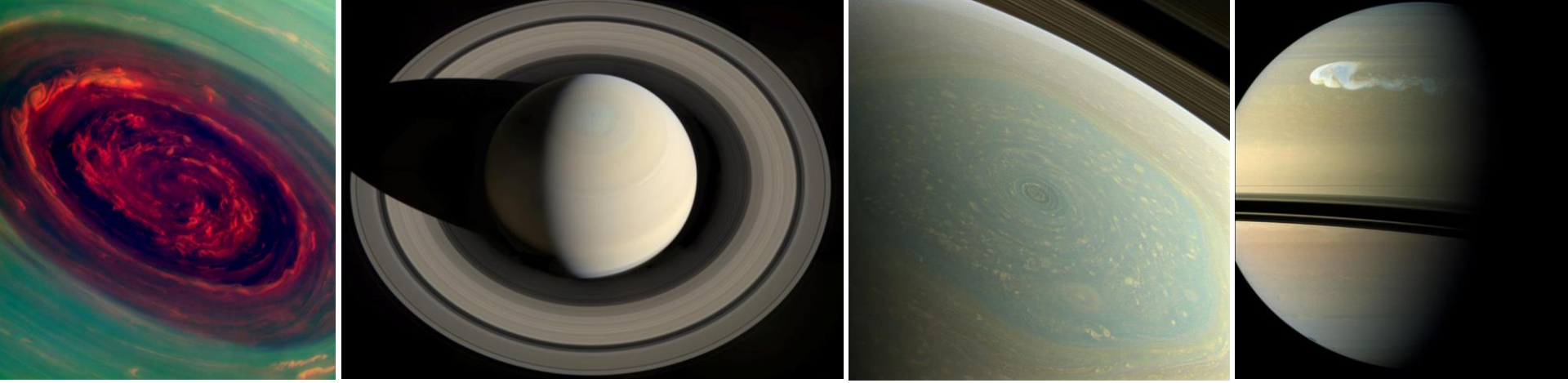


Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev Bb Segment Legacy Package

Segment Boundary: December 14, 2004 – December 16, 2004
2004-349T07:52:00 – 2004-351T13:22:00 (SCET)

Integration Began 07/01/2002
Segment Delivered to S06 Sequence 04/08/2003
Lead Integrator was Scott Edgington

Legacy Package Assembled by Shawn Boll

Table of Contents

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

Segment Overview and Final Products

Segment Summary

- This was a slightly over 2 day long segment in the early days of the Prime Mission. The orbit was slightly inclined at the time and the segment covered periapse 00B.
- Saturn TWT also shepherded another segment during this rev which included part of the inbound leg. These two segments were developed together until the “A” segment had to be temporarily shelved pending the resolution of critical activities in preparation of the Huygens Probe release. This “B” segment’s development continued on and was wrapped up first.
- A large portion of the time in this segment was allocated to the ORS instruments and RADAR studying Dione during a 80,000 km flyby. Optical navigation images to help the team to better define the ephemerides of the various bodies in the Saturnian System were also performed.
- Saturn science included VIMS cylindrical mapping and CIRS limb mapping.
- CIRS and UVIS led ORS investigations of the rings.

