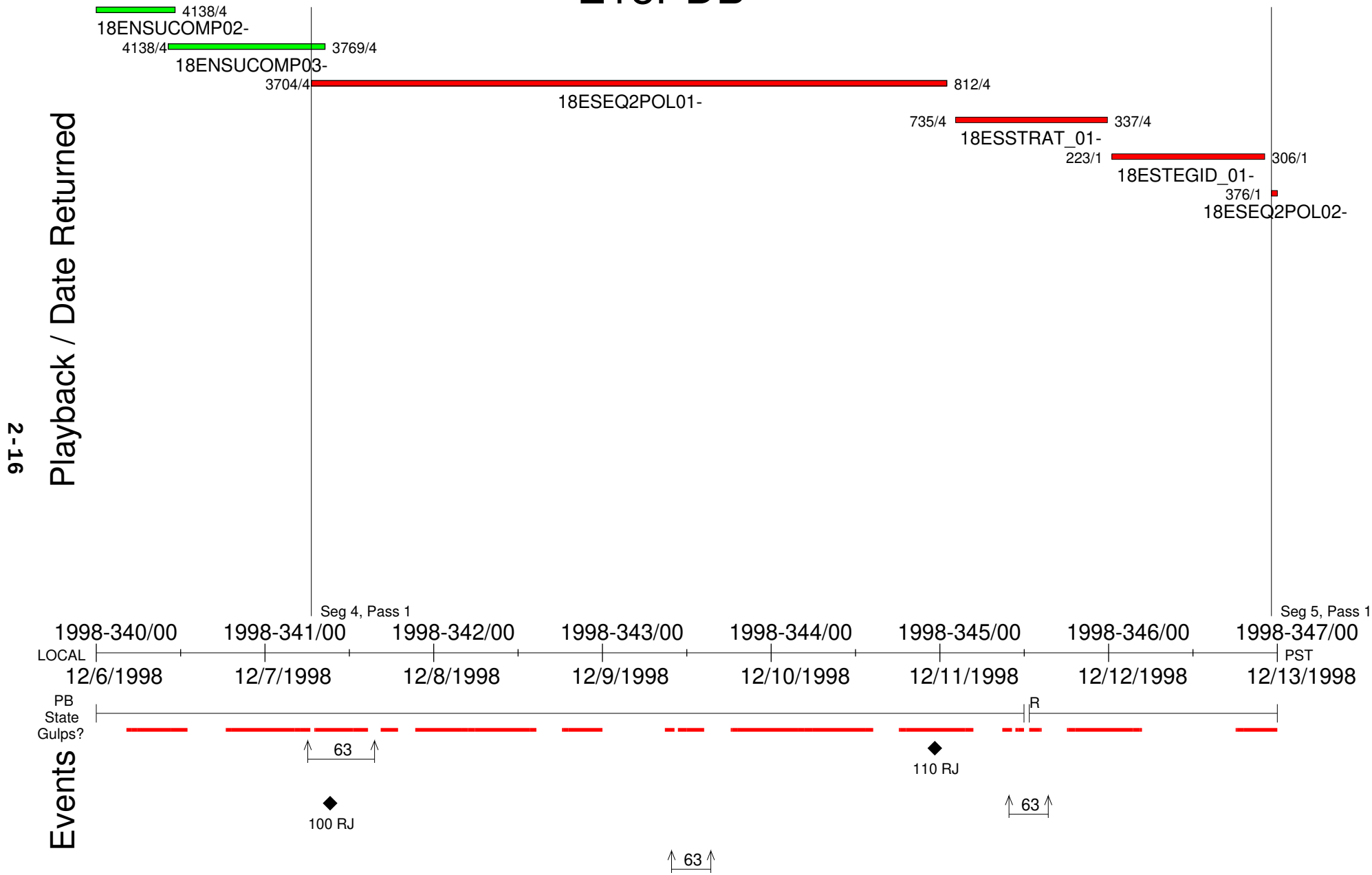
PB State Gulps?
R
Events
70 RJ
14
63
63
80 RJ
90 RJ

