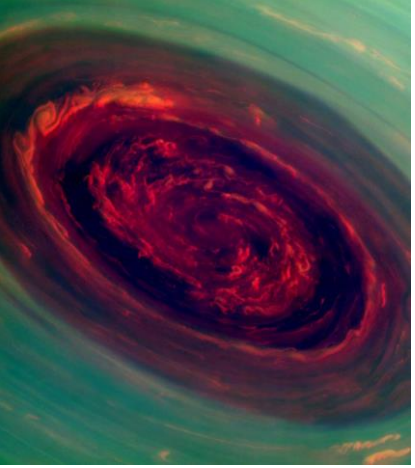

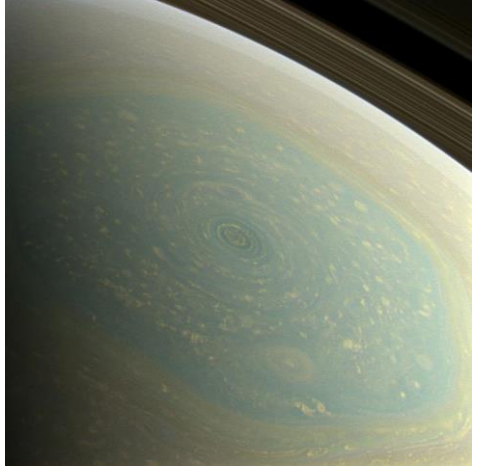
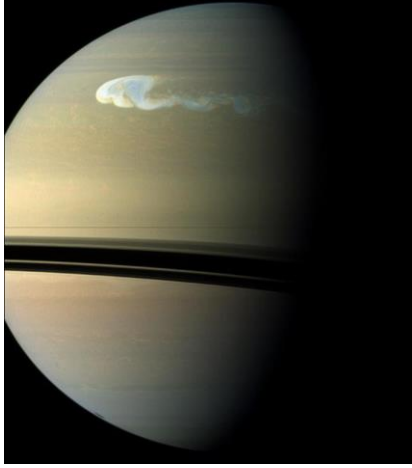

Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 7 Segment Legacy Package

Segment Boundary: May 4, 2005 – May 6, 2005
2005-124T20:30:00 – 2005-126T03:40:00 (SCET)

Integration Began 09/10/2001
Segment Delivered to S10 Sequence 01/16/2002
Lead Integrator was Jerod Gross

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 very short Prime Mission segment, just over a day long, following periapse.
- The initial 12 hours of this segment was 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).
- The segment's time was spent mostly by ISS and VIMS imaging Saturn. Time was also given for quick looks at Dione, Telesto, and Titan.
- It appears that during the sequence development process, the planned 70 meter DSN station was swapped for a 34 meter dish. This created a very large amount of carryover into the next segment. These negotiations were common and the overrun was addressed downstream either by getting absorbed into existing margin, upgrading later stations, or cutting data volume requests.

Final Sequenced SPASS

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S010, length = 35 ...		2005-099T05:15:00	E006_SEQUENCE_010+000T00:00:00	034T21:35:00	2005-134T02:50:00			
SATURN rev 7 Segment		2005-124T20:30:00		001T07:10:00	2005-126T03:40:00			
SP_007SA_WAYPTTURN124_PRIME		2005-124T20:30:00		000T00:30:00	2005-124T21:00:00	ISS_NAC to Saturn	NEG_X to Sun	SP Turn to Waypoint
NEW WAYPOINT		**2005-124T21:00:00**		**001T10:00:00**	**2005-126T07:00:00**	**ISS_NAC to Saturn**	**NEG_X to Sun**	
ISS_007SA_1X2WPH120001_PRIME	V	2005-124T21:19:00		000T00:59:00	2005-124T22:18:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_007SA_1X2WPH120002_PRIME	V	2005-124T22:19:00		000T00:59:00	2005-124T23:18:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_007SA_1X2WPH100001_PRIME	V	2005-124T23:24:00		000T00:59:00	2005-125T00:23:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_007SA_1X2WPH100002_PRIME	V	2005-125T00:24:00		000T00:59:00	2005-125T01:23:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_007DI_MUTUALEVE001_PRIME		2005-125T01:28:39		000T00:30:57	2005-125T01:59:36	ISS_NAC to Dione	NEG_X to Sun	
ISS_007SA_1X2WPH100003_PRIME	V	2005-125T02:00:00		000T00:59:00	2005-125T02:59:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_007SA_1X2WPH100004_PRIME	V	2005-125T03:00:00		000T00:59:00	2005-125T03:59:00	ISS_NAC to Saturn	NEG_X to Sun	
NAV_007SK_OPNAV251_PRIME	N	2005-125T04:00:00		000T01:59:00	2005-125T05:59:00	ISS_NAC to Satellites	NEG_X to Sun	
ISS_007TI_1X1PT150001_PRIME		2005-125T06:00:00		000T01:00:00	2005-125T07:00:00	ISS_NAC to Titan	NEG_X to Sun	
ISS_007TL_MUTUALEVE001_PRIME		2005-125T07:26:14		000T00:31:29	2005-125T07:57:43	ISS_NAC to Telesto	NEG_X to Sun	
UVIS_007SA_EUVFUV002_PRIME	C, M, V	2005-125T08:10:00		000T09:00:00	2005-125T17:10:00	UVIS_EUV to Saturn	POS_X to NSP	
ISS_007TI_1X1PT140001_PRIME	M	2005-125T17:10:00		000T01:00:00	2005-125T18:10:00	ISS_NAC to Titan	NEG_X to Sun	
SP_007EA_DLTURN125_PRIME		2005-125T18:10:00		000T00:30:00	2005-125T18:40:00	XBAND to Earth	POS_X to NEP	SP Turn to Earth
SP_007EA_G34BWGNON125_PRIME	C	2005-125T18:40:00		000T09:00:00	2005-126T03:40:00	XBAND to Earth	5_Hr_Delayed_Rolling	

