Chapter 2 - Orbit Overview

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Introduction to Chapter 2

This chapter gives an overview of the NIMS observations in the E19 Orbit.

The text on page 3 summarizes the NIMS science objectives for E19. The NIMS calibrations are discussed on page 3. Early data return and E19 playback are also discussed on page 3.

The table on page 4 is a time-ordered listing of the NIMS Oapels for E19.

The plot on page 5 shows the geometry of the NIMS E19 observations using a north trajectory pole view projection. The plot on page 6 shows the geometry of the NIMS E19 calibrations.

The spreadsheet on page 7 summarizes the various inputs for the NIMS E19 Observations. The spreadsheet on pages 8 and 9 summarizes the resource usage for the NIMS E19 observations.

The table on page 10 lists various NIMS E19 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 E19 observations for all intruments during the E19 Encounter Period.

The tapemap on page 12 shows the placement of the E19 observations on the spacecraft's tape recorder.

The timeline on pages 13 through 24 shows the preliminary E19 playback schedule.

The NIMS E19 mosaic designs are summarized on page 25 and 26 in time-order.

NIMS E19 SCIENCE OVERVIEW

Jupiter Science

There are nine Jupiter observations in E19. Two are realtime and seven are recorded. The first realtime observation looks at the Northern Temperate Belt (NTB) and the second looks at the northern auroal region. Three recorded observations (JNHOTMAP01, 02 and 03) map the same +7 degree latitude hotspot region at different viewing geometries, 2 nightside and 1 dayside. Three other observations (JNJUPNTB01, 02 and 03) map the same NTB region at different viewing geometries, 2 nightside and 1 dayside. JNIOFLUX01 maps the Io Flux tube footprint region on the nightside of the northern auroral region.

Io Science

Io was not observed in E19.

Europa Science

There are two Europa observations planned for E19: HEXICE02 and HEXICE03. Both observations look at the same spot on Europa over a large range of viewing angles to map out phase function of the icy material to try to distinguish the ice's crystaline sturcture.

Ganymede Science

GNAURORA01, 02 and 03 are distant maps of Ganymede in Jupiter eclipse to search for any auroral activity on Ganymede.

Callisto Science

Callisto was not observed in E19.

Calibration

There are three NIMS calibration observations planned for E19: one PCT cal, one RCT cal, one OPCAL.

Early Data Return

There are five realtime observations in E19: Two 408 wavelength Jupiter observations (JUPRTS), one PCT calibration, one RCT calibration and one OPCAL.

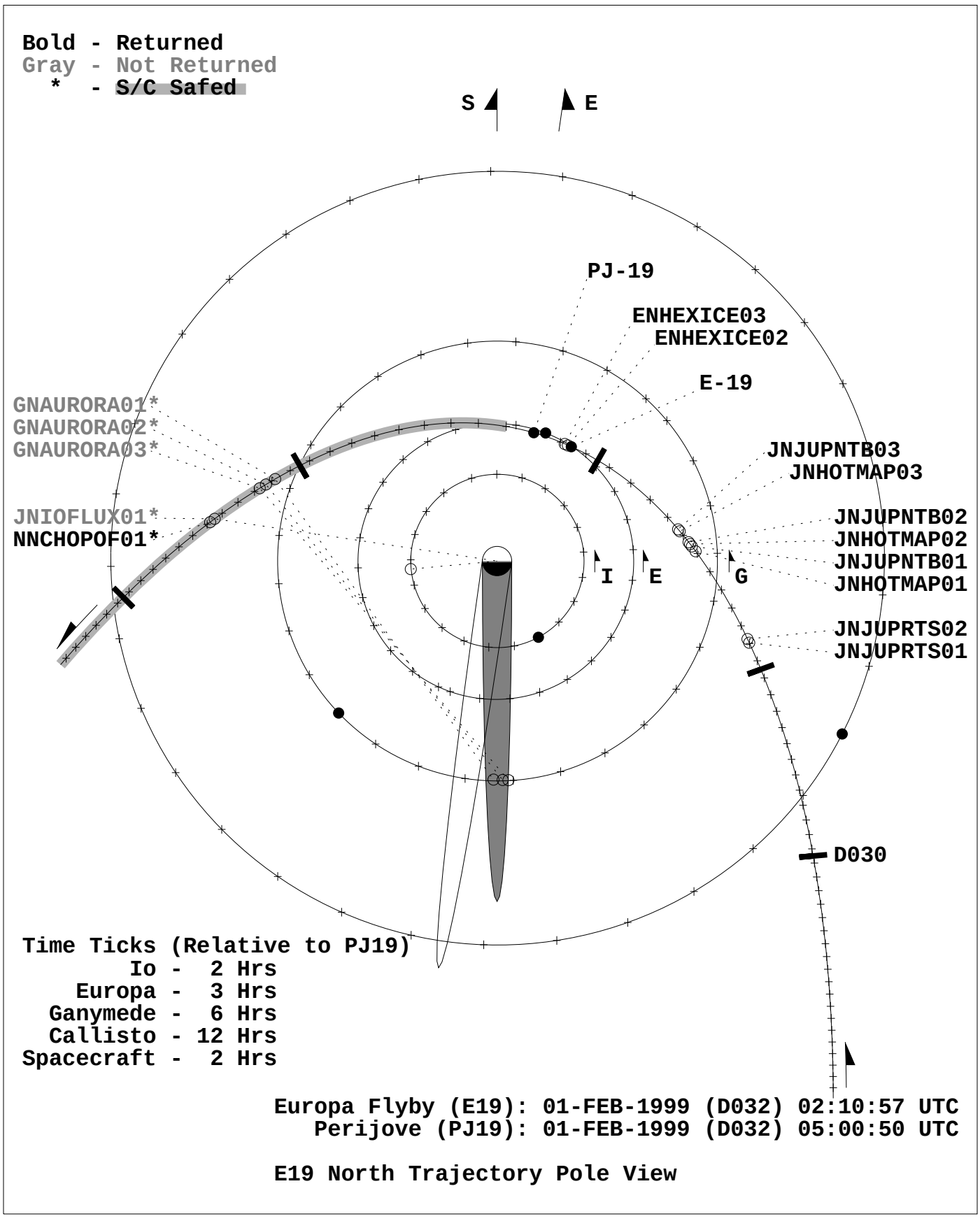
E19 Playback

E19 playback is split into two passes through the tape.

