Chapter 2 - Orbit Overview

Contents

Introduction to Chapter 2

This chapter gives an overview of the NIMS observations in the I25 Orbit.

The text on page 3 summarizes the NIMS science objectives for I25. The NIMS calibrations are discussed on page 3. Early data return and I25 playback are also discussed on page 3.

The I25 Integrated Io Observation Plan is presented on pages 4 through 6.

The table on page 7 is a time-ordered listing of the NIMS Oapels for I25.

The plot on page 8 shows the geometry of the NIMS I25 observations using a north trajectory pole view projection. The plot on page 9 shows the geometry of the NIMS I25 observations during the Io Flyby using a north trajectory pole view projection. The plot on page 10 shows the geometry of the NIMS I25 calibrations.

The spreadsheet on page 11 summarizes the various inputs for the NIMS I25 Observations. The spreadsheet on pages 12 and 13 summarizes the resource usage for the NIMS I25 observations.

The table on page 14 lists various NIMS I25 observing parameters: target latitude/longitude, range, cone angle, incidence angle light), emission angle view) and phase angle.

The timeline on pages 15 through 17 shows the placement of the I25 observations for all intruments during the I25 Encounter Period.

The tapemap on page 18 shows the placement of the I25 observations on the spacecraft’s tape recorder.

The timeline on pages 19 through 24 shows the preliminary I25 playback schedule.

The NIMS I25 mosaic designs are summarized on page 25 and 26 in time-order.

NIMS I25 SCIENCE OVERVIEW

Io Science

The I25 Io sequence design is very similar to the I24 Io design. The I25 closest approach period contains very few stand-alone NIMS observations. All the targeting or pointing is done within the SSI observations. The bulk of the observations are sit and stare with NO planned scan platform motion. These tag-along observations are brief observations that take place just after a SSI observation where the scan platform is repositioned near the center of the SSI mosaic and usually have a duration of 26 or 52 seconds. The I25 observations have been very tightly integrated in time and tape space as well.

25INTIERMS01 - high resolution nightside obs. of Tiermes hot spot.
25INSOPOLE01 - dayside 26 sec. tag-along obs. of South pole material.
25INPRMETH01 - 2 Rim limb-scan of Prometheus' eruption column.
25INSOPOLE02 - dayside 26 sec. tag-along obs. of South pole material.
25INEMAKNG01 - dayside 52 sec. tag-along obs. of Emakong Patera caldera.
25INITUPAN01 - dayside 26 sec. tag-along obs. of Tupan hot spot.
25INSAPPNG02 - dayside 26 sec. tag-along obs. of a Sapping region.
25INITUPAN02 - 9 Rim observation of the Tupan hot spot region.
25INEMAKNG02 - dayside 52 sec. tag-along obs. of Emakong Patera caldera.
25INGIANTS01 - dayside 104 sec. tag-along obs. of giant calderas.
25INCULANN01 - dayside 52 sec. tag-along obs. of Culann hot spot.
25ININTERM01 - dayside 52 sec. tag-along obs. of Gish Bar.
25INREGION01 - dayside 45 min. two swath regional map centered at 0 deg latitude, 133 deg W. longitude.

Europa Science

I25 is the first opportunity to observe Europa's Jupiter-facing hemisphere at high resolution. The loss of LPU mode and the stuck grating forced changes to the original Europa observation designs. There are 4 NIMS Europa observations in I25:

25ENNOPOLE01 - high resolution mosaic of north polar region.
25ENSUBJUP01 - mosaic of the equatorial sub-Jupiter region.
25ENEQUATR01 - single-swath east-west equatorial map.
25ENGLOBAL01 - three swath global map of the sub-Jupiter hemisphere.

Calibration

There are three NIMS calibration observations planned for I25: one PCT cal, one RCT cal and one OPCAL.

Early Data Return

There are three realtime observations in I25: One PCT calibration, one RCT calibration and one OPCAL.

I25 Playback

I25 playback is split into two passes through the tape. Some I25 data will not be recorded over in E26 and will be played back during E26 cruise.

I25 TAPE AND BTG PLAN

I. I25 TAPE PLAN OVERVIEW

Start on track 1 for Europa closest approach.
Approximately -7 hrs to Io C/A (+3 hrs from Europa C/A), change to track 2 for MWG recording and PPR Io.
-56 minutes to C/A, change to track 3 for Io closest approach.
+30 minutes after C/A, change to track 4.

II. TAPE ALLOCATIONS IN IO REMOTE SENSING GROUP:

We agreed to the following allocations:

Track 1: All Europa

Track 2: MWG and PPR (plus SSI small satellites)

Track 3:
- SSI: 0.68 track
- NIMS: 0.21 track
- MWG: 0.11 track
- PPR: ridealong

Track 4:
- SSI: 0.5 track
- NIMS: 0.5 track
- PPR: ridealong

III. BTG ALLOCATIONS

Original OPG allocations:

- MWG: 41 Mbits
- NIMS: 23 Mbits
- SSI Io: 44 Mbits
- Europa: 12 Mbits
- PPR: 2 Mbits
- UVS: 1 Mbit
- Reserve: 7 Mbits

I25 DETAILED IO OBSERVATION PLAN

Track 1: All Europa, details by Europa group

Track 2:

day/hr:mn	observations
	MWG high-rate recording, inner Io torus region
329/22 to 330/01	PPR Io Global mosaic.
330/02 to 330/03	PPR Io Regional hot spot map
330/03 to 330/03:16	PPR high-resolution Pele mosaic.

Track 3:

day/hr:mn	Min from Io C/A	Target	Target Lat/Lon	S/C Lat/Lon	Range	notes
330/03:46	-22 to -20	tape track turnaround				
56	-8 to -1	Tiermes P.?	+23, 351	-60, 320	600	NIMS, 7 minutes, nightside
4:00	0	S. Pole	-80, 90	-80, 85	300	1x8 AI8 and 1 IM8/240, NIMS 52 s
02	+2	Sapping	-53, 122.5	-61, 109	487	1x10 AI8 and 1 IM8/240, NIMS 52 s
04	+4	Prom column	-2, 155	-40, 118	1300	2 AI8 frames, 26 m/pixel, NIMS 2 minutes
08	+8	SP context	-80, 90	-25, 122	2386	1x6, 48 m/pixel, NIMS 26 s
10	+10	Emakong01	-2.8, 122.7	-20, 123	3187	1x8 AI8 and 1 IM8/240, NIMS 52 s
12	+12	Tupan P.	-18.8, 141.1	-16, 124	4016	1x4 AI8 and 1 IM8/240, NIMS 26 s
14	+14	Sap context	-53, 122.5	-13, 125	4863	1x6 AI8, 100 m/pixel, NIMS 26 s
16	+16	Shamshu P.	-9, 65	-11, 126	5721	1x6 AI8, 114 m/pixel, NIMS 26 s?
18	+18	Tupan P.	-18.8, 141.1	-8, 126	6587	NIMS mosaic, 9.4 minutes

Comments:

S. Pole target--terra incognito. Added later context mosaic--seems essential.
We want to be ~10 degrees from the terminator; layout otherwise arbitrary.

Sapping target and context: targetting tweaks by Jeff Moore. We may well move this one around (+/- 5 degrees lat/long) after seeing C21 images. How to orient strip is also uncertain. Suggest Kari do a placeholder design that's easy for now.

Prometheus plume - clear-filter only, work around NIMS design.

I25 DETAILED IO OBSERVATION PLAN

Emakong 01-02 stereo. Laszlo will tweak targetting. Plan E-W trend, cover thick (?) flows running west from caldera.

Tupan - Kari’s design looks fine, add IM8/240 frame.

Shamshu - Is slew over and back a problem? Could be spectacular images-oblique view of rugged topography near terminator. NIMS hot spot right on terminator.
Rosaly: are you sure NIMS wants to skip this?

Track 4:

day/hr:mn	Min from Io C/A	Target	Target Lat/Lon	S/C Lat/Lon	Range	notes
330/04:30-32	+30-32	tape track turnaround (3-->4)				
34	+34	Emakong02	-2.8, 122.7	-2, 130	13631	1x3 IM8/240, NIMS 52 s
40	+40	giant calderas	+50, 125	-1, 130	16294	2x4 AI8, 326 m/pixel, NIMS 104 s
46	+46	Culann	-20, 160	0, 132	18962	2x2x3-color AI8, NIMS 52 s
54	+52	Bosphorus R.	-3, 120	1, 133	21600	1x4 AI8, NIMS?
52	+56	Term01	20, 68	1, 133	23434	1x10 AI8, NIMS 52 s
62	+62	Culaan	-20, 160	1, 133	25000	NIMS regional mosaic, 50 minutes

Emakong02 -- by using the top 240 lines in IM8 we better match the coverage and resolution of Emakong01, and this mode provides a safety net for radiation noise as the very top lines are nearly noise-free.

Giant calderas - There are 2 giant calderas, one at +48/125 and another (triple structure) at +60/120.

Culann -- use violet, green, red.

