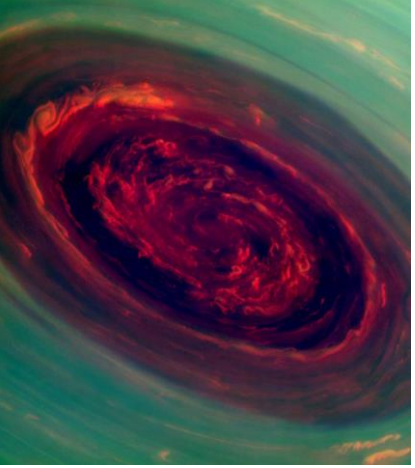

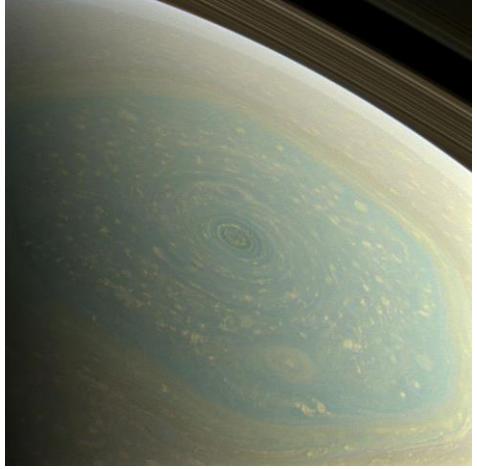
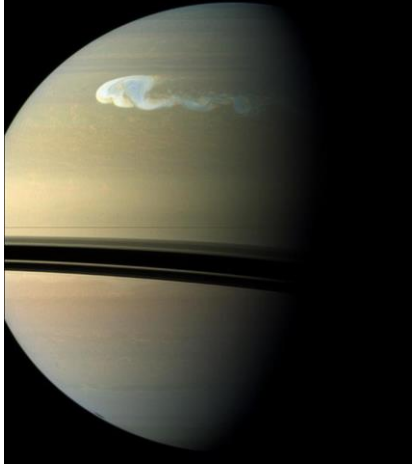

Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 195_196 Segment Legacy Package

Segment Boundary: July 28, 2013 – August 14, 2013
2013-209T11:09:00 – 2013-226T09:51:00 (SCET)

Integration Began 10/29/2012
Segment Delivered to S79 Sequence 12/13/2012
Lead Integrator was Kathleen Kelleher

Legacy Package Assembled by Kathleen Kelleher

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Segment Overview and Final Products

Segment Summary

- Saturn 195-196 was a nearly 17-day “CAKE” (Cassini Apoapse for Kronian Exploration) segment in the second inclined phase (IN-1B) of Solstice Mission in S79.
- The timeline was filled primarily with typical CAKE template activities, such as wind studies, UVIS EUV/FUV PIE series, and CIRS-led composition and mapping. Other Saturn observations included a VIMS Saturn global movie.
- Noteworthy out-of-discipline activities included Titan Cloud Monitoring campaign, a Level 3 RSS ring occultation of Saturn, MAG calibration rolling, and an Opnav. An ISS observation of an irregular small satellite (Paaliaq) was also performed, as was a UVIS Iapetus Exosphere target of Gamma Ori to look for volatiles. CDA also performed an Interstellar cosmic dust observation.
- A single waypoint was chosen for the entire segment.
- Significant data cuts in several rounds and one station upgrade were necessary to fit the data volume into available resources.

Final Sequenced SPASS (1 of 2)

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence 579, length = 68 days		2013-158T00:45:00		068T09:06:00	2013-226T09:51:00			
SATURN_195_196 Segment		2013-209T11:09:00		016T22:42:00	2013-226T09:51:00			
SP_195SA_WAYPTTURN209_PRIME		2013-209T11:09:00		000T00:34:00	2013-209T11:43:00	ISS_NAC to Saturn	NEG_X to Sun	
NEW WAYPOINT		**2013-209T11:43:00**		**000T12:40:00**	**2013-210T00:23:00**	**ISS_NAC to Saturn**	**NEG_X to Sun**	
UVIS_195SA_EUVPIE007_PRIME	I	2013-209T11:43:00		000T12:00:00	2013-209T23:43:00	UVIS_FUV to Saturn	NEG_X to Sun	
SP_195EA_DLTURN409_PRIME		2013-209T23:43:00		000T00:40:00	2013-210T00:23:00	XBAND to Earth	NEG_Y to 50.0/20.0	
NEW WAYPOINT		**2013-210T00:23:00**		**000T11:10:00**	**2013-210T11:33:00**	**XBAND to Earth**	**NEG_Y to 50.0/20.0**	
SP_195EA_YGAP210_PRIME		2013-210T00:23:00		000T01:30:00	2013-210T01:53:00	XBAND to Earth	NEG_Y to 50.0/20.0	
SP_195EA_C34BWGNON210_PRIME	C	2013-210T01:53:00		000T09:00:00	2013-210T10:53:00	XBAND to Earth	5_Hr_Rolling	MIMI. NEG_Y to Saturn (0,0,-45) changed due to waypoint issues. SID suspend. CIRS heating
SP_195SA_WAYPTTURN210_PRIME		2013-210T10:53:00		000T00:40:00	2013-210T11:33:00	ISS_NAC to Saturn	NEG_X to Sun	
NEW WAYPOINT		**2013-210T11:33:00**		**000T14:20:00**	**2013-211T01:53:00**	**ISS_NAC to Saturn**	**NEG_X to Sun**	
NAV_195SK_OPNAV101_PRIME		2013-210T11:33:00		000T01:30:00	2013-210T13:03:00	ISS_NAC to Satellites	NEG_X to Sun	No Preference to secondary pointing. Starts at waypoint, ends at same waypoint
UVIS_195SA_EUVPIE008_PRIME	I	2013-210T13:03:00		000T12:00:00	2013-211T01:03:00	UVIS_FUV to Saturn	NEG_X to Sun	
SP_195EA_DLTURN211_PRIME		2013-211T01:13:00		000T00:40:00	2013-211T01:53:00	XBAND to Earth	NEG_Y to 50.0/20.0	
NEW WAYPOINT		**2013-211T01:53:00**		**000T09:40:00**	**2013-211T11:33:00**	**XBAND to Earth**	**NEG_Y to 50.0/20.0**	
SP_195EA_C34HEFOTP211_PRIME	C,E,N	2013-211T01:53:00		000T09:00:00	2013-211T10:53:00	XBAND to Earth	4_Hr_Rolling	MIMI. NEG_Y to Saturn (0,0,-45). OTP. SID suspend. CIRS heating
SP_195SA_WAYPTTURN211_PRIME		2013-211T10:53:00		000T00:40:00	2013-211T11:33:00	ISS_NAC to Saturn	NEG_X to Sun	
NEW WAYPOINT		**2013-211T11:33:00**		**000T14:20:00**	**2013-212T01:53:00**	**ISS_NAC to Saturn**	**NEG_X to Sun**	
ISS_195TI_M90R2CLD211_PRIME	C,V	2013-211T11:33:00	E195_M90R2CLD211+000T00:00:00	000T01:30:00	2013-211T13:03:00	ISS_NAC to Titan	NEG_X to Sun	No Preference to secondary pointing
UVIS_195SA_EUVPIE009_PRIME	I	2013-211T13:03:00		000T12:00:00	2013-212T01:03:00	UVIS_FUV to Saturn	NEG_X to Sun	
SP_195EA_DLTURN212_PRIME		2013-212T01:13:00		000T00:40:00	2013-212T01:53:00	XBAND to Earth	NEG_Y to 50.0/20.0	
NEW WAYPOINT		**2013-212T01:53:00**		**002T09:25:00**	**2013-214T11:18:00**	**XBAND to Earth**	**NEG_Y to 50.0/20.0**	
SP_195EA_C34UNQOTB212_PRIME	C,N	2013-212T01:53:00		000T09:00:00	2013-212T10:53:00	XBAND to Earth	4_Hr_Rolling	MIMI. NEG_Y to Saturn (0,0,-45). Same secondary as OTP pass. OTB. SID suspend
ISS_195OT_PAAROT102_PRIME	U	2013-212T10:53:00		001T13:15:00	2013-214T00:08:00	UVIS_FUV to Rocks	NEG_Z to NSP	
SP_195EA_YGAP214_PRIME		2013-214T00:08:00		000T01:30:00	2013-214T01:38:00	XBAND to Earth	NEG_X to 50.0/20.0	
SP_195EA_C70METNON214_PRIME	C	2013-214T01:38:00		000T08:00:00	2013-214T09:38:00	XBAND to Earth	Rolling/SRU	MIMI. NEG_Y to (302/6.5) changed due to waypoint issues. SID suspend. CIRS heating
SP_195SA_WAYPTTURN214_PRIME		2013-214T10:38:00		000T00:40:00	2013-214T11:18:00	ISS_NAC to Saturn	NEG_X to Sun	
NEW WAYPOINT		**2013-214T11:18:00**		**001T06:35:00**	**2013-215T17:53:00**	**ISS_NAC to Saturn**	**NEG_X to Sun**	
VIMS_195SA_GLOBMOV001_PRIME		2013-214T11:18:00		000T22:00:00	2013-215T09:18:00	ISS_NAC to Saturn	NEG_Z to NSP	
CIRS_195SA_COMPSIT001_PRIME		2013-215T09:18:00		000T07:55:00	2013-215T17:13:00	CIRS_FPB to Saturn	NEG_Z to NSP	
SP_195EA_DLTURN215_PRIME		2013-215T17:13:00		000T00:40:00	2013-215T17:53:00	XBAND to Earth	NEG_X to 298.0/25.0	
NEW WAYPOINT		**2013-215T17:53:00**		**000T11:10:00**	**2013-216T05:03:00**	**XBAND to Earth**	**NEG_X to 298.0/25.0**	
SP_195EA_YGAP215_PRIME		2013-215T17:53:00		000T01:30:00	2013-215T19:23:00	XBAND to Earth	NEG_X to 298.0/25.0	
SP_195EA_G34BWGSEQ215_PRIME	C,E,R	2013-215T19:23:00		000T09:00:00	2013-216T04:23:00	XBAND to Earth	NEG_X to 298.0/25.0	CDA. NEG_X to (298/25). CIRS heating
SP_195SA_WAYPTTURN216_PRIME		2013-216T04:23:00		000T00:40:00	2013-216T05:03:00	ISS_NAC to Saturn	NEG_X to Sun	
NEW WAYPOINT		**2013-216T05:03:00**		**000T18:49:00**	**2013-216T23:52:00**	**ISS_NAC to Saturn**	**NEG_X to Sun**	
ISS_195TI_M120R2HZ216_PRIME	C,V	2013-216T05:03:00	E195_M120R2HZ216+000T00:00:00	000T01:30:00	2013-216T06:33:00	ISS_NAC to Titan (0.0,3.0,0.0 deg. offset)	NEG_X to Sun	
UVIS_195SA_EUVFUV010_PRIME	I,M	2013-216T06:33:00		000T16:39:00	2013-216T23:12:00	UVIS_FUV to Saturn	NEG_X to Sun	
SP_195EA_DLTURN216_PRIME	M	2013-216T23:12:00		000T00:40:00	2013-216T23:52:00	XBAND to Earth	NEG_X to 298.0/25.0	
NEW WAYPOINT		**2013-216T23:52:00**		**000T11:10:00**	**2013-217T11:02:00**	**XBAND to Earth**	**NEG_X to 298.0/25.0**	
SP_195EA_YGAP216_PRIME	M	2013-216T23:52:00		000T01:30:00	2013-217T01:22:00	XBAND to Earth	NEG_X to 298.0/25.0	
SP_195EA_C70UNQSEQ217_PRIME	C,M	2013-217T01:22:00		000T09:00:00	2013-217T10:22:00	XBAND to Earth	NEG_X to 298.0/25.0	CDA. NEG_X to (298/25). CIRS heating
SP_195SA_WAYPTTURN217_PRIME		2013-217T10:22:00		000T00:40:00	2013-217T11:02:00	ISS_NAC to Saturn	NEG_X to Sun	

