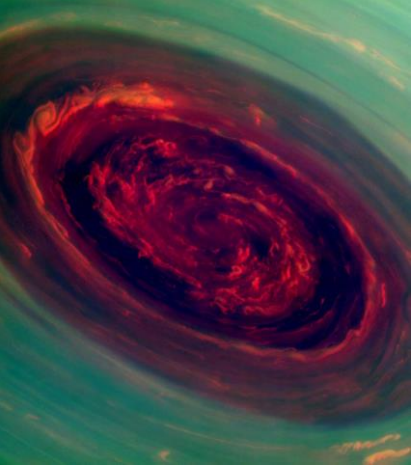
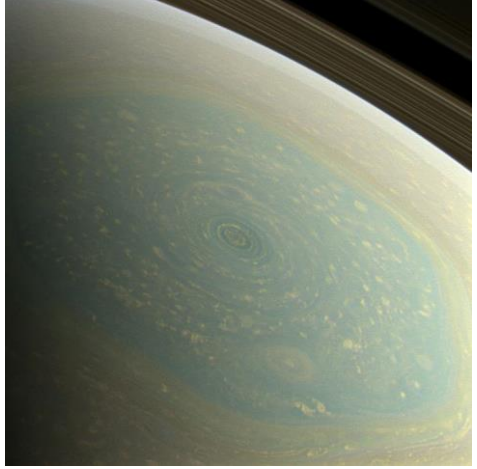
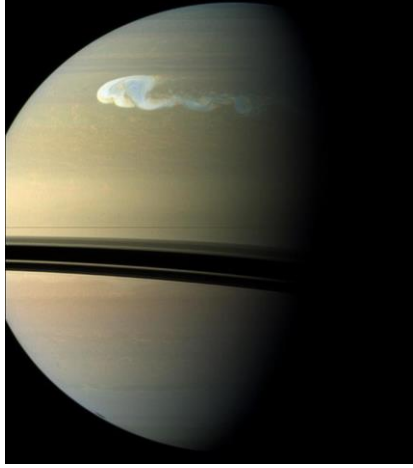


Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 134_135 Segment Legacy Package

Segment Boundary: July 9, 2010 – July 26, 2010
2010-190T10:09:00 – 2010-207T09:06:00 (SCET)

Integration Began 10/26/2009
Segment Delivered to S61 Sequence 12/15/2009
Lead Integrator was Shawn Boll

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 an equatorial segment during the final part of the Equinox Mission. It began a few days prior to Rev 135 apoapse and continued through the periapse and wrapped up about a day after, moving outbound.

- The majority of the segment was comprised of CAKE (Cassini Apoapse for Kronian Exploration) templated activities, such as UVIS EUV/FUVs, CIRS mapping, and wind studies.

- The key periapse science included one of only three opportunities to perform a deep atmosphere campaign with RADAR and VIMS covering the same territory. A Radio Science atmosphere occultation was also conducted.

- Key out-of-discipline activities included irregular rock observations, MAG calibration rolling, and a VIMS Rings-Stellar occultation just prior to periapse.

- Solar geometry impacted the placement of science observations and waypoint selections. Constraint management was requested for the Saturn targeted observations while the Sun was blocked by the planet (see pgs 10 & 23 for more info).

- Reaction wheel friendly attitudes were chosen for the majority of the segment as they were compatible with science desires in this equatorial orbit. Surrounding periapse, the waypoint selection was more complicated as mentioned above.

- Data volume was challenging, requiring multiple rounds of cuts.

Final Sequenced SPASS (1 of 2)