E18PDB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3769/4
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3704/4
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735/4
337/4
18ESSTRAT_01-
223/1
306/1
18ESTEGID_01-
376/1
18ESEQ2POL02-
Playback / Date Returned
Seg 4, Pass 1
Seg 5, Pass 1
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1998-341/00
1998-342/00
1998-343/00
1998-344/00
1998-345/00
1998-346/00
1998-347/00
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12/7/1998
12/8/1998
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12/10/1998
12/11/1998
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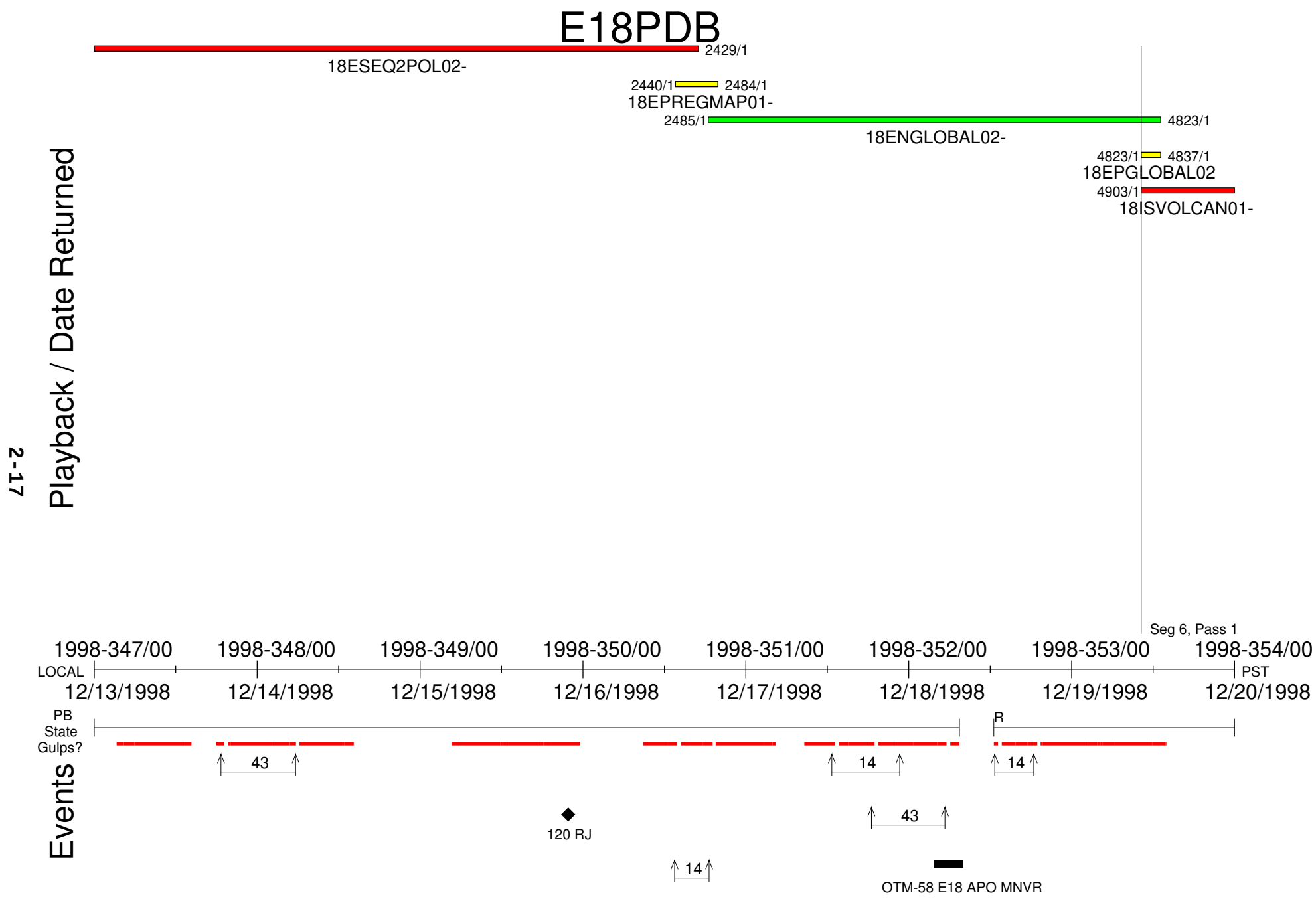
State
Gulps?
R
63
110 RJ
100 RJ
63
63
Events

