Chapter 2 - Orbit Overview

Contents

Introduction to Chapter 2

This chapter gives an overview of the NIMS observations in the C22 Orbit.

The text on page 3 summarizes the NIMS science objectives for C22. The NIMS calibrations are discussed on page 3. Early data return and C22 playback are also discussed on page 3.

The table on page 4 is a time-ordered listing of the NIMS Oapels for C22.

The plot on page 5 shows the geometry of the NIMS C22 observations using a north trajectory pole view projection. The plot on page 6 shows the geometry of the NIMS C22 calibrations.

The spreadsheet on page 7 summarizes the various inputs for the NIMS C22 Observations. The spreadsheet on pages 8 and 9 summarizes the resource usage for the NIMS C22 observations.

The table on page 10 lists various NIMS C22 observing parameters: target latitude/longitude, range, cone angle, incidence angle light), emission angle view) and phase angle.

The timeline on pages 11 through 14 show the placement of the C22 observations for all intruments during the C22 Encounter Period.

The tapemap on page 15 shows the placement of the C22 observations on the spacecraft’s tape recorder.

The timeline on pages 16 through 20 shows the preliminary C22 playback schedule.

The NIMS C22 mosaic designs are summarized on pages 21 and 22 in time-order.

NIMS C22 SCIENCE OVERVIEW

Jupiter Science

There are two realtime and six recorded Jupiter observations in C22. The first realtime observation looks at the North Equatorial Belt Region. The second looks at the same longitude at 20 degrees North latitude, 10 degrees North latitude and the equator. Of the six recorded Jupiter observations, three are observations of the hotspot region at 7 degrees North latitude, two look at the white oval region near 30 degrees South latitude and one looks at a dark spot near 30 degrees South latitude.

Io Science

INHRSPEC01 is a low resolution map of Io. This is the final observation of Io before I24.

Europa Science

There are two Europa observations in C22. ENBELUSL is a long spectrometer observation of dark surface material in the Belus Linea region. ENGLOBAL is a two swath global map covering the trailing hemisphere.

Ganymede Science

Ganymede was not observed in C22.

Callisto Science

Callisto was not observed in C22.

Calibration

There are two NIMS calibration observations planned for C22: one RCT cal and three OPCALs. Two OPCALs were inserted into the encounter sequence in the dark sky portion at the tail end of the observations INHRSPEC01 and ENGLOBAL01.

Early Data Return

There are four realtime observations in C22: Two 408 wavelength Jupiter observations (JUPRTS), one RCT calibration and one OPCAL.

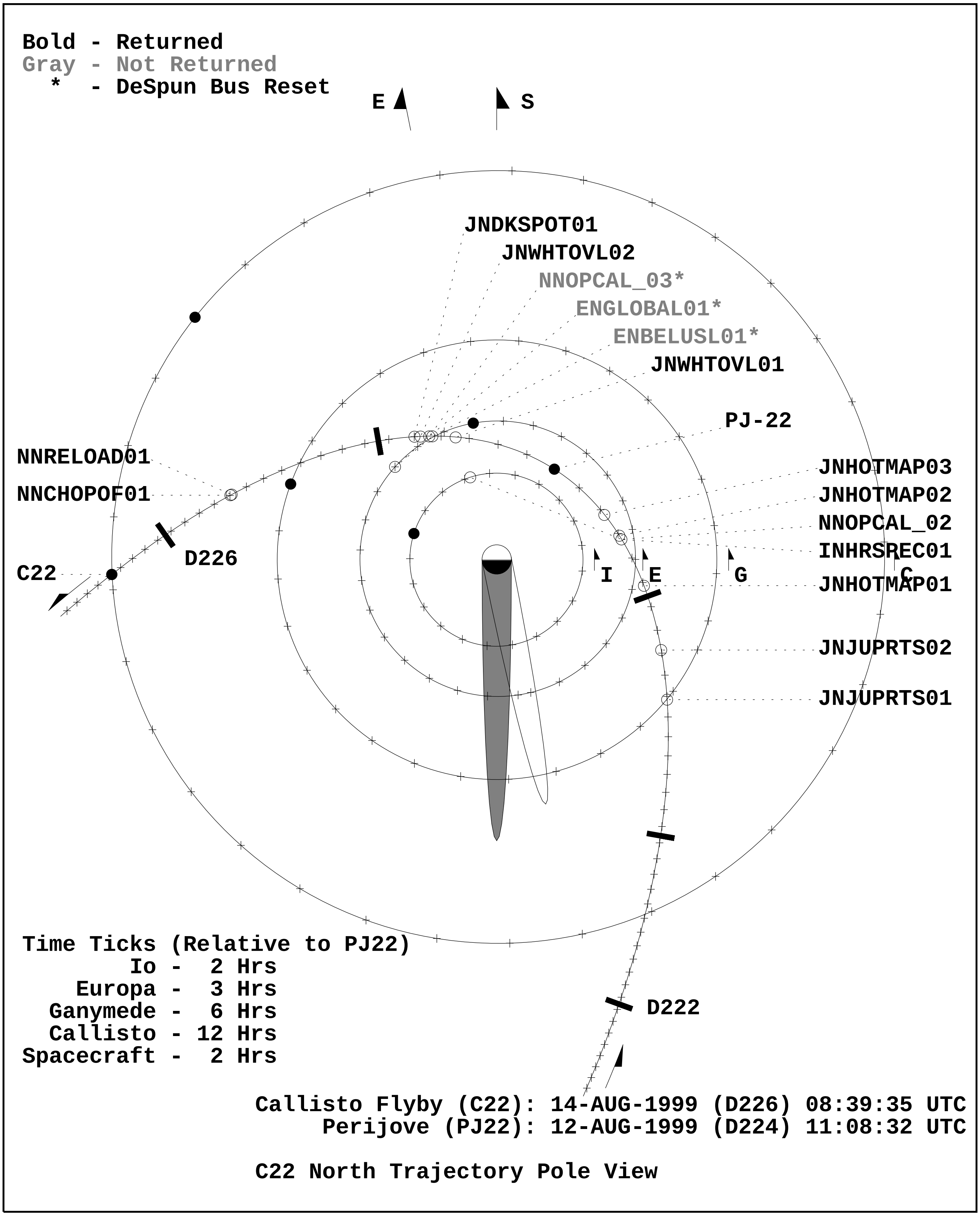
C22 Playback

C22 playback is split into two passes through the tape.

C22 Time-Ordered Listing

OAPEL	Start (UTC)	End (UTC)	Duration
22NNJUPRTS01-	99-223/14:45:27	99-223/14:48:29	000/00:03:02
22JNJUPRTS01*	99-223/14:49:30	99-223/15:15:47	000/00:26:17
22NNHRSPEC01-	99-223/17:57:34	99-223/18:00:36	000/00:03:02
22INHRSPEC01-	99-223/18:02:37	99-223/18:09:42	000/00:07:04
22NNJUPRTS02-	99-223/19:16:26	99-223/19:19:28	000/00:03:02
22JNJUPRTS02*	99-223/19:19:28	99-223/19:45:45	000/00:26:17
22NNHOTMAP01-	99-224/00:47:04	99-224/00:50:06	000/00:03:02
22JNHOTMAP01-	99-224/00:52:07	99-224/01:25:29	000/00:33:22
22NNHOTMAP02-	99-224/04:54:47	99-224/04:57:49	000/00:03:02
22JNHOTMAP02-	99-224/04:57:49	99-224/05:31:11	000/00:33:22
22NNHOTMAP03-	99-224/06:38:56	99-224/06:41:58	000/00:03:02
22JNHOTMAP03-	99-224/06:41:58	99-224/07:06:14	000/00:24:16
22NNWHTOVL01-	99-224/18:05:29	99-224/18:08:31	000/00:03:02
22JNWHTOVL01-	99-224/18:08:31	99-224/18:20:39	000/00:12:08
22NNBELUSL01-	99-224/19:40:31	99-224/19:43:33	000/00:03:02
22ENBELUSL01-	99-224/19:47:36	99-224/20:01:45	000/00:14:09
22NNGLOBAL01-	99-224/20:01:45	99-224/20:04:47	000/00:03:02
22ENGLOBAL01*	99-224/20:04:47	99-224/20:26:01	000/00:21:14
22NNWHTOVL02-	99-224/20:36:08	99-224/20:39:10	000/00:03:02
22JNWHTOVL02-	99-224/20:40:11	99-224/20:54:20	000/00:14:09
22NNDKSPOT01-	99-224/21:06:28	99-224/21:09:30	000/00:03:02
22JNDKSPOT01-	99-224/21:09:30	99-224/21:21:38	000/00:12:08
22NNRELOAD01-	99-225/14:56:13	99-225/15:00:16	000/00:04:02
22NNCHOPOF01-	99-225/15:05:19	99-225/15:15:26	000/00:10:06
22NNDETECT01-	99-244/06:49:31	99-244/09:56:34	000/03:07:03
22NNRCTRLT01-	99-244/23:00:11	99-245/12:15:55	000/13:15:44