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S61, length = 35 days		2010-176T21:10:00		034T21:41:00	2010-211T18:51:00			
SATURN REV_134_135 Segment		2010-190T10:09:00		016T22:57:00	2010-207T09:06:00			
SP_134SA_WAYPTTURN190_PRIME	M	2010-190T10:09:00		000T00:40:00	2010-190T10:49:00	ISS_NAC to Saturn	NEG_Z to 82.6/84.0	
NEW WAYPOINT		**2010-190T10:49:00**		**001T23:44:00**	**2010-192T10:33:00**	**ISS_NAC to Saturn**	**NEG_Z to 82.6/84.0**	
ISS_134TI_M60R2CLD190_PRIME	C, M, V	2010-190T10:49:00	E134_M60R2CLD190+000T00:00:00	000T01:30:00	2010-190T12:19:00	ISS_NAC to Titan	NEG_Z to 6.774/78.408	
UVIS_134SA_EUVFUV001_PRIME	M	2010-190T12:19:00		000T11:54:00	2010-191T00:13:00	UVIS_FUV to Saturn	NEG_Z to 118.11/83.136	
SP_134EA_DLTURN191_PRIME	M, N	2010-191T00:13:00		000T00:41:00	2010-191T00:54:00	XBAND to Earth	NEG_Y to 89.666/6.618	RBOT A: New RA/DEC and slowed down turn to 7PROFILE 1.00 1.3 2.2 0.009 0.009 0.022
SP_134EA_C34HEFOTP191_PRIME	C, E, M, N	2010-191T00:54:00		000T08:59:00	2010-191T09:53:00	XBAND to Earth	4_Hr_Rolling	RBOT A changed initial secondary attitude RA/DEC to 89.666/6.618
SP_134SA_WAYPTTURN191_PRIME	M	2010-191T09:53:00		000T00:40:00	2010-191T10:33:00	ISS_NAC to Saturn	NEG_Z to 27.222/77.874	RBOT A sped up turn to maximum 7PROFILE 1.92 2.3 3.9 0.009 0.009 0.022, add custom handoff
CIRS_134SA_MIRMAP001_PRIME	M, V	2010-191T10:33:00		000T13:40:00	2010-192T00:13:00	CIRS_FP3 to Saturn	NEG_Z to 27.222/77.874	
SP_134EA_DLTURN192_PRIME	M	2010-192T00:13:00		000T00:40:00	2010-192T00:53:00	XBAND to Earth	NEG_Y to 269.77/-3.62	RBOT A Custom pickup attitude NEG_Z to 19.719/74.296
SP_134EA_C70METOTB192_PRIME	C, M, N	2010-192T00:53:00		000T09:00:00	2010-192T09:53:00	XBAND to Earth	4_Hr_Rolling	NEG_Y to 269.77/-3.62, different from OTP
SP_134SA_WAYPTTURN192_PRIME	M	2010-192T10:08:00		000T00:25:00	2010-192T10:33:00	ISS_NAC to Saturn	NEG_Z to 82.4/84.0	RBOT A delayed start time of waypoint turn by 15 minutes
NEW WAYPOINT		**2010-192T10:33:00**		**006T23:44:00**	**2010-199T10:17:00**	**ISS_NAC to Saturn**	**NEG_Z to 82.4/84.0**	
MAG_134SU_CALROLL002_PRIME	M	2010-192T10:33:00		000T06:45:00	2010-192T17:18:00	NEG_X to Sun (0.0,0.0,-30.0 deg. offset)	Rolling	
ISS_134SA_WIND5HR001_PRIME	M, V	2010-192T17:18:00		000T05:00:00	2010-192T22:18:00	ISS_NAC to Saturn	NEG_Z to 82.4/84.0	collaborative with VIMS
CIRS_134SA_COMPSIT002_PRIME	M, V	2010-192T22:18:00		000T06:00:00	2010-193T04:18:00	CIRS_FP1 to Saturn	NEG_Z to 82.4/84.0	
ISS_134SA_WIND5HR002_PRIME	M	2010-193T04:18:00		000T05:00:00	2010-193T09:18:00	ISS_NAC to Saturn	NEG_Z to 82.4/84.0	collaborative with VIMS
CIRS_134SA_COMPSIT003_PRIME	M, V	2010-193T09:18:00		000T06:00:00	2010-193T15:18:00	CIRS_FP1 to Saturn	NEG_Z to 82.4/84.0	
NAV_134SK_OPNAV931_PRIME	M	2010-193T16:13:00		000T01:30:00	2010-193T17:43:00	ISS_NAC to Satellites	NEG_Z to 82.4/84.0	Starts at waypoint, ends at same waypoint
SP_134EA_DLTURN193_PRIME	M	2010-193T17:58:00		000T00:40:00	2010-193T18:38:00	XBAND to Earth	NEG_X to 302.0/87.0	
SP_134EA_G34HEFNON193_PRIME	C, M	2010-193T19:23:00		000T08:15:00	2010-194T03:38:00	XBAND to Earth	Rolling/SRU	NEG_X to 302 /87, CDA. RBOT A changed second part of rolling/sru to later time and increase number of roll to 7DELTA_BODY_LONG 0.0 0.0 37699.112. ORT was removed from this pass.
SP_134SA_WAYPTTURN194_PRIME	M	2010-194T03:38:00		000T00:40:00	2010-194T04:18:00	ISS_NAC to Saturn	NEG_Z to 82.4/84.0	RBOT A sped up turn to maximum rate 7PROFILE 1.92 2.3 3.9 0.010 0.013 0.022
ISS_134SA_WIND5HR003_PRIME	M	2010-194T04:18:00		000T05:00:00	2010-194T09:18:00	ISS_NAC to Saturn	NEG_Z to 82.4/84.0	collaborative with VIMS
CIRS_134SA_COMPSIT004_PRIME	M	2010-194T09:18:00		000T06:00:00	2010-194T15:18:00	CIRS_FP1 to Saturn	NEG_Z to 82.4/84.0	
ISS_134SA_WIND5HR004_PRIME	M, V	2010-194T15:18:00		000T05:00:00	2010-194T20:18:00	ISS_NAC to Saturn	NEG_Z to 82.4/84.0	collaborative with VIMS
CIRS_134SA_COMPSIT005_PRIME	M	2010-194T20:18:00		000T03:00:00	2010-194T23:18:00	CIRS_FP1 to Saturn	NEG_Z to 82.4/84.0	
SP_134EA_DLTURN195_PRIME	M	2010-195T00:13:00		000T00:40:00	2010-195T00:53:00	XBAND to Earth	NEG_Y to 270.02/-3.26	
SP_134EA_C70METNON195_PRIME	C, M	2010-195T00:53:00		000T09:00:00	2010-195T09:53:00	XBAND to Earth	5_Hr_Rolling	NEG_Y to 270.02/-3.26, (NEG_Y to Saturn (0,0,-9.5)), MIMI
SP_134SA_WAYPTTURN195_PRIME	M	2010-195T09:53:00		000T00:40:00	2010-195T10:33:00	ISS_NAC to Saturn	NEG_Z to 82.4/84.0	
CIRS_134SA_COMPSIT006_PRIME	M	2010-195T10:33:00		000T20:00:00	2010-196T06:33:00	CIRS_FP1 to Saturn	NEG_Z to 82.4/84.0	
Apoapse Per = 19.9 d, inc ...		2010-196T04:18:59		000T00:00:01	2010-196T04:19:00			
UVIS_135SA_EUVFUV001_PRIME	M	2010-196T06:33:00		000T11:00:00	2010-196T17:33:00	UVIS_FUV to Saturn	NEG_Z to 82.4/84.0	
ISS_135OT_KIVPHA075_PRIME	M, U	2010-196T17:33:00		000T04:00:00	2010-196T21:33:00	UVIS_FUV to Rocks	NEG_X to 54.9/5.217	
ISS_135TI_M90R3CLD196_PRIME	C, M, U, V	2010-196T21:33:00	E135_M90R3CLD196+000T00:00:00	000T01:30:00	2010-196T23:03:00	ISS_NAC to Titan	NEG_Z to 82.4/84.0	
SP_135EA_DLTURN196_PRIME	M	2010-196T23:58:00		000T00:40:00	2010-197T00:38:00	XBAND to Earth	NEG_X to 302.0/87.0	
SP_135EA_C34HEFNON197_PRIME	C, M	2010-197T00:38:00		000T09:00:00	2010-197T09:38:00	XBAND to Earth	Rolling/SRU	NEG_X to 302 /87, CDA. RBOT A - changed second half of rolling/sru to start later, also increase number of rolls
SP_135SA_WAYPTTURN197_PRIME	M	2010-197T09:38:00		000T00:40:00	2010-197T10:18:00	ISS_NAC to Saturn	NEG_Z to 82.4/84.0	
CIRS_135SA_COMPSIT001_PRIME	M	2010-197T10:18:00		000T13:00:00	2010-197T23:18:00	CIRS_FP1 to Saturn	NEG_Z to 82.4/84.0	
ISS_135OT_SATELLORB001_PRIME	M	2010-197T23:28:00		000T00:30:00	2010-197T23:58:00	ISS_NAC to Satellites	NEG_Z to 82.4/84.0	
SP_135EA_DLTURN197_PRIME	M	2010-197T23:58:00		000T00:40:00	2010-198T00:38:00	XBAND to Earth	NEG_Y to 270.23/-3.06	
SP_135EA_C34BWGNON198_PRIME	C, M	2010-198T00:38:00		000T09:00:00	2010-198T09:38:00	XBAND to Earth	Rolling/SRU	NEG_Y to 270.23/-3.06, (NEG_Y to Saturn (0,0,-9.5)), MIMI
SP_135SA_WAYPTTURN198_PRIME	M	2010-198T09:38:00		000T00:40:00	2010-198T10:18:00	ISS_NAC to Saturn	NEG_Z to 82.4/84.0	
UVIS_135SA_EUVFUV004_PRIME	M	2010-198T10:18:00		000T13:39:00	2010-198T23:57:00	UVIS_FUV to Saturn	NEG_Z to 82.4/84.0	
SP_135EA_DLTURN198_PRIME	M	2010-198T23:57:00		000T00:40:00	2010-199T00:37:00	XBAND to Earth	NEG_X to 276.964/71.318	RBOT A changed secondary RA/DEC to 276.964/71.318
SP_135EA_C34BWGOTP199_PRIME	C, E, M, N	2010-199T00:37:00		000T09:00:00	2010-199T09:37:00	XBAND to Earth	4_Hr_Rolling	NEG_X to 302 /87, CDA
SP_135SA_WAYPTTURN199_PRIME	M	2010-199T09:37:00		000T00:40:00	2010-199T10:17:00	ISS_NAC to Saturn	NEG_Z to 85.1/84.2	RBOT A increase turn rate to maximum 7PROFILE 1.92 2.3 3.9 0.009 0.009 0.022
NEW WAYPOINT		**2010-199T10:17:00**		**002T12:35:00**	**2010-201T22:52:00**	**ISS_NAC to Saturn**	**NEG_Z to 85.1/84.2**	

Gap 1

Gap 2

Gap 3

Gap 4

Final Sequenced SPASS (2 of 2)