2-16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1998-351/00
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PST
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R
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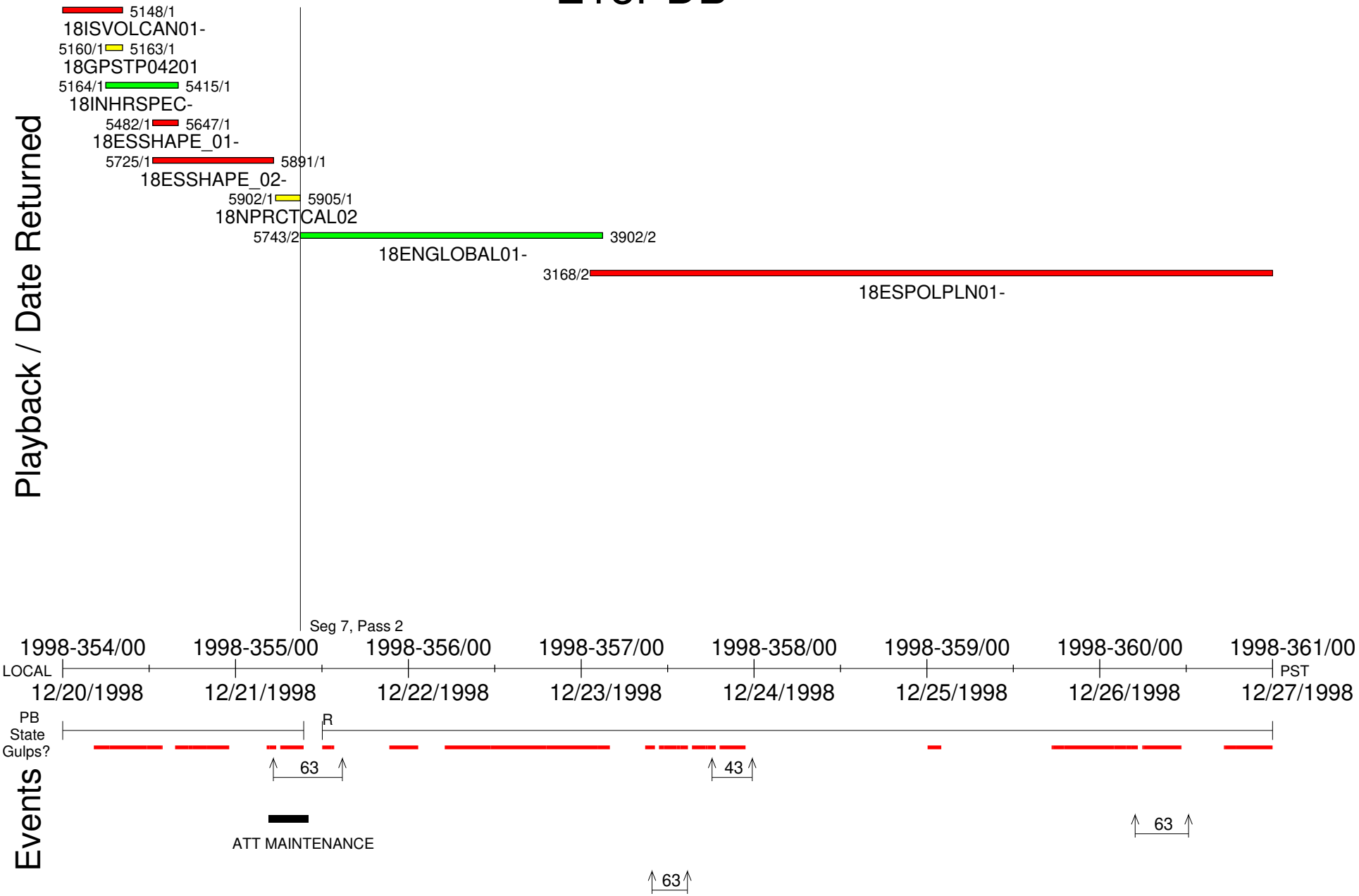
OTM-58 E18 APO MNVR

E18PDB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18ESSHAPE_02-
5902/1
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12/25/1998
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R
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ATT MAINTENANCE
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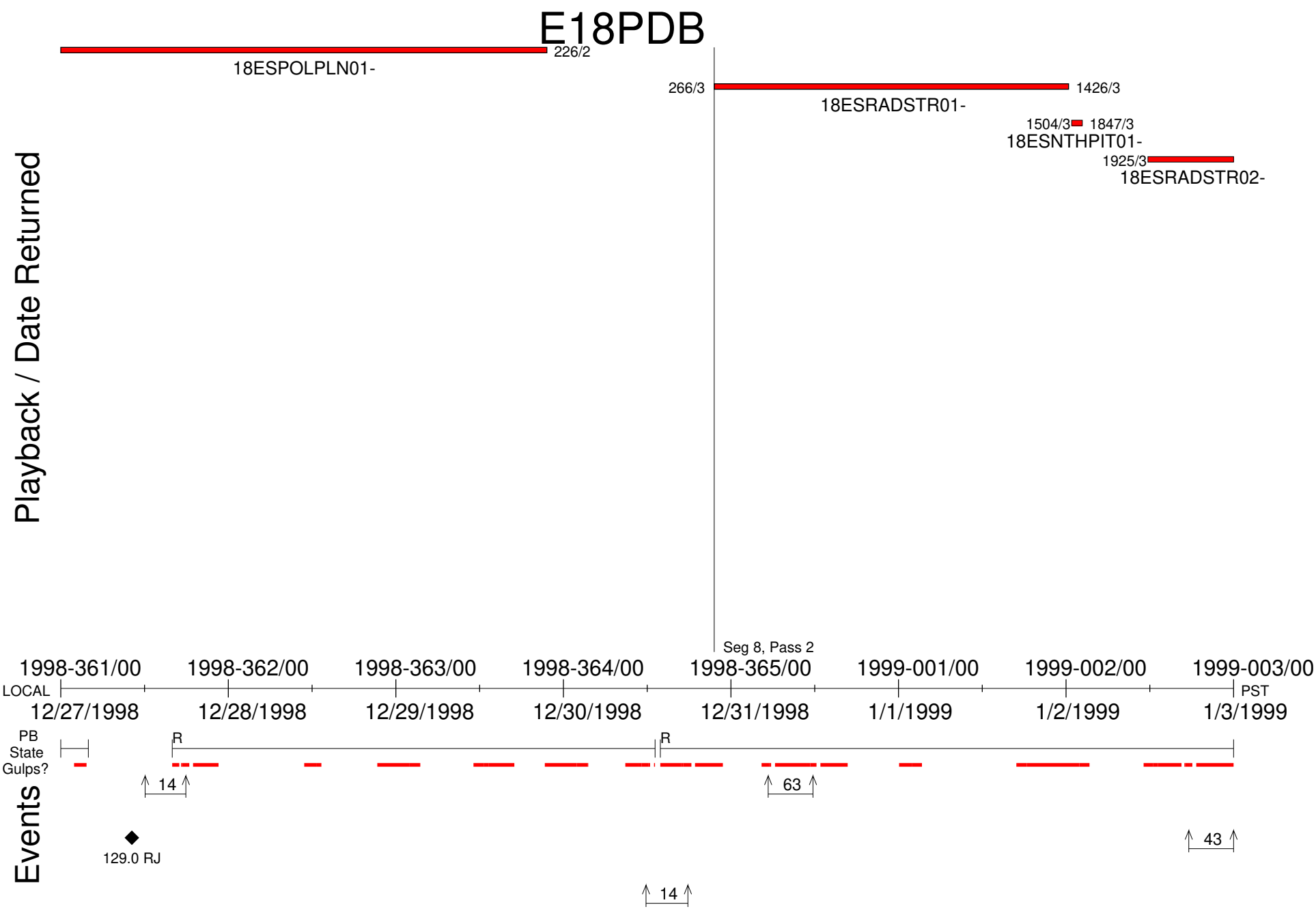
Events