E19 Time-Ordered Listing

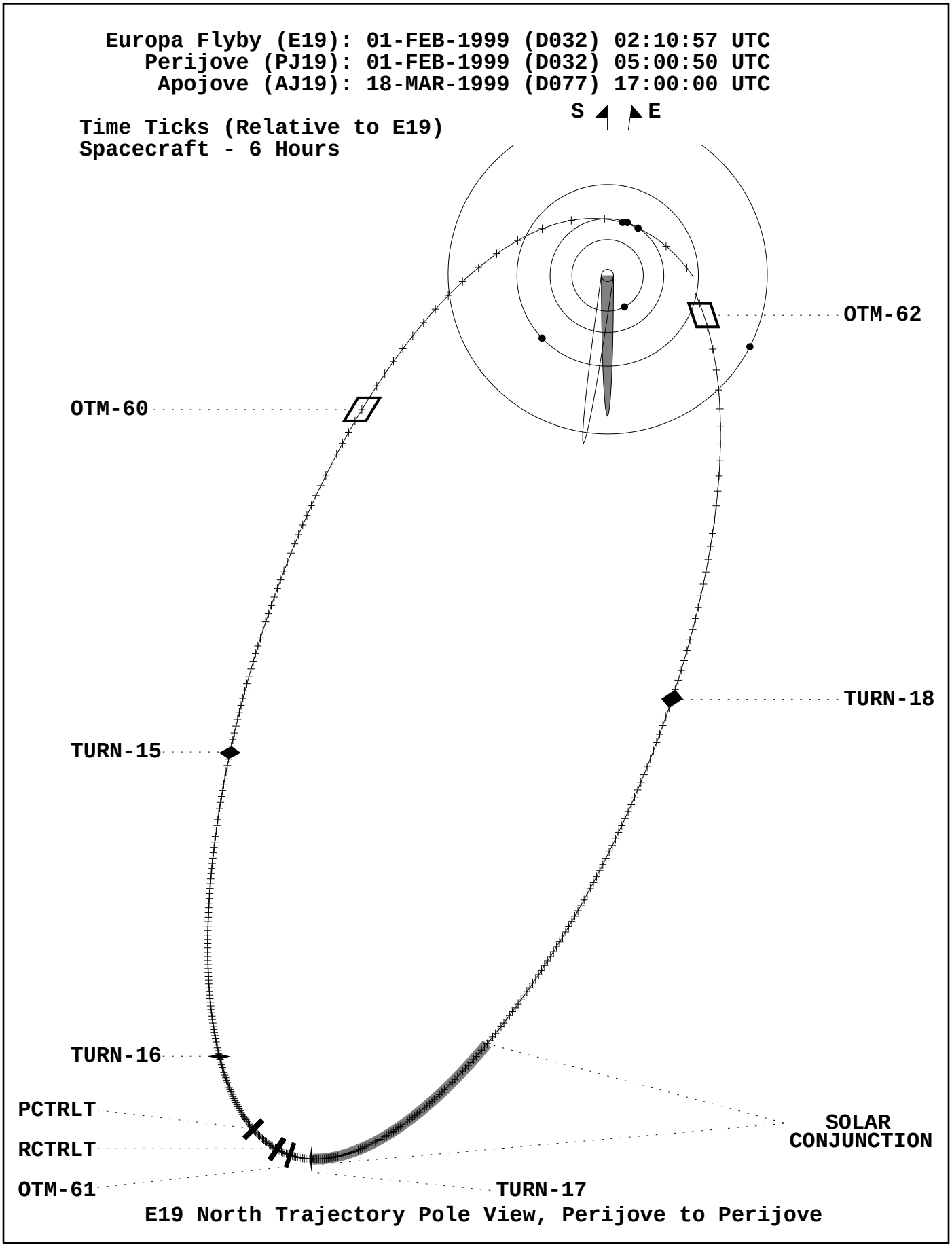
OAPEL	Start (UTC)	End (UTC)	Duration
19NNJUPRTS01-	99-031/02:59:37	99-031/03:01:38	000/00:02:01
19JNJUPRTS01*	99-031/03:02:39	99-031/03:16:48	000/00:14:09
19NNJUPRTS02-	99-031/03:27:56	99-031/03:29:57	000/00:02:01
19JNJUPRTS02*	99-031/03:30:58	99-031/03:45:07	000/00:14:09
19NNHOTMAP01-	99-031/13:30:33	99-031/13:32:34	000/00:02:01
19JNHOTMAP01-	99-031/13:33:35	99-031/13:47:44	000/00:14:09
19JNJUPNTB01-	99-031/13:47:44	99-031/13:59:52	000/00:12:08
19NNHOTMAP02-	99-031/13:59:52	99-031/14:01:54	000/00:02:01
19JNHOTMAP02-	99-031/14:02:54	99-031/14:36:16	000/00:33:22
19JNJUPNTB02-	99-031/14:36:16	99-031/14:50:26	000/00:14:09
19NNHOTMAP03-	99-031/15:23:48	99-031/15:25:49	000/00:02:01
19JNHOTMAP03-	99-031/15:26:50	99-031/15:40:59	000/00:14:09
19JNJUPNTB03-	99-031/15:40:59	99-031/15:55:08	000/00:14:09
19NNHEXICE02-	99-032/02:20:00	99-032/02:22:02	000/00:02:01
19ENHEXICE02-	99-032/02:23:02	99-032/02:37:15	000/00:14:12
19NNHEXICE03-	99-032/02:39:13	99-032/02:41:14	000/00:02:01
19ENHEXICE03-	99-032/02:42:15	99-032/03:09:29	000/00:27:14
19NNAURORA01-	99-033/02:28:55	99-033/02:30:57	000/00:02:01
19GNAURORA01-	99-033/02:31:57	99-033/02:39:13	000/00:07:15
19NNAURORA02-	99-033/03:36:40	99-033/03:38:41	000/00:02:01
19GNAURORA02-	99-033/03:39:42	99-033/03:46:57	000/00:07:15
19NNAURORA03-	99-033/04:17:07	99-033/04:19:08	000/00:02:01
19GNAURORA03-	99-033/04:20:09	99-033/04:27:24	000/00:07:15
19NNIOFLUX01-	99-033/09:59:53	99-033/10:01:54	000/00:02:01
19JNIOFLUX01-	99-033/10:02:55	99-033/10:17:04	000/00:14:09
19NNCHOPOF01-	99-033/10:36:17	99-033/10:46:24	000/00:10:06
19NNPCTRLT01-	99-071/17:00:00	99-072/00:50:10	000/07:50:10
19NNRCTRLT01-	99-075/12:00:00	99-076/01:15:44	000/13:15:44

NIMS E19 OBSERVATIONS



NIMS - FEL - 12/06/99

NIMS E19 CRUISE CALIBRATIONS



E19 North Trajectory Pole View, Perijove to Perijove

E19 NIMS INPUTS

Activity ID	Observation Title	NIMS Edit Table	NIMS PB Table	Mode	Gain	Grating Start	Grating Offset	Record Format	PSID
19NNJUPRTS01-	NIMS Software Reload								DA
19JNJUPRTS01*	Jupiter Realtime Observation	E19JLM408/MB	R/T	LM	2	0	4	R/T	DA
19NNJUPRTS02-	NIMS Software Reload								DC
19JNJUPRTS02*	Jupiter Realtime Observation	E19JRT204A/MB	R/T	LM	4	0	4	R/T	DC
19NNHOTMAP01-	NIMS Software Reload								DB
19JNHOTMAP01-	NIMS Jupiter HotMap	E19JHT253A	E19JHT253A	LM	4	0	4	LPU	DB
19JNJUPNTB01-	Jupiter NTB Observation	E19JHT253A	E19JHT253A	LM	4	0	4	LPU	DM
19NNHOTMAP02-	NIMS Software Reload								DD
19JNHOTMAP02-	NIMS Jupiter HotMap	E19JHT253A	E19JHT253A	LM	4	0	4	LPU	DD
19JNJUPNTB02-	Jupiter NTB Observation	E19JHT253A	E19JHT253A	LM	4	0	4	LPU	DN
19NNHOTMAP03-	NIMS Software Reload								DE
19JNHOTMAP03-	NIMS Jupiter HotMap	E19JSB253C	E19JSB253C	LM	2	0	4	LPU	DE
19JNJUPNTB03-	Jupiter NTB Observation	E19JSB253C	E19JSB253C	LM	2	0	4	LPU	DO
19NNHEXICE02-	NIMS Software Reload								DF
19ENHEXICE02-	Europa Hexagonal Ice Obs. part 2	E19EXM17A	E19EXM15A	XM	4	0	4	MPW	DF
19NNHEXICE03-	NIMS Software Reload								DF
19ENHEXICE03-	Europa Hexagonal Ice Obs. part 3	E19EXM17A	E19EXM15A	XM	4	0	4	MPW	DG
19NNAURORA01-	NIMS Software Reload								DI
19GNAURORA01-	Ganymede Aurora Observation	E19GLM247L	E19GLM228L	LM	4	0	4	LPU	DI
19NNAURORA02-	NIMS Software Reload								DJ
19GNAURORA02-	Ganymede Aurora Observation	E19GLM247L	E19GLM228L	LM	4	0	4	LPU	DJ
19NNAURORA03-	NIMS Software Reload								DK
19GNAURORA03-	Ganymede Aurora Observation	E19GLM247L	E19GLM228L	LM	4	0	4	LPU	DK
19NNIOFLUX01-	NIMS Software Reload								DP
19JNIOFLUX01-	Jupiter Io Flux Observation	E19JLM442	E19JLM360	LM	4	0	4	MPW	DP
19NNCHOPOF01-	NIMS Chopper Off								FN
19NNPCTRLT01-	NIMS Real-Time PCT Calibration	E19PCT252	R/T						FB
19NNRCTRLT01-	NIMS RCT Real Time Calibration	E19RCT252	R/T	LM	1	0	4	R/T	XU
19NNROPCAL01-	NIMS OPCAL	E19OPCAL48	R/T	LM	4	0	4	R/T	DC

E. Barbinis

E19 RESOURCES

Activity ID	Mode	Record Format	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)
19JNJUPRTS01	LM	R/T			360					
19JNJUPRTS02	LM	R/T			204					
19JNHOTMAP01	LM	LPU	0.0245	143	72	600	597	3.68	3.70	8.667
19JNJUPNTB01	LM	LPU	0.0249	145	72	610	607	3.74	3.76	8.667
19JNHOTMAP02	LM	LPU	0.0245	143	72	600	597	3.68	3.70	8.667
19JNJUPNTB02	LM	LPU	0.0486	283	72	1200	598	3.69	7.40	8.667
19JNHOTMAP03	LM	LPU	0.0245	143	238	600	597	3.68	3.70	8.667
19JNJUPNTB03	LM	LPU	0.0486	283	238	1200	598	3.69	7.40	8.667
19ENHEXICE02	XM	MPW	0.1006	586	15	664	660	7.60	7.65	0.333
19ENHEXICE03	XM	MPW	0.2107	1228	15	1394	137	1.58	16.06	0.333
19GNAURORA01	LM	LPU	0.0154	90	228	375	360	2.22	2.31	8.667
19GNAURORA02	LM	LPU	0.0154	90	228	375	300	1.85	2.31	8.667
19GNAURORA03	LM	LPU	0.0154	90	228	375	360	2.22	2.31	8.667
19JNIOFLUX01	LM	MPW	0.0909	530	360	600	595	6.85	6.91	8.667
Resource Totals			**0.6440**	**3753**						

E19 RESOURCES

Activity ID	AACS Mbits c 2.5	Comp	Thold	RT BTG MBits	Total BTG Mbits (4% ohead)	Data Reduction Factor (sBOT/BTG)	Pass
19JNJUPRTS01				0.16			
19JNJUPRTS02				0.16			
19JNHOTMAP01	0.03	1.5	0		0.6877	5.4	1
19JNJUPNTB01	0.03	1.3	0		0.8068	4.6	2
19JNHOTMAP02	0.03	1.3	0		0.7935	4.6	2
19JNJUPNTB02	0.03	1.3	0		0.7948	4.6	1
19JNHOTMAP03	0.03	1.5	0		2.2733	1.6	1,2
19JNJUPNTB03	0.03	1.5	0		2.2771	1.6	1,2
19ENHEXICE02	0.04	1.5	0		4.1225	1.8	1,2
19ENHEXICE03	0.01	1.3	0		0.9874	1.6	1,2
19GNAURORA01	0.02	2.2	0		0.8954	2.5	2
19GNAURORA02	0.02	2.2	0		0.7462	2.5	1
19GNAURORA03	0.02	2.2	0		0.8954	2.5	2
19JNIOFLUX01	0.03	1.5	0		3.4271	2.0	1,2
Resource Totals					**18.7072**		
				Alloc.	**18.8180**		
				Over.	**-0.1108**		

