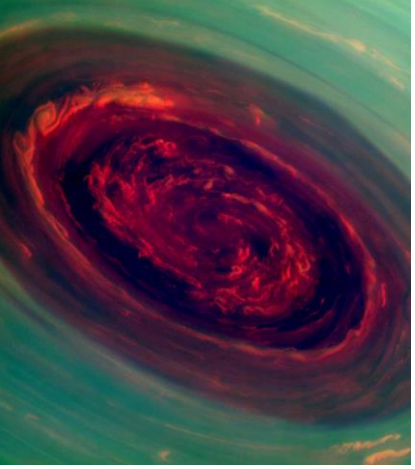

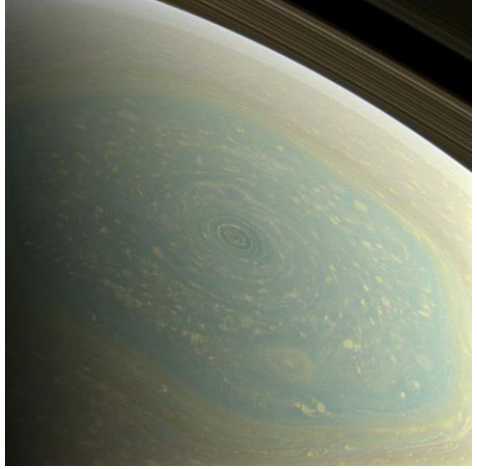
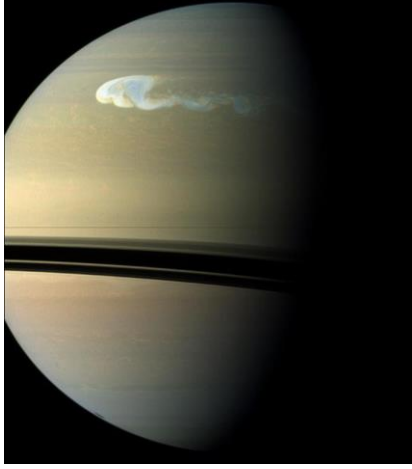

Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 12a Segment Legacy Package

Segment Boundary: July 29, 2005 – July 31, 2005
2005-210T21:30:00 – 2005-212T22:00:00 (SCET)

Integration Began 9/17/2001
Segment Delivered to S12 Sequence 02/06/2002
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 short 2 day long segment in the Prime Mission. The segment started a few days following solar conjunction, inbound to periapse, and was the first of two Saturn TWT segments in Rev 12. Saturn views were of the mostly lit southern hemisphere.

- Saturn science included CIRS Far-IR mapping with ORS riders, ISS and VIMS imaging, and UVIS EUV/FUV. UVIS also led an ORS look for impacts in the rings.

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 12 Segment		2005-210T21:30:00		002T00:30:00	2005-212T22:00:00			
SP_012SA_WAYPTTURN210_PRIME		2005-210T21:30:00		000T00:30:00	2005-210T22:00:00	ISS_NAC to Saturn	NEG_X to Sun	
UVIS_012RI_IMPACT004_PRIME	I, V	2005-210T22:00:00		000T04:00:00	2005-211T02:00:00	UVIS_HSP to Rings	NEG_X to Sun	
CIRS_012SA_FIRMAP009_PRIME	C, V	2005-211T02:00:00		000T22:00:00	2005-212T00:00:00	CIRS_FP1 to Saturn	POS_X to NSP	
ISS_012SA_1X2WPH40001_PRIME	V	2005-212T00:00:00		000T00:50:00	2005-212T00:50:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_012SA_1X2WPH40002_PRIME	V	2005-212T01:00:00		000T00:50:00	2005-212T01:50:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_012SA_1X2WPH40003_PRIME	V	2005-212T02:00:00		000T00:50:00	2005-212T02:50:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_012SA_1X2WPH40004_PRIME	V	2005-212T03:00:00		000T00:50:00	2005-212T03:50:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_012SA_1X2WPH40005_PRIME	V	2005-212T04:00:00		000T00:50:00	2005-212T04:50:00	ISS_NAC to Saturn	NEG_X to Sun	
ISS_012SA_1X2WPH40006_PRIME	V	2005-212T05:00:00		000T00:50:00	2005-212T05:50:00	ISS_NAC to Saturn	NEG_X to Sun	
UVIS_012SA_EUVFUV001_PRIME	C, M, V	2005-212T05:50:00		000T05:40:00	2005-212T11:30:00	UVIS_FUV to Saturn	POS_Z to NSP	
NAV_012SK_OPNAV121_PRIME	M	2005-212T11:30:00		000T01:29:00	2005-212T12:59:00	ISS_NAC to Satellites	NEG_X to Sun	Starts at waypoint, ends at Earth point
NAV_012EA_DLTURN121_PRIME	M	2005-212T12:59:00		000T00:01:00	2005-212T13:00:00	XBAND to Earth	NEG_X to Sun	
SP_012EA_G70METSEQ212_PRIME	C, M	2005-212T13:00:00		000T09:00:00	2005-212T22:00:00	XBAND to Earth	NEG_X to Sun	No Roll due to DSAT