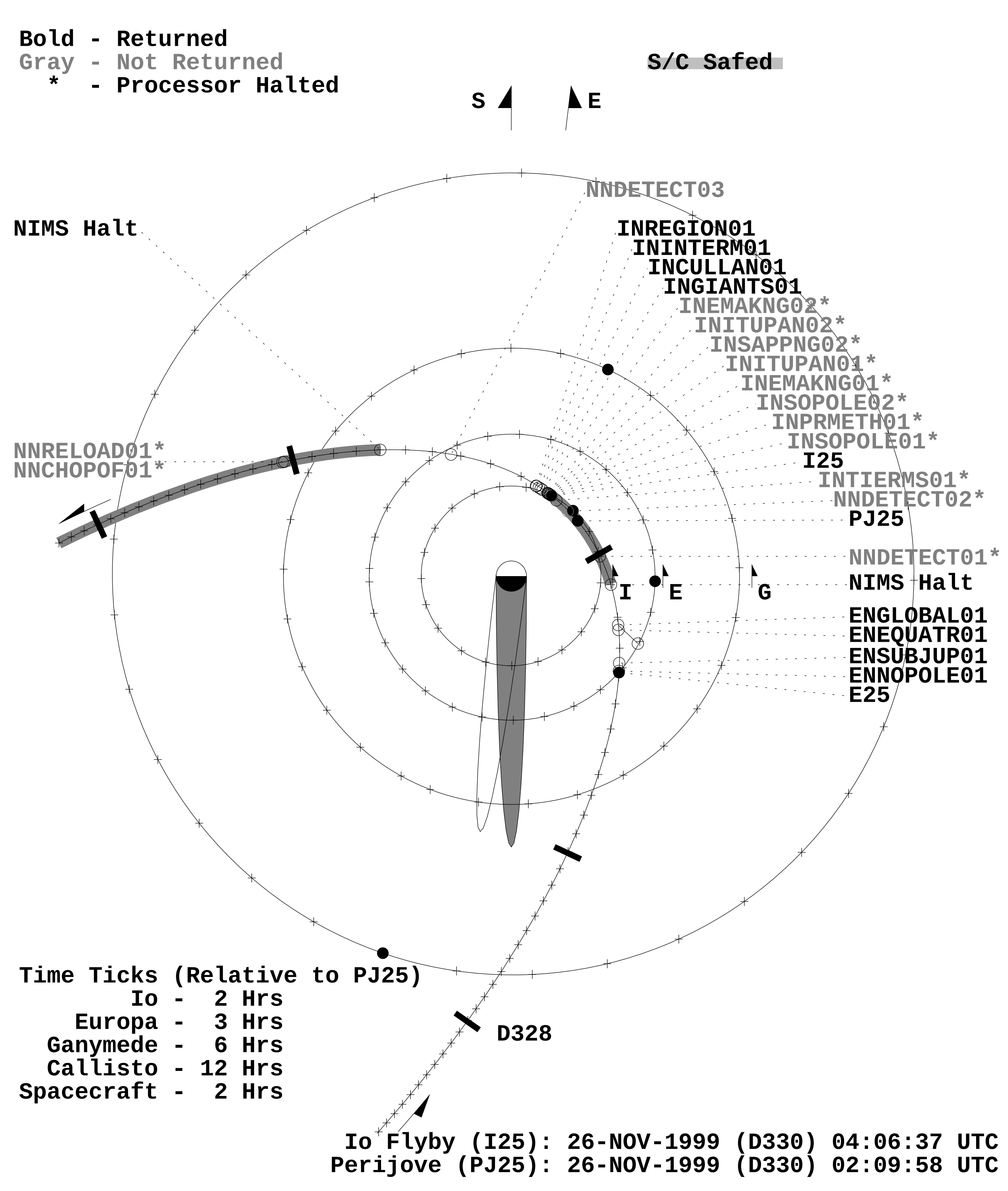
Bosphorus -- regional context, was 1x2x3 color in I24.

Term01-- From Zal (+40) on south along terminator. Coordinate with I24 + I27 terminator mapping (I25 terminator ~ 10 deg east of I24 terminator at comparable range; I27 another 10 deg. east).

I25 Time-Ordered Listing

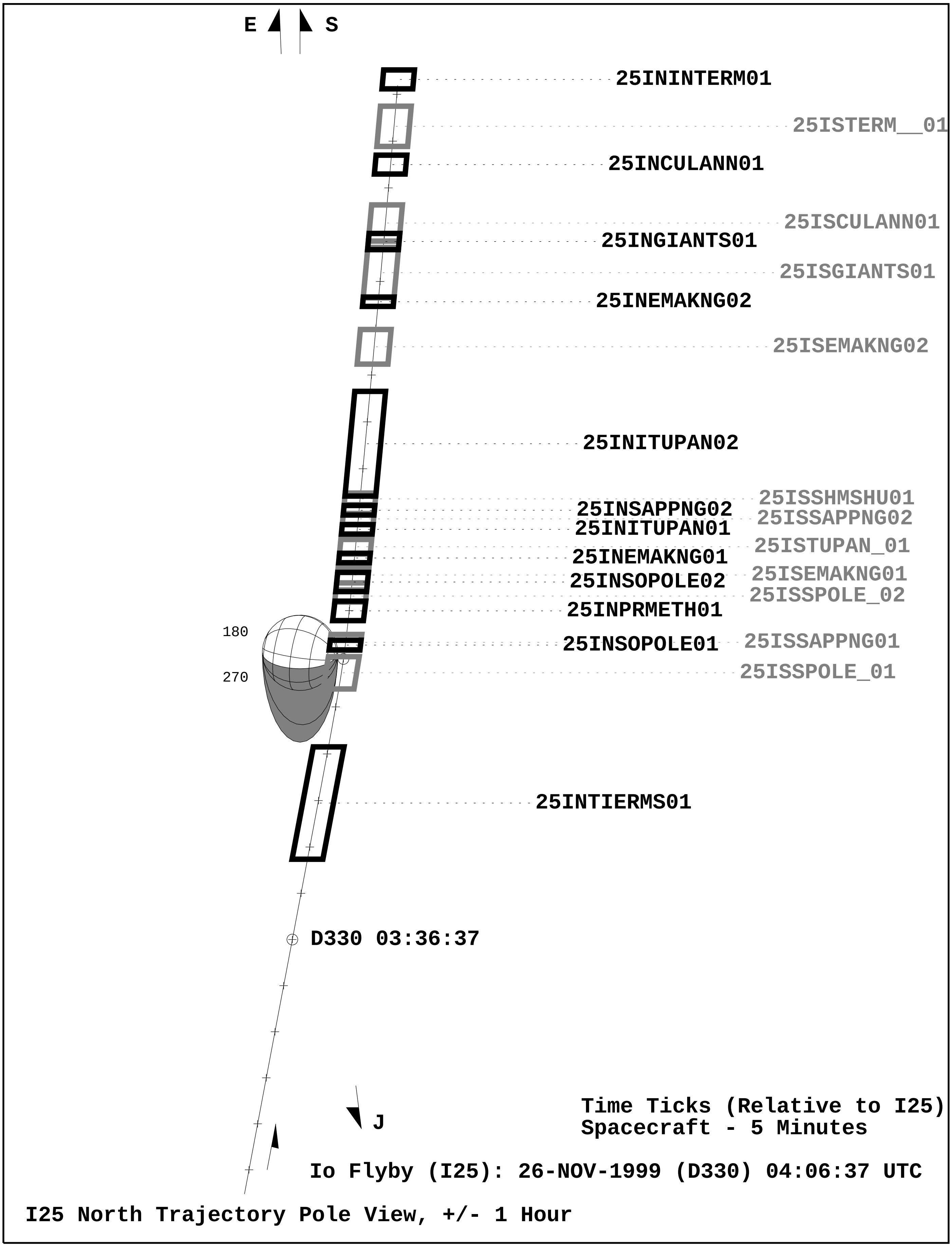
OAPEL	Start (UTC)	End (UTC)	Duration
25NNNOPOLE01-	99-329/16:31:54	99-329/16:34:56	000/00:03:02
25ENNOPOLE01-	99-329/16:34:56	99-329/16:50:06	000/00:15:10
25NNSUBJUP01-	99-329/17:04:15	99-329/17:07:17	000/00:03:02
25ENSUBJUP01-	99-329/17:07:17	99-329/17:28:31	000/00:21:14
25NNEQUATR01-	99-329/19:17:43	99-329/19:20:45	000/00:03:02
25ENEQUATR01-	99-329/19:20:45	99-329/19:38:57	000/00:18:12
25NNGLOBAL01-	99-329/19:38:57	99-329/19:39:58	000/00:01:00
25ENGLOBAL01-	99-329/19:39:58	99-329/20:24:27	000/00:44:29
25NNTIERMS01-	99-330/03:41:15	99-330/03:44:17	000/00:03:02
25INTIERMS01-	99-330/03:45:18	99-330/03:57:26	000/00:12:08
25NNSOPOLE01-	99-330/04:04:31	99-330/04:07:33	000/00:03:01
25INSOPOLE01-	99-330/04:07:33	99-330/04:08:33	000/00:01:00
25NNPRMETH01-	99-330/04:08:33	99-330/04:10:35	000/00:02:01
25INPRMETH01-	99-330/04:10:35	99-330/04:12:36	000/00:02:01
25INSOPOLE02-	99-330/04:13:37	99-330/04:15:38	000/00:02:01
25INEMAKNG01-	99-330/04:16:39	99-330/04:17:39	000/00:01:00
25INITUPAN01-	99-330/04:19:41	99-330/04:20:41	000/00:01:00
25INSAPPNG02-	99-330/04:21:42	99-330/04:22:43	000/00:01:00
25NNITUPAN02-	99-330/04:22:43	99-330/04:23:43	000/00:01:00
25INITUPAN02-	99-330/04:23:43	99-330/04:34:51	000/00:11:07
25INEMAKNG02-	99-330/04:43:57	99-330/04:44:57	000/00:01:00
25NNGIANTS01-	99-330/04:46:59	99-330/04:50:01	000/00:03:02
25INGIANTS01-	99-330/04:50:01	99-330/04:51:45	000/00:01:44
25NNCULANN01-	99-330/04:55:04	99-330/04:58:06	000/00:03:02
25INCULANN01-	99-330/04:58:06	99-330/05:00:07	000/00:02:01
25NNINTERM01-	99-330/05:01:08	99-330/05:04:10	000/00:03:02
25ININTERM01-	99-330/05:07:12	99-330/05:09:13	000/00:02:01
25INREGION01-	99-330/05:09:13	99-330/06:03:49	000/00:54:36
25NNRELOAD01-	99-331/00:52:13	99-331/01:02:20	000/00:10:06
25NNCHOPOF01-	99-331/01:04:21	99-331/01:14:28	000/00:10:06
25NNPCTRLT01-	99-335/22:00:27	99-336/05:50:37	000/07:50:10
25NNRCTRLT01-	99-353/17:59:37	99-354/07:15:22	000/13:15:44

