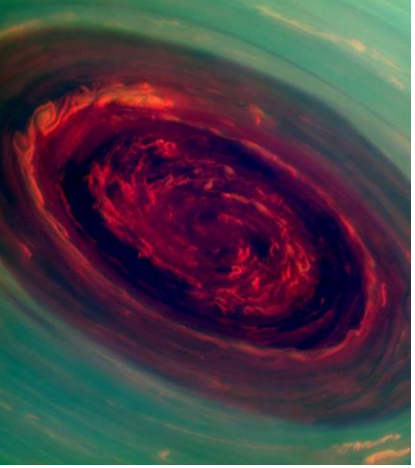

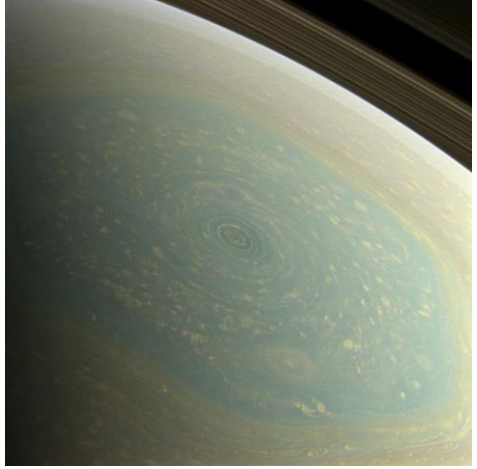
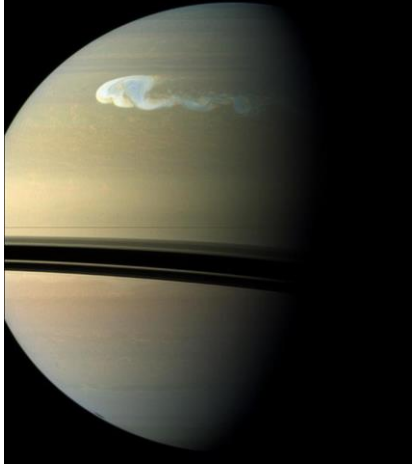

Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 128_129 Segment Legacy Package

Segment Boundary: March 25, 2010– April 5, 2010
2010-084T03:34:00 – 2010-095T02:49:00 (SCET)

Integration Began 05/18/2009
Segment Delivered to S58 Sequence 08/18/2009
Lead Integrator was Shawn Boll

Legacy Package Assembled by Shawn Boll

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

Segment Overview and Final Products

Segment Summary

- This 11 day segment took place during the Equinox Mission in an equatorial orbit. It covered the outbound leg of Rev 128, through apoapse, and the inbound leg of Rev 129.
- There was a lot of time given to daily UVIS apoapse mosaics of the Saturn system. CIRS had several observations to measure composition and a Mid-IR map of Saturn to determine upper troposphere and tropopause temperature.
- As a “pseudo-cross discipline” segment, a lot of time was given to other disciplines, including several CAPS magnetosphere survey measurements, MAG calibration rolls, icy satellites (Rhea, Titan, Dione, Iapetus, Epimetheus), VIMS rings, and an OPNAV (optical navigation).
- Significant effort went into cutting back on initial data volume desires so that the science planned could fit on the SSRs.
- A single waypoint was chosen for the entire segment. In this case the RBOT (Reaction wheel friendly) RA/Dec suggestion was compatible with the science desires. When in an equatorial orbit, these secondary pointing suggestions line up very closely to the “NSP” direction.

Final Sequenced SPASS (1 of 2)