Final Sequenced SPASS (2 of 2)

NEW WAYPOINT		2013-217T11:02:00		000T12:50:00	2013-217T23:52:00	ISS_NAC to Saturn	NEG_X to Sun	
CIRS_195SA_MIRMAP001_PRIME	V	2013-217T11:02:00		000T12:10:00	2013-217T23:12:00	CIRS_FP3 to Saturn	NEG_Z to NSP	
Apoapse Per = 23.9 d, Inc ..		2013-217T16:37:48		000T00:00:01	2013-217T16:37:49			
SP_196EA_DLTURN217_PRIME		2013-217T23:12:00		000T00:40:00	2013-217T23:52:00	XBAND to Earth	NEG_X to 298.0/25.0	
NEW WAYPOINT		2013-217T23:52:00		000T11:10:00	2013-218T11:02:00	XBAND to Earth	NEG_X to 298.0/25.0	
SP_196EA_YGAP217_PRIME		2013-217T23:52:00		000T01:30:00	2013-218T01:22:00	XBAND to Earth	NEG_X to 298.0/25.0	
SP_196EA_C34HEFSEQ218_PRIME	C, M	2013-218T01:22:00		000T09:00:00	2013-218T10:22:00	XBAND to Earth	NEG_X to 298.0/25.0	CDA. NEG_X to (298/25). CIRS heating
SP_196SA_WAYPTTURN218_PRIME	M	2013-218T10:22:00		000T00:40:00	2013-218T11:02:00	ISS_NAC to Saturn	NEG_X to Sun	
NEW WAYPOINT		2013-218T11:02:00		000T14:20:00	2013-219T01:22:00	ISS_NAC to Saturn	NEG_X to Sun	
CIRS_196SA_MIRTMAP001_PRIME	M, V	2013-218T11:02:00		000T13:40:00	2013-219T00:42:00	CIRS_FP3 to Saturn	NEG_Z to NSP	
SP_196EA_DLTURN219_PRIME		2013-219T00:42:00		000T00:40:00	2013-219T01:22:00	XBAND to Earth	NEG_X to 298.0/25.0	
NEW WAYPOINT		2013-219T01:22:00		003T10:55:00	2013-222T12:17:00	XBAND to Earth	NEG_X to 298.0/25.0	
SP_196EA_C34HEFOTP219_PRIME	C, E, N	2013-219T01:22:00		000T09:00:00	2013-219T10:22:00	XBAND to Earth	4_Hr_Rolling	CDA. NEG_X to (298/25). OTP. CIRS heating
MAG_196SU_CALROLL001_PRIME	M	2013-219T10:22:00		000T15:00:00	2013-220T01:22:00	NEG_X to Earth (0.0,0.0,-30.0 deg. offset)	Rolling	
SP_196EA_C34UNQOTB220_PRIME	C, M, N	2013-220T01:22:00		000T09:00:00	2013-220T10:22:00	XBAND to Earth	Rolling	CDA. Same as OTP pass. OTB. CIRS heating
RSS_196RI_OCC001_PIE	M	2013-220T14:36:59		000T09:11:57	2013-220T23:48:56	XBAND to Earth	PIC	
CDA_196DR_ISD0056003_PRIME		2013-220T23:49:00		001T01:00:00	2013-222T00:49:00	NEG_Z to Sun	POS_X to 127.5/-9.0	
SP_196EA_C70METSEQ222_PRIME	C	2013-222T01:07:00		000T09:00:00	2013-222T10:07:00	XBAND to Earth	Rolling	CDA. NEG_X to (298/25). CIRS heating
SP_196EA_YGAP222_PRIME		2013-222T10:07:00		000T01:30:00	2013-222T11:37:00	XBAND to Earth	NEG_X to 298.0/25.0	
SP_196SA_WAYPTTURN222_PRIME		2013-222T11:37:00		000T00:26:00	2013-222T12:03:00	ISS_NAC to Saturn (0.0,0.0,5.0 deg. offset)	NEG_X to Sun	
SP_196SA_WAYPTTURN422_PRIME		2013-222T12:03:00		000T00:14:00	2013-222T12:17:00	ISS_NAC to Saturn	NEG_X to Sun	
NEW WAYPOINT		2013-222T12:17:00		001T11:04:00	2013-223T23:21:00	ISS_NAC to Saturn	NEG_X to Sun	
CIRS_196SA_COMPSIT001_PRIME	U, V	2013-222T12:17:00		000T08:50:00	2013-222T21:07:00	CIRS_FP3 to Saturn	POS_Z to NSP	
UVIS_196IA_ICYEXO001_PRIME	I	2013-222T21:07:00		000T01:04:00	2013-222T22:11:00	UVIS_FUV to 81.283/6.35	NEG_X to Sun	Duration requested includes possible turn time. Actual occ is from 21:37 to 21:41.
UVIS_196SA_EUVFUV001_PRIME	I	2013-222T22:11:00		000T16:00:00	2013-223T14:11:00	UVIS_FUV to Saturn	NEG_X to Sun	
CIRS_196SA_COMPSIT002_PRIME	U, V	2013-223T14:11:00		000T08:30:00	2013-223T22:41:00	CIRS_FP3 to Saturn	POS_Z to NSP	
SP_196EA_DLTURN223_PRIME		2013-223T22:41:00		000T00:40:00	2013-223T23:21:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	NEG_Y to Saturn	
NEW WAYPOINT		2013-223T23:21:00		000T11:10:00	2013-224T10:31:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	NEG_Y to Saturn	
ENGR_196SC_KPTYBIAS223_PRIME		2013-223T23:21:00		000T01:30:00	2013-224T00:51:00	NEG_Z to DELTA_H (0.0,0.0,54.998 deg. offset)	NEG_X to Sun	
SP_196EA_C34HEFSEQ224_PRIME	C	2013-224T00:51:00		000T09:00:00	2013-224T09:51:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	Rolling	MIMI. NEG_Y to Saturn (0,0,-9.5). CIRS heating
SP_196SA_WAYPTTURN224_PRIME		2013-224T09:51:00		000T00:40:00	2013-224T10:31:00	ISS_NAC to Saturn	NEG_X to Sun	
NEW WAYPOINT		2013-224T10:31:00		001T14:20:00	2013-226T00:51:00	ISS_NAC to Saturn	NEG_X to Sun	
VIMS_196SA_REGWIND001_PRIME	C	2013-224T10:31:00		000T05:00:00	2013-224T15:31:00	ISS_NAC to Saturn	NEG_X to Sun	
CIRS_196SA_COMPSIT003_PRIME	I, U	2013-224T15:31:00		000T06:00:00	2013-224T21:31:00	CIRS_FP3 to Saturn	POS_Z to NSP	Collaborative Rider(s): ISS
VIMS_196SA_REGWIND002_PRIME	C	2013-224T21:31:00		000T05:00:00	2013-225T02:31:00	ISS_NAC to Saturn	NEG_X to Sun	
VIMS_196SA_REGWIND003_PRIME	C	2013-225T02:31:00		000T05:00:00	2013-225T07:31:00	ISS_NAC to Saturn	NEG_X to Sun	
CIRS_196SA_COMPSIT004_PRIME	I, U	2013-225T07:31:00		000T06:00:00	2013-225T13:31:00	CIRS_FP3 to Saturn	POS_Z to NSP	Collaborative Rider(s): ISS
VIMS_196SA_REGWIND004_PRIME	C	2013-225T13:31:00		000T05:00:00	2013-225T18:31:00	ISS_NAC to Sun	NEG_X to Sun	
CIRS_196SA_COMPSIT005_PRIME	I, U	2013-225T18:31:00		000T05:40:00	2013-226T00:11:00	CIRS_FP1 to Saturn	POS_Z to NSP	Collaborative Rider(s): ISS
SP_196EA_DLTURN226_PRIME		2013-226T00:11:00		000T00:40:00	2013-226T00:51:00	XBAND to Earth	NEG_Y to 115.0/-40.0	
NEW WAYPOINT		2013-226T00:51:00		000T09:00:00	2013-226T09:51:00	XBAND to Earth	NEG_Y to 115.0/-40.0	
SP_196EA_C70METSEQ226_PRIME	C	2013-226T00:51:00		000T09:00:00	2013-226T09:51:00	XBAND to Earth	NEG_Y to 115.0/-40.0	MIMI. NEG_Y to Saturn (0,0,-9.5). EOS