NIMS I25 OBSERVATIONS

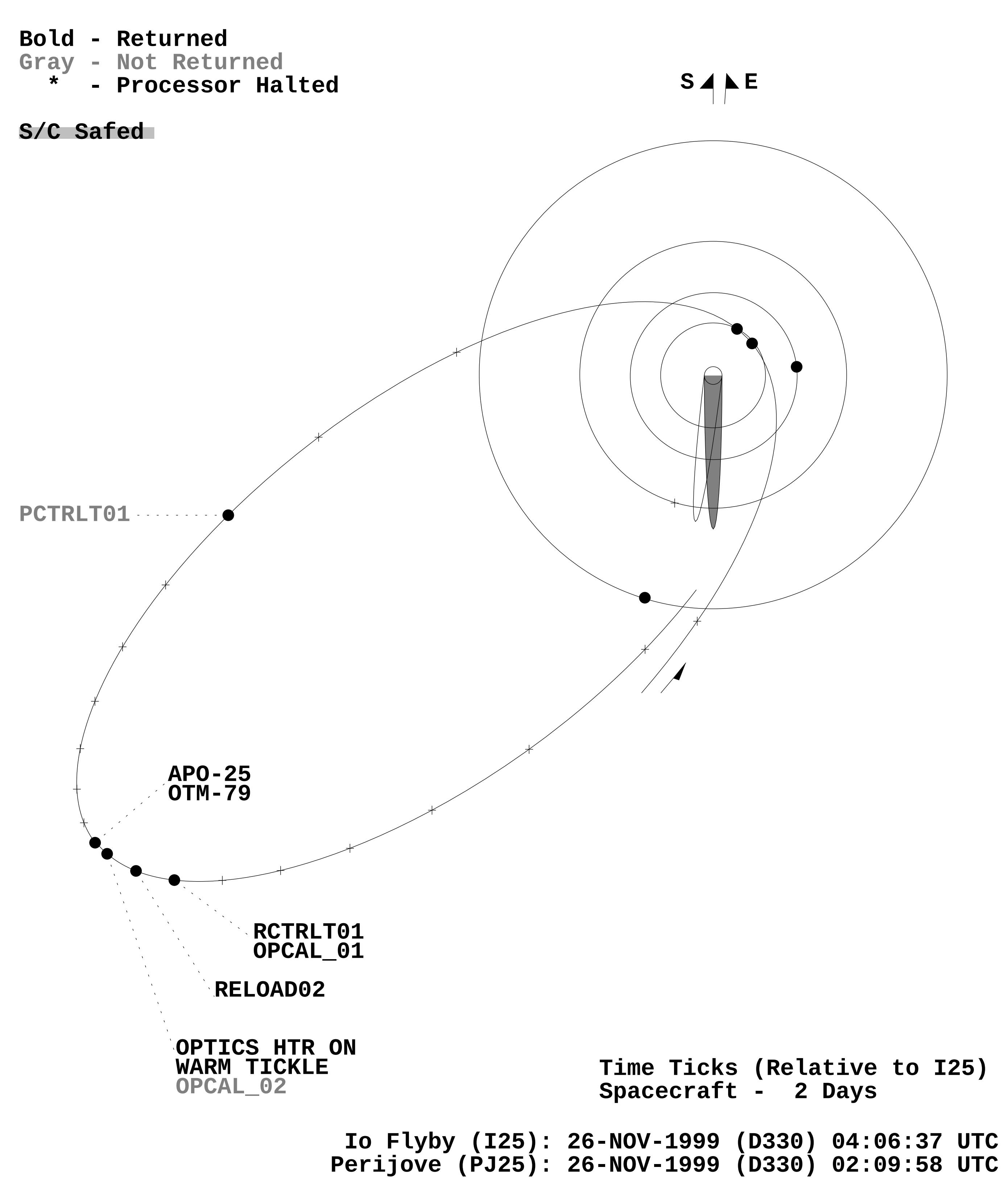


I25 North Trajectory Pole View

NIMS & SSI I25 IO FLYBY OBSERVATIONS



NIMS I25 CALIBRATIONS



I25 North Trajectory Pole View

NIMS - FEL - 12/20/99

I25 NIMS INPUTS

Activity ID	Observation Title	NIMS Edit Table	NIMS PB Table	Mode	Gain	Grating Start	Grating Offset	Record Format	PSID
25NNNOPOLE01-	NIMS Software Reload								
25ENNOPOLE01-	Europa North Polar Meridional Obs.	I25ELM442	I25ELM360	LM	4	0	4	MPW	
25NNSUBJUP01-	NIMS Software Reload								
25ENSUBJUP01-	Europa Subjupiter Point Regional Obs.	I25ELM442	I25ELM228C	LM	3	0	4	MPW	
25NNEQUATR01-	NIMS Software Reload								
25ENEQUATR01-	Europa Equatorial Band	I25ELM442	I25ELM360	LM	3,4	0	4	MPW	
25NNGLOBAL01-	NIMS Software Reload								
25ENGLOBAL01-	Europa Jupiter-Facing Hemisphere Global	I25ELM442	I25ELM228C	LM	3	0	4	MPW	
25NNTIERMS01-	NIMS Software Reload								
25INTIERMS01-	Io Tierms Observation	I25ILM442	I25ILM360	LM	4	0	4	MPW	
25NNSOPOLE01-	NIMS Software Reload								
25INSOPOLE01-	Io South Pole Obs.	I25ILM442	I25ILM360	XS	4	0	4	MPW	
25NNPRMETH01-	NIMS Software Reload								
25INPRMETH01-	Io Prometheus Obs	I25ILM442	I25ILM360	LM	4	0	4	MPW	
25INSOPOLE02-	Io South Pole Obs.	I25ILM442	I25ILM360	LM	4	0	4	MPW	
25INEMAKNG01-	Io Emakong Obs.	I25ILM442	I25ILM360	LM	2	0	4	MPW	
25INITUPAN01-	Io Tupan Observation	I25ILM442	I25ILM360	LM	2	0	4	MPW	
25INSAPPNG02-	NIMS Io Sapping Material	I25ILM442	I25ILM360	LM	3	0	4	MPW	
25NNITUPAN02-	NIMS Software Reload								
25INITUPAN02-	Io Tupan Observation	I25ILM442	I25ILM360	LM	2	0	4	MPW	
25INEMAKNG02-	Io Emakong Obs.	I25ILM442	I25ILM360	LM	2	0	4	MPW	
25NNGIANTS01-	NIMS Software Reload								
25INGIANTS01-	Io Giant Calderas Obs.	I25ILM442	I25ILM360	LM	3	0	4	MPW	
25NNCULANN01-	NIMS Software Reload								
25INCULANN01-	Io Culann Obs	I25ILM442	I25ILM360	LM	2	0	4	MPW	
25NNTERMAP01-	NIMS Software Reload								
25ININTERM01-	Io Obs. Near Terminator	I25ILM442	I25ILM360	LM	3	0	4	MPW	
25NNREGION01-	NIMS Software Reload								
25INREGION01-	NIMS Io Regional Observation	I25ILM442	I25ILM360	LM	2	0	4	MPW	
25NNRELOAD01-	NIMS Software Reload								
25NNCHOPOF01-	NIMS Chopper Off								
25NNPCTRLT01-	PCT Calibration	I25PCT252	R/T	LM	4	0	4	R/T	
25NNRCTRLT01-	RCT Calibration	I25RCT252	R/T	LM	1	0	4	R/T	
25NNROPCAL01	NIMS OPCAL	I25OPCAL48	R/T	LM	4	0	4	R/T	

I25 RESOURCES

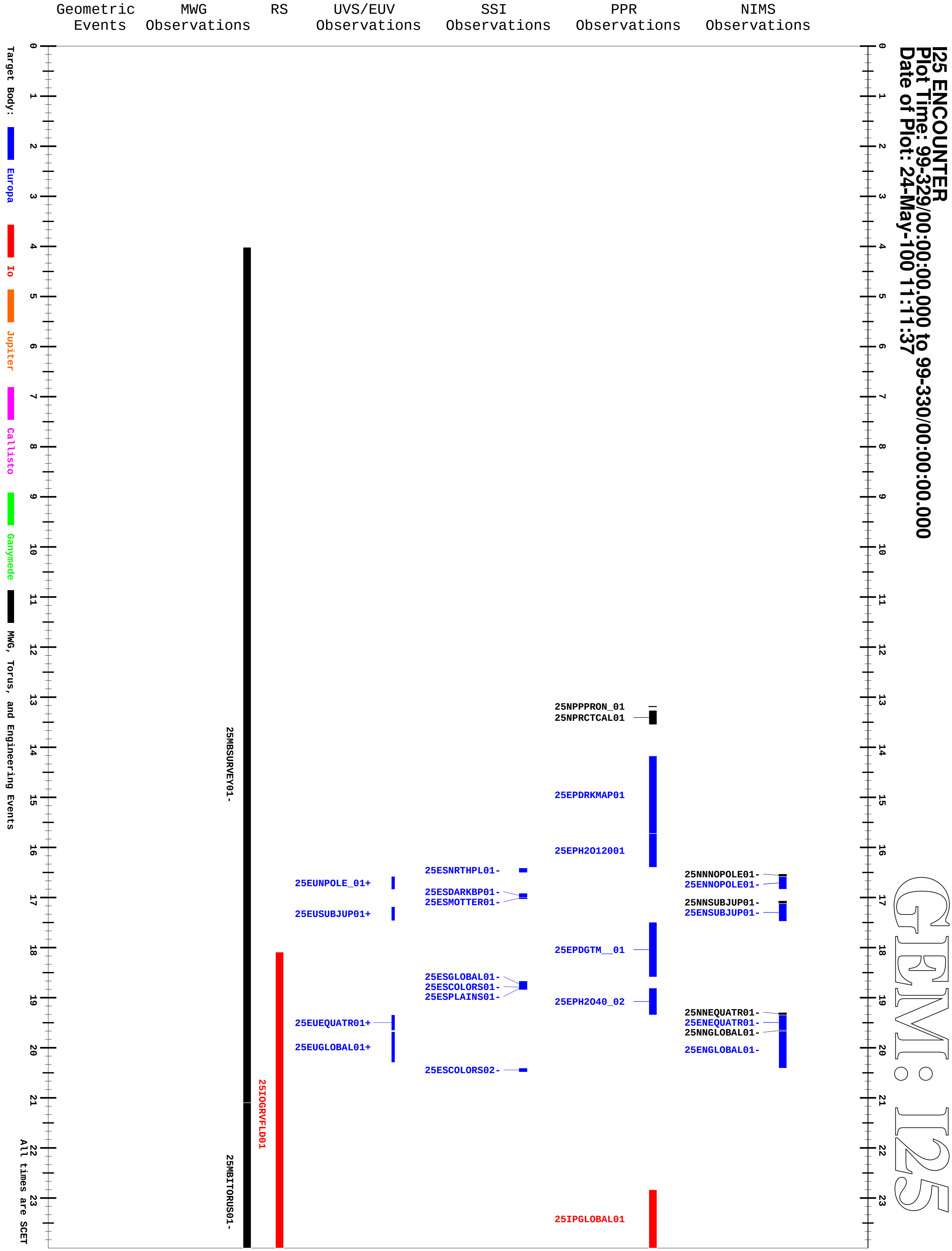
Activity ID	Mode	Record Format	Obs. Cost (tracks)	Obs. Cost (ticks)	Number Wavelengths Returned	Obs Record (sec.)	Obs PB (sec.)	Selected Bits to Tape sBOT (MBITS)	Bits to Tape BOT (Mbit)	Mode Cycle time (sec)
25ENNOPOLE01-	LM	MPW	0.1000	583	360	660.00	660.00	7.60	7.60	8.667
25ENSUBJUP01-	LM	MPW	0.0291	169	228	190.00	190.00	2.19	2.19	8.667
25ENEQUATR01-	LM	MPW	0.1196	697	360	790.00	790.00	9.10	9.10	8.667
25ENGLOBAL01-	LM	MPW	0.0763	445	228	503.00	120.00	1.38	5.79	8.667
25INTIERMS01-	LM	MPW	0.0638	372	360	420.00	420.00	4.84	4.84	8.667
25INSOPOLE01-	XS	MPW	0.0044	25	17	26.00	26.00	0.30	0.30	8.667
25INPRMETH01-	LM	MPW	0.0187	109	360	121.33	121.33	1.40	1.40	8.667
25INSOPOLE02-	LM	MPW	0.0044	25	360	26.00	26.00	0.30	0.30	8.667
25INEMAKNG01-	LM	MPW	0.0083	48	360	52.00	52.00	0.60	0.60	8.667
25INITUPAN01-	LM	MPW	0.0044	25	360	26.00	26.00	0.30	0.30	8.667
25INSAPPNG02-	LM	MPW	0.0044	25	360	26.00	26.00	0.30	0.30	8.667
25INITUPAN02-	LM	MPW	0.0867	505	360	572.00	572.00	6.59	6.59	8.667
25INEMAKNG02-	LM	MPW	0.0083	48	360	52.00	52.00	0.60	0.60	8.667
25INGIANTS01-	LM	MPW	0.0161	94	360	104.00	104.00	1.20	1.20	8.667
25INCULANN01-	LM	MPW	0.0083	48	360	52.00	52.00	0.60	0.60	8.667
25INTERMAP01-	LM	MPW	0.0083	48	360	52.00	52.00	0.60	0.60	8.667
25INREGION01-	LM	MPW	0.4080	2377	360	2,702.00	1200.00	13.82	31.13	8.667
Resource Totals			**0.9687**	**5645**						