2-18

E18PDB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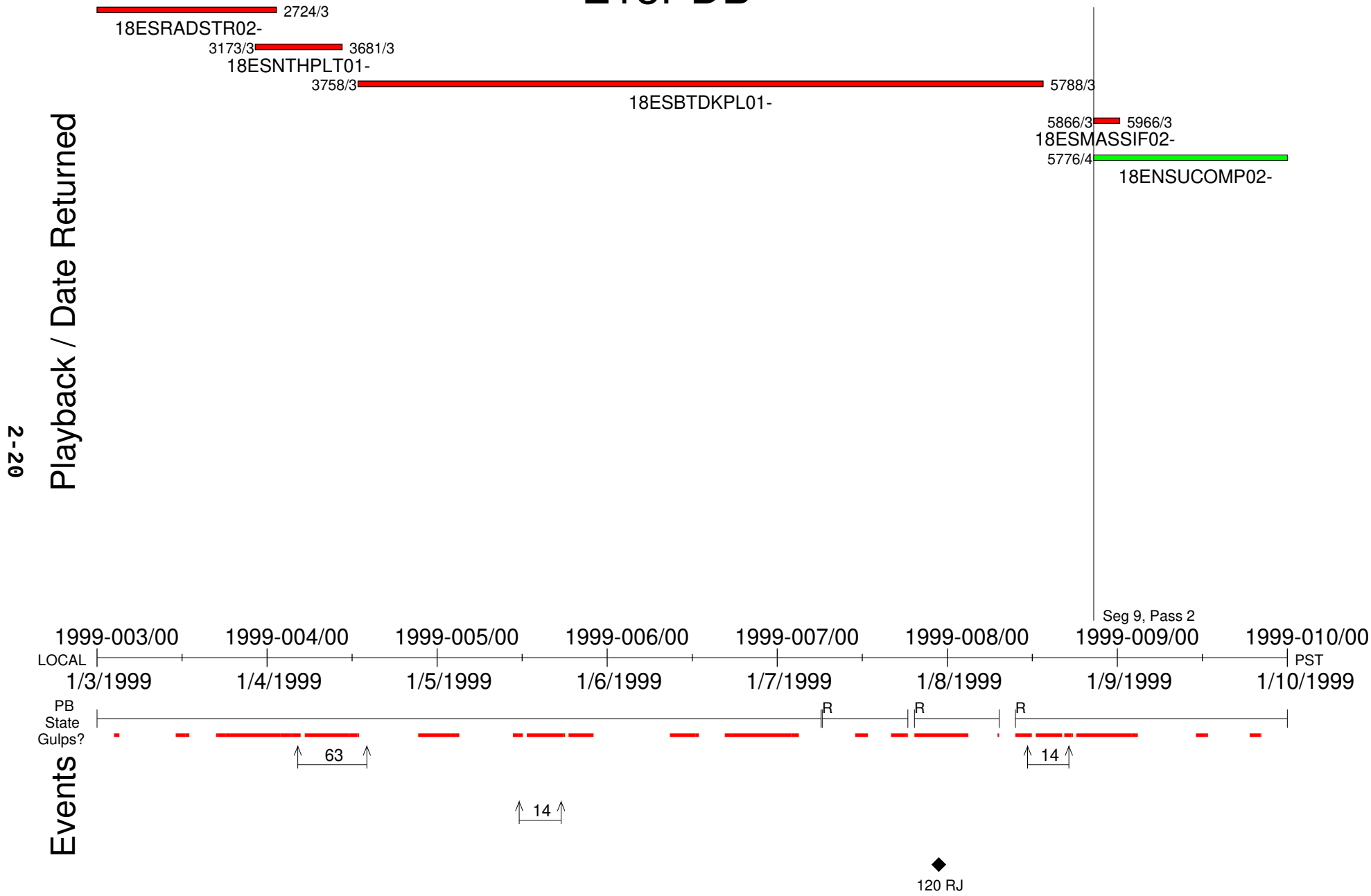
Events

