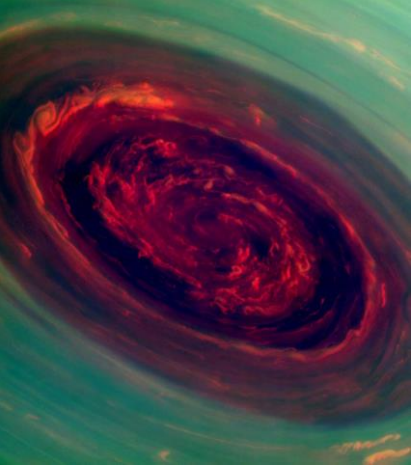
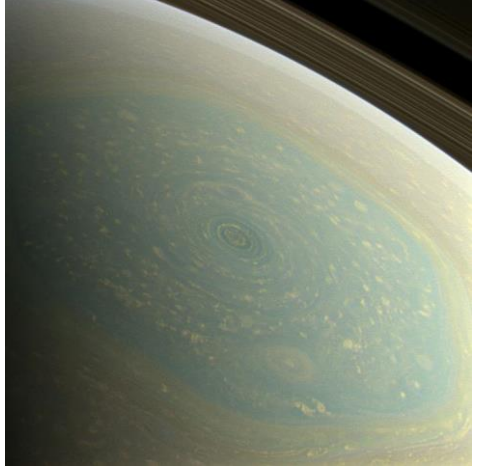
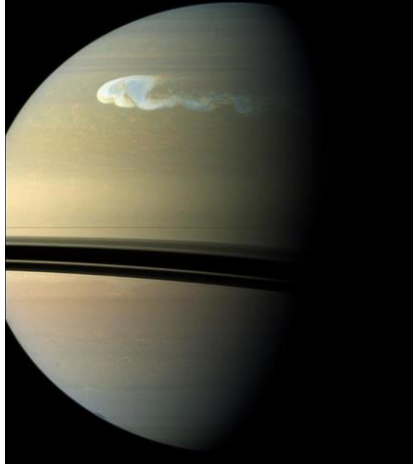


Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 98_100 Segment Legacy Package

Segment Boundary: December 28, 2008 – January 9, 2009
2008-363T16:00:00 – 2009-009T15:16:00 (SCET)

Integration Began 01/14/2008
Segment Delivered to S46 Sequence 06/03/2008
Lead Integrator was Barbara Larsen

Legacy Package Assembled by Shawn Boll

Table of Contents

*** N.A. = Slide present but content not available.**

Segment Overview and Final Products

Segment Summary

- This was a 12 day segment in the Equinox Mission during an inclined orbit. The segment begins before apoapse, continues through periapse and out to the next apoapse (a full orbit).
- The spacecraft approached Saturn with well-lit views of the northern hemisphere before swinging around to the night side at periapse. The outbound leg again saw the lit side but with views of the southern hemisphere.
- Saturn science inbound included ISS WAC photopolarimetry, CIRS mapping and composition, and UVIS EUV/FUVs. Observations for Titan and Dione were also included in the timeline, as well as CAPS prime pointing and a MAG calibration roll.
- During the time near periapse, Saturn science focused upon polar dynamics, aurora, and a UVIS stellar occultation. ISS took a look at Tethys and more prime pointing time was provided for CAPS.
- Outbound studies returned to ISS photopolarimetry an CIRS mapping. RADAR performed a Titan calibration and ISS looked at the ring shadow.
- Despite the long length of the segment, one waypoint was chosen to cover the entire time.
- Negative SSR margins were passed on to the sequence process, a practice that was later prohibited. Later in the mission, negative SSR margins were only allowed during DSN negotiations.

Final Sequenced SPASS (1 of 2)

Saturn 98_100 Legacy

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S46, length = 44 days		2008-331T17:55:00		043T21:21:00	2009-009T15:16:00			
SATURN_98_100 Segment		2008-363T16:00:00		011T23:16:00	2009-009T15:16:00			
NAV_098SK_OPNAV631_PRIME		2008-363T16:00:00		000T01:14:00	2008-363T17:14:00	ISS_NAC to Satellites	NEG_X to NEP	Start at Earth point, end at new Waypoint
NAV_098SK_WAYPTTURN631_PRIME		2008-363T17:14:00		000T00:01:00	2008-363T17:15:00	ISS_NAC to Saturn	NEG_X to Sun	
NEW WAYPOINT		**2008-363T17:15:00**		**011T22:01:00**	**2009-009T15:16:00**	**ISS_NAC to Saturn**	**NEG_X to Sun**	
ISS_098SA_1X2WP25001_PRIME		2008-363T17:15:00		000T01:00:00	2008-363T18:15:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_098TI_MR3CLD363_PRIME	C, U	2008-363T18:15:00	E098_MR3CLD363+000T00:00:00	000T01:15:00	2008-363T19:30:00	ISS_NAC to Titan	NEG_Z to Sun	
CAPS_098SA_SURVEYPTG004_PRIME		2008-363T19:30:00		000T02:00:00	2008-363T21:30:00	NEG_Z to Saturn (5.0,0.0,2.0 deg. offset)	NEG_X to North_Pole_Dir	
MAG_098SU_CALROLL001_PRIME		2008-363T21:30:00		000T06:15:00	2008-364T03:45:00	NEG_X to Sun (0.0,0.0,-30.0 deg. offset)	Rolling	
ISS_098SA_1X2WP25002_PRIME		2008-364T03:45:00		000T01:00:00	2008-364T04:45:00	ISS_NAC to Saturn	NEG_X to Sun	
CIRS_098SA_FIRMAP001_PRIME		2008-364T04:45:00		000T19:05:00	2008-364T23:50:00	CIRS_FP1 to Saturn	NEG_X to NSP	
SP_098EA_DLTURN364_PRIME		2008-364T23:50:00		000T00:25:00	2008-365T00:15:00	XBAND to Earth	NEG_Y to 79.54/35.12	SP Turn to Earth
SP_098EA_M34BWGNON365_PRIME	C, E	2008-365T00:15:00		000T09:00:00	2008-365T09:15:00	XBAND to Earth	NEG_Y to 79.54/35.12	MIMI NEG_Y to Saturn (0,0, -9.5)
SP_098SA_WAYPTTURN365_PRIME		2008-365T09:15:00		000T00:40:00	2008-365T09:55:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_098TI_MR3CLD365_PRIME	C, U	2008-365T09:55:00	E098_MR3CLD365+000T00:00:00	000T01:15:00	2008-365T11:10:00	ISS_NAC to Titan	NEG_Z to Sun	
ISS_098OT_SATELLORB014_PRIME		2008-365T11:10:00		000T00:30:00	2008-365T11:40:00	ISS_NAC to Rocks	NEG_X to Sun	
ISS_098SA_1X2WP25004_PRIME		2008-365T11:40:00		000T01:00:00	2008-365T12:40:00	ISS_NAC to Saturn	NEG_X to Sun	
CIRS_098SA_COMPSIT002_PRIME	U	2008-365T12:40:00		000T06:00:00	2008-365T18:40:00	CIRS_FP1 to Saturn	POS_Z to NSP	
UVIS_098SA_EUVFUV001_PRIME	I	2008-365T18:40:00		000T09:25:00	2008-366T04:05:00	UVIS_FUV to Saturn (1.148,0.0,3.21 deg. offset)	POS_Z to NSP	
Apoapse Per = 9.6 d, inc =...		2008-366T00:06:10		000T00:00:01	2008-366T00:06:11			
ISS_099DI_088W008PH001_PRIME	C, U, V	2008-366T04:05:00		000T02:00:00	2008-366T06:05:00	UVIS_FUV to Dione	NEG_X to Sun	Do (0,0,-1.03 mrad) offset for CIRS FP3 within the first approx. 10 percent of the tracking period (but at least for 5 min.)
SP_099EA_DLTURN366_PRIME		2008-366T06:05:00		000T00:40:00	2008-366T06:45:00	XBAND to Earth	POS_X to NEP	SP Turn to Earth
SP_099EA_G34BWGNON366_PRIME	C, E, R	2008-366T06:45:00		000T09:00:00	2008-366T15:45:00	XBAND to Earth	6_Hr_Rolling	POS_X to NEP
SP_099SA_WAYPTTURN366_PRIME		2008-366T15:45:00		000T00:40:00	2008-366T16:25:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_099TI_MR3CLD366_PRIME	C, U	2008-366T16:25:00	E099_MR3CLD366+000T00:00:00	000T01:15:00	2008-366T17:40:00	ISS_NAC to Titan	NEG_Z to Sun	
VIMS_099SU_SOLARPORT001_PRIME	U	2008-366T17:40:00		000T08:00:00	2009-001T01:40:00	VIMS_IR_SOL to Sun	NEG_Z to NEP	
CAPS_099SA_SURVEYPTG002_PRIME		2009-001T01:40:00		000T02:00:00	2009-001T03:40:00	POS_X to North_Pole_Dir (-13.0,0.0,1.0 deg. offset)	POS_Z to Saturn	
ISS_099SA_1X2WP25003_PRIME		2009-001T03:40:00		000T01:00:00	2009-001T04:40:00	ISS_NAC to Saturn	NEG_X to Sun	
CIRS_099SA_FIRMAP001_PRIME	V	2009-001T04:40:00		000T13:18:00	2009-001T17:58:00	CIRS_FP1 to Saturn	POS_X to NSP	
ISS_099SA_1X2WP25004_PRIME		2009-001T17:58:00		000T01:00:00	2009-001T18:58:00	ISS_NAC to Saturn	NEG_X to Sun	
VIMS_099OT_PLEIADES001_PRIME		2009-001T18:58:00		000T09:17:00	2009-002T04:15:00	VIMS_IR to 56.75/24.12	NEG_X to 343.11/-32.38	Secondary axis required by MIMI agreed to:Neg X to 343.11/-32.38, KHB, 02/11/08
ISS_099SA_1X2WP25015_PRIME		2009-002T04:15:00		000T01:00:00	2009-002T05:15:00	ISS_NAC to Saturn	NEG_X to Sun	
NAV_099SK_OPNAV021_PRIME		2009-002T05:15:00		000T01:29:00	2009-002T06:44:00	ISS_NAC to Satellites	POS_Z to NSP	Start at Waypoint, end at Earth point
NAV_099EA_DLTURN021_PRIME		2009-002T06:44:00		000T00:01:00	2009-002T06:45:00	XBAND to Earth	POS_X to NEP	
SP_099EA_G70METNON002_PRIME	C, E, M	2009-002T06:45:00		000T09:00:00	2009-002T15:45:00	XBAND to Earth	6_Hr_Rolling	POS_X to NEP; 6 hr roll, 3 hr dscal
SP_099SA_WAYPTTURN002_PRIME	M	2009-002T15:45:00		000T00:40:00	2009-002T16:25:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_099TI_MR2CLD002_PRIME	C, M, U	2009-002T16:25:00	E099_MR2CLD002+000T00:00:00	000T01:15:00	2009-002T17:40:00	ISS_NAC to Titan	NEG_Z to Sun	
VIMS_099SA_NPOLEDYN001_PRIME	I, M, U	2009-002T17:40:00		000T10:11:00	2009-003T03:51:00	ISS_NAC to Saturn (0.0,-20.0,0.0 deg. offset)	NEG_X to Sun	
UVIS_099ST_BETCRU002_PRIME		2009-003T03:51:00		000T01:30:00	2009-003T05:21:00	UVIS_FUV to 191.93/-59.688 (0.258,0.0,0.0 deg. offset)	NEG_Z to NSP	
VIMS_099SA_NPOLEDYN003_PRIME	I, U	2009-003T05:21:00		000T17:00:00	2009-003T22:21:00	ISS_NAC to Saturn	NEG_X to Sun	
SP_099EA_DLTURN003_PRIME		2009-003T22:21:00		000T00:40:00	2009-003T23:01:00	XBAND to Earth	POS_X to NEP	SP Turn to Earth
SP_099EA_M70METSEQ003_PRIME	C, E	2009-003T23:01:00		000T09:00:00	2009-004T08:01:00	XBAND to Earth	Rolling/SRU	POS_X to NEP
SP_099SA_WAYPTTURN004_PRIME		2009-004T08:01:00		000T00:25:00	2009-004T08:26:00	ISS_NAC to Saturn	NEG_X to Sun	
UVIS_099SA_AURORA001_PRIME	I, V	2009-004T08:26:00		000T03:51:00	2009-004T12:17:00	ISS_NAC to Saturn	NEG_X to 30.147/2.098	
ISS_099TE_064W150PH001_PRIME	C, U, V	2009-004T12:17:00		000T03:08:00	2009-004T15:25:00	UVIS_FUV to Tethys	NEG_X to Sun	Do (0,0,-1.03 mrad) offset for CIRS FP3 within the first approx. 10 percent of the tracking period (but at least for 5 min.)
CAPS_099SA_IMVP9PTG001_PRIME	M	2009-004T15:25:00		000T08:40:00	2009-005T00:05:00	POS_Y to COROT (-5.0,0.0,16.0 deg. offset)	POS_X to NSP	