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 (Mb)
SP_195EA_C34BWGNON210_PRIME	210 01:53	210 10:53	0	570	62	632	3322	2690	0	238	53	924	748	-176	231	2%	176
SP_195EA_C34HEFOTP211_PRIME	211 01:53	211 10:53	176	610	63	849	3322	2473	0	238	53	1140	681	-460	231	2%	460
SP_195EA_C34UNQOTB212_PRIME	212 01:53	212 10:53	460	671	63	1194	3322	2128	0	238	53	1486	1267	-219	-58	0%	219
SP_195EA_C70METNON214_PRIME	214 01:38	214 09:38	219	2127	164	2509	3322	813	0	211	47	2767	2998	230	-58	0%	0
SP_195EA_G34BWGSEQ215_PRIME	215 19:23	216 04:23	0	1664	143	1806	3322	1516	0	238	53	2098	609	-1489	-289	-1%	1489
SP_195EA_C70UNQSEQ217_PRIME	217 01:22	217 10:22	1489	1493	89	3070	3322	252	0	238	53	3361	2754	-608	-289	-1%	608
SP_196EA_C34HEFSEQ218_PRIME	218 01:22	218 10:22	608	901	63	1572	3322	1750	0	238	53	1864	788	-1076	-289	-2%	1076
SP_196EA_C34HEFOTP219_PRIME	219 01:22	219 10:22	1076	885	63	2024	3322	1298	0	238	53	2315	645	-1671	-289	-2%	1670
SP_196EA_C34UNQOTB220_PRIME	220 01:22	220 10:22	1670	298	63	2031	3322	1291	0	238	53	2323	666	-1657	-289	-3%	1657
SP_196EA_C70METSEQ222_PRIME	222 01:07	222 10:07	1657	1792	164	3612	3322	-289	0	238	53	3613	3285	-329	-72	0%	328
SP_196EA_C34HEFSEQ224_PRIME	224 00:51	224 09:51	328	1635	164	2127	3322	1195	0	182	53	2362	770	-1592	-72	-1%	1591
SP_196EA_C70METSEQ226_PRIME	226 00:51	226 09:51	1591	1639	165	3395	3322	-72	0	182	53	3557	3310	-248	0	0%	247

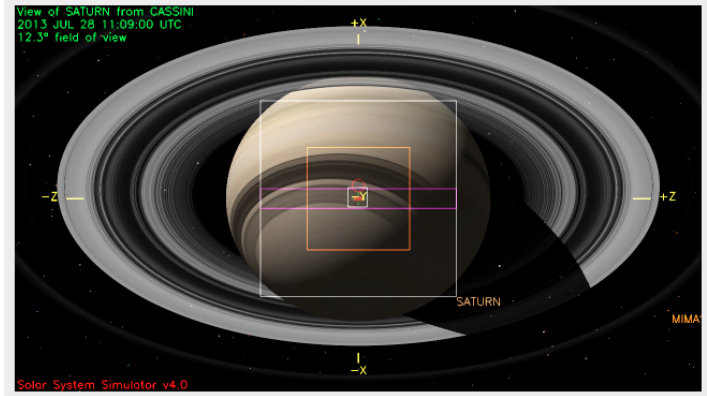
*NOTE: Negative SSR (P4) Margins did not result in a loss of science due to compression/under-utilization.