NIMS E19 OBSERVING GEOMETRY

OAPEL	Latitude (deg)	Longitude (deg)	Range (km)	Cone (deg)	Light (deg)	View (deg)	Phase (deg)
19JNJUPRTS01	+15 TO +40	162 to 181	1240K	77	60 to 70	43 to 65	110
19JNJUPRTS02	+75 to +80	158 and 304	1271K	80	74 to 99	90	---
19JNHOTMAP01	+3 to +10	235 to 250	890K	103	101 to 122	19 to 39	83
19JNJUPNTB01	+15 to +22	239 to 263	890K	104	94 to 125	25 to 50	83
19JNHOTMAP02	+3 to +10	237 to 250	872K	104	86 to 105	8 to 23	84
19JNJUPNTB02	+15 to +22	256 to 294	880K	105	92 to 137	23 to 64	82
19JNHOTMAP03	+3 to +10	233 to 250	845K	104	31 to 54	30 to 53	83
19JNJUPNTB03	+15 to +22	249 to 280	834K	106	38 to 77	22 to 52	82
19ENHEXICE02	26	64	3.7K	57 to 78	85	36 to 83	119 to 160
19ENHEXICE03	26	64	10K	57	86	25 to 28	95 to 106
19GNAURORA01	-90 to +90	235 to 55	1816K	136	4 to 126	4 to 90	36
19GNAURORA02	-90 to +90	235 to 55	1848K	133	8 to 128	4 to 90	38
19GNAURORA03	-90 to +90	235 to 55	1869K	132	3 to 130	6 to 90	40
19JNIOFLUX01	+40 to +70	130 to 190	1387K	92	103 to 130	67 to 91	80

GEM: E19

E19 ENCOUNTER
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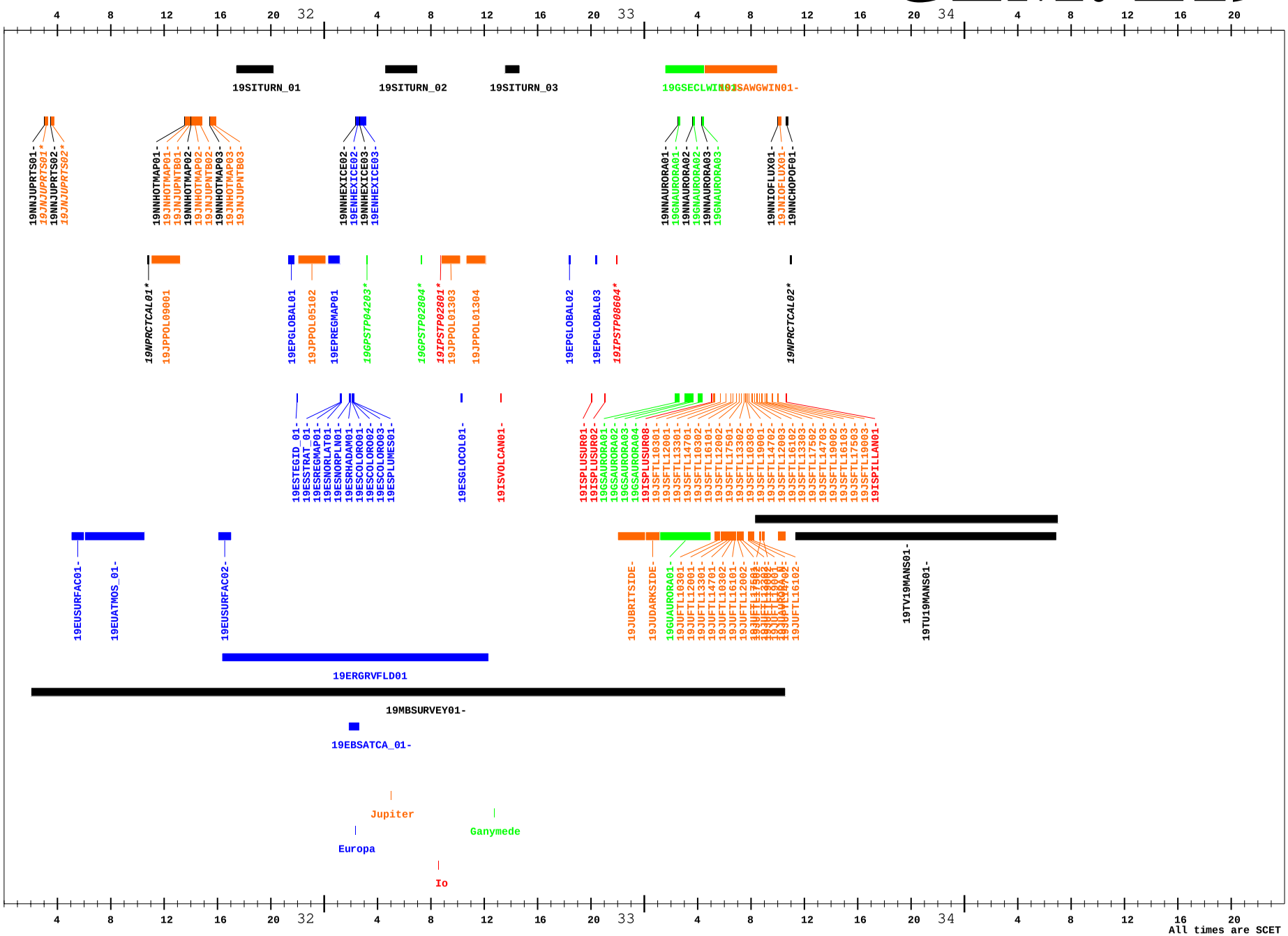
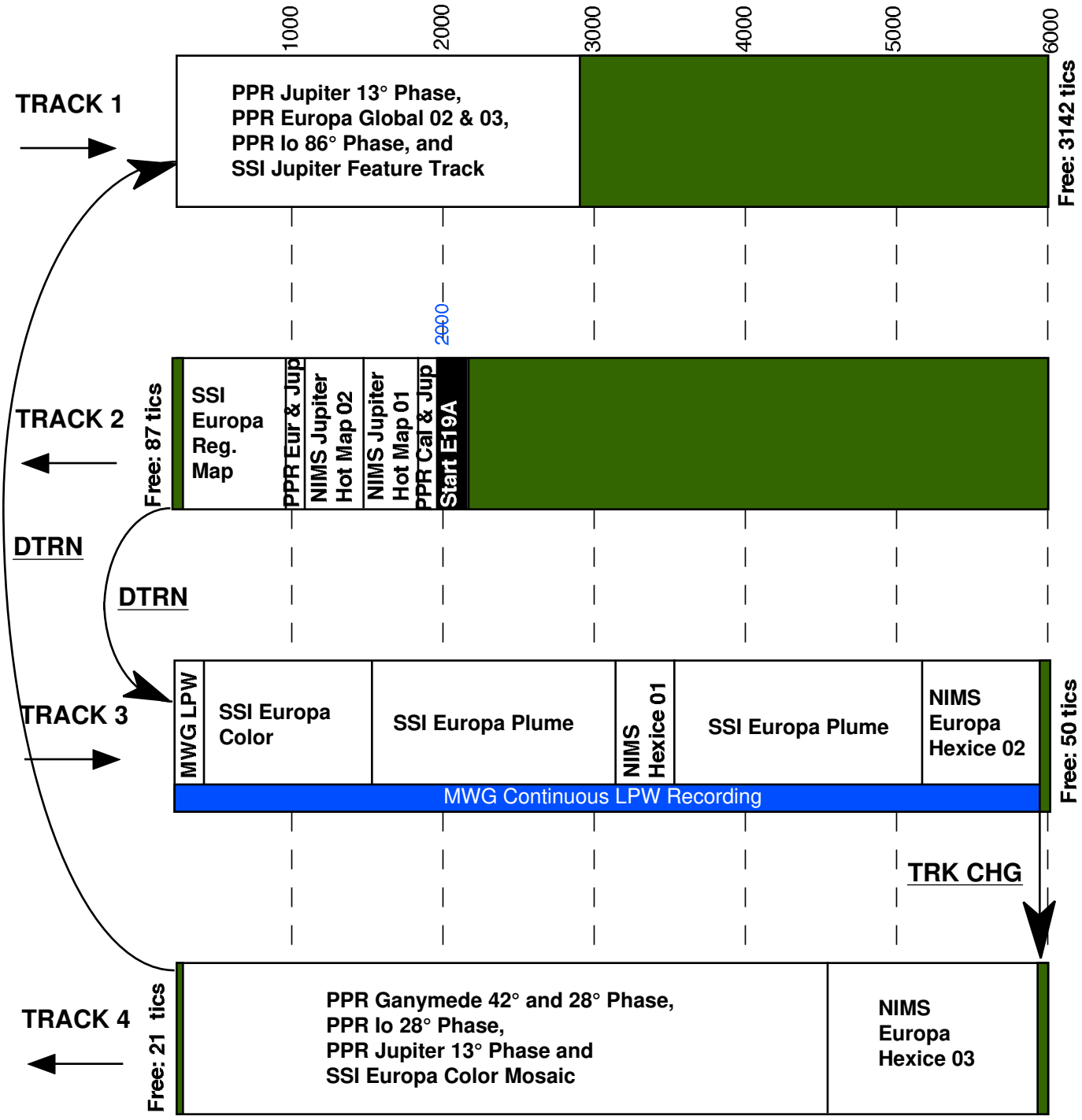
Date of Plot: 26-Jan-99 11:25: 7