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
ISS_135SA_WIND2HR001_PRIME	M	2010-199T10:17:00		000T02:00:00	2010-199T12:17:00	ISS_NAC to Saturn	NEG_Z to 85.1/84.2	collaborative with VIMS
CIRS_135SA_COMPSIT002_PRIME	M	2010-199T12:17:00		000T09:00:00	2010-199T21:17:00	CIRS_FP1 to Saturn	NEG_Z to 85.1/84.2	
ISS_135SA_WIND2HR002_PRIME	M	2010-199T21:17:00		000T02:00:00	2010-199T23:17:00	ISS_NAC to Saturn	NEG_Z to 85.1/84.2	collaborative with VIMS
SP_135EA_DLTURN199_PRIME	M	2010-199T23:42:00		000T00:40:00	2010-200T00:22:00	XBAND to Earth	NEG_X to 302.0/87.0	
SP_135EA_C70METOTB200_PRIME	C, M, N	2010-200T00:22:00		000T09:00:00	2010-200T09:22:00	XBAND to Earth	4_Hr_Rolling	NEG_X to 302 /87, different from OTP
SP_135SA_WAYPTTURN200_PRIME	M	2010-200T09:22:00		000T00:40:00	2010-200T10:02:00	ISS_NAC to Saturn	NEG_Z to 85.1/84.2	
CIRS_135SA_MIRMAP001_PRIME	M, V	2010-200T10:02:00		001T11:00:00	2010-201T21:02:00	CIRS_FP3 to Saturn	NEG_Z to 85.1/84.2	
ISS_135OT_SATELLORB002_PRIME	M	2010-201T21:02:00		000T00:30:00	2010-201T21:32:00	ISS_NAC to Satellites	NEG_Z to 85.1/84.2	
SP_135EA_DLTURN201_PRIME	M	2010-201T22:12:00		000T00:40:00	2010-201T22:52:00	XBAND to Earth	NEG_Y to 270.55/-2.69	
NEW WAYPOINT		**2010-201T22:52:00**		**000T11:10:00**	**2010-202T10:02:00**	**XBAND to Earth**	**NEG_Y to 270.55/-2.69**	
SP_135EA_C34HEFSEQ202_PRIME	C, M	2010-202T00:22:00		000T09:00:00	2010-202T09:22:00	XBAND to Earth	Rolling/SRU	NEG_Y to 270.55/-2.69, (NEG_Y to Saturn (0,0,-9.5)), MIMI
SP_135SA_WAYPTTURN202_PRIME	M	2010-202T09:22:00		000T00:40:00	2010-202T10:02:00	ISS_NAC to Saturn	NEG_Z to 85.1/84.2	
NEW WAYPOINT		**2010-202T10:02:00**		**001T12:35:00**	**2010-203T22:37:00**	**ISS_NAC to Saturn**	**NEG_Z to 85.1/84.2**	
UVIS_135SA_EUVFUV002_PRIME	M	2010-202T10:02:00		000T19:30:00	2010-203T05:32:00	UVIS_FUV to Saturn	NEG_Z to 85.1/84.2	
ISS_135TI_M30R2CLD203_PRIME	C, M, U, V	2010-203T05:32:00	E135_M30R2CLD203+000T00:00:00	000T01:30:00	2010-203T07:02:00	ISS_NAC to Titan	NEG_Z to 259.996/32.774	
ISS_135SA_NALGTNG001_PRIME	M	2010-203T07:02:00		000T14:00:00	2010-203T21:02:00	ISS_NAC to Saturn	NEG_Z to 85.1/84.2	collaborative with VIMS
SP_135EA_DLTURN203_PRIME	M	2010-203T21:57:00		000T00:40:00	2010-203T22:37:00	XBAND to Earth	NEG_X to 302.0/87.0	
NEW WAYPOINT		**2010-203T22:37:00**		**000T11:10:00**	**2010-204T09:47:00**	**XBAND to Earth**	**NEG_X to 302.0/87.0**	
SP_135EA_C70METSEQ204_PRIME	C, M	2010-204T00:07:00		000T09:00:00	2010-204T09:07:00	XBAND to Earth	6_Hr_Rolling	NEG_X to 302 /87, CDA
SP_135SA_WAYPTTURN204_PRIME	M	2010-204T09:07:00		000T00:40:00	2010-204T09:47:00	ISS_NAC to Saturn	NEG_Z to 85.0/84.2	
NEW WAYPOINT		**2010-204T09:47:00**		**000T06:35:00**	**2010-204T16:22:00**	**ISS_NAC to Saturn**	**NEG_Z to 85.0/84.2**	
UVIS_135SA_EUVFUV003_PRIME	M	2010-204T09:47:00		000T05:55:00	2010-204T15:42:00	UVIS_FUV to Saturn	NEG_Z to 85.0/84.2	
SP_135EA_DLTURN204_PRIME	M	2010-204T15:42:00		000T00:33:00	2010-204T16:15:00	XBAND to Earth (0.0,0.0,20.0 deg. offset)	NEG_X to NEP	Part 1 of 2-part Turn
SP_135EA_DLTURN404_PRIME	M	2010-204T16:15:00		000T00:07:00	2010-204T16:22:00	XBAND to Earth	NEG_X to NEP	Part 2 of 2-part Turn
NEW WAYPOINT		**2010-204T16:22:00**		**000T11:10:00**	**2010-205T03:32:00**	**XBAND to Earth**	**NEG_X to NEP**	
ENGR_135SC_KPTYBIAS204_PRIME	M	2010-204T16:22:00		000T01:30:00	2010-204T17:52:00	XBAND to Earth	NEG_X to NEP	
SP_135EA_G34BWGSEQ204_PRIME	C, M, R	2010-204T17:52:00		000T09:00:00	2010-205T02:52:00	XBAND to Earth	NEG_X to NEP	NEG_X to NEP, CAPS. RBOT A deleted roll
SP_135SA_WAYPTTURN205_PRIME	M	2010-205T02:52:00		000T00:40:00	2010-205T03:32:00	ISS_NAC to Saturn (0.0,0.0,20.0 deg. offset)	POS_X to NSP	RBOT A slowed down turn rate to 7PROFILE 1.10 1.30 2.2 0.009 0.009 0.022
NEW WAYPOINT		**2010-205T03:32:00**		**000T18:40:00**	**2010-205T22:12:00**	**ISS_NAC to Saturn (0.0,0.0,20.0 deg. offset)**	**POS_X to NSP**	
VIMS_135SA_GLOBDYN001_PRIME	I, M, R	2010-205T03:32:00		000T10:01:00	2010-205T13:33:00	ISS_NAC to Saturn (0.0,-8.594,0.0 deg. offset)	POS_X to NSP	PIE
SP_135SA_DEADTIME205_PRIME	**M, R**	**2010-205T13:33:00**		**000T00:10:00**	**2010-205T13:43:00**	**ISS_NAC to Saturn (0.0,0.0,20.0 deg. offset)**	**POS_X to NSP**	
RSS_135SA_OCCIN001_PRIME	I, M	2010-205T13:43:00	LMB_E135_Saturn_RSS_OCC_ING-000T00:58:37	000T02:09:00	2010-205T15:52:00	XBAND to Earth	POS_X to NSP	PIE
SP_135SA_DEADTIME405_PRIME	**I, M**	**2010-205T15:52:00**		**000T00:10:00**	**2010-205T16:02:00**	**ISS_NAC to Saturn (0.0,0.0,20.0 deg. offset)**	**POS_X to NSP**	
VIMS_135SA_GLOBDYN002_PRIME	I, M	2010-205T16:02:00		000T03:13:00	2010-205T19:15:00	ISS_NAC to Saturn	POS_X to NSP	PIE
VIMS_135RI_OMICETOCC001_PRIME	M	2010-205T19:15:00		000T02:27:00	2010-205T21:42:00	VIMS_IR to 34.836/-2.978 (0.0,5.157,0.0 deg. offset)	POS_X to NSP	PIE
SP_135SA_WAYPTTURN405_PRIME	M	2010-205T21:42:00		000T00:30:00	2010-205T22:12:00	NEG_Z to Saturn	NEG_X to Sun	
NEW WAYPOINT		**2010-205T22:12:00**		**000T13:30:00**	**2010-206T11:42:00**	**NEG_Z to Saturn**	**NEG_X to Sun**	
RADAR_135SA_GLOBALMAP001_PRIME	M	2010-205T22:12:00		000T13:00:00	2010-206T11:12:00	NEG_Z to Saturn	NEG_Y to NSP	Saturn PIE.
Periapse R = 3.438 Rs, lat ...		2010-206T03:13:43		000T00:00:01	2010-206T03:13:44			
SP_135SA_WAYPTTURN206_PRIME	M	2010-206T11:12:00		000T00:30:00	2010-206T11:42:00	ISS_NAC to Saturn (0.0,0.0,-20.0 deg. offset)	NEG_X to NSP	RBOT A sped up turn to maximum rate 7PROFILE 1.92 2.3 3.9 0.009 0.009 0.019
NEW WAYPOINT		**2010-206T11:42:00**		**000T12:24:00**	**2010-207T00:06:00**	**ISS_NAC to Saturn (0.0,0.0,-20.0 deg. offset)**	**NEG_X to NSP**	
VIMS_135SA_GLOBDYN003_PRIME	I, M	2010-206T11:42:00		000T11:44:00	2010-206T23:26:00	ISS_NAC to Saturn	NEG_X to NSP	PIE
SP_135EA_DLTURN206_PRIME	M	2010-206T23:26:00		000T00:40:00	2010-207T00:06:00	XBAND to Earth	NEG_X to NEP	
NEW WAYPOINT		**2010-207T00:06:00**		**000T09:22:00**	**2010-207T09:28:00**	**XBAND to Earth**	**NEG_X to NEP**	
ENGR_135SC_KPTYBIAS207_PRIME	M	2010-207T00:06:00		000T00:45:00	2010-207T00:51:00	XBAND to Earth	NEG_X to NEP	
SP_135EA_C70METNON206_PRIME	M	2010-207T00:51:00		000T08:15:00	2010-207T09:06:00	XBAND to Earth	NEG_X to NEP	NEG_X to NEP; RBOT A deleted roll

Gap 5

Gap 6

Gap 7

Gap 8

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 (%)	CAROVR (Mb)
SP_134EA_C34HEFOTP191_PRIME	191 00:54	191 09:53	199	712	62	973	3308	2335	0	237	53	1262	635	-628	1405	11%	627
SP_134EA_C70METOTB192_PRIME	192 00:53	192 09:53	627	793	63	1483	3308	1824	0	237	53	1773	3178	1404	1405	11%	0
SP_134EA_G34HEFNON193_PRIME	193 19:23	194 03:38	0	2051	142	2192	3308	1115	0	170	49	2411	796	-1616	0	0%	1616
SP_134EA_C70METNON195_PRIME	195 00:53	195 09:53	1616	1481	90	3186	3308	121	0	188	53	3428	3199	-229	0	0%	228
SP_135EA_C34HEFNON197_PRIME	197 00:38	197 09:38	228	1635	164	2028	3308	1280	0	225	53	2306	752	-1554	0	0%	1554
SP_135EA_C34BWGNON198_PRIME	198 00:38	198 09:38	1554	499	63	2116	3308	1191	0	225	53	2395	673	-1722	144	1%	1722
SP_135EA_C34BWGOTP199_PRIME	199 00:37	199 09:37	1722	661	63	2446	3308	861	0	225	53	2725	557	-2169	144	1%	2168
SP_135EA_C70METOTB200_PRIME	200 00:22	200 09:22	2168	760	62	2990	3308	317	0	225	53	3269	3146	-123	144	1%	122
SP_135EA_C34HEFSEQ202_PRIME	202 00:22	202 09:22	122	1479	165	1767	3308	1541	0	225	53	2045	739	-1307	144	1%	1306
SP_135EA_C70METSEQ204_PRIME	204 00:07	204 09:07	1306	1546	164	3015	3308	292	0	225	53	3294	3135	-159	144	1%	159
SP_135EA_G34BWGSEQ204_PRIME	204 17:52	205 02:52	159	427	37	623	3308	2684	0	186	53	862	651	-212	144	2%	211
SP_135EA_C70METNON206_PRIME	207 00:51	207 09:06	211	2757	196	3164	3308	144	0	131	49	3343	2931	-412	678	11%	412