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	209 11:09	210 01:53	37.1	27.8	86.4	5.3	50.0	26.2	45.1	0.0	69.5	217.4	0.0	0.0	61.6	626.3
SP_195EA_C34BWGNON210_PRIME	210 01:53	210 10:53	22.7	17.0	86.4	3.2	0.0	32.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	236.2
DAILY TOTAL SCIENCE	209 11:09	210 10:53	59.8	44.8	172.8	8.5	50.0	58.2	72.6	0.0	111.9	222.3	0.0	0.0	61.6	
OBSERVATION_NOR	210 10:53	211 01:53	37.8	28.3	86.4	5.4	50.0	53.4	45.9	0.0	70.7	217.4	0.0	0.0	62.7	658.0
OBSERVATION_SI	210 10:53	211 01:53	0.0	0.0	0.0	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.7
SP_195EA_C34HEFOTP211_PRIME	211 01:53	211 10:53	22.7	17.0	86.4	3.2	0.0	32.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	236.2
DAILY TOTAL SCIENCE	210 10:53	211 10:53	60.5	45.3	172.8	8.6	58.7	85.4	73.4	0.0	113.2	222.3	0.0	0.0	62.7	
OBSERVATION_NOR	211 10:53	212 01:53	37.8	28.3	108.0	5.4	88.5	53.4	45.9	0.0	70.7	217.4	10.0	0.0	62.7	728.1
SP_195EA_C34UNQOTB212_PRIME	212 01:53	212 10:53	22.7	17.0	86.4	3.2	0.0	32.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	236.2
DAILY TOTAL SCIENCE	211 10:53	212 10:53	60.5	45.3	194.4	8.6	88.5	85.4	73.4	0.0	113.2	222.3	10.0	0.0	62.7	
OBSERVATION_NOR	212 10:53	214 01:38	97.6	73.1	0.0	14.0	1300.0	137.8	118.6	0.0	265.0	101.2	0.0	0.0	162.0	2269.3
SP_195EA_C70METNON214_PRIME	214 01:38	214 09:38	20.2	15.1	75.6	2.9	0.0	28.5	24.5	0.0	37.7	4.4	0.0	0.0	0.0	208.8
DAILY TOTAL SCIENCE	212 10:53	214 09:38	117.8	88.2	75.6	16.8	1300.0	166.3	143.1	0.0	302.7	105.6	0.0	0.0	162.0	
OBSERVATION_NOR	214 09:38	215 19:23	85.1	63.7	124.8	12.2	0.0	120.0	103.3	0.0	159.2	0.5	980.0	0.0	141.1	1789.8
SP_195EA_G34BWGSEQ215_PRIME	215 19:23	216 04:23	22.7	17.0	86.4	3.2	0.0	32.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	236.2
DAILY TOTAL SCIENCE	214 09:38	216 04:23	107.7	80.6	211.2	15.4	0.0	152.1	130.8	0.0	201.6	5.5	980.0	0.0	141.1	
OBSERVATION_NOR	216 04:23	217 01:22	52.9	39.6	141.5	7.6	85.0	74.6	64.2	0.0	702.1	301.6	10.0	0.0	87.7	1566.8
SP_195EA_C70UNQSEQ217_PRIME	217 01:22	217 10:22	22.7	17.0	86.4	3.2	0.0	32.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	236.2
DAILY TOTAL SCIENCE	216 04:23	217 10:22	75.6	56.6	227.9	10.8	85.0	106.6	91.7	0.0	744.6	306.6	10.0	0.0	87.7	
OBSERVATION_NOR	217 10:22	218 01:22	37.8	28.3	175.2	15.5	0.0	53.4	45.9	0.0	70.7	0.0	466.0	0.0	62.7	955.4
SP_196EA_C34HEFSEQ218_PRIME	218 01:22	218 10:22	22.7	17.0	86.4	3.2	0.0	32.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	236.2
DAILY TOTAL SCIENCE	217 10:22	218 10:22	60.5	45.3	261.6	18.7	0.0	85.4	73.4	0.0	113.2	4.9	466.0	0.0	62.7	
OBSERVATION_NOR	218 10:22	219 01:22	66.4	28.3	196.8	5.4	0.0	53.4	45.9	0.0	70.7	0.0	410.0	0.0	62.7	939.5
SP_196EA_C34HEFOTP219_PRIME	219 01:22	219 10:22	22.7	17.0	86.4	3.2	0.0	32.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	236.2
DAILY TOTAL SCIENCE	218 10:22	219 10:22	89.0	45.3	283.2	8.6	0.0	85.4	73.4	0.0	113.2	4.9	410.0	0.0	62.7	
OBSERVATION_NOR	219 10:22	220 01:22	37.8	28.3	0.0	5.4	0.0	106.7	45.9	0.0	70.7	0.0	0.0	0.0	62.7	357.5
SP_196EA_C34UNQOTB220_PRIME	220 01:22	220 10:22	22.7	17.0	86.4	3.2	0.0	32.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	236.2
DAILY TOTAL SCIENCE	219 10:22	220 10:22	60.5	45.3	86.4	8.6	0.0	138.7	73.4	0.0	113.2	4.9	0.0	0.0	62.7	
OBSERVATION_NOR	220 10:22	222 01:07	97.7	73.1	0.0	14.0	0.0	137.8	118.6	0.0	1334.3	0.0	0.0	0.0	162.0	1937.3
SP_196EA_C70METSEQ222_PRIME	222 01:07	222 10:07	22.7	17.0	86.4	3.2	0.0	32.0	27.5	0.0	42.1	4.9	0.0	0.0	0.0	235.8
DAILY TOTAL SCIENCE	220 10:22	222 10:07	120.3	90.1	86.4	17.2	0.0	169.8	146.1	0.0	1376.3	4.9	0.0	0.0	162.0	
OBSERVATION_NOR	222 10:07	224 00:51	97.6	36.5	240.0	13.9	150.0	34.4	83.7	0.0	125.5	358.7	480.0	0.0	161.9	1782.2
SP_196EA_C34HEFSEQ224_PRIME	224 00:51	224 09:51	22.7	8.5	86.4	3.2	0.0	8.0	19.4	0.0	29.2	2.5	0.0	0.0	0.0	179.9
DAILY TOTAL SCIENCE	222 10:07	224 09:51	120.3	45.0	326.4	17.2	150.0	42.4	103.1	0.0	154.7	361.1	480.0	0.0	161.9	
OBSERVATION_NOR	224 09:51	226 00:51	98.3	36.8	271.2	14.0	301.0	34.7	84.2	0.0	126.4	57.6	600.0	0.0	163.0	1787.2
SP_196EA_C70METSEQ226_PRIME	226 00:51	226 09:51	22.7	8.5	86.4	3.2	0.0	8.0	19.4	0.0	29.2	2.5	0.0	0.0	0.0	179.9
DAILY TOTAL SCIENCE	224 09:51	226 09:51	121.0	45.3	357.6	17.3	301.0	42.7	103.7	0.0	155.5	60.1	600.0	0.0	163.0	

Segment Geometry




```
Rev 195 OUTBOUND
2013 -  209T11:09:00 SCET
2013 JUL 28 11:09:00 SCET
2013 JUL 28 12:30:28 ERT
Apoapse__195 + 013T04:54:27
Periapse_195 + 005T05:28:41
Light time:    81.5 min
Orbit period:  23.9 days
Radius    1454358 km      24.13 Rs
Rad_cyl   1234813 km      20.49 Rs
Z_ht_cyl  -768370 km     -12.75 Rs
Mag_L          33.48
Semi_axs  1601016 km      26.56 Rs
Eccentricity    0.305
Inclination    53.43 deg
Sun_range       9.84 AU
Earth_range     9.79 AU
--- DSN ELEV -- D/L -- U/L --------
Goldstone     -61.3  -32.7
Canberra       23.2   54.6
Madrid         -2.6  -33.4
------- LOOK DIRECTION INFO ------
FOV            12.3 deg  214.3 mra
RA           -99.751 deg
DEC           36.968 deg
Crosses_RP_0   0.000 Rs
EPS            5.923 deg *
SEP           89.591 deg
ORS b/s angle 117.0 deg
ORS rad angle  47.8 deg  *
```

Point NEG_Y at SATURN and align POS_X = Up with NSP

User vector – RA: -58.158 DEC: +37.550 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

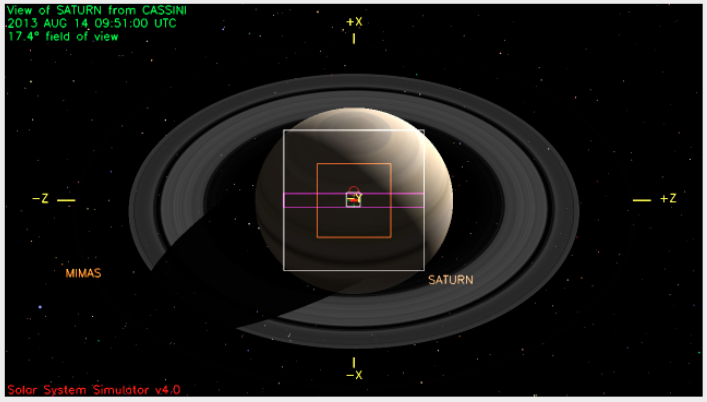
Year | Month | Day | Hour | Minute | Second