Final Sequenced SPASS (2 of 2)

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Periapse R = 9.100 Rs, lat ...		2009-004T19:01:08		000T00:00:01	2009-004T19:01:09			
VIMS_099SA_SPOLEDYN001_PRIME	I, U	2009-005T00:05:00		000T11:00:00	2009-005T11:05:00	ISS_NAC to Saturn	NEG_X to Sun	
SP_099EA_DLTURN005_PRIME		2009-005T11:05:00		000T00:30:00	2009-005T11:35:00	XBAND to Earth	NEG_Y to 75.0/57.0	SP Turn to Earth
SP_099EA_G70METNON005_PRIME		2009-005T11:35:00		000T03:55:00	2009-005T15:30:00	XBAND to Earth	NEG_Y to 75.0/57.0	NEG_Y to 75.0/57.0 for CAPS
SP_099SA_WAYPTTURN005_PRIME		2009-005T15:30:00		000T00:35:00	2009-005T16:05:00	ISS_NAC to Saturn	NEG_X to Sun	
VIMS_099SA_SPOLEDYN002_PRIME	I, U	2009-005T16:05:00		000T13:11:00	2009-006T05:16:00	ISS_NAC to Saturn	NEG_X to Sun	
NAV_099SK_OPNAV061_PRIME		2009-006T05:16:00		000T01:14:00	2009-006T06:30:00	ISS_NAC to Satellites	POS_Z to NSP	Start at Waypoint, end at Earth point
NAV_099EA_DLTURN061_PRIME		2009-006T06:30:00		000T00:01:00	2009-006T06:31:00	XBAND to Earth	NEG_X to NEP	
SP_099EA_G70METSEQ006_PRIME	C, E	2009-006T06:31:00		000T09:00:00	2009-006T15:31:00	XBAND to Earth	5_Hr_Rolling	NEG_X to NEP; 5 hr roll (SID suspend), 4 hr dscal
SP_099SA_WAYPTTURN006_PRIME		2009-006T15:31:00		000T00:40:00	2009-006T16:11:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_099TI_MR2HAZ006_PRIME	C, U	2009-006T16:11:00	E099_MR2HAZ006+000T00:00:00	000T01:15:00	2009-006T17:26:00	ISS_NAC to Titan	NEG_X to Sun	
ISS_099SA_1X2WP25007_PRIME		2009-006T17:26:00		000T01:00:00	2009-006T18:26:00	ISS_NAC to Saturn	NEG_X to Sun	
CIRS_099SA_COMPSIT001_PRIME	U, V	2009-006T18:26:00		000T11:10:00	2009-007T05:36:00	CIRS_FP1 to Saturn	POS_Z to NSP	
SP_099EA_DLTURN007_PRIME	U	2009-007T05:36:00		000T00:40:00	2009-007T06:16:00	XBAND to Earth	NEG_X to NEP	SP Turn to Earth
SP_099EA_G34BWGSEQ007_PRIME	C, E	2009-007T06:16:00		000T09:00:00	2009-007T15:16:00	XBAND to Earth	Rolling/SRU	NEG_X to NEP
SP_099SA_WAYPTTURN007_PRIME	R	2009-007T15:16:00		000T00:40:00	2009-007T15:56:00	ISS_NAC to Saturn	NEG_X to Sun	
CAPS_099SA_SURVEYPTG004_PRIME	R	2009-007T15:56:00		000T02:00:00	2009-007T17:56:00	NEG_Z to Saturn (0.0,10.0,14.0 deg. offset)	NEG_X to North_Pole_Dir	
RADAR_099TI_SMIDLCAL001_PRIME		2009-007T17:56:00		000T01:30:00	2009-007T19:26:00	NEG_Z to Titan (0.0,0.0,-3.0 deg. offset)	POS_Y to Sun	
ISS_099SA_1X2WP25008_PRIME		2009-007T19:26:00		000T01:00:00	2009-007T20:26:00	ISS_NAC to Saturn	NEG_X to Sun	
CIRS_099SA_COMPSIT003_PRIME	V	2009-007T20:26:00		000T08:00:00	2009-008T04:26:00	CIRS_FP1 to Saturn	POS_Z to NSP	
ISS_099RI_MNRNGSHAD010_PRIME		2009-008T04:26:00		000T01:10:00	2009-008T05:36:00	ISS_NAC to Rings	PIC	
SP_099EA_DLTURN008_PRIME		2009-008T05:36:00		000T00:40:00	2009-008T06:16:00	XBAND to Earth	NEG_X to NEP	SP Turn to Earth
SP_099EA_G34BWGSEQ008_PRIME	C	2009-008T06:16:00		000T09:00:00	2009-008T15:16:00	XBAND to Earth	6_Hr_Rolling	NEG_X to NEP; 6 hr roll, 3 hr dscal
SP_099SA_WAYPTTURN008_PRIME		2009-008T15:16:00		000T00:40:00	2009-008T15:56:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_099OT_SATELLORB015_PRIME		2009-008T15:56:00		000T00:30:00	2009-008T16:26:00	ISS_NAC to Rocks	NEG_X to Sun	
ISS_099SA_1X2WP25011_PRIME		2009-008T16:26:00		000T01:00:00	2009-008T17:26:00	ISS_NAC to Saturn	NEG_X to Sun	
CIRS_099SA_COMPSIT002_PRIME		2009-008T17:26:00		000T11:10:00	2009-009T04:36:00	CIRS_FP1 to Saturn	POS_Z to NSP	
ISS_099SA_1X2WP25013_PRIME		2009-009T04:36:00		000T01:00:00	2009-009T05:36:00	ISS_NAC to Saturn	NEG_X to Sun	
SP_099EA_DLTURN009_PRIME		2009-009T05:36:00		000T00:40:00	2009-009T06:16:00	XBAND to Earth	NEG_Y to 81.45/17.74	SP Turn to Earth
SP_099EA_G70METSEQ009_PRIME	C, E	2009-009T06:16:00		000T08:15:00	2009-009T14:31:00	XBAND to Earth	NEG_Y to 81.45/17.74	MIMI NEG_Y to Saturn (0,0, -9.5)
Apoapse Per = 9.6 d, inc =...		2009-009T13:52:43		000T00:00:01	2009-009T13:52:44			
SP_100EA_G34BWGSEQ009_PRIME	C	2009-009T14:31:00		000T00:45:00	2009-009T15:16:00	XBAND to Earth	NEG_Y to 81.45/17.74	MIMI NEG_Y to Saturn (0,0, -9.5)