Final Sequenced SPASS

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S006, length = 32 ...		2004-320T07:49:00	E00A_SEQUENCE_006+000T00:00:00	031T05:33:00	2004-351T13:22:00			
SATURN rev B Segment		2004-349T07:52:00		002T05:30:00	2004-351T13:22:00			
NAV_00BSK_OPNAV491_PRIME		2004-349T08:00:00		000T00:59:00	2004-349T08:59:00	ISS_NAC to Satellites	POS_X to NSP	Starts at Earth point, ends at NEW waypoint
NAV_00BSA_WAYPTTURN491_PRIME		2004-349T08:59:00		000T00:01:00	2004-349T09:00:00	ISS_NAC to Saturn	POS_X to NSP	
NEW WAYPOINT		**2004-349T09:00:00**		**002T04:22:00**	**2004-351T13:22:00**	**ISS_NAC to Saturn**	**POS_X to NSP**	
VIMS_00BSA_CYLMAP002_PRIME	C, I, U	2004-349T09:00:00		000T07:52:00	2004-349T16:52:00	ISS_NAC to Saturn	POS_X to NSP	
ISS_00BDI_GLOCOL001_PRIME	C, U, V	2004-349T16:52:00		000T01:00:00	2004-349T17:52:00	ISS_NAC to Dione	POS_X to North_Pole_Dir	
CIRS_00BRI_TEMPU05LP001_PRIME	C	2004-349T17:52:00		000T04:00:00	2004-349T21:52:00	CIRS_FP1 to Rings	POS_X to NSP	
CIRS_00BSA_LIMBMAP007_PRIME	C, R, U, V	2004-349T21:52:00		000T03:00:00	2004-350T00:52:00	CIRS_FPB to Saturn	POS_X to North_Pole_Dir	
Begin Custom Period		**2004-350T00:52:00**		**000T00:01:00**	**2004-350T00:53:00**			
ISS_00BDI_REGMAP001_PRIME	C, R, U, V	2004-350T00:52:00		000T00:48:00	2004-350T01:40:00	ISS_NAC to Dione	POS_X to North_Pole_Dir	Pick up at ISS_NAC to Saturn, POS_X to NSP; Hand off at ISS_NAC to Dione, POS_X to North_Pole_Dir. Handoff to CIRS at ISS_NAC to Dione, POS_X to North_Pole_Dir
CIRS_00BDI_FP1DRKMAP001_PRIME	R, U, V	2004-350T01:40:00		000T00:42:00	2004-350T02:22:00	CIRS_FP1 to Dione	POS_X to North_Pole_Dir	Pick up at ISS_NAC to Dione, POS_X to North_Pole_Dir; Hand off at CIRS_FP1 to Dione, POS_X to North_Pole_Dir. From: ISS NAC TO DI, POS_X TO N_POL_DIR to FP1 TO DI, POS_X TO N_POL_DIR
RADAR_00BDI_SCATTRADL002_PRIME		2004-350T02:22:00		000T02:00:00	2004-350T04:22:00	NEG_Z to Dione (0.0,0.0,5.0 deg. offset)	POS_X to North_Pole_Dir	Pick up at CIRS_FP1 to Dione, POS_X to North_Pole_Dir; Hand off at ISS_NAC to Saturn, POS_X to NSP. Pick up at CIRS_FP1 to DI, +X to Pole_Dir; Dione scatt, then turn to MI for scatt stare (-Z MI, +X NSP), then handoff to wypt. RADAR must control primary...
End Custom Period		**2004-350T04:22:00**		**000T00:01:00**	**2004-350T04:23:00**			
INMS_00BSA_INMAGSCN001_PRIME		2004-350T04:22:00		000T01:00:00	2004-350T05:22:00	NEG_X to 300.474/-1.079	NEG_Z to North_Pole_Dir	
NAV_00BSK_OPNAV501_PRIME	M	2004-350T05:22:00		000T00:59:00	2004-350T06:21:00	ISS_NAC to Satellites	POS_X to NSP	Starts at waypoint, ends at Earth point
NAV_00BEA_DLTURN501_PRIME	M	2004-350T06:21:00		000T00:01:00	2004-350T06:22:00	XBAND to Earth	NEG_X to 207.2/-2.0	
SP_00BEA_G70METSEQ350_PRIME	C, M	2004-350T06:22:00		000T09:00:00	2004-350T15:22:00	XBAND to Earth	Rolling/SRU	Notify CDA of any rolling status changes; they suggested NEG_X to 207.2/-2.0
NAV_00BSK_OPNAV502_PRIME		2004-350T15:22:00		000T00:59:00	2004-350T16:21:00	ISS_NAC to Satellites	POS_X to NSP	Starts at Earth point, ends at waypoint
NAV_00BSA_WAYPTTURN502_PRIME		2004-350T16:21:00		000T00:01:00	2004-350T16:22:00	ISS_NAC to Saturn	POS_X to NSP	
UVIS_00BRI_IMPACT001_PRIME	C, I, V	2004-350T16:22:00		000T03:08:00	2004-350T19:30:00	UVIS_HSP to Rings	POS_X to NSP	
CIRS_00BRI_TEMPL06MP001_PRIME	C, V	2004-350T19:30:00		000T04:00:00	2004-350T23:30:00	CIRS_FP1 to Rings	POS_X to North_Pole_Dir	
SP_00BSA_DLTURN350_PRIME		2004-350T23:30:00		000T00:36:00	2004-351T00:06:00	XBAND to Earth	NEG_X to NEP	
NEW WAYPOINT		**2004-350T23:59:00**		**000T00:01:00**	**2004-351T00:00:00**	**XBAND to Earth**	**NEG_X to NEP**	
SP_00BEA_M34BWGSEQ351_PRIME	C	2004-351T00:06:00		000T04:16:00	2004-351T04:22:00	XBAND to Earth	NEG_X to NEP	
SP_00BEA_G34BWGSEQ351_PRIME	C	2004-351T04:22:00		000T09:00:00	2004-351T13:22:00	XBAND to Earth	NEG_X to NEP	