NIMS C22 OBSERVATIONS

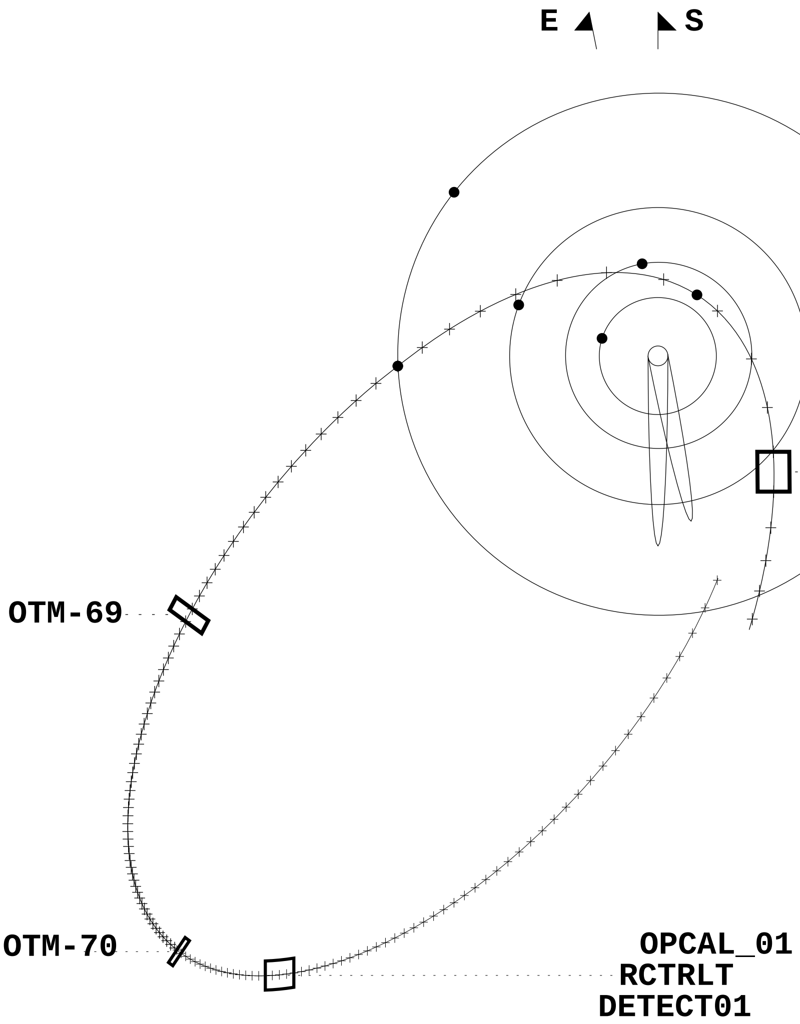


NIMS - FEL - 12/06/99

NIMS C22 CRUISE CALIBRATIONS

Callisto Flyby (C22): 14-AUG-1999 (D226) 08:39:35 UTC
Perijove (PJ22): 12-AUG-1999 (D224) 11:08:32 UTC
Apojove (AJ22): 28-AUG-1999 (D240) 16:00:00 UTC

Time Ticks (Relative to C22)
Spacecraft - 6 Hours



C22 North Trajectory Pole View, Perijove to Perijove

C22 NIMS INPUTS

Activity ID	Observation Title	NIMS Edit Table	NIMS PB Table	Mode	Gain	Grating Start	Grating Offset	Record Format	PSID
22NNJUPRTS01-	NIMS Software Reload								
22JNJUPRTS01*	Jupiter Realtime Observation	C22JLM442/MB	R/T	LM	4	0	4	R/T	DB
22NNHRSPEC01-	NIMS Software Reload								
22INHRSPEC01-	Io monitoring	C22ILMDK243D	C22ILMDK228D	LM	4	0	4	LPU	DC
22NNJUPRTS02-	NIMS Software Reload								
22JNJUPRTS02*	Jupiter Realtime Observation	C22JLM442/MB	R/T	LM	2	0	4	R/T	DD
22NNHOTMAP01-	NIMS Software Reload								
22JNHOTMAP01-	NIMS Jupiter HotMap	C22JSB253C	C22JSB76C	LM	2	0	4	LPU	DA
22NNHOTMAP02-	NIMS Software Reload								
22JNHOTMAP02-	NIMS Jupiter HotMap	C22JHT253A	C22JHT80A	LM	4	0	4	LPU	DE
22NNHOTMAP03-	NIMS Software Reload								
22JNHOTMAP03-	NIMS Jupiter HotMap	C22JSB253C	C22JSB76C	LM	2	0	4	LPU	DG
22NNWHTOVL01-	NIMS Software Reload								
22JNWHTOVL01-	Jupiter White Oval	C22JSB253C	C22JSB132C	LM	2	0	4	LPU	DJ
22NNBELUSL01-	NIMS Software Reload								
22ENBELUSL01-	Europa Belus Linea Dark Materials Obs	C22ELS442	C22ELS360	LS	3	0	4	MPW	DH
22NNGLOBAL01-	NIMS Software Reload								
22ENGLOBAL01*	Europa Global	C22ELM243C	C22ELM228C	LM	3,2	0	4	LPU	DI
22ENGLOBAL01_O	Europa Global(O)	C22OPCAL48	C22OPCAL48	LM	4	0	4	LPU	
22NNWHTOVL02-	NIMS Software Reload								
22JNWHTOVL02-	Jupiter White Oval	C22JSB253C	C22JSB132C	LM	2	0	4	LPU	DK
22NNDKSPOT01-	NIMS Software Reload								
22JNDKSPOT01-	Jupiter Dark Spot	C22JSB253C	C22JSB76C	LM	2	0	4	LPU	DL
22NNRELOAD01-	NIMS Software Reload								
22NNCHOPOF01-	Chopper off								
22NNDETECT01-	Grating Step Test								
22NNRCTRLT01-	NIMS RCT Real Time Calibration	C22RCT252	R/T	LM	1	0	4	R/T	
22NNROPCAL01	NIMS OPCAL	C22OPCAL48	R/T	LM	4	0	4	R/T	

C22 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 BOT (Mbit)	Mode Cycle time (sec)
22JNJUPRTS01	LM	R/T			360					
22INHRSPEC01	LM	LPU	0.0148	86	228	360	170	1.05	2.22	8.667
22JNJUPRTS02	LM	R/T			360					
22JNHOTMAP01	LM	LPU	0.0245	143	76	600	590	3.64	3.70	8.667
22JNHOTMAP02	LM	LPU	0.0245	143	80	600	590	3.64	3.70	8.667
22JNHOTMAP03	LM	LPU	0.0245	143	76	600	590	3.64	3.70	8.667
22JNWHTOVL01	LM	LPU	0.0245	143	132	600	590	3.64	3.70	8.667
22ENBELUSL01	LS	MPW	0.0909	530	360	600	598	6.89	6.91	8.667
22ENGLOBAL01	LM	LPU	0.0537	313	228	1327	674	4.16	8.18	8.667
22ENGLOBAL01_O	LM	LPU	0.0537	313	48	1327	110	0.68	8.18	8.667
22JNWHTOVL02	LM	LPU	0.0414	241	132	1020	1010	6.23	6.29	8.667
22JNDKSPOT01	LM	LPU	0.0450	262	76	1110	550	3.39	6.85	8.667
Resource Totals			**0.3827**	**2054**						