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

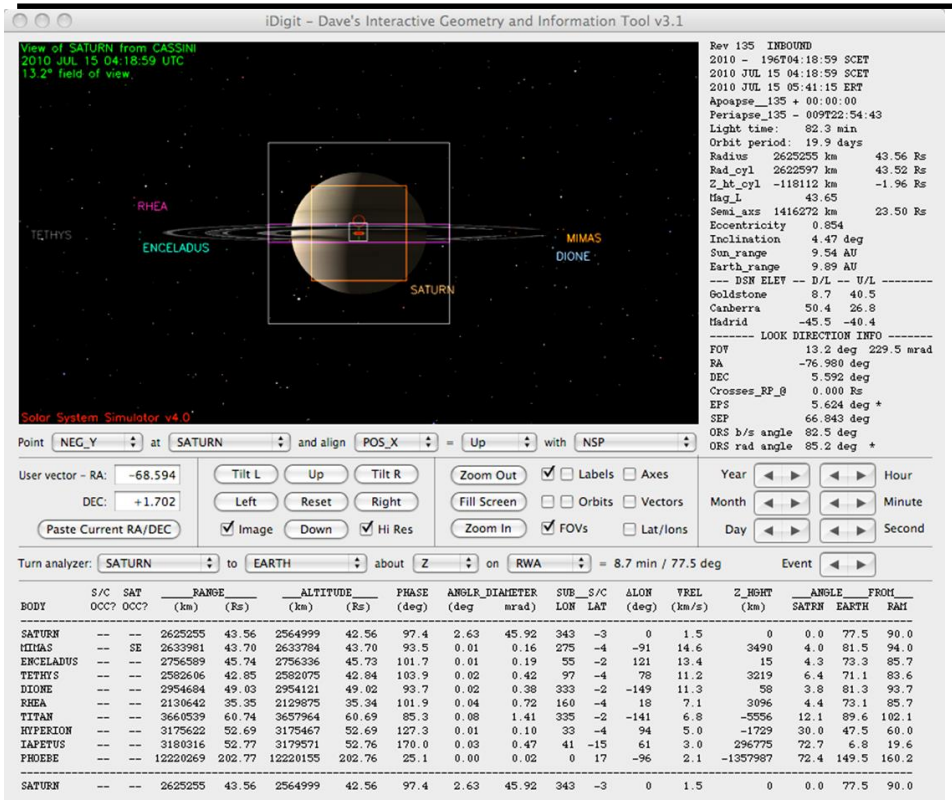
Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	190 10:09	191 00:54	53.1	27.8	21.6	5.3	223.0	31.9	47.8	0.0	69.0	215.6	10.0	0.0	61.6	766.7
SP_134EA_C34HEFOTP191_PRIME	191 00:54	191 09:53	32.3	16.9	86.4	3.2	0.0	19.4	29.1	0.0	42.1	4.9	0.0	0.0	0.0	234.5
DAILY TOTAL SCIENCE	190 10:09	191 09:53	85.4	44.8	108.0	8.5	223.0	51.3	76.9	0.0	111.2	220.5	10.0	0.0	61.6	
OBSERVATION_NOR	191 09:53	192 00:53	54.0	28.3	196.8	5.4	0.0	32.4	48.6	0.0	70.3	0.0	350.0	0.0	62.7	848.5
SP_134EA_C70METOTB192_PRIME	192 00:53	192 09:53	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	42.1	4.9	0.0	0.0	0.0	234.7
DAILY TOTAL SCIENCE	191 09:53	192 09:53	86.4	45.3	283.2	8.6	0.0	51.8	77.8	0.0	112.5	4.9	350.0	0.0	62.7	
OBSERVATION_NOR	192 09:53	193 19:23	120.6	63.2	172.8	12.1	810.0	81.8	108.5	0.0	114.6	80.1	425.0	0.0	140.0	2128.7
OBSERVATION_SI	192 09:53	193 19:23	0.0	0.0	0.0	0.0	43.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.5
SP_134EA_G34HEFNON193_PRIME	193 19:23	194 03:38	29.7	15.6	43.2	3.0	0.0	17.8	26.7	0.0	28.2	4.5	0.0	0.0	0.0	168.7
DAILY TOTAL SCIENCE	192 09:53	194 03:38	150.3	78.8	216.0	15.0	853.5	99.6	135.3	0.0	142.8	84.6	425.0	0.0	140.0	
OBSERVATION_NOR	194 03:38	195 00:53	98.8	40.1	129.6	7.7	810.0	45.9	68.8	0.0	72.7	68.8	125.0	0.0	88.8	1556.2
SP_134EA_C70METNON195_PRIME	195 00:53	195 09:53	38.7	17.0	43.2	3.2	0.0	19.4	29.2	0.0	30.8	4.9	0.0	0.0	0.0	186.4
DAILY TOTAL SCIENCE	194 03:38	195 09:53	137.5	57.1	172.8	10.9	810.0	65.3	98.0	0.0	103.5	73.8	125.0	0.0	88.8	

Final Sequenced SMT and Data Volume (2 of 2)