Final Sequenced SMT and Data Volume

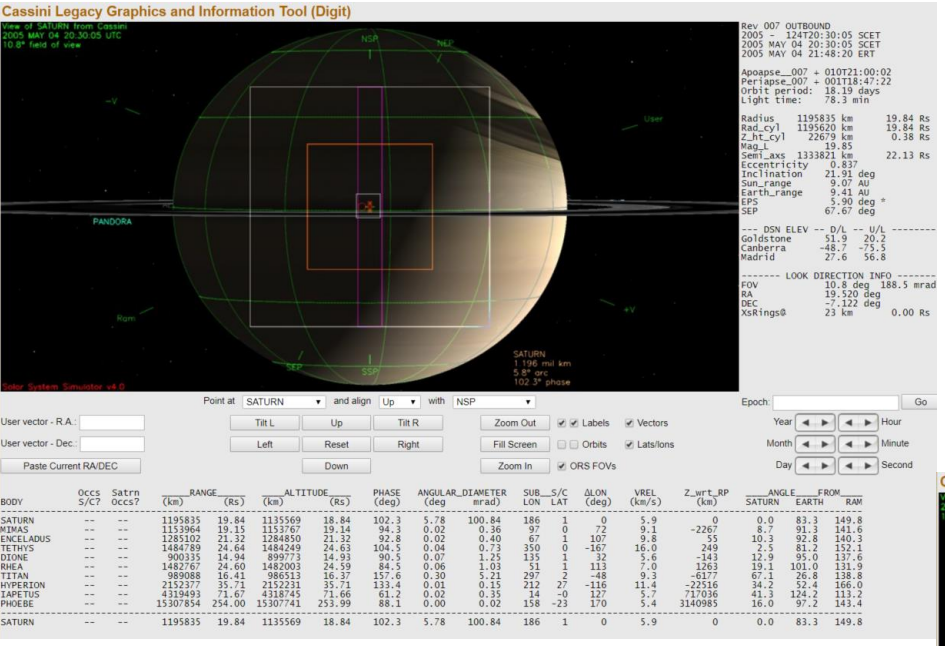
DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

			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_007EA_G34BWGNON125_PRIME	125 18:40	126 03:40	0	2575	75	2650	3423	773	18	302	53	3023	766	-2256	177	2%	2257

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

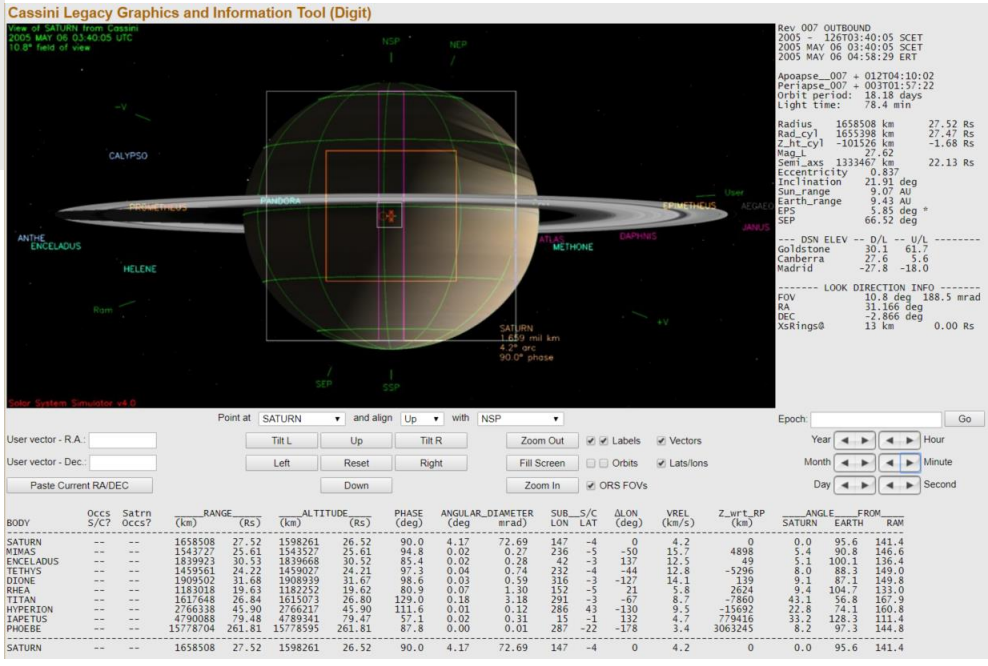
Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	124 20:30	125 18:40	345.9	9.6	129.6	7.9	1190.7	94.7	142.0	0.0	204.0	163.0	263.8	0.0	0.0	2551.2
OBSERVATION_OPN	124 20:30	125 18:40	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_007EA_G34BWGNON125_PRIME	125 18:40	126 03:40	64.8	3.9	43.2	3.2	0.0	38.9	58.3	0.0	84.2	2.5	0.0	0.0	0.0	299.0
DAILY TOTAL SCIENCE	124 20:30	126 03:40	410.7	13.5	172.8	11.1	1190.7	133.6	200.3	0.0	288.2	165.5	263.8	0.0		