Saturn 128_129 Legacy

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S58, length = 34 days		2010-060T19:04:00		034T07:45:00	2010-095T02:49:00			
SATURN_128_129 Segment		2010-084T03:34:00		010T23:15:00	2010-095T02:49:00			
SP_128SA_WAYPTTURN084_PRIME	M	2010-084T03:34:00		000T00:40:00	2010-084T04:14:00	ISS_NAC to Saturn	NEG_Z to 37.3/83.6	RBOT required custom hand-off between WAYPTTURN and ISS Titan at NEG_Z to 32.541/82.773. SPASS errors will occur for these two activities. NOT changing pointing of this WAYPTTURN in order to avoid errors in ISS Sat, MAG, UVIS, CIRS and SP DLTURN.
NEW WAYPOINT		**2010-084T04:14:00**		**010T22:35:00**	**2010-095T02:49:0(**	**ISS_NAC to Saturn**	**NEG_Z to 37.3/83.6**	
ISS_128TI_M90R3CLD084_PRIME	C, M, U	2010-084T04:14:00	E128_M90R3CLD084 +000T00:00:00	000T01:15:00	2010-084T05:29:00	ISS_NAC to Titan	NEG_Z to 167.08/14.142	
ISS_128OT_SATELLORB010_PRIME	M	2010-084T05:29:00		000T00:30:00	2010-084T05:59:00	ISS_NAC to Rocks	NEG_Z to 37.3/83.6	
MAG_128SU_CALROLL001_PRIME	M	2010-084T05:59:00		000T06:45:00	2010-084T12:44:00	NEG_X to Sun (0.0,0.0,-30.0 deg. offset)	Rolling	
UVIS_128SA_MOS128APO002_PRIME	M	2010-084T12:44:00		000T10:15:00	2010-084T22:59:00	ISS_NAC to Saturn (-0.038,69.999,0.011 deg. offset)	NEG_Z to 37.3/83.6	
CIRS_128SA_COMPSIT003_PRIME	M	2010-084T22:59:00		000T08:40:00	2010-085T07:39:00	CIRS_FP1 to Saturn	NEG_Z to 37.3/83.6	
SP_128EA_DLTURN085_PRIME	M	2010-085T07:39:00		000T00:40:00	2010-085T08:19:00	XBAND to Earth	NEG_Y to 271.35/-6.2	
SP_128EA_C34HEFOTP085_PRIME	C, E, M, N	2010-085T08:19:00		000T09:00:00	2010-085T17:19:00	XBAND to Earth	4_Hr_Rolling	NEG_Y to 271.35/-6.2 (Saturn, (0,0,-9.5)); MIMI,CAPS,CDA; MIMI ENA Imaging Series Candidate
NAV_128SK_OPNAVK003_PRIME	M	2010-085T17:19:05		000T00:58:55	2010-085T18:18:00	ISS_NAC to 275.583/3.299	NEG_Z to 37.3/83.6	
NAV_128SA_WAYPTTURN851_PRIME	M	2010-085T18:18:00		000T00:01:00	2010-085T18:19:00	ISS_NAC to Saturn	NEG_Z to 37.3/83.6	
ISS_128OT_SATELLORB014_PRIME	M	2010-085T18:19:00		000T00:30:00	2010-085T18:49:00	ISS_NAC to Rocks	NEG_Z to 37.3/83.6	
ISS_128DI_MUTUALEVE003_PRIME	M	2010-085T18:49:00		000T00:43:00	2010-085T19:32:00	ISS_NAC to Dione (0.0,-8.0,0.0 deg. offset)	NEG_Z to 37.3/83.6	ISS_NAC to Dione control of secondary axis not required
CIRS_128SA_COMPSIT004_PRIME	M	2010-085T19:32:00		000T08:35:00	2010-086T04:07:00	CIRS_FP1 to Saturn	NEG_Z to 37.3/83.6	
UVIS_128SA_MOS128APO003_PRIME	M	2010-086T04:07:00		000T11:00:00	2010-086T15:07:00	ISS_NAC to Saturn (-0.033,60.001,0.011 deg. offset)	NEG_Z to 37.3/83.6	
ISS_128JA_MUTUALEVE004_PRIME	M	2010-086T15:07:00		000T00:52:00	2010-086T15:59:00	ISS_NAC to Janus	NEG_Z to 37.3/83.6	ISS_NAC to Janus control of secondary axis not required
ISS_128OT_SATELLORB015_PRIME	M	2010-086T15:59:00		000T01:40:00	2010-086T17:39:00	ISS_NAC to Rocks	NEG_Z to 37.3/83.6	
SP_128EA_DLTURN086_PRIME	M	2010-086T17:39:00		000T00:40:00	2010-086T18:19:00	XBAND to Earth	NEG_Y to 271.35/-6.2	
SP_128EA_M70METOTB086_PRIME	C, M, N	2010-086T18:19:00		000T09:00:00	2010-087T03:19:00	XBAND to Earth	4_Hr_Rolling	NEG_Y to 271.35/-6.2 (Saturn, (0,0,-9.5)); MIMI,CAPS,CDA; MIMI ENA Imaging Series Candidate
SP_128SA_WAYPTTURN087_PRIME	M	2010-087T03:19:00		000T00:40:00	2010-087T03:59:00	ISS_NAC to Saturn	NEG_Z to 37.3/83.6	
CAPS_128SA_MAGBNDPTG005_PRIME	M	2010-087T03:59:00		000T06:00:00	2010-087T09:59:00	POS_Y to COROT (0.0,0.0,55.0 deg. offset)	NEG_Z to 37.3/83.6	
UVIS_128SA_MOS128APO005_PRIME	M	2010-087T09:59:00		000T11:45:00	2010-087T21:44:00	ISS_NAC to Saturn (-0.0050,9.997,0.0 deg. offset)	NEG_Z to 37.3/83.6	
ISS_128RH_MUTUALEVE011_PRIME	M	2010-087T21:44:00		000T00:41:00	2010-087T22:25:00	ISS_NAC to Rhea	NEG_Z to 37.3/83.6	ISS_NAC to Rhea control of secondary axis not required
CAPS_128SW_SWAURPTG007_PRIME	M	2010-087T22:25:00		000T05:59:00	2010-088T04:24:00	NEG_X to Sun (0.0,0.0,-30.0 deg. offset)	Rolling	
ISS_128OT_OUTERSATS002_PRIME	M, U	2010-088T04:24:00		000T03:00:00	2010-088T07:24:00	UVIS_FUV to Rocks (0.0,55.0,0.0 deg. offset)	NEG_X to Sun	
SP_128EA_DLTURN088_PRIME	M	2010-088T07:24:00		000T00:40:00	2010-088T08:04:00	XBAND to Earth	POS_X to NEP	
SP_128EA_C70METSEQ088_PRIME	C, E, M	2010-088T08:04:00		000T09:00:00	2010-088T17:04:00	XBAND to Earth	Rolling/SRU	POS_X to NEP
Apoapse Per = 17.6 d, inc ...		2010-088T17:01:54		000T00:00:01	2010-088T17:01:55			
SP_129SA_WAYPTTURN088_PRIME	M	2010-088T17:04:00		000T00:40:00	2010-088T17:44:00	ISS_NAC to Saturn	NEG_Z to 37.3/83.6	
UVIS_129IC_ALPVIR001_PRIME	I, M	2010-088T17:44:00		000T03:00:00	2010-088T20:44:00	UVIS_FUV to Star	NEG_Z to 37.3/83.6	
UVIS_129SA_MOS128APO006_PRIME	M	2010-088T20:44:00		000T11:00:00	2010-089T07:44:00	ISS_NAC to Saturn (-0.033,54.997,0.011 deg. offset)	NEG_Z to 37.3/83.6	
CIRS_129SA_COMPSIT001_PRIME	M, R, V	2010-089T07:44:00		000T09:40:00	2010-089T17:24:00	CIRS_FP1 to Saturn	NEG_Z to 37.3/83.6	
SP_129EA_DLTURN089_PRIME	M, R	2010-089T17:24:00		000T00:40:00	2010-089T18:04:00	XBAND to Earth	POS_X to NEP	
SP_129EA_M70METSEQ089_PRIME	C, M, R	2010-089T18:04:00		000T09:00:00	2010-090T03:04:00	XBAND to Earth	Rolling/SRU	POS_X to NEP
SP_129SA_WAYPTTURN090_PRIME	M	2010-090T03:04:00		000T00:40:00	2010-090T03:44:00	ISS_NAC to Saturn	NEG_Z to 37.3/83.6	
CAPS_129SW_SWAURPTG002_PRIME	M	2010-090T03:44:00		000T04:25:00	2010-090T08:09:00	NEG_X to Sun (0.0,0.0,-30.0 deg. offset)	Rolling	
CIRS_129SA_MIRMAP001_PRIME	M, V	2010-090T08:09:00		000T23:00:00	2010-091T07:09:00	CIRS_FP3 to Saturn	NEG_Z to 37.3/83.6	