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

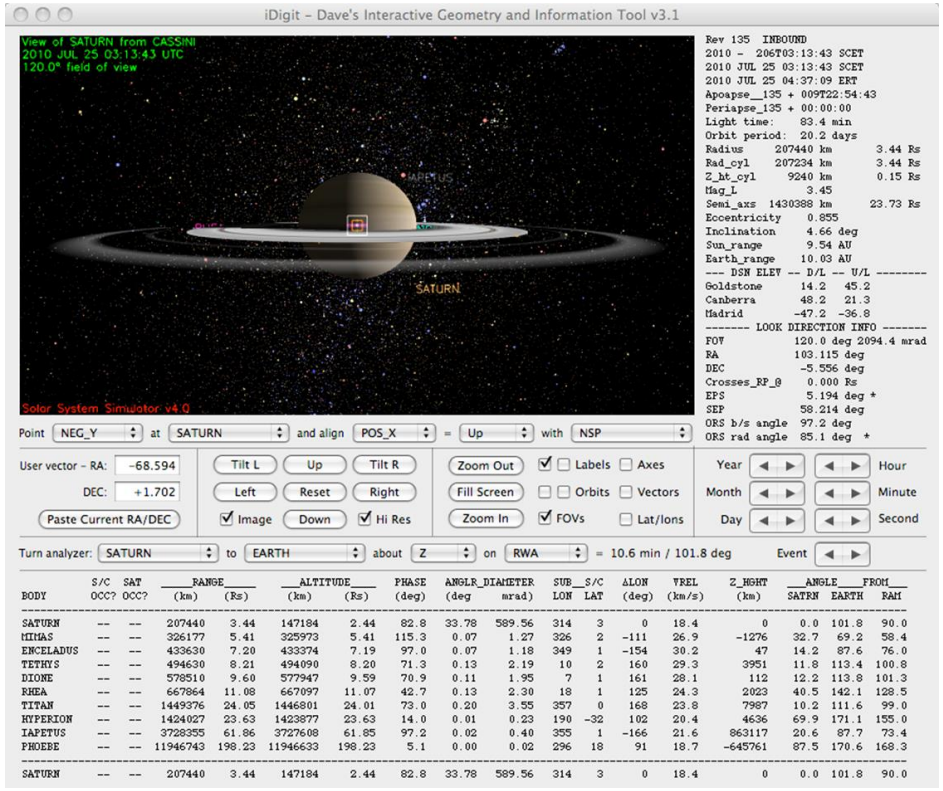
Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	195 09:53	197 00:38	139.5	73.1	309.6	24.0	373.0	83.7	125.6	0.0	132.5	349.6	10.0	0.0	162.0	1782.6
SP_135EA_C34HEFNON197_PRIME	197 00:38	197 09:38	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	30.8	4.9	0.0	0.0	0.0	223.3
DAILY TOTAL SCIENCE	195 09:53	197 09:38	171.9	90.1	396.0	27.3	373.0	103.1	154.7	0.0	163.3	354.6	10.0	0.0	162.0	
OBSERVATION_NOR	197 09:38	198 00:38	54.0	28.3	187.2	5.4	40.0	32.4	48.6	0.0	51.3	47.1	0.0	0.0	62.7	557.0
SP_135EA_C34BWGNON198_PRIME	198 00:38	198 09:38	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	30.8	4.9	0.0	0.0	0.0	223.3
DAILY TOTAL SCIENCE	197 09:38	198 09:38	86.4	45.3	273.6	8.6	40.0	51.8	77.8	0.0	82.1	52.0	0.0	0.0	62.7	
OBSERVATION_NOR	198 09:38	199 00:37	53.9	28.3	0.0	5.4	188.0	32.4	48.5	0.0	51.2	247.3	0.0	0.0	62.6	717.6
SP_135EA_C34BWGOTP199_PRIME	199 00:37	199 09:37	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	30.8	4.9	0.0	0.0	0.0	223.3
DAILY TOTAL SCIENCE	198 09:38	199 09:37	86.3	45.2	86.4	8.6	188.0	51.8	77.7	0.0	82.0	252.2	0.0	0.0	62.6	
OBSERVATION_NOR	199 09:37	200 00:22	53.1	27.8	129.6	5.3	360.0	31.9	47.8	0.0	50.4	47.1	0.0	0.0	61.6	814.7
SP_135EA_C70METOTB200_PRIME	200 00:22	200 09:22	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	30.8	4.9	0.0	0.0	0.0	223.3
DAILY TOTAL SCIENCE	199 09:37	200 09:22	85.5	44.8	216.0	8.6	360.0	51.3	76.9	0.0	81.2	52.0	0.0	0.0	61.6	
OBSERVATION_NOR	200 09:22	202 00:22	140.4	73.6	504.0	14.0	40.0	84.2	126.4	0.0	133.4	0.0	350.0	0.0	163.0	1629.0
SP_135EA_C34HEFSEQ202_PRIME	202 00:22	202 09:22	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	30.8	4.9	0.0	0.0	0.0	223.3
DAILY TOTAL SCIENCE	200 09:22	202 09:22	172.8	90.5	590.4	17.3	40.0	103.7	155.5	0.0	164.2	4.9	350.0	0.0	163.0	
OBSERVATION_NOR	202 09:22	204 00:07	139.5	73.1	21.6	14.0	573.0	83.7	125.6	0.0	132.5	358.7	10.0	0.0	162.0	1693.6
SP_135EA_C70METSEQ204_PRIME	204 00:07	204 09:07	32.4	17.0	86.4	3.2	0.0	19.4	29.2	0.0	30.8	4.9	0.0	0.0	0.0	223.3
DAILY TOTAL SCIENCE	202 09:22	204 09:07	171.9	90.1	108.0	17.2	573.0	103.1	154.7	0.0	163.3	363.6	10.0	0.0	162.0	
OBSERVATION_NOR	204 09:07	204 17:52	31.5	16.5	0.0	3.2	188.0	18.9	28.4	0.0	29.9	107.2	0.0	0.0	36.6	460.1
SP_135EA_G34BWGSEQ204_PRIME	204 17:52	205 02:52	32.4	17.0	43.2	3.2	0.0	19.4	29.2	0.0	34.6	4.9	0.0	0.0	0.0	184.0
DAILY TOTAL SCIENCE	204 09:07	205 02:52	63.9	33.5	43.2	6.4	188.0	38.3	57.5	0.0	64.5	112.1	0.0	0.0	36.6	
OBSERVATION_NOR	205 02:52	207 00:51	165.5	86.7	0.0	26.6	430.0	81.8	149.0	52.0	294.2	0.4	1445.7	0.0	192.2	2924.1
SP_135EA_C70METNON206_PRIME	207 00:51	207 09:06	29.7	15.6	0.0	3.0	0.0	14.7	26.7	0.0	35.2	4.5	0.0	0.0	0.0	129.4
DAILY TOTAL SCIENCE	205 02:52	207 09:06	195.2	102.3	0.0	29.6	430.0	96.4	175.7	52.0	329.4	4.9	1445.7	0.0	192.2	

Segment Geometry



Apoapse (Left)

Periapse (below)



	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	33.15	78.7	-1
Apoapse	43.56	97.4	-3
Periapse	3.44	82.8	3
Segment End	15.92	51.9	1

Solar Geometry – ORS Boresight Concerns

ORS Boresight Solar constraints on science pointing from 205T13:19 – 20:39, where it was not safe to look at Saturn center

Sun behind Saturn from 16:00 – 19:45

Daily Science Highlights (1 of 2)

DOY 190: The Saturn 134_135 segment started with an ORS Titan cloud monitor request on this day. Afterwards, UVIS occupied most of the day with an EUV/FUV, which involved slow scans across Saturn's visible hemisphere to form spectral images. MAPS was occupied with a magnetospheric boundaries campaign.

DOY 191: The entire day was devoted to a CIRS Saturn Mid-IR Map, which helps determine Saturn's upper troposphere and tropopause temperature with spatial resolution of about two degrees of latitude and longitude. MAPS continued with a magnetospheric boundaries campaign.

DOY 192: MAG performed a periodic calibration that entailed a roll about an axis other than Z for determination of sensor offsets. ISS and VIMS spent time building their Saturn wind speed template by staring and shooting every 10 minutes to mosaic in longitude. CIRS measured oxygen compounds (H2O, CO2) in Saturn's stratosphere as a function of latitude, while VIMS rode along. MAPS continued with a magnetospheric boundaries campaign.

DOY 193: ISS and VIMS spent time building their Saturn wind speed template by staring and shooting every 10 minutes to mosaic in longitude. CIRS measured oxygen compounds (H2O, CO2) in Saturn's stratosphere as a function of latitude, while VIMS rode along. ISS snapped a couple of pictures for optical navigation. MAPS continued with a magnetospheric boundaries campaign.

DOY 194: ISS and VIMS spent time building their Saturn wind speed template by staring and shooting every 10 minutes to mosaic in longitude. CIRS measured oxygen compounds (H2O, CO2) in Saturn's stratosphere as a function of latitude, while VIMS rode along. MAPS continued with a magnetospheric boundaries campaign.

DOY 195: CIRS measured oxygen compounds (H2O, CO2) in Saturn's stratosphere as a function of latitude. MAPS teams transitioned to an auroral campaign to observe the auroral magnetosphere (e.g. the acceleration region) and SKR source regions of Saturn.

DOY 196: Following the spacecraft's passage through apoapse, UVIS conducted an EUV/FUV, which involved slow scans across Saturn's visible hemisphere to form spectral images. ISS and UVIS took a look at the small irregular moon Kiviuq before turning their attention to Titan for another cloud monitor. MAPS continued their auroral campaign.

DOY 197: CIRS measured oxygen compounds (H2O, CO2) in Saturn's stratosphere as a function of latitude. ISS took a look at small satellites for orbit determination. MAPS continued their auroral campaign.

DOY 198: UVIS occupied the entire day with an EUV/FUV, which involved slow scans across Saturn's visible hemisphere to form spectral images. MAPS continued their auroral campaign.

DOY 199: ISS and VIMS spent time building their Saturn wind speed template by staring and shooting every 10 minutes to mosaic in longitude. CIRS measured oxygen compounds (H2O, CO2) in Saturn's stratosphere as a function of latitude, while VIMS rode along. MAPS continued with their auroral campaign.

DOY 200: The entire day was devoted to a CIRS Saturn Mid-IR Map, which helps determine Saturn's upper troposphere and tropopause temperature with spatial resolution of about two degrees of latitude and longitude. MAPS continued with their auroral campaign.

Daily Science Highlights (2 of 2)

DOY 201: Most of the day was devoted to a CIRS Saturn Mid-IR Map, which helps determine Saturn's upper troposphere and tropopause temperature with spatial resolution of about two degrees of latitude and longitude. ISS followed with a look at small satellites for orbit determination. MAPS continued with their auroral campaign.

DOY 202: UVIS occupied the entire day with an EUV/FUV, which involved slow scans across Saturn's visible hemisphere to form spectral images. MAPS transitioned back to their magnetospheric boundaries campaign.

DOY 203: ORS teams took another look at Titan as part of the cloud monitoring campaign. ISS looked for lightning on Saturn, with VIMS riding along. MAPS continued their magnetospheric boundaries campaign.

DOY 204: UVIS occupied the entire day with an EUV/FUV, which involved slow scans across Saturn's visible hemisphere to form spectral images. MAPS conducted periapse survey observations.

DOY 205: VIMS started the highest priority period of this Saturn segment with a Saturn global dynamics mosaic for deep atmospheric studies, followed by an RSS Saturn atmospheric occultation. This RSS occultation of Saturn's ionosphere and atmosphere measured vertical profiles of electron density in the ionosphere, and of density, pressure, and temperature in the neutral atmosphere. X, S, and Ka bands were used. Following the occultation, VIMS performed another round of global dynamics and then an omiCet star-ring occultation. MAPS conducted periapse survey observations.

DOY 206: As the spacecraft traveled through periapse, this high priority day was split between a RADAR Saturn global map and another period of VIMS Saturn global dynamics. MAPS conducted periapse survey observations.