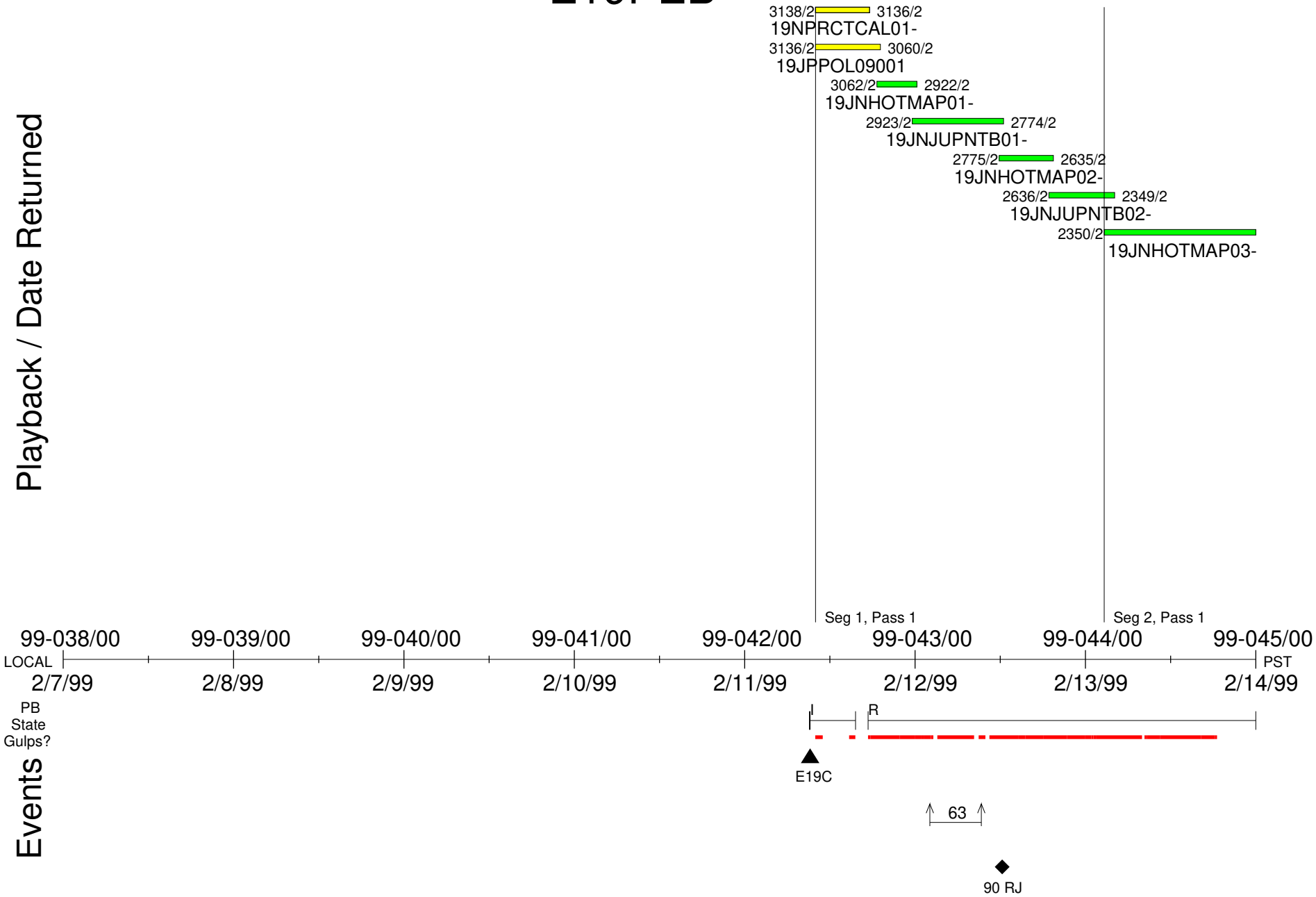


E19 HIGH-LEVEL TAPEMAP



J. Gross, 8/13/97

E19PEB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2923/2
2774/2
19JNJUPNTB01-
2775/2
2635/2
19JNHOTMAP02-
2636/2
2349/2
19JNJUPNTB02-
2350/2
19JNHOTMAP03-
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Seg 2, Pass 1
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99-040/00
99-041/00
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99-045/00
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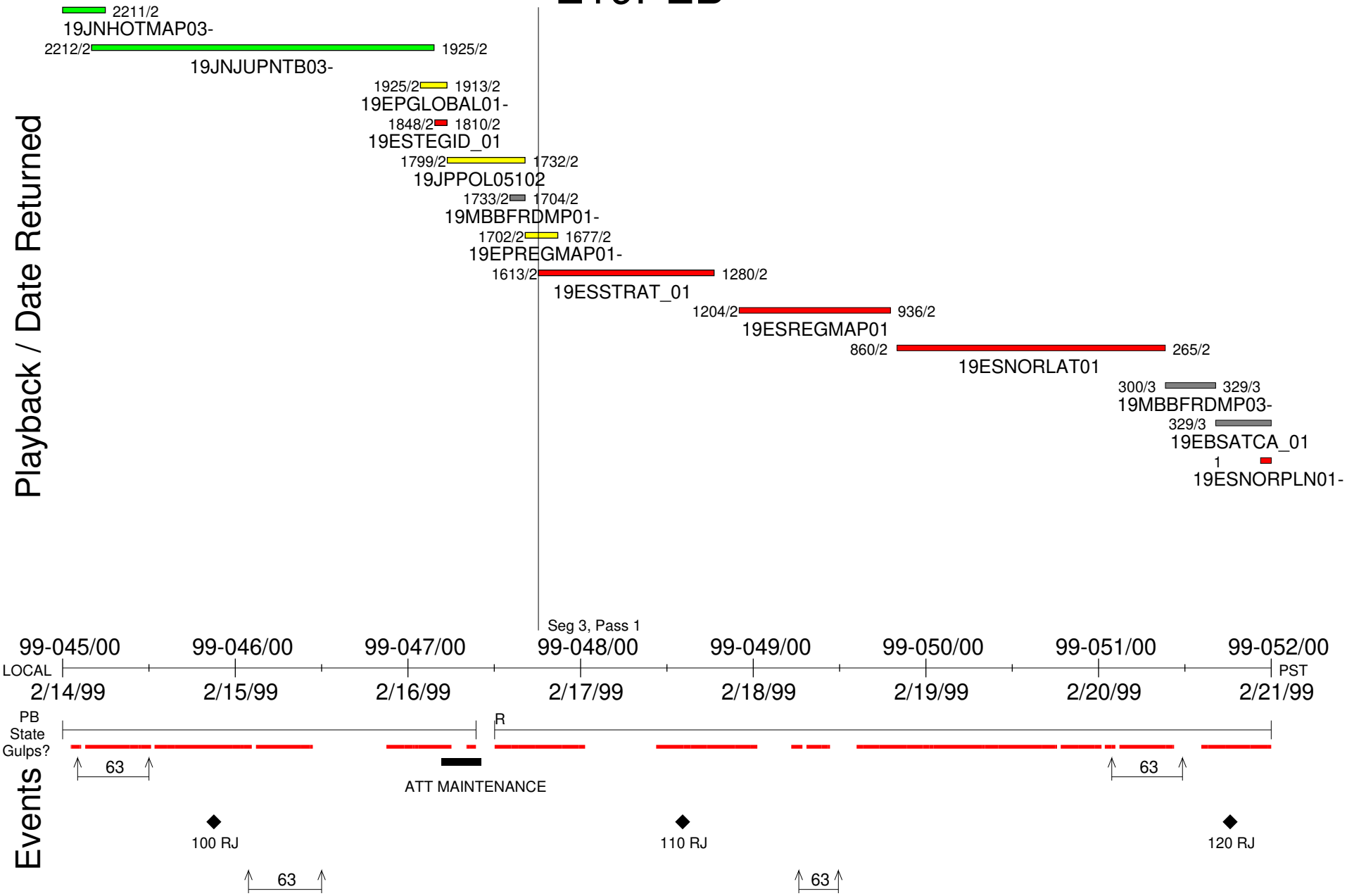
2/8/99
2/9/99
2/10/99
2/11/99
2/12/99
2/13/99
2/14/99
Playback / Date Returned
PB
State
Gulps?
I
R
E19C
63
90 RJ
Events