Final Sequenced SPASS (2 of 2)

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S58, length = 34 days		2010-060T19:04:00		034T07:45:00	2010-095T02:49:00			
SATURN_128_129 Segment		2010-084T03:34:00		010T23:15:00	2010-095T02:49:00			
SP_129EA_DLTURN091_PRIME	M	2010-091T07:09:00		000T00:40:00	2010-091T07:49:00	XBAND to Earth	POS_X to NEP	
SP_129EA_C34HEFSEQ091_PRIME	C, M	2010-091T07:49:00		000T09:00:00	2010-091T16:49:00	XBAND to Earth	Rolling/SRU	POS_X to NEP
SP_129SA_WAYPTTURN091_PRIME	M	2010-091T16:49:00		000T00:40:00	2010-091T17:29:00	ISS_NAC to Saturn	NEG_Z to 37.3/83.6	
UVIS_129SA_MOS128APO009_PRIME	M	2010-091T17:29:00		000T11:00:00	2010-092T04:29:00	ISS_NAC to Saturn	NEG_Z to 37.3/83.6	
ISS_129EP_MUTUALEVE002_PRIME	M	2010-092T04:29:00		000T00:57:00	2010-092T05:26:00	ISS_NAC to Epimetheus	NEG_Z to 37.3/83.6	ISS_NAC to Epimetheus control of secondary axis not required
CAPS_129SW_SWAURPTG004_PRIME	M	2010-092T05:26:00		000T01:43:00	2010-092T07:09:00	NEG_X to Sun (0.0,0.0,-30.0 deg. offset)	NEG_Z to 37.3/83.6	
SP_129EA_DLTURN092_PRIME	M	2010-092T07:09:00		000T00:40:00	2010-092T07:49:00	XBAND to Earth	NEG_Y to 270.84/-7.4	
SP_129EA_C34HEFOTP092_PRIME	C, M, N	2010-092T07:49:00		000T09:00:00	2010-092T16:49:00	XBAND to Earth	4_Hr_Rolling	NEG_Y to 270.84/-7.4 (Saturn, (0,0,-9.5)); MIMI,CAPS,CDA
SP_129SA_WAYPTTURN092_PRIME	M	2010-092T16:49:00		000T00:40:00	2010-092T17:29:00	ISS_NAC to Saturn	NEG_Z to 37.3/83.6	
ISS_129TI_M180R2HZ092_PRIME	C, M, U	2010-092T17:29:00	E129_M180R2HZ092 +000T00:00:00	000T01:15:00	2010-092T18:44:00	ISS_NAC to Titan	NEG_Z to 245.858/5.627	
UVIS_129SA_MOS128APO010_PRIME	M	2010-092T18:44:00		000T12:10:00	2010-093T06:54:00	ISS_NAC to Saturn	NEG_Z to 37.3/83.6	
SP_129EA_DLTURN093_PRIME	M	2010-093T06:54:00		000T00:40:00	2010-093T07:34:00	XBAND to Earth	NEG_Y to 270.84/-7.4	
SP_129EA_C34HEFOTB093_PRIME	C, M, N	2010-093T07:34:00		000T09:00:00	2010-093T16:34:00	XBAND to Earth	4_Hr_Rolling	NEG_Y to 270.84/-7.4 (Saturn, (0,0,-9.5)); MIMI,CAPS,CDA; 'SEQ' Pass
SP_129SA_WAYPTTURN093_PRIME	M	2010-093T16:34:00		000T00:40:00	2010-093T17:14:00	ISS_NAC to Saturn	NEG_Z to 37.3/83.6	
VIMS_129RI_EG130PHAS001_PRIME	M	2010-093T17:14:00		000T17:55:00	2010-094T11:09:00	VIMS_IR to Rings	NEG_Z to 37.3/83.6	
CAPS_129SA_MAGBNDPTG001_PRIME	M	2010-094T11:09:00		000T06:00:00	2010-094T17:09:00	POS_Y to COROT (0.0,0.0,75.0 deg. offset)	NEG_Z to 37.3/83.6	
SP_129EA_DLTURN094_PRIME	M	2010-094T17:09:00		000T00:40:00	2010-094T17:49:00	XBAND to Earth	POS_X to NEP	
SP_129EA_M70METSEQ094_PRIME	C, E, M	2010-094T17:49:00		000T09:00:00	2010-095T02:49:00	XBAND to Earth	5_Hr_Rolling	