E18PDB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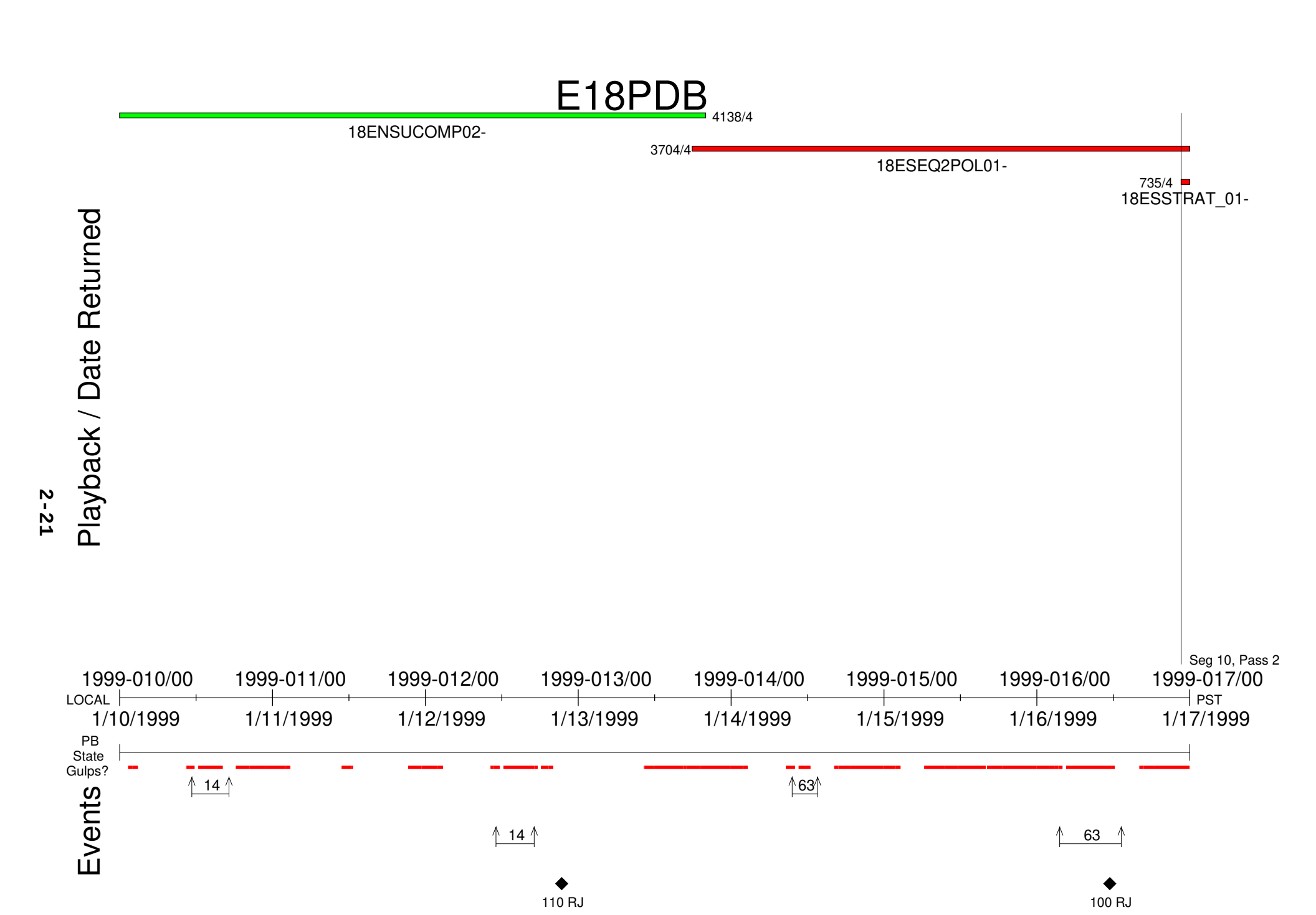
E18PDB
4138/4
18ENSUCOMP02-
3704/4
18ESEQ2POL01-
735/4
18ESSTRAT_01-
Playback / Date Returned
2-21
Seg 10, Pass 2
1999-010/00
1999-011/00
1999-012/00
1999-013/00
1999-014/00
1999-015/00
1999-016/00
1999-017/00
LOCAL
PST
1/10/1999
1/11/1999
1/12/1999
1/13/1999
1/14/1999
1/15/1999
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PB
State
Gulps?
Events
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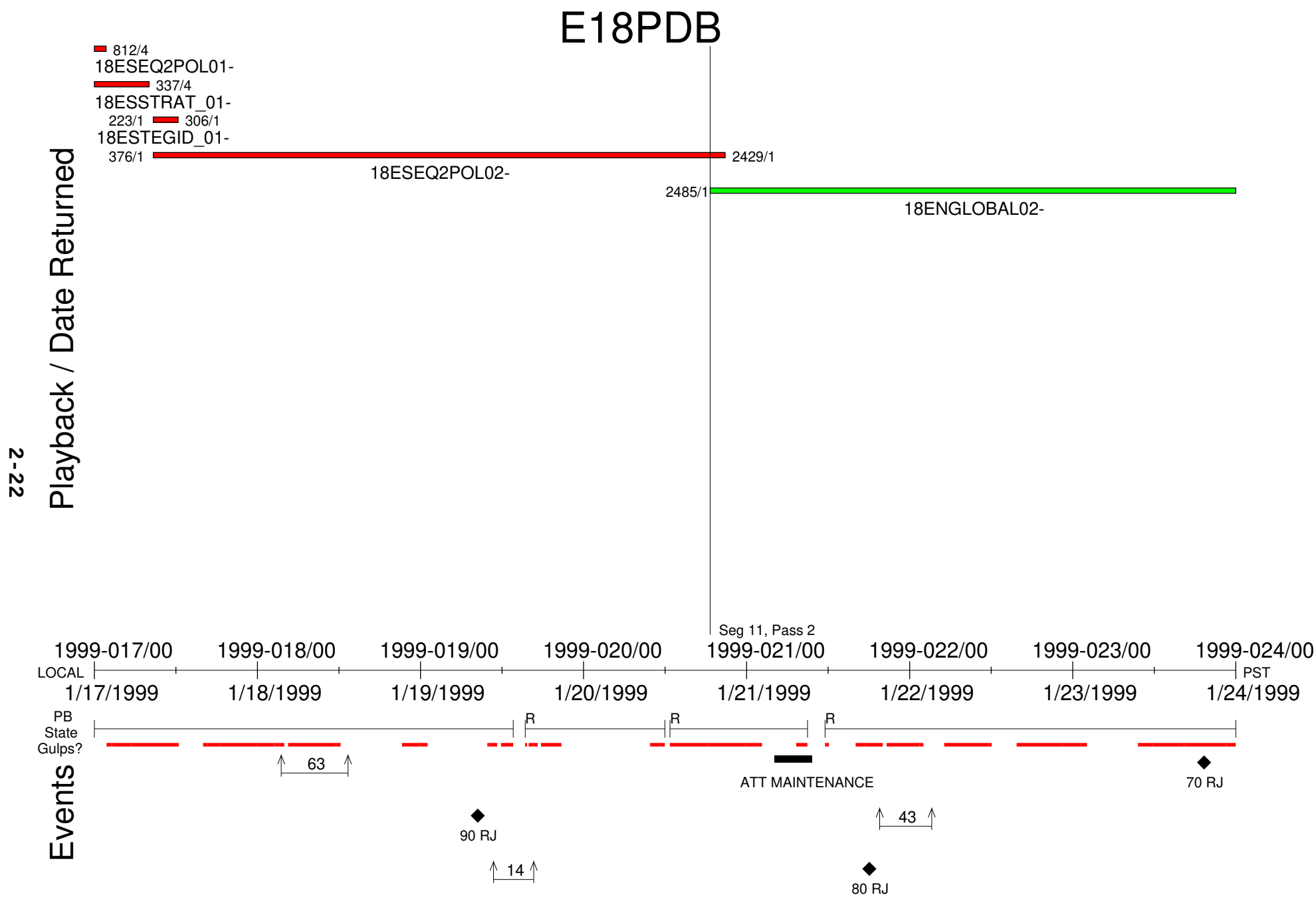
14
63
110 RJ
100 RJ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337/4
