Chapter 2 - Orbit Overview

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Introduction to Chapter 2

This chapter gives an overview of the NIMS observations in the I33 Orbit.

The text on page 3 summarizes the NIMS science objectives for I33. The NIMS calibrations are discussed on page 3. Early data return and I33 playback are also discussed on page 3.

The table on page 4 is a time-ordered listing of the NIMS Oapels for I33.

The plot on page 5 shows the geometry of the NIMS I33 observations using a north trajectory pole view projection. The plot on page 6 shows the geometry of the NIMS I33 observations during the Io Flyby using a north trajectory pole view projection. The plot on page 7 shows the geometry of the NIMS I33 calibrations.

The spreadsheet on page 8 summarizes the various inputs for the NIMS I33 Observations. The spreadsheet on pages 9 and 10 summarizes the resource usage for the NIMS I33 observations.

The table on page 11 lists various NIMS I33 observing parameters: target latitude/longitude, range, cone angle, incidence angle light), emission angle view) and phase angle.

The timeline on pages 12 through 18 shows the placement of the I33 observations for all intruments during the I33 Encounter Period.

The tapemap on page 19 shows the placement of the I33 observations on the spacecraft's tape recorder.

The timeline on pages 20 through 30 shows the preliminary I33 playback schedule.

The NIMS I33 mosaic designs are summarized on pages 31 and 32 in time-order.

NIMS I33 SCIENCE OVERVIEW

Jupiter Science

There are three Jupiter observations in I33, all recorded. These observations are Jupiter global maps (JNGLOBAL). The mosaics are centered at 138, 258 and 18 degrees W. longitude at 120 degree intervals to give complete global coverage.

Io Science

The I33 Io sequence design is similar to that used in I32 in response to the loss of spectral capability due to the stuck grating. The NIMS observations are mostly mapping instead of sit-and-stare spectrum building observations. NIMS and SSI did collaborate on some targets, but no ride-along behind SSI will be returned.

33INMARDUK01 - nightside swath across Marduk hot spot.
33INKANEHE01 - high res dayside obs of part of Kanehekili hot spot.
33INMOSAIC01 - dayside two-swath mosaic of the Kanehekili region.
33INMOSAIC02 - dayside two-swath mosaic of the Hi’iaka hot spot region.
33INREGION01 - dayside five-swath regional map, pole to pole.
33INGLOBAL01 - dayside four-swath global map, pole to pole.
33INGLOBAL02 - dayside three-swath global map, pole to pole.

Europa Science

There are no Europa observations in I33.

Ganymede Science

There are no Ganymede observations in I33.

Callisto Science

There are no Callisto observations in I33.

Calibration

There is one NIMS calibration observation planned for I33: an RCT cal.

Early Data Return

There is one realtime observations in I33, the RCT calibration.

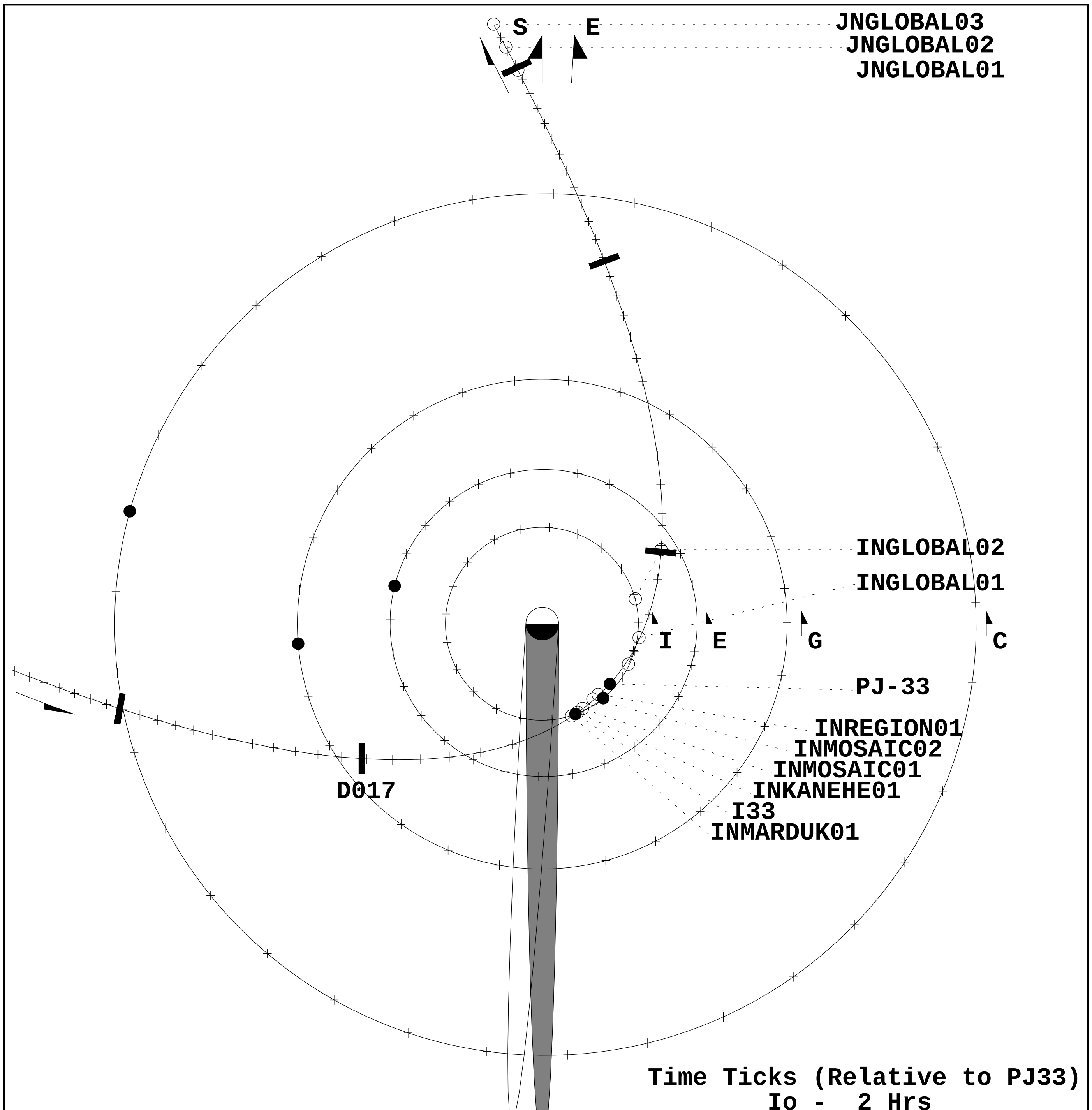
I33 Playback

I33 playback is split into two passes through the tape.

I33 Time-Ordered Listing

OAPEL	Start (UTC)	End (UTC)	Duration
33INMARDUK01	02-017/13:54:23	02-017/14:01:27	000/00:07:04
33INKANEHE01	02-017/14:18:39	02-017/14:24:43	000/00:06:04
33INMOSAIC01	02-017/14:37:11	02-017/14:53:22	000/00:16:10
33INMOSAIC02	02-017/15:18:39	02-017/15:36:51	000/00:18:12
33INREGION01	02-017/15:38:47	02-017/16:30:48	000/00:52:00
33INGLOBAL01	02-017/19:07:49	02-017/20:07:29	000/00:59:39
33INGLOBAL02	02-018/00:09:08	02-018/00:28:21	000/00:19:12
33JNGLOBAL01	02-019/23:43:24	02-020/00:10:47	000/00:27:22
33JNGLOBAL02	02-020/03:03:36	02-020/03:27:08	000/00:23:32
33JNGLOBAL03	02-020/06:24:54	02-020/06:46:08	000/00:21:11
33NNRCTRLT01	02-032/12:00:00	02-033/01:21:34	000/13:21:34

NIMS I33 OBSERVATIONS



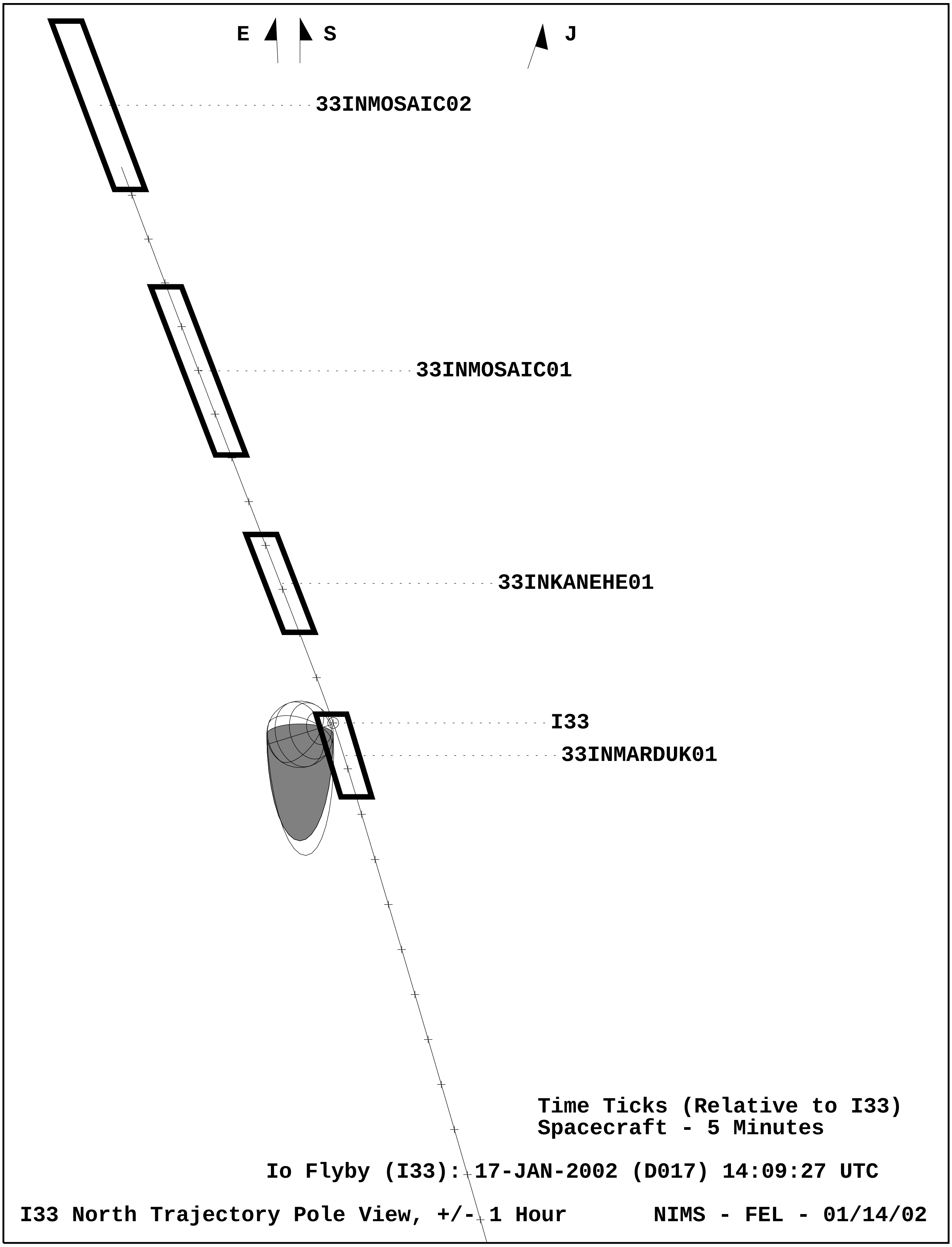
Time Ticks (Relative to PJ33)
Io - 2 Hrs
Europa - 3 Hrs
Ganymede - 6 Hrs
Callisto - 12 Hrs
Spacecraft - 2 Hrs

Io Flyby (I33): 17-JAN-2002 (D017) 14:09:27 UTC
Perijove (PJ33): 17-JAN-2002 (D017) 16:23:35 UTC