Final Sequenced SMT and Data Volume (1 of 2)

DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

			OBSERVATION_PERIOD							DOWNLINK_PASS						
			P4						P5	RECORDED		PLAYBACK				
DOWNLINK PASS NAME	Start doy hh:mm	End doy hh:mm	START (Mb)	SCI (Mb)	HK+E (Mb)	TOTAL (Mb)	CPACTY (Mb)	MRGN (Mb)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGN (Mb)	NET_MARGN (Mb)	CAROVR (%)
SP_098EA_M34BWGNON365_PRIME	365 00:15	365 09:15	0	1138	136	1274	3501	2227	21	237	53	1585	791	-795	-86	0% 794
SP_099EA_G34BWGNON366_PRIME	366 06:45	366 15:45	794	1165	91	2050	3501	1451	0	230	53	2333	831	-1503	-86	0% 1503
SP_099EA_G70METNON002_PRIME	002 06:45	002 15:45	1503	1890	165	3558	3501	-56	21	697	53	4273	4217	-56	-86	0% 56
SP_099EA_M70METSEQ003_PRIME	003 23:01	004 08:01	56	3309	132	3497	3501	4	0	574	53	4123	4010	-114	-86	0% 113
SP_099EA_G70METNON005_PRIME	005 11:35	005 15:30	113	3331	116	3561	3501	-59	0	132	23	3656	1792	-1865	-86	0% 1865
SP_099EA_G70METSEQ006_PRIME	006 06:31	006 15:31	1865	1660	63	3588	3501	-86	21	537	53	4112	4268	155	96	1% 0
SP_099EA_G34BWGSEQ007_PRIME	007 06:16	007 15:16	0	1435	62	1497	3501	2004	0	657	53	2207	872	-1335	-59	0% 1335
SP_099EA_G34BWGSEQ008_PRIME	008 06:16	008 15:16	1335	1482	64	2881	3501	620	0	602	53	3535	872	-2664	-59	0% 2663
SP_099EA_G70METSEQ009_PRIME	009 06:16	009 14:31	2663	834	63	3561	3501	-59	0	338	49	3887	3959	72	108	3% 0
SP_100EA_G34BWGSEQ009_PRIME	009 14:31	009 15:16	0	0	0	0	3501	3501	0	21	4	26	61	35	36	58% 0

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	363 16:00	365 00:15	137.7	60.8	292.8	11.6	241.1	100.6	126.1	0.0	152.1	4.5	0.0	0.0	26.4	1153.8
OBSERVATION_OPN	363 16:00	365 00:15	0.0	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0
SP_098EA_M34BWGNON365_PRIME	365 00:15	365 09:15	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	42.4	4.9	0.0	0.0	0.0	235.0
DAILY TOTAL SCIENCE	363 16:00	365 09:15	170.1	77.8	379.2	14.9	241.1	120.1	155.2	0.0	194.5	9.5	0.0	0.0		
OBSERVATION_NOR	365 09:15	366 06:45	77.4	40.6	133.2	17.8	430.1	46.4	69.7	0.0	96.4	227.6	15.0	0.0	17.6	1171.8
SP_099EA_G34BWGNON366_PRIME	366 06:45	366 15:45	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	35.6	4.9	0.0	0.0	0.0	228.2
DAILY TOTAL SCIENCE	365 09:15	366 15:45	109.8	57.5	219.6	21.0	430.1	65.9	98.8	0.0	132.1	232.6	15.0	0.0		
OBSERVATION_NOR	366 15:45	002 06:45	162.0	73.6	209.5	14.0	344.2	84.2	140.1	0.0	154.4	7.3	683.8	0.0	31.9	1905.1
OBSERVATION_OPN	366 15:45	002 06:45	0.0	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0
SP_099EA_G70METNON002_PRIME	002 06:45	002 15:45	49.2	17.0	86.4	3.2	0.0	22.7	40.3	0.0	467.3	4.9	0.0	0.0	0.0	691.1
DAILY TOTAL SCIENCE	366 15:45	002 15:45	211.2	90.5	295.9	17.3	344.2	107.0	180.5	0.0	621.7	12.2	683.8	0.0		

* NOTE: Negative SSR (P4) Margins did not result in data loss due to compression/under-utilization.

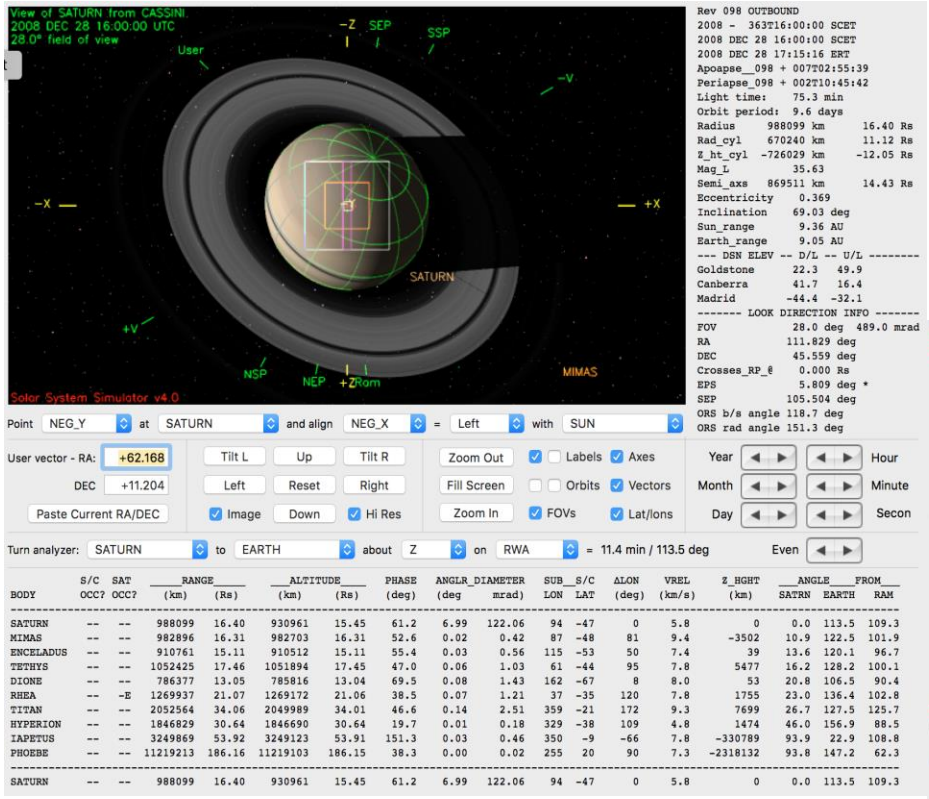
Final Sequenced SMT and Data Volume (2 of 2)

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	002 15:45	003 23:01	196.6	59.0	18.0	11.3	210.0	84.0	142.3	0.0	674.0	583.6	1300.0	0.0	25.6	3304.3
SP_099EA_M70METSEQ003_PRIME	003 23:01	004 08:01	32.4	17.0	86.4	3.2	0.0	19.4	38.9	0.0	366.2	4.9	0.0	0.0	0.0	568.4
DAILY TOTAL SCIENCE	002 15:45	004 08:01	229.0	76.0	104.4	14.5	210.0	103.5	181.2	0.0	1040.2	588.6	1300.0	0.0		
OBSERVATION_NOR	004 08:01	005 11:35	567.2	84.4	45.1	20.0	627.0	102.5	119.1	0.0	852.3	317.3	566.0	0.0	22.5	3323.4
SP_099EA_G70METNON005_PRIME	005 11:35	005 15:30	14.1	7.4	0.0	1.4	0.0	8.5	16.9	0.0	82.8	0.0	0.0	0.0	0.0	131.0
DAILY TOTAL SCIENCE	004 08:01	005 15:30	581.3	91.7	45.1	21.4	627.0	110.9	136.0	0.0	935.1	317.3	566.0	0.0		
OBSERVATION_NOR	005 15:30	006 06:31	54.1	28.3	0.0	5.4	500.5	32.4	64.9	0.0	317.3	238.8	403.0	0.0	12.3	1657.0
OBSERVATION_OPN	005 15:30	006 06:31	0.0	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0
SP_099EA_G70METSEQ006_PRIME	006 06:31	006 15:31	32.4	17.0	86.4	3.2	0.0	19.4	38.9	0.0	329.9	4.9	0.0	0.0	0.0	532.2
DAILY TOTAL SCIENCE	005 15:30	006 15:31	86.5	45.3	86.4	8.6	500.5	51.9	103.8	0.0	647.2	243.8	403.0	0.0		
OBSERVATION_NOR	006 15:31	007 06:16	53.1	27.8	178.8	5.3	138.1	31.9	63.7	0.0	578.0	45.0	300.0	0.0	12.1	1433.7
SP_099EA_G34BWGSEQ007_PRIME	007 06:16	007 15:16	32.4	17.0	86.4	3.2	0.0	19.4	38.9	0.0	448.7	4.9	0.0	0.0	0.0	651.0
DAILY TOTAL SCIENCE	006 15:31	007 15:16	85.5	44.8	265.2	8.6	138.1	51.3	102.6	0.0	1026.7	49.9	300.0	0.0		
OBSERVATION_NOR	007 15:16	008 06:16	75.6	28.3	115.2	5.4	143.1	32.4	59.1	11.7	747.8	0.0	250.0	0.0	12.3	1480.9
SP_099EA_G34BWGSEQ008_PRIME	008 06:16	008 15:16	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	403.6	4.9	0.0	0.0	0.0	596.1
DAILY TOTAL SCIENCE	007 15:16	008 15:16	108.0	45.3	201.6	8.6	143.1	51.8	88.3	11.7	1151.4	4.9	250.0	0.0		
OBSERVATION_NOR	008 15:16	009 06:16	242.1	28.3	160.8	5.4	238.1	32.4	48.6	0.0	70.7	0.0	0.0	0.0	12.3	838.7
SP_099EA_G70METSEQ009_PRIME	009 06:16	009 14:31	29.7	15.6	78.3	13.0	0.0	17.8	26.7	0.0	148.6	4.8	0.0	0.0	0.0	334.6
SP_100EA_G34BWGSEQ009_PRIME	009 14:31	009 15:16	2.7	1.4	8.1	0.3	0.0	1.6	2.4	0.0	3.5	0.8	0.0	0.0	0.0	20.9
DAILY TOTAL SCIENCE	008 15:16	009 15:16	274.5	45.3	247.2	18.7	238.1	51.8	77.8	0.0	222.9	5.7	0.0	0.0		