Segment Geometry



Seg Start (Left)

Seg End (below)



	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	19.84 Rs	102.3	1
Segment End	27.52 Rs	90.0	-4

Solar Geometry – ORS Boresight Concerns

No ORS Boresight Solar Constraints on Science Pointing.

Daily Science Highlights

Science highlights were unavailable for the days in this segment.

Segment Integration Planning

Timeline Gaps and Suggested Observations

First Look:

- Rev 7 segment (124T05:00 to 126T05:00)
  - Periapse is 2005-123T00:19:56.13, so this is an outbound segment
  - Surprisingly few activities!
  - First segment Saturn TWT has done with OpNav requests
  - Total data volume of all inputs: ~2100 Mb
  - Proposed DSN passes: 2 Goldstone 34-m HEFs, ~925 Mb capability each

Initial SMT and Data Volume

First look during Integration:

Rev 7 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 (1690 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**	125 18:25	126 03:40	3838	192	128	1827	1956	1690

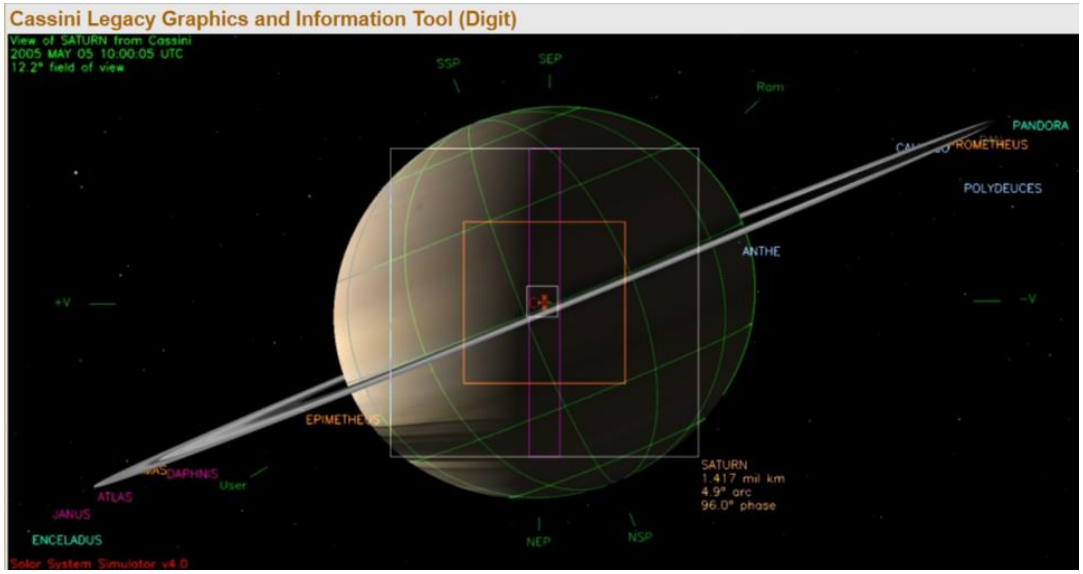
Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	RSS (Mb)	ENG (Mb)	SCI HK (Mb)	TOTAL (Mb)
OBSERVATIO	124 20:45	125 18:25	266.1	0	64.8	3.9	893.5	46.8	70.2	0	101.4	163.5	0	0	55.4	19.8	1685.4
PLAYBACK**	125 18:25	126 03:40	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



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: 2005-168T18:00 to 2005-169T03:00 (9 hrs.) [*see pg. 14 for Rev 10 plot]*

Rev 7 Saturn Segment Open Issues (as of 11/26/01)

- **Pointing Issues**
  - Waypoint
    - 2005-124T21:00 to 2005-126T04:10: NAC to Saturn, -X to Sun
  - No moveable blocks
  - No epoch-relative prime observations
- **Data Volume Issues**
  - 569 Mb of excess margin still available to use
  - 2 OpNavs requested (Tethys at 125T04:00, Rhea at 125T05:00); X-D needs to account for playing back the OpNavs a second time
  - No high-value science requested; any OpNav or high-value science coming from Rings TWT?
  - No Support Imaging requests.
- **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