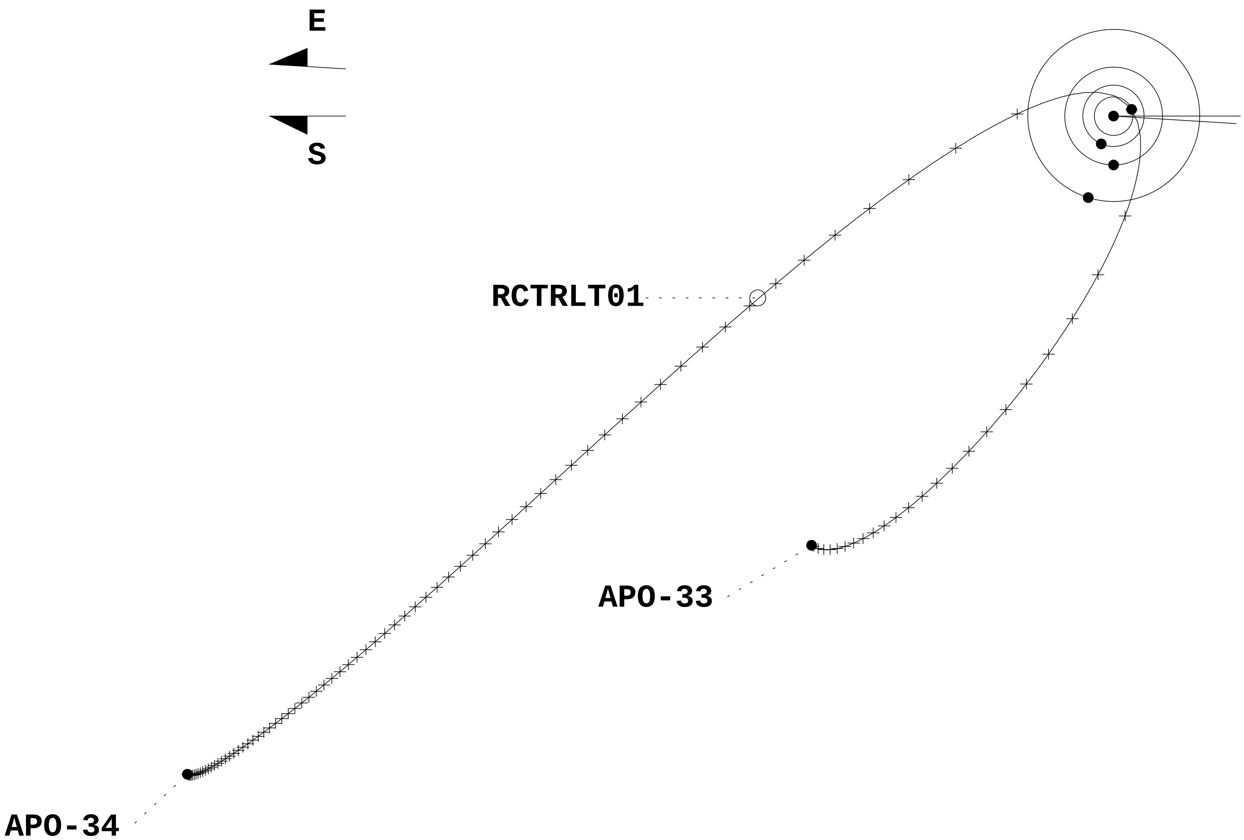
I33 North Trajectory Pole View

NIMS - FEL - 12/06/01

NIMS I33 IO FLYBY OBSERVATIONS



NIMS I33 CALIBRATIONS



Time Ticks (Relative to I33)
Spacecraft - 2 Days

Io Flyby (I33): 17-JAN-2002 (D017) 14:09:27 UTC
Perijove (PJ33): 17-JAN-2002 (D017) 16:23:35 UTC
Apojove (A34): 13-JUN-2002 (D164) 04:21:54 UTC

I33 North Trajectory Pole View

NIMS - FEL - 01/14/02

I33 INPUTS

Activity ID	Observation Title	NIMS Edit Table	NIMS PB Table	Mode	Gain	Grating Start	Grating Offset	Record Format	Obs. Cost (tracks)	Obs. Cost (ticks)	PSID
33INMARDUK01	Io Marduk Observation	I33ILM442	I33ILM144	LM	1	0	4	MPW	0.0737	430	DB
33INKANEHE01	Io Kanehekili Obs	I33ILM442	I33ILM144	LM	2	0	4	MPW	0.0463	270	DC
33INMOSAIC01	Io Mosaic Observation	I33ILM442	I33ILMFG96	LM	2	0	4	MPW	0.1387	808	DD
33INMOSAIC02	Io Mosaic Observation	I33ILM442	I33ILMFG96	LM	2	0	4	MPW	0.1565	912	DE
33INREGION01	Io Regional Obs	I33ILM442	I33ISMFG72	SM	2	0	4	MPW	0.4425	2579	DF
33INGLOBAL01	Io Global Obs	I33ILMFG252	I33ILM144comp	LM	2	0	4	LPU	0.1370	798	DG
33INGLOBAL02	Io Global Obs	I33ILMFG252	I33ILMFG72A	LM	2	0	4	LPU	0.0422	246	DK
33JNGLOBAL01	Jupiter Global	I33JXM10	I33JXMFG7	XM	2	0	6	LPU	0.0569	331	DH
33JNGLOBAL02	Jupiter Global	I33JXM10	I33JXMFG7	XM	2	0	6	LPU	0.0495	289	DI
33JNGLOBAL03	Jupiter Global	I33JXM10	I33JXMFG7	XM	2	0	6	LPU	0.0422	246	DJ
33INMARDUK01	Io Marduk Observation	I33ILM442	I33ILM144comp	LM	1	0	4	MPW	0.0737	430	DB
33INMOSAIC01	Io Mosaic Observation	I33ILM442	I33ILMFG48	LM	2	0	4	MPW	0.1387	808	DD
33INMOSAIC02	Io Mosaic Observation	I33ILM442	I33ILMFG48	LM	2	0	4	MPW	0.1565	912	DE
33INREGION01-gf	Io Regional Obs	I33ILM442	I33ISMFG72	SM	2	0	4	MPW	0.4421	2576	DF
33INGLOBAL01	Io Global Obs	I33ILMFG252	I33ILMFG108B	LM	2	0	4	LPU	0.1370	798	DG

I33 RESOURCES

Activity ID	Mode	Record Format	Obs. Cost (tracks)	Obs. Cost (ticks)	Number Wavelengths Returned	Obs Record Time (sec)	Obs PB Time (sec)	Selected Bits to Tape sBOT(MBITS)	Bits to Tape BOT (Mbit)	Mode Cycle time (sec)
33INMARDUK01	LM	MPW	0.0728	424	360	480	480	5.53	5.53	8.667
33INKANEHE01	LM	MPW	0.0366	213	360	240	240	2.76	2.76	8.667
33INMOSAIC01	LM	MPW	0.1362	794	360	900	900	10.37	10.37	8.667
33INMOSAIC02	LM	MPW	0.1543	899	360	1020	1020	11.75	11.75	8.667
33INREGION01	SM	MPW	0.4348	2534	360	2880	2880	33.18	33.18	2.33
33INGLOBAL01	LM	LPU	0.1371	799	253	3400	3400	20.97	20.97	8.667
33INGLOBAL02	LM	LPU	0.0414	241	253	1020	1020	6.29	6.29	8.667
33JNGLOBAL01	XM	LPU	0.0559	325	10	1380	1380	8.51	8.51	0.333
33JNGLOBAL02	XM	LPU	0.0486	283	10	1200	1200	7.40	7.40	0.333
33JNGLOBAL03	XM	LPU	0.0414	241	10	1020	1020	6.29	6.29	0.333
I33 tape USAGE			**0.9719**	**6754**						

I33 RESOURCES

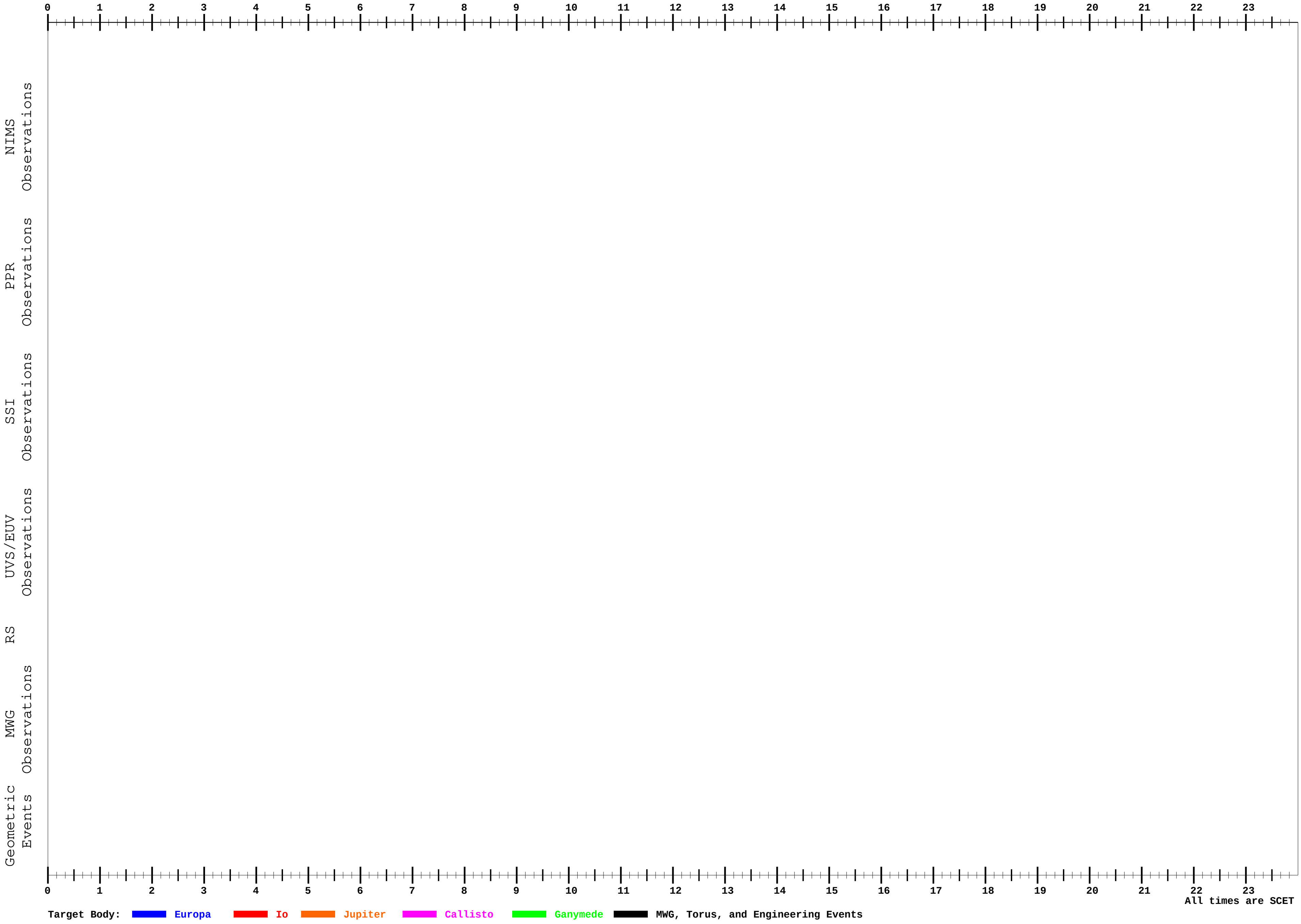
Activity ID	AACS Mbits c 2.5	Comp	Thold	RT BTG	Total BTG (Mbits) (w/4% ohead)	Data Reduction Factor (sBOT/BOT)	Pass
33INMARDUK01	0.03	1.2			3.4559	1.6	
33INKANEHE01	0.01	1.2			1.7279	1.6	
33INMOSAIC01	0.05	1.2			6.4798	1.6	
33INMOSAIC02	0.06	1.2			7.3437	1.6	
33INREGION01	0.17	1.2			77.1296	0.4	
33INGLOBAL01	0.20	1.2			17.2033	1.2	
33INGLOBAL02	0.06	1.2			5.1610	1.2	
33JNGLOBAL01	0.08	1.5			5.7465	1.5	
33JNGLOBAL02	0.07	1.5			4.9970	1.5	
33JNGLOBAL03	0.06	1.5			4.2474	1.5	
Totals					**129.2448**		