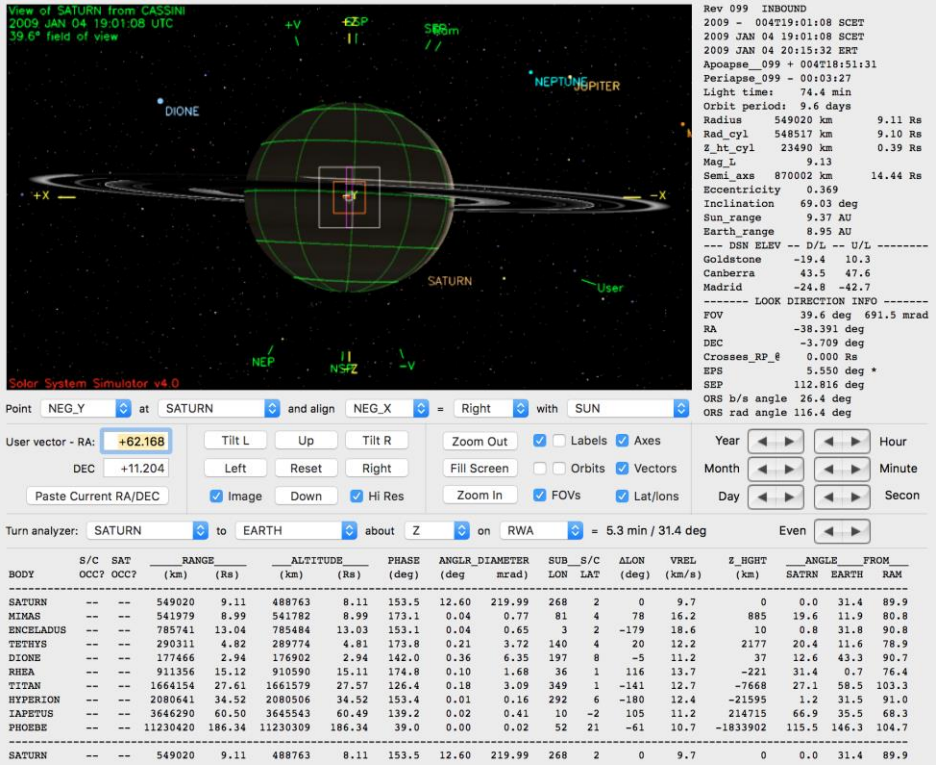
* NOTE: Negative SSR (P4) Margins did not result in data loss due to compression/under-utilization.

Segment Geometry (1 of 2)



Seg Start (Left)

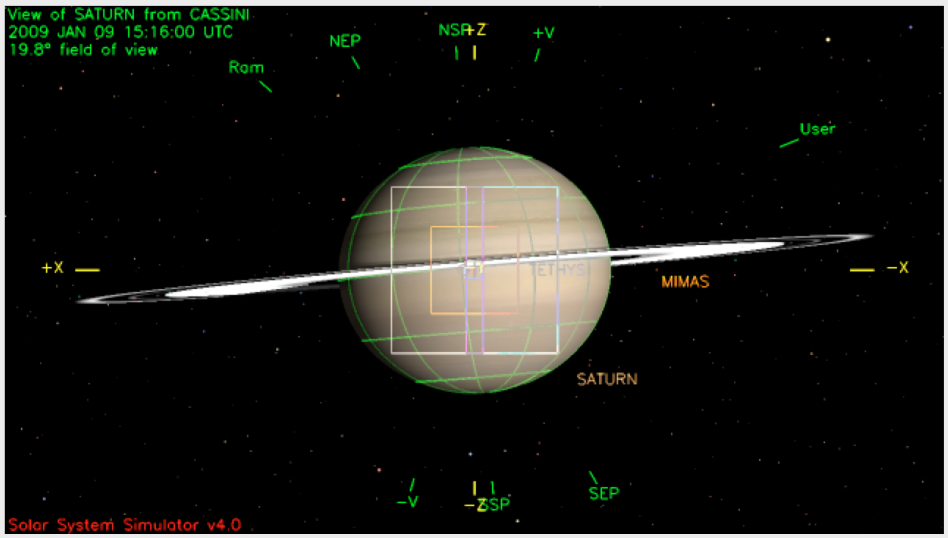
Periapse (below)



	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	16.4 Rs	61.2	-47
Apoapse	19.76 Rs	26.2	-2.3
Periapse	9.1 Rs	153.5	2
Apoapse	19.75 Rs	26.6	-2.3
Segment End	19.74 Rs	26.3	-1

Segment Geometry (2 of 2)

Seg End




```
Rev 100  INBOUND
2009 -  009T15:16:00 SCET
2009 JAN 09 15:16:00 SCET
2009 JAN 09 16:29:43 ERT
Apoapse__100 + 01:19:50
Periapse_100 - 004T17:32:38
Light time:    73.7 min
Orbit period:  9.6 days
Radius     1189959 km      19.74 Rs
Rad_cyl    1189641 km      19.74 Rs
Z_ht_cyl    -27523 km      -0.46 Rs
Mag_L         19.76
Semi_axs    869577 km      14.43 Rs
Eccentricity    0.369
Inclination    69.03 deg
Sun_range       9.36 AU
Earth_range     8.86 AU
--- DSN ELEV -- D/L -- U/L --------
Goldstone      22.0   49.3
Canberra       41.8   17.3
Madrid        -44.3  -32.7
------- LOOK DIRECTION INFO -------
FOV            19.8 deg  345.8 mrad
RA           142.155 deg
DEC            2.636 deg
Crosses_RP_@   0.000 Rs
EPS            5.332 deg *
SEP          117.770 deg
ORS b/s angle 153.7 deg
ORS rad angle 116.3 deg
```

Point NEG_Y at SATURN and align NEG_X = Right with SUN

User vector - RA: +62.168 DEC +11.204 Paste Current RA/DEC

Tilt L | Up | Tilt R | Left | Reset | Right | Image | Down | Hi Res

Zoom Out | Fill Screen | Zoom In | Labels | Axes | Orbits | Vectors | FOVs | Lat/lons

Year Month Day Hour Minute Secon

Turn analyzer: SATURN to EARTH about Z on RWA = 14.1 min / 149.0 deg Even

BODY	S/C OCC?	SAT OCC?	RANGE (km)	RANGE (Rs)	ALTITUDE (km)	ALTITUDE (Rs)	PHASE (deg)	ANGLR_DIAMETER (deg	mrad)	SUB_S/C LON	SUB_S/C LAT	ALON (deg)	VREL (km/s)	Z_HGHT (km)	ANGLE FROM SATRN	ANGLE FROM EARTH	ANGLE FROM RAM
SATURN	--	--	1189959	19.74	1129694	18.74	26.3	5.81	101.34	55	-1	0	4.5	0	0.0	149.0	89.5
MIMAS	--	--	1357418	22.52	1357213	22.52	30.1	0.02	0.31	334	-2	-151	16.2	-3581	3.9	145.2	92.4
ENCELADUS	--	--	1425414	23.65	1425158	23.65	24.4	0.02	0.36	13	-1	169	14.8	0	1.9	150.9	88.4
TETHYS	--	--	895973	14.87	895433	14.86	27.3	0.07	1.21	185	-1	-3	10.7	-4131	1.1	147.9	90.2
DIONE	--	--	1323406	21.96	1322844	21.95	42.4	0.05	0.85	299	-1	-102	11.3	-130	16.2	132.8	100.8
RHEA	--	--	1299589	21.56	1298826	21.55	50.1	0.07	1.18	296	-1	-90	9.6	1258	23.9	125.1	105.9
TITAN	--	--	1462546	24.27	1459971	24.22	78.8	0.20	3.52	303	-1	-75	6.9	2388	52.7	96.3	122.9
HYPERION	--	--	1655143	27.46	1655014	27.46	92.9	0.01	0.20	144	49	-70	6.0	9835	66.8	82.2	128.7
IAPETUS	--	--	3829294	63.54	3828547	63.53	90.2	0.02	0.39	343	4	-97	5.2	555463	64.8	84.5	120.9
PHOEBE	--	--	12261869	203.46	12261759	203.45	27.9	0.00	0.02	257	21	123	3.9	-1494417	53.0	157.2	62.9
SATURN	--	--	1189959	19.74	1129694	18.74	26.3	5.81	101.34	55	-1	0	4.5	0	0.0	149.0	89.5

Solar Geometry – ORS Boresight Concerns

No ORS Boresight Solar Constraints on Science Pointing.