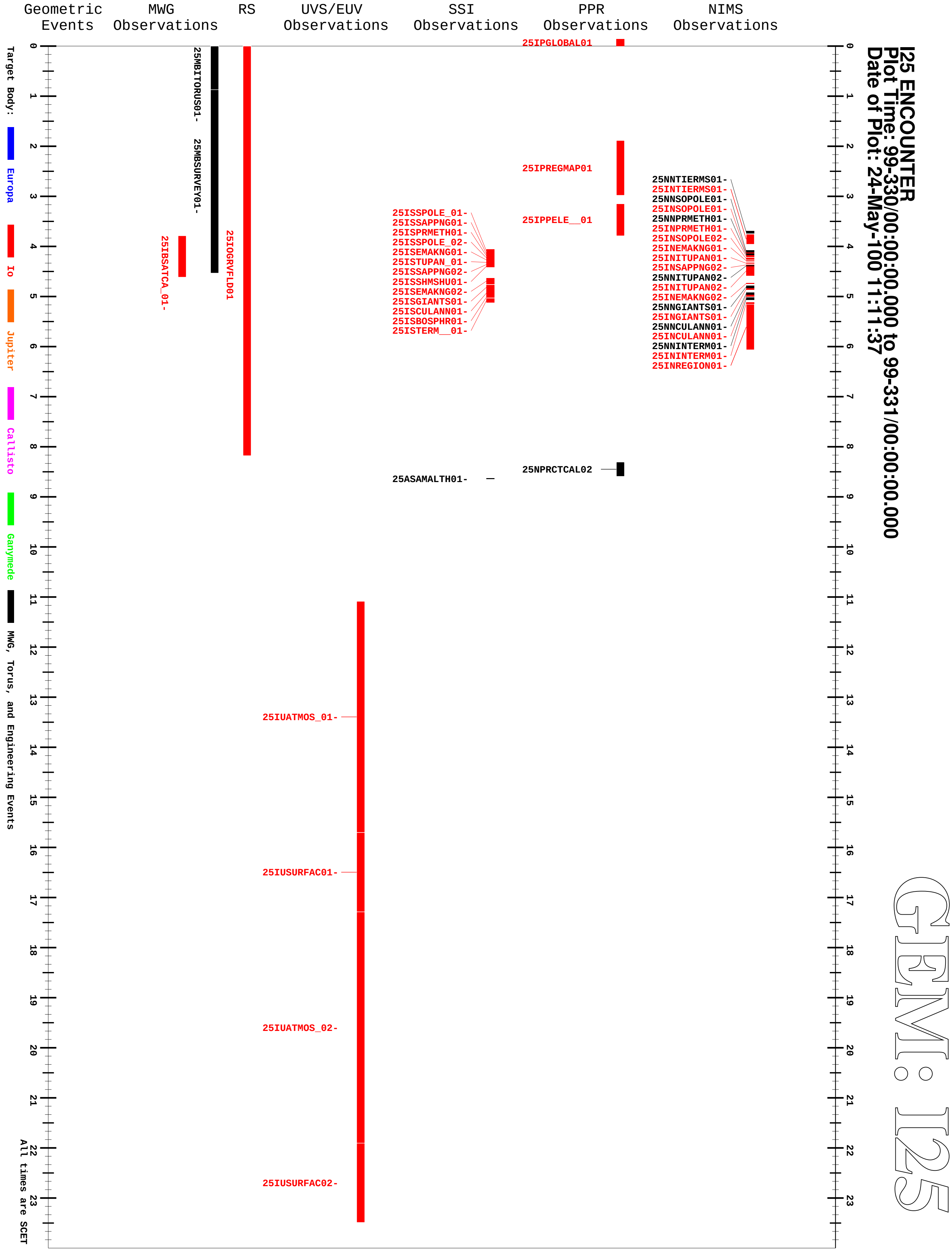
I25 RESOURCES

Activity ID	AACS Mbits c 2.5	Comp	Thold	RT	Total BTG Mbits (w/4% ohead)	Data Reduction Factor (sBOT/BTG)	Pass
25ENNOPOLE01-	0.04	1.20			4.7518	1.60	2,3
25ENSUBJUP01-	0.01	1.20			0.8664	2.53	2,3
25ENEQUATR01-	0.05	1.20			5.6878	1.60	2,3
25ENGLOBAL01-	0.01	1.30			0.5051	2.74	2
25INTIERMS01-	0.02	1.20			3.0239	1.60	1,2
25INSOPOLE01-	0.00	1.20			0.0088	33.88	1
25INPRMETH01-	0.01	1.20			0.8735	1.60	1
25INSOPOLE02-	0.00	1.20			0.1872	1.60	1
25INEMAKNG01-	0.00	1.20			0.3744	1.60	1
25INITUPAN01-	0.00	1.20			0.1872	1.60	1
25INSAPPNG02-	0.00	1.20			0.1872	1.60	1
25INITUPAN02-	0.03	1.20			4.1182	1.60	1,2
25INEMAKNG02-	0.00	1.20			0.3744	1.60	1
25INGIANTS01-	0.01	1.20			0.7488	1.60	1
25INCULANN01-	0.00	1.20			0.3744	1.60	1
25INTERMAP01-	0.00	1.20			0.3744	1.60	1
25INREGION01-	0.07	1.33			7.7952	1.77	1
Resource Totals					**30.4386**		

NIMS I25 OBSERVING GEOMETRY

OAPEL	Latitude (deg)	Longitude (deg)	Range (km)	Cone (deg)	Light (deg)	View (deg)	Phase (deg)
25ENNOPOLE01	+72 to +80	45 to 62	11 to 17K	142	70 to 77	37 to 51	34 to 40
25ENSUBJUP01	-5 to +5	353 to 7	31 to 40K	137	45 to 61	15 to 30	36
25ENEQUATR01	-3 to +3	330 to 90	122 to 132K	131	0 to 94	3 to 69	42
25ENGLOBAL01	-90 to +90	0 to 40	137 to 160K	131	14 to 117	3 to 90	42
25INTIERMS01	+17 to +36	283 to 351	4 to 9K	42	126 to 156	69 to 157	129
25INSOPOLE01	-81 to -78	90	.5 to 1.1K	123	76 to 89	51 to 64	69
25INPRMETH01	+3	157	3K	85 to 99	2 to 21	75 to 107	73 to ---
25INSPOLE02	-82 to -78	90	4K	142	82 to 89	74 to 81	30
25INEMAKNG01	-4 to -3	121	4K	133	34 to 38	20 to 26	40
25INITUPAN01	-18 to -17	142	5K	133	19 to 26	21 to 23	38
25INSAPPNG02	-54 to -52	119	7K	144	61 to 64	50 to 52	28
25INITUPAN02	-20 to -16	137 to 143	10K	141	24 to 29	18 to 21	31
25INEMAKNG02	-8 to -2	117 to 118	16K	146	37 to 42	11 to 16	26
25INGIANTS01	+55 to +70	110 to 125	19K	144	63	66	28
25INCULANN01	-25 to -15	160 to 164	22K	144	17 to 25	32 to 37	29
25INTERM01	+10 to +20	90	28K	149	71 to 84	50 to 66	24
25INREGION01	-15 to +15	106 to 168	28 to 51K	147	1 to 64	2 to 41	24 to 28


I25 ENCOUNTER
Plot Time: 99-329/00:00:00.000 to 99-330/00:00:00.000
Date of Plot: 24-May-100 11:11:37
GEM: I25
Geometric Events
MWG Observations
RS
UVS/EUV Observations
SSI Observations
PPR Observations
NIMS Observations
Target Body:
Europa
Io
Jupiter
Callisto
Ganymede
MWG, Torus, and Engineering Events
All times are SCET
25MBSURVEY01-
25MBITORUS01-
25IOGRVFLD01
25EUNPOLE_01+
25EUSUBJUP01+
25EUEQUATR01+
25EUGLOBAL01+
25ESNRTHPL01-
25ESDARKBP01-
25ESMOTTER01-
25ESGLOBAL01-
25ESCOLORS01-
25ESPLAINS01-
25ESCOLORS02-
25NPPPRON_01
25NPRCTCAL01
25EPDRKMAP01
25EPH2O12001
25EPDGTM__01
25EPH2O40_02
25IPGLOBAL01
25NNNOPOLE01-
25ENNOPOLE01-
25NNSUBJUP01-
25ENSUBJUP01-
25NNEQUATR01-
25ENEQUATR01-
25NNGLOBAL01-
25ENGLOBAL01-