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223/1
306/1
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376/1
2429/1
18ESEQ2POL02-
2485/1
18ENGLOBAL02-
Playback / Date Returned
Seg 11, Pass 2
1999-017/00
1999-018/00
1999-019/00
1999-020/00
1999-021/00
1999-022/00
1999-023/00
1999-024/00
LOCAL
PST
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1/18/1999
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1/20/1999
1/21/1999
1/22/1999
1/23/1999
1/24/1999
PB State Gulps?
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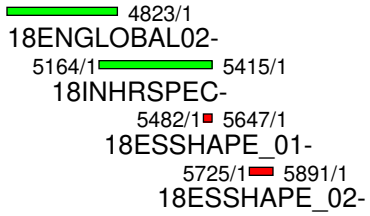
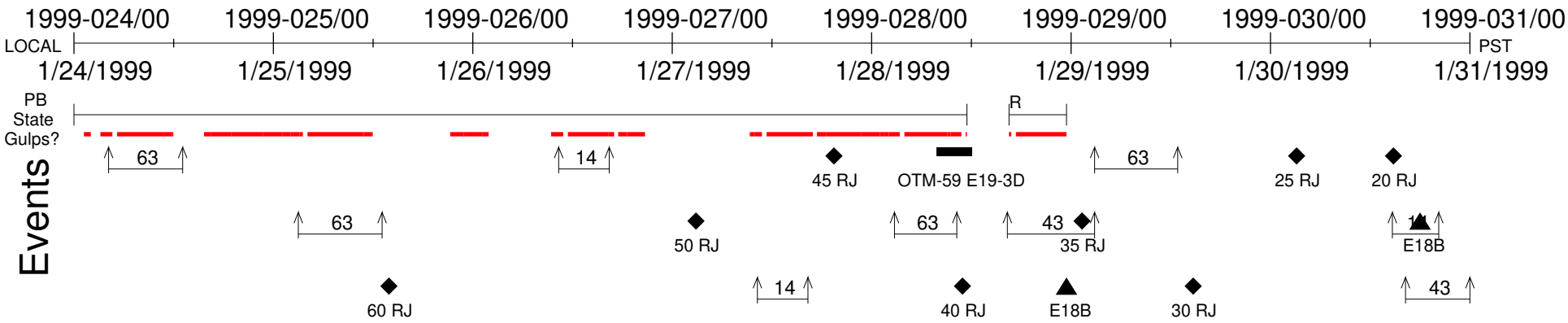
ATT MAINTENANCE
70 RJ
90 RJ
43
14
80 RJ
Events