C22 RESOURCES

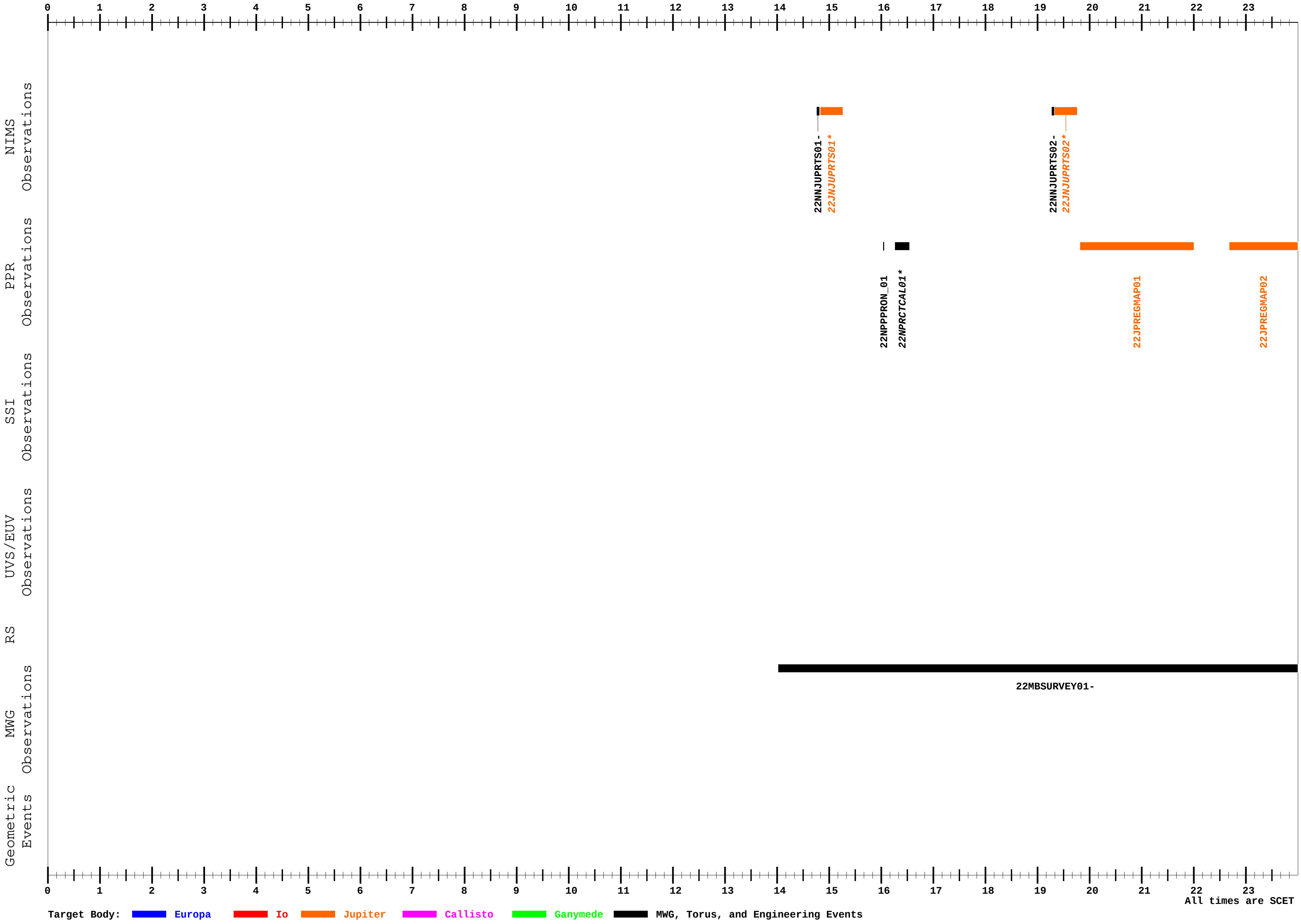
Activity ID	AACS	RT BTG	Comp	Thold	Total BTG	Data Reduction	Pass
	Mbits	Mbits			Mbits	Factor	
	c 2.5				(w/4% overhead)	(sBOT/BTG)	
22JNJUPRTS01		0.32					
22INHRSPEC01	0.01		1.80	0	0.5168	2.0	1
22JNJUPRTS02		0.32					
22JNHOTMAP01	0.03		1.50	0	0.7174	5.1	2
22JNHOTMAP02	0.03		1.50	0	0.7552	4.8	1
22JNHOTMAP03	0.03		1.50	0	0.7174	5.1	2
22JNWHTOVL01	0.03		1.80	0	1.0384	3.5	1
22ENBELUSL01	0.03		1.80	0	2.8703	2.4	1
22ENGLOBAL01	0.04		1.80	0	2.0489	2.0	2
22ENGLOBAL01_O	0.01		2.00	0	0.0634	10.7	1
22JNWHTOVL02	0.06		1.80	0	1.7775	3.5	2
22JNDKSPOT01	0.03		1.80	0	0.5573	6.1	1
Resource Totals					**11.0625**		

NIMS C22 OBSERVING GEOMETRY

OAPEL	Latitude (deg)	Longitude (deg)	Range (km)	Cone (deg)	Light (deg)	View (deg)	Phase (deg)
22JNJUPRTS01	+7	350 to 70	1000K	39 to 43	96 to 164	8 to 41	126 to 131
22INHRSPEC01	-90 to +90	220 to 40	787K	58	21 to 174	0 to 90	111
22JNJUPRTS02	+20	125 to 150	855K	48	58 to 88	32 to 67	120
	+10	125 to 150	855K	48	58 to 88	32 to 67	120
	+0	125 to 150	855K	48	58 to 88	32 to 67	120
22JNHOTMAP01	+22 to +35	311 to 342	671K	68	48 to 75	40 to 70	101
22JNHOTMAP02	+4 to +15	128 to 148	529K	94	68 to 87	8 to 19	76
22JNHOTMAP03	+4 to +12	129 to 155	510K	99	6 to 40	30 to 68	70
22JNWHTOVL01	+26 to +34	133 to 143	580K	171	41 to 51	34 to 40	19
22ENBELUSL01	+8	233	211K	122	6	44	47
22ENGLOBAL01	-90 to +90	184 to 4	212K	126	31 to 129	31 to 90	42
22JNWHTOVL02	+4 to +12	212 to 230	650K	158	32 to 60	8 to 29	32
22JNDKSPOT01	-36 to -26	255 to 277	676K	153	34 to 46	34 to 49	37

C22 ENCOUNTER
Plot Time: 99-223/00:00:00.000 to 99-224/00:00:00.000
Date of Plot: 3-Aug-99 13:43:35