2-13

E19PEB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1848/2
1810/2
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1799/2
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265/2
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300/3
329/3
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329/3
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99-046/00
99-047/00
99-048/00
99-049/00
99-050/00
99-051/00
99-052/00
LOCAL
PST
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R
63
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ATT MAINTENANCE
Events
100 RJ
110 RJ
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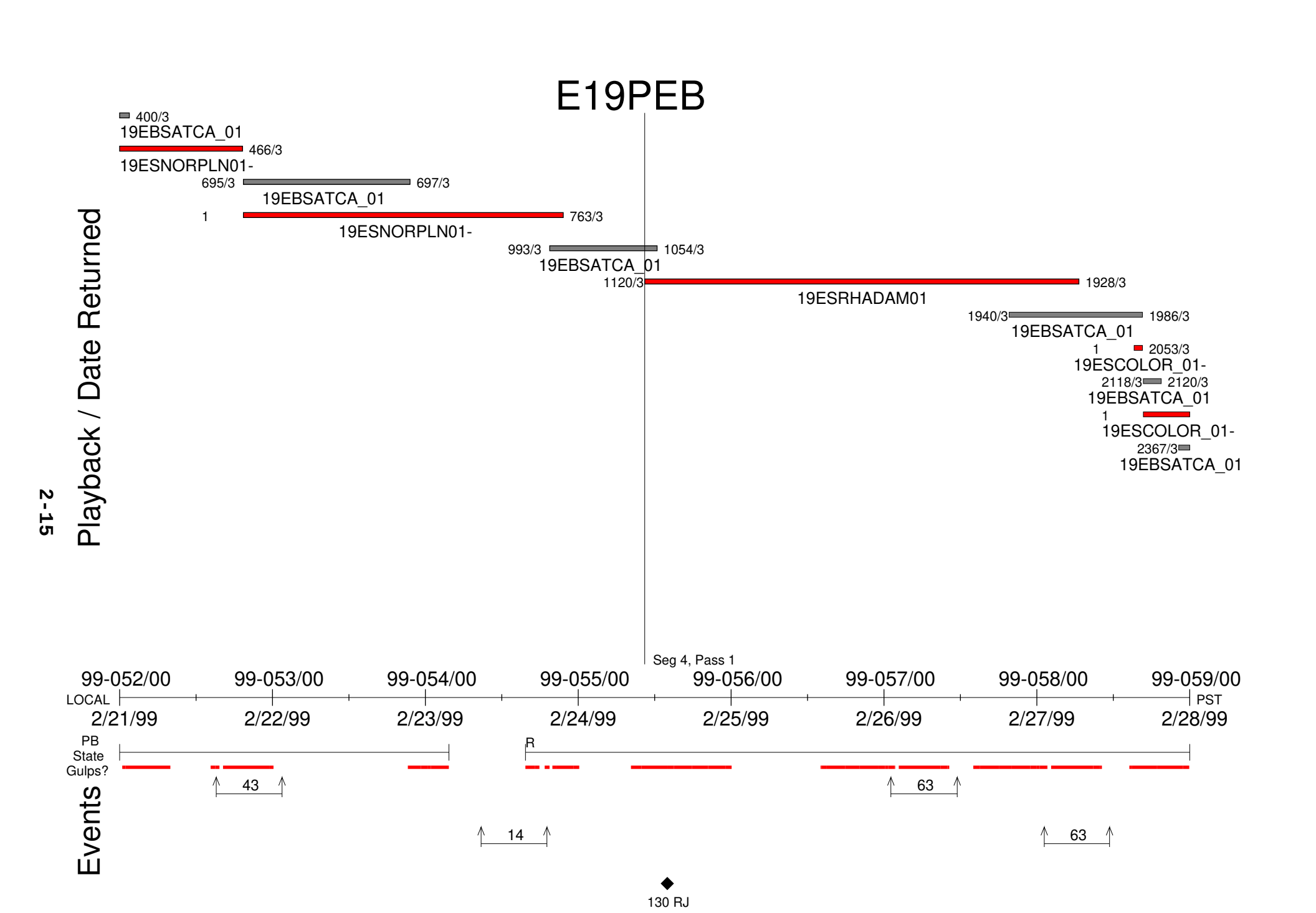
63
63


E19PEB
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466/3
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695/3
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763/3
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993/3
1054/3
19EBSATCA_01
1120/3
1928/3
19ESRHADAM01
1940/3
1986/3
19EBSATCA_01
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2053/3
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2120/3
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Playback / Date Returned
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2/22/99
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2/28/99
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Gulps?
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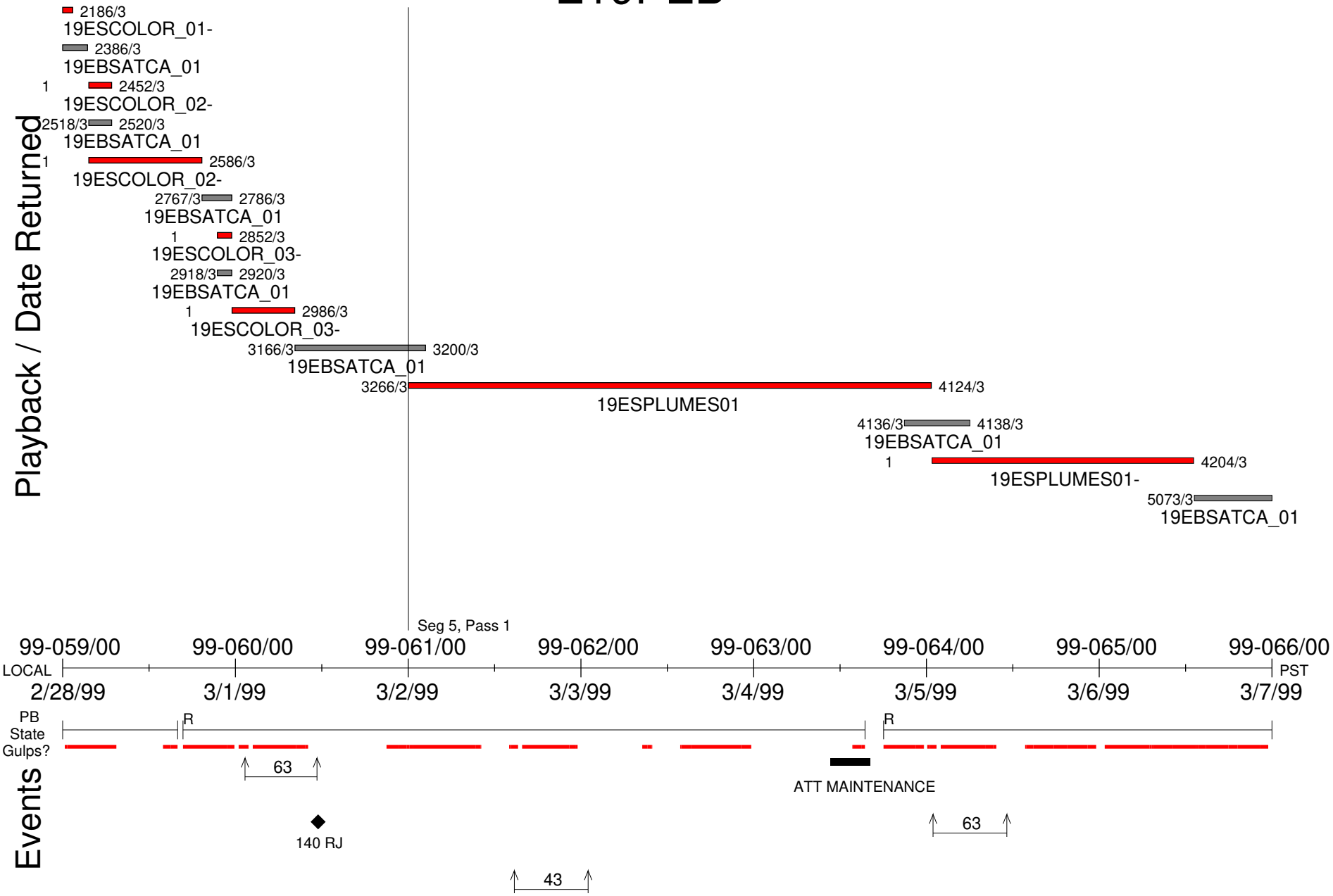
63
14
63
Events
130 RJ

E19PEB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3/3/99
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3/5/99
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PB State Gulps?
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Events
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ATT MAINTENANCE
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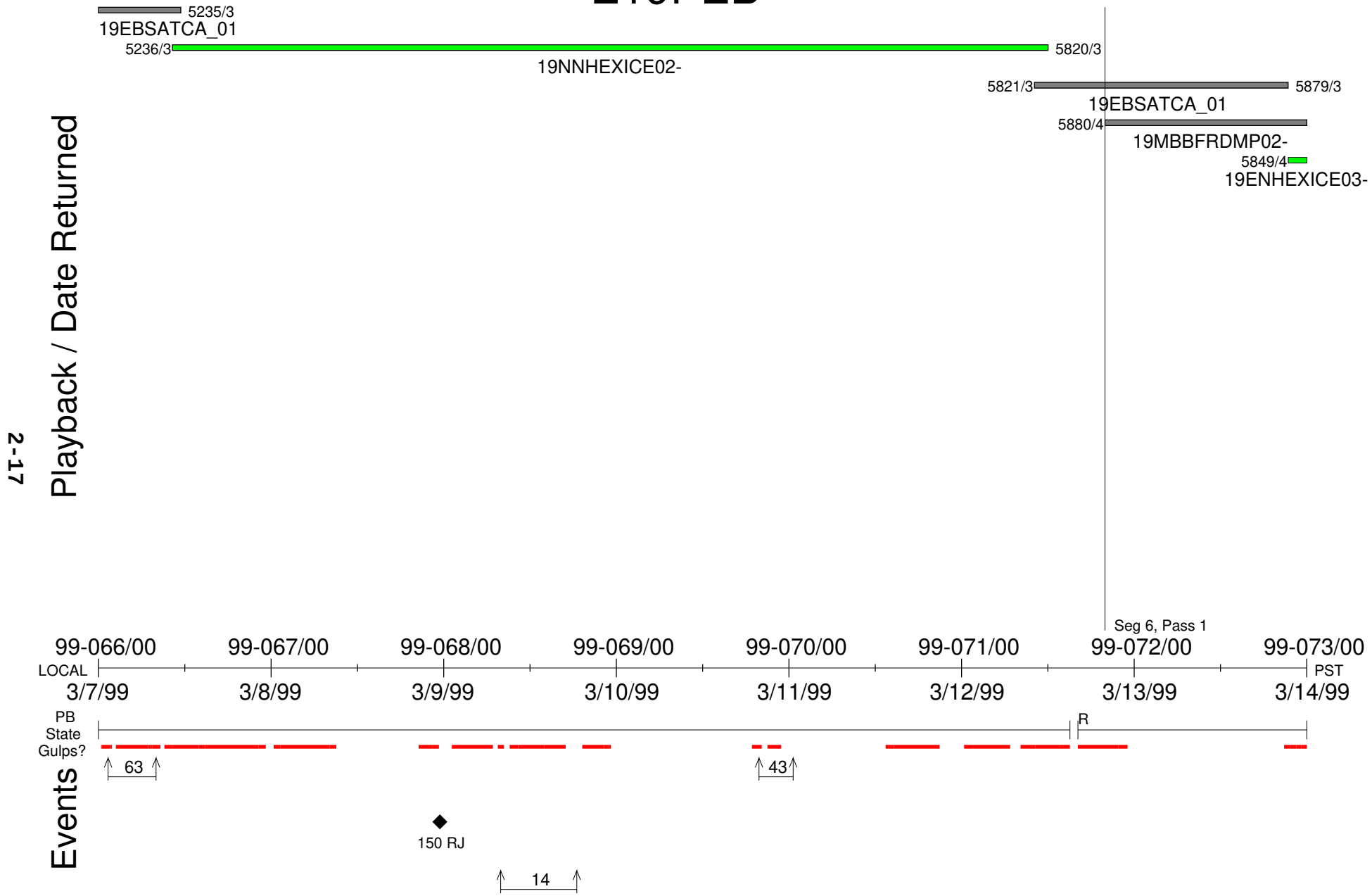
63
43