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)	NET_MARGN (%)	CAROVR (Mb)
SP_128EA_C34HEFOTP085_PRIME	085 08:19	085 17:19	0	1904	121	2026	3533	1508	0	508	53	2587	854	-1733	-12	0%	1733
SP_128EA_M70METOTB086_PRIME	086 18:19	087 03:19	1733	1708	106	3546	3533	-12	0	576	53	4163	4277	114	142	1%	0
SP_128EA_C70METSEQ088_PRIME	088 08:04	088 17:04	0	2565	121	2686	3533	847	0	1437	53	4176	4158	-19	27	0%	18
SP_129EA_M70METSEQ089_PRIME	089 18:04	090 03:04	18	2622	106	2746	3533	787	0	1373	53	4172	4259	87	27	0%	0
SP_129EA_C34HEFSEQ091_PRIME	091 07:49	091 16:49	0	1781	121	1902	3533	1631	0	392	53	2347	1015	-1332	-59	0%	1332
SP_129EA_C34HEFOTP092_PRIME	092 07:49	092 16:49	1332	752	63	2147	3533	1386	0	418	53	2618	849	-1769	-59	0%	1769
SP_129EA_C34HEFOTB093_PRIME	093 07:34	093 16:34	1769	963	62	2794	3533	739	0	490	53	3337	1014	-2324	-59	0%	2323
SP_129EA_M70METSEQ094_PRIME	094 17:49	095 02:49	2323	1164	107	3594	3533	-59	0	684	53	4271	4277	6	7	0%	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	084 03:34	085 08:19	275.6	54.2	142.8	10.4	67.0	204.5	93.1	0.0	849.7	189.8	0.0	0.0	120.2	2007.3
SP_128EA_C34HEFOTP085_PRIME	085 08:19	085 17:19	32.4	17.0	86.4	3.2	0.0	64.0	29.2	0.0	266.0	4.9	0.0	0.0	0.0	503.1
DAILY TOTAL SCIENCE	084 03:34	085 17:19	308.0	71.2	229.2	13.6	67.0	268.5	122.3	0.0	1115.8	194.7	0.0	0.0	120.2	
OBSERVATION_NOR	085 17:19	086 18:19	90.0	47.2	123.6	9.0	184.0	177.8	81.0	0.0	738.9	230.1	0.0	0.0	104.5	1786.0
OBSERVATION_SI	085 17:19	086 18:19	0.0	0.0	0.0	0.0	10.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8
SP_128EA_M70METOTB086_PRIME	086 18:19	087 03:19	32.4	17.0	86.4	3.2	0.0	64.0	29.2	0.0	334.0	4.9	0.0	0.0	0.0	571.2
DAILY TOTAL SCIENCE	085 17:19	087 03:19	122.4	64.1	210.0	12.2	194.8	241.9	110.2	0.0	1073.0	235.0	0.0	0.0	104.5	
OBSERVATION_NOR	087 03:19	088 08:04	900.5	54.2	0.0	30.5	130.0	204.5	124.2	0.0	828.8	268.7	0.0	0.0	120.2	2661.5
SP_128EA_C70METSEQ088_PRIME	088 08:04	088 17:04	64.8	17.0	86.4	3.2	0.0	64.0	38.9	0.0	1144.8	4.9	0.0	0.0	0.0	1424.1
DAILY TOTAL SCIENCE	087 03:19	088 17:04	965.3	71.2	86.4	33.7	130.0	268.5	163.1	0.0	1973.6	273.6	0.0	0.0	120.2	
OBSERVATION_NOR	088 17:04	089 18:04	360.0	47.2	139.2	9.0	308.3	177.8	108.0	0.0	927.9	320.9	200.0	0.0	104.5	2702.8
SP_129EA_M70METSEQ089_PRIME	089 18:04	090 03:04	129.6	17.0	86.4	3.2	0.0	64.0	38.9	0.0	1016.0	4.9	0.0	0.0	0.0	1360.1
DAILY TOTAL SCIENCE	088 17:04	090 03:04	489.6	64.1	225.6	12.2	308.3	241.9	146.9	0.0	1943.9	325.9	200.0	0.0	104.5	