GEM: C22



GEM: C22

C22 ENCOUNTER
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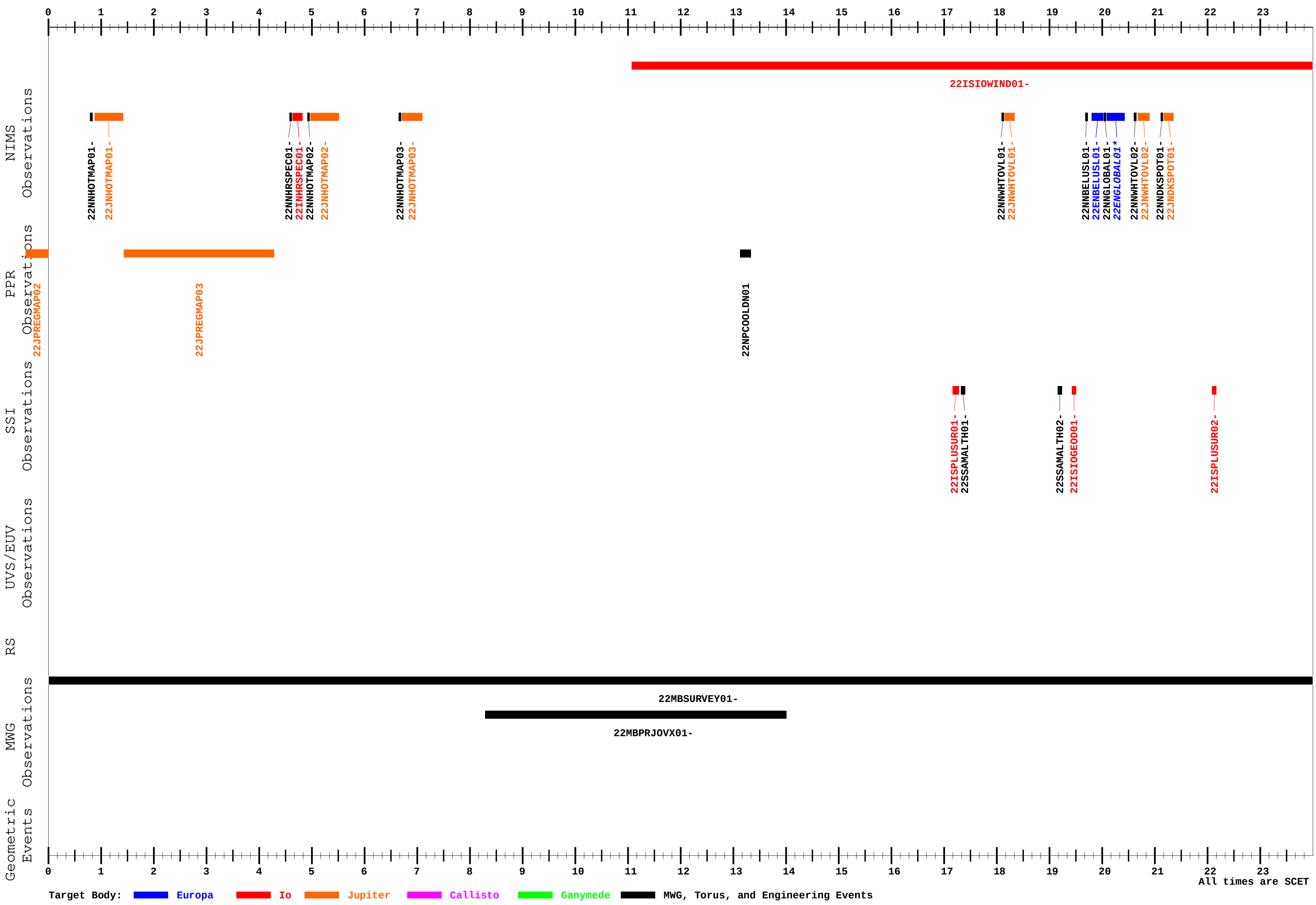

GEM: C22

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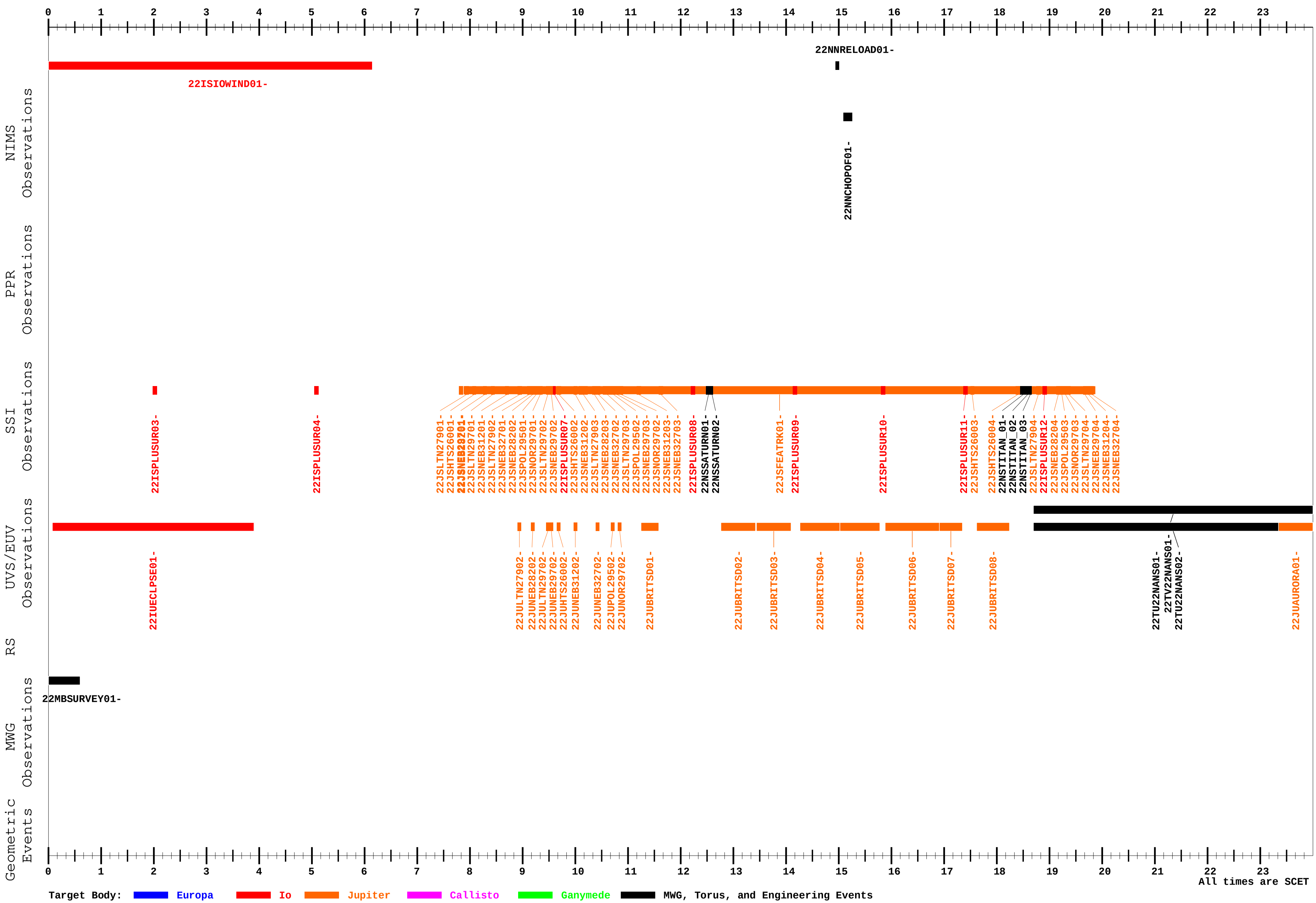