I25 ENCOUNTER
Plot Time: 99-330/00:00:00.000 to 99-331/00:00:00.000
Date of Plot: 24-May-100 11:11:37
GEM: I25
Geometric Events
MWG Observations
RS
UVS/EUV Observations
SSI Observations
PPR Observations
NIMS Observations
Target Body:
Europa
Io
Jupiter
Callisto
Ganymede
MWG, Torus, and Engineering Events
All times are SCET
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
25MBITORUS01-
25MBSURVEY01-
25IBSATCA_01-
25IOGRVFLD01
25IUATMOS_01-
25IUSURFAC01-
25IUATMOS_02-
25IUSURFAC02-
25ISSPOLE_01-
25ISSAPPNG01-
25ISPRMETH01-
25ISSPOLE_02-
25ISEMAKNG01-
25ISTUPAN_01-
25ISSAPPNG02-
25ISSHMSHU01-
25ISEMAKNG02-
25ISGIANTS01-
25ISCULANN01-
25ISBOSPHR01-
25ISTERM__01-
25ASAMALTH01-
25IPGLOBAL01
25IPREGMAP01
25IPPELE__01
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25INTIERMS01-
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25INSOPOLE01-
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25INSOPOLE02-
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25INITUPAN01-
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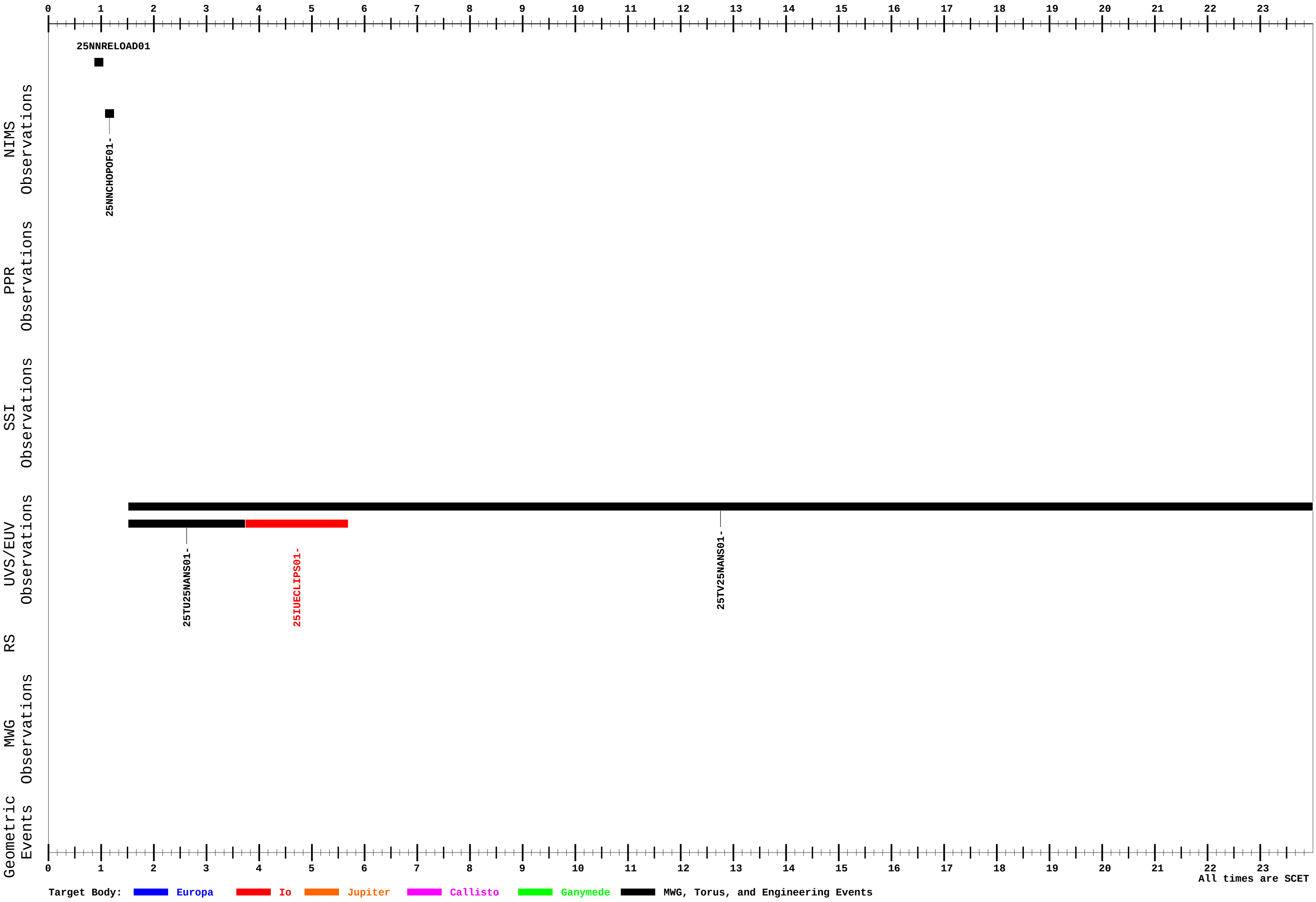

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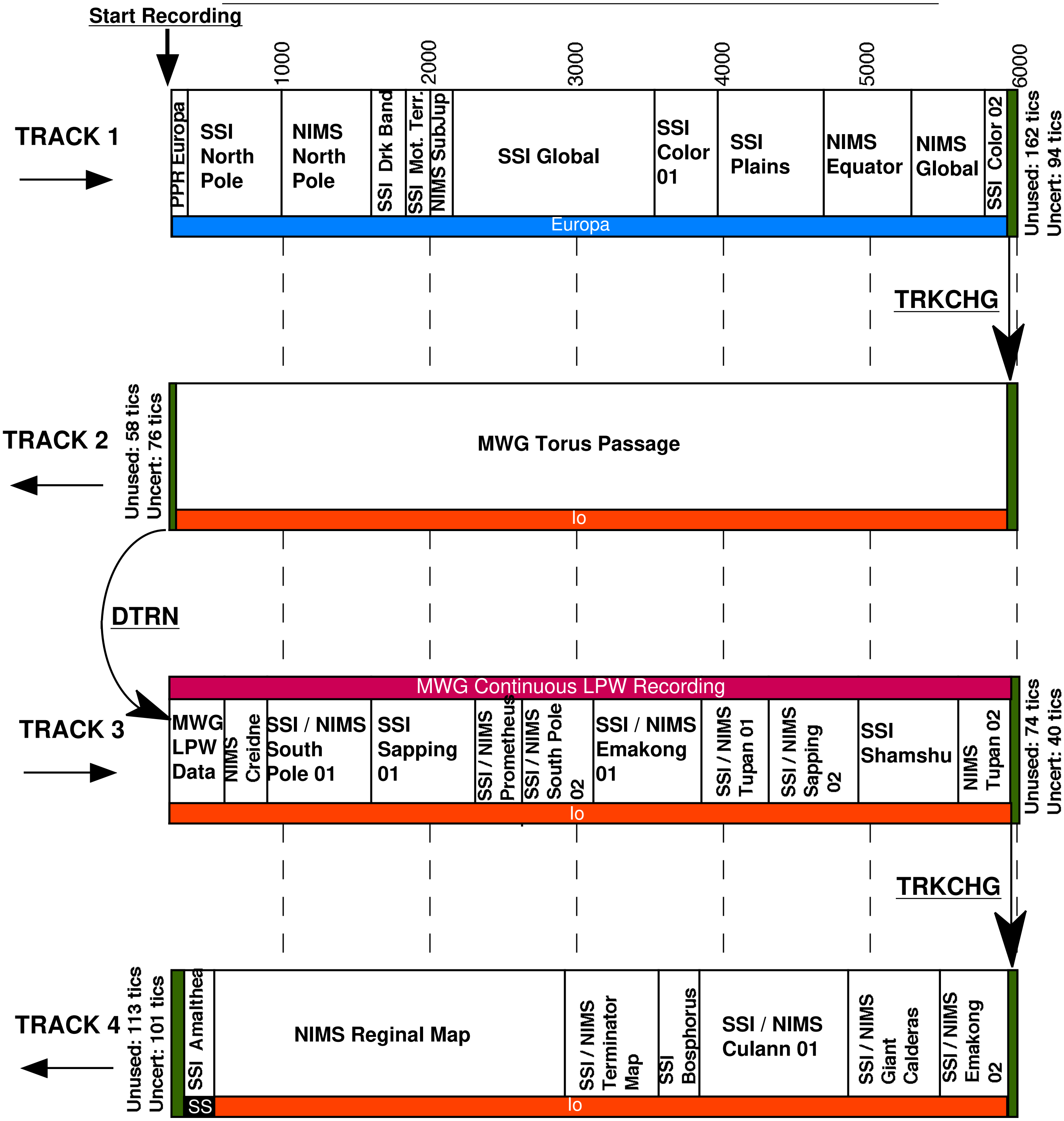

J. Gross, 7/26/99

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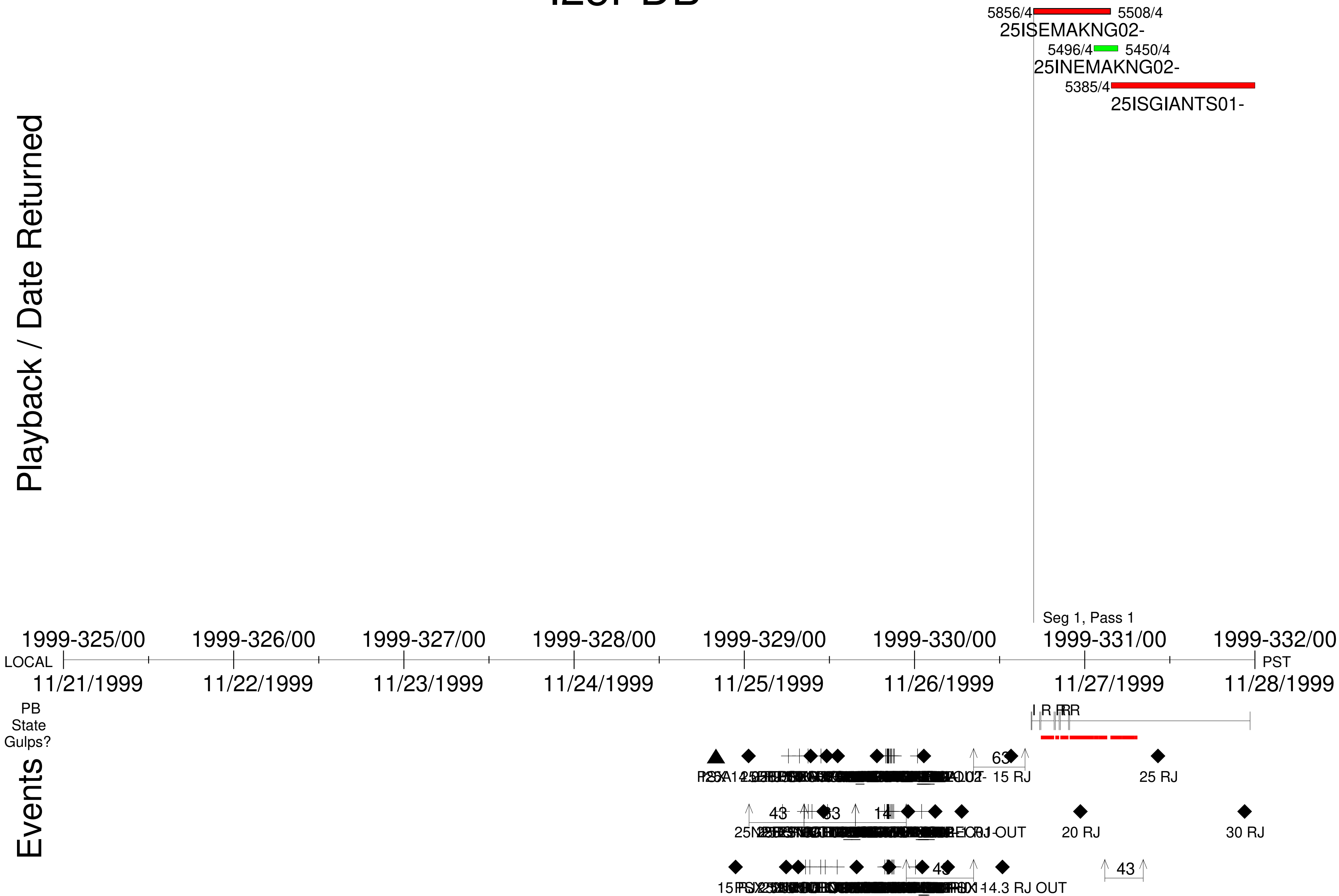