E18PDB



Playback / Date Returned



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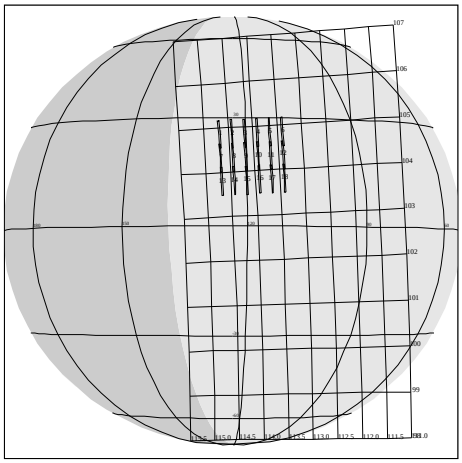
E18 NIMS A



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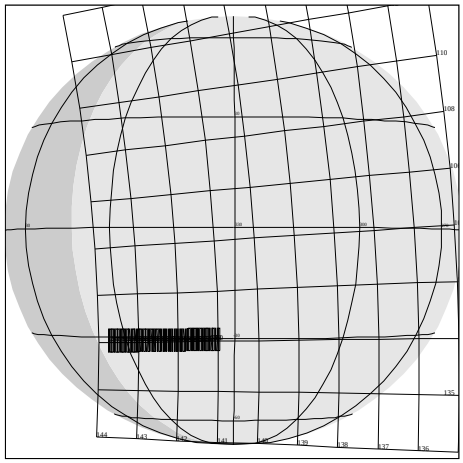

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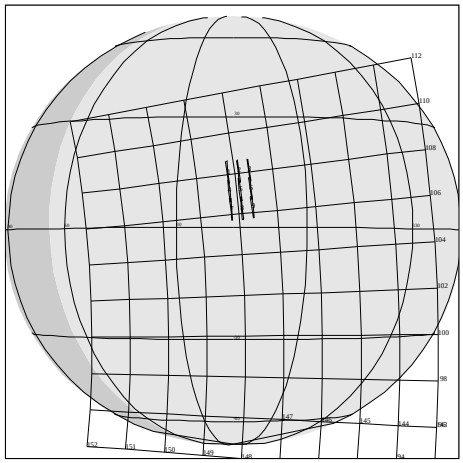
98-326/00:27:19



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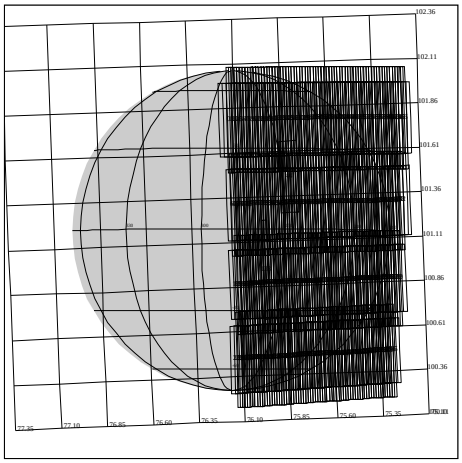
98-326/01:57:19