Turn analyzer: SATURN to EARTH about Z on RWA = 11.5 min / 115.0 deg Event

BODY	S/C OCC?	SAT OCC?	RANGE (km)	RANGE (Rs)	ALTITUDE (km)	ALTITUDE (Rs)	PHASE (deg)	ANGLR_DIAMETER (deg	ANGLR_DIAMETER 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	--	--	1454358	24.13	1395687	23.16	63.0	4.75	82.90	129	-32	0	5.3	0	0.0	115.0	111.6
IO	--	--	2046M	33.95K	2046M	33.95K	33.9	0.00	0.00	289	4	21	28.5	837399044	120.5	22.8	112.4
EUROPA	--	--	2046M	33.94K	2046M	33.94K	33.9	0.00	0.00	108	4	21	19.7	837441717	120.5	22.9	112.4
GANYMEDE	--	--	2046M	33.94K	2046M	33.94K	33.9	0.00	0.00	107	4	21	18.6	837469695	120.5	22.9	112.4
CALLISTO	--	--	2048M	33.97K	2048M	33.97K	33.9	0.00	0.00	28	4	21	25.4	838339899	120.5	22.9	112.4
MIMAS	--	--	1550553	25.73	1550354	25.72	57.9	0.02	0.27	312	-31	-125	16.8	614	5.9	120.4	111.7
ENCELADUS	--	--	1535516	25.48	1535265	25.47	56.5	0.02	0.33	302	-30	-109	14.3	2	8.5	122.1	113.2
TETHYS	--	--	1707148	28.33	1706611	28.32	57.7	0.04	0.63	349	-26	-165	15.2	5141	5.5	120.1	107.9
DIONE	--	--	1425973	23.66	1425412	23.65	74.6	0.05	0.79	87	-33	76	11.1	21	15.0	102.5	107.0
RHEA	--	--	1886167	31.30	1885401	31.28	62.3	0.05	0.81	21	-24	154	12.6	-2979	10.5	114.6	101.7
TITAN	--	--	857712	14.23	855137	14.19	90.4	0.34	6.00	273	-65	-17	4.4	8070	57.9	93.0	167.8
HYPERION	--	--	1072410	17.79	1072276	17.79	127.2	0.02	0.31	289	-4	32	5.2	16435	64.7	50.3	115.1

Seg Start (Left)

Seg End (below)




```
Rev 196  INBOUND
2013 -  226T09:51:00 SCET
2013 AUG 14 09:51:00 SCET
2013 AUG 14 11:14:50 ERT
Apoapse__196 + 008T17:13:12
Periapse_196 - 003T05:43:50
Light time:    83.8 min
Orbit period:  23.9 days
Radius    1391114 km      23.08 Rs
Rad_cyl   1105130 km      18.34 Rs
Z_ht_cyl   844918 km      14.02 Rs
Mag_L          36.57
Semi_axs  1600503 km      26.56 Rs
Eccentricity    0.304
Inclination    53.45 deg
Sun_range       9.85 AU
Earth_range    10.08 AU
--- DSN ELEV -- D/L -- U/L --------
Goldstone     -60.0  -29.5
Canberra       25.8   57.4
Madrid         -5.0  -36.6
-------- LOOK DIRECTION INFO -------
FOV            17.4 deg  303.1 mrad
RA             88.362 deg
DEC           -41.906 deg
Crosses_RP_0   0.000 Rs
EPS            5.677 deg *
SEP           74.177 deg
ORS b/s angle  70.7 deg
ORS rad angle  47.9 deg  *
```

Point NEG_Y at SATURN and align POS_X = Up with NSP

User vector – RA: -58.158 DEC: +37.550 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 | Second

Turn analyzer: SATURN to EARTH about Z on RWA = 8.4 min / 72.7 deg Event

BODY	S/C OCC?	SAT OCC?	RANGE (km)	RANGE (Rs)	ALTITUDE (km)	ALTITUDE (Rs)	PHASE (deg)	ANGLR_DIAMETER (deg	ANGLR_DIAMETER 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	--	--	1391114	23.08	1332965	22.12	109.2	4.97	86.67	2	37	0	5.6	0	0.0	72.7	67.7
IO	--	--	2041M	33.87K	2041M	33.87K	34.5	0.00	0.00	136	4	-153	23.2	840444828	66.7	22.9	42.1
EUROPA	--	--	2042M	33.89K	2042M	33.89K	34.5	0.00	0.00	25	4	-153	37.6	840875955	66.7	22.9	42.1
GANYMEDE	--	--	2041M	33.87K	2041M	33.87K	34.5	0.00	0.00	239	4	-153	16.1	840100998	66.7	22.8	42.1
CALLISTO	--	--	2043M	33.90K	2043M	33.90K	34.5	0.00	0.00	32	4	-153	31.9	841449005	66.7	22.9	42.1
MIMAS	--	--	1353848	22.46	1353653	22.46	102.9	0.02	0.31	102	40	70	17.2	-171	7.4	79.3	67.0
ENCELADUS	--	--	1297072	21.52	1296822	21.52	112.3	0.02	0.40	249	41	-54	7.8	25	9.4	68.7	74.2
TETHYS	--	--	1203736	19.97	1203203	19.96	99.1	0.05	0.90	141	43	30	10.9	5319	10.1	82.7	72.4
DIONE	--	--	1698517	28.18	1697954	28.17	116.7	0.04	0.66	350	30	-166	13.9	247	8.1	65.6	61.7
RHEA	--	--	1352268	22.44	1351505	22.42	90.4	0.07	1.13	84	39	71	11.6	-1514	22.1	92.4	66.8
TITAN	--	--	2410872	40.00	2408297	39.96	107.6	0.12	2.14	11	20	148	10.8	8287	22.5	76.2	48.0
HYPERION	--	--	1749104	29.02	1748988	29.02	125.4	0.01	0.19	132	63	-68	3.3	-16273	57.4	50.7	102.9

	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	24.1 R_{Sat}	63.0°	32° S
Apoapsis	34.6 R_{Sat}	152.3°	38° S
Segment End	23.1 R_{Sat}	109.2°	37° N

Solar Geometry – ORS Boresight Concerns

No ORS Boresight Solar Constraints on Science Pointing.

Daily Science Highlights

DOY 209 (28 July 2013): The Saturn_195_196 segment continued on from where Saturn 194_195 left off during a Saturn CAKE and UVIS PIE EUVFUV campaign. Each EUVFUV is a single slow scan across Saturn's illuminated hemisphere to form spectral images. ISS rode along to take one polarimetry photo during each scan using the WAC, and CIRS also rode along.

DOY 210 (29 July 2013): After a downlink, there was an Opnav and then another EUVFUV PIE from UVIS with ISS and CIRS riding.

DOY 211 (30 July 2013): Another downlink and then ISS conducted a Titan Monitoring Campaign before UVIS completed the last EUVFUV PIE of the "West CAKE" for this segment (with ISS and CIRS riding).

DOY 212 - 213 (31 July - 1 August 2013): Most of these two days was occupied by a downlink followed by a 37.25 hour observation by ISS of Paaliaq, an irregular moon of Saturn, and another downlink.

DOY 214 - 215 (2 - 3 August 2013): After the downlink, VIMS spent the balance of the day and half of the next doing a 22-hour Global Movie mosaic, followed by CIRS closing out DOY 215 with a CIRS Compsit, and another downlink.

DOY 216 (4 August 2013): A second Titan Cloud Monitor observation for ISS with VIMS riding, followed by a "normal CAKE" UVIS EUVFUV with CIRS and ISS riding, and then a turn to downlink.

DOY 217 (5 August 2013): This day began with a CIRS observation to map Saturn's atmosphere with its mid-infrared sensor, followed by a turn to downlink.

DOY 218 (6 August 2013): CIRS completed a second mid-infrared map

DOY 219 (7 August 2013): MAG executed a Calibration Roll in Earth pointed between downlinks during a difficult waypoint period.

DOY 220 (8 August 2013): RSS conducted a Level 3 Ring Occultation PIE.

DOY 221 (9 August 2013): CDA took up most of the day with a 25-hr. long Interstellar Dust observation.

DOY 222 (10 August 2013): After CDA wrapped up, we have another downlink then a YGAP window we finally turned back to Saturn now that the Sun has gone on its way. Another CIRS Compsit was conducted followed by another PIE, this one from UVIS of an icy exo planet. Finally, the fifth and final UVIS EUVFUV for this segment was executed, with just ISS riding.

DOY 223 (11 August 2013): CIRS completed another Compsit of Saturn.

DOY 224 - 226 (12 - 14 August 2013): After a downlink the last observation period of this segment began with a winds/compsit template campaign, common in a Saturn CAKE, but this time, VIMS was alternating with CIRS instead of ISS, since Cassini was looking at the dark side of Saturn. VIMS and CIRS alternated on two rounds of winds-compsit-winds, mapping the winds and composition of the Saturnian atmosphere. A downlink ended the segment.

