



CASSINI TOST T109 SEGMENT

Rev 212 Handoff Package

Segment Boundary 2015-042T23:51:00 – 2015-045T03:51:00

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J. Pitesky

Science Highlights

Notes & Liens

This document has been reviewed and determined not to contain export controlled technical data

Science Highlights

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DOY 043 (Feb 11) – Inbound to Titan, VIMS will image the South Pole to witness the evolution of the South Polar vortex. It will then make a mosaic of the sub-Saturn tropical zone that include dunes fields and plateaus. It will also look for clouds at northern mid-latitudes. Then, the VIMS will use the push-broom mode to take a high resolution swath across the polar cap North of 60 deg. This path will cross Punga Mare and possibly Kivu Lacus, looking for compositional differences in the faculae and the dunes. , VIMS will first look for specular reflection on the northeastern tip of Kraken Mare and across the strait that links Kraken and Ligeia. It will then acquire a few high-resolution images of the lakes before handing off to CIRS. Just after closest approach, CIRS performs limb sounding in the far-infrared at 50N to extend spatial coverage of gas and aerosol vertical distributions. ISS will ride along with VIMS, UVIS, and CIRS to image Titan's surface and atmosphere over the equatorial sub-Saturnian hemisphere, including northern Tsegih and eastern Aztlan.

DOY 044 (Feb 12) – CIRS performs limb sounding in the far-infrared at 50N to extend spatial coverage of gas and aerosol vertical distributions. – ISS will ride along with VIMS, UVIS, and CIRS to image Titan's surface and atmosphere at high phase angle. T109 is a low altitude (1200 km) dayside polar flyby occurring in the midnight sector of Saturn's magnetosphere. With closest approach near the terminator, Cassini will be able to study the draping and the diffusion of the external magnetic field within the ionosphere over the flank facing Saturn.

Y bias windows & data volume

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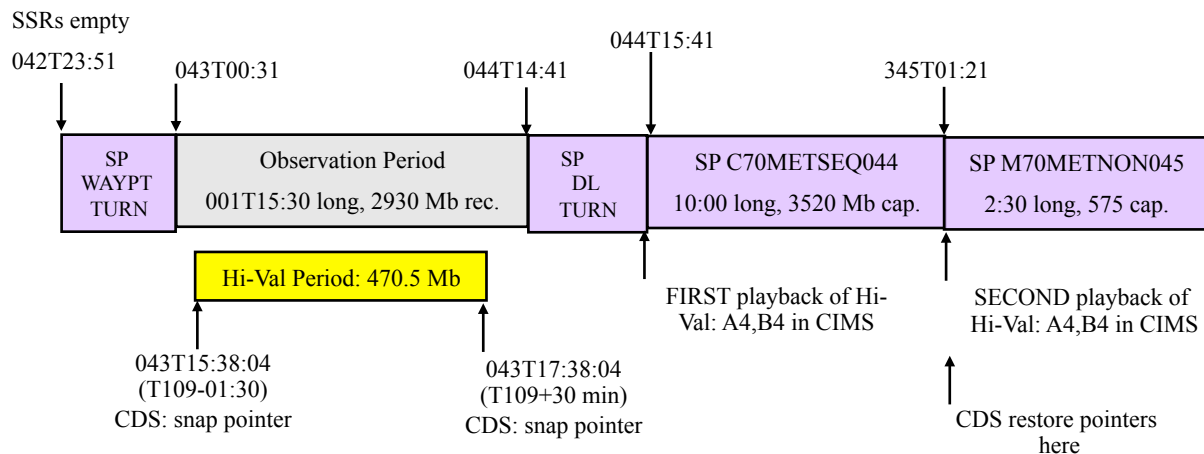
No Y bias windows for this segment because the encounter is on thrusters.