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C22 ENCOUNTER
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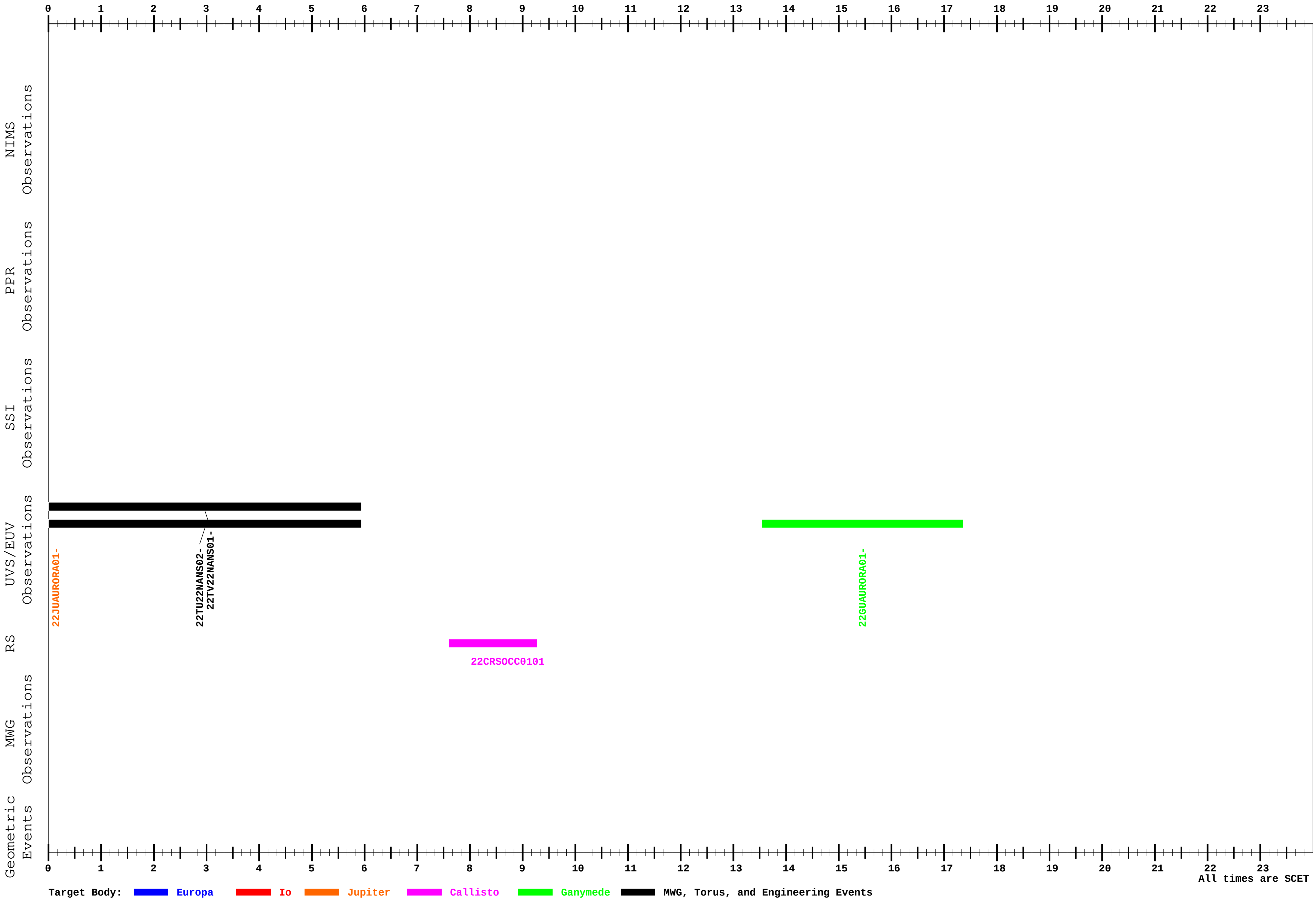
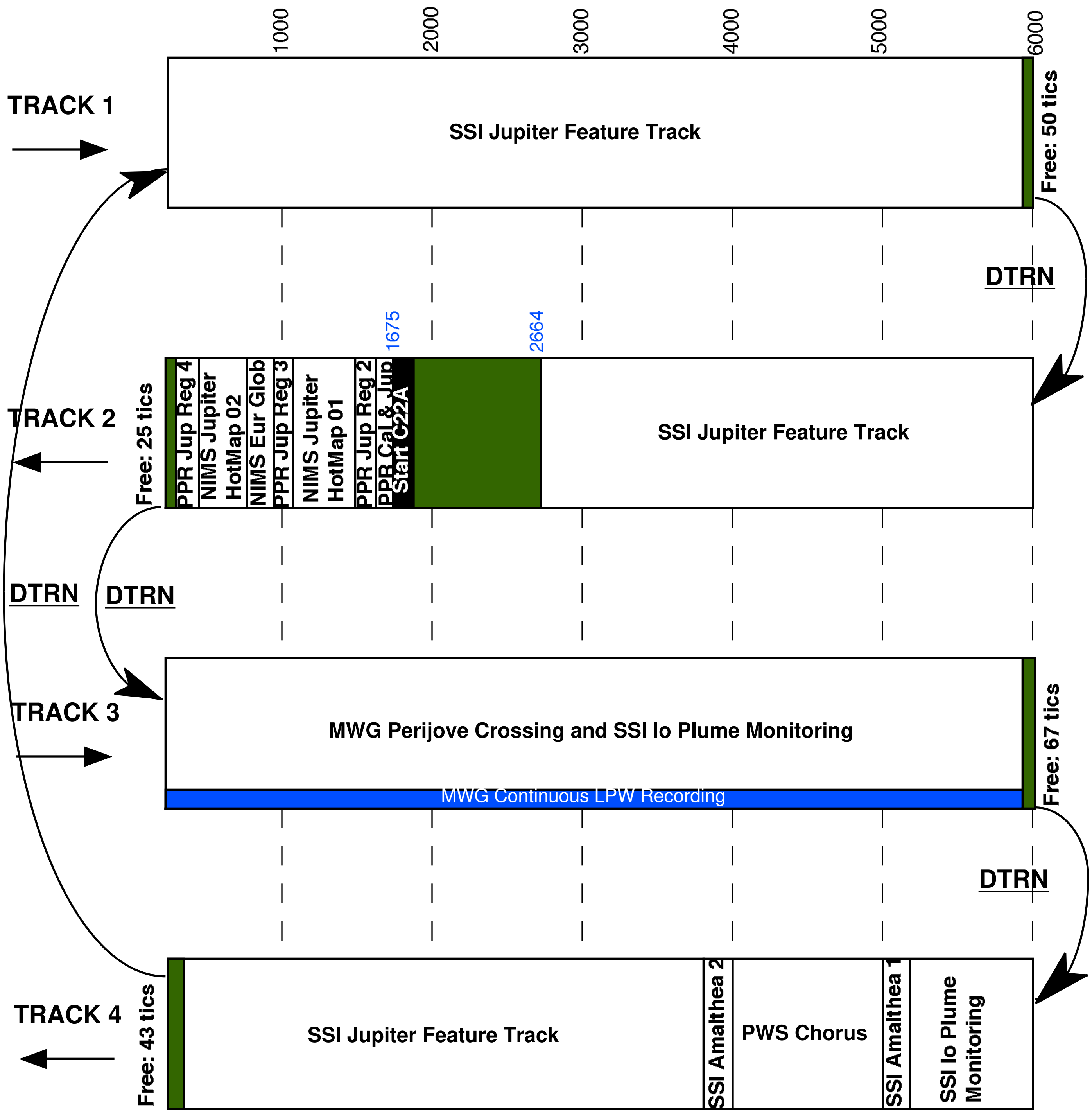
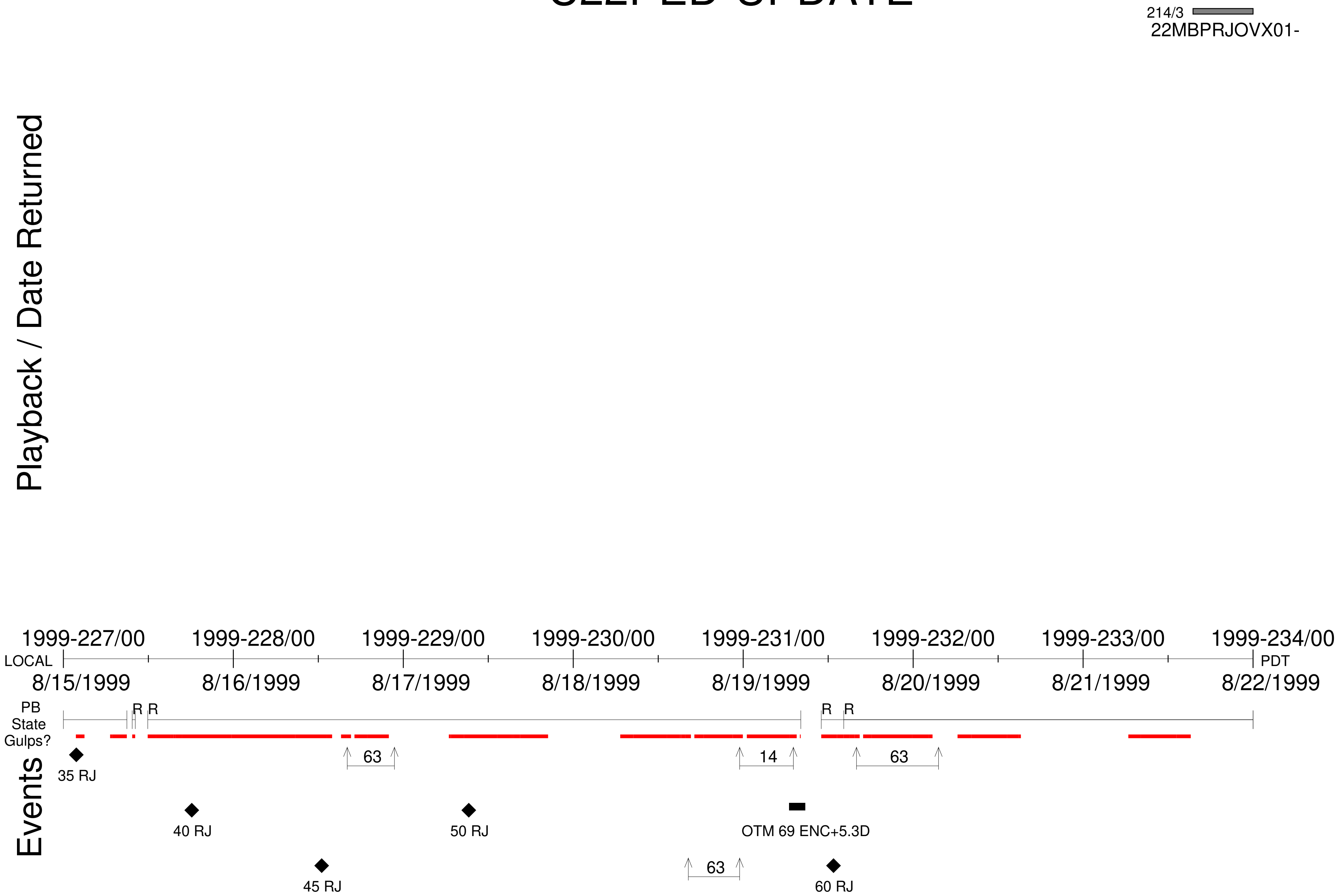