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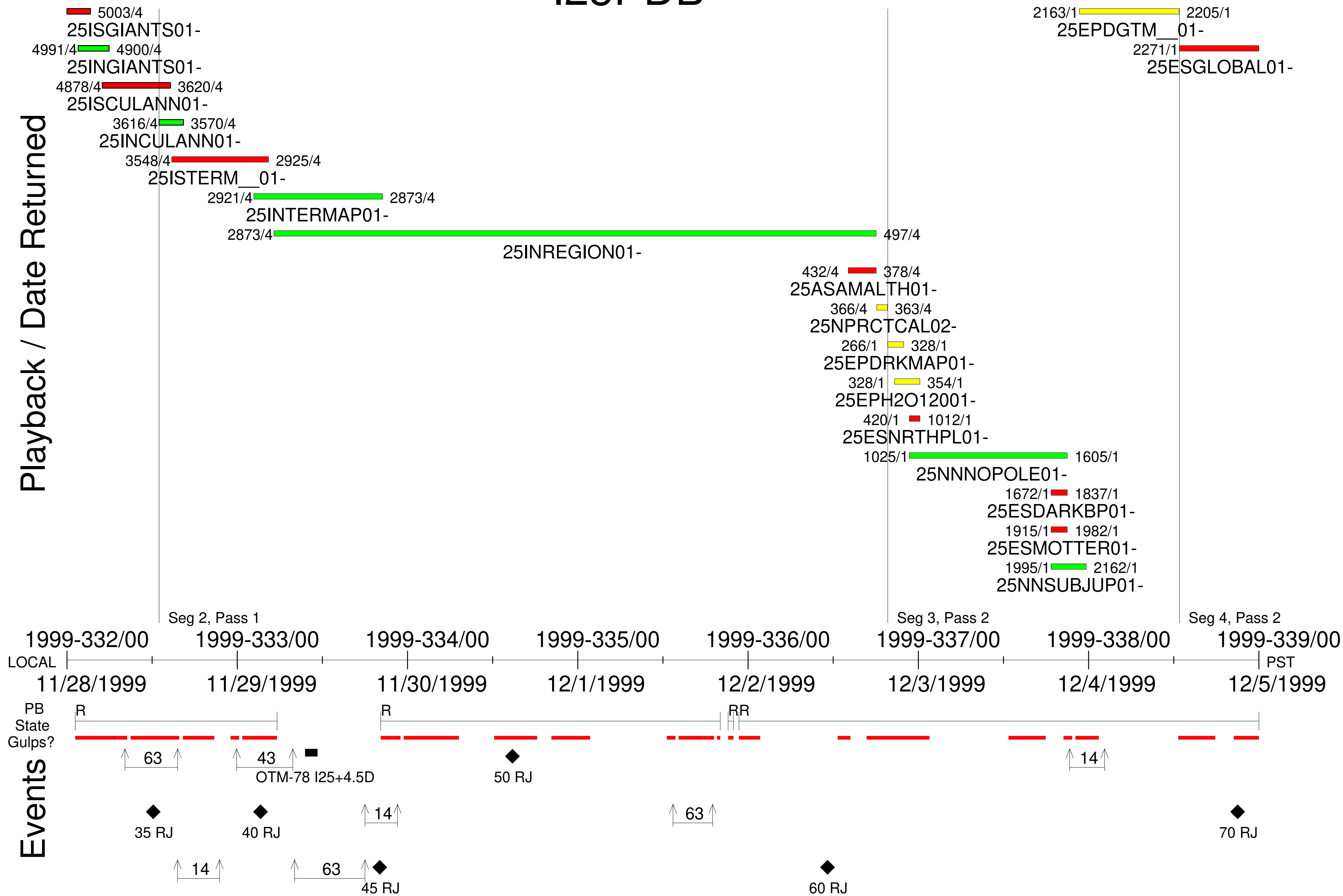

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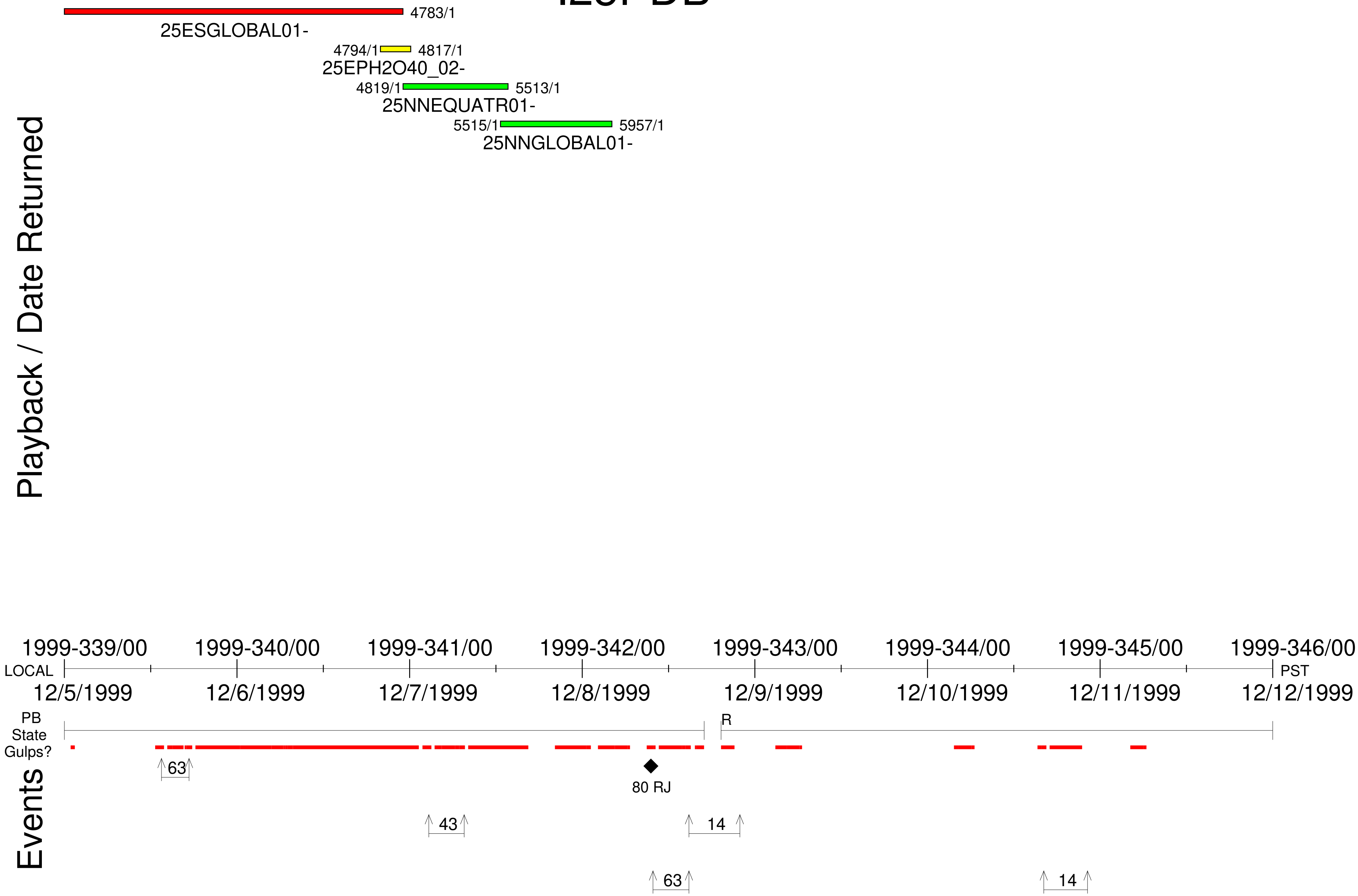