Segment Integration Planning

Timeline Gaps and Suggested Observations

Request	Start (SCET)	Duration	End (SCET)	Comments
GAP 1	2010-193T09:18:00	000T08:40:00	2010-193T17:58:00	CAKE
GAP 2	2010-194T20:18:00	000T03:55:00	2010-195T00:13:00	CAKE
GAP 3	2010-196T06:33:00	000T17:25:00	2010-196T23:58:00	CAKE
GAP 4	2010-197T20:18:00	000T03:10:00	2010-197T23:28:00	CAKE
GAP 5	2010-201T08:32:00	000T13:40:00	2010-201T22:12:00	CAKE
GAP 6	2010-203T02:02:00	000T19:55:00	2010-203T21:57:00	CAKE
GAP 7	2010-205T03:32:00	000T01:58:00	2010-205T05:30:00	
GAP 8	2010-206T22:42:00	000T00:44:00	2010-206T23:26:00	

Initial SMT and Data Volume

Beginning of Integration:

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 (Mb)
SP_134EA_C34HEFOTP191_PRIME	191 00:53	191 09:53	0	498	62	561	3550	2989	0	155	53	769	636	-133	2929	23%	132
SP_134EA_C70METOTB192_PRIME	192 00:53	192 09:53	132	425	63	621	3550	2929	0	135	53	809	3178	2368	3112	24%	0
SP_134EA_G34HEFNON193_PRIME	193 18:38	194 03:38	0	1739	138	1877	3550	1673	0	155	53	2085	855	-1230	743	6%	1230
SP_134EA_C70METNON195_PRIME	195 00:53	195 09:53	1230	1488	90	2807	3550	743	0	161	53	3021	3199	178	1610	12%	0
SP_135EA_C34HEFNON197_PRIME	197 00:38	197 09:38	0	1320	164	1483	3550	2066	0	155	53	1691	752	-940	1405	11%	939
SP_135EA_C34BWGNON198_PRIME	198 00:38	198 09:38	939	487	63	1490	3550	2060	0	155	53	1698	673	-1026	1405	12%	1025
SP_135EA_C34BWGOTP199_PRIME	199 00:37	199 09:37	1025	507	63	1596	3550	1954	0	155	53	1803	557	-1247	1405	12%	1247
SP_135EA_C70METOTB200_PRIME	200 00:22	200 09:22	1247	808	62	2117	3550	1432	0	155	53	2325	3146	821	1405	13%	0
SP_135EA_C34HEFSEQ202_PRIME	202 00:22	202 09:22	0	1220	165	1385	3550	2165	0	155	53	1592	739	-854	584	8%	853
SP_135EA_C70METSEQ204_PRIME	204 00:07	204 09:07	853	1404	164	2421	3550	1129	0	155	53	2628	3135	506	584	8%	0
SP_135EA_G34HEFSEQ204_PRIME	204 17:52	205 02:52	0	221	37	257	3550	3292	0	115	53	426	800	373	77	2%	0
SP_135EA_C70METNON207_PRIME	207 00:06	207 09:06	0	3654	192	3846	3550	-296	0	270	53	3872	3102	-771	0	0%	770

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

CAKE data volume templates modeled as ISS data.

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	190 10:09	191 00:53	53.0	27.8	0.0	5.3	0.0	31.8	63.6	0.0	69.5	242.7	0.0	0.0	61.6	555.4
SP_134EA_C34HEFOTP191_PRIME	191 00:53	191 09:53	32.4	17.0	0.0	3.2	0.0	19.4	38.9	0.0	42.5	0.0	0.0	0.0	0.0	153.5
DAILY TOTAL SCIENCE	190 10:09	191 09:53	85.4	44.8	0.0	8.5	0.0	51.3	102.5	0.0	112.0	242.7	0.0	0.0	61.6	
OBSERVATION_NOR	191 09:53	192 00:53	54.0	28.3	196.8	5.4	0.0	1.4	64.8	0.0	70.9	0.0	0.0	0.0	62.7	484.3
SP_134EA_C70METOTB192_PRIME	192 00:53	192 09:53	32.4	17.0	0.0	3.2	0.0	0.0	38.9	0.0	42.4	0.0	0.0	0.0	0.0	133.9
DAILY TOTAL SCIENCE	191 09:53	192 09:53	86.4	45.3	196.8	8.6	0.0	1.4	103.7	0.0	113.3	0.0	0.0	0.0	62.7	
OBSERVATION_NOR	192 09:53	193 18:38	117.9	61.8	172.8	11.8	960.0	102.7	141.5	0.0	154.5	0.0	0.0	0.0	136.9	1859.8
SP_134EA_G34HEFNON193_PRIME	193 18:38	194 03:38	32.4	17.0	0.0	3.2	0.0	19.4	38.9	0.0	42.4	0.0	0.0	0.0	0.0	153.4
DAILY TOTAL SCIENCE	192 09:53	194 03:38	150.3	78.8	172.8	15.0	960.0	122.2	180.4	0.0	196.9	0.0	0.0	0.0	136.9	
OBSERVATION_NOR	194 03:38	195 00:53	98.8	40.1	129.6	7.7	960.0	45.9	91.8	0.0	100.2	0.0	0.0	0.0	88.8	1562.8
SP_134EA_C70METNON195_PRIME	195 00:53	195 09:53	38.7	17.0	0.0	3.2	0.0	19.4	38.9	0.0	42.4	0.0	0.0	0.0	0.0	159.7
DAILY TOTAL SCIENCE	194 03:38	195 09:53	137.5	57.1	129.6	10.9	960.0	65.3	130.7	0.0	142.7	0.0	0.0	0.0	88.8	

Initial SMT and Data Volume

Beginning of Integration:

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	195 09:53	197 00:38	139.5	73.1	288.0	24.0	150.0	83.7	167.4	0.0	182.7	199.3	0.0	0.0	162.0	1469.7
SP_135EA_C34HEFNON197_PRIME	197 00:38	197 09:38	32.4	17.0	0.0	3.2	0.0	19.4	38.9	0.0	42.4	0.0	0.0	0.0	0.0	153.4
DAILY TOTAL SCIENCE	195 09:53	197 09:38	171.9	90.1	288.0	27.3	150.0	103.1	206.3	0.0	225.2	199.3	0.0	0.0	162.0	
OBSERVATION_NOR	197 09:38	198 00:38	54.0	28.3	187.2	5.4	40.0	32.4	64.8	0.0	70.7	0.0	0.0	0.0	62.7	545.5
SP_135EA_C34BWGNON198_PRIME	198 00:38	198 09:38	32.4	17.0	0.0	3.2	0.0	19.4	38.9	0.0	42.4	0.0	0.0	0.0	0.0	153.4
DAILY TOTAL SCIENCE	197 09:38	198 09:38	86.4	45.3	187.2	8.6	40.0	51.8	103.7	0.0	113.2	0.0	0.0	0.0	62.7	
OBSERVATION_NOR	198 09:38	199 00:37	53.9	28.3	0.0	5.4	0.0	32.4	64.7	0.0	70.7	247.3	0.0	0.0	62.6	565.2
SP_135EA_C34BWGOTP199_PRIME	199 00:37	199 09:37	32.4	17.0	0.0	3.2	0.0	19.4	38.9	0.0	42.4	0.0	0.0	0.0	0.0	153.4
DAILY TOTAL SCIENCE	198 09:38	199 09:37	86.3	45.2	0.0	8.6	0.0	51.8	103.6	0.0	113.1	247.3	0.0	0.0	62.6	
OBSERVATION_NOR	199 09:37	200 00:22	53.1	27.8	129.6	5.3	420.0	31.9	63.7	0.0	69.6	0.0	0.0	0.0	61.6	862.6
SP_135EA_C70METOTB200_PRIME	200 00:22	200 09:22	32.4	17.0	0.0	3.2	0.0	19.4	38.9	0.0	42.4	0.0	0.0	0.0	0.0	153.4
DAILY TOTAL SCIENCE	199 09:37	200 09:22	85.5	44.8	129.6	8.6	420.0	51.3	102.6	0.0	112.0	0.0	0.0	0.0	61.6	
OBSERVATION_NOR	200 09:22	202 00:22	140.4	73.6	504.0	14.0	40.0	84.2	168.5	0.0	183.9	0.0	0.0	0.0	163.0	1371.7
SP_135EA_C34HEFSEQ202_PRIME	202 00:22	202 09:22	32.4	17.0	0.0	3.2	0.0	19.4	38.9	0.0	42.4	0.0	0.0	0.0	0.0	153.4
DAILY TOTAL SCIENCE	200 09:22	202 09:22	172.8	90.5	504.0	17.3	40.0	103.7	207.4	0.0	226.4	0.0	0.0	0.0	163.0	
OBSERVATION_NOR	202 09:22	204 00:07	139.5	73.1	0.0	14.0	350.0	83.7	167.4	0.0	182.7	380.4	0.0	0.0	162.0	1552.8
SP_135EA_C70METSEQ204_PRIME	204 00:07	204 09:07	32.4	17.0	0.0	3.2	0.0	19.4	38.8	0.0	42.4	0.0	0.0	0.0	0.0	153.3
DAILY TOTAL SCIENCE	202 09:22	204 09:07	171.9	90.1	0.0	17.2	350.0	103.1	206.2	0.0	225.2	380.4	0.0	0.0	162.0	
OBSERVATION_NOR	204 09:07	204 17:52	31.5	16.5	0.0	3.2	0.0	18.9	0.0	0.0	41.3	107.2	0.0	0.0	36.6	255.1
SP_135EA_G34HEFSEQ204_PRIME	204 17:52	205 02:52	32.4	17.0	0.0	3.2	0.0	19.4	0.0	0.0	42.3	0.0	0.0	0.0	0.0	114.4
DAILY TOTAL SCIENCE	204 09:07	205 02:52	63.9	33.5	0.0	6.4	0.0	38.3	0.0	0.0	83.6	107.2	0.0	0.0	36.6	
OBSERVATION_NOR	205 02:52	207 00:06	162.8	521.1	0.0	26.3	0.0	100.3	0.0	50.4	1199.9	0.0	1560.0	0.0	189.0	3809.9
SP_135EA_C70METNON207_PRIME	207 00:06	207 09:06	32.4	135.8	0.0	3.2	0.0	53.6	0.0	0.0	42.2	0.0	0.0	0.0	0.0	267.3
DAILY TOTAL SCIENCE	205 02:52	207 09:06	195.2	656.9	0.0	29.6	0.0	153.9	0.0	50.4	1242.1	0.0	1560.0	0.0	189.0	