C22 HIGH-LEVEL TAPEMAP



J. Gross, 8/13/97

C22PED-UPDATE



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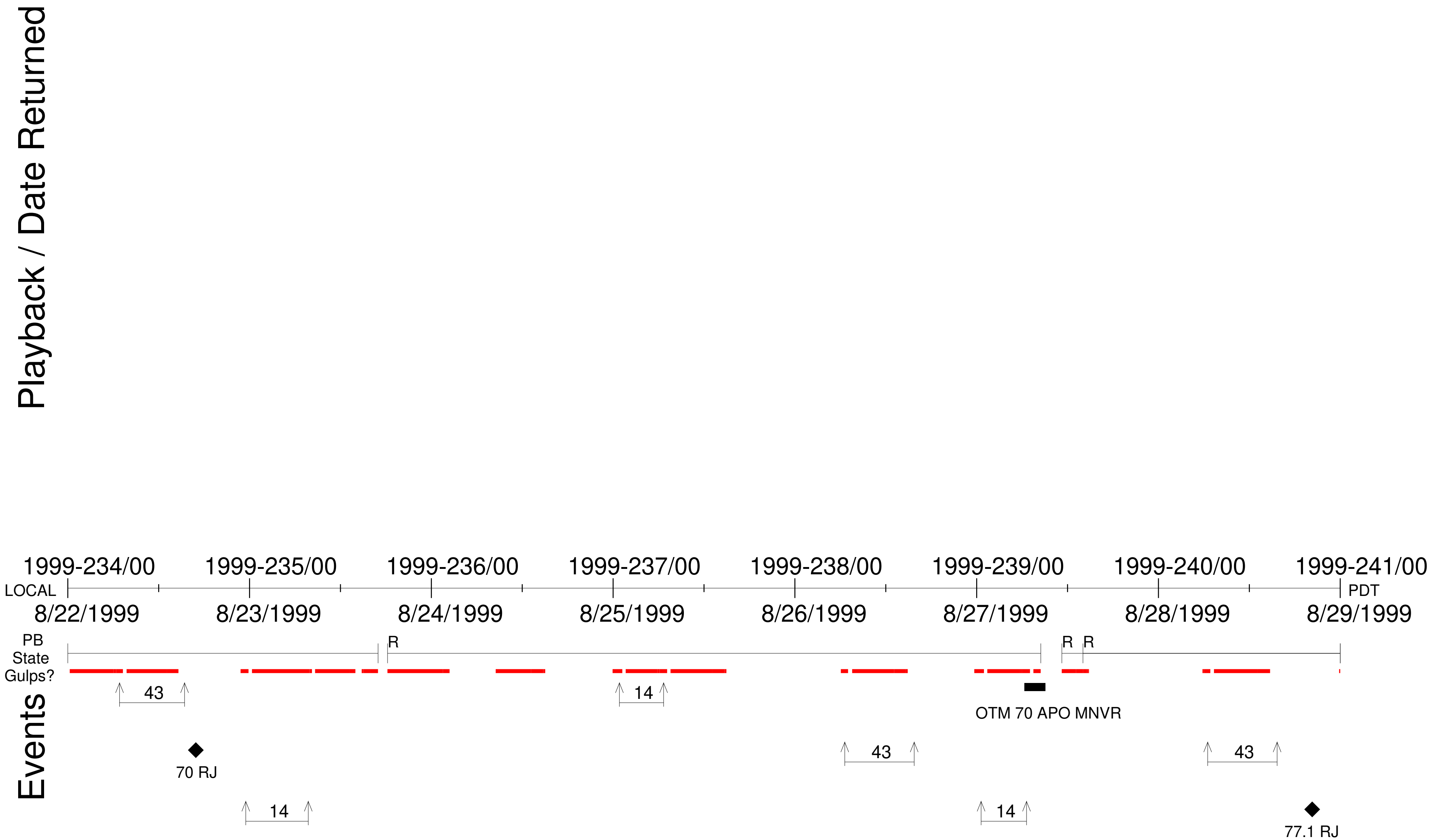
C22PED-UPDATE

22MBPRJOVX01-



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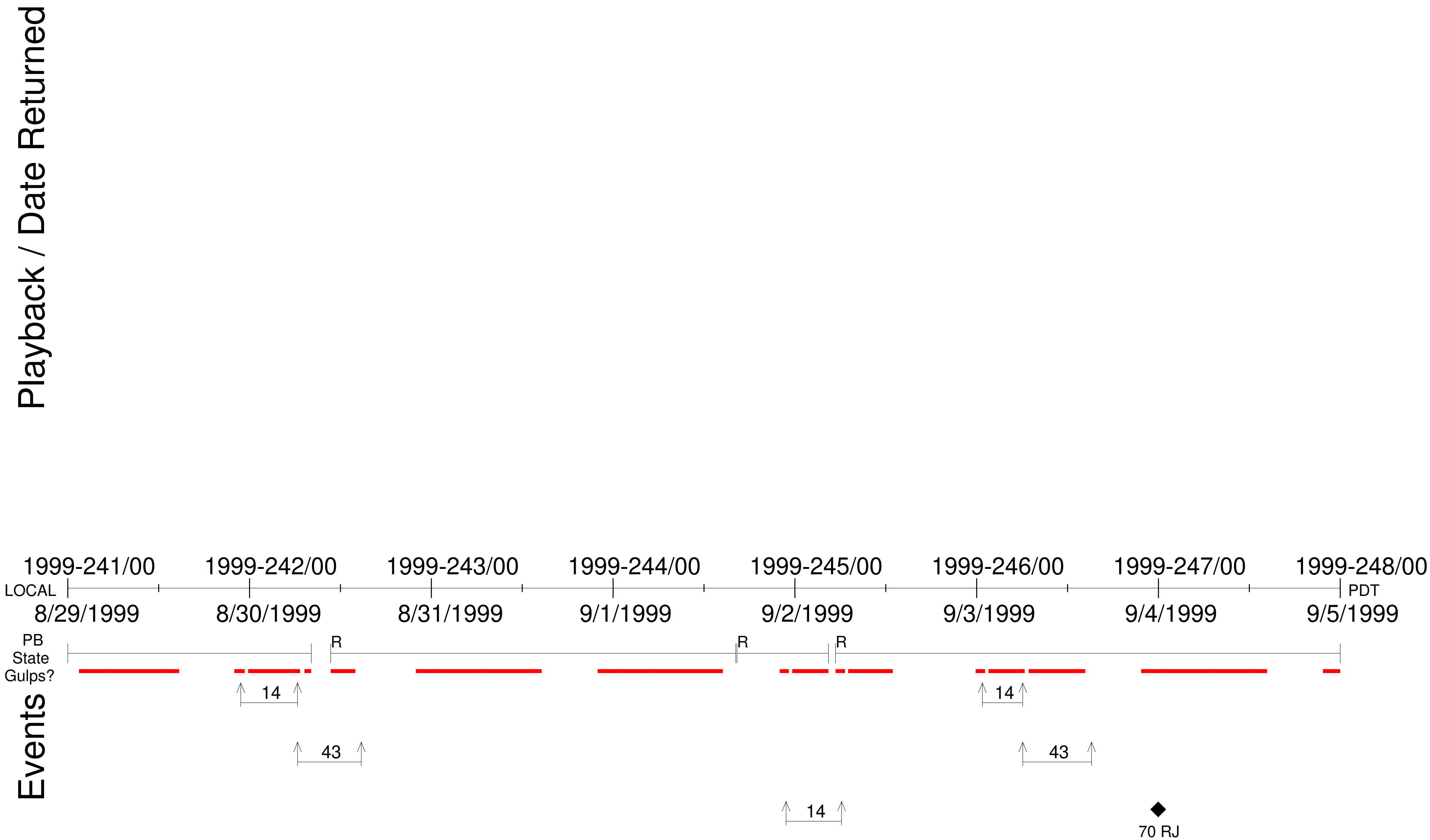