Segment Integration Planning

Timeline Gaps and Suggested Observations

Info on Suggested Observations was Not Available

Initial SMT and Data Volume (1 of 3)

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_195EA_C34BWGNON210_PRIME	210 01:53	210 10:53	0	570	62	632	3322	2690	0	222	53	908	748	-160	1147	11%	160
SP_195EA_C34BWGOTP211_PRIME	211 01:53	211 10:53	160	583	63	806	3322	2516	0	222	53	1081	606	-475	1147	11%	475
SP_195EA_C34HEFOTB212_PRIME	212 01:53	212 10:53	475	645	63	1183	3322	2139	0	222	53	1458	814	-645	1147	8%	644
SP_195EA_C70METNON214_PRIME	214 01:38	214 10:38	644	1367	164	2176	3322	1147	0	222	53	2451	3343	891	2512	19%	0
SP_195EA_G34BWGSEQ215_PRIME	215 19:23	216 04:23	0	1016	138	1154	3322	2168	0	222	53	1429	646	-784	1620	12%	783
SP_195EA_C70METSEQ217_PRIME	217 01:22	217 10:22	783	830	89	1702	3322	1620	0	222	53	1977	3320	1343	4226	33%	0
SP_196EA_C34HEFSEQ218_PRIME	218 01:22	218 10:22	0	376	63	439	3322	2883	0	191	53	684	788	104	2898	31%	0
SP_196EA_C34HEFOTP219_PRIME	219 01:22	219 10:22	0	397	63	460	3322	2862	0	191	53	704	645	-60	2794	32%	59
SP_196EA_C34BWGOTB220_PRIME	220 01:22	220 10:22	59	250	63	373	3322	2949	0	183	53	609	694	85	2794	35%	0
SP_196EA_C70METSEQ222_PRIME	222 01:07	222 10:07	0	450	164	614	3322	2708	0	183	53	850	3285	2434	3186	43%	0
SP_196EA_C34HEFSEQ224_PRIME	224 00:51	224 09:51	0	1164	164	1328	3322	1994	0	186	53	1567	770	-797	751	18%	796
SP_196EA_C70METSEQ226_PRIME	226 00:51	226 09:51	796	1262	165	2223	3322	1099	0	283	53	2559	3310	750	751	23%	0

Nearly entire segment over Canberra.
Upgraded one 70m on DOY 217

Initially assuming MAPS at minimal after Apoapse.
** This might not have to be done, but is reflected in this table.

Initial SMT and Data Volume (2 of 3)

What is roughly expected estimate and assuming MAPS at minimal rates post-Apoapse:

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	209 11:09	210 01:53	37.1	27.8	86.4	5.3	50.0	26.2	45.1	0.0	69.5	217.4	0.0	0.0	61.6	626.3
SP_195EA_C34BWGNON210_PRIME	210 01:53	210 10:53	22.7	17.0	86.4	3.2	0.0	16.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	220.2
DAILY TOTAL SCIENCE	209 11:09	210 10:53	59.8	44.8	172.8	8.5	50.0	42.2	72.6	0.0	111.9	222.3	0.0	0.0	61.6	
OBSERVATION_NOR	210 10:53	211 01:53	37.8	28.3	86.4	5.4	50.0	26.7	45.9	0.0	70.7	217.4	0.0	0.0	62.7	631.3
OBSERVATION_SI	210 10:53	211 01:53	0.0	0.0	0.0	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.7
SP_195EA_C34BWGOTP211_PRIME	211 01:53	211 10:53	22.7	17.0	86.4	3.2	0.0	16.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	220.2
DAILY TOTAL SCIENCE	210 10:53	211 10:53	60.5	45.3	172.8	8.6	58.7	42.7	73.4	0.0	113.2	222.3	0.0	0.0	62.7	
OBSERVATION_NOR	211 10:53	212 01:53	37.8	28.3	108.0	5.4	88.5	26.7	45.9	0.0	70.7	217.4	10.0	0.0	62.7	701.4
SP_195EA_C34HEFOTB212_PRIME	212 01:53	212 10:53	22.7	17.0	86.4	3.2	0.0	16.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	220.2
DAILY TOTAL SCIENCE	211 10:53	212 10:53	60.5	45.3	194.4	8.6	88.5	42.7	73.4	0.0	113.2	222.3	10.0	0.0	62.7	
OBSERVATION_NOR	212 10:53	214 01:38	97.6	73.1	0.0	14.0	800.0	68.9	118.6	0.0	182.7	0.0	0.0	0.0	162.0	1516.9
SP_195EA_C70METNON214_PRIME	214 01:38	214 10:38	22.7	17.0	86.4	3.2	0.0	16.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	220.2
DAILY TOTAL SCIENCE	212 10:53	214 10:38	120.3	90.1	86.4	17.2	800.0	84.9	146.1	0.0	225.2	4.9	0.0	0.0	162.0	
OBSERVATION_NOR	214 10:38	215 19:23	82.5	61.8	57.0	11.8	0.0	58.2	100.2	0.0	154.5	28.7	451.6	0.0	136.9	1143.2
SP_195EA_G34BWGSEQ215_PRIME	215 19:23	216 04:23	22.7	17.0	86.4	3.2	0.0	16.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	220.2
DAILY TOTAL SCIENCE	214 10:38	216 04:23	105.2	78.8	143.4	15.0	0.0	74.2	127.8	0.0	196.9	33.6	451.6	0.0	136.9	
OBSERVATION_NOR	216 04:23	217 01:22	52.9	39.6	136.8	7.6	85.0	37.3	64.2	0.0	99.0	289.8	10.0	0.0	87.7	909.8
SP_195EA_C70METSEQ217_PRIME	217 01:22	217 10:22	22.7	17.0	86.4	3.2	0.0	16.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	220.2
DAILY TOTAL SCIENCE	216 04:23	217 10:22	75.6	56.6	223.2	10.8	85.0	53.3	91.7	0.0	141.4	294.8	10.0	0.0	87.7	
OBSERVATION_NOR	217 10:22	218 01:22	37.8	20.0	175.2	15.5	0.0	26.7	39.6	0.0	57.8	0.0	0.0	0.0	62.7	435.3
SP_196EA_C34HEFSEQ218_PRIME	218 01:22	218 10:22	22.7	8.5	86.4	3.2	0.0	16.0	21.1	0.0	29.2	2.5	0.0	0.0	0.0	189.5
DAILY TOTAL SCIENCE	217 10:22	218 10:22	60.5	28.5	261.6	18.7	0.0	42.7	60.7	0.0	87.0	2.5	0.0	0.0	62.7	
OBSERVATION_NOR	218 10:22	219 01:22	66.4	14.1	196.8	5.4	0.0	26.7	35.1	0.0	48.6	0.0	0.0	0.0	62.7	455.8
SP_196EA_C34HEFOTP219_PRIME	219 01:22	219 10:22	22.7	8.5	86.4	3.2	0.0	16.0	21.1	0.0	29.2	2.5	0.0	0.0	0.0	189.5
DAILY TOTAL SCIENCE	218 10:22	219 10:22	89.0	22.6	283.2	8.6	0.0	42.7	56.2	0.0	77.8	2.5	0.0	0.0	62.7	

Initial SMT and Data Volume (3 of 3)

What is roughly expected estimate and assuming MAPS at minimal rates post-Apoapse:

OBSERVATION_NOR	219 10:22	220 01:22	37.8	14.1	0.0	5.4	0.0	106.7	35.1	0.0	48.6	0.0	0.0	0.0	62.7	310.4
SP_196EA_C34BWGOTB220_PRIME	220 01:22	220 10:22	22.7	8.5	86.4	3.2	0.0	8.0	21.1	0.0	29.2	2.5	0.0	0.0	0.0	181.5
DAILY TOTAL SCIENCE	219 10:22	220 10:22	60.5	22.6	86.4	8.6	0.0	114.7	56.2	0.0	77.8	2.5	0.0	0.0	62.7	
OBSERVATION_NOR	220 10:22	222 01:07	97.7	83.7	0.0	14.0	0.0	34.5	90.7	0.0	125.5	0.0	0.0	0.0	162.0	607.9
SP_196EA_C70METSEQ222_PRIME	222 01:07	222 10:07	22.7	8.5	86.4	3.2	0.0	8.0	21.1	0.0	29.2	2.5	0.0	0.0	0.0	181.5
DAILY TOTAL SCIENCE	220 10:22	222 10:07	120.3	92.2	86.4	17.2	0.0	42.5	111.7	0.0	154.7	2.5	0.0	0.0	162.0	
OBSERVATION_NOR	222 10:07	224 00:51	97.6	36.5	240.0	13.9	150.0	34.4	90.6	0.0	125.5	365.0	0.0	0.0	161.9	1315.5
SP_196EA_C34HEFSEQ224_PRIME	224 00:51	224 09:51	22.7	8.5	86.4	3.2	0.0	8.0	21.1	0.0	29.2	4.9	0.0	0.0	0.0	184.0
DAILY TOTAL SCIENCE	222 10:07	224 09:51	120.3	45.0	326.4	17.2	150.0	42.4	111.7	0.0	154.7	369.9	0.0	0.0	161.9	
OBSERVATION_NOR	224 09:51	226 00:51	98.3	36.8	216.0	14.0	0.0	34.7	91.3	0.0	135.7	108.7	515.0	0.0	163.0	1413.4
SP_196EA_C70METSEQ226_PRIME	226 00:51	226 09:51	22.7	8.5	86.4	3.2	0.0	8.0	21.1	0.0	127.9	2.5	0.0	0.0	0.0	280.2
DAILY TOTAL SCIENCE	224 09:51	226 09:51	121.0	45.3	302.4	17.3	0.0	42.7	112.3	0.0	263.5	111.2	515.0	0.0	163.0	