NIMS I33 OBSERVING GEOMETRY

OAPEL	Latitude (deg)	Longitude (deg)	Range (km)	Cone (deg)	Light (deg)	View (deg)	Phase (deg)
33INMARDUK01	-28 to -26	207 to 210	2.5 to 5.8K	38 to 73	152 to 154	37 to 66	103 to 137
33INKANEHE01	-15 to -13	32 to 34	4.1 to 6.5K	164	18 to 20	6 to 14	17 to 21
33INMOSAIC01	-20 to -11	29 to 39	14 to 22K	159	15 to 22	18 to 29	23 to 26
33INMOSAIC02	-14 to +8	67 to 89	35 to 44K	160	34 to 57	12 to 34	24 to 25
33INREGION01	-90 to +90	330 to 150	48 to 73K	160	3 to 113	3 to 90	23
33INGLOBAL01	-90 to +90	356 to 176	145 to 167K	162	10 to 111	10 to 90	21
33INGLOBAL02	-90 to +90	45 to 225	242 to 250K	155	1 to 119	1 to 90	29
33JNGLOBAL01	-90 to +90	48 to 228	2400K	173	1 to 91	2 to 91	1
33JNGLOBAL02	-90 to +90	168 to 348	2500K	172	0 to 92	1 to 91	2
33JNGLOBAL03	-90 to +90	288 to 108	2600K	171	0 to 93	0 to 91	3

I33 ENCOUNTER
Plot Time: 02-014/00:00:00.000 to 02-15/00:00:00.000
Date of Plot: 12-Dec-101 12:29:35

GEM: I33



GEM: I33

I33 ENCOUNTER
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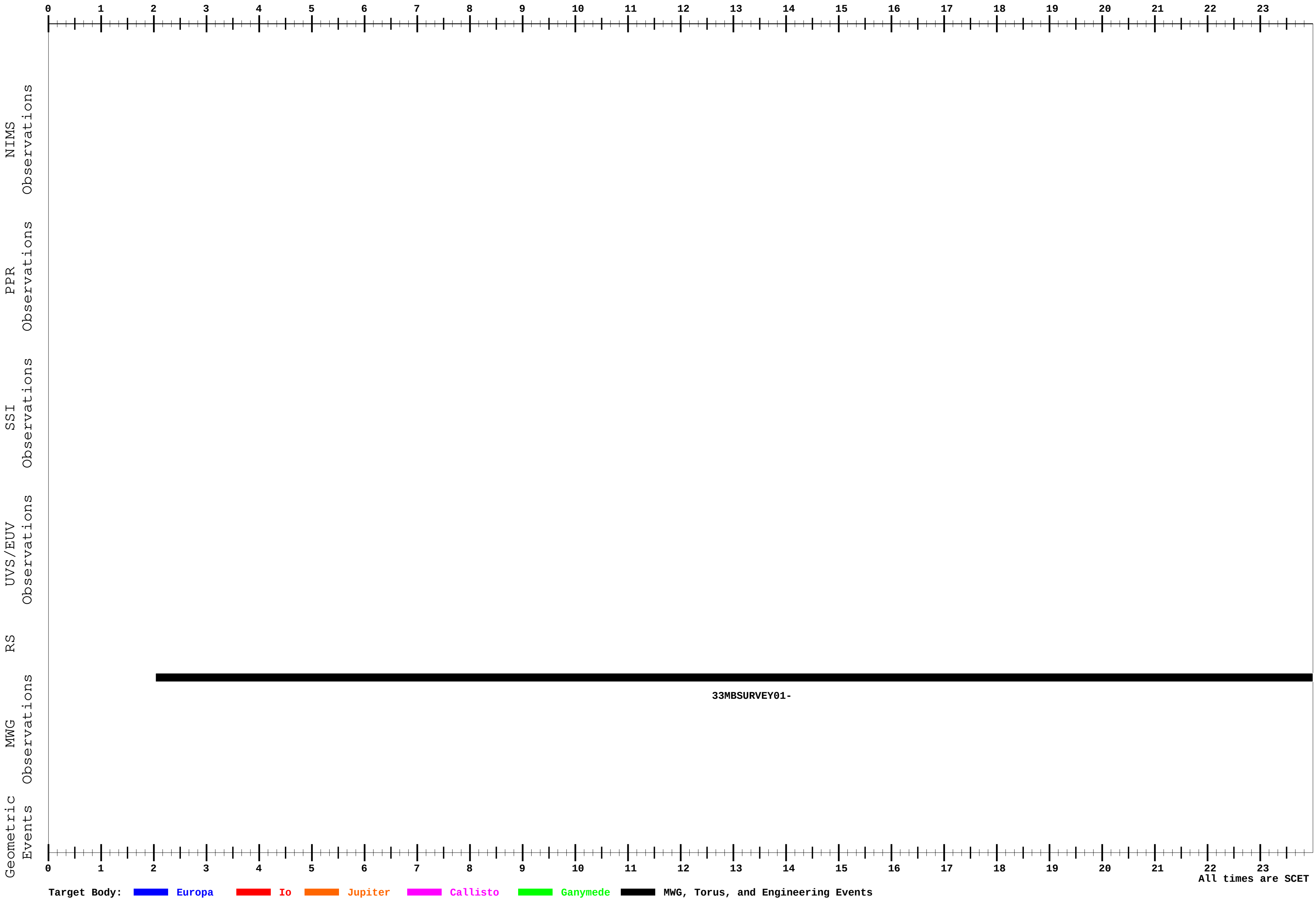
Date of Plot: 12-Dec-101 12:29:35



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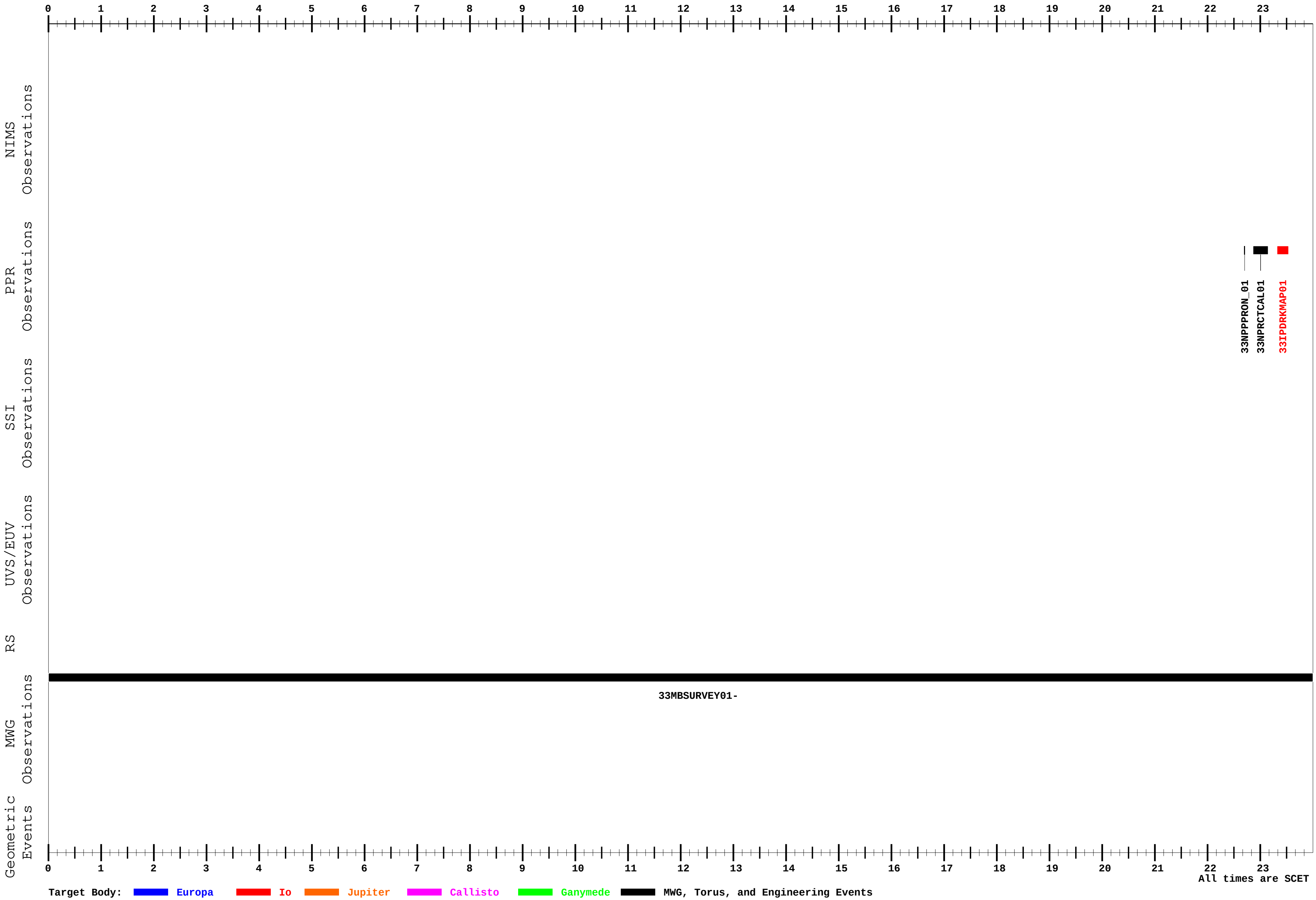
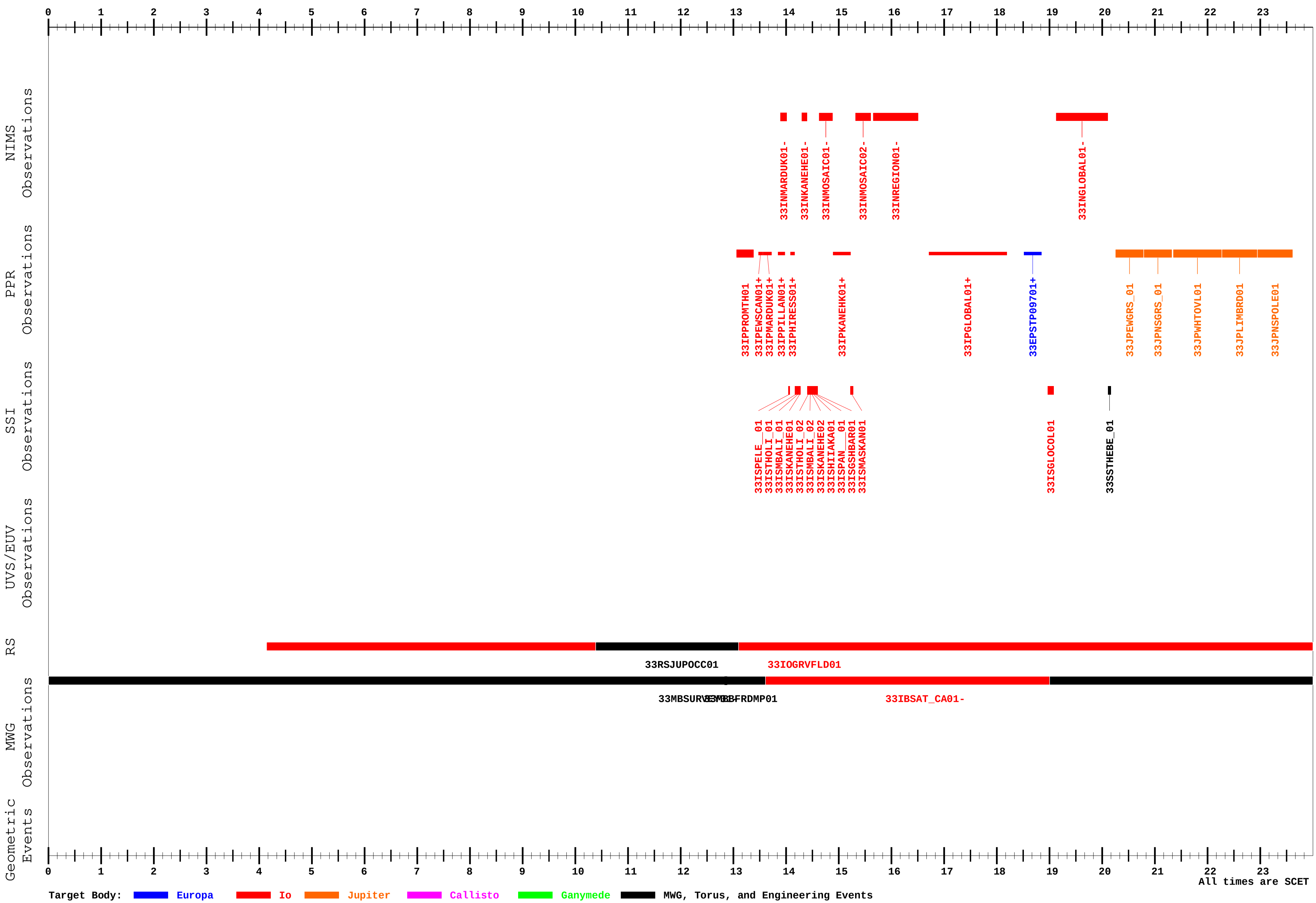
Date of Plot: 12-Dec-101 12:29:35