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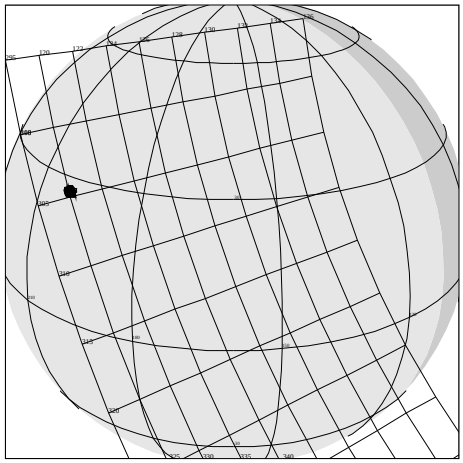
98-326/06:35:22



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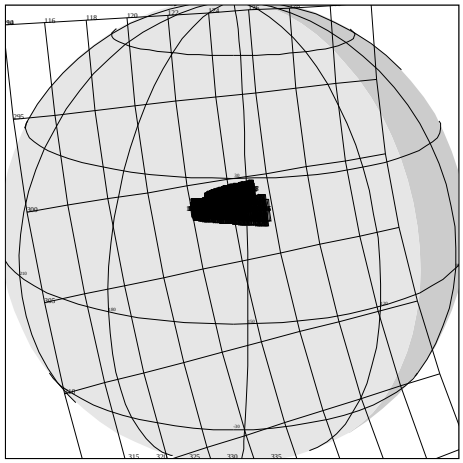

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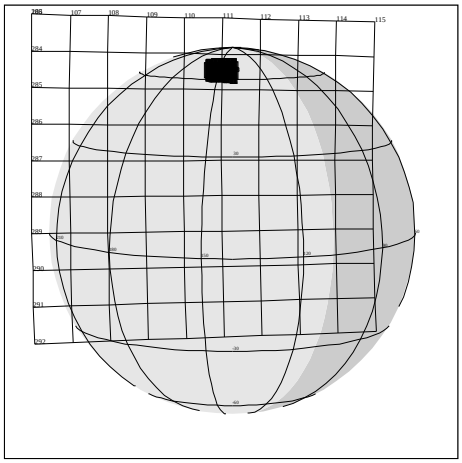
98-326/11:56:54



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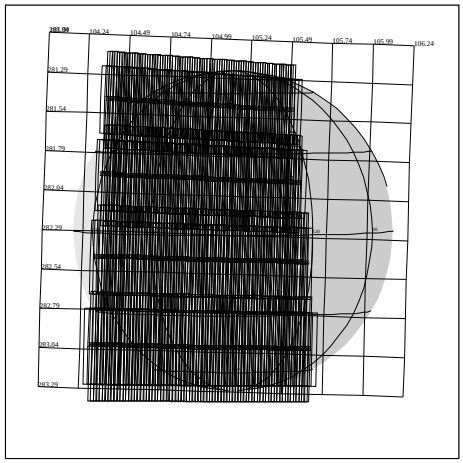
98-326/12:29:15



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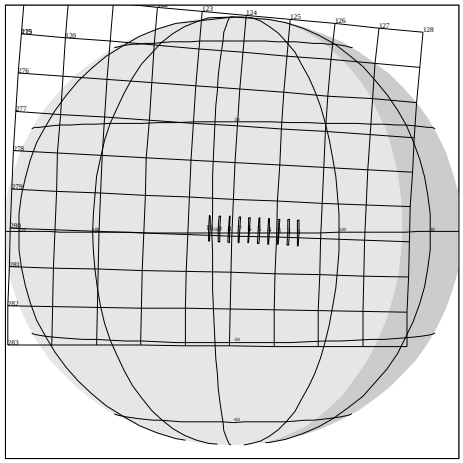
98-326/16:42:02



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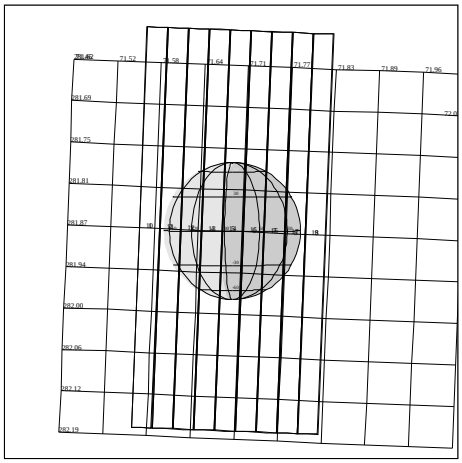
E18 NIMS B



18INHRSPEC01

98-327/03:56:27