Daily Science Highlights (1 of 2)

Sunday, December 28 (DOY 363)
The ORS instruments, with ISS as prime, made one of hundreds of distant observations of Titan designed to improve our understanding of clouds on Titan. MAG performed one of its rolling calibrations, which are done outside of 15 Rs.

Monday, December 29 (DOY 364)
CIRS performed regional mapping of Saturn's upper troposphere in the far infra-red. These are repeated over the course of the mission to reveal seasonal variations.

Tuesday, December 30 (DOY 365)
CIRS with UVIS riding along stared at Saturn for over twelve hours to measure oxygen compounds in the stratosphere. Each such study focuses on a particular latitude. Today the sub-spacecraft latitude was 14 degrees. UVIS then took over prime pointing to make several slow scans across Saturn's visible hemisphere to form spectral images in both the far ultra-violet and the extreme ultra-violet. ISS participated as well.

Wednesday, December 31 (DOY 366)
Cassini reached apoapse at 2008-366T00:06:10. The ORS instruments collectively participated in a long range, low phase observation of Dione. VIMS performed an in-flight calibration of the solar port.

Thursday, January 1 (DOY 001)
MAPS instruments took over pointing control of the spacecraft todirect activity to monitoring the plasma and field characteristics. As Cassini headed back toward Saturn, the distance from the planet was again appropriate for regional mapping by CIRS of the upper troposphere in the far infra-red. Repeating these observations provides measurements that can be compared for temporal vaiations. VIMS observed the Pleiades to provide in-flight characterization of the pixel look directions within the instrument. This supports geometric calibration of images.

Friday, January 2 (DOY 002)
VIMS began the first of several lengthy studies of the polar regions, to study the structure and dynamics of the polar vortices, and their variability over time, including seasonal changes.

Saturday, January 3 (DOY 003)
An occultation of Beta Cru by Saturn provided an opportunity for UVIS to measure the vertical profile of aerosol and gas opacity as well as temperature information at thehighest altitudes of Saturn's atmosphere. Attention then returned to the polar dynamics study led by VIMS with ISS and UVIS participation. The north polar region is experiencing sunlight for the first time in over a decade. Images of the north pole from VIMS, as well as ISS and UVIS, will reveal the structure and microphysical nature of upper tropospheric clouds that help form the bizarre hexagonal feature there.

Daily Science Highlights (2 of 2)

Sunday, January 4 (DOY 004)
Several Cassini remote sensing instruments - in particular, ISS, UVIS, and VIMS – made a collective, concerted effort to reveal the multifaceted nature of polar aurorae. All three instruments imaged the aurorae using a variety of wavelengths, thus quantitatively mapping their power over the polar regions. Multiple images acquired regularly over short periods of time spanning minutes to hours will characterize the transient nature of auroral phenomena. Correlations of auroral activity with underlying hazes will help our understanding of the role aurorae play in generating polar hazes and clouds. The ORS instruments also imaged Tethys from 415,000 km away at a dark phase angle of 162 degrees. The MAPS instruments engaged in a campaign to measure the vertical structure and dynamics of the inner magnetosphere as Cassini crossed Saturn's equatorial plane nearly tangent to the L-shell set of planetary magnetic field lines. Cassini reached periapse at a distance of 9.1 Rs at 2009-004T19:01:09.

Monday, January 5 (DOY 005)
The polar dynamics study of the last several days continued with attention shifted to the south pole. The south polar region is about to enter more than a decade of polar winter. One goal of these observations is to track the winds and determine vertical cloud structure in the dynamic polar regions. Simultaneous observations by ISS and VIMS provide the opportunity to solve for cloud heights using two independent measurements: by absorption by methane gas above the clouds (ISS) and by thermal emission at various wavelengths (VIMS).

Tuesday, January 6 (DOY 006)
Most of today was devoted to the first of three compositional studies of Saturn's atmosphere led by CIRS with UVIS and VIMS participating. These measurements require lengthy integration at a single point on Saturn.

Wednesday, January 7 (DOY 007)
Prior to another compositional study of Saturn's atmosphere by CIRS and VIMS, RADAR did radiometry on the south mid latitudes of a distant Titan.

Thursday, January 8 (DOY 008)
ISS imaged the shadow of one of Saturn's moons on the rings. Then CIRS focused a third lengthy stare on a Saturn latitude to measure the composition of the Saturn atmosphere. Ofinterest are oxygen compounds such as H2O and CO2 as well as hydrocarbons.

Friday, January 9 (DOY 009)
The final observation of S46 was another of the series of ISS pickets that repeatedly observe a particular latitude and longitude to detect short term temporal variation. Cassini reached apoapse at 2009-009T13:52:44