GEM: I33

I33 ENCOUNTER
Plot Time: 02-17/00:00:00.000 to 02-18/00:00:00.000
Date of Plot: 12-Dec-101 12:29:35



GEM: I33

I33 ENCOUNTER
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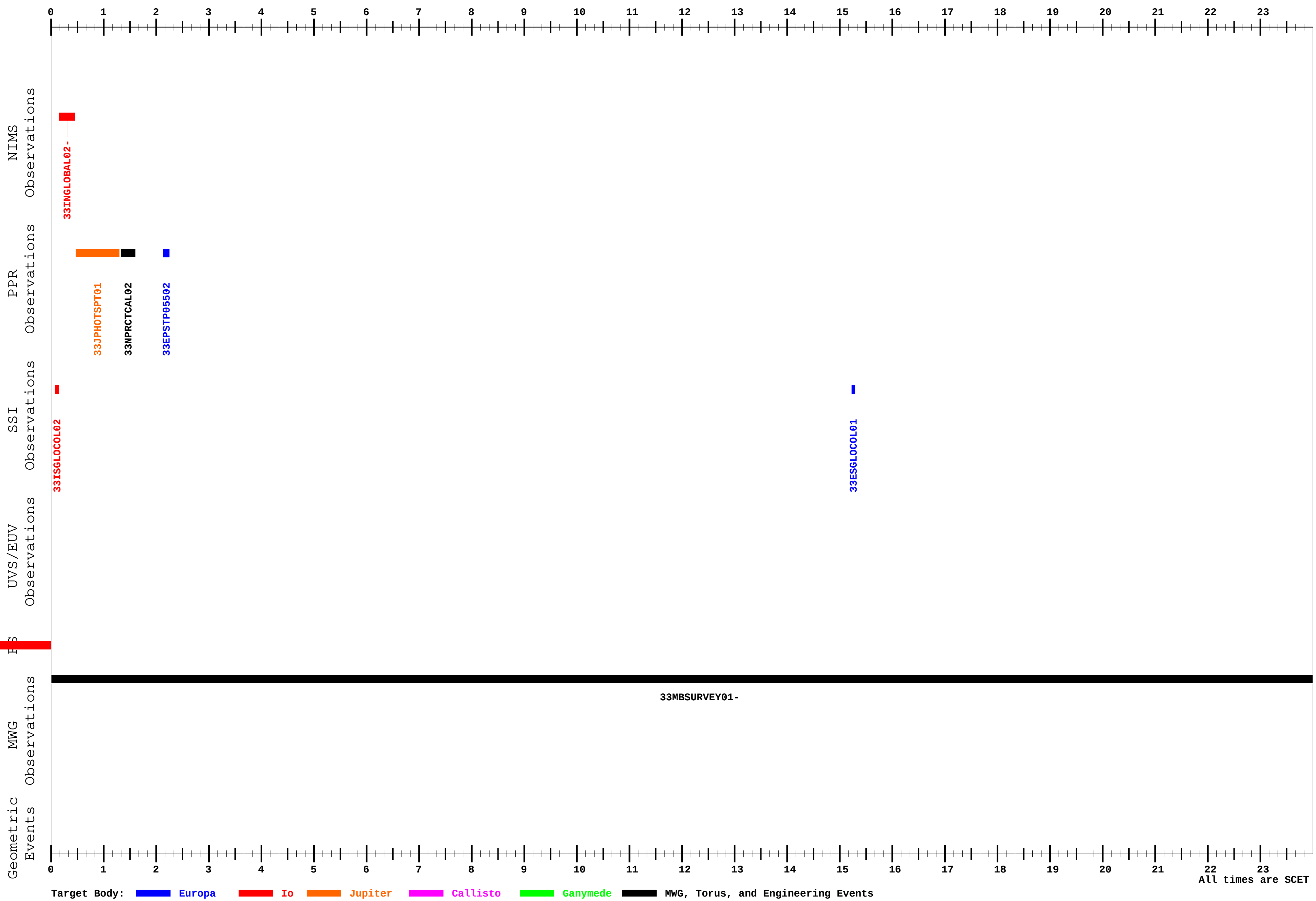

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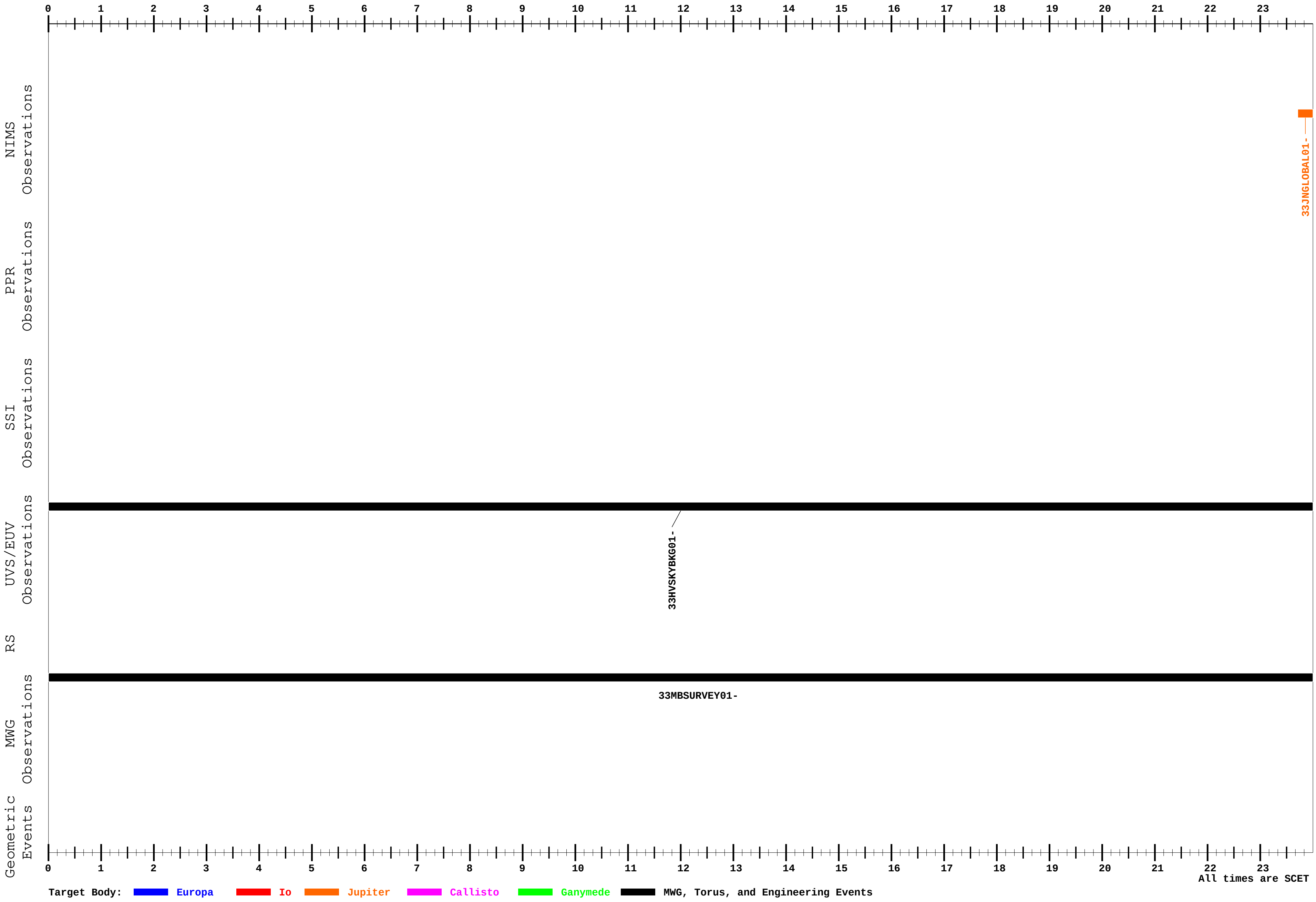
Plot Time: 02-19/00:00:00.000 to 02-20/00:00:00.000
Date of Plot: 12-Dec-101 12:29:36



GEM: I33

I33 ENCOUNTER
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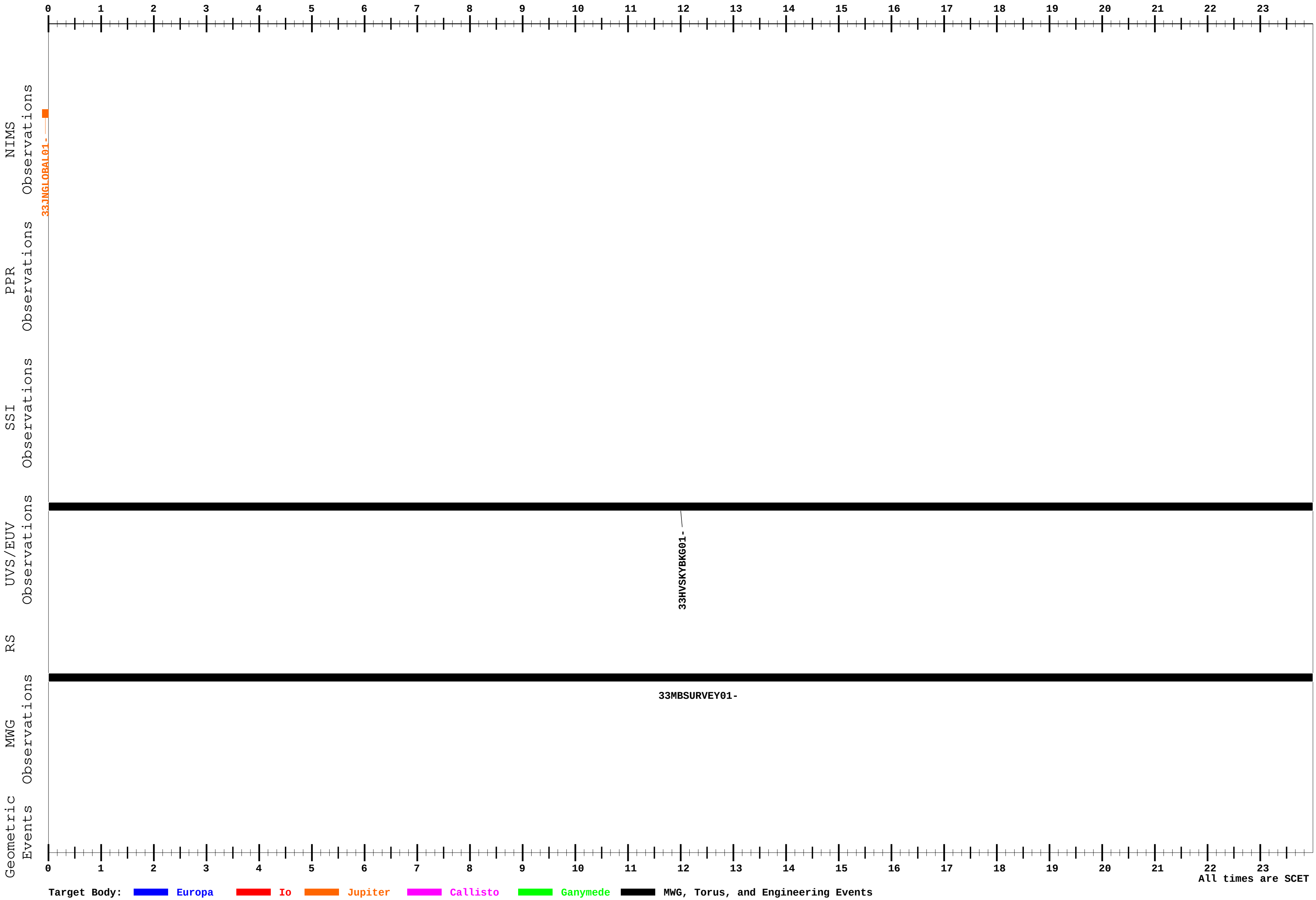