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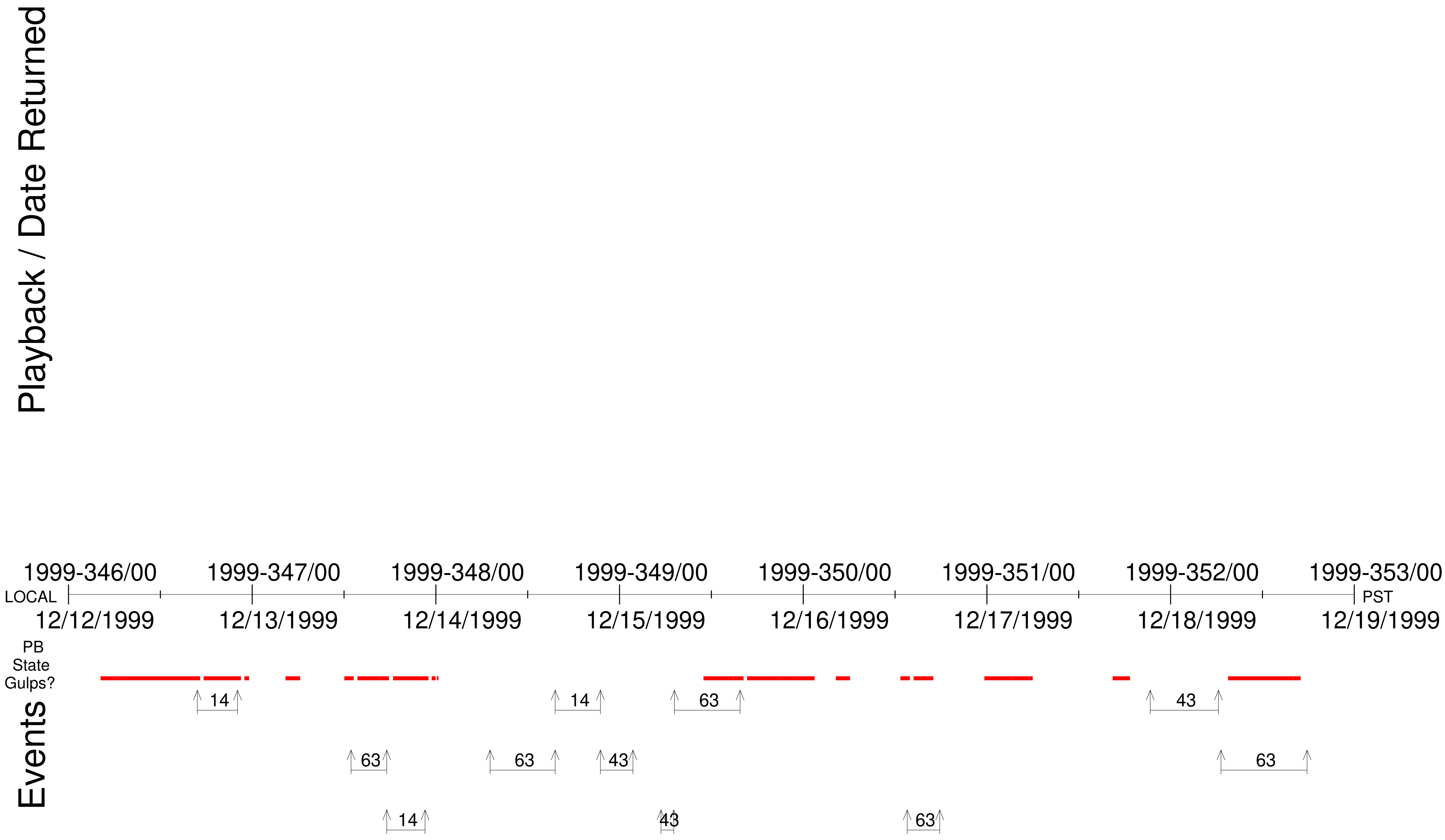
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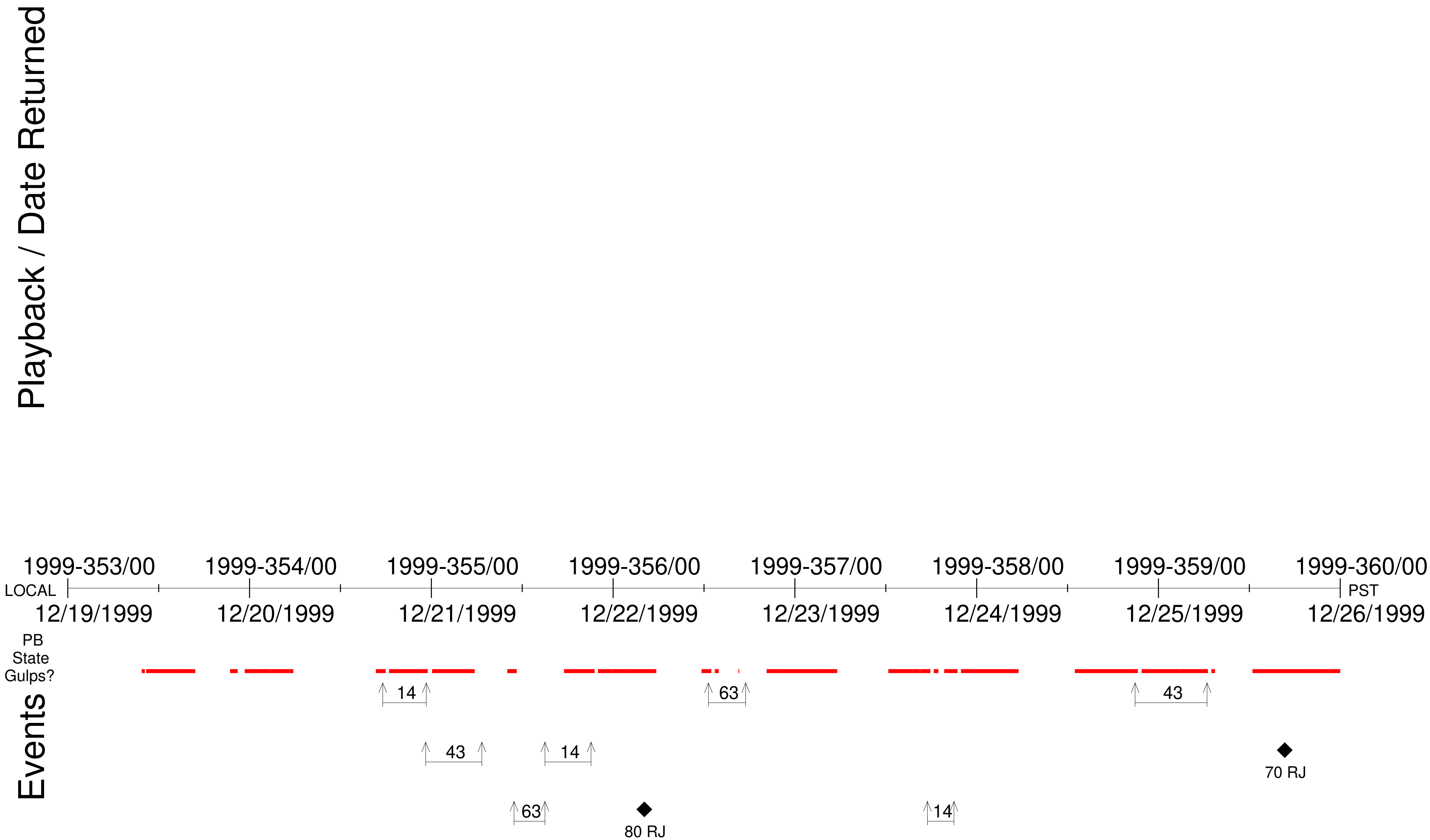

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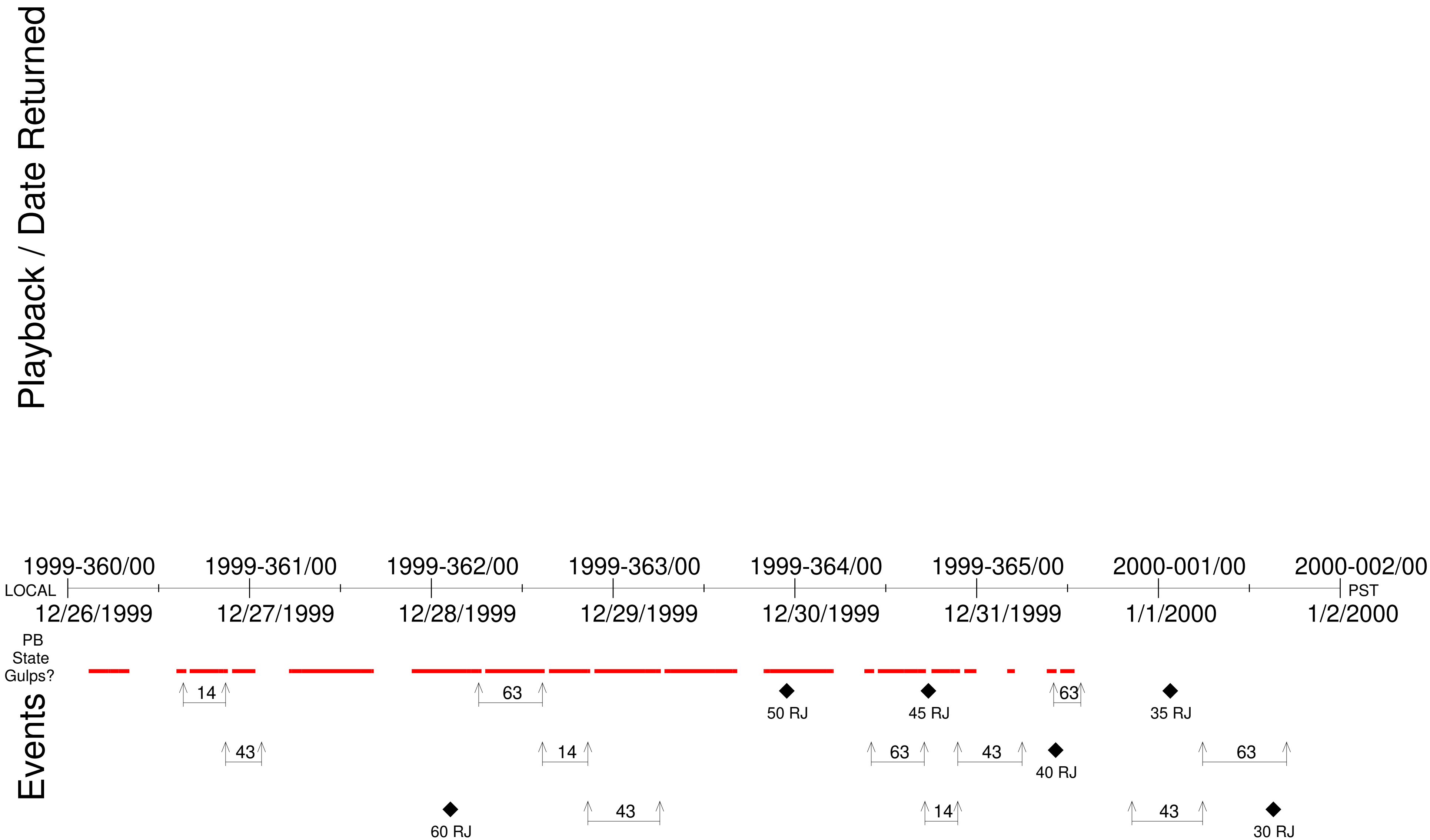

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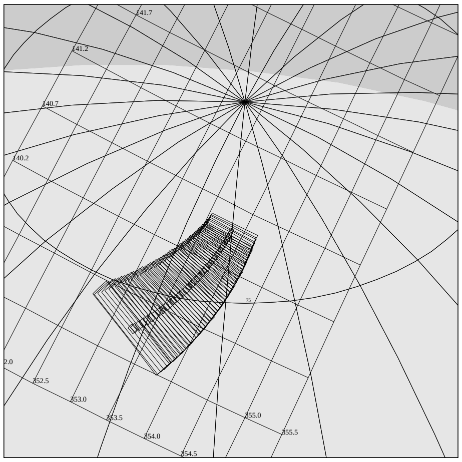

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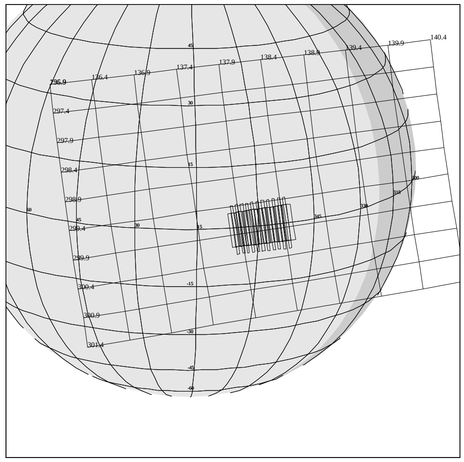

