



CASSINI TOST T91 SEGMENT

Rev 190 Handoff Package

Segment Boundary 2012-205T20:38:00– 2012-208T06:38:00

24 SEP 2012

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SMT report and SPASS

Science Highlights

Notes & Liens

SMT report

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

DOWNLINK PASS NAME	Start doy hh:mm	End doy hh:mm	OBSERVATION PERIOD								DOWNLINK_PASS						
			P4					P5	RECORDED		PLAYBACK						
			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_190EA_M70METNON144_PRIME	144 16:31	145 01:31	0	3137	175	3312	3322	10	0	145	53	3510	3231	-280	194	3%	279
SP_190EA_G70METNON145_PRIME	145 01:31	145 03:31	279	0	0	279	3322	3043	0	759	12	1050	870	-180	194	8%	180
SP_190EA_G70METNON146_PRIME	146 00:01	146 03:01	180	922	87	1188	3322	2134	0	70	18	1276	1124	-152	194	12%	151
SP_190EA_G34BWGNON146_PRIME	146 03:01	146 09:01	151	0	0	151	3322	3171	0	160	35	347	540	193	194	36%	0

SPASS

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Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S78, length = 72 days		2013-085T13:15:00		072T11:30:00	2013-158T00:45:00			
Titan Flyby T91 Segment		2013-143T01:46:00		003T07:15:00	2013-146T09:01:00			
SP_190TI_WAYPTTURN143_PRIME		2013-143T01:46:00		000T00:40:00	2013-143T02:26:00	NEG_Y to Titan	NEG_X to NTP	
NEW WAYPOINT		2013-143T02:26:00		001T14:05:00	2013-144T16:31:00	NEG_Y to Titan	NEG_X to NTP	
SP_190TI_DEADTIME143_PRIME		2013-143T02:26:00		000T00:15:00	2013-143T02:41:00	NEG_Y to Titan	NEG_X to NTP	
CIRS_190TI_MIDIRMAP001_PRIME I, V		2013-143T02:41:00	GMB_E190_TITAN_T91-000T14:51:55	000T01:51:55	2013-143T04:32:55	CIRS_FPB to Titan	PIC	
CIRS_190TI_FIRNADCMP001_PRIME I, U, V		2013-143T04:32:55	GMB_E190_TITAN_T91-000T13:00:00	000T04:00:00	2013-143T08:32:55	CIRS_FP1 to Titan	PIC	Collaborative Rider(s): VIMS
CIRS_190TI_MIRLMBMAP001_PRIME I, V		2013-143T08:32:55	GMB_E190_TITAN_T91-000T09:00:00	000T03:00:00	2013-143T11:32:55	CIRS_FPB to Titan	PIC	Collaborative Rider(s): VIMS
RADAR_190TI_T91INRAD001_PRIME		2013-143T11:32:55	GMB_E190_TITAN_T91-000T06:00:00	000T03:45:00	2013-143T15:17:55	NEG_Z to Titan (0.0,0.0,45.0 deg. offset)	POS_Y to NTP	Use +Y to NTP (0,0,45deg) and -X to NTP (0,0,45deg) for polarizations.
RADAR_190TI_T91INSCAT001_PRIME M		2013-143T15:17:55	GMB_E190_TITAN_T91-000T02:15:00	000T01:03:00	2013-143T16:20:55	NEG_Z to Titan	PIC	
RADAR_190TI_T91IHISAR001_PRIME M		2013-143T16:20:55	GMB_E190_TITAN_T91-000T01:12:00	000T00:41:00	2013-143T17:01:55	NEG_Z to Titan	NEG_X to NTP	
ENGR_190SC_RADRCS143_PRIME M		2013-143T17:01:55	GMB_E190_TITAN_T91-000T00:31:00	000T00:01:00	2013-143T17:02:55	NEG_Z to Titan	PIC	Deadband = (2,2,20)
RADAR_190TI_T91INALT001_PRIME M		2013-143T17:02:55	GMB_E190_TITAN_T91-000T00:30:00	000T00:12:00	2013-143T17:14:55	NEG_Z to Titan	PIC	
Begin Dual Playback Science		2013-143T17:14:55	GMB_E190_TITAN_T91-000T00:18:00	000T00:00:01	2013-143T17:14:55			
RADAR_190TI_T91INOSAR001_PRIME M		2013-143T17:14:55	GMB_E190_TITAN_T91-000T00:18:00	000T00:36:00	2013-143T17:50:55	NEG_Z to Titan	NEG_X to Titan_SC_RAM	
190TI (t) T91 TITAN Outbou...		2013-143T17:32:55		000T00:00:01	2013-143T17:32:55			
RADAR_190TI_T91OUTALT001_PRIME M		2013-143T17:50:55	GMB_E190_TITAN_T91+000T00:18:00	000T00:12:00	2013-143T18:02:55	NEG_Z to Titan	PIC	
End Dual Playback Science		2013-143T18:02:55	GMB_E190_TITAN_T91+000T00:30:00	000T00:00:01	2013-143T18:02:55			
RADAR_190TI_T91OHISAR001_PRIME M		2013-143T18:02:55	GMB_E190_TITAN_T91+000T00:30:00	000T00:20:00	2013-143T18:22:55	NEG_Z to Titan	NEG_X to NTP	