Segment Integration Planning

Timeline Gaps and Suggested Observations

	Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
	SP_098SA_WAYPTTURN363_PRIME		2008-363T16:00:00		000T00:40:00	2008-363T16:40:00			
	ISS_098SA_1X2WP25001_PRIME		2008-363T16:40:00		000T01:00:00	2008-363T17:40:00	ISS_NAC to Saturn	NEG_Z to NSP	
	ISS_098TI_MR3CLD363_PRIME		2008-363T17:40:00		000T01:15:00	2008-363T18:55:00			
	ISS_098OT_SATELLORB010_PRIME		2008-363T18:55:00		000T00:30:00	2008-363T19:25:00	ISS_NAC to Rocks	POS_X to NSP	FUV to Dione
*1	CAPS_098SA_SURVEYPTG004_PRIME		2008-363T19:25:00		000T06:45:00	2008-364T02:10:00			
	MAG_098SU_CALROLL001_PRIME		2008-363T19:25:00		000T06:45:00	2008-364T02:10:00	NEG_X to Sun (0.0,0.0,-30.0 deg. offs	Rolling	1st hour is FP3 on DI, 2nd 2 hours is UVIS_FUV on DI
	ISS_098SA_1X2WP25002_PRIME		2008-364T02:10:00		000T01:00:00	2008-364T03:10:00	ISS_NAC to Saturn	NEG_Z to NSP	
	CIRS_098SA_FIRMAP001_PRIME		2008-364T03:10:00		000T18:50:00	2008-364T22:00:00	CIRS_FP1 to Saturn	NEG_X to NSP	
	NAV_098SK_OPNAV641_PRIME		2008-364T22:00:00		000T01:14:00	2008-364T23:14:00	ISS_NAC to Satellites	POS_Z to NSP	
	NAV_098EA_DLTURN641_PRIME		2008-364T23:14:00		000T00:01:00	2008-364T23:15:00	XBAND to Earth	POS_X to NEP	NEG_X to NEP
	SP_098EA_M34BWGNON364_PRIME		2008-364T23:15:00		000T09:00:00	2008-365T08:15:00	XBAND to Earth	NEG_Y to 79.54/35.12	POS_X to NEP; 6 hr roll, 3 hr dscal
	SP_098SA_WAYPTTURN365_PRIME		2008-365T08:15:00		000T00:40:00	2008-365T08:55:00			MIMI NEG_Y to Saturn (0,0, -9.5)
	ISS_098TI_MR3CLD365_PRIME		2008-365T08:55:00		000T01:15:00	2008-365T10:10:00			
	ISS_098SA_1X2WP25005_PRIME		2008-365T10:10:00		000T01:00:00	2008-365T11:10:00	ISS_NAC to Saturn	NEG_Z to NSP	
	CIRS_098SA_COMPSIT002_PRIME		2008-365T11:10:00		000T10:00:00	2008-365T21:10:00	CIRS_FP1 to Saturn	POS_Z to NSP	
	CAPS_098SA_SURVEYPTG005_PRIME		2008-365T21:10:00		000T02:00:00	2008-365T23:10:00			
	ISS_098SA_1X2WP25006_PRIME		2008-365T23:10:00		000T01:00:00	2008-366T00:10:00	ISS_NAC to Saturn	NEG_Z to NSP	
*2	VIMS_099SU_SOLARPORT001_PRIME		2008-366T00:10:00		000T03:55:00	2008-366T04:05:00	VIMS_IR_SOL to Sun	NEG_X to NSP	
*2	UVIS_099SA_EUVFUV001_PRIME		2008-366T00:10:00		000T03:55:00	2008-366T04:05:00	UVIS_FUV to Saturn	POS_X to NSP	
*3	ISS_099DI_088W008PH001_PRIME		2008-366T04:05:00		000T02:00:00	2008-366T06:05:00	UVIS_FUV to Dione (0.0,0.0,-1.03 deg	NEG_X to Sun	1st hour is FP3 on DI, 2nd 2 hours is UVIS_FUV
	SP_099EA_DLTURN366_PRIME		2008-366T06:05:00		000T00:40:00	2008-366T06:45:00			
	SP_099EA_G34BWGNON366_PRIME		2008-366T06:45:00		000T09:00:00	2008-366T15:45:00	XBAND to Earth	6_Hr_Rolling	
	SP_099SA_WAYPTTURN366_PRIME		2008-366T15:45:00		000T00:40:00	2008-366T16:25:00			
	ISS_099TI_MR3CLD366_PRIME		2008-366T16:25:00		000T01:15:00	2008-366T17:40:00			
	VIMS_099OT_PLEIADES001_PRIME		2008-366T17:40:00		000T09:17:00	2009-001T02:57:00			
*4	ISS_099SA_1X2WP25003_PRIME		2009-001T02:57:00		000T01:00:00	2009-001T03:57:00	ISS_NAC to Saturn	NEG_Z to NSP	
*4	CIRS_099SA_COMPSIT001_PRIME		2009-001T03:57:00		000T22:18:00	2009-002T02:15:00	CIRS_FP1 to Saturn	POS_Z to NSP	
*4	CAPS_099SA_SURVEYPTG002_PRIME		2009-002T02:15:00		000T02:00:00	2009-002T04:15:00			
*4	ISS_099SA_1X2WP25004_PRIME		2009-002T04:15:00		000T01:00:00	2009-002T05:15:00	ISS_NAC to Saturn	NEG_Z to NSP	
	NAV_099SK_OPNAV021_PRIME		2009-002T05:15:00		000T01:29:00	2009-002T06:44:00	ISS_NAC to Satellites	POS_Z to NSP	
	NAV_099EA_DLTURN021_PRIME		2009-002T06:44:00		000T00:01:00	2009-002T06:45:00	XBAND to Earth	POS_X to NEP	
	SP_099EA_G70METNON002_PRIME		2009-002T06:45:00		000T09:00:00	2009-002T15:45:00	XBAND to Earth	6_Hr_Rolling	
	SP_099SA_WAYPTTURN002_PRIME		2009-002T15:45:00		000T00:40:00	2009-002T16:25:00			
	ISS_099TI_MR2CLD002_PRIME		2009-002T16:25:00		000T01:15:00	2009-002T17:40:00			
	VIMS_099SA_NPOLEDYN001_PRIME		2009-002T17:40:00		001T04:41:00	2009-003T22:21:00	ISS_NAC to Saturn	NEG_X to NSP	
	SP_099EA_DLTURN003_PRIME		2009-003T22:21:00		000T00:40:00	2009-003T23:01:00			
	SP_099EA_M34BWGNON003_PRIME		2009-003T23:01:00		000T09:00:00	2009-004T08:01:00	XBAND to Earth	Rolling	POS_X to NEP
	SP_099SA_WAYPTTURN004_PRIME		2009-004T08:01:00		000T00:40:00	2009-004T08:41:00			
	UVIS_099SA_AURORA001_PRIME		2009-004T08:41:00		000T04:36:00	2009-004T13:17:00	ISS_NAC to Saturn	NEG_X to Sun	
	ISS_099TE_064W150PH001_PRIME		2009-004T13:17:00		000T05:00:00	2009-004T18:17:00	UVIS_FUV to Tethys (0.0,0.0,-1.03 de	NEG_X to Sun	Start at Waypoint, end at Earth point
	CAPS_099SA_IMVP9PTG001_PRIME		2009-004T18:17:00		000T08:40:00	2009-005T02:57:00			POS_X to NEP; 6 hr roll, 3 hr dscal
	VIMS_099SA_SPOLEDYN001_PRIME		2009-005T01:07:00		001T04:54:00	2009-006T05:16:00	ISS_NAC to Saturn	NEG_X to NSP	
	NAV_099SK_OPNAV061_PRIME		2009-006T05:16:00		000T01:14:00	2009-006T06:30:00	ISS_NAC to Satellites	POS_Z to NSP	POS_X to NEP
	NAV_099EA_DLTURN061_PRIME		2009-006T06:30:00		000T00:01:00	2009-006T06:31:00	XBAND to Earth	POS_X to NEP	Start at Waypoint, end at Earth point
	SP_099EA_G70METNON006_PRIME		2009-006T06:31:00		000T09:00:00	2009-006T15:31:00	XBAND to Earth	6_Hr_Rolling	
	SP_099SA_WAYPTTURN006_PRIME		2009-006T15:31:00		000T00:40:00	2009-006T16:11:00			NEG_X to NEP; 6 hr roll, 3 hr dscal
	ISS_099TI_MR2HAZ006_PRIME		2009-006T16:11:00		000T01:15:00	2009-006T17:26:00			
	CIRS_099SA_FIRMAP001_PRIME		2009-006T17:26:00		000T06:34:00	2009-007T00:00:00	CIRS_FP1 to Saturn	NEG_X to NSP	
	ISS_099SA_1X2WP25007_PRIME		2009-007T00:00:00		000T01:00:00	2009-007T01:00:00	ISS_NAC to Saturn	NEG_Z to NSP	
	CIRS_099SA_FIRMAP001_PRIME		2009-007T01:00:00		000T04:36:00	2009-007T05:36:00	CIRS_FP1 to Saturn	NEG_X to NSP	
	SP_099EA_DLTURN007_PRIME		2009-007T05:36:00		000T00:40:00	2009-007T06:16:00			
	SP_099EA_G34BWGNON007_PRIME		2009-007T06:16:00		000T09:00:00	2009-007T15:16:00	XBAND to Earth	Rolling	
	SP_099SA_WAYPTTURN007_PRIME		2009-007T15:16:00		000T00:40:00	2009-007T15:56:00			
	CAPS_099SA_SURVEYPTG004_PRIME		2009-007T15:56:00		000T02:00:00	2009-007T17:56:00			
*5	RADAR_099TI_SMIDLCAL001_PRIME		2009-007T17:56:00		000T01:30:00	2009-007T19:26:00	NEG_Z to Titan	PIC	
	ISS_099SA_1X2WP25009_PRIME		2009-007T19:26:00		000T01:00:00	2009-007T20:26:00	ISS_NAC to Saturn	NEG_Z to NSP	
	ISS_099RI_SPKFMLFLP001_PRIME		2009-007T20:26:00		000T05:55:00	2009-008T02:21:00	ISS_NAC to Rings	PIC	
	ISS_099RI_MNRNGSHAD010_PRIME		2009-008T02:21:00		000T02:45:00	2009-008T05:06:00	ISS_NAC to Rings	PIC	
	ISS_099OT_SATELLORB013_PRIME		2009-008T05:06:00		000T00:30:00	2009-008T05:36:00	ISS_NAC to Rocks	POS_X to NSP	
	SP_099EA_DLTURN008_PRIME		2009-008T05:36:00		000T00:40:00	2009-008T06:16:00			
	SP_099EA_G34BWGNON008_PRIME		2009-008T06:16:00		000T09:00:00	2009-008T15:16:00	XBAND to Earth	6_Hr_Rolling	
	SP_099SA_WAYPTTURN009_PRIME		2009-008T15:16:00		000T00:40:00	2009-008T15:56:00			
	ISS_099OT_SATELLORB015_PRIME		2009-008T15:56:00		000T00:30:00	2009-008T16:26:00	ISS_NAC to Rocks	POS_X to NSP	
	ISS_099SA_1X2WP25011_PRIME		2009-008T16:26:00		000T01:00:00	2009-008T17:26:00	ISS_NAC to Saturn	NEG_Z to NSP	
	CIRS_099SA_COMPSIT002_PRIME		2009-008T17:26:00		000T11:10:00	2009-009T04:36:00	CIRS_FP1 to Saturn	POS_Z to NSP	
	ISS_099SA_1X2WP25012_PRIME		2009-009T04:36:00		000T01:00:00	2009-009T05:36:00	ISS_NAC to Saturn	NEG_Z to NSP	
	SP_099EA_DLTURN009_PRIME		2009-009T05:36:00		000T00:40:00	2009-009T06:16:00			
	SP_099EA_G70METNON009_PRIME		2009-009T06:16:00		000T09:00:00	2009-009T15:16:00	XBAND to Earth	NEG_Y to 81.45/17.74	

*1 Can CAPS ride on MAG CAL roll in lieu of prime?
*2 If VIMS solar calibration is not critical, UVIS may replace
*3 The shift in the DIONE requests need to be evaluated by the satellite people
*4 All of these need to be compatible with a VIMS decon
*5 The radar request has been shifted from the previous observation period. Does that work?

	request time	TWT	altitude (km)	AD (mrad)		phase angles
TETHYS	2009-004T08:30 - 16:00	99 SATURN	260,935	4.097	can be shortened	150 - 165

Initial SMT and Data Volume

First Look in Integration:

Saturn_098_100 Initial Data Volume Summary

DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

	OBSERVATION_PERIOD							DOWNLINK_PASS						
			P4					P5	RECORDED		PLAYBACK				
DOWNLINK PASS NAME	Start doy hh:mm	End doy hh:mm	START (Mb)	SCI (Mb)	HK+E (Mb)	TOTAL (Mb)	CPACTY (Mb)	MRGN (Mb)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGN (Mb)	NET_MARGN (Mb)	NET_MARGN (%)	CAROVR (Mb)
SP_098EA_M34BWGNON365_PRIME	365 00:15	365 09:15	0	1138	136	1274	3509	2235	21	237	53	1585	791	-795	-5030	-29%	794
SP_099EA_G34BWGNON366_PRIME	366 06:45	366 15:45	794	1170	91	2055	3509	1454	0	237	53	2345	831	-1515	-5030	-30%	1514
SP_099EA_G70METNON002_PRIME	002 06:45	002 15:45	1514	1560	165	3239	3509	270	21	293	53	3606	4217	611	-5030	-32%	0
SP_099EA_M34BWGNON003_PRIME	003 23:01	004 08:01	0	3135	132	3267	3509	242	0	574	53	3894	814	-3081	-5641	-50%	3080
SP_099EA_G70METNON006_PRIME	006 06:31	006 15:31	3080	5875	196	9151	3509	-5641	21	247	53	3830	4268	438	3013	29%	0
SP_099EA_G34BWGNON007_PRIME	007 06:16	007 15:16	0	619	62	681	3509	2828	0	247	53	981	872	-109	2575	43%	109
SP_099EA_G34BWGNON008_PRIME	008 06:16	008 15:16	109	506	64	679	3509	2830	0	237	53	969	872	-97	2575	50%	97
SP_099EA_G70METNON009_PRIME	009 06:16	009 15:16	97	774	63	934	3509	2575	0	308	53	1295	4268	2972	2973	70%	0