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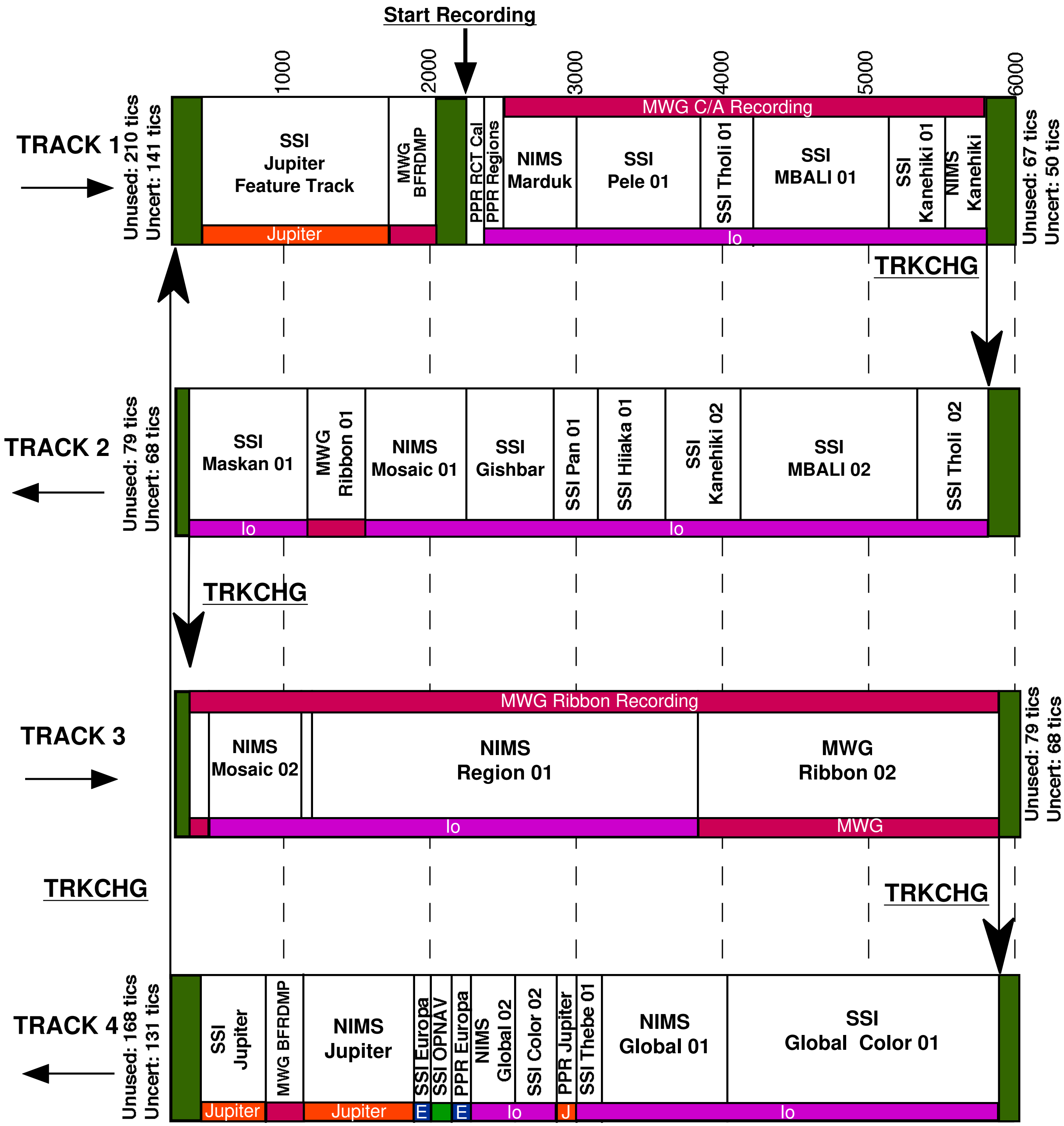

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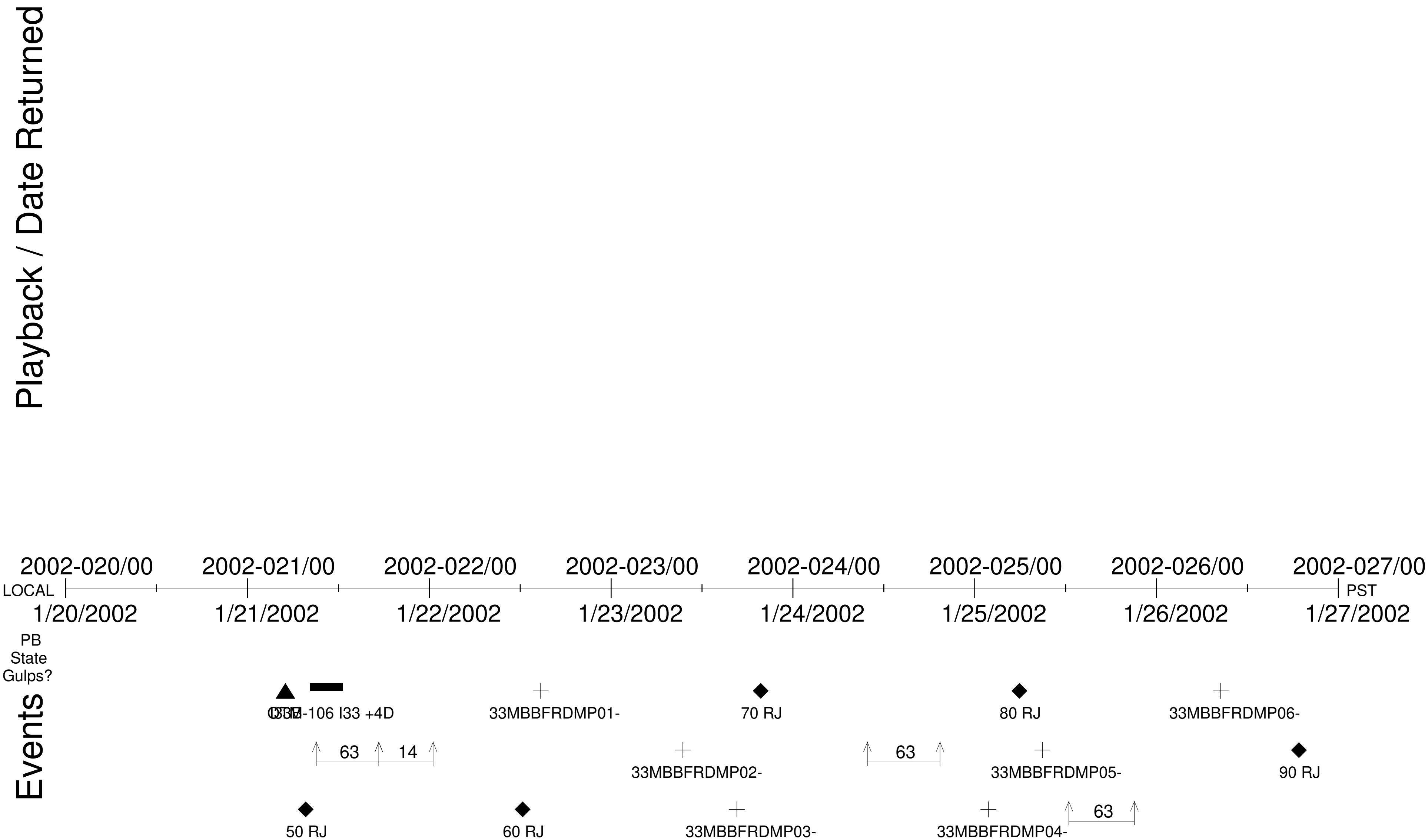
I33PBA


Playback / Date Returned
Events
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2002-021/00
2002-022/00
2002-023/00
2002-024/00
2002-025/00
2002-026/00
2002-027/00
LOCAL
PST
1/20/2002
1/21/2002
1/22/2002
1/23/2002
1/24/2002
1/25/2002
1/26/2002
1/27/2002
PB
State
Gulps?
-106 I33 +4D
33MBBFRDMP01-
70 RJ
80 RJ
33MBBFRDMP06-
63
14
33MBBFRDMP02-
63
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90 RJ
50 RJ
60 RJ
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63

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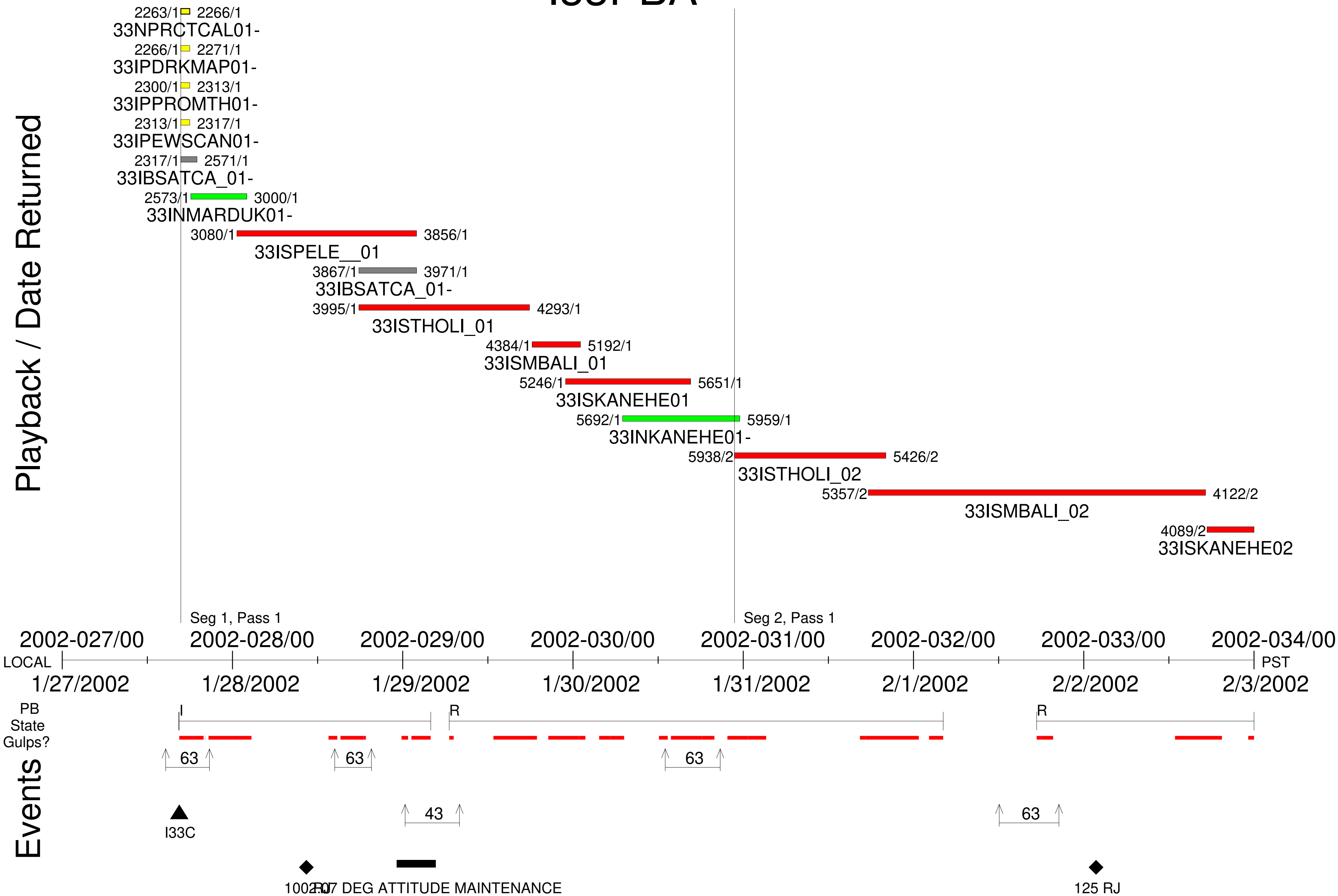