	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)	1053.4	617.0	2339.4	156.5	1232.2	667.7	1093.9	0.0	1717.2	1491.3	986.6	0.0

Waypoint Selection (1 of 2)

RBOT – Friendly as per CTV:

OBS_NAME	START	END	POS_X_2_NSP	POS_X_2_NEP	NEG_X_2_NSP	NEG_X_2_NEP	POS_Z_2_NSP	POS_Z_2_NEP	NEG_Z_2_NSP	NEG_Z_2_NEP	NEG_X_2_SUN	NEG_Z_2_EARTH
SP_195NA_OBSERV209_NA	2013-209T11:09:00	2013-210T01:53:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	**BAD**
SP_195NA_OBSERV210_NA	2013-210T10:53:00	2013-211T01:53:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	**BAD**
SP_195NA_OBSERV211_NA	2013-211T10:53:00	2013-212T01:53:00	**BAD**	OK	OK	**BAD**	**BAD**	**BAD**	OK	OK	OK	**BAD**
SP_195NA_OBSERV212_NA	2013-212T10:53:00	2013-214T01:38:00	**BAD**	OK	**BAD**	**BAD**	**BAD**	**BAD**	OK	OK	OK	**BAD**
SP_195NA_OBSERV214_NA	2013-214T10:38:00	2013-215T19:23:00	OK	OK	**BAD**	**BAD**	**BAD**	**BAD**	OK	OK	OK	**BAD**
SP_195NA_OBSERV216_NA	2013-216T04:23:00	2013-217T01:22:00	OK	OK	**BAD**	**BAD**	**BAD**	**BAD**	OK	OK	OK	**BAD**
SP_195NA_OBSERV217_NA	2013-217T10:22:00	2013-218T01:22:00	OK	OK	**BAD**	**BAD**	**BAD**	**BAD**	OK	OK	OK	**BAD**
SP_196NA_OBSERV218_NA	2013-218T10:22:00	2013-219T01:22:00	OK	OK	**BAD**	**BAD**	**BAD**	**BAD**	OK	OK	OK	**BAD**
SP_196NA_OBSERV219_NA	2013-219T10:22:00	2013-220T01:22:00	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**
SP_196NA_OBSERV220_NA	2013-220T10:22:00	2013-222T01:07:00	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**
SP_196NA_OBSERV222_NA	2013-222T10:07:00	2013-224T00:51:00	**BAD**	**BAD**	OK	OK	OK	OK	**BAD**	**BAD**	OK	OK
SP_196NA_OBSERV224_NA	2013-224T09:51:00	2013-226T00:51:00	**BAD**	**BAD**	OK	OK	OK	OK	**BAD**	**BAD**	OK	OK
SP_196NA_OBSERV226_NA	2013-226T09:51:00	2013-227T00:51:00	**BAD**	**BAD**	OK	OK	OK	OK	**BAD**	**BAD**	OK	OK

- UVIS prefers NEG_X to Sun (potentially open to RBOT issues) or NEG_Z to NSP.
  - Entire segment is outside 23Rs.

IN-1 RBOT WAYPOINTS

EVALUATED FOR ALL IN-1 OBSERVATION PERIODS AS THEY APPEAR IN CIMS

PRIMARY AXIS IS **NEG_Y to SATURN**

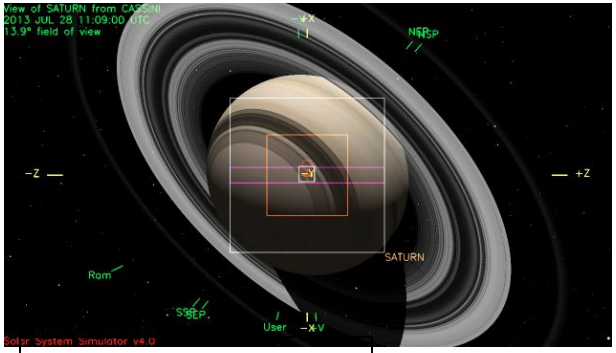
OBSERVATION PERIOD	START	END	POS_X	NEG_X	POS_Z	NEG_Z
SP_195NA_OBSERV209_NA	2013-209T11:09:00	2013-210T01:53:00	------	135.2/ 37.4	------	135.2/ 37.4
SP_195NA_OBSERV210_NA	2013-210T10:53:00	2013-211T01:53:00	------	135.2/ 37.4	------	135.2/ 37.4
SP_195NA_OBSERV211_NA	2013-211T10:53:00	2013-212T01:53:00	------	135.2/ 37.4	------	135.2/ 37.4
SP_195NA_OBSERV212_NA	2013-212T10:53:00	2013-214T01:38:00	------	135.2/ 37.4	------	135.2/ 37.4
SP_195NA_OBSERV214_NA	2013-214T10:38:00	2013-215T19:23:00	------	135.2/ 37.4	------	135.2/ 37.4
SP_195NA_OBSERV216_NA	2013-216T04:23:00	2013-217T01:22:00	------	135.2/ 37.4	------	135.2/ 37.4
SP_195NA_OBSERV217_NA	2013-217T10:22:00	2013-218T01:22:00	------	135.2/ 37.4	------	135.2/ 37.4
SP_196NA_OBSERV218_NA	2013-218T10:22:00	2013-219T01:22:00	------	135.2/ 37.4	------	135.2/ 37.4
SP_196NA_OBSERV219_NA	2013-219T10:22:00	2013-220T01:22:00	------	------	------	------
SP_196NA_OBSERV220_NA	2013-220T10:22:00	2013-222T01:07:00	------	------	------	------
SP_196NA_OBSERV222_NA	2013-222T10:07:00	2013-224T00:51:00	------	135.2/ 37.3	135.2/ 37.3	------
SP_196NA_OBSERV224_NA	2013-224T09:51:00	2013-226T00:51:00	------	135.2/ 37.3	135.2/ 37.3	------

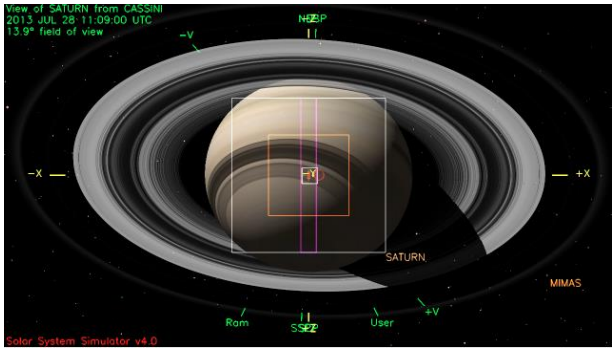
Waypoint Selection (2 of 2)