	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)	1493.6	1322.3	1608.0	166.6	2920.0	897.3	1447.0	50.4	2905.7	1176.9	1560.0	0.0

Waypoint Selection

RBOT FRIENDLY WAYPOINTS

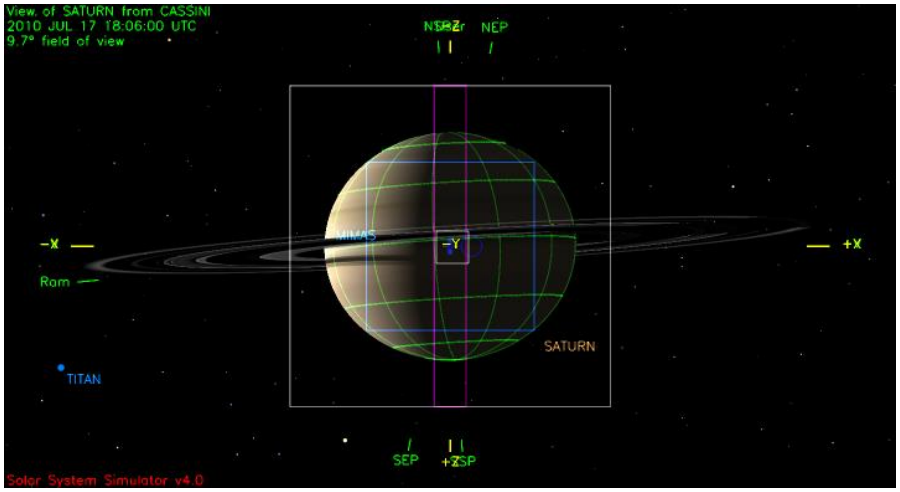
PRIMARY : NEG_Y to SATURN

OBSERVATION PERIOD	START	END	POS_X	NEG_X	POS_Z	NEG_Z
SP_134NA_C34OBSNON190_NA	2010-190T10:09:00	2010-191T00:53:00	82.6/ 84.0	82.6/ 84.0	------	82.6/ 84.0
SP_134NA_C70OBSNON191_NA	2010-191T09:53:00	2010-192T00:53:00	82.6/ 84.0	82.6/ 84.0	------	82.6/ 84.0
SP_134NA_G34OBSNON192_NA	2010-192T09:53:00	2010-193T18:38:00	82.4/ 84.0	82.4/ 84.0	------	82.4/ 84.0
SP_134NA_C70OBSNON194_NA	2010-194T03:38:00	2010-195T00:53:00	82.4/ 84.0	82.4/ 84.0	------	82.4/ 84.0
SP_134NA_C34OBSNON195_NA	2010-195T09:53:00	2010-197T00:38:00	82.4/ 84.0	82.4/ 84.0	------	82.4/ 84.0
SP_135NA_C34OBSNON197_NA	2010-197T09:38:00	2010-198T00:38:00	82.4/ 84.0	82.4/ 84.0	------	82.4/ 84.0
SP_135NA_C34OBSNON198_NA	2010-198T09:38:00	2010-199T00:37:00	82.4/ 84.0	82.4/ 84.0	------	82.4/ 84.0
SP_135NA_C70OBSNON199_NA	2010-199T09:37:00	2010-200T00:22:00	85.1/ 84.2	85.1/ 84.2	------	85.1/ 84.2
SP_135NA_C34OBSNON200_NA	2010-200T09:22:00	2010-202T00:22:00	85.1/ 84.2	85.1/ 84.2	------	85.1/ 84.2
SP_135NA_C70OBSNON202_NA	2010-202T09:22:00	2010-204T00:07:00	85.1/ 84.2	85.1/ 84.2	------	85.1/ 84.2
SP_135NA_G34OBSNON204_NA	2010-204T09:07:00	2010-204T17:52:00	85.0/ 84.2	85.0/ 84.2	------	85.0/ 84.2
SP_135NA_C70OBSNON205_NA	2010-205T02:52:00	2010-207T00:06:00	------	------	------	------
SP_135NA_M34OBSNON207_NA	2010-207T09:06:00	2010-209T09:51:00	------	------	------	------

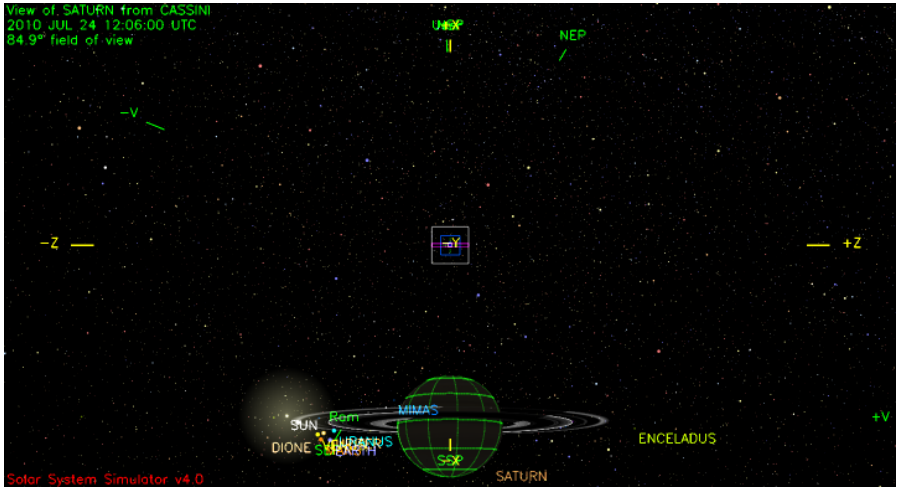
- ORS to Sun violations from 205T13:19 – 20:39
  - Saturn-based waypoints will not work at this time.
  - XBAND to Earth is safe with the usual secondaries.

Waypoints Chosen

Waypoint 1 (2010-190T10:49:00 – 2010-205T03:32:00): ISS_NAC to Saturn; NEG_Z to 83.5/84*
*RWA wheel friendly attitude used, RA/Dec varied slightly over time. Using average here.

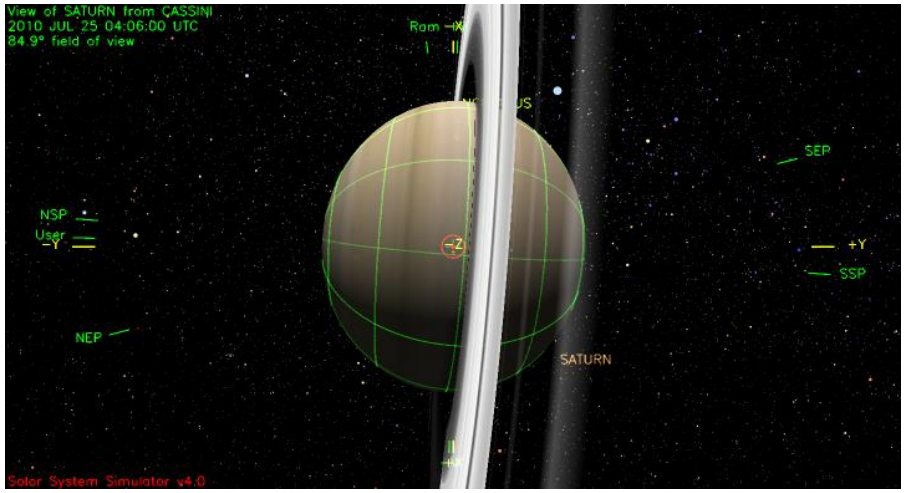


Waypoint 2 (2010-205T03:32:00 – 2010-205T22:12:00): ISS_NAC to Saturn (0, 0, 20); POS_X to NSP