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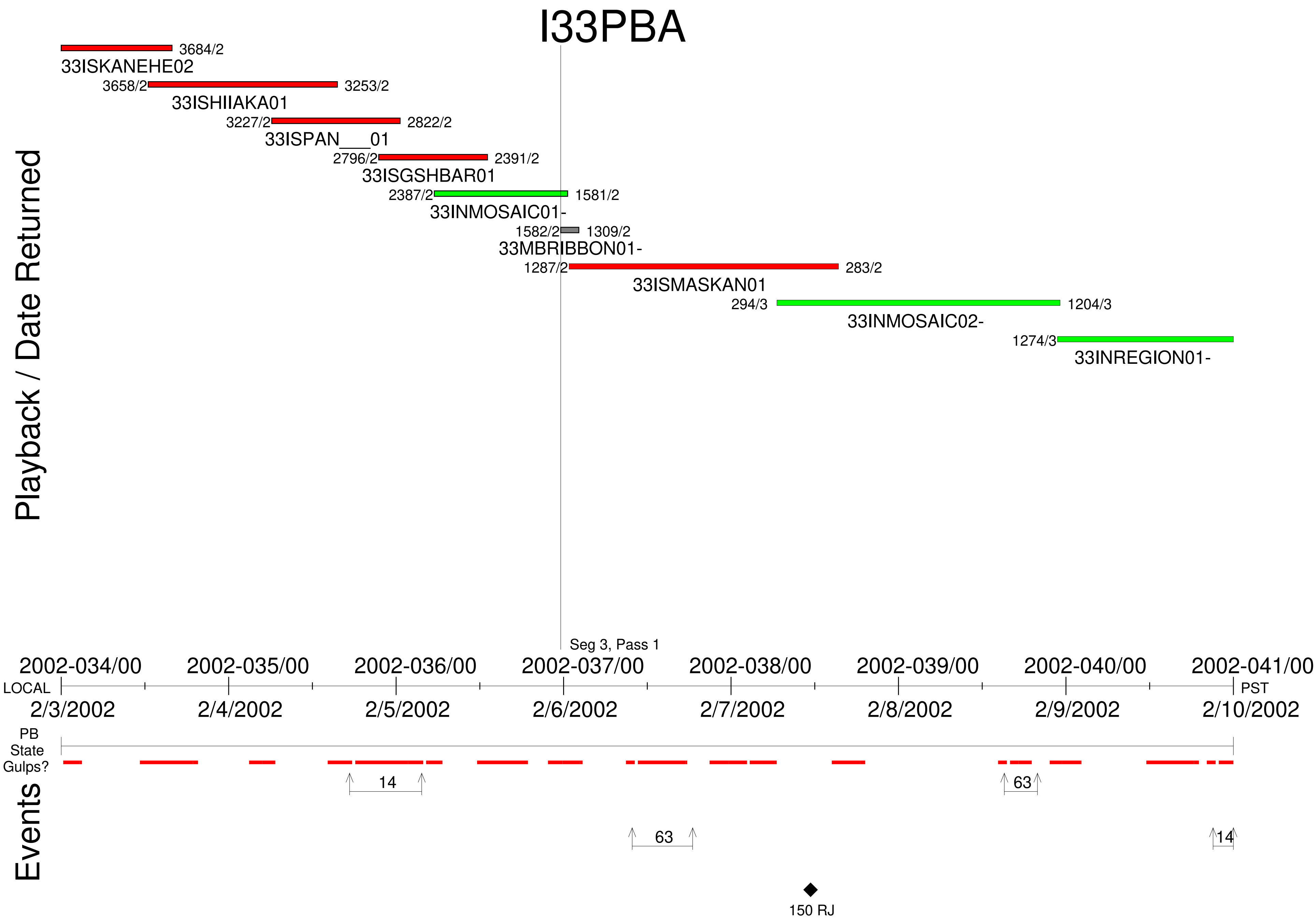

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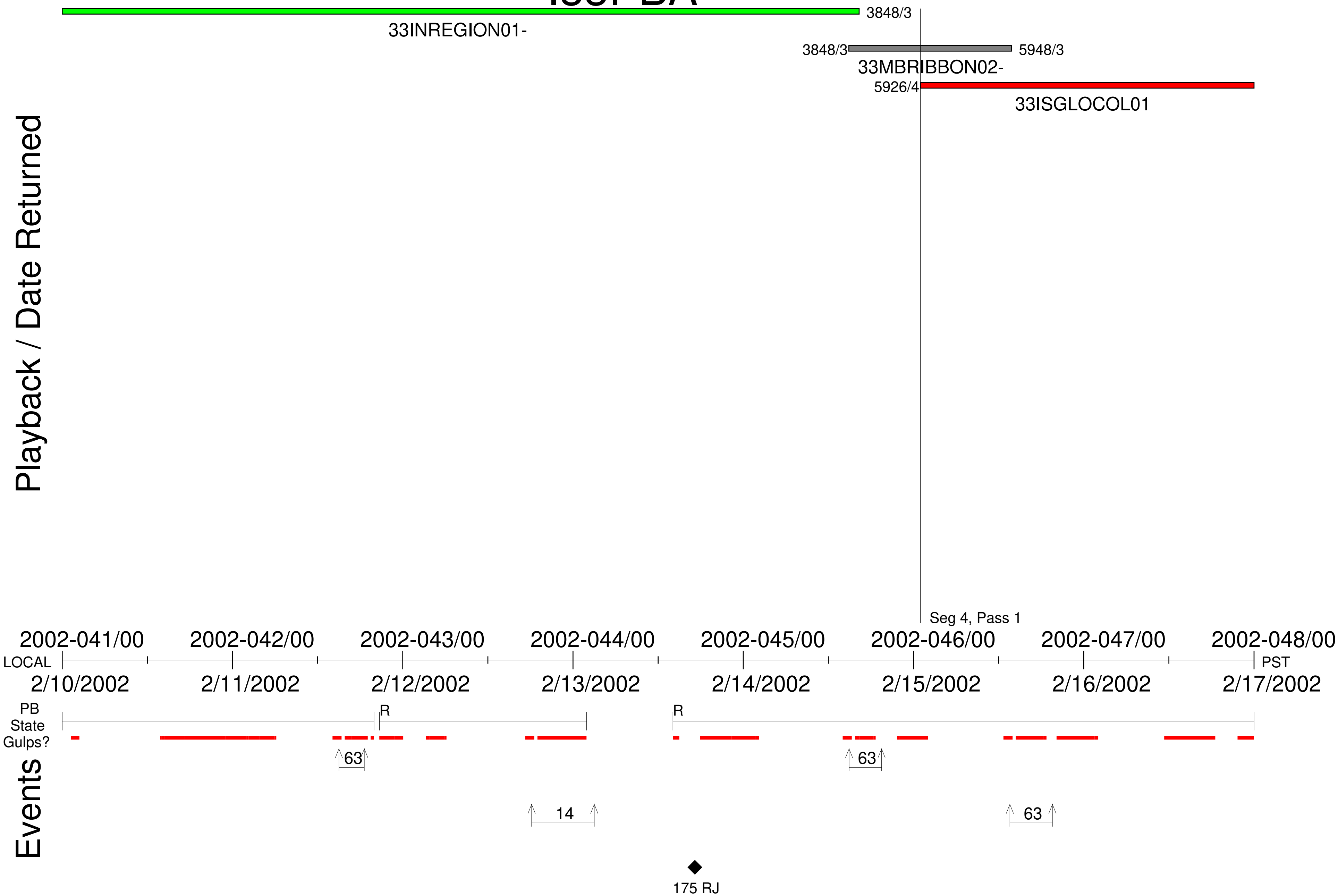

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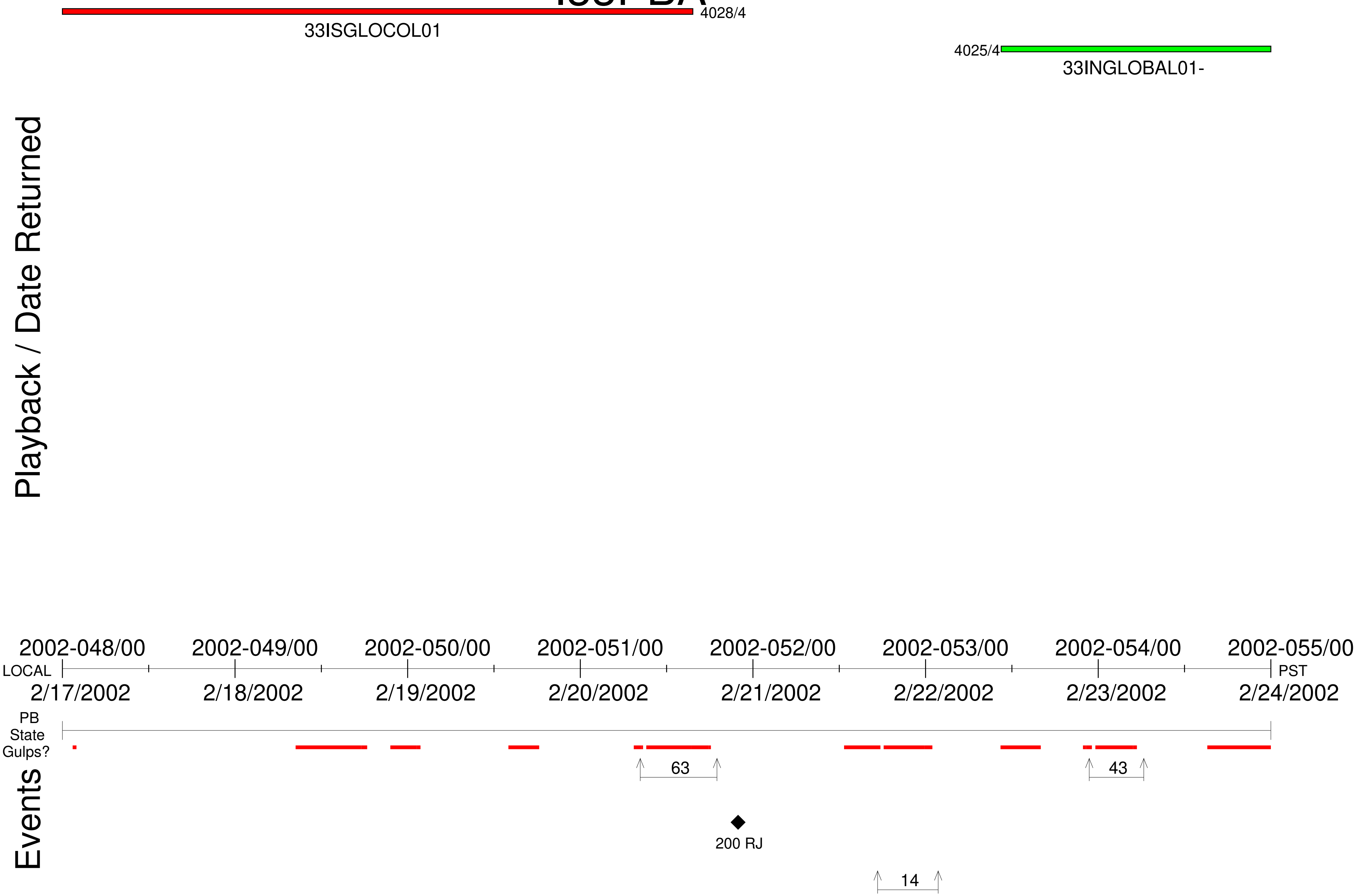

33ISGLOCOL01
4028/4
4025/4
33INGLOBAL01-
Playback / Date Returned
2002-048/00
2002-049/00
2002-050/00
2002-051/00
2002-052/00
2002-053/00
2002-054/00
2002-055/00
LOCAL
PST
2/17/2002
2/18/2002
2/19/2002
2/20/2002
2/21/2002
2/22/2002
2/23/2002
2/24/2002
PB
State
Gulps?
Events
63
43
200 RJ
14