ENGR_190SC_RADRWBIAS143_PPS M		2013-143T18:22:55	GMB_E190_TITAN_T91+000T00:50:00	000T00:22:00	2013-143T18:44:55	NEG_Z to Titan	PIC	Deadband=(2, 2, 20)
RADAR_190TI_T91OUTSCT001_PRIME M		2013-143T18:44:55	GMB_E190_TITAN_T91+000T01:12:00	000T01:03:00	2013-143T19:47:55	NEG_Z to Titan	PIC	
RADAR_190TI_T91OUTRAD001_PRIME		2013-143T19:47:55	GMB_E190_TITAN_T91+000T02:15:00	000T03:45:00	2013-143T23:32:55	NEG_Z to Titan (0.0,0.0,-30.0 deg. offset)	NEG_X to NTP	Use -X to NTP (0,0,-30d) and -Y to NTP (0,0,-30) for polarizations.
ISS_190TI_GLOBMAP001_PRIME C, V		2013-143T23:32:55	GMB_E190_TITAN_T91+000T06:00:00	000T03:00:00	2013-144T02:32:55	ISS_NAC to Titan	NEG_X to Sun	
CIRS_190TI_FIRNADCMP002_PRIME I, U, V		2013-144T02:32:55	GMB_E190_TITAN_T91+000T09:00:00	000T05:00:00	2013-144T07:32:55	CIRS_FP1 to Titan	PIC	
CIRS_190TI_MIDIRMAP002_PRIME I, V		2013-144T07:32:55	GMB_E190_TITAN_T91+000T14:00:00	000T08:03:05	2013-144T15:36:00	CIRS_FPB to Titan	PIC	Collaborative Rider(s): ISS
SP_190TI_DEADTIME144_PRIME		2013-144T15:36:00	GMB_E190_TITAN_T91+000T22:03:00	000T00:14:55	2013-144T15:50:55	NEG_Y to Titan	NEG_X to NTP	
SP_190EA_DLTURN144_PRIME		2013-144T15:51:00		000T00:40:00	2013-144T16:31:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	NEG_Y to Saturn	
NEW WAYPOINT		2013-144T16:31:00		000T11:40:00	2013-145T04:11:00	XBAND to Earth (0.0,0.0,-9.5 deg. off)	NEG_Y to Saturn	
SP_190EA_M70METNON144_PRIME		2013-144T16:31:00		000T09:00:00	2013-145T01:31:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	Rolling	MIMI. NEG_Y to Saturn (0,0,-9.5).
Pointer Reset in preparatio...		2013-145T01:31:00		000T00:00:01	2013-145T01:31:01			
SP_190EA_G70METNON145_PRIME C		2013-145T01:31:00		000T02:00:00	2013-145T03:31:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	Rolling	MIMI. NEG_Y to Saturn (0,0,-9.5).
SP_190TI_WAYPTTURN145_PRIME		2013-145T03:31:00		000T00:40:00	2013-145T04:11:00	NEG_Y to Titan	NEG_X to NTP	NEP also OK; both NTP and NEP cause CIRS FR warning on WP and DL turns
NEW WAYPOINT		2013-145T04:11:00		000T18:20:00	2013-145T22:31:00	NEG_Y to Titan	NEG_X to NTP	
ISS_190TI_CLOUD001_PRIME V		2013-145T04:11:00		000T04:00:00	2013-145T08:11:00	ISS_NAC to Titan	NEG_X to Sun	
ISS_190TI_CLOUD002_PRIME V		2013-145T08:11:00		000T04:00:00	2013-145T12:11:00	ISS_NAC to Titan	NEG_X to Sun	
ISS_190TI_CLOUD003_PRIME V		2013-145T12:11:00		000T04:00:00	2013-145T16:11:00	ISS_NAC to Titan	NEG_X to Sun	
ISS_190TI_CLOUD004_PRIME V		2013-145T16:11:00		000T02:40:00	2013-145T18:51:00	ISS_NAC to Titan	NEG_X to Sun	
RADAR_190TI_RADIOMCAL126_PRIME		2013-145T18:51:00		000T02:00:00	2013-145T20:51:00	NEG_Z to Titan	NEG_X to NTP	No Preference to secondary pointing
ISS_190TI_CLOUD005_PRIME V		2013-145T20:51:00		000T01:00:00	2013-145T21:51:00	ISS_NAC to Titan	NEG_X to Sun	
SP_190EA_DLTURN145_PRIME		2013-145T21:51:00		000T00:40:00	2013-145T22:31:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	NEG_Y to Saturn	
NEW WAYPOINT		2013-145T22:31:00		000T10:30:00	2013-146T09:01:00	XBAND to Earth (0.0,0.0,-9.5 deg. off)	NEG_Y to Saturn	
SP_190EA_YGAP145_PRIME E		2013-145T22:31:00		000T01:30:00	2013-146T00:01:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	NEG_Y to Saturn	
SP_190EA_G70METNON146_PRIME C		2013-146T00:01:00		000T03:00:00	2013-146T03:01:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	Rolling/SRU	MIMI. NEG_Y to Saturn (0,0,-9.5). SID suspend
SP_190EA_G34BWGNON146_PRIME C		2013-146T03:01:00		000T06:00:00	2013-146T09:01:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	Rolling/SRU	MIMI. NEG_Y to Saturn (0,0,-9.5). SID suspend