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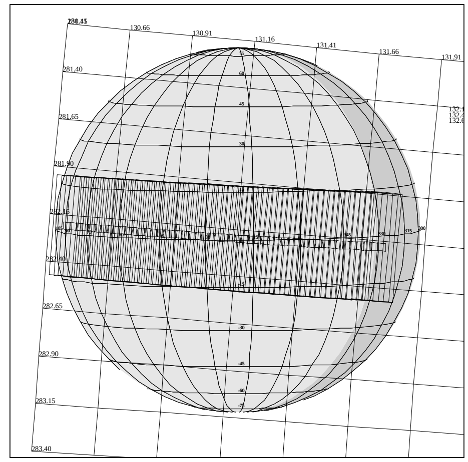

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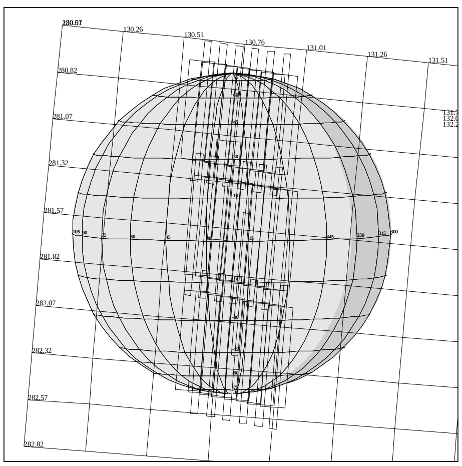

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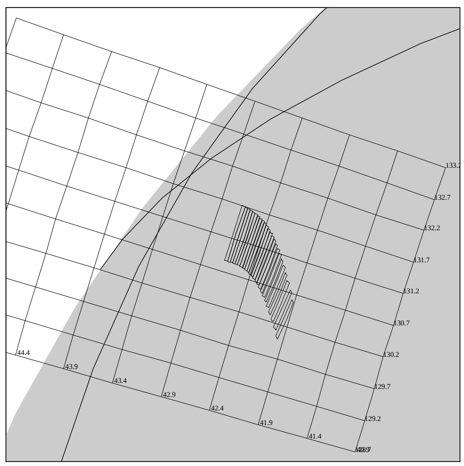

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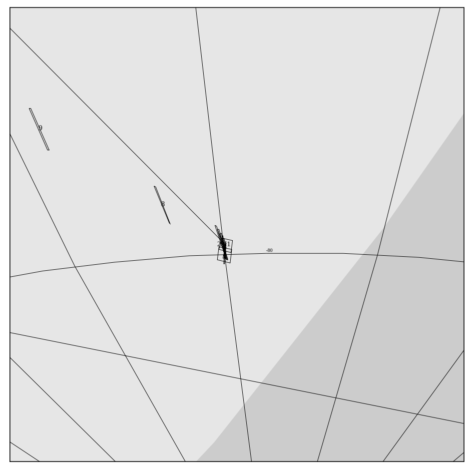

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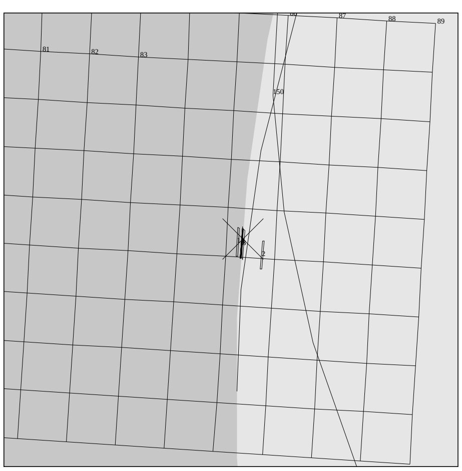

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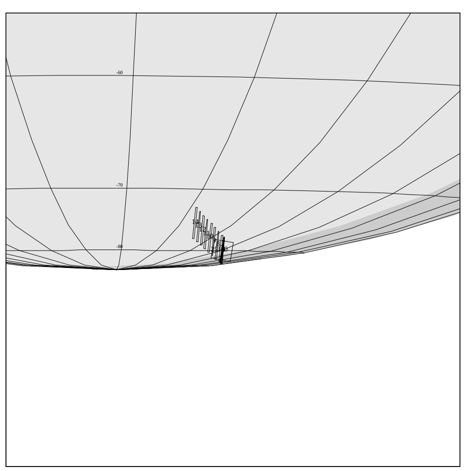

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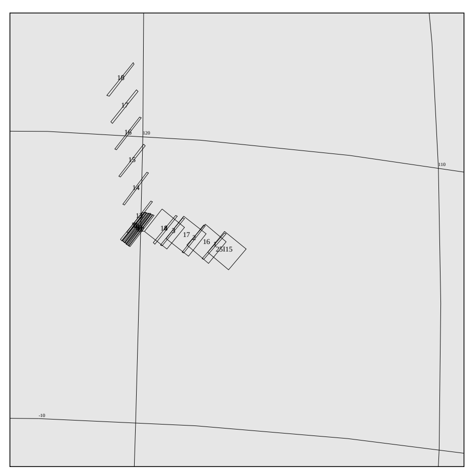

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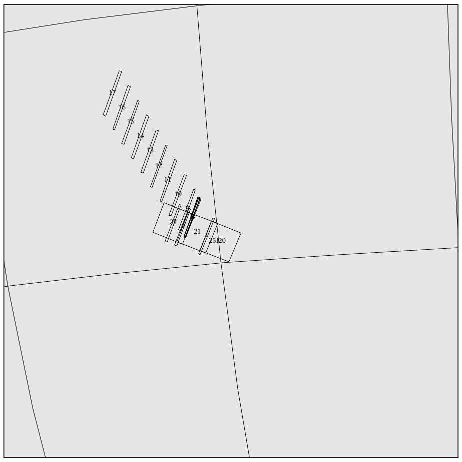
I25 NIMS B



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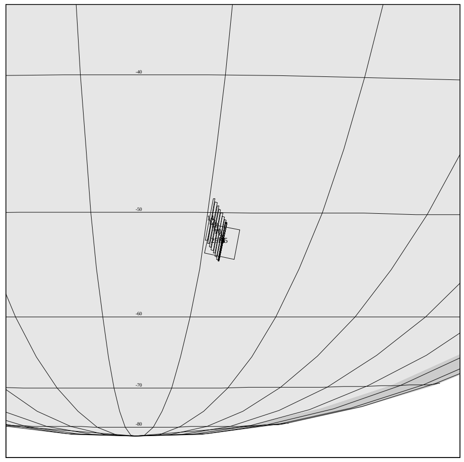

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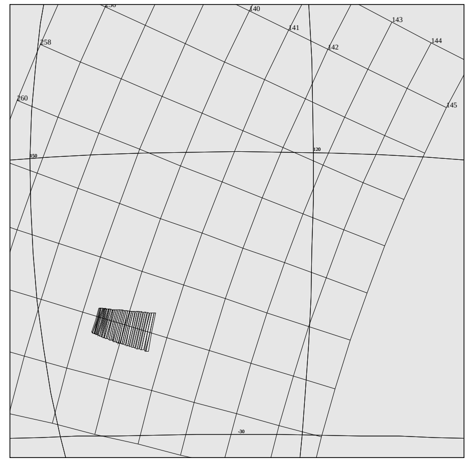

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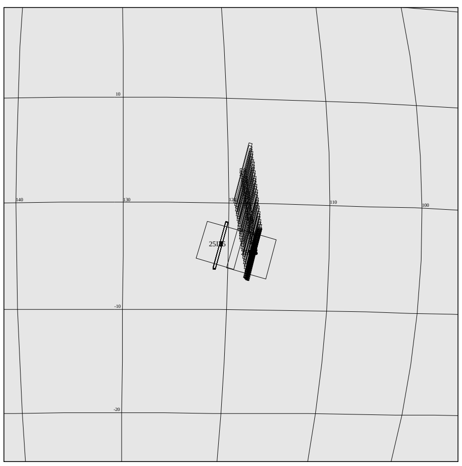

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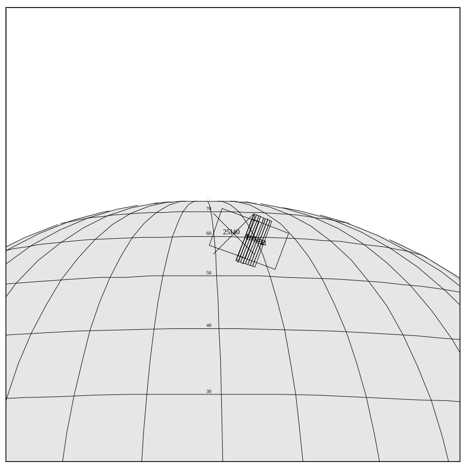

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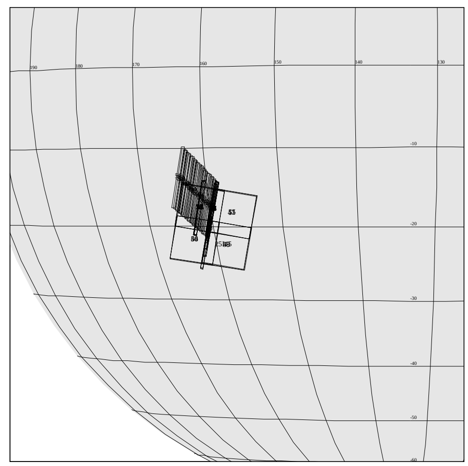

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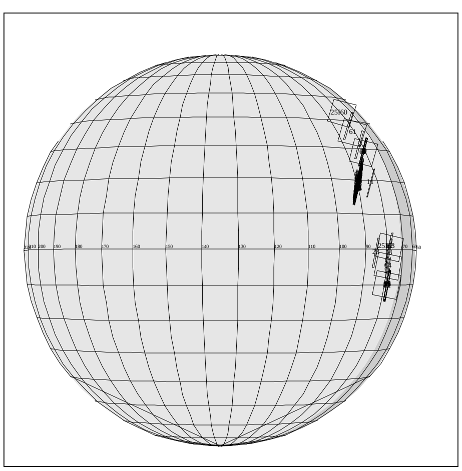

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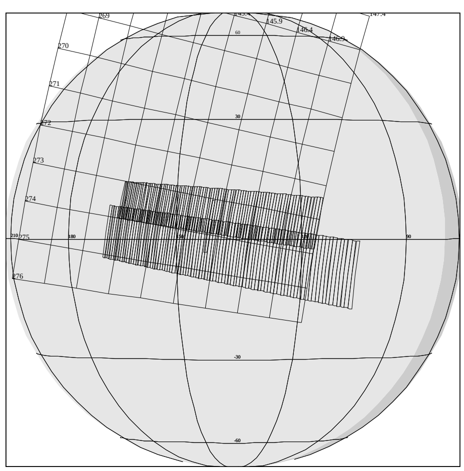

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