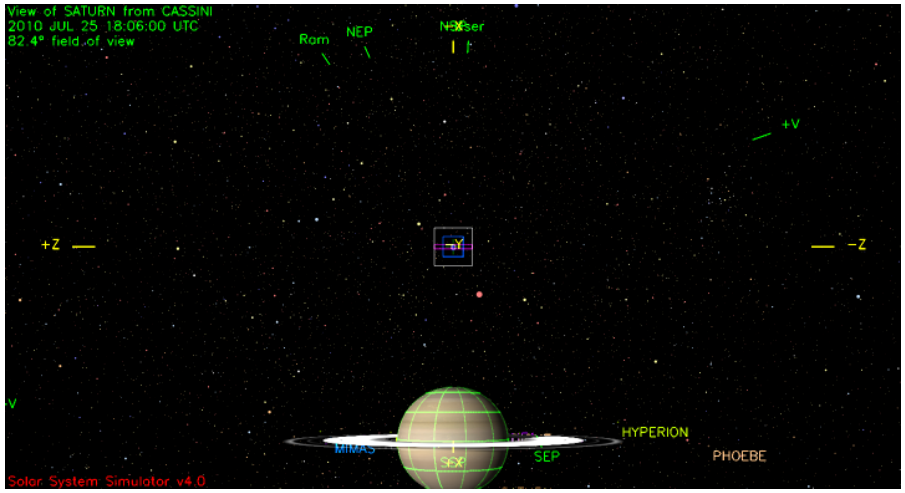


Waypoints Chosen

Waypoint 3 (2010-205T22:12:00– 2010-206T11:42:00): NEG_Z to Saturn; NEG_X to Sun.



Waypoint 4 (2010-206T11:42:00 – 2010-207T00:06:00): ISS_NAC to Saturn (0, 0, -20); NEG_X to NSP



Notes & Liens (1 of 3)

• Saturn TWT is nominally placing the Y-bias windows over the downlink, except where we are required to do otherwise.

• If the final placement of a Y-bias results in an SSR overflow that exceeds the guideline for negative margin and the overflow is contained to the Saturn TWT segment, we will write a waiver if it is felt that data under-utilization will cover it. If the overflow is too much for comfort, we will cut data based on an observation priority basis.

• If the bias results in carryover into the next segment that causes a corresponding SSR overflow, we will either write a waiver, per impacted TWT/OSTs approval, or cut data in the same manner as above.

Notes & Liens (2 of 3)

• No Biases during (overlapping) the RSS science observations: Occultation experiments (rings, Saturn atmospheric, Titan, Satellite), Bistatic observations and prime gravity observations.

- RSS Saturn atmospheric Occultation at 205T14:09 – 15:26.

• For gravity observations, the requirement is no biases (thruster firing) in arcs devoted to gravity observations. A gravity arc is defined as the time between the start of the first tracking pass and the end of the last pass, so if there's a gap in between the tracking passes, there should be no biases there as well. Any firing in this arc would destroy the coherence of the trajectory and would lead to an unpredictable result. **TWT/OST to provide exact times of this no_bias arc**

- No RSS gravity observations in this segment.

No Biases during Gravity Science Enhancements. If unavoidable, RSS prefers to protect GSE's in this order:
a. GSEs that bracket prime gravity observations
b. GSEs that bracket close satellite flybys (example: Enceladus)
c. GSEs that bracket occultation experiments
d. Other GSEs
If a bias is needed during the GSE, RSS prefers that it's done at the earliest possible time during the inbound GSE, and latest possible time during the outbound GSE.

- GSE at 204T17:52 – 205T02:52 (priority "c" as indicated above)

Notes & Liens (3 of 3)

- Pointing:
  - Collaborative activities have been identified in the SPASS Comment Field
    - ISS WIND5HRs with VIMS
    - ISS NALGTNG with VIMS
  - 2-part downlink turn on DOY 204 to avoid POS_X to Sun violations
  - RBOT friendly secondaries used throughout the segment where they were safe
    - Most observations using waypoint secondary; if they differ it is **intended** and should not be changed without TWT approval.
- Data Volume:
  - Carryover of 49 Mbs to the MAG 135 segment – approved by MAG_TWT
- DSN:
  - No Issues
- Opmodes:
  - Nothing “unique”, but RSSK for ORTs, RSS3ARWA for Saturn Occ, and RADWU for RADAR on DOY 205
- Special Activities:
  - LMB for RSS Saturn Occ.

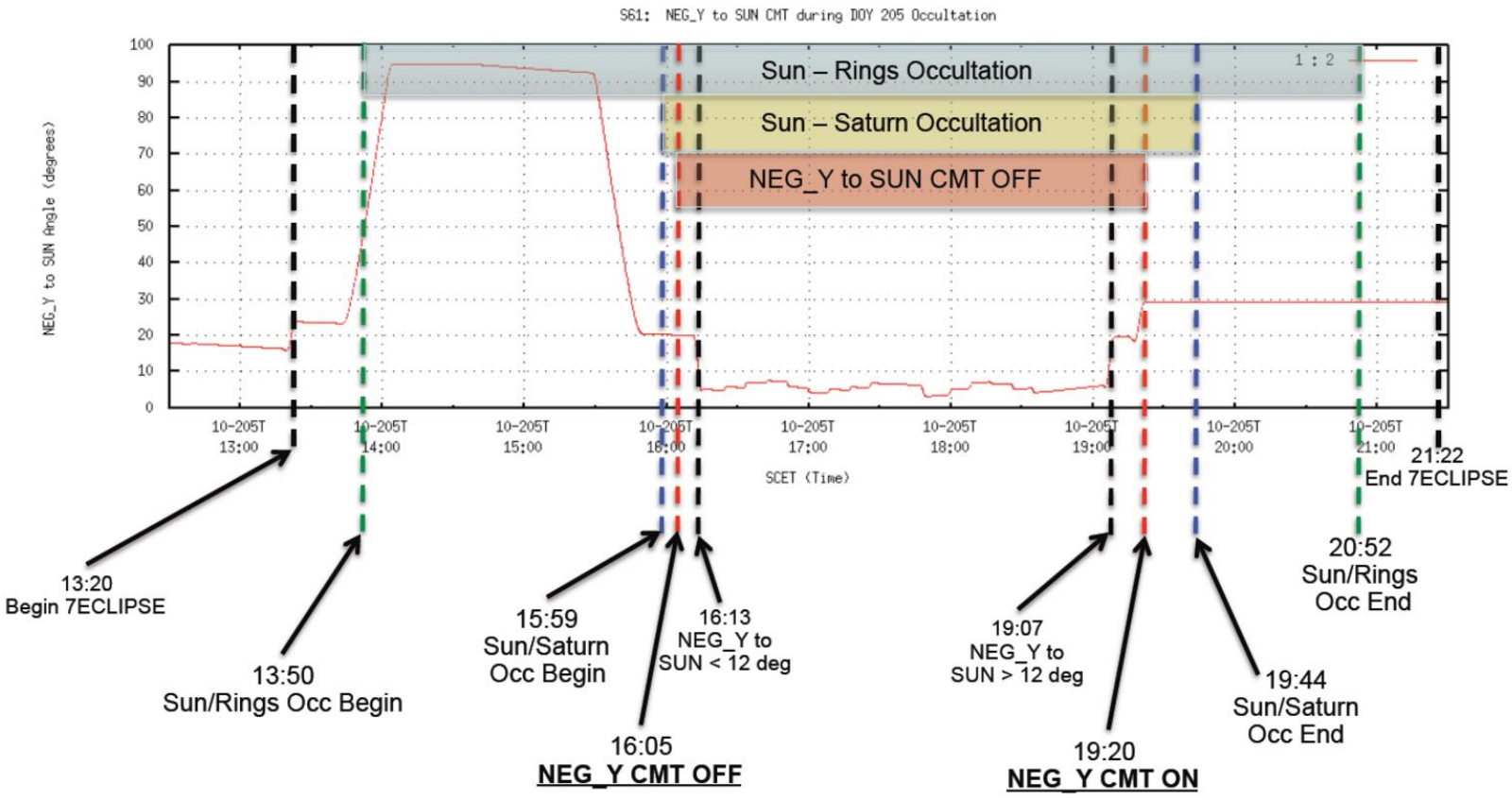
Sequence Liens:

- None

CMT Management: -Y to Sun violation

CMT Management for DOY 205 Occultation

JPL — S61 Peer Review



VIMS turn times:
205T16:11:00
205T19:04:00

- 07/24/10 DOY205 RSS Sun/Ring OCC egress, Earth/OCC Saturn egress
  - **LMB:** 2010-205T13:49:00 - 2010-205T15:46:00, deadtimes 10:00/10:00

Todd Brown — 10 — Mar 29, 2010