Science Highlights

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DOY 143: On the inbound wing, CIRS focuses on continued temporal coverage of gas and temperature distributions in the stratosphere. ISS rides along with CIRS' observations to image Titan's surface and atmosphere, including high northern latitudes as Titan approaches northern summer. VIMS will look for specular reflection at 65 N latitudes and 150 W longitudes. Closest approach science is dedicated to RADAR: SAR stereo coverage (with T92) of small lakes seen in T18/19, altimetry from near North pole across Ligeia Mare (the only altimetry over a lake in the Solstice Mission) and altimetry for global shape along 120 East meridian down to the equator. Inbound and outbound to closest approach, RADAR conducts scatterometry/radiometry, HiSAR and altimetry observations. T91 is another high inclination (990 km) low altitude flyby in the noon sector of Saturn's magnetosphere. With closest approach in the dayside, Cassini will be able to study the diffusion of the external magnetic field at low altitudes and low solar zenith angles. A comparison with flybys T83-T90 will be very useful

DOY 144: ISS will acquire global-scale mosaics of Titan's mid-southern latitudes on the trailing hemisphere, which have only been imaged at lower resolution. Then CIRS focuses on continued temporal coverage of gas and temperature distributions in the stratosphere. ISS rides along with CIRS' observations to image Titan's surface and atmosphere, including mid-southern latitudes on the trailing hemisphere. VIMS will be monitoring the cloud activity as it rides along with ISS and CIRS. Flyby data is played back to the Deep Space Network.

DOY 145: Downlink of the flyby data to the Deep Space Network continues. ISS will monitor Titan to track clouds and the evolution thereof for an extra day after the Titan encounter. Data is played back to the Deep Space Network.

DOY 146 : Downlink of Titan data continues.

Dual playbacks