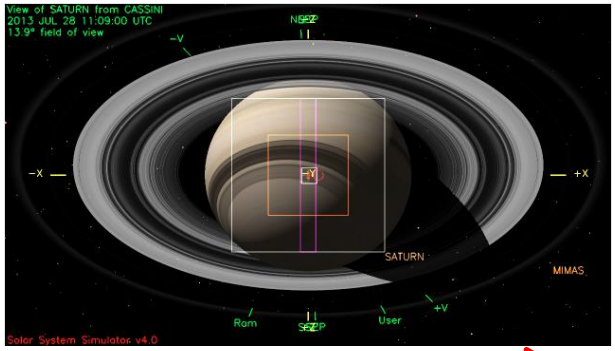
Potential RBOT problem: NEG_X to SUN

RBOT – Friendly: NEG_Z to NEP

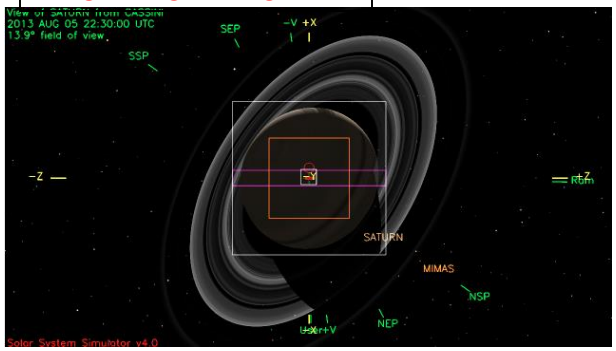
RBOT – Friendly: NEG_Z to NSP

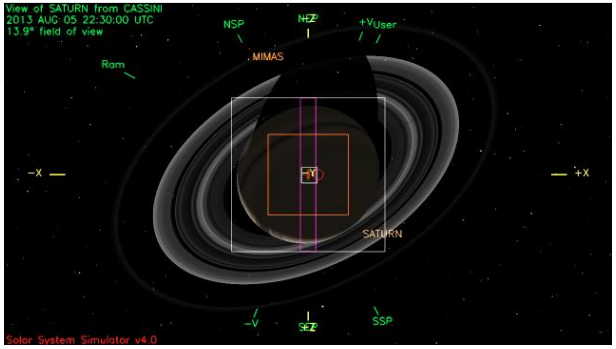


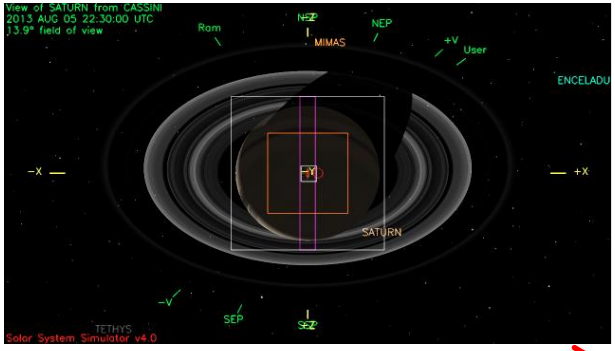




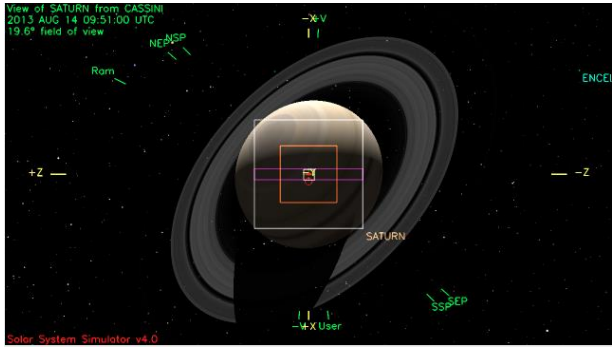
Beginning of segment

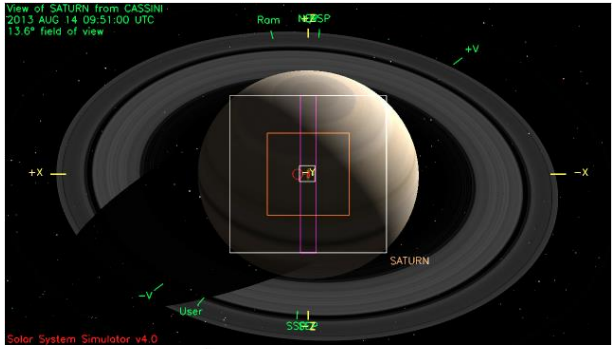


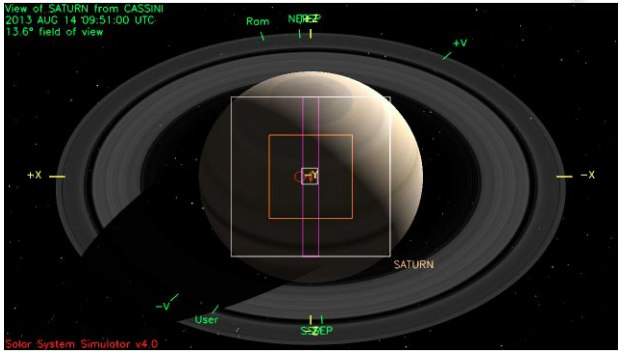




Middle of segment







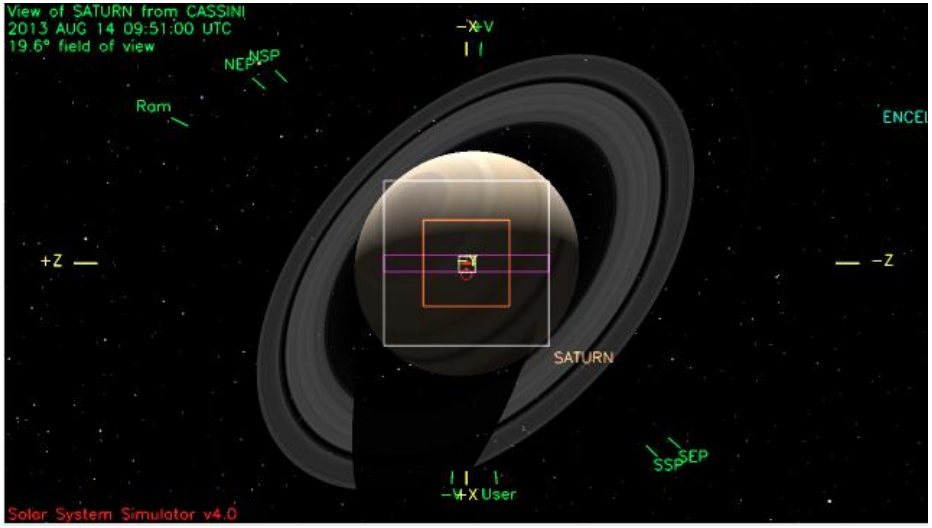
End of segment

RBOT – Friendly: POS_Z to NEP

RBOT – Friendly: POS_Z to NSP

Waypoints Chosen

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



Notes & Liens

- Pointing:
  - Expected heating of CIRS on rolling downlinks. Some SID suspends. Attitudes from DLWG.
  - Left ansa ring occultation = no good Saturn waypoint from 219T10:22 - 222T01:07. We are staying Earth-pointed to avoid CMT violations. MAG will do a cal-roll, RSS will do the occultation and CDA will do a 25-hr observation.
  - Only one YGAP window after downlink on DOY 222.
  - First turn is shortened to 34 minutes to allow UVIS EUVFUV CAKE observations be the same length. Turn takes ~22 minutes in PDT with margin.
  - According to target_motion_spass, no tracking greater than 8.3 deg.
- DSN:
  - L3: RSS Rings OCC PIE: 2013-220T14:36:59 – 220T23:48:56. Request includes turns.
  - Requested DSN stations: 63, 55, 14, 25.
  - Ap_downlink report check: Both 70m are in weekly maintenance and overlap by 3.5-4 hours. Warnings that RSS config codes are wrong. RSS confirms that seg file for this segment is how they want it. Ap_downlink report check output:

    Warning: SP_196NA_M70RSSOCC220_SP DSS code is inconsistent with complex/antenna
    Note: RSS pass SP_196NA_M70RSSOCC220_SP overlaps end of DSS-63 weekly maintenance by 209 minute(s); move later to resolve
    Warning: SP_196NA_M34RSSOCC220_SP DSS code is inconsistent with complex/antenna
    Error: SP_196NA_M34RSSOCC220_SP ends after view period close at 220T20:41:30
    Warning: SP_196NA_G34RSSOCC220_SP DSS code is inconsistent with complex/antenna
    Warning: SP_196NA_G70RSSOCC220_SP DSS code is inconsistent with complex/antenna
    Note: RSS pass SP_196NA_G70RSSOCC220_SP overlaps end of DSS-14 weekly maintenance by 240 minute(s); move later to resolve
  - Using Canberra DSN supports for all of the segment except DOY215.
- Opmodes:
  - Going to RSS3RWAS (3 bands) at the start of RSS Thermal PIE warmup instead of the main Occultation PIE at 2013-220T13:11:59. This is during a gap in the SPASS.
- Special Activities:
  - One OpNavs, no Kodak Moments or SFAD
  - CDA No-Articulation agreement during RSS Occultation
- Liens:
  - No liens, SPAM items, SPLAT items or Resource Checker items.