POST 70m Upgrade on DOY 003&004

DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

	OBSERVATION_PERIOD							DOWNLINK_PASS						
			P4					P5	RECORDED		PLAYBACK				
DOWNLINK PASS NAME	Start doy hh:mm	End doy hh:mm	START (Mb)	SCI (Mb)	HK+E (Mb)	TOTAL (Mb)	CPACTY (Mb)	MRGN (Mb)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGN (Mb)	NET_MARGN (Mb)	NET_MARGN (%)	CAROVR (Mb)
SP_098EA_M34BWGNON365_PRIME	365 00:15	365 09:15	0	1138	136	1274	3509	2235	21	237	53	1585	791	-795	-1834	-8%	794
SP_099EA_G34BWGNON366_PRIME	366 06:45	366 15:45	794	1170	91	2055	3509	1454	0	237	53	2345	831	-1515	-1834	-8%	1514
SP_099EA_G70METNON002_PRIME	002 06:45	002 15:45	1514	1560	165	3239	3509	270	21	293	53	3606	4217	611	-1834	-9%	0
SP_099EA_M70METNON003_PRIME	003 23:01	004 08:01	0	3135	132	3267	3509	242	0	574	53	3894	4010	116	-2445	-16%	0
SP_099EA_G70METNON006_PRIME	006 06:31	006 15:31	0	5875	196	6071	3509	-2561	21	247	53	3830	4268	438	3013	29%	0
SP_099EA_G34BWGNON007_PRIME	007 06:16	007 15:16	0	619	62	681	3509	2828	0	247	53	981	872	-109	2575	43%	109
SP_099EA_G34BWGNON008_PRIME	008 06:16	008 15:16	109	506	64	679	3509	2830	0	237	53	969	872	-97	2575	50%	97
SP_099EA_G70METNON009_PRIME	009 06:16	009 15:16	97	774	63	934	3509	2575	0	308	53	1295	4268	2972	2973	70%	0

Initial SMT and Data Volume

First Look in Integration:

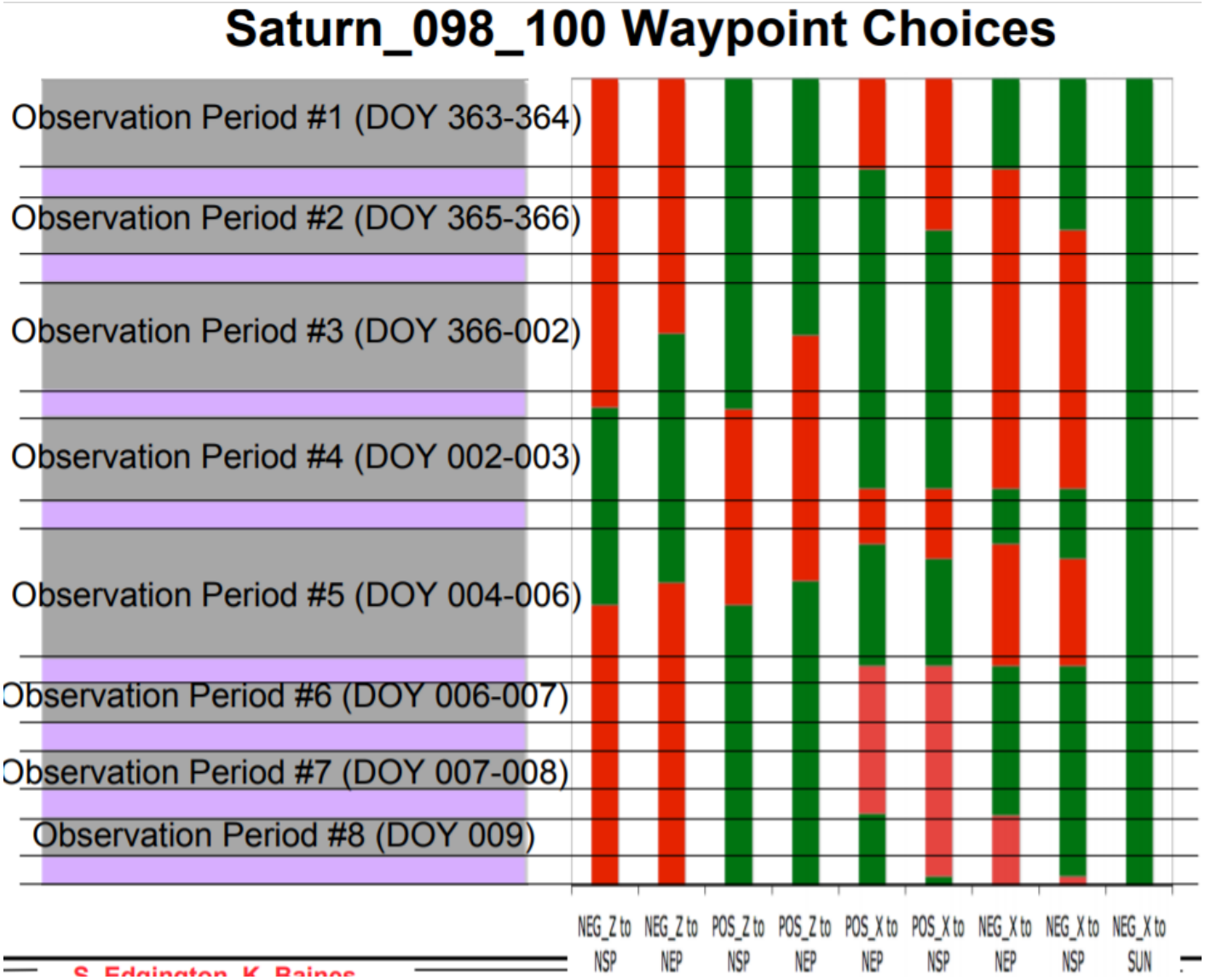
Saturn_098_100 Initial Data Volume Allocation

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	363 16:00	365 00:15	137.7	60.8	292.8	11.6	241.1	100.6	126.1	0.0	152.1	4.5	0.0	0.0	26.4	1153.8
OBSERVATION_OPN	363 16:00	365 00:15	0.0	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0
SP_098EA_M34BWGNON365_PRIME	365 00:15	365 09:15	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	42.4	4.9	0.0	0.0	0.0	235.0
DAILY TOTAL SCIENCE	363 16:00	365 09:15	170.1	77.8	379.2	14.9	241.1	120.1	155.2	0.0	194.5	9.5	0.0	0.0		
OBSERVATION_NOR	365 09:15	366 06:45	77.4	40.6	133.2	17.8	430.1	46.4	69.7	0.0	101.4	227.6	15.0	0.0	17.6	1176.7
SP_099EA_G34BWGNON366_PRIME	366 06:45	366 15:45	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	42.4	4.9	0.0	0.0	0.0	235.0
DAILY TOTAL SCIENCE	365 09:15	366 15:45	109.8	57.5	219.6	21.0	430.1	65.9	98.8	0.0	143.8	232.6	15.0	0.0		
OBSERVATION_NOR	366 15:45	002 06:45	162.0	73.6	209.5	14.0	344.2	84.2	140.1	0.0	183.9	7.3	326.5	0.0	31.9	1577.3
OBSERVATION_OPN	366 15:45	002 06:45	0.0	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0
SP_099EA_G70METNON002_PRIME	002 06:45	002 15:45	49.2	17.0	86.4	3.2	0.0	22.7	40.3	0.0	66.4	4.9	0.0	0.0	0.0	290.3
DAILY TOTAL SCIENCE	366 15:45	002 15:45	211.2	90.5	295.9	17.3	344.2	107.0	180.5	0.0	250.4	12.2	326.5	0.0		
OBSERVATION_NOR	002 15:45	003 23:01	196.6	59.0	18.0	11.3	35.0	84.0	142.3	0.0	621.1	639.5	1300.0	0.0	25.6	3132.3
SP_099EA_M34BWGNON003_PRIME	003 23:01	004 08:01	32.4	17.0	86.4	3.2	0.0	19.4	38.9	0.0	366.2	4.9	0.0	0.0	0.0	568.4
DAILY TOTAL SCIENCE	002 15:45	004 08:01	229.0	76.0	104.4	14.5	35.0	103.5	181.2	0.0	987.3	644.4	1300.0	0.0		
OBSERVATION_NOR	004 08:01	006 06:31	635.4	120.1	131.5	26.8	1164.0	143.4	200.9	0.0	1817.7	646.7	935.0	0.0	38.0	5859.4
OBSERVATION_OPN	004 08:01	006 06:31	0.0	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.0
SP_099EA_G70METNON006_PRIME	006 06:31	006 15:31	32.4	17.0	86.4	3.2	0.0	19.4	38.9	0.0	42.1	4.9	0.0	0.0	0.0	244.4
DAILY TOTAL SCIENCE	004 08:01	006 15:31	667.8	137.0	217.9	30.0	1164.0	162.8	239.8	0.0	1859.8	651.6	935.0	0.0		
OBSERVATION_NOR	006 15:31	007 06:16	53.1	27.8	178.8	5.3	138.1	31.9	63.7	0.0	69.4	45.0	0.0	0.0	12.1	625.2
SP_099EA_G34BWGNON007_PRIME	007 06:16	007 15:16	32.4	17.0	86.4	3.2	0.0	19.4	38.9	0.0	42.4	4.9	0.0	0.0	0.0	244.7
DAILY TOTAL SCIENCE	006 15:31	007 15:16	85.5	44.8	265.2	8.6	138.1	51.3	102.6	0.0	111.9	49.9	0.0	0.0		
OBSERVATION_NOR	007 15:16	008 06:16	75.6	28.3	115.2	5.4	103.1	32.4	59.1	11.7	70.7	0.0	0.0	0.0	12.3	513.8
SP_099EA_G34BWGNON008_PRIME	008 06:16	008 15:16	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	42.4	4.9	0.0	0.0	0.0	235.0
DAILY TOTAL SCIENCE	007 15:16	008 15:16	108.0	45.3	201.6	8.6	103.1	51.8	88.3	11.7	113.2	4.9	0.0	0.0		
OBSERVATION_NOR	008 15:16	009 06:16	182.6	28.3	160.8	5.4	238.1	32.4	48.6	0.0	70.7	0.0	0.0	0.0	12.3	779.2
SP_099EA_G70METNON009_PRIME	009 06:16	009 15:16	91.9	17.0	86.4	13.3	0.0	19.4	29.2	0.0	42.4	5.7	0.0	0.0	0.0	305.3
DAILY TOTAL SCIENCE	008 15:16	009 15:16	274.5	45.3	247.2	18.7	238.1	51.8	77.8	0.0	113.2	5.7	0.0	0.0		