E19PEB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5849/4
19ENHEXICE03-
Playback / Date Returned
Seg 6, Pass 1
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99-067/00
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LOCAL
PST
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3/8/99
3/9/99
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3/11/99
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PB
State
Gulps?
R
63
43
Events
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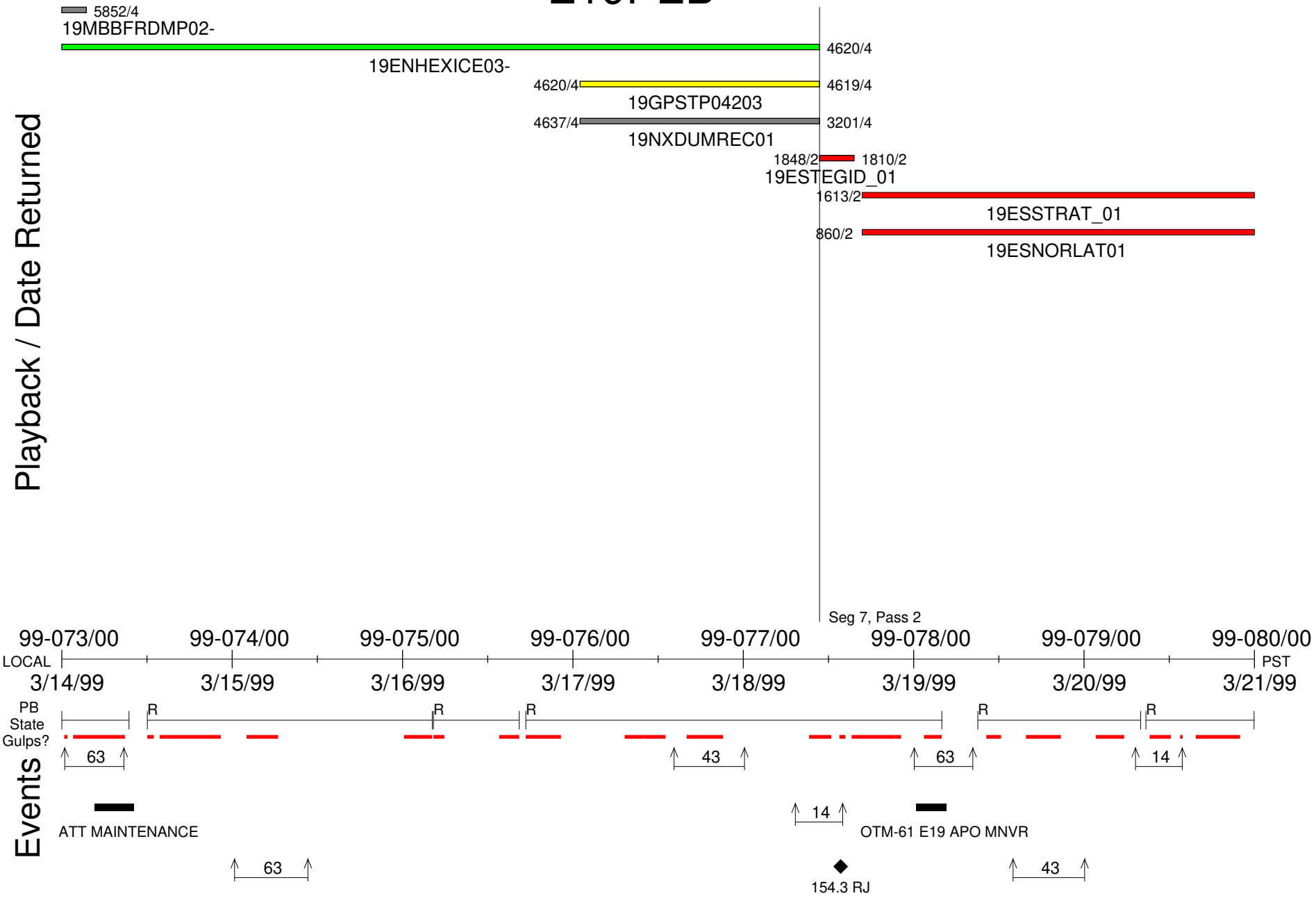
14

E19PEB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1848/2
1810/2
19ESTEGID_01
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Playback / Date Returned
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99-076/00
99-077/00
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99-079/00
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3/15/99
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3/17/99
3/18/99
3/19/99
3/20/99
3/21/99
PB State Gulps?
R
63
43
63
14
Events
ATT MAINTENANCE
14
OTM-61 E19 APO MNVR
63
154.3 RJ
43

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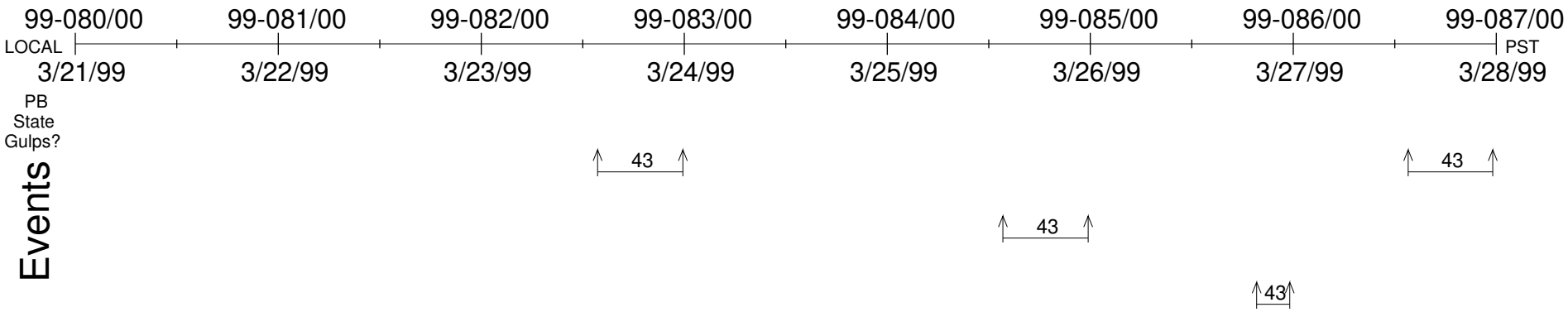
19ESSTRAT_01

19ESNORLAT01

Playback / Date Returned

2-19



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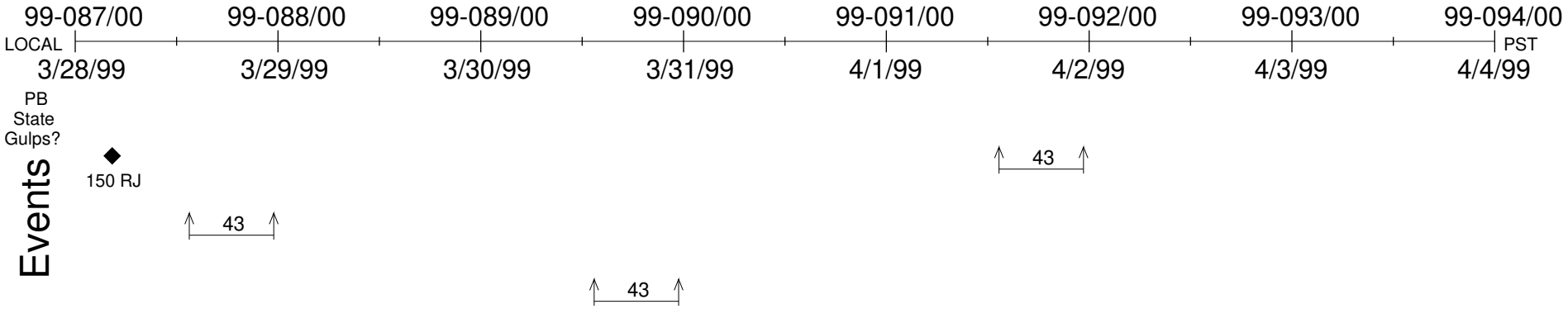