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

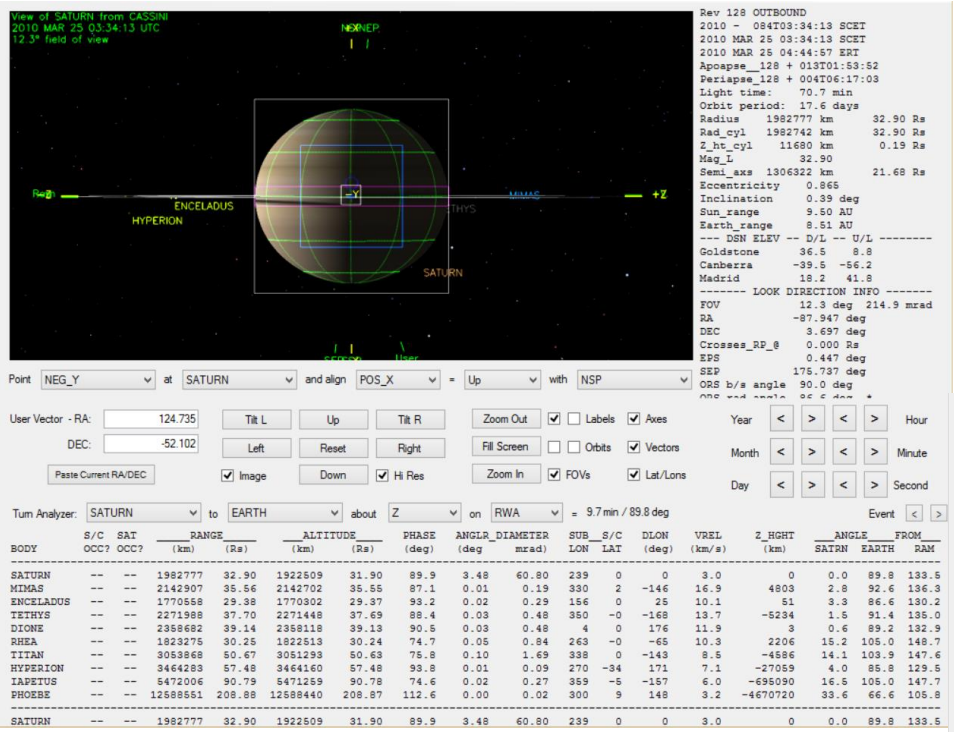
Final Sequenced SMT and Data Volume (2 of 2)

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	090 03:04	091 07:49	339.3	54.2	331.2	10.4	0.0	204.5	124.2	0.0	451.0	0.0	250.0	0.0	120.2	1884.9
SP_129EA_C34HEFSEQ091_PRIME	091 07:49	091 16:49	32.4	17.0	86.4	3.2	0.0	64.0	38.9	0.0	141.2	4.9	0.0	0.0	0.0	388.1
DAILY TOTAL SCIENCE	090 03:04	091 16:49	371.7	71.2	417.6	13.6	0.0	268.5	163.1	0.0	592.2	4.9	250.0	0.0	120.2	
OBSERVATION_NOR	091 16:49	092 07:49	72.5	28.3	0.0	5.4	60.0	106.7	64.8	0.0	235.3	172.0	0.0	0.0	62.7	807.7
SP_129EA_C34HEFOTP092_PRIME	092 07:49	092 16:49	58.3	17.0	86.4	3.2	0.0	64.0	38.9	0.0	141.1	4.9	0.0	0.0	0.0	413.9
DAILY TOTAL SCIENCE	091 16:49	092 16:49	130.9	45.3	86.4	8.6	60.0	170.7	103.7	0.0	376.5	176.9	0.0	0.0	62.7	
OBSERVATION_NOR	092 16:49	093 07:34	212.4	27.8	18.0	5.3	35.0	104.9	63.7	0.0	231.3	256.2	0.0	0.0	61.6	1016.3
SP_129EA_C34HEFOTB093_PRIME	093 07:34	093 16:34	129.6	17.0	86.4	3.2	0.0	64.0	38.9	0.0	141.1	4.9	0.0	0.0	0.0	485.2
DAILY TOTAL SCIENCE	092 16:49	093 16:34	342.0	44.8	104.4	8.6	35.0	168.9	102.6	0.0	372.5	261.1	0.0	0.0	61.6	
OBSERVATION_NOR	093 16:34	094 17:49	363.6	47.6	0.0	9.1	0.0	139.6	109.1	0.0	396.0	0.0	88.4	0.0	105.5	1258.9
SP_129EA_M70METSEQ094_PRIME	094 17:49	095 02:49	129.6	17.0	86.4	3.2	0.0	64.0	38.9	0.0	334.0	4.9	0.0	0.0	0.0	678.1
DAILY TOTAL SCIENCE	093 16:34	095 02:49	493.2	64.6	86.4	12.3	0.0	203.6	148.0	0.0	730.0	4.9	88.4	0.0	105.5	