Final Sequenced SMT and Data Volume

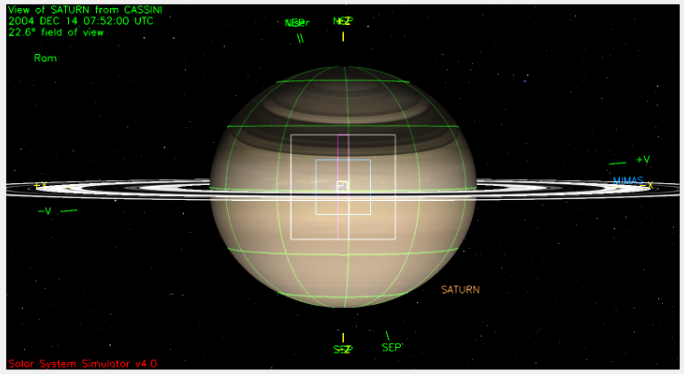
DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

			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_00BEA_G70METSEQ350_PRIME	350 06:22	350 15:22	0	3187	82	3270	3379	109	44	842	53	4209	3991	-218	316	6%	218
SP_00BEA_M34BWGSEQ351_PRIME	351 00:06	351 04:22	218	525	30	773	3379	2606	18	99	25	915	495	-420	316	21%	420
SP_00BEA_G34BWGSEQ351_PRIME	351 04:22	351 13:22	420	0	0	420	3379	2959	0	235	53	708	1025	317	316	31%	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	349 07:52	350 06:22	283.9	42.3	250.1	9.3	771.8	80.0	76.0	452.6	296.8	174.6	713.5	0.0	0.0	3150.8
OBSERVATION_OPN	349 07:52	350 06:22	0.0	0.0	0.0	0.0	43.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.5
OBSERVATION_SI	349 07:52	350 06:22	0.0	0.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5
SP_00BEA_G70METSEQ350_PRIME	350 06:22	350 15:22	64.8	17.0	75.6	1.6	0.0	32.0	55.1	0.0	588.7	0.0	0.0	0.0	0.0	834.8
DAILY TOTAL SCIENCE	349 07:52	350 15:22	348.7	59.3	333.2	10.9	771.8	112.0	131.1	452.6	885.4	174.6	713.5	0.0		
OBSERVATION_NOR	350 15:22	351 00:06	62.9	16.4	102.7	1.6	24.0	18.9	28.3	0.0	41.2	73.9	145.0	0.0	0.0	514.8
OBSERVATION_OPN	350 15:22	351 00:06	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
OBSERVATION_SI	350 15:22	351 00:06	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5
SP_00BEA_M34BWGSEQ351_PRIME	351 00:06	351 04:22	30.7	3.1	19.7	0.8	0.0	9.2	13.8	0.0	20.1	1.2	0.0	0.0	0.0	98.6
SP_00BEA_G34BWGSEQ351_PRIME	351 04:22	351 13:22	64.8	6.5	66.7	1.6	0.0	19.4	29.2	0.0	42.4	2.5	0.0	0.0	0.0	233.1
DAILY TOTAL SCIENCE	350 15:22	351 13:22	158.4	25.9	194.6	4.0	24.0	47.5	71.3	0.0	103.8	77.5	145.0	0.0		

Segment Geometry




```
Rev 00B  INBOUND
2004 -  349T07:52:00 SCET
2004 DEC 14 07:52:00 SCET
2004 DEC 14 09:00:19 ERT
Apoapse__00B + 022T23:11:00
Periapse_00B - 21:59:22
Light time:    68.3 min
Orbit period:  31.9 days
Radius      763671 km      12.67 Rs
Rad_cyl     763379 km      12.67 Rs
Z_ht_cyl     21114 km       0.35 Rs
Mag_L           12.68
Semi_axs   1941285 km      32.21 Rs
Eccentricity    0.852
Inclination     5.18 deg
Sun_range       9.05 AU
Earth_range     8.21 AU
--- DSN ELEV -- D/L -- U/L --------
Goldstone      69.4   43.4
Canberra      -28.5  -56.2
Madrid          9.0   34.6
------- LOOK DIRECTION INFO -------
FOV            22.6 deg  393.8 mrad
RA            114.450 deg
DEC            -3.396 deg
Crosses_RP_@    0.000 Rs
EPS             3.441 deg
SEP           146.498 deg
ORS b/s angle 155.1 deg
ORS rad angle  92.6 deg
```

Point NEG_Y at SATURN and align POS_Z = Up with NSP

User Vector - RA: 256.95 DEC: 75.15 Paste Current RA/DEC

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

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

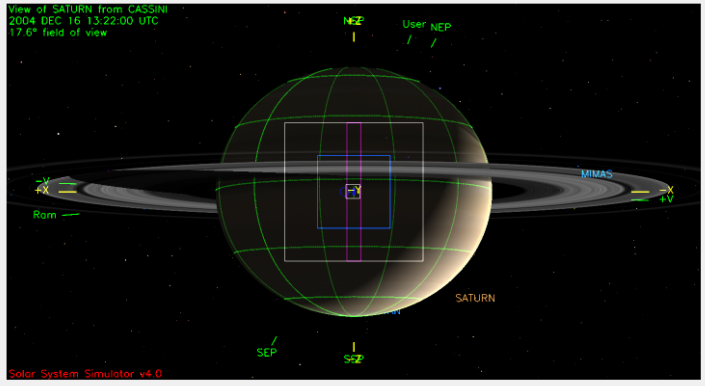
Year / Month / Day / Hour / Minute / Second

Turn Analyzer: SATURN to EARTH about Z on RWA = 14.6 min / 155.4 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	DLON (deg)	VREL (km/s)	Z_HGHT (km)	ANGLE_FROM SATRN	ANGLE_FROM EARTH	ANGLE_FROM RAM
SATURN	--	--	763671	12.67	703407	11.67	24.9	9.05	158.00	182	2	0	8.9	0	0.0	155.4	10.9
MIMAS	--	--	899841	14.93	899638	14.93	26.8	0.03	0.46	320	2	-132	15.6	3920	9.0	152.3	19.3
ENCELADUS	--	--	659592	10.94	659341	10.94	31.9	0.04	0.78	257	2	-56	3.9	-47	17.4	146.5	27.8
TETHYS	--	--	789852	13.11	789321	13.10	34.5	0.08	1.37	286	2	-84	6.5	-1385	21.8	143.6	32.1
DIONE	--	--	438606	7.28	438043	7.27	30.4	0.15	2.57	138	3	22	11.1	-22	19.2	152.1	10.7
RHEA	--	--	442313	7.34	441550	7.33	51.1	0.20	3.47	259	3	-34	2.3	-3187	42.1	126.3	52.4
TITAN	--	--	433428	7.19	430853	7.15	160.3	0.68	11.88	1	4	0	6.7	-7929	174.5	19.7	169.0
HYPERION	--	--	2274812	37.74	2274676	37.74	35.9	0.01	0.14	324	40	-143	10.1	26360	25.6	141.8	35.6
IAPETUS	--	--	4247411	70.48	4246663	70.46	30.0	0.02	0.35	7	3	142	12.0	782307	33.5	153.3	22.6
PHOEBE	--	--	15406348	255.63	15406234	255.63	11.5	0.00	0.01	349	-16	-170	8.2	6923888	29.6	165.0	30.3
SATURN	--	--	763671	12.67	703407	11.67	24.9	9.05	158.00	182	2	0	8.9	0	0.0	155.4	10.9

Seg Start (Left)

Seg End (below)




```
Rev 00B OUTBOUND
2004 -  351T13:22:00 SCET
2004 DEC 16 13:22:00 SCET
2004 DEC 16 14:30:13 ERT
Apoapse__00B + 025T04:41:00
Periapse_00B + 001T07:30:38
Light time:    68.2 min
Orbit period:  31.9 days
Radius      982519 km      16.30 Rs
Rad_cyl     978916 km      16.24 Rs
Z_ht_cyl    -84073 km      -1.39 Rs
Mag_L           16.42
Semi_axs   1939949 km      32.19 Rs
Eccentricity    0.852
Inclination     5.18 deg
Sun_range       9.06 AU
Earth_range     8.20 AU
--- DSN ELEV -- D/L -- U/L --------
Goldstone      29.4   57.0
Canberra       28.5    9.9
Madrid        -28.7  -21.2
------- LOOK DIRECTION INFO -------
FOV            17.6 deg  306.3 mrad
RA            -12.080 deg
DEC             0.998 deg
Crosses_RP_@    0.000 Rs
EPS             3.219 deg
SEP           148.869 deg
ORS b/s angle  56.7 deg
ORS rad angle 135.2 deg
```

Point NEG_Y at SATURN and align POS_Z = Up with NSP

User Vector - RA: 256.95 DEC: 75.15 Paste Current RA/DEC

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

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

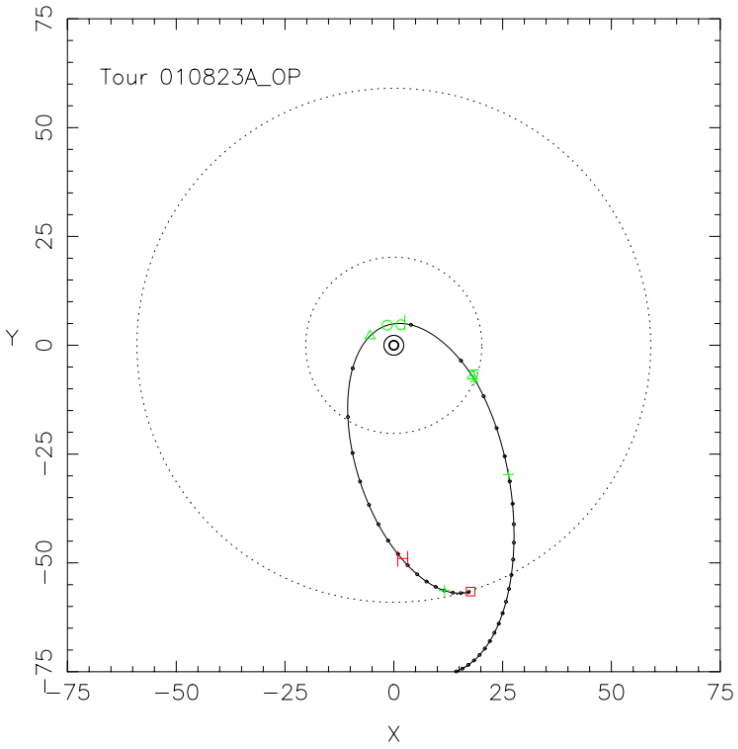
Year / Month / Day / Hour / Minute / Second

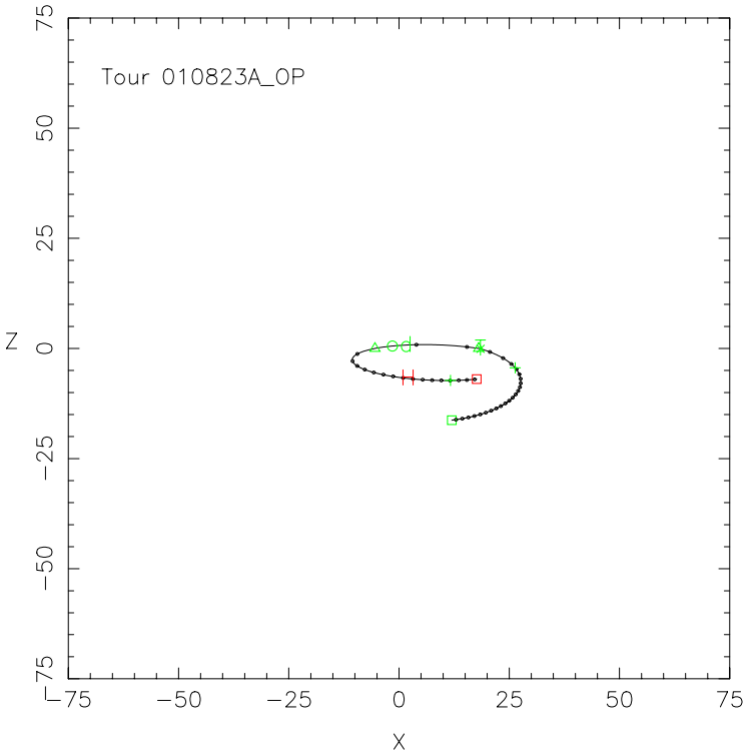
Turn Analyzer: SATURN to EARTH about Z on RWA = 6.9 min / 53.5 deg Event

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	DLON (deg)	VREL (km/s)	Z_HGHT (km)	ANGLE_FROM SATRN	ANGLE_FROM EARTH	ANGLE_FROM RAM
SATURN	--	--	982519	16.30	922293	15.30	123.3	7.03	122.76	316	-5	0	7.6	0	0.0	53.5	164.8
MIMAS	--	--	819783	13.60	819579	13.60	127.7	0.03	0.51	214	-5	-26	15.0	-4993	5.7	49.1	170.5
ENCELADUS	--	--	843121	13.99	842868	13.99	132.7	0.03	0.61	244	-6	-48	15.9	20	12.1	44.2	176.9
TETHYS	--	--	997645	16.55	997114	16.54	108.2	0.06	1.08	79	-6	84	6.3	4386	17.1	68.5	147.8
DIONE	--	--	721917	11.98	721355	11.97	136.9	0.09	1.56	236	-7	-37	12.6	-155	18.6	40.2	176.5
RHEA	--	--	532725	8.84	531959	8.83	102.3	0.17	2.88	139	-10	22	4.5	3171	22.0	74.4	143.3
TITAN	--	--	2167610	35.97	2165035	35.92	125.0	0.14	2.38	357	-2	-179	12.0	-4087	2.8	51.7	164.7
HYPERION	--	--	1436721	23.84	1436592	23.84	48.0	0.01	0.23	146	49	60	3.2	31187	83.2	129.2	81.8
IAPETUS	--	--	2718511	45.11	2717764	45.09	40.3	0.03	0.55	5	-5	6	5.7	675265	157.4	142.7	23.3
PHOEBE	--	--	14466620	240.04	14466511	240.04	17.2	0.00	0.02	271	-20	65	9.1	6951208	106.0	159.5	62.1
SATURN	--	--	982519	16.30	922293	15.30	123.3	7.03	122.76	316	-5	0	7.6	0	0.0	53.5	164.8

	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	12.67	24.9	2
Periapse	4.77	108.3	4
Segment End	16.30	123.3	-5

Segment Geometry (2 of 2)





DOY	Range(km)	Alt(km)	SSCLat	SSCLon.	SSLat	SSLon	Vrad	Vtan	Phase	AD(rad)
338	3932349.096	3872246.335	-9.857	61.414	-23.246	354.923	1.636	1.3	64.617	0.03065
339	3783324.626	3723212.319	-9.565	150.509	-23.238	85.678	1.816	1.351	63.198	0.03186
340	3618135.721	3558013.064	-9.239	239.46	-23.229	176.432	2.01	1.413	61.659	0.03332
341	3435442.687	3375308.706	-8.868	328.227	-23.22	267.187	2.222	1.489	59.971	0.03509
342	3233556.033	3173409.546	-8.441	56.759	-23.211	357.941	2.455	1.582	58.092	0.03728
343	3010326.069	2950165.622	-7.937	144.976	-23.203	88.696	2.717	1.7	55.962	0.04004
344	2762925.618	2702749.402	-7.328	232.763	-23.194	179.451	3.017	1.853	53.494	0.04363
345	2487556.428	2427362.192	-6.565	319.93	-23.185	270.205	3.368	2.058	50.553	0.04846
349	947004.237	886739.22	1.313	286.058	-23.15	273.224	6.145	4.782	27.468	0.12737
350	366366.767	306215.972	8.176	312.555	-23.141	3.979	5.899	12.361	59.225	0.33051
351	664233.19	604043.609	-6.728	244.776	-23.132	94.733	6.944	6.818	138.178	0.18172
352	1196587.908	1136440.982	-8.401	307.84	-23.123	185.488	5.437	3.785	115.434	0.10078

Solar Geometry – ORS Boresight Concerns

No ORS Boresight Solar Constraints on Science Pointing.

Weekly Science Highlights

Following the Titan-B flyby, CIRS obtained its first dark side FP1 map of Dione on Rev B. CIRS looked for thermal anomalies and will use the data to investigate Dione's thermal inertia. This flyby was the third closest approach to Dione - at approximately 80,000 kilometers - during the nominal tour. ISS observations were taken of the trailing hemisphere of this satellite where the strange "wispy streaks" are located.

Segment Integration Planning

Timeline Gaps and Suggested Observations (1 of 2)

Atmosphere Segment Information

Rev Ba →

- !st Segment
  - 2004-338T15:00 (Dec 3) to 2004-345T07:51 (Dec 10)
  - TOST segment follows

Rev Bb →

- 2nd Segment
  - Starts after TOST segment @ 2004-349T07:52 (Dec 14)
    - This is 6 hrs 24 min earlier than the original segment boundary 2004-349T14:16
  - Saturn TWT/MAG TWT currently boundary at 2004-352T00:00:00 (Dec 17)
  - Probe Quiet Period (PQP) currently set at 2004-351T00:00:00
    - Earth pointed
    - Can carry over to passes within PQP, but no guarantees for getting data back

Timeline Gaps and Suggested Observations (2 of 2)

Proposed Timeline

- 2nd Segment
  - 349T08:00 - 349T09:00 OPNAV
  - 349T09:00 - 349T20:00 VIMS Cylindrical Map
  - 349T20:00 - 350T00:00 CIRS Ring Temperature Scan
  - 350T00:00 - 350T03:00 CIRS Limb Scan
  - 350T03:00 - 350T04:00 CIRS Dione
  - 350T04:00 - 350T06:00 RADAR (Mimas/Titan/Dione)
  - 350T06:00 - 350T07:00 INMS
  - 350T07:00 - 350T08:00 OPNAV
  - 350T08:00 - 350T14:30 Downlink (Goldstone)
  - 350T14:30 - 350T15:30 OPNAV
  - 350T15:30 - 350T18:30 VIMS Lightning
  - 350T18:30 - 350T21:30 UVIS Ring Impact
  - 350T21:30 - 350T01:30 CIRS Ring Temperature Scan
  - 350T01:30 - 350T02:30 OPNAV
  - 350T02:30 - 350T11:30 Down link (Goldstone)

Initial SMT and Data Volume

Beginning of 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_00BEA_G70METNON350_PRIME	350 08:00	350 14:30	0	3070	81	3152	3497	345 10%	35	545	38	3770	3092	-678	-22%	678
SP_00BEA_M70METOTP351_PRIME	351 00:00	351 04:22	678	1507	32	2218	3534	1316 37%	17	163	26	2424	991	-1433	-145%	1433
SP_00BEA_G70METNON351_PRIME	351 04:22	351 13:22	1433	0	0	1433	3572	2139 60%	0	270	53	1755	3052	1297	42%	0

Must be < 2080 Mb!

DATA VOLUME REPORT

	Start	End	CAPS	CDA	CIRS	INMS	ISS	MAG	MIMI	RADAR	RPWS	UVIS	VIMS	PROBE	ENGR	TOTAL
Event	doy hh:mm	doy hh:mm	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)	(Mb)
OBSERVATION_NOR	349 07:52	350 08:00	173.8	45.3	262.8	4.3	721.4	52.1	86.6	611.2	405.7	31.7	670.0	0.0	0.0	3064.8
OBSERVATION_OPN	349 07:52	350 08:00	0.0	0.0	0.0	0.0	34.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.8
OBSERVATION_SI	349 07:52	350 08:00	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5
SP_00BEA_G70METNON350_PRIME	350 08:00	350 14:30	46.8	12.3	86.4	1.2	0.0	14.0	40.8	0.0	344.0	0.0	0.0	0.0	0.0	545.5
OBSERVATION_NOR	350 14:30	351 00:00	68.4	17.9	36.0	1.7	32.0	20.5	30.8	0.0	44.8	70.7	1180.0	0.0	0.0	1502.8
OBSERVATION_OPN	350 14:30	351 00:00	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	350 14:30	351 00:00	0.0	0.0	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6
SP_00BEA_M70METOTP351_PRIME	351 00:00	351 04:22	31.4	3.1	50.2	0.8	30.5	9.4	14.1	0.0	20.6	0.0	0.0	0.0	0.0	160.2
SP_00BEA_G70METNON351_PRIME	351 04:22	351 13:22	64.8	6.5	66.7	1.6	39.2	19.4	29.2	0.0	42.4	0.0	0.0	0.0	0.0	269.9

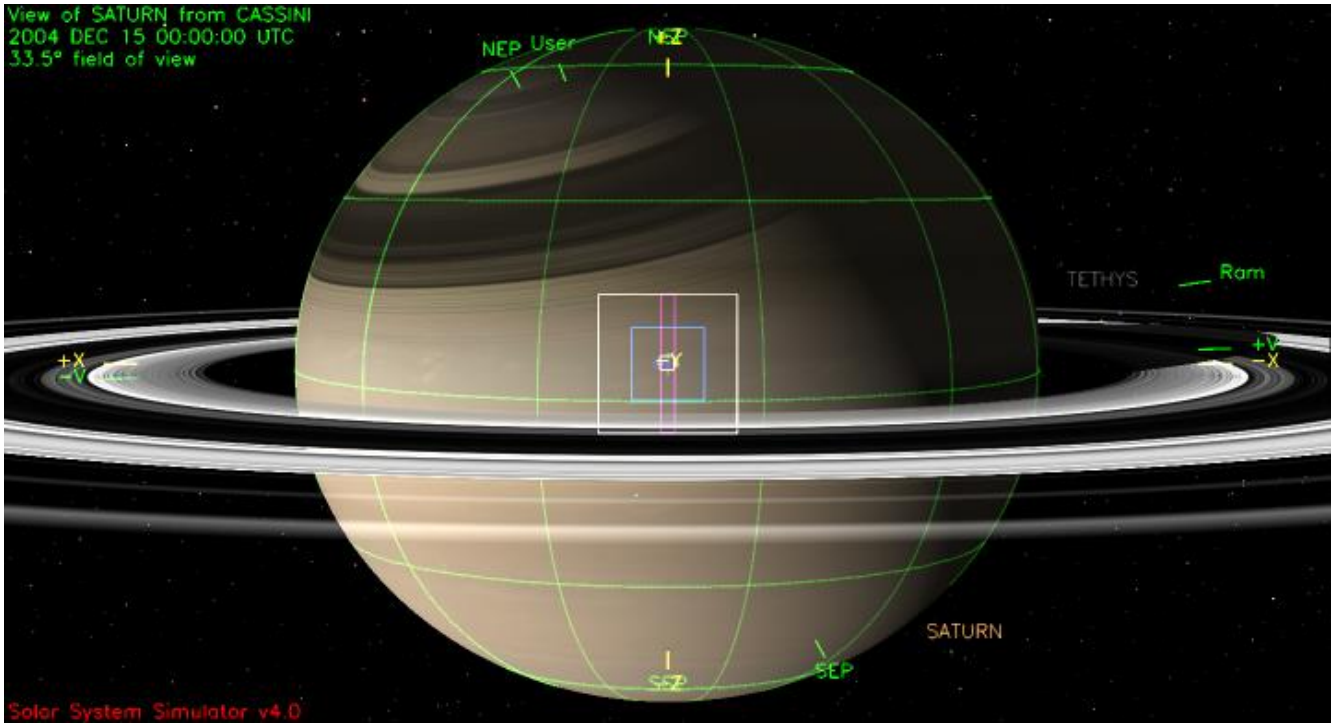
Rev B - Possible Waypoints

- ISS_NAC to Saturn POS_X to NSP OK for entire period
- ISS_NAC to Saturn POS_X to NEP OK for entire period
  (very minor CIRS Temp increase? - 89 degrees for ~1.0 hour)
- ISS_NAC to Saturn NEG_X to Sun OK for entire period
- ISS_NAC to Saturn POS_Z to NSP/NEP Good for last day
- ISS_NAC to Saturn NEG_Z to NSP/NEP Good for first day

Waypoints Chosen

Waypoint 1 (Whole Segment): ISS_NAC to Saturn; POS_X to NSP

Custom Period used for Dione Flyby 2004-350T00:52:00 to 2004-350T04:23:00



Saturn Rev Bb Open Issues

- **Pointing Issues**
  - Must be Earth-pointing at the beginning of DOY 351 due to Probe activities. See statement from Mission Planning (p. 10) pertaining to this period.
- **Data Volume Issues**
  - **WARNING:** The S7 sequence is beginning with a downlink period. S6 ends with 1443 Mb in the P4 partition. See statement from Mission Planning (p. 10) pertaining to this period.
- **Telemetry Mode Issues**
  - None
- **CIMS Issues**
  - There is a 6-minute IVP gap at the beginning of the pass starting 351T00:00:00
- **Power/OPMODE Issues**
  - None
- **Flight Rule/Mission Planning Guideline and Constraint Issues**
  - None
- **Other Issues**
  - None