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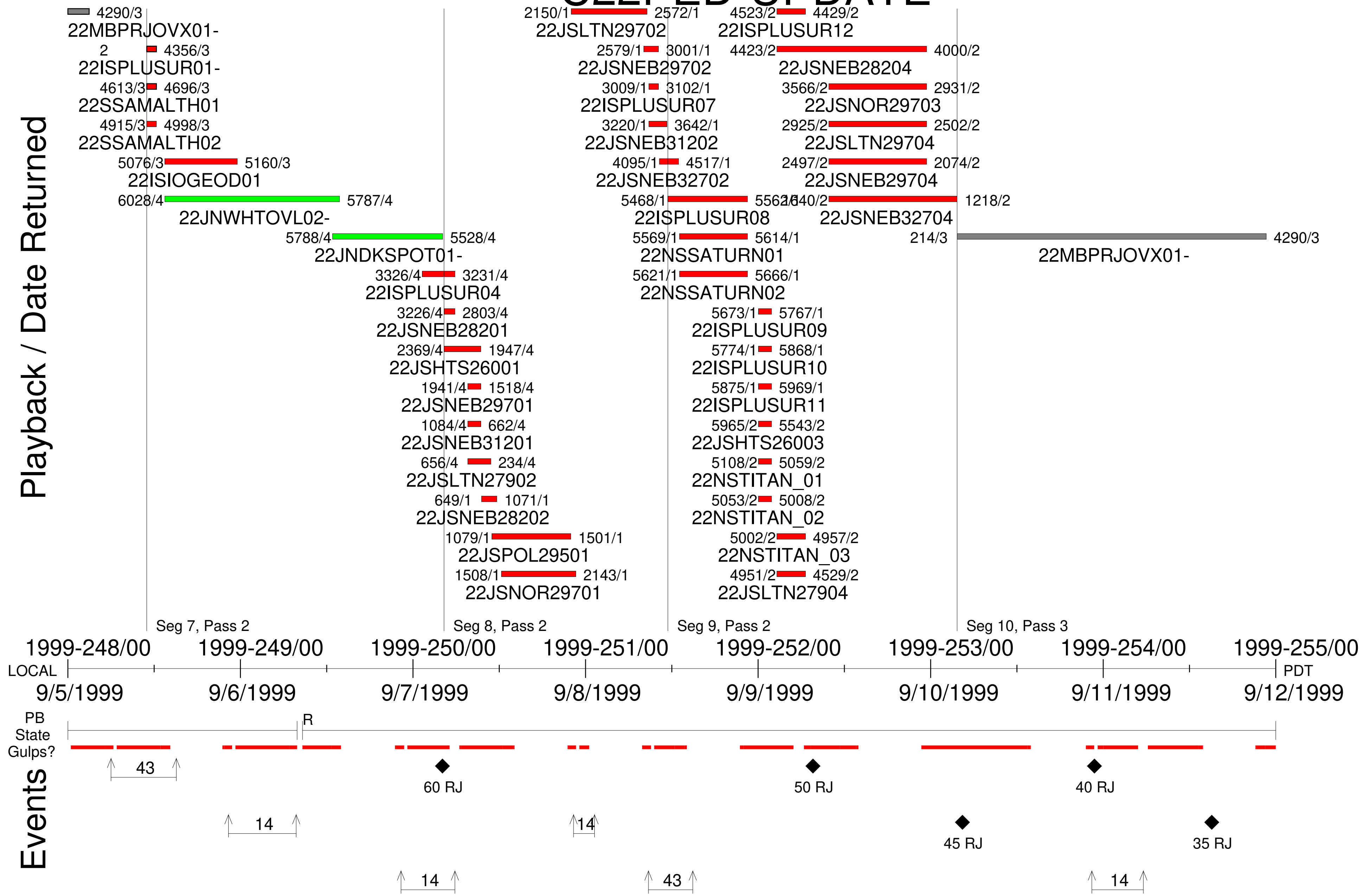

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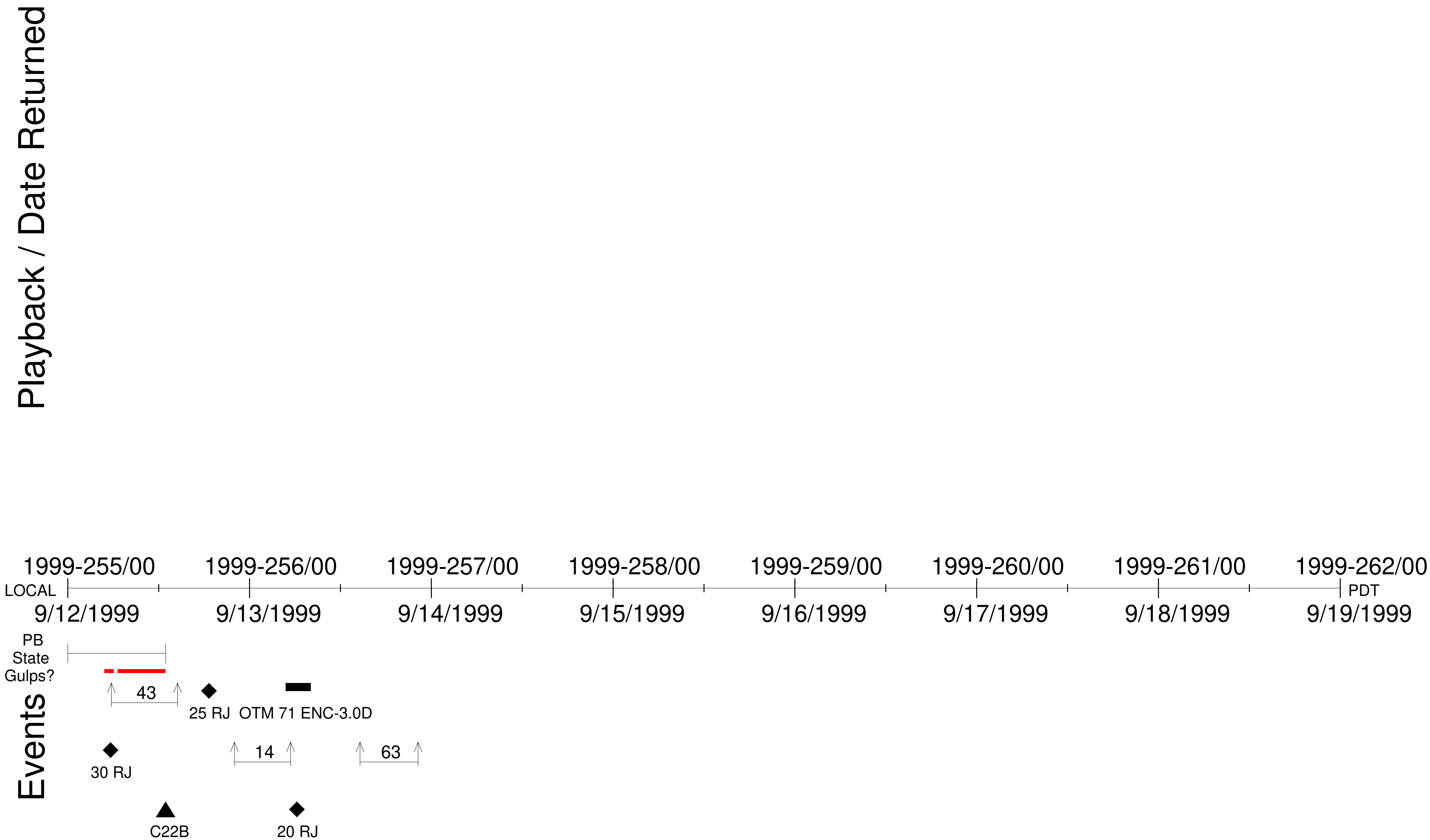