	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)
TOTAL RECORDED (OPNAV data not included)	1855.9	574.3	1931.0	133.6	2693.6	714.2	1124.1	11.7	3774.1	1610.8	2576.5	0.0

Waypoint Selection (1 of 2)



Waypoint Selection (2 of 2)

Saturn_098_100 Waypoint Data

NEG_X to NEP

FR VIOLATED	
2008-363T16:00:00.0	OK
2008-365T00:30:00.0	CIRS RADIATOR FR
2009-003T17:40:00.0	OK
2009-004T13:50:00.0	CIRS RADIATOR FR
2009-006T09:00:00.0	OK
2009-008T14:20:00.0	CIRS RADIATOR FR
2009-009T15:16:00	

NEG_X to NSP

TIME	FR VIOLATED
2008-363T16:00:00.0	OK
2008-365T22:10:00.0	CIRS RADIATOR FR
2009-003T18:00:00.0	OK
2009-004T18:40:00.0	CIRS RADIATOR FR
2009-006T09:20:00.0	OK
2009-009T12:10:00.0	CIRS RADIATOR FR
2009-009T15:16:00	

NEG_X to SUN

TIME	FR VIOLATED
2008-363T16:00:00.0	OK
2009-009T15:16:00	

NEG_Z to NEP

TIME	FR VIOLATED
2008-363T16:00:00.0	CIRS RADIATOR FR
2009-001T10:50:00.0	OK
2009-005T03:10:00.0	CIRS RADIATOR FR
2009-009T15:16:00	

NEG_Z to NSP

TIME	FR VIOLATED
2008-363T16:00:00.0	CIRS RADIATOR FR
2009-002T13:20:00.0	OK
2009-005T11:40:00.0	CIRS RADIATOR FR
2009-009T15:16:00	

POS_X to NEP

TIME	FR VIOLATED
2008-363T16:00:00.0	CIRS RADIATOR FR
2008-365T00:00:00.0	OK
2009-003T17:50:00.0	CIRS RADIATOR FR
2009-004T13:50:00.0	OK
2009-006T09:10:00.0	CIRS RADIATOR FR
2009-008T13:50:00.0	OK
2009-009T15:16:00	

POS_X to NSP

TIME	FR VIOLATED
2008-363T16:00:00.0	CIRS RADIATOR FR
2008-365T21:50:00.0	OK
2009-003T18:00:00.0	CIRS RADIATOR FR
2009-004T18:40:00.0	OK
2009-006T09:20:00.0	CIRS RADIATOR FR
2009-009T12:00:00.0	OK
2009-009T15:16:00	

POS_Z to NEP

TIME	FR VIOLATED
2008-363T16:00:00.0	OK
2009-001T11:10:00.0	CIRS RADIATOR FR
2009-005T03:00:00.0	OK
2009-009T15:16:00	

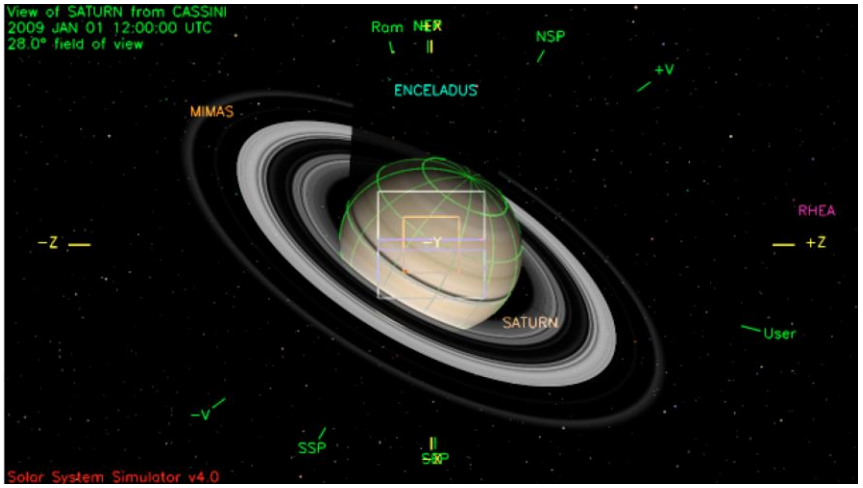
POS_Z to NSP

TIME	FR VIOLATED
2008-363T16:00:00.0	OK
2009-002T13:30:00.0	CIRS RADIATOR FR
2009-005T11:40:00.0	OK
2009-009T15:16:00	

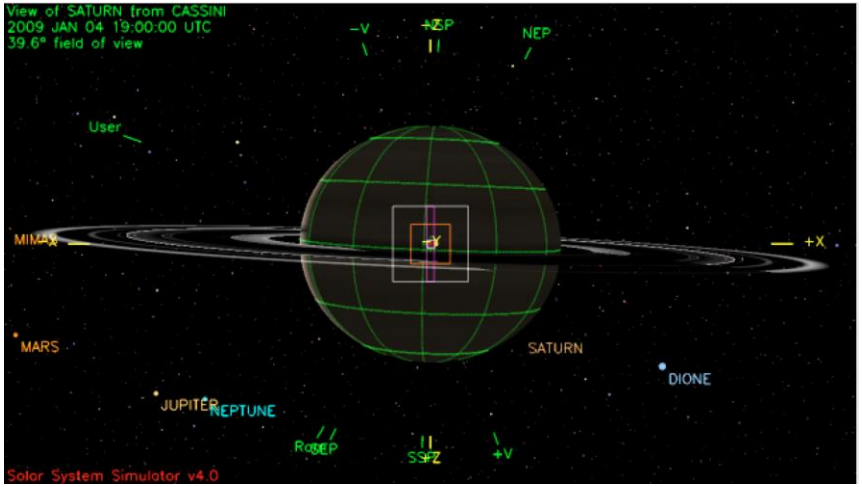
Waypoints Chosen

Waypoint 1 (Whole Segment): ISS_NAC to Saturn, NEG_X to Sun

Inbound



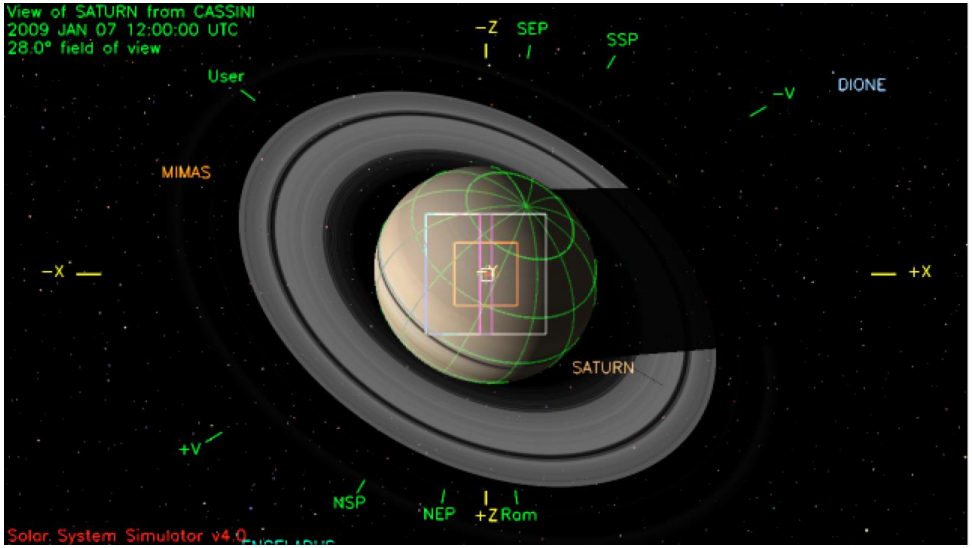
Periapse



Waypoints Chosen

Waypoint 1 (Whole Segment): ISS_NAC to Saturn, NEG_X to Sun

Outbound



Notes & Liens

Notes:

- Pointing:
  - OK
- Data Volume:

SP_099EA_G70METNON002_PRIME -54
SP_099EA_G70METNON005_PRIME -60
SP_099EA_G70METNON006_PRIME -87

- DSN:
  - OK
- Opmodes:
  - RADAR_099TI_SMIDLCAL001_PRIME agreed to 02:40 of warm-up
- Special Activities:
  - None

Sequence Liens:

- None