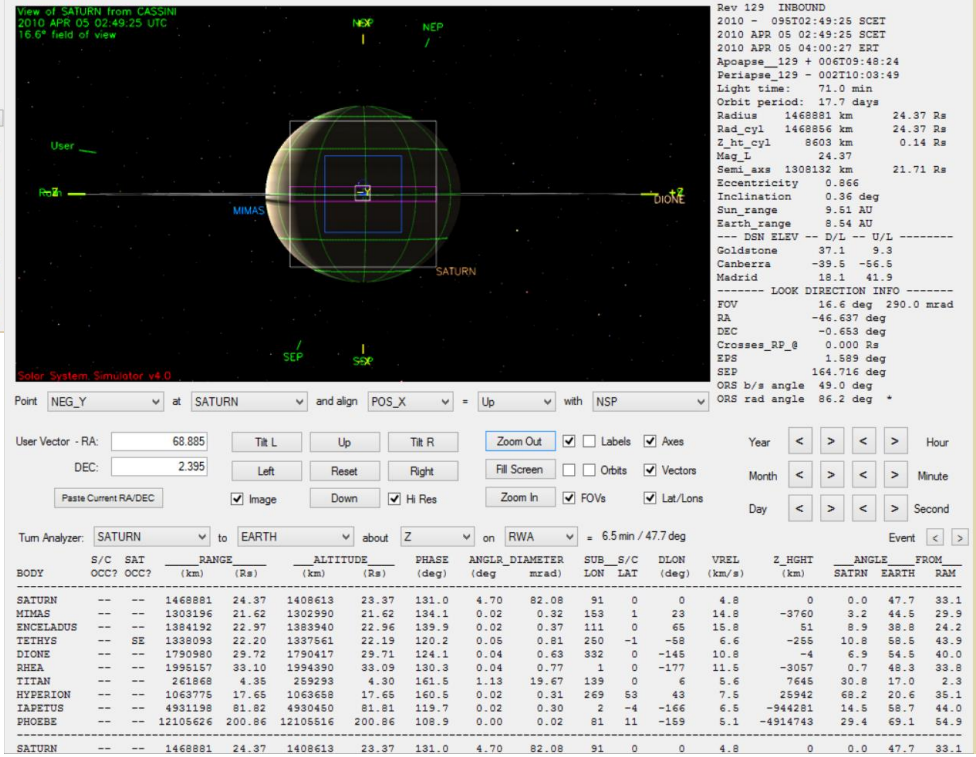
* NOTE: Negative SSR (P4) Margins did not result in data loss due to compression/under-utilization.

Segment Geometry



Seg Start (Left)

Seg End (below)



	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	32.9 Rs	89.9	0
Apoapse	40.45 Rs	105.1	0
Segment End	24.37 Rs	131.0	0

Solar Geometry – ORS Boresight Concerns

No ORS Boresight Solar Constraints on Science Pointing.

Daily Science Highlights

DOY 084: The day began with a Titan cloud monitoring campaign observation by the ORS instruments while the MAPS teams took measurements for their magnetospheric boundaries campaign. ISS took images of small satellites to better determine their orbital characteristics and MAG performed a roll calibration. The largest part of the day was used by UVIS as they conducted mosaic scans of Saturn's magnetosphere.

DOY 085: CIRS observed Saturn, measuring oxygen compounds (H_2O, CO_2) in the stratosphere as a function of latitude. The MAPS teams transitioned to a solar wind – auroral campaign and the NAV team took some optical navigation images. ISS snapped some images of small satellites to better determine their orbital characteristics, followed by a mutual event in the form of a transit of Dione across Tethys.

DOY 086: CIRS again observed Saturn, measuring oxygen compounds (H_2O, CO_2) in the stratosphere as a function of latitude. UVIS conducted mosaic scans of Saturn's magnetosphere as the MAPS teams continued their solar wind – auroral campaign. ISS observed the transit of Janus across Titan and took images of other small satellites to better determine their orbital characteristics.

DOY 087: CAPS performed survey measurements with "prime" pointing while the MAPS teams continued their solar wind – auroral campaign. UVIS spent most of the day conducting mosaic scans of Saturn's magnetosphere and ISS watched the transit of Rhea across Janus for orbit determination purposes.

DOY 088: As Cassini passed through apoapse, CAPS performed survey measurements with "prime" pointing and the MAPS teams continued their solar wind – auroral campaign. ISS took images of small satellites to better determine their orbital characteristics and UVIS performed a stellar calibration.