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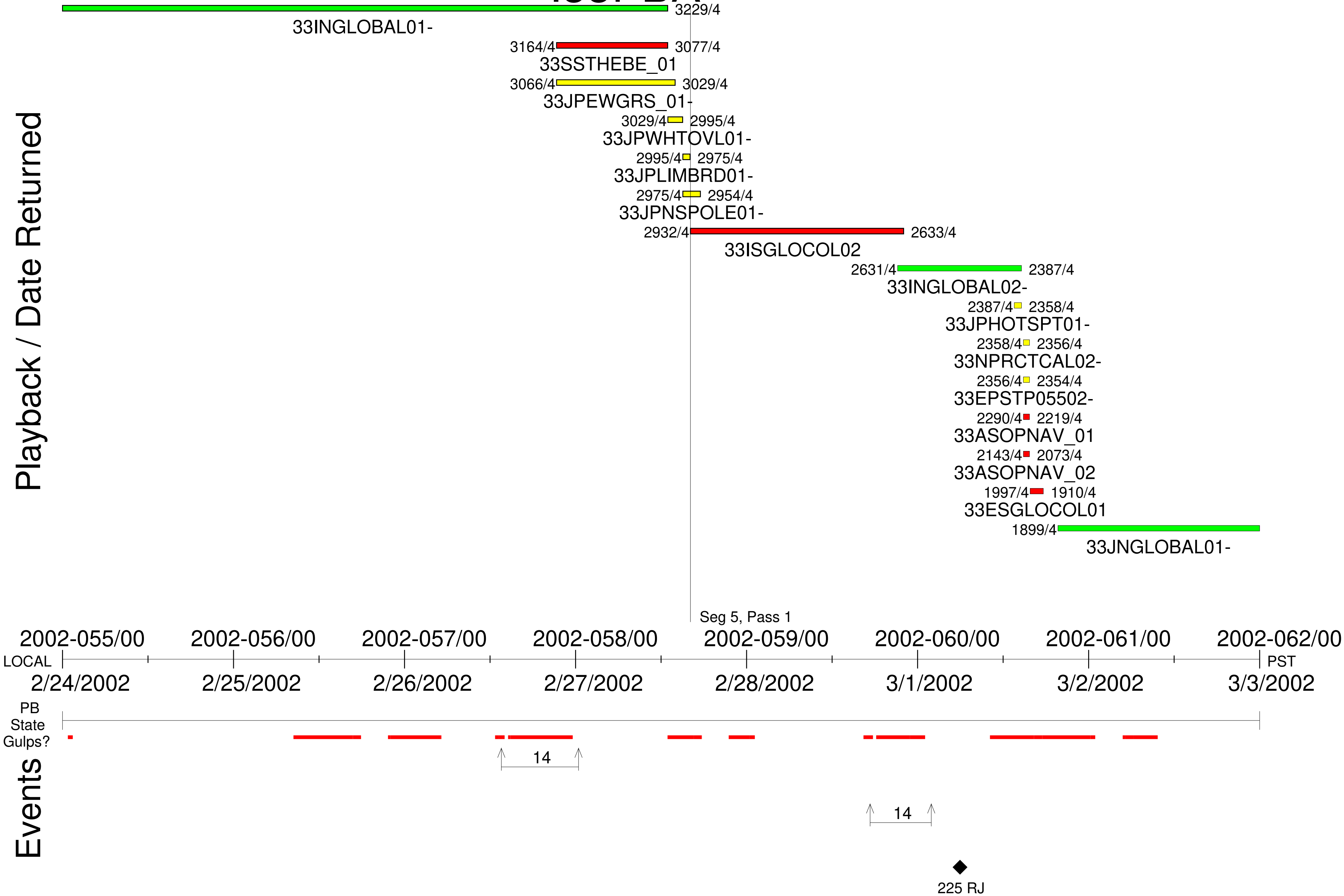

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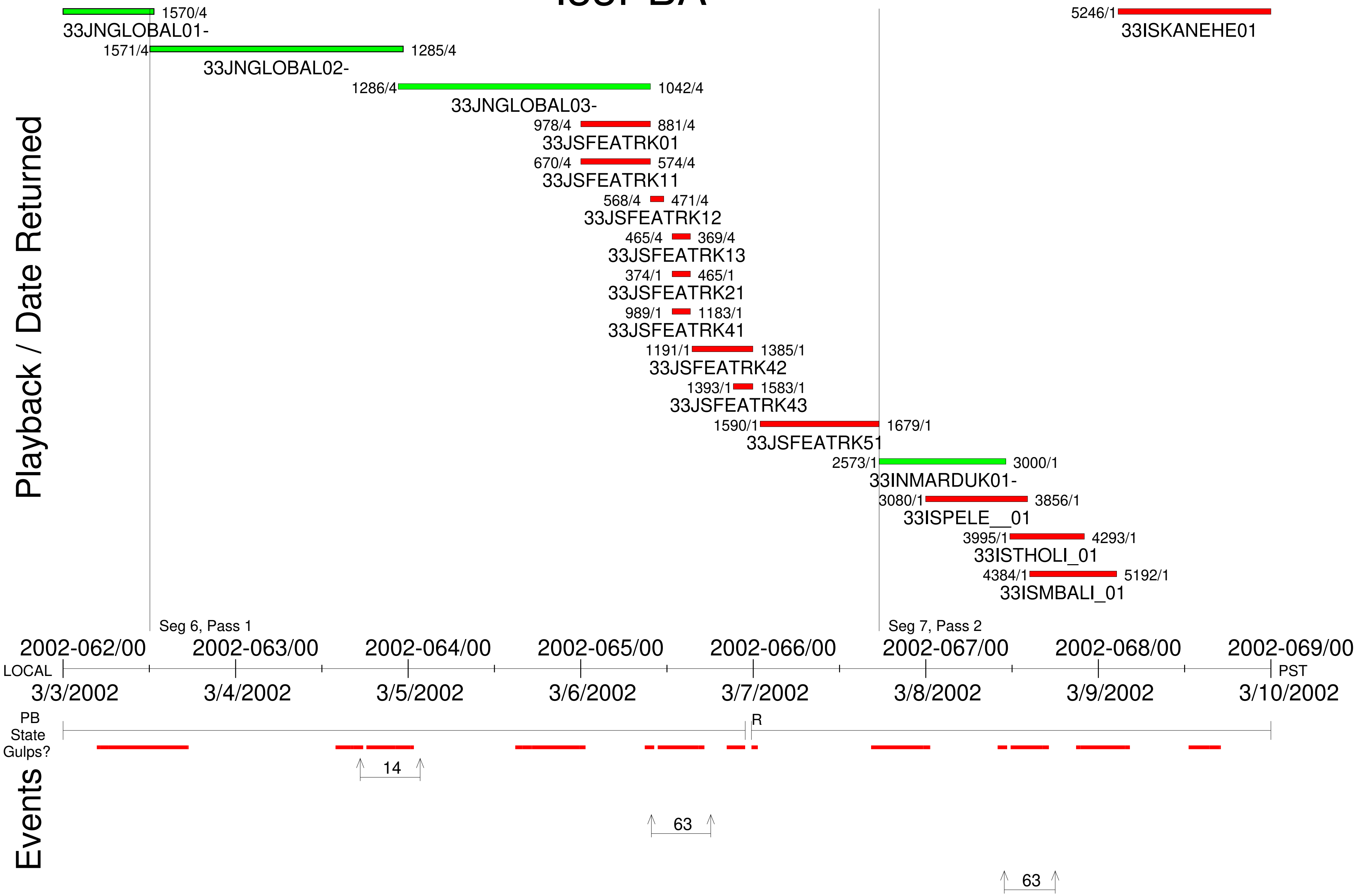

Playback / Date Returned
1570/4
33JNGLOBAL01-
1571/4
1285/4
33JNGLOBAL02-
1286/4
1042/4
33JNGLOBAL03-
978/4
881/4
33JSFEATRK01
670/4
574/4
33JSFEATRK11
568/4
471/4
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3080/1
3856/1
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3995/1
4293/1
33ISTHOLI_01
4384/1
5192/1
33ISMBALI_01
5246/1
33ISKANEHE01
Seg 6, Pass 1
Seg 7, Pass 2
2002-062/00
2002-063/00
2002-064/00
2002-065/00
2002-066/00
2002-067/00
2002-068/00
2002-069/00
LOCAL
PST
3/3/2002
3/4/2002
3/5/2002
3/6/2002
3/7/2002
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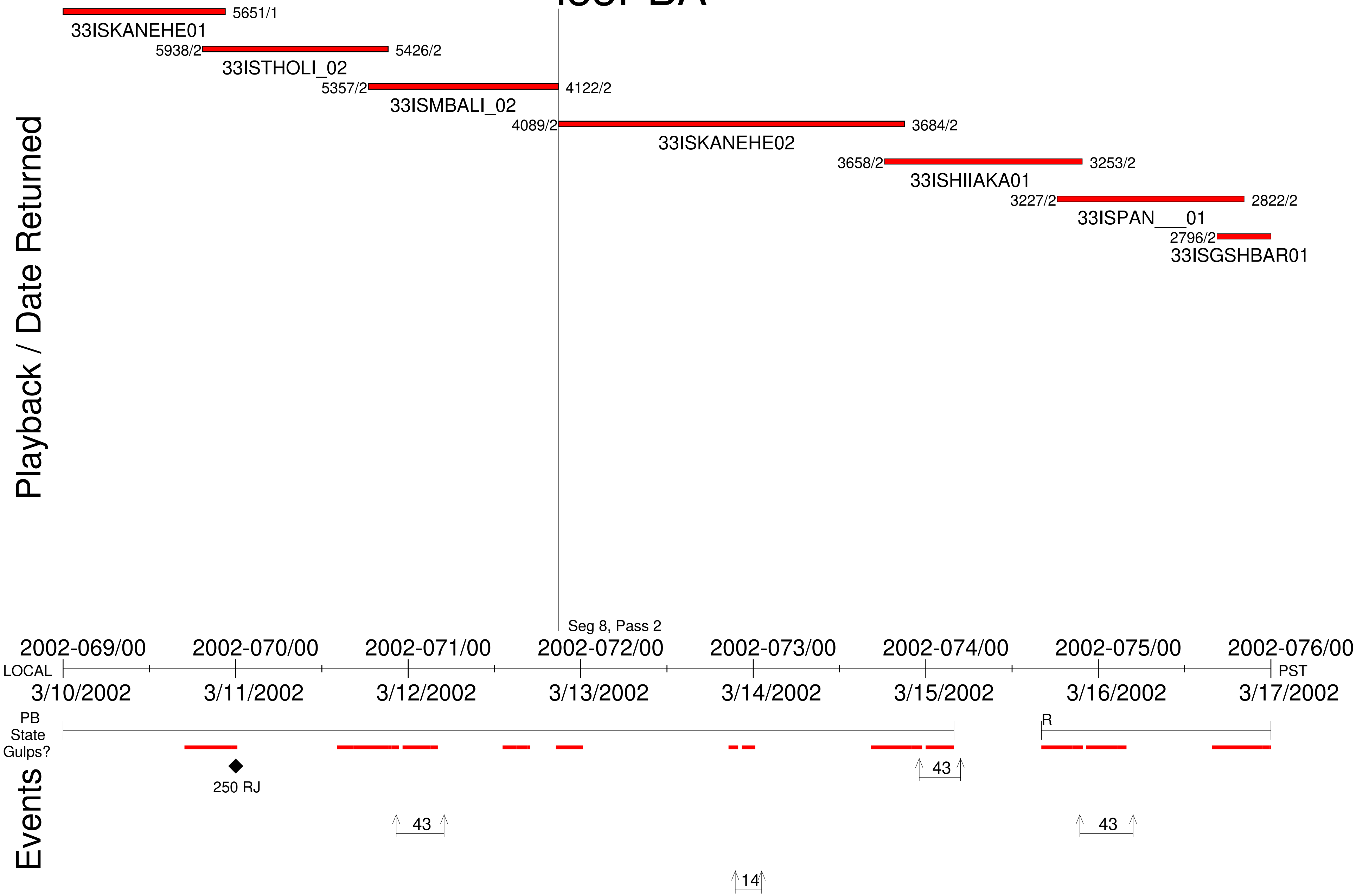
3/9/2002
3/10/2002
PB
State
Gulps?
R
Events
14
63
63