Dual Playback (VIMS)

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Flyby	BEGHIVAL	ENDHIVAL	P4 Dual Playback Data Volume	SSR empty before hi-val observation period? (if not verify any carryover on A fits with Hi-Val data)	SSR-A empty after first playback?	PPL set to A4,B4 for first AND second playbacks?	SSRs empty after second playback? (if not does any Hi-Val data carry over?)
T109	T109-01:30	T109+30 min	470.5 Mb	Yes	Yes	Yes	Yes

Playbacks contiguous



Reminder - ALL instruments' data is played back twice during P4 dual playback periods

Notes

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- Pointing:
 - Could not find consistent RBOT-friendly waypoint
 - No YGAP window because flyby is on thrusters
- Data Volume:
 - Odd p/b priority list order due to dual p/b.
- DSN:
 - Added C34BWGNON344 (to support RSS during c/a) and M70METNON346 (for dual playback)
 - C34BWGNON344 should be Level 3 support
 - DSS-25 pass on DOY 344 during maintenance; pass requires Ka-band support and DSS-26 is in extended downtime so we have no other options.
 - Handover from DSS-43 to DSS-63 on DOY 346: ap_downlink provides less than 15 minutes overlap, so Madrid playback pause was increased.
- Resource checker:
 - See opmode and data volume sections
- Opmodes:
 - Unusual opmode strategy which appears to be a mismatch but is verified by SCO (see TOST T107 master timeline at end of package)
- Hydrazine:
 - AACS analysis TBD: TOST predict is 300g, T87 flyby (similar) actual was 123g
 - (0.5, 2, 0.5) deadband to support VIMS
- Special Activities:
 - RSS is supporting NAV/INMS activity but not using the data, so no RSS activity in CIMS

Liens

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Sequence Liens (should all be SPLAT items):

- Dual Playback

T109 TOST Master Timeline

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212TI_T109 1200

Start Time	End Time	Prime Activity	Obs. Detail	Op Mode	TLM Mode	Comments
2015-042T23:51:00	2015-043T00:31:00	SP Turn to WP	NEG_Y to Titan, NEG_X to NTP	DFPW Normal	S_N_ER_3	NEG_X to NEP secondary turn to d/l violates sun_ors operational FR
2015-043T00:31:00	C/A-16:22:05	OD Uncertainty Dead Time		DFPW Normal	S_N_ER_3	
C/A-16:22:05	-14:00	VIMS	B (TC1a)	DFPW Normal	S_N_ER_3	
-14:00	-09:00	VIMS	V (TC1a, TC1b)	DFPW Normal	S_N_ER_3	
-09:00	-02:15	UVIS	X (TN1c. ISS ridealong is photon WAC (TN1c and TC1a))	DFPW Normal	S_N_ER_3	
begin custom period						
-02:15	-00:30	VIMS		DFPW Normal	S_N_ER_3	
-00:30	-00:29	RWA to RCS Transition		ORSRCS	S_N_ER_3	
-00:29	0	VIMS		ORSRCS	S_N_ER_3	
2015-043T17:08:05		CLOSEST APPROACH	NEG_Y to Titan (Tc2a)			Punga Mare - Sinlap 5 km/pixel
0	+00:30	VIMS	VIMS hand off at CIRS attitude	ORSRCS	S_N_ER_3	
+00:30	+01:15	CIRS	TC1a	ORSRCS	S_N_ER_3	
+01:15	+01:37	RCS to RWA Transition		ORSRCS	S_N_ER_3	
+01:37	+02:15	CIRS	TC1a	DFPW Normal	S_N_ER_3	
end custom period						
+02:15	+09:00	UVIS	X (TN1c. ISS ridealong is photon WAC (TN1c and TC1a))	DFPW Normal	S_N_ER_3	
+09:00	+13:00	CIRS	N1 (Tc1b, TN1c aerosol)	DFPW Normal	S_N_ER_3	
+13:00	C/A+21:17:55	CIRS	M4 (Tc1b (TN1c on outbound))	DFPW Normal	S_N_ER_3	
C/A+21:17:55	2015-044T14:41:00	OD Uncertainty Dead Time		DFPW Normal	S_N_ER_3	
2015-044T14:41:00	2015-044T15:21:00	SP Turn to Earth for downlink	XBAND to Earth, NEG_X to 300/55	DFPW Normal	S_N_ER_3	
2015-044T15:21:00	2015-045T01:21:00	Canberra 70M		DFPW Normal	RTE_N_SPB	
2015-045T01:21:00	2015-045T03:51:00	Madrid 70M		DFPW Normal	RTE_N_SPB	Dual playback for VIMS, -01:30 to +00:30