DOY 089: A big chunk of the day was taken up by more UVIS mosaic scans of Saturn's magnetosphere. CIRS again observed Saturn, measuring oxygen compounds (H_2O, CO_2) in the stratosphere as a function of latitude, while the MAPS teams continued their solar wind – auroral campaign. RSS performed Ka-TWTA maintenance.

DOY 090: CAPS performed survey measurements with "prime" pointing while the MAPS teams continued their solar wind – auroral campaign. Almost the entire day was dedicated to a CIRS mid-IR map of Saturn to determine upper troposphere and tropopause temperature with spatial resolution of about two degrees of latitude and longitude.

DOY 091: In addition to the ongoing MAPS solar wind – auroral campaign, UVIS spent the day performing more mosaic scans of Saturn's magnetosphere.

DOY 092: ISS observed the transit of Epimetheus across Janus for orbit determination purposes as the MAPS solar wind – auroral campaign continued, with some "prime" pointing time for CAPS. ISS led an ORS campaign to monitor the clouds on Titan to round out the day.

DOY 093: The day was filled with another round of UVIS mosaic scans of Saturn's magnetosphere. The MAPS teams transitioned to a magnetospheric boundaries campaign.

DOY 094: VIMS performed an E/G Ring phase observation that takes the bulk of the day. The MAPS teams continued their magnetospheric boundaries campaign, while also conducting some dusk magnetosphere observations. CAPS got some more "prime" pointing time.

Segment Integration Planning

Timeline Gaps and Suggested Observations

Saturn Rev 128_129 (pseudo-xd) Strawman Statistics

2010-084T03:34:00 --> 2010-095T02:49:00

	Requested in CIMS				Allocated in Timeline						
Prime Pointing Request Type	**Requests**	**Min. Duration**	**Max. Duration**	**Total Duration**	**Requests**	**Min. Duration**	**Max. Duration**	**Total Duration**	**% Alloc. Req.**	**% Alloc. Time**	**Notes**
CAPS											
SA_MAGBNDPTG	2	000T06:00:00	000T06:00:00	000T12:00:00	2	000T06:00:00	000T06:00:00	000T12:00:00	100.00%	100.00%	
SW_SWAURPTG	8	000T06:00:00	000T06:00:00	002T00:00:00	3	000T01:43:00	000T05:59:00	000T12:07:00	37.50%	25.24%	
CIRS											
SA_COMPSIT	2	000T22:35:00	001T20:00:00	002T18:35:00	3	000T08:35:00	000T09:40:00	001T02:55:00	150.00%	40.43%	
SA_MIRMAP	1	000T23:00:00	000T23:00:00	000T23:00:00	1	000T23:00:00	000T23:00:00	000T23:00:00	100.00%	100.00%	
ISS											
MUTUALEVE	23	000T00:40:00	000T01:10:00	000T18:36:00	4	000T00:41:00	000T00:57:00	000T03:13:00	17.39%	17.29%	Conflicts with downlinks and long observations.
OT_OUTERSATS	2	000T03:00:00	000T03:00:00	000T06:00:00	1	000T03:00:00	000T03:00:00	000T03:00:00	50.00%	50.00%	
OT_SATELLORB	9	000T00:30:00	000T00:30:00	000T04:30:00	3	000T00:30:00	000T01:40:00	000T02:40:00	33.33%	59.26%	
TI_CLOUD_MONITOR	2	000T01:15:00	000T01:15:00	000T02:30:00	2	000T01:15:00	000T01:15:00	000T02:30:00	100.00%	100.00%	
MAG											
SU_CALROLL	1	000T06:45:00	000T06:45:00	000T06:45:00	1	000T06:45:00	000T06:45:00	000T06:45:00	100.00%	100.00%	
NAV											
SA_WAYPTTURN	1	000T00:01:00	000T00:01:00	000T00:01:00	1	000T00:01:00	000T00:01:00	000T00:01:00	100.00%	100.00%	
SK_OPNAVK	1	000T00:59:00	000T00:59:00	000T00:59:00	1	000T00:59:00	000T00:59:00	000T00:59:00	100.00%	100.00%	
UVIS											
IC_ALPVIR	1	000T03:00:00	000T03:00:00	000T03:00:00	1	000T03:00:00	000T03:00:00	000T03:00:00	100.00%	100.00%	
SA_MOS128APO	9	000T08:00:00	000T08:00:00	003T00:00:00	6	000T11:00:00	000T12:10:00	002T19:10:00	66.67%	93.29%	
VIMS											
VIMS_129RI_EG130PHAS001_PRIME	1	000T18:00:00	000T18:00:00	000T18:00:00	1	000T17:55:00	000T17:55:00	000T17:55:00	100.00%	99.54%	

The Strawman timeline was first presented to the TWT in a complete form without open periods (gaps). All observations were planned ahead of time by the integration leads based on the TWT approved formula for what were called the “pseudo-cross discipline” apoapse segments.