Final Sequenced SMT and Data Volume

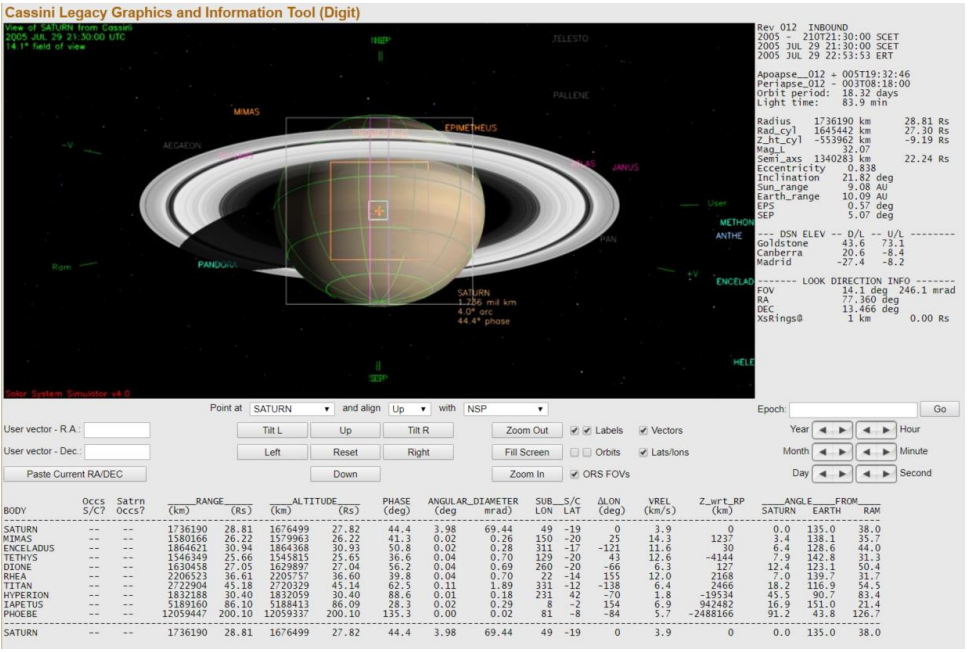
DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)

			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 (%)	CAROVR (Mb)
SP_012EA_G70METSEQ212_PRIME	212 13:00	212 22:00	0	2757	134	2892	3460	568	35	222	53	3202	3276	75	74	2%	0

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

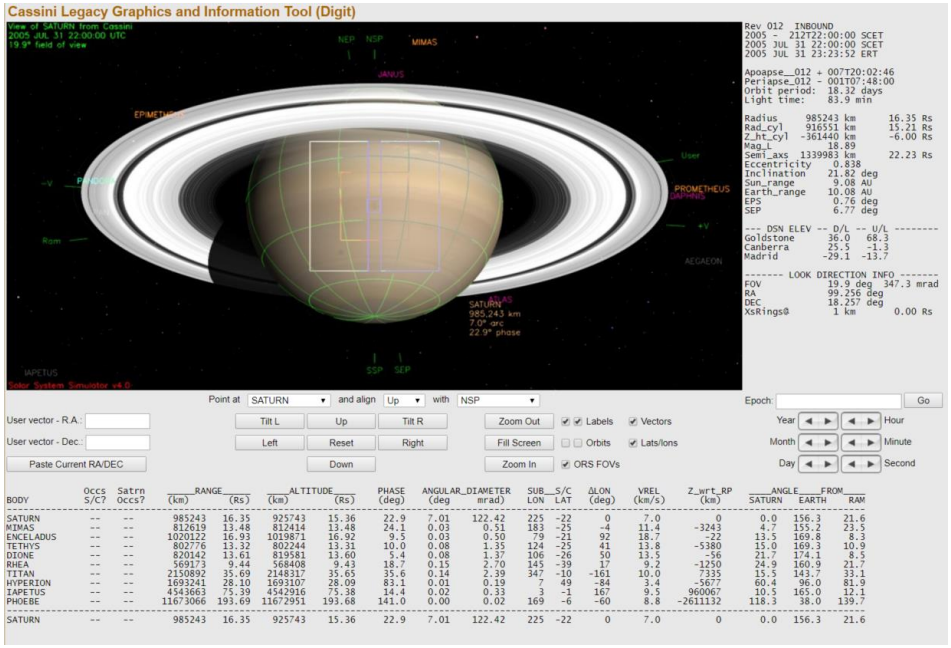
Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	210 21:30	212 13:00	142.1	21.3	357.6	7.1	650.3	46.7	131.4	0.0	186.3	196.9	980.0	0.0	0.0	2719.7
OBSERVATION_OPN	210 21:30	212 13:00	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	210 21:30	212 13:00	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5
SP_012EA_G70METSEQ212_PRIME	212 13:00	212 22:00	32.4	4.9	86.4	1.6	0.0	10.5	38.9	0.0	42.4	2.5	0.0	0.0	0.0	219.6
DAILY TOTAL SCIENCE	210 21:30	212 22:00	174.5	26.2	456.5	8.7	650.3	57.2	170.3	0.0	228.7	199.4	980.0	0.0		