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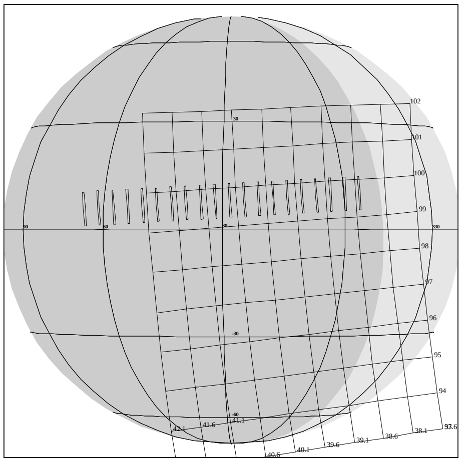
C22 NIMS A



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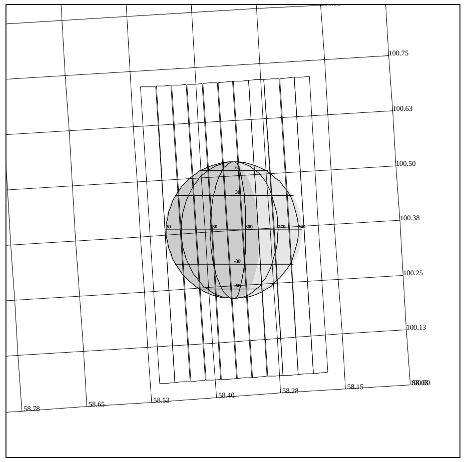

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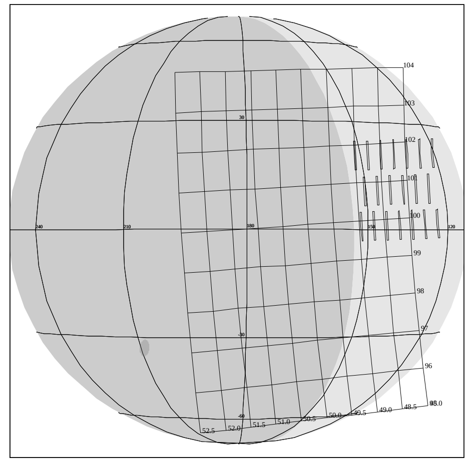

22JNJUPRTS02
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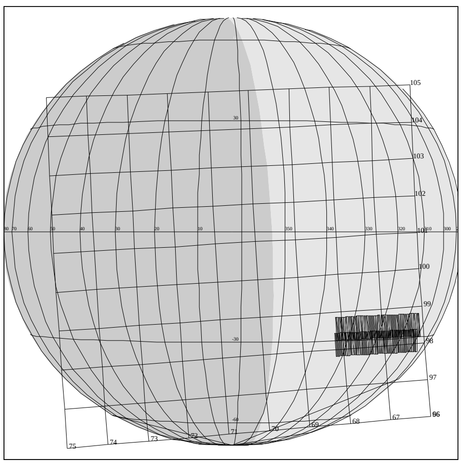

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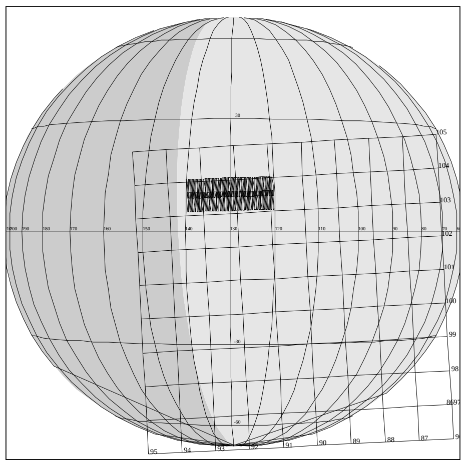

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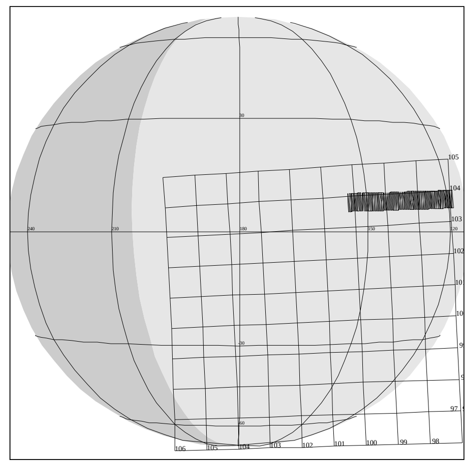

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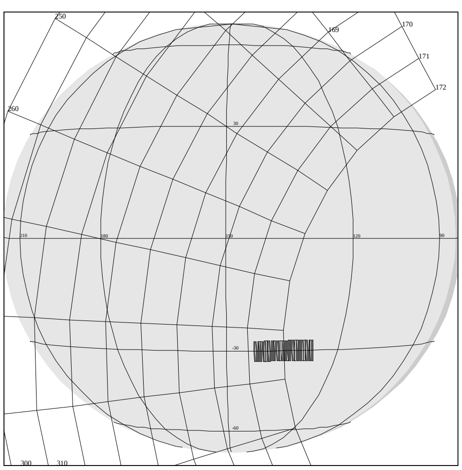

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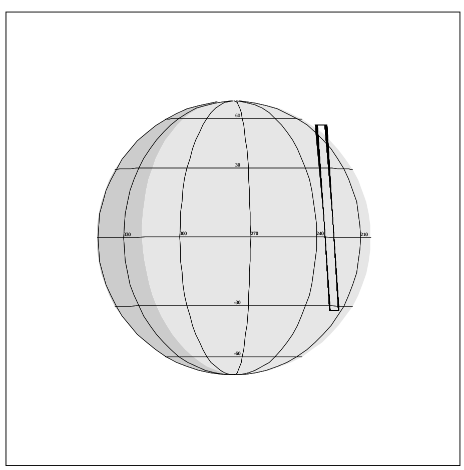

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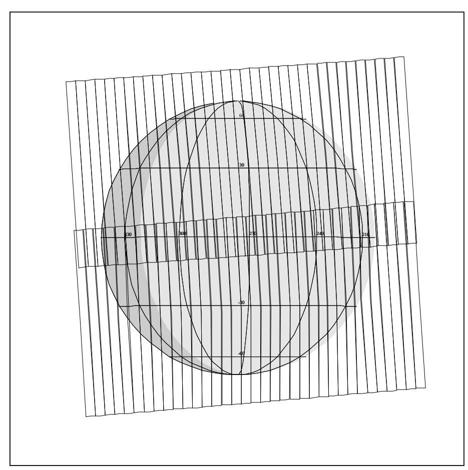

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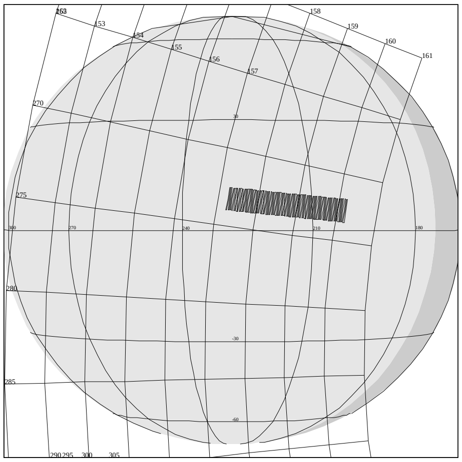
C22 NIMS B



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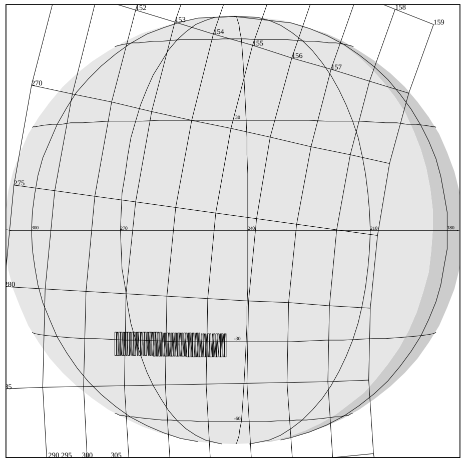

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