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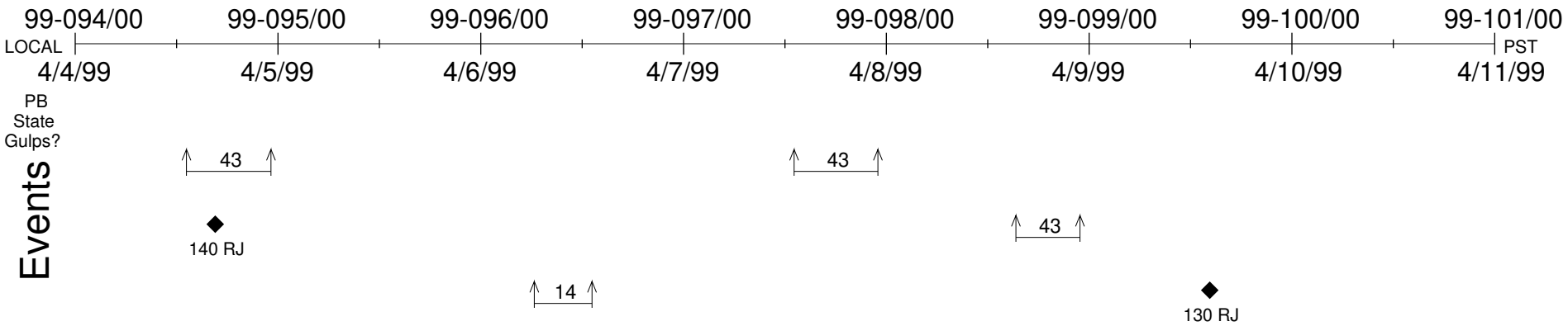

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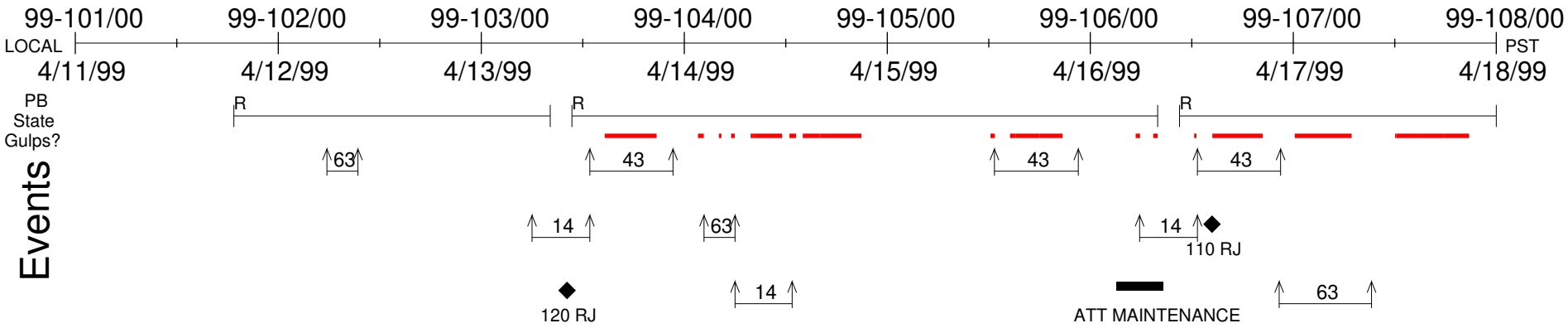

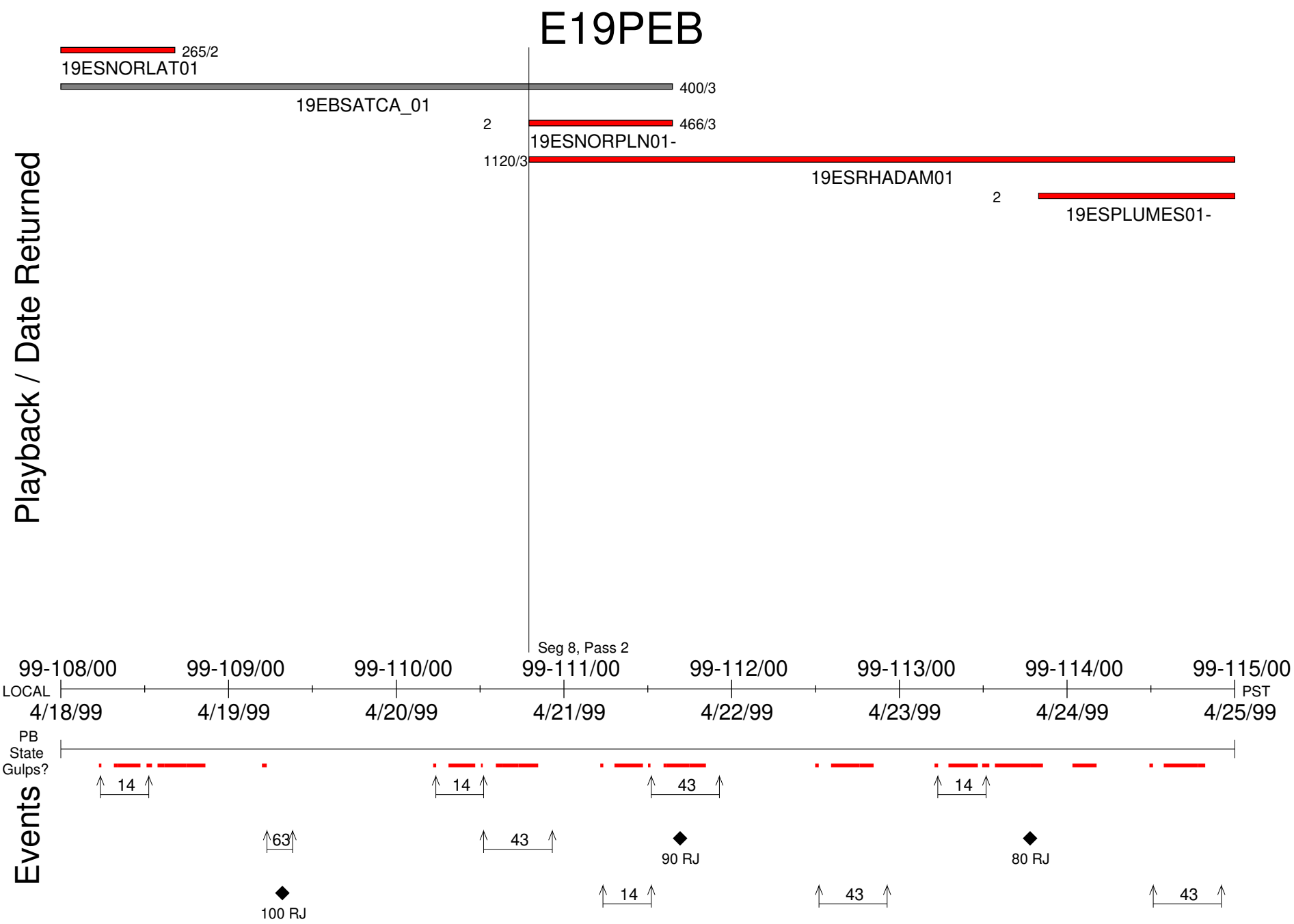

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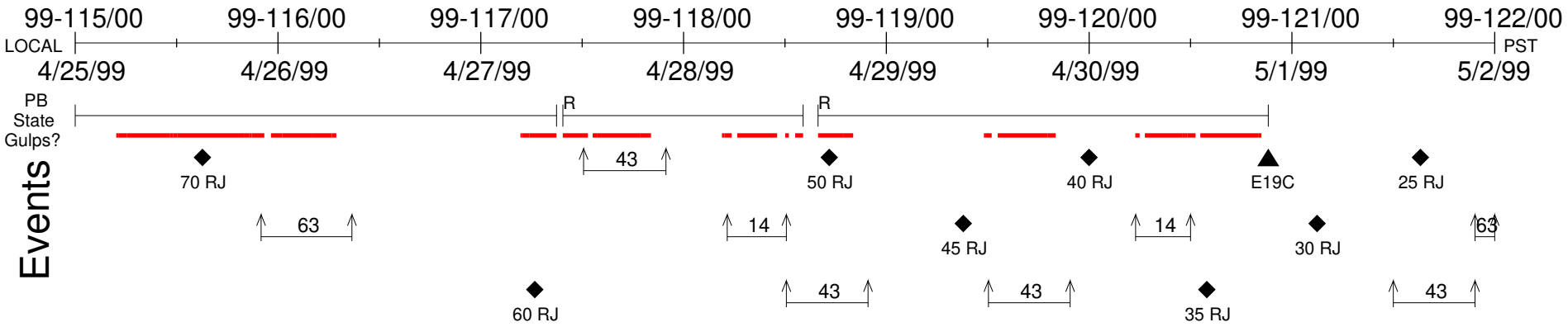

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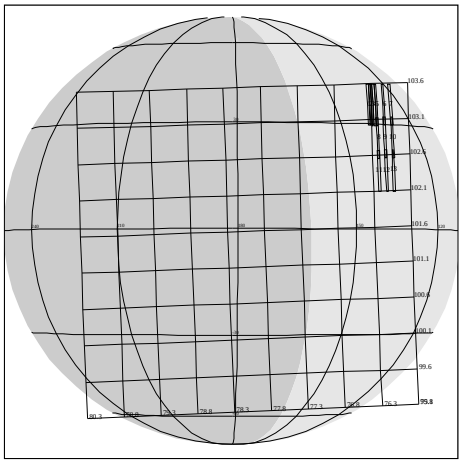