Segment Geometry



Seg Start (Left)

Seg End (below)



	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	28.81 Rs	44.4	-19
Segment End	16.35 Rs	22.9	-22

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 12 Inbound Strawman

- **Rev 12 inbound segment (210T22:00 to 212T22:00)**
  - Periapse is 2005-214T05:31:27.70, so this seg starts at Peri-3T07:30
  - Total data volume of all inputs: ~3100 Mb
  - Proposed DSN passes: 1 Goldstone 70-m, capability ~ 3350 Mb
- **Proposed Strawman:**
- CIRS moved 11:00 earlier
- ISS observations moved 0:30 earlier
- OPNAV given 2:30 to do whatever they need
- 30 minutes to turn to Earth after OpNav
- 9-hour d/l assumed (13 hrs. pictured)
- **Questions**
- Should we do 1/2 UVIS EUV in place of ISS?
- What to do with SatOrb?

Observation	Start Time	Dur	End Time
VIMS Fomalhaut	210T22:00	8:30	211T06:30
CIRS Far-IR Map	211T06:30	22:00	212T04:30
ISS Saturn Photom 001	212T04:30	0:24	212T04:54
ISS Saturn Photom 002	212T05:30	0:24	212T05:54
ISS Saturn Photom 003	212T06:30	0:24	212T06:54
ISS Saturn Photom 004	212T07:30	0:24	212T07:54
ISS Saturn Photom 005	212T08:30	0:24	212T08:54
ISS Saturn Photom 006	212T09:30	0:24	212T09:54
OPNAV	212T10:00	2:30	212T12:30
Downlink & CIRS Cal	212T13:00	9:00	212T22:00

Initial SMT and Data Volume

First Look During Integration:

Rev 12 Inbound Data Volume Analysis

(Based on CIMS inputs as of 01/04/02)

- Current Data Volumes

Playback	Start doy hh:mm	End doy hh:mm	Volume (Mb)	5% (Mb)	ENG+HK (Mb)	SCIENCE (Mb)	TOTAL (Mb)	MARGIN (Mb)
PLAYBACK**	212 13:13	212 22:29	3384	169	186	3043	3229	-14

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)
OBSERVATION	210 21:51	212 13:13	141.8	21.2	398.4	7.1	686.8	85.1	131.1	0.0	184.3	197.0	920.0	0.0	101.8	31.0	2905.5
PLAYBACK**	212 13:13	212 22:29	33.4	5.0	86.4	1.7	37.7	20.0	40.0	0.0	43.4	2.4	0.0	0.0	53.2	0.0	323.2

* = back-to-back or multirate playbacks; first one listed

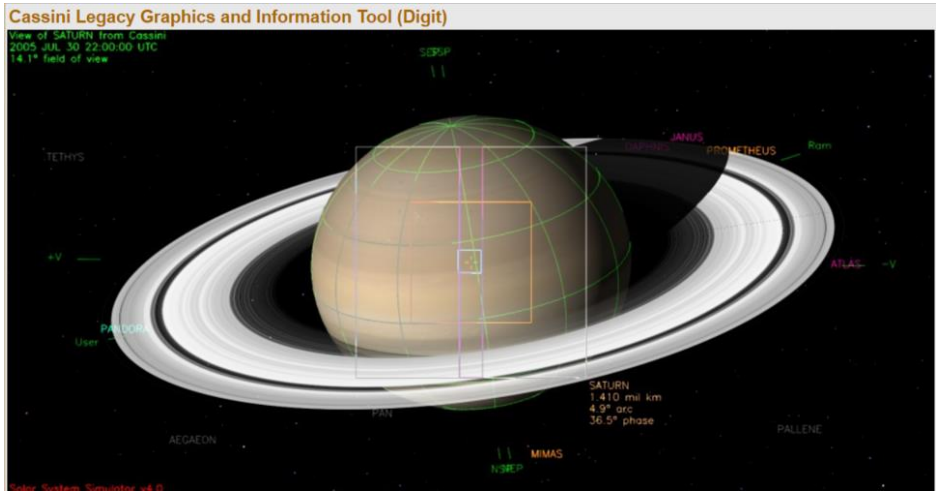
- We have a margin of -14.
- Problems
  - ISS_012MI_PHOTOM001_RIDER not removed yet. This puts us over by 37.7 Mb.
  - VIMS rider pickets giving zero data volume => Check CIMS inputs

Waypoint Selection

No Waypoint Selection Info Available.

Waypoints Chosen

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



Saturn Rev 12 Inbound Open Issues (as of 02/06/02)

- **Pointing Issues**
  - The waypoint is NAC to Saturn, -X to Sun.
- **Data Volume Issues**
  - 185 Mb of “extra” data volume available
  - There are OpNavs in the observation period.
- **CIMS Issues**
  - None
- **Power Issues**
  - None
- **Flight Rule / Mission Planning Guideline & Constraint Issues**
  - None
- **Other Issues**
  - None