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)
1	SP_128EA_C34HEFOTP085_PRIME	085 08:19	085 17:19	0	2124	121	2245	3544	1299	0	576	53	2875	854	-2021	-1463	-7%	2021
	SP_128EA_M70METOTB086_PRIME	086 18:19	087 03:19	2021	1899	106	4025	3544	**-480**	0	576	53	4173	4277	104	-1463	-8%	0
2	SP_128EA_C34HEFNON088_PRIME	088 08:04	088 17:04	0	2156	121	2277	3544	1267	0	576	53	2907	1015	-1892	-1567	-12%	1892
	SP_129EA_M70METNON089_PRIME	089 18:04	090 03:04	1892	2249	106	4246	3544	**-701**	0	650	53	4247	4259	12	-1567	-13%	0
3	SP_129EA_C34HEFNON091_PRIME	091 07:49	091 16:49	0	2491	121	2612	3544	932	0	586	53	3252	1015	-2237	-1579	-21%	2236
	SP_129EA_C34HEFOTP092_PRIME	092 07:49	092 16:49	2236	1135	63	3435	3544	109	0	612	53	4100	849	-3251	-1579	-25%	3251
	SP_129EA_C34HEFOTB093_PRIME	093 07:34	093 16:34	3251	1282	62	4596	3544	**-1051**	0	684	53	4281	1014	-3268	-1579	-29%	3267
	SP_129EA_M70METNON094_PRIME	094 17:49	095 02:49	3267	1751	107	5124	3544	**-1579**	0	684	53	4281	4277	-4	0	0%	**4**

Period 1: 2010-084T03:34 – 086T18:19 → Cut 480 Mbits.

Period 2: 2010-087T03:19 – 089T18:04 → Cut 701 Mbits.

Period 3: 2010-090T03:04 – 095T02:49 → Cut 2634 Mbits.

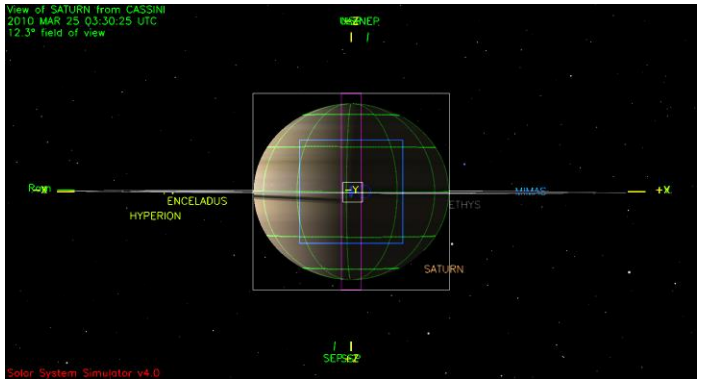
- At least 1051Mb must be cut prior to 093T07:34.
- No more than 4 Mb that is cut during the final downlink can count toward the 2634 Mb total.

Waypoint Selection

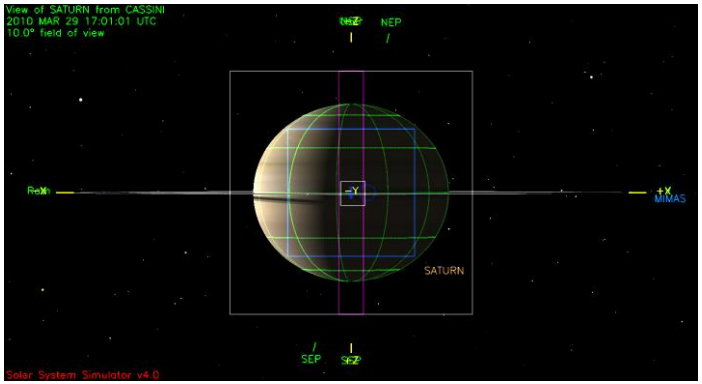
No Waypoint Selection Info Available.

Waypoints Chosen

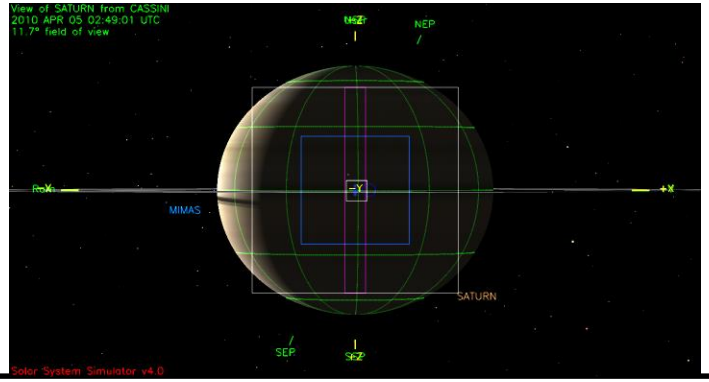
Waypoint 1 (Whole Segment): ISS_NAC to Saturn, NEG_Z to 37.3/83.6



START



APOAPSE



END

Notes & Liens

Notes:

- Pointing:
  - “RBOT-friendly” secondary used as the waypoint and for most science observations.
- Data Volume:
  - None
- DSN:
  - None
- Opmodes:
  - RSSP & RSSK opmodes for PIM on DOY 089.
- Special Activities:
  - None

Sequence Liens:

- None