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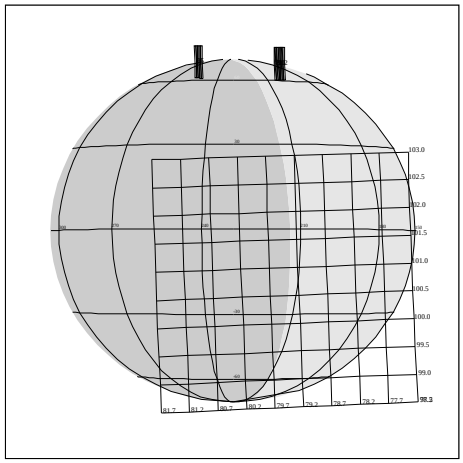

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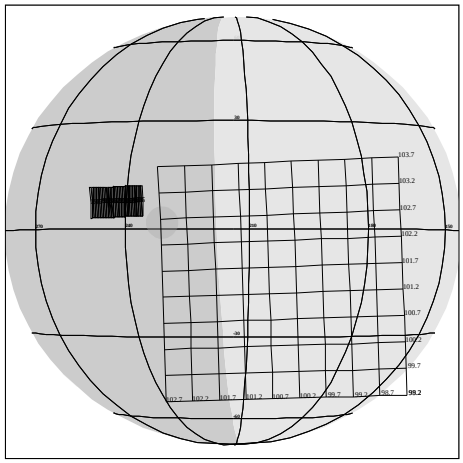

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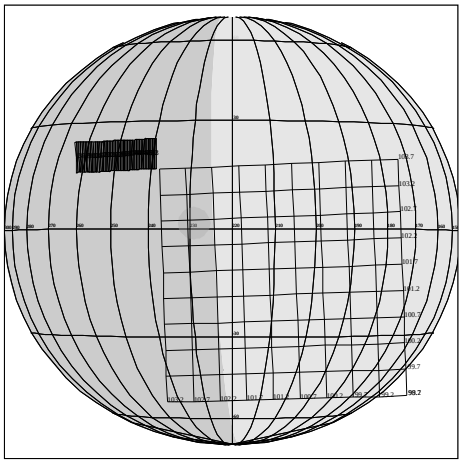

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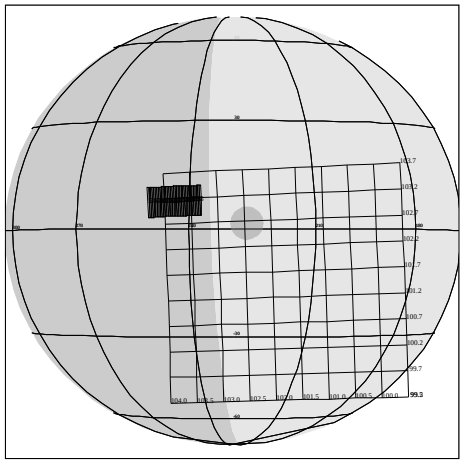

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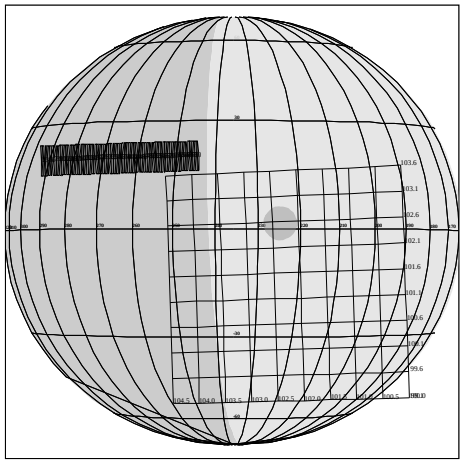

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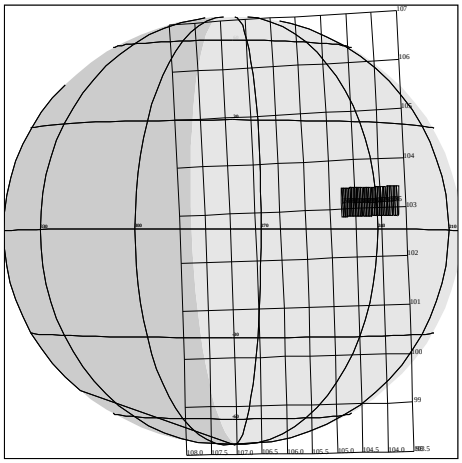

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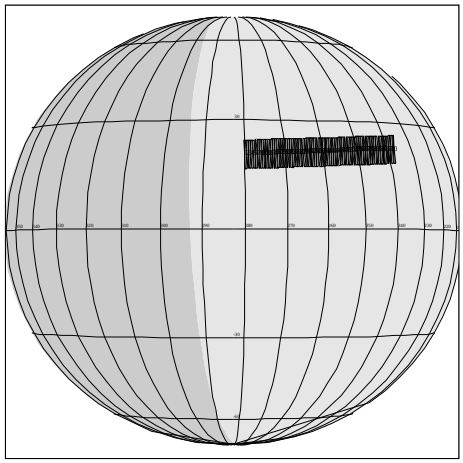

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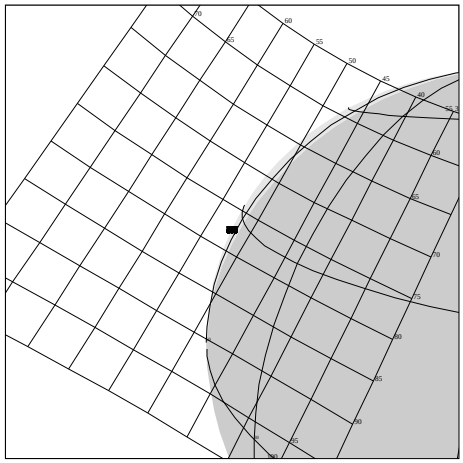
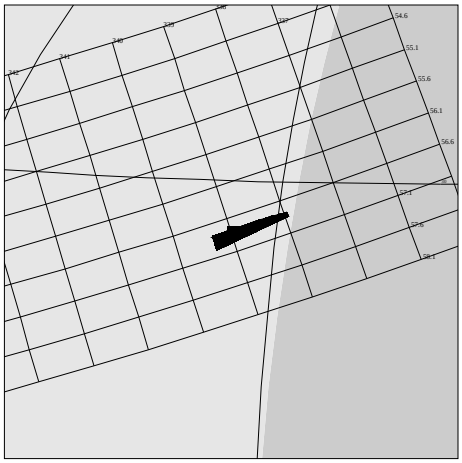


19ENHEXICE02
99-032 02:23:02

E19 NIMS B



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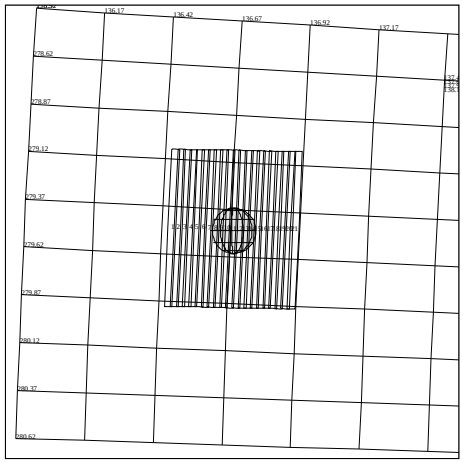

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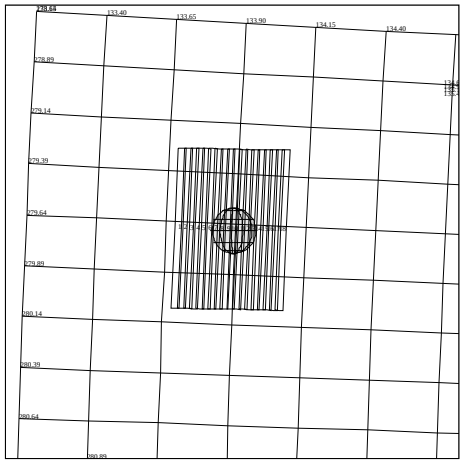

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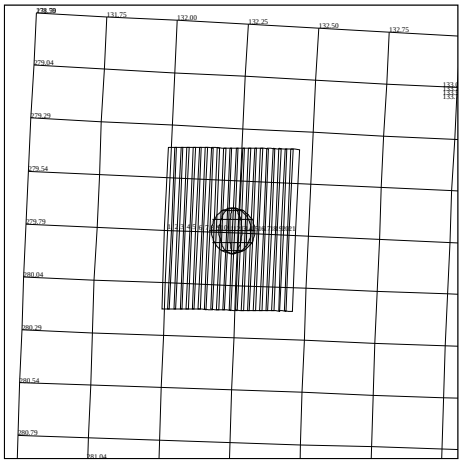

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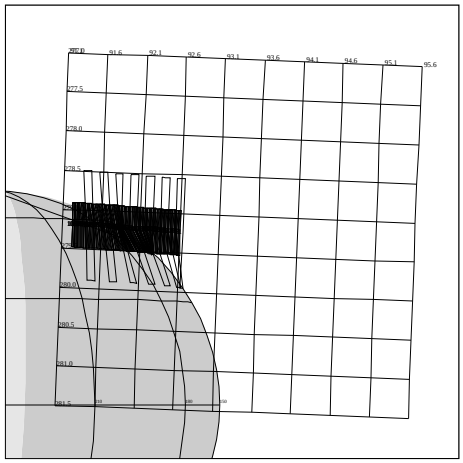

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