I33PBA



Playback / Date Returned
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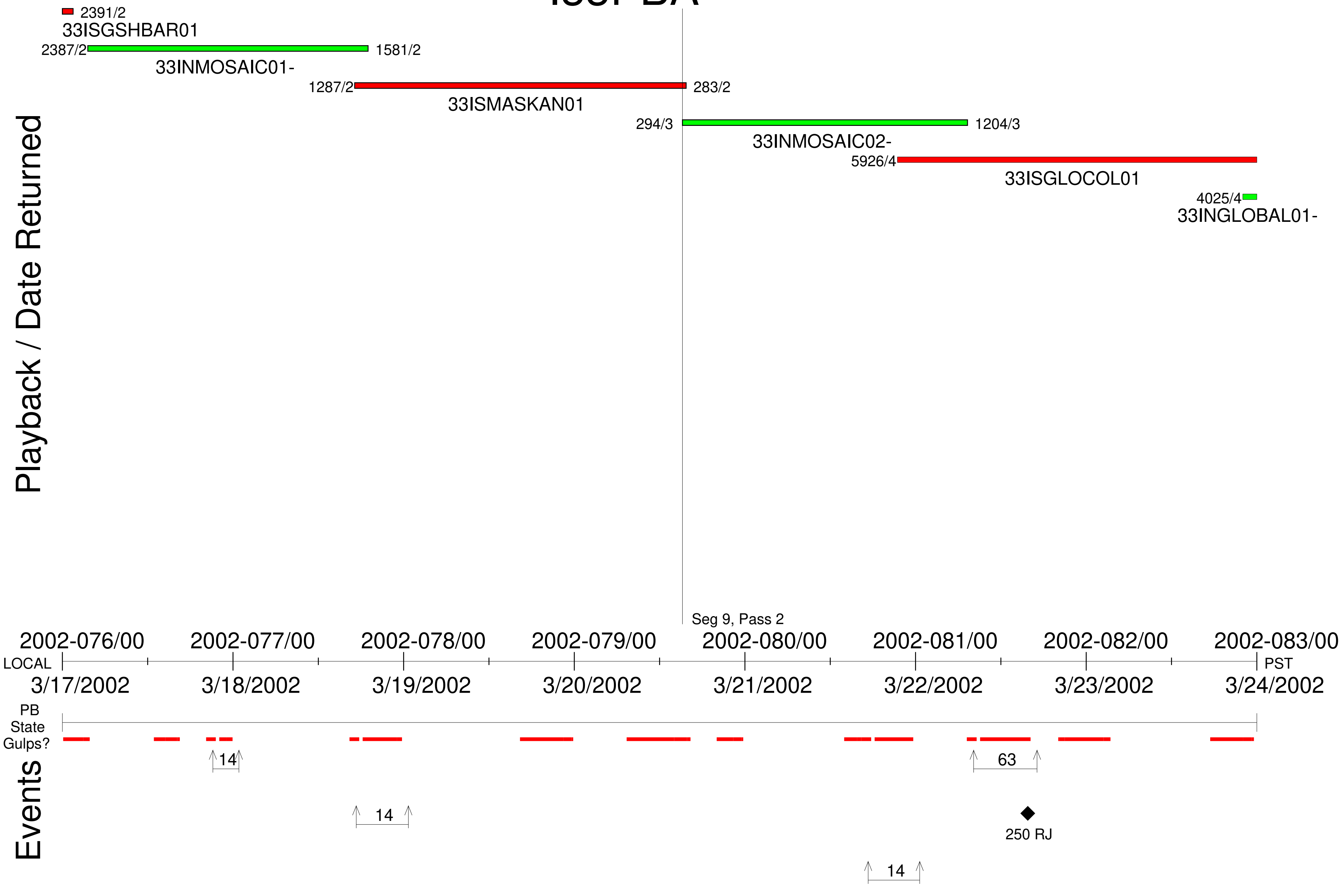
5938/2
5426/2
33ISTHOLI_02
5357/2
4122/2
33ISMBALI_02
4089/2
3684/2
33ISKANEHE02
3658/2
3253/2
33ISHIIAKA01
3227/2
2822/2
33ISPAN___01
2796/2
33ISGSHBAR01
Seg 8, Pass 2
2002-069/00
2002-070/00
2002-071/00
2002-072/00
2002-073/00
2002-074/00
2002-075/00
2002-076/00
LOCAL
PST
3/10/2002
3/11/2002
3/12/2002
3/13/2002
3/14/2002
3/15/2002
3/16/2002
3/17/2002
PB
State
Gulps?
R
250 RJ
43
43
43
14
Events

I33PBA



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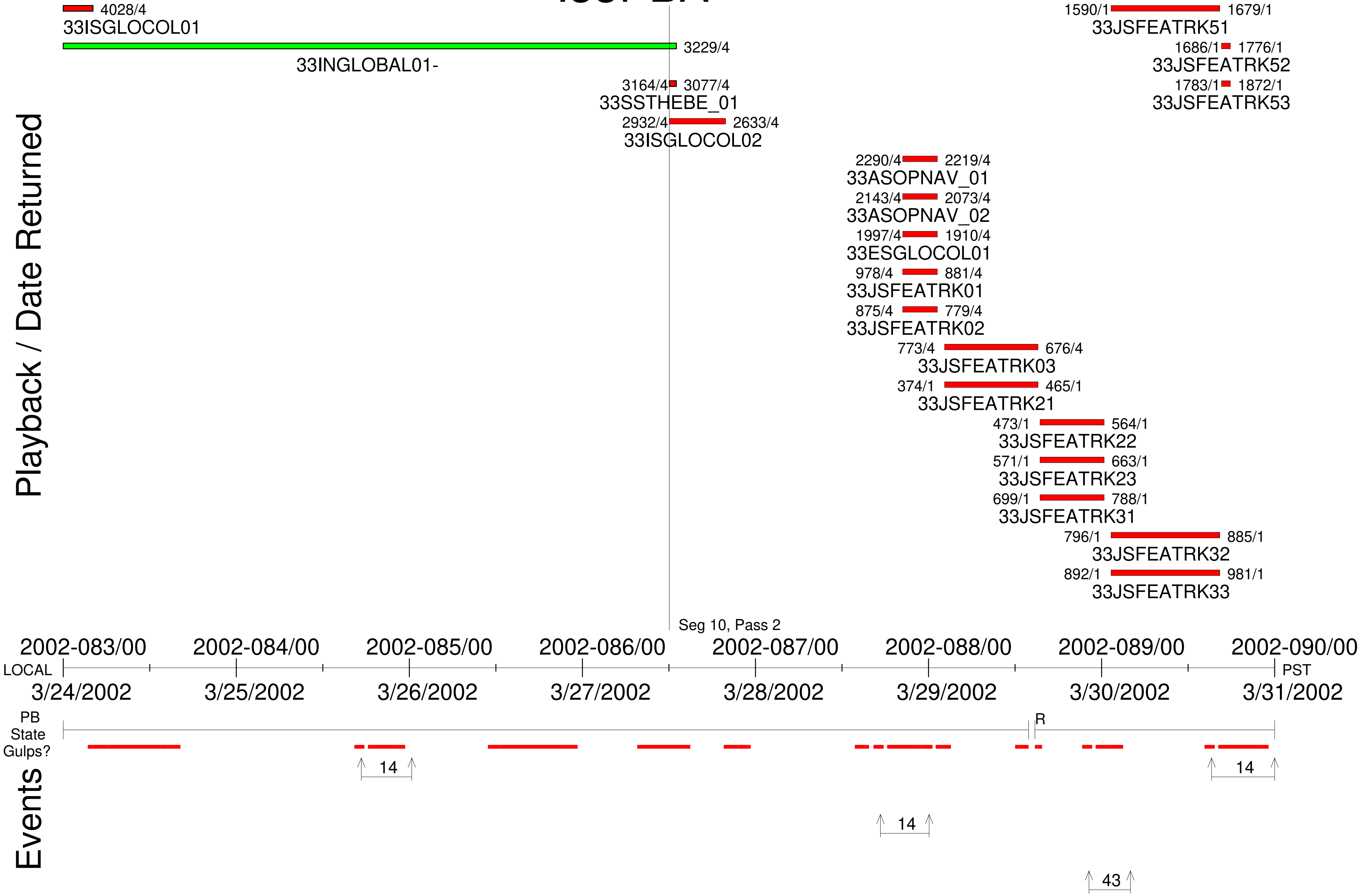

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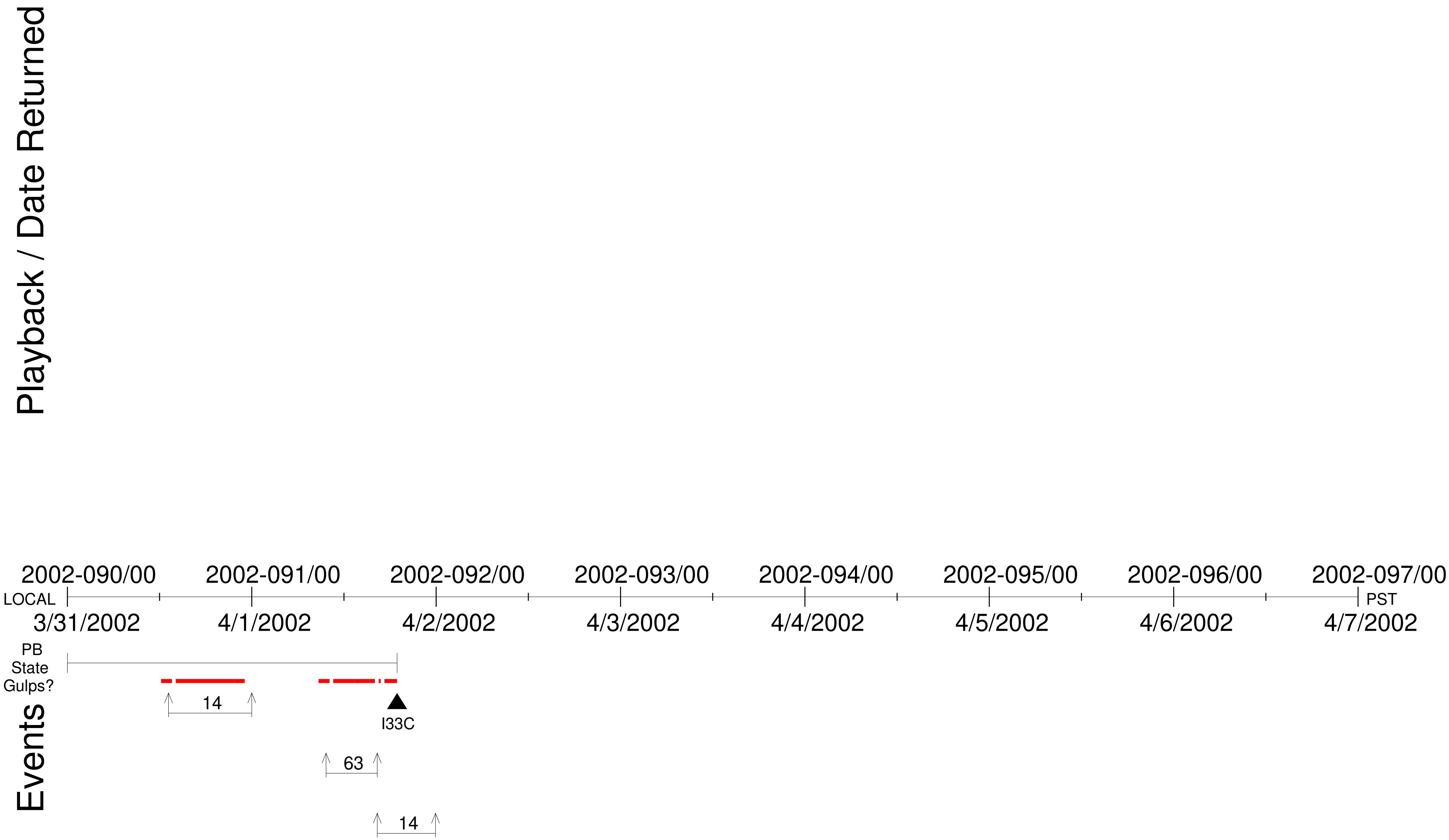

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