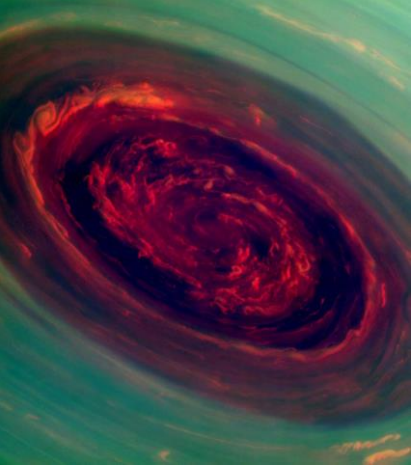
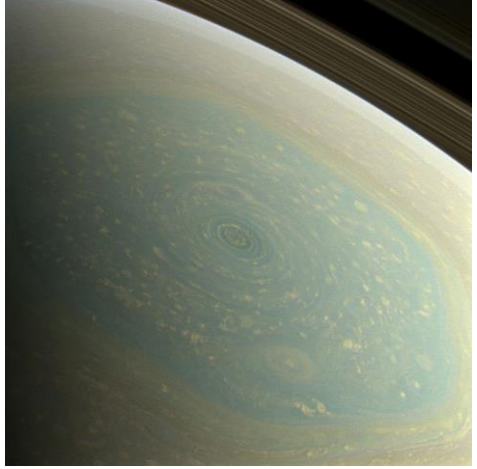
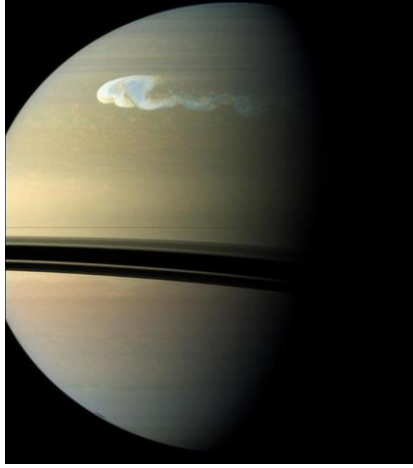


Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 10 Segment Legacy Package

Segment Boundary: June 28, 2005 – June 29, 2005
2005-179T00:30:00 – 2005-180T00:55:00 (SCET)

Integration Began 10/08/2001
Segment Delivered to S12 Sequence 01/16/2002
Lead Integrator was Jerod Gross

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 very short 1 day segment early in the Prime Mission. It started 1.5 days after periapse.
- The first few hours of this segment were given to the Rings TWT in an exchange of time on several revs for a Saturn segment on Rev 9 (see last page for more details).
- Science included a UVIS Saturn aurora observation with the other ORS teams riding along. ISS and VIMS spent the remaining time, following an OPNAV, imaging Saturn.

Final Sequenced SPASS

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S012, length = 44 ...		2005-169T01:34:00	E010_SEQUENCE_012+000T00:00:00	043T20:26:00	2005-212T22:00:00			
SATURN rev 10 Segment		2005-179T00:30:00		001T00:25:00	2005-180T00:55:00			
SP_010SA_WAYPTTURN179_PRIME		2005-179T00:30:00		000T00:30:00	2005-179T01:00:00	ISS_NAC to Saturn	NEG_X to Sun	
NEW WAYPOINT		**2005-179T01:00:00**		**001T02:00:00**	**2005-180T03:00:00**	**ISS_NAC to Saturn**	**NEG_X to Sun**	
UVIS_010SA_EUVFUV002_PRIME	C, V	2005-179T01:00:00		000T09:00:00	2005-179T10:00:00	UVIS_FUV to Saturn	NEG_X to Sun	
NAV_010SK_OPNAV791_PRIME		2005-179T10:10:00		000T00:49:00	2005-179T10:59:00	ISS_NAC to Satellites	NEG_X to Sun	
NAV_010SA_WAYPTTURN791_PRIME		2005-179T10:59:00		000T00:01:00	2005-179T11:00:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_010SA_1X2WPH120001_PRIME	V	2005-179T11:08:00		000T00:59:00	2005-179T12:07:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_010SA_1X2WPH120002_PRIME	V	2005-179T12:08:00		000T00:59:00	2005-179T13:07:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_010SA_1X2WPH120003_PRIME	V	2005-179T13:08:00		000T00:59:00	2005-179T14:07:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_010SA_1X2WPH120004_PRIME	V	2005-179T14:08:00		000T00:59:00	2005-179T15:07:00	ISS_NAC to Saturn	NEG_X to Sun	
SP_010EA_DLTURN179_PRIME		2005-179T15:55:00		000T00:30:00	2005-179T16:25:00	XBAND to Earth	POS_X to NEP	
SP_010EA_G70ARRNON179_PRIME	C	2005-179T16:25:00		000T03:10:00	2005-179T19:35:00	XBAND to Earth	Rolling/SRU	
SP_010EA_G34BWGNON179_PRIME	C	2005-179T19:35:00		000T05:50:00	2005-180T01:25:00	XBAND to Earth	Rolling/SRU	

Final Sequenced SMT and Data Volume

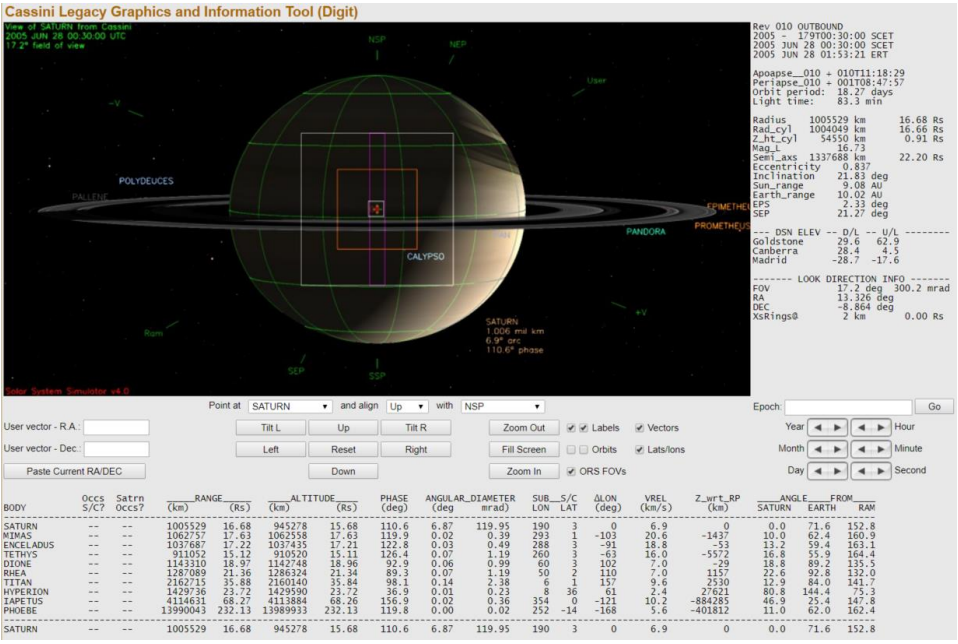
DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

			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)	NET_MARGN (%)	CAROVR (Mb)
SP_010EA_G70ARRNON179_PRIME	179 16:25	179 19:35	504	1640	54	2199	3460	1261	9	111	19	2338	1353	-984	0	0%	985
SP_010EA_G34BWGNON179_PRIME	179 19:35	180 01:25	985	0	0	985	3460	2475	0	227	34	1246	426	-819	0	0%	820

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

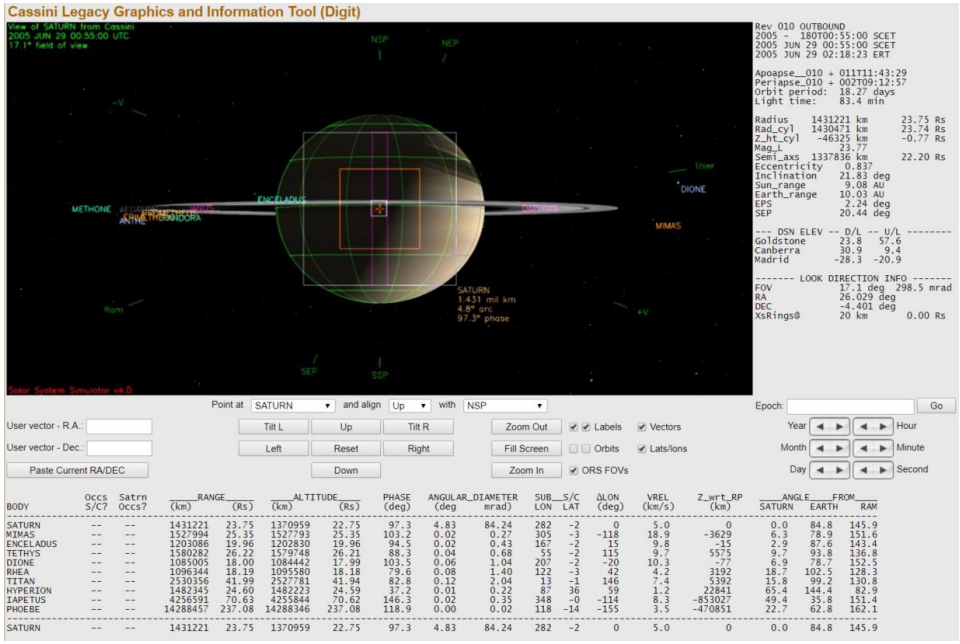
Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	179 00:30	179 16:25	112.8	22.1	129.6	5.6	618.3	56.6	101.5	0.0	146.7	163.0	269.2	0.0	0.0	1625.5
OBSERVATION_OPN	179 00:30	179 16:25	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_010EA_G70ARRNON179_PRIME	179 16:25	179 19:35	22.8	1.1	22.8	1.1	0.0	11.3	20.5	0.0	29.6	0.9	0.0	0.0	0.0	110.2
SP_010EA_G34BWGNON179_PRIME	179 19:35	180 01:25	42.0	2.1	63.6	2.1	0.0	20.7	37.8	0.0	54.6	1.6	0.0	0.0	0.0	224.5
DAILY TOTAL SCIENCE	179 00:30	180 01:25	177.6	25.3	216.0	8.9	618.3	88.6	159.8	0.0	230.9	165.5	269.2	0.0		

Segment Geometry



Seg Start (Left)

Seg End (below)



	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	16.68 Rs	110.6	3
Segment End	23.75 Rs	97.3	-2

Solar Geometry – ORS Boresight Concerns

No ORS Boresight Solar Constraints on Science Pointing.

Daily Science Highlights

Science Highlights for the days in this segment were not available.

Segment Integration Planning

Timeline Gaps and Suggested Observations

- Rev 10 segment (178T18:00 to 180T02:00)
  - Periapse is 2005-177T15:25:07.94, so this seg starts at Peri + 1T03:30.
  - Total data volume of all inputs: ~1600 Mb
  - Proposed DSN passes: 1 Goldstone 34-m HEF, ~885 Mb capability
  - UVIS FUVEUV move to start at end of Goldstone pass.
  - Most ISS 1X2WPH1 observations unchanged.
- Rev 10 Questions
  - Can ISS_SatOrb requests and OPNAV by interwoven?
  - What are the engineering requirements?

Initial SMT and Data Volume

First look in Integration:

Rev 10 Data Volume Analysis

(Based on CIMS inputs as of 11/18/01)

- Need VIMS inputs for accurate data volume determination.
- With such a large margin (1979 Mb), do we short the playback period? Or do we collect more data?

Playback	Start doy hh:mm	End doy hh:mm	Volume (Mb)	5 % (Mb)	ENG+HK (Mb)	SCIENCE (Mb)	TOTAL (Mb)	MARGIN (Mb)
PLAYBACK***	179 16:10	180 01:25	3330	166	106	1078	1185	1979

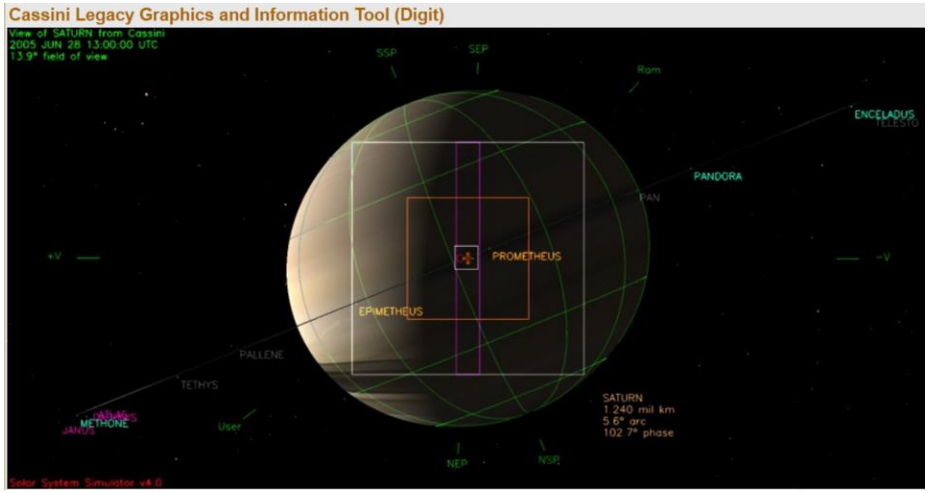
Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	RSS (Mb)	ENG (Mb)	SCIENC (Mb)	TOTAL (Mb)
OBSERVATIO	179 00:45	179 16:10	55.5	1.4	64.8	2.8	418.2	33.3	49.9	0	72.1	163	0	0	39.2	14	914.4
PLAYBACK**	179 16:10	180 01:25	33.3	0	86.4	1.7	0	20	30	0	43.3	2.5	0	0	53.2	0	270.3

Waypoint Selection

No Waypoint Selection Info Available.

Waypoints Chosen

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



Rev 10 Saturn Segment Open Issues (as of 11/27/01)

- **Pointing Issues**
  - Waypoint
    - 2005-179T01:00 to 2005-180T01:55: NAC to Saturn, -X to Sun
  - No moveable blocks
  - No epoch-relative prime observations
- **Data Volume Issues**
  - Currently 1069 Mb of margin available for use in segment
  - One OpNav requested (Hyperion, 2005-179T10:10); X-D needs to accommodate 2nd playback of this data
  - No high-value science requested; any h.v. science data being carried over from Rings TWT?
  - No Support Imaging requested
- **CIMS Issues**
  - SP turns and downlink rate info are not currently represented in CIMS
- **Power Issues**
  - None
- **Flight Rule / Mission Plan Guidelines and Constraint Issues**
  - None
- **Other Issues**
  - None

Notes & Liens (2 of 2)

Proposed Trade With Rings TWT

- The Rings TWT has approached the Saturn TWT regarding a trade: Saturn would give up time to Rings on Revs 7,8, and 10 in exchange for a new Saturn segment in Rev 9.
- The new segment in Rev 9 would run from approx. 2005-160T12:00 to 2005-162T09:00; the start time is ~1T10:00 after periapse.[*see pg. 12 for Rev 9 plot]*
- In exchange, Saturn would give up the following (all times approx.):
  - Rev 7: 2005-124T06:00 to 2005-124T18:00 (12 hrs.) [*see pg. 10 for Rev 7 plot]*
  - Rev 8: 2005-142T04:00 to 2005-142T17:00 (13 hrs.) [*see pg. 11 for Rev 8 plot]*
  - Rev 10: 2005-~~168~~178T18:00 to 2005-~~169~~179T03:00 (9 hrs.) [*see pg. 14 for Rev 10 plot]*