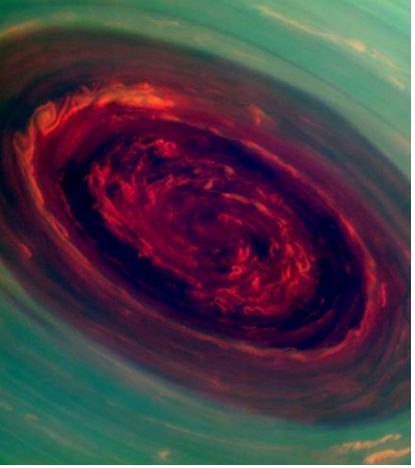

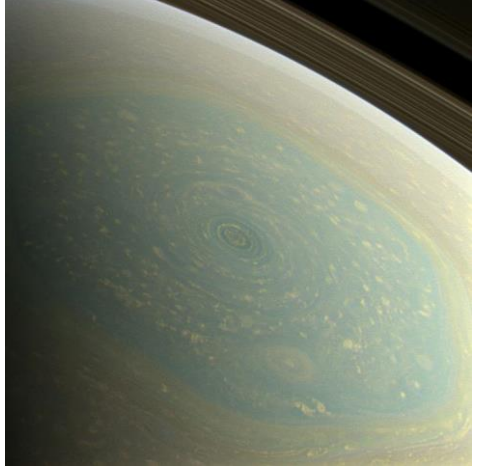
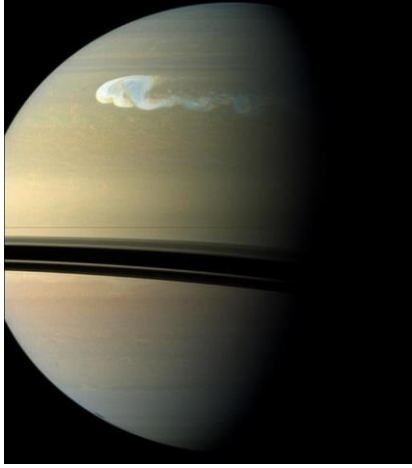

Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 40 Segment Legacy Package

Segment Boundary: March 2, 2007 – March 9, 2007
2007-061T09:51:00 – 2007-068T09:21:00 (SCET)

Integration Began 03/17/2003
Segment Delivered to S28 Sequence 10/06/2006
Lead Integrators were Jerod Gross & Barbara Larsen

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 was a week long periapse segment in the Prime Mission, during an inclined orbit. Early in the segment, as the spacecraft approached the planet, the views were of the north pole in high phase. By periapse, the spacecraft had swung around to the south pole. As the segment ended, outbound from periapse, the views were of the low phase southern hemisphere.

- Inbound Saturn science included CIRS Far-IR mapping and VIMS auroral mapping. UVIS observed stellar occultations of the rings and RADAR looked at Titan.

- Around periapse, ISS performed several Saturn limb scans and VIMS focused on cylindrical and south pole mapping. CIRS looked at Rhea, the rings, and Titan. RADAR performed a scatterometry observation of Titan.

- Minor solar – ORS viewing issues were encountered inbound to periapse, but were easily dismissed with a waiver of the CIRS “operational” flight rule.

- Many waypoints were chosen to maximize science return by reducing turn times.

Final Sequenced SPASS

Saturn 40 Legacy

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S028, length = 39 ...		2007-048T10:52:00	E039_SEQUENCE	038T21:12:00	2007-087T08:04:00			
SATURN rev 40 Segment		2007-061T09:51:00		006T23:30:00	2007-068T09:21:00			
SP_040SA_WAYPTTURN061_PRIME	M	2007-061T09:51:00		000T00:30:00	2007-061T10:21:00	ISS_NAC to Saturn	NEG_X to NSP	SP Turn to Waypoint
NEW WAYPOINT		**2007-061T10:21:00**		**001T00:00:00**	**2007-062T10:21:00**	**ISS_NAC to Saturn**	**NEG_X to NSP**	
CIRS_040SA_FIRMAP018_PRIME	C, M	2007-061T10:21:00		000T14:00:00	2007-062T00:21:00	CIRS_FP1 to Saturn	NEG_X to NSP	
SP_040EA_DLTURN062_PRIME	M	2007-062T00:21:00		000T00:30:00	2007-062T00:51:00	XBAND to Earth	POS_X to NEP	SP Turn to Earth
SP_040EA_G34BWGOTB062_PRIME	C, M, N	2007-062T00:51:00		000T09:00:00	2007-062T09:51:00	XBAND to Earth	Rolling	
SP_040SA_WAYPTTURN062_PRIME	M	2007-062T09:51:00		000T00:30:00	2007-062T10:21:00	ISS_NAC to Saturn	NEG_Z to NSP	SP Turn to Waypoint
NEW WAYPOINT		**2007-062T10:21:00**		**001T00:00:00**	**2007-063T10:21:00**	**ISS_NAC to Saturn**	**NEG_Z to NSP**	
VIMS_040SA_AURMAP001_PRIME	C, M, U	2007-062T10:21:00		000T14:00:00	2007-063T00:21:00	ISS_NAC to Saturn	NEG_Z to NSP	None
SP_040EA_DLTURN063_PRIME	M	2007-063T00:21:00		000T00:30:00	2007-063T00:51:00	XBAND to Earth	POS_X to NEP	SP Turn to Earth
SP_040EA_G34BWGNON063_PRIME	C, M	2007-063T00:51:00		000T09:00:00	2007-063T09:51:00	XBAND to Earth	Rolling	
SP_040SA_WAYPTTURN063_PRIME	M	2007-063T09:51:00		000T00:30:00	2007-063T10:21:00	ISS_NAC to Saturn	NEG_X to NSP	SP Turn to Waypoint
NEW WAYPOINT		**2007-063T10:21:00**		**000T16:15:00**	**2007-064T02:36:00**	**ISS_NAC to Saturn**	**NEG_X to NSP**	
UVIS_040ST_URGAMGRU005_PRIME	C, M, U, V	2007-063T10:21:00		000T04:39:00	2007-063T15:00:00	UVIS_FUV to 328.482/-37.365	NEG_X to NSP	
UVIS_040ST_URBETPSA005_PRIME	C, M, U, V	2007-063T15:00:00		000T02:16:00	2007-063T17:16:00	UVIS_FUV to 337.876/-32.346	NEG_X to NSP	
SP_040EA_DLTURN463_PRIME	M	2007-063T17:16:00		000T00:20:00	2007-063T17:36:00	XBAND to Earth	NEG_X to NEP	SP Turn to Earth
SP_040EA_M34BWGNON063_PRIME	M	2007-063T17:36:00		000T08:30:00	2007-064T02:06:00	XBAND to Earth	Rolling	
SP_040SA_WAYPTTURN064_PRIME	M	2007-064T02:06:00		000T00:30:00	2007-064T02:36:00	ISS_NAC to Saturn	POS_Z to NSP	SP Turn to Waypoint
NEW WAYPOINT		**2007-064T02:36:00**		**001T00:15:00**	**2007-065T02:51:00**	**ISS_NAC to Saturn**	**POS_Z to NSP**	
VIMS_040SA_AURMAP002_PRIME	C, M, R, U	2007-064T02:36:00		000T11:00:00	2007-064T13:36:00	ISS_NAC to Saturn	POS_Z to NSP	None
RADAR_040TI_NORTH4CAL001_PRIME	M	2007-064T13:36:00		000T01:00:00	2007-064T14:36:00	NEG_Z to Titan	POS_Y to North_Pole_Dir	
ISS_040RI_HIPHAMOVD001_PRIME	M, V	2007-064T14:36:00		000T02:15:00	2007-064T16:51:00	ISS_NAC to Rings	POS_Z to NSP	
SP_040EA_DLTURN064_PRIME	M	2007-064T16:51:00		000T00:30:00	2007-064T17:21:00	XBAND to Earth	NEG_X to NEP	SP Turn to Earth
SP_040EA_M70METNON064_PRIME	C, M	2007-064T17:21:00		000T09:00:00	2007-065T02:21:00	XBAND to Earth	Rolling	
SP_040SA_WAYPTTURN065_PRIME	M	2007-065T02:21:00		000T00:30:00	2007-065T02:51:00	ISS_NAC to Saturn	POS_X to NEP	SP Turn to Waypoint
NEW WAYPOINT		**2007-065T02:51:00**		**000T23:45:00**	**2007-066T02:36:00**	**ISS_NAC to Saturn**	**POS_X to NEP**	
CIRS_040RH_FP1FAZ0P5315_PRIME	M, U	2007-065T02:51:00		000T02:09:00	2007-065T05:00:00	CIRS_FP1 to Rhea	POS_X to NEP	
ISS_040SA_LIMBSCAN001_PRIME	M	2007-065T05:00:00		000T01:00:00	2007-065T06:00:00	ISS_NAC to Saturn	POS_X to NEP	
ISS_040SA_LIMBSCAN002_PRIME	M	2007-065T06:00:00		000T01:00:00	2007-065T07:00:00	ISS_NAC to Saturn	POS_X to NEP	
ISS_040SA_LIMBSCAN003_PRIME	M	2007-065T07:00:00		000T01:00:00	2007-065T08:00:00	ISS_NAC to Saturn	POS_X to NEP	
ISS_040SA_LIMBSCAN004_PRIME	M	2007-065T08:00:00		000T01:00:00	2007-065T09:00:00	ISS_NAC to Saturn	POS_X to NEP	
ISS_040SA_LIMBSCAN005_PRIME	M	2007-065T09:00:00		000T01:00:00	2007-065T10:00:00	ISS_NAC to Saturn	POS_X to NEP	
ISS_040SA_LIMBSCAN006_PRIME	M	2007-065T10:00:00		000T01:00:00	2007-065T11:00:00	ISS_NAC to Saturn	POS_X to NEP	
ISS_040SA_LIMBSCAN007_PRIME	M	2007-065T11:00:00		000T01:00:00	2007-065T12:00:00	ISS_NAC to Saturn	POS_X to NEP	
ISS_040SA_LIMBSCAN008_PRIME	M	2007-065T12:00:00		000T01:00:00	2007-065T13:00:00	ISS_NAC to Saturn	POS_X to NEP	
ISS_040SA_LIMBSCAN009_PRIME	M	2007-065T13:00:00		000T01:00:00	2007-065T14:00:00	ISS_NAC to Saturn	POS_X to NEP	
ISS_040SA_LIMBSCAN010_PRIME	M	2007-065T14:00:00		000T01:00:00	2007-065T15:00:00	ISS_NAC to Saturn	POS_X to NEP	
ISS_040SA_LIMBSCAN011_PRIME	M	2007-065T15:00:00		000T00:20:00	2007-065T15:20:00	ISS_NAC to Saturn	POS_X to NEP	
ISS_040TI_1X1PT150001_PRIME	M	2007-065T15:20:00		000T00:46:00	2007-065T16:06:00	ISS_NAC to Titan	NEG_X to Sun	
SP_040EA_DLTURN065_PRIME	M	2007-065T16:28:00		000T00:31:00	2007-065T16:59:00	XBAND to Earth (-20.0,0.0,0.0 deg. offset)	NEG_X to Saturn	SP Turn to Earth
SP_040EA_DLTURN465_PRIME	M	2007-065T16:59:00		000T00:07:00	2007-065T17:06:00	XBAND to Earth	NEG_X to Saturn	SP Turn to Earth
SP_040EA_M70METOTP065_PRIME	C, M, N	2007-065T17:06:00		000T09:00:00	2007-066T02:06:00	XBAND to Earth	NEG_X to Saturn	
SP_040SA_WAYPTTURN066_PRIME	M	2007-066T02:06:00		000T00:30:00	2007-066T02:36:00	ISS_NAC to Saturn	POS_Z to NSP	SP Turn to Waypoint
NEW WAYPOINT		**2007-066T02:36:00**		**001T07:05:00**	**2007-067T09:41:00**	**ISS_NAC to Saturn**	**POS_Z to NSP**	
VIMS_040SA_CYLMAP001_PRIME	M	2007-066T02:36:00		000T11:00:00	2007-066T13:36:00	ISS_NAC to Saturn	POS_Z to NSP	None
Periapse R = 12.1 Rs, lat =...		2007-066T07:09:04		000T00:00:01	2007-066T07:09:05			
VIMS_040SA_POLEMAP001_PRIME	C, M	2007-066T13:36:00		000T08:15:00	2007-066T21:51:00	ISS_NAC to Saturn	POS_Z to NSP	None
CIRS_040RI_TEMPL55MP001_PRIME	C, M, U	2007-066T21:51:00		000T02:00:00	2007-066T23:51:00	CIRS_FP1 to Rings	POS_Z to NSP	
SP_040EA_DLTURN066_PRIME	M	2007-066T23:51:00		000T00:30:00	2007-067T00:21:00	XBAND to Earth	NEG_X to NEP	SP Turn to Earth
SP_040EA_G34HEFOTB067_PRIME	C, E, M, N	2007-067T00:21:00		000T09:00:00	2007-067T09:21:00	XBAND to Earth	4_Hr_Delayed_Rolling	
SP_040SA_WAYPTTURN067_PRIME	M	2007-067T09:21:00		000T00:20:00	2007-067T09:41:00	ISS_NAC to Saturn	NEG_X to NSP	SP Turn to Waypoint
NEW WAYPOINT		**2007-067T09:41:00**		**001T00:10:00**	**2007-068T09:51:00**	**ISS_NAC to Saturn**	**NEG_X to NSP**	
CIRS_040RI_TEMPL40LP001_PRIME	C, M, U	2007-067T09:41:00		000T02:40:00	2007-067T12:21:00	CIRS_FP1 to Rings	NEG_X to NSP	
VIMS_040SA_CYLMAP002_PRIME	M, R	2007-067T12:21:00		000T06:00:00	2007-067T18:21:00	ISS_NAC to Saturn	NEG_X to NSP	None
RADAR_040TI_SOUTHSCAT001_PRIME	M	2007-067T18:21:00		000T01:30:00	2007-067T19:51:00	NEG_Z to Titan	POS_Y to North_Pole_Dir	
CIRS_040TI_COMPMAP026_PRIME	M	2007-067T19:51:00		000T04:00:00	2007-067T23:51:00	CIRS_FPB to Titan	NEG_Z to NTP	
SP_040EA_DLTURN067_PRIME	M	2007-067T23:51:00		000T00:30:00	2007-068T00:21:00	XBAND to Earth	NEG_X to NEP	SP Turn to Earth
SP_040EA_G70METNON068_PRIME	C, M	2007-068T00:21:00		000T09:00:00	2007-068T09:21:00	XBAND to Earth	Rolling	

Final Sequenced SMT and Data Volume (1 of 2)

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

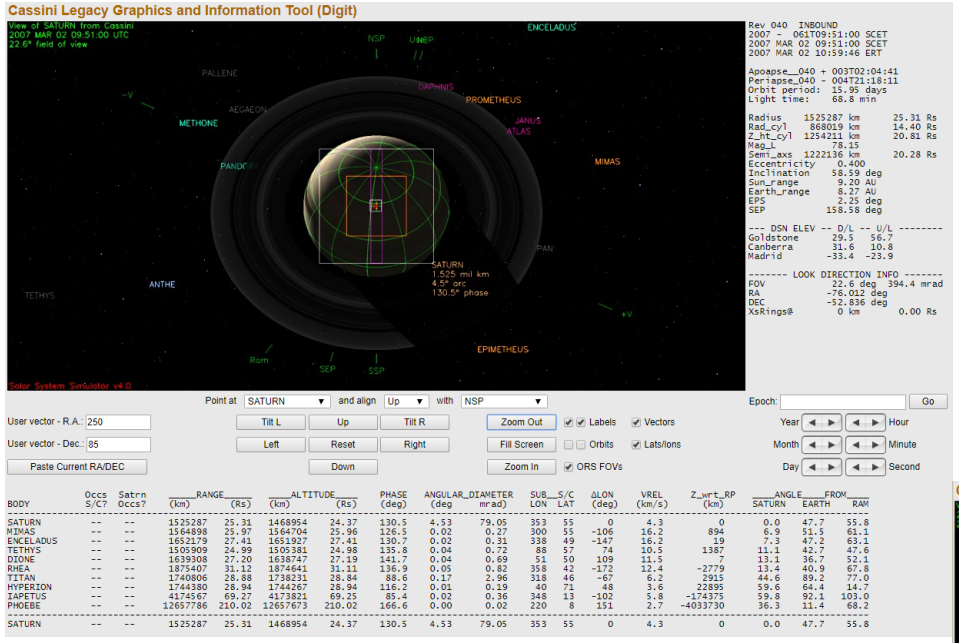
			OBSERVATION_PERIOD							DOWNLINK_PASS							
			P4						P5	RECORDED		PLAYBACK					
DOWNLINK PASS NAME	Start doy hh:mm	End doy hh:mm	START (Mb)	SCI (Mb)	HK+E (Mb)	TOTAL (Mb)	CPACTY (Mb)	MRGN (Mb)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGN (Mb)	NET_MARGN (Mb)	(%)	CAROVR (Mb)
SP_040EA_G34BWGOTB062_PRIME	062 00:51	062 09:51	0	440	51	491	3498	3007	0	221	53	765	1022	257	527	2%	0
SP_040EA_G34BWGNON063_PRIME	063 00:51	063 09:51	0	1193	51	1244	3498	2254	0	221	53	1518	1004	-515	270	1%	514
SP_040EA_M34BWGNON063_PRIME	063 17:36	064 02:06	514	407	26	947	3498	2551	0	170	50	1168	881	-287	270	1%	287
SP_040EA_M70METNON064_PRIME	064 17:21	065 02:21	287	2886	65	3238	3498	261	0	868	53	4150	4491	340	643	2%	0
SP_040EA_M70METOTP065_PRIME	065 17:06	066 02:06	0	3146	62	3208	3498	290	0	379	53	3628	3808	180	371	1%	0
SP_040EA_G34HEFOTB067_PRIME	067 00:21	067 09:21	0	1636	76	1712	3498	1787	0	232	53	1997	1206	-792	191	1%	791
SP_040EA_G70METNON068_PRIME	068 00:21	068 09:21	791	2463	64	3318	3498	180	0	446	53	3806	4535	729	886	4%	0

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	061 09:51	062 00:51	54.0	8.1	201.6	2.7	0.0	32.4	49.7	0.0	70.7	0.0	0.0	0.0	0.0	419.3
OBSERVATION_SI	061 09:51	062 00:51	0.0	0.0	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.0
SP_040EA_G34BWGOTB062_PRIME	062 00:51	062 09:51	32.4	4.9	86.4	1.6	0.0	19.4	29.2	0.0	42.4	2.5	0.0	0.0	0.0	218.8
DAILY TOTAL SCIENCE	061 09:51	062 09:51	86.4	12.9	305.0	4.3	0.0	51.8	78.9	0.0	113.2	2.5	0.0	0.0		
OBSERVATION_NOR	062 09:51	063 00:51	54.0	8.1	201.6	2.7	0.0	32.4	48.6	0.0	70.7	254.0	510.0	0.0	0.0	1182.1
SP_040EA_G34BWGNON063_PRIME	063 00:51	063 09:51	32.4	4.9	86.4	1.6	0.0	19.4	29.2	0.0	42.4	2.5	0.0	0.0	0.0	218.8
DAILY TOTAL SCIENCE	062 09:51	063 09:51	86.4	12.9	288.0	4.3	0.0	51.8	77.8	0.0	113.2	256.4	510.0	0.0		
OBSERVATION_NOR	063 09:51	063 17:36	27.9	4.2	90.0	3.4	0.0	16.7	25.1	0.0	36.5	163.2	30.0	0.0	0.0	397.0
OBSERVATION_SI	063 09:51	063 17:36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	6.0
SP_040EA_M34BWGNON063_PRIME	063 17:36	064 02:06	73.7	5.2	0.0	1.5	0.0	18.4	27.5	0.0	40.1	2.3	0.0	0.0	0.0	168.7
DAILY TOTAL SCIENCE	063 09:51	064 02:06	101.6	9.4	90.0	4.9	0.0	35.1	52.7	0.0	76.6	171.5	30.0	0.0		
OBSERVATION_NOR	064 02:06	064 17:21	662.7	16.4	158.4	3.0	116.0	108.5	53.2	6.3	1051.9	199.5	484.0	0.0	12.5	2872.5
SP_040EA_M70METNON064_PRIME	064 17:21	065 02:21	472.2	17.9	86.4	3.2	0.0	64.0	58.3	0.0	155.8	2.5	0.0	0.0	0.0	860.4
DAILY TOTAL SCIENCE	064 02:06	065 02:21	1134.9	34.4	244.8	6.2	116.0	172.5	111.6	6.3	1207.8	202.0	484.0	0.0		
OBSERVATION_NOR	065 02:21	065 17:06	574.4	15.9	31.0	4.7	1357.7	104.9	88.5	0.0	901.5	38.9	0.0	0.0	12.1	3129.6
SP_040EA_M70METOTP065_PRIME	065 17:06	066 02:06	129.6	9.7	86.4	1.6	0.0	64.0	38.9	0.0	42.4	2.5	0.0	0.0	0.0	375.1
DAILY TOTAL SCIENCE	065 02:21	066 02:06	704.0	25.6	117.4	6.3	1357.7	168.9	127.4	0.0	944.0	41.4	0.0	0.0		
OBSERVATION_NOR	066 02:06	067 00:21	80.1	16.0	147.6	4.0	0.0	48.1	96.1	0.0	447.8	7.3	770.0	0.0	0.0	1616.9
OBSERVATION_SI	066 02:06	067 00:21	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
SP_040EA_G34HEFOTB067_PRIME	067 00:21	067 09:21	32.4	6.4	86.4	1.6	0.0	19.4	38.9	0.0	42.4	2.5	0.0	0.0	0.0	230.1
DAILY TOTAL SCIENCE	066 02:06	067 09:21	112.5	22.4	238.0	5.6	0.0	67.5	135.0	0.0	490.2	9.7	770.0	0.0		
OBSERVATION_NOR	067 09:21	068 00:21	431.0	10.7	96.0	2.7	0.0	106.7	64.8	400.2	878.6	36.0	410.0	0.0	12.3	2449.1
OBSERVATION_SI	067 09:21	068 00:21	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
SP_040EA_G70METNON068_PRIME	068 00:21	068 09:21	181.8	8.1	86.4	1.6	0.0	64.0	54.8	0.0	42.4	2.5	0.0	0.0	0.0	441.6
DAILY TOTAL SCIENCE	067 09:21	068 09:21	612.9	18.8	186.4	4.3	0.0	170.7	119.6	400.2	921.1	38.5	410.0	0.0		

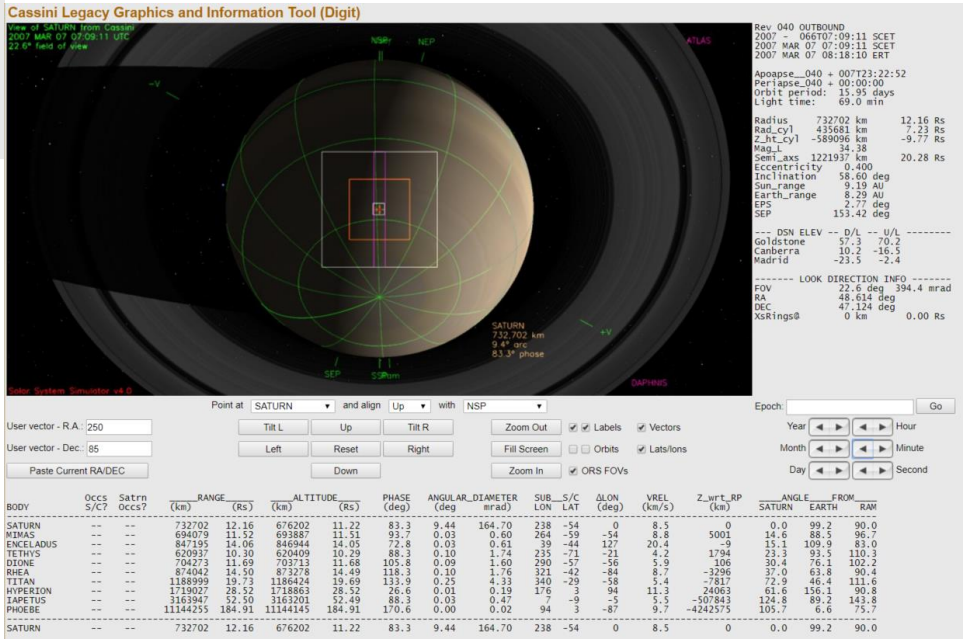
Segment Geometry (1 of 2)



BODY	Occs S/C?	Satrn Occs?	RANGE (km)	RANGE (Rs)	ALTITUDE (km)	ALTITUDE (Rs)	PHASE (deg)	ANGULAR DIAMETER (deg)	ANGULAR DIAMETER mrad	SUB_S/C LON	SUB_S/C LAT	ΔLON (deg)	VREL (km/s)	Z_wrt_RP (km)	ANGLE FROM SATURN	ANGLE FROM EARTH	ANGLE FROM RAM
SATURN	--	--	1525287	25.31	1468954	24.37	130.5	4.53	79.05	353	55	0	4.3	0	0.0	47.7	55.8
MIMAS	--	--	1564898	25.97	1564704	25.96	126.5	0.02	0.27	300	55	-106	16.2	894	6.9	51.5	61.1
ENCELADUS	--	--	1652179	27.41	1651927	27.41	130.7	0.02	0.31	338	49	-147	16.2	19	7.3	47.2	63.1
TETHYS	--	--	1505909	24.99	1505381	24.98	135.8	0.04	0.72	88	57	74	10.5	1387	11.1	42.7	47.6
DIONE	--	--	1639308	27.20	1638747	27.19	141.7	0.04	0.69	51	50	109	11.5	7	13.1	36.7	52.1
RHEA	--	--	1875407	31.12	1874641	31.11	136.9	0.05	0.82	358	42	-172	12.4	-2779	13.4	40.9	67.8
TITAN	--	--	1740806	28.88	1738231	28.84	88.6	0.17	2.96	318	46	-67	6.2	2915	44.6	89.2	77.0
HYPERION	--	--	1744380	28.94	1744267	28.94	116.2	0.01	0.19	40	71	48	3.6	22895	59.6	64.4	14.7
IAPETUS	--	--	4174567	69.27	4173821	69.25	85.4	0.02	0.36	348	13	-102	5.8	-174375	59.8	92.1	103.0
PHOEBE	--	--	12657786	210.02	12657673	210.02	166.6	0.00	0.02	220	8	151	2.7	-4033730	36.3	11.4	68.2
SATURN	--	--	1525287	25.31	1468954	24.37	130.5	4.53	79.05	353	55	0	4.3	0	0.0	47.7	55.8

← Seg Start (Left)

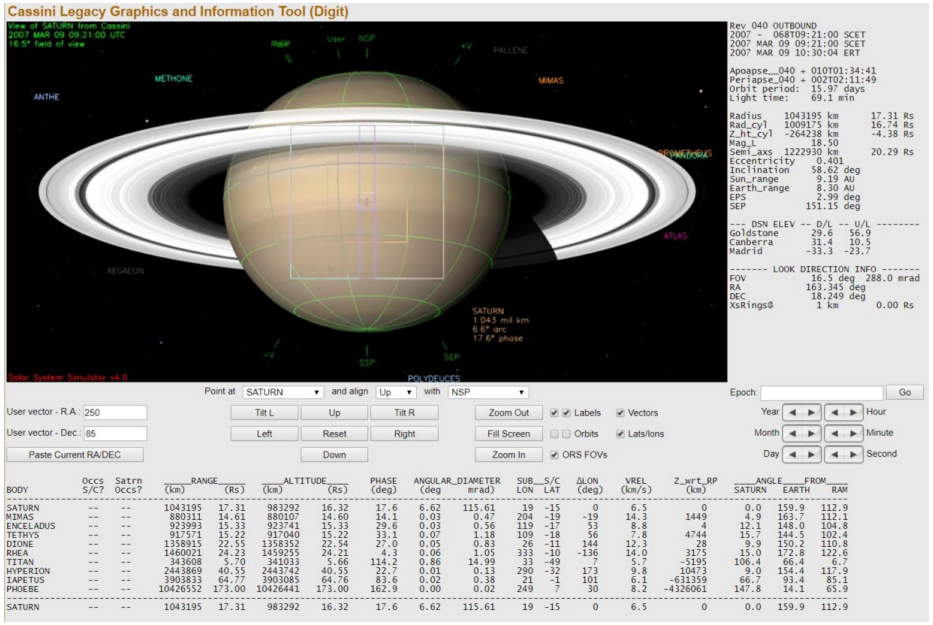
↓ Periapse (below)



BODY	Occs S/C?	Satrn Occs?	RANGE (km)	RANGE (Rs)	ALTITUDE (km)	ALTITUDE (Rs)	PHASE (deg)	ANGULAR DIAMETER (deg	ANGULAR DIAMETER mrad)	SUB_S/C LON	SUB_S/C LAT	ΔLON (deg)	VREL (km/s)	Z_wrt_RP (km)	ANGLE FROM SATURN	ANGLE FROM EARTH	ANGLE FROM RAM
SATURN	--	--	732702	12.16	676202	11.22	83.3	9.44	164.70	238	-54	0	8.5	0	0.0	99.2	90.0
MIMAS	--	--	694079	11.52	693887	11.51	93.7	0.03	0.60	264	-59	-54	8.8	5001	14.6	88.5	96.7
ENCELADUS	--	--	847195	14.06	846944	14.05	72.8	0.03	0.61	39	-44	127	20.4	-9	15.1	109.9	83.0
TETHYS	--	--	620937	10.30	620409	10.29	88.3	0.10	1.74	235	-71	-21	4.2	1794	23.3	93.5	110.3
DIONE	--	--	704273	11.69	703713	11.68	105.8	0.09	1.60	290	-57	-56	5.9	106	30.4	76.1	102.2
RHEA	--	--	874042	14.50	873278	14.49	118.3	0.10	1.76	321	-42	-84	8.7	-3296	37.0	63.8	90.4
TITAN	--	--	1188999	19.73	1186424	19.69	133.9	0.25	4.33	340	-29	-58	5.4	-7817	72.9	46.4	111.6
HYPERION	--	--	1719027	28.52	1718863	28.52	26.6	0.01	0.19	176	3	94	11.3	24063	61.6	156.1	90.8
IAPETUS	--	--	3163947	52.50	3163201	52.49	88.3	0.03	0.47	7	-9	-5	5.5	-507843	124.8	89.2	143.8
PHOEBE	--	--	11144255	184.91	11144145	184.91	170.6	0.00	0.02	94	3	-87	9.7	-4242575	105.7	6.6	75.7
SATURN	--	--	732702	12.16	676202	11.22	83.3	9.44	164.70	238	-54	0	8.5	0	0.0	99.2	90.0

	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	25.31 Rs	130.5	55
Periapse	12.16 Rs	83.3	-54
Segment End	17.31 Rs	17.6	-15

Segment Geometry (2 of 2)



Seg End

Solar Geometry – ORS Boresight Concerns

VIMS_040SA_AURMAP002_PRIME from 2007-064T03:00:48.870 to 2007-064T03:23:44.490 required a waiver of the “operational” CIRS boresight to sun limit, with a minimum angle of 14.3 degrees at 2007-064T03:01:26.870, just skirting below the 15 degree limit.

Week 2: 8 March (doy 061-067):

The Saturn TWT rev 40 observations included the Rings behind Saturn's nightside limb, CIRS Saturn Far IR mapping, and VIMS Saturn Auroral Maps / Saturn Cylindrical Map / Saturn Polar Map. For Titan, observations included distant radiometer observations to provide coverage of Titan northern latitude variation , and a MAPS Titan vertical profile campaign to measure the vertical structure and dynamics of the Titan torus on orbits nearly tangent to L shells at a variety of local times and L shell. Ring measurements included ring stellar occultations, and CIRS Radial scan of rings to obtain thermal measurements.

Segment Integration Planning

Timeline Gaps and Suggested Observations (1 of 3)

Rev 40 Periapse v.1 Strawman TOL

Request	Start	Dur	End	Original Request Start
SP Turn	061T09:51	0:30	061T10:21	
CIRS_040SA_FIRMAP018_PRIME	061T10:21	14:00	062T00:21	061T12:00, dur was 22:00
SP Turn	062T00:21	0:30	062T00:51	
Gold BWG	062T00:51	9:00	062T09:51	OTM-96 back-up
SP Turn	062T09:51	0:30	062T10:21	
VIMS_040SA_AURMAP001_PRIME	062T10:21	14:00	063T00:21	062T04:00, dur was 11:00
SP Turn	063T00:21	0:30	063T00:51	
Gold BWG	063T00:51	9:00	063T09:51	
SP Turn	063T09:51	0:30	063T10:21	
UVIS_040RI_IMPACT005_PRIME	063T10:21	6:15	063T16:36	062T23:50, dur was 9:00
SP Turn	063T16:36	0:30	063T17:06	
Mad HEF	063T17:06	9:00	064T02:06	

Timeline Gaps and Suggested Observations (2 of 3)

Rev 40 Periapse v.1 Strawman TOL (cont.)

Request	Start	Dur	End	Original Request Start
SP Turn	064T02:06	0:30	064T02:36	
VIMS_040SA_AURMAP002_PRIME	064T02:36	11:00	064T13:36	063T12:00
RADAR_040TI_NORTH4CAL001_PRIME	064T13:36	1:00	064T14:36	064T01:30
VIMS_040RH_RHEA002_PRIME	064T14:36	2:15	064T16:51	064T14:30, dur was 3:12
SP Turn	064T16:51	0:30	064T17:21	
Mad HEF	064T17:21	9:00	065T02:21	
SP Turn	065T02:21	0:30	065T02:51	
CIRS_040RH_FP1FAZ0P5315_PRIME	065T02:51	2:09	065T05:00	065T03:00, dur was 1:30
ISS_040SA_LIMBSCAN00<X>_PRIME	065T05:00	10:20	065T15:20	Includes all 11 original pickets
ISS_040TI_1X1PT<XXX>001_PRIME	065T15:20	1:36	065T16:36	065T18:39
SP Turn	065T16:36	0:30	065T17:06	
Mad HEF	065T17:06	9:00	066T02:06	OTM-97 Prime

Rev 40 Periapse v.1 Strawman TOL (cont.)

Request	Start	Dur	End	Original Request Start
SP Turn	066T02:06	0:30	066T02:36	
VIMS_040SA_CYLMAP001_PRIME	066T02:36	11:00	066T13:36	066T06:00
VIMS_040SA_POLEMAP001_PRIME	066T13:36	10:15	066T23:51	066T17:30, dur was 11:00
SP Turn	066T23:51	0:30	067T00:21	
Gold 70-m	067T00:21	9:00	067T09:21	OTM-97 back-up
SP Turn	067T09:21	0:30	067T09:51	
VIMS_040SA_CYLMAP002_PRIME	067T09:51	11:00	067T20:51	067T05:00
RADAR_040TI_SOUTH<XXX>_PRIME	067T20:51	3:00	067T23:51	067T12:00
SP Turn	067T23:51	0:30	068T00:21	
Gold HEF	068T00:21	9:00	068T09:21	

Initial SMT and Data Volume (1 of 2)

First Look in Integration:

DATA VOLUME SUMMARY

			OBSERVATION_PERIOD								DOWNLINK_PASS						
			P4						P5	RECORDED	PLAYBACK						
	Start	End	START	SCI	HK+E	TOTAL	CPACTY	MARGIN		OPNAV	SCI	ENGR	TOTAL	CPACTY	MARGIN		CAROVR
DOWNLINK PASS NAME	doy hh:mm	doy hh:mm	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(%)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(%)	(Mb)
SP_040EA_G34BWGOTB062_PRIME	062 00:51	062 09:51	0	439	51	490	3569	3079	86%	0	216	53	759	1027	268	26%	0
SP_040EA_G34BWGNON063_PRIME	063 00:51	063 09:51	0	1078	51	1129	3569	2440	68%	0	216	53	1398	1022	-375	-37%	375
SP_040EA_M34HEFNON063_PRIME	063 17:06	064 02:06	375	406	24	806	3569	2763	77%	0	174	53	1032	1140	109	10%	0
SP_040EA_M34HEFNON064_PRIME	064 17:21	065 02:21	0	1286	51	1337	3561	2224	62%	0	636	53	2025	1134	-891	-79%	891
SP_040EA_M70METNON065_PRIME	065 17:06	066 02:06	891	2138	50	3079	3534	454	13%	17	141	53	3290	3572	281	8%	0
SP_040EA_G70METOTB067_PRIME	067 00:21	067 09:21	0	2164	75	2239	3568	1330	37%	0	228	53	2519	4400	1881	43%	0
SP_040EA_G34HEFNON068_PRIME	068 00:21	068 09:21	0	1189	51	1239	3534	2294	65%	17	221	53	1530	1229	-302	-25%	302

Initial SMT and Data Volume (2 of 2)

First Look in Integration:

DATA VOLUME REPORT

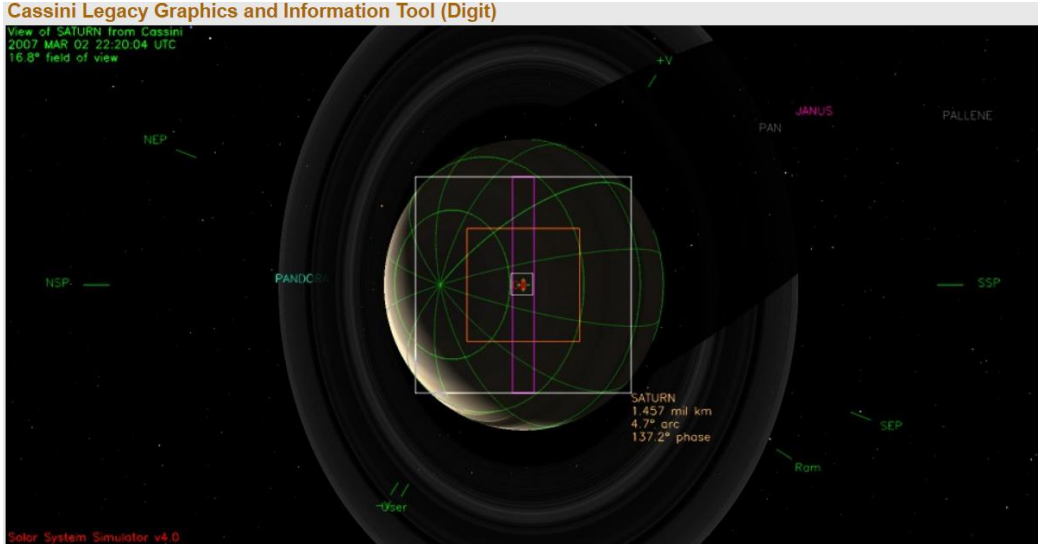
Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	061 09:51	062 00:51	54.0	8.1	201.6	2.7	0.0	32.4	49.7	0.0	70.7	0.0	0.0	0.0	0.0	419.3
OBSERVATION_SI	061 09:51	062 00:51	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0
SP_040EA_G34BWGOTB062_PRIME	062 00:51	062 09:51	32.4	4.9	86.4	1.6	0.0	19.4	29.2	0.0	42.4	0.0	0.0	0.0	0.0	216.3
OBSERVATION_NOR	062 09:51	063 00:51	54.0	8.1	201.6	2.7	0.0	32.4	48.6	0.0	70.7	0.0	660.0	0.0	0.0	1078.1
SP_040EA_G34BWGNON063_PRIME	063 00:51	063 09:51	32.4	4.9	86.4	1.6	0.0	19.4	29.2	0.0	42.4	0.0	0.0	0.0	0.0	216.3
OBSERVATION_NOR	063 09:51	063 17:06	26.1	3.9	90.0	1.3	64.0	15.7	23.5	0.0	34.2	147.3	0.0	0.0	0.0	406.0
SP_040EA_M34HEFNON063_PRIME	063 17:06	064 02:06	75.5	5.5	0.0	1.6	0.0	19.4	29.2	0.0	42.4	0.0	0.0	0.0	0.0	173.6
OBSERVATION_NOR	064 02:06	064 17:21	229.7	11.0	158.4	3.0	0.0	38.8	53.2	6.3	86.8	0.0	698.4	0.0	0.0	1285.6
SP_040EA_M34HEFNON064_PRIME	064 17:21	065 02:21	259.2	8.8	86.4	3.2	0.0	64.0	58.3	0.0	155.8	0.0	0.0	0.0	0.0	635.8
OBSERVATION_NOR	065 02:21	065 17:06	342.5	10.6	31.0	4.7	1357.7	88.7	88.5	0.0	214.3	0.0	0.0	0.0	0.0	2138.0
OBSERVATION_OPN	065 02:21	065 17:06	0.0	0.0	0.0	0.0	17.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4
SP_040EA_M70METNON065_PRIME	065 17:06	066 02:06	32.4	6.5	0.0	1.6	0.0	19.4	38.9	0.0	42.4	0.0	0.0	0.0	0.0	141.2
OBSERVATION_NOR	066 02:06	067 00:21	80.1	16.0	147.6	4.0	0.0	48.1	96.1	0.0	447.8	0.0	1320.0	0.0	0.0	2159.6
OBSERVATION_SI	066 02:06	067 00:21	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
SP_040EA_G70METOTB067_PRIME	067 00:21	067 09:21	32.4	6.4	86.4	1.6	0.0	19.4	38.9	0.0	42.4	0.0	0.0	0.0	0.0	227.6
OBSERVATION_NOR	067 09:21	068 00:21	54.0	10.7	86.4	2.7	0.0	32.4	64.8	202.7	70.7	0.0	660.0	0.0	0.0	1184.5
OBSERVATION_OPN	067 09:21	068 00:21	0.0	0.0	0.0	0.0	17.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4
OBSERVATION_SI	067 09:21	068 00:21	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
SP_040EA_G34HEFNON068_PRIME	068 00:21	068 09:21	32.4	8.1	86.4	1.6	0.0	19.4	30.9	0.0	42.4	0.0	0.0	0.0	0.0	221.3

Safe Waypoint Options

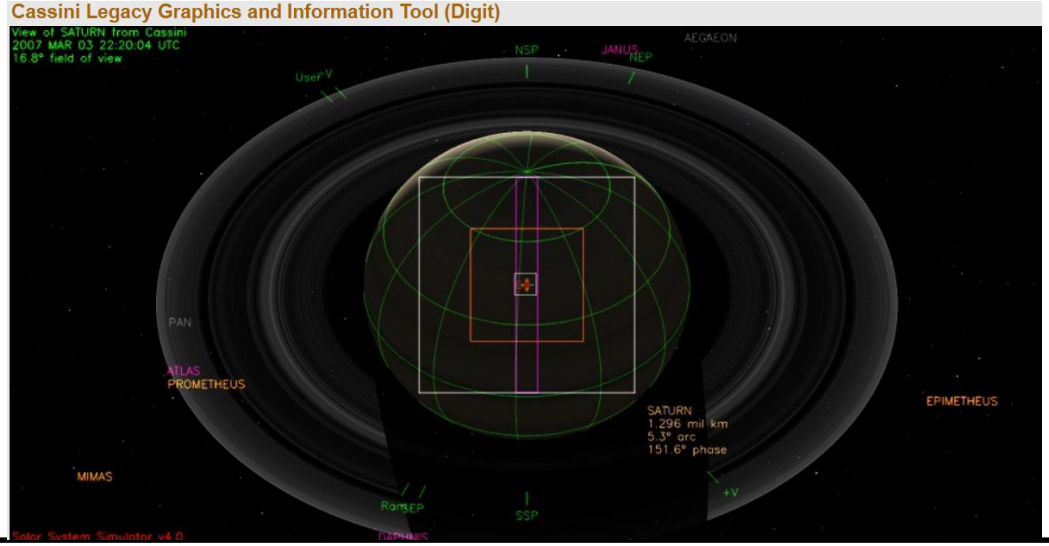
- **061T09:51 to 062T00:51**
  - NAC to Saturn, NEG_X to NSP
  - NAC to Saturn, NEG_Z to NSP
  - NAC to Saturn, NEG_X to NEP
- **062T09:51 to 063T00:51**
  - NAC to Saturn, NEG_X to NSP
  - NAC to Saturn, NEG_Z to NSP
  - NAC to Saturn, NEG_X to NEP
- **063T09:51 to 063T17:06**
  - NAC to Saturn, NEG_X to NSP
  - NAC to Saturn, POS_Z to NSP
  - NAC to Saturn, NEG_X to NEP
- **064T02:06 to 064T17:21**
  - NAC to Saturn, POS_Z to NSP
  - NAC to Saturn, NEG_X to NEP
  - Using X to NSP as 2nd axis would require 180° flip from NEG_X to POS_X at approximately 064T09:30
- **065T02:21 to 065T17:06**
  - NAC to Saturn, POS_X to NSP
  - NAC to Saturn, POS_Z to NSP
  - NAC to Saturn, POS_X to NEP
- **066T02:06 to 067T00:21**
  - NAC to Saturn, POS_Z to NSP
  - Using X to NSP as 2nd axis would require 180° flip from POS_X to NEG_X at approximately 066T11:20
  - Using X to NEP as 2nd axis would require 180° flip from POS_X to NEG_X at approximately 066T05:25
- **067T09:21 to 068T09:21**
  - NAC to Saturn, NEG_X to NSP
  - NAC to Saturn, NEG_X to NEP
  - Using Z to NSP as 2nd axis would require 180° flip from POS_Z to NEG_Z at approximately 067T13:50

Waypoints Chosen

Waypoint 1 (2007-061T10:21:00 – 2007-062T10:21:00): ISS_NAC to Saturn; NEG_X to NSP

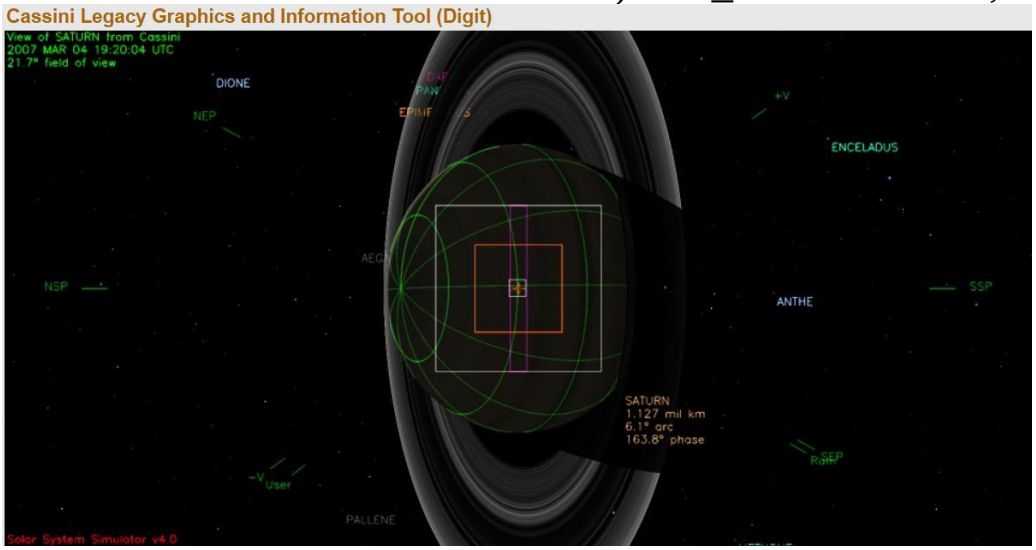


Waypoint 2 (2007-062T10:21:00 – 2007-063T10:21:00): ISS_NAC to Saturn; NEG_Z to NSP

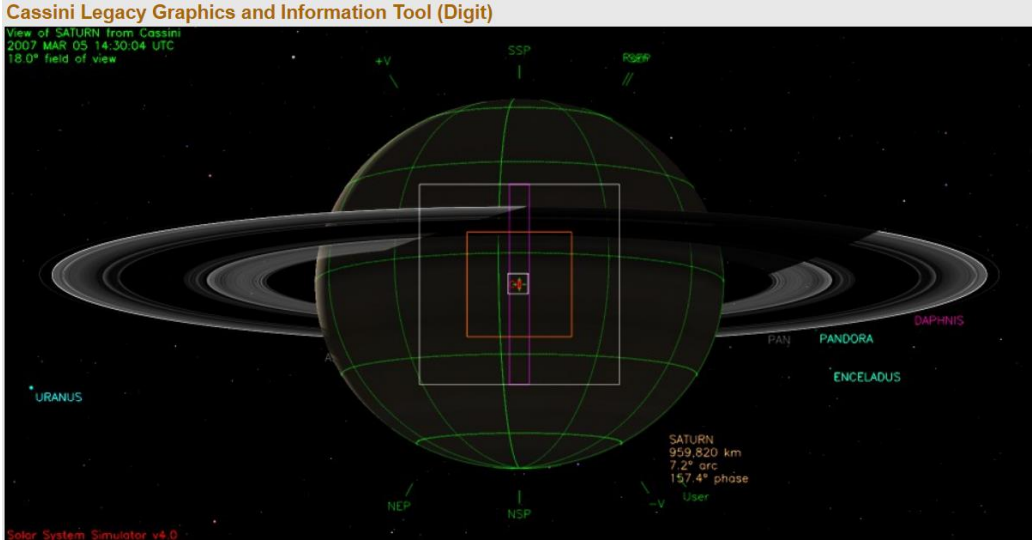


Waypoints Chosen

Waypoint 3 (2007-063T10:21:00 – 2007-064T02:36:00): ISS_NAC to Saturn; NEG_X to NSP

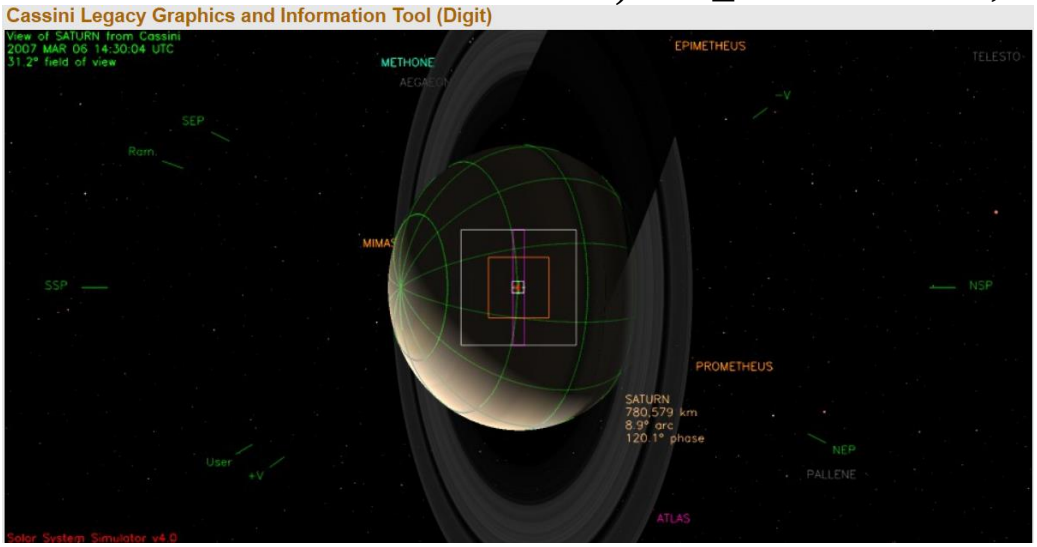


Waypoint 4 (2007-064T02:36:00 – 2007-065T02:51:00): ISS_NAC to Saturn; POS_Z to NSP

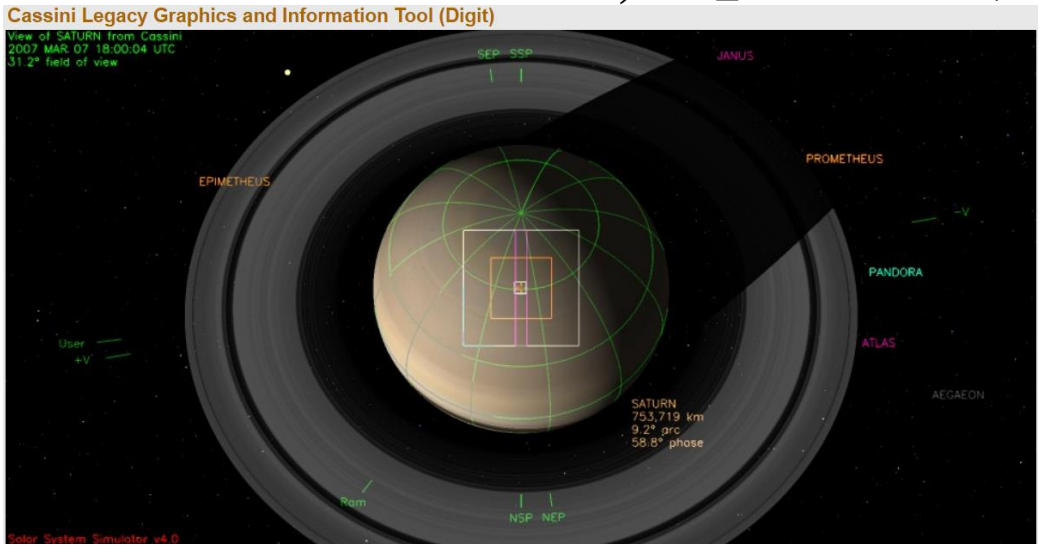


Waypoints Chosen

Waypoint 5 (2007-065T02:51:00 – 2007-066T02:36:00): ISS_NAC to Saturn; POS_X to NEP

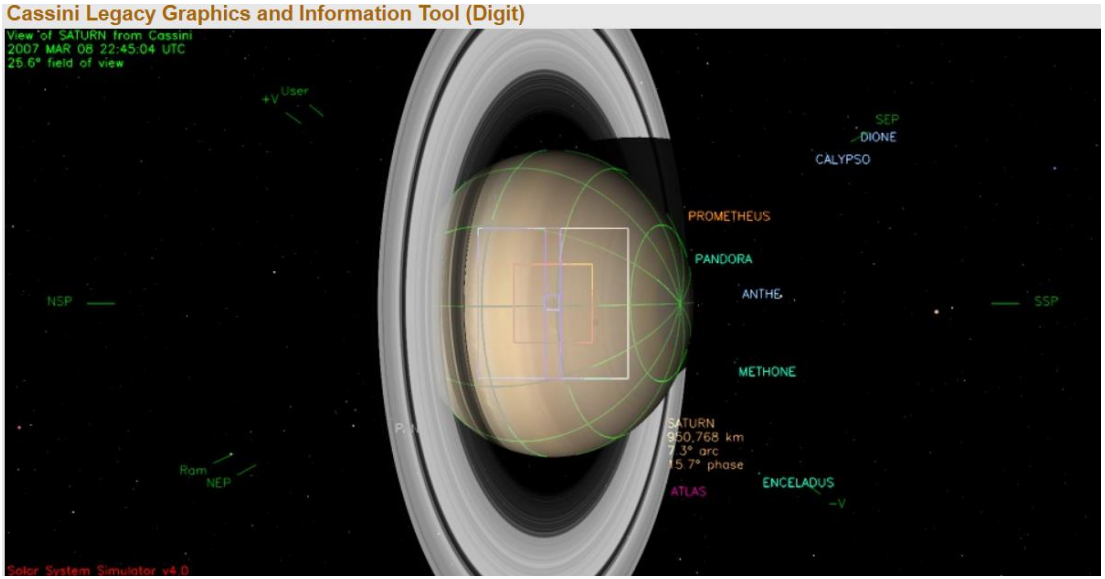


Waypoint 6 (2007-066T02:36:00 – 2007-067T09:41:00): ISS_NAC to Saturn; POS_Z to NSP



Waypoints Chosen

Waypoint 7 (2007-067T09:41:00 – 2007-068T09:51:00): ISS_NAC to Saturn; NEG_X to NSP



Notes & Liens

- Timing
  - Start 2007-061T09:51:00
  - End 2007-068T09:21:00
- Pointing
  - Waypoints have been re-validated
  - Downlink attitudes have been re-validated
  - SP turns are safe
- Data Volume
  - Quite adequate
- CIMS
  - All requests are currently approved
- OpModes
  - DFPW, DFPWTCM, RADWU, RADRWA
  - Two RADAR observations intentionally use different opmode patterns
  - Timing on page 15
- DSN
  - 70m usage for sequence exceeds project commitment of <= 35%; is at 43% over 7 passes due to unavailability of Madrid HEF
  - Stations Used:

DSS-63 (Madrid 70M)	DSS-14 (Goldstone 70M)
DSS-54 (Madrid BWG)	DSS-15 (Goldstone HEF
	DSS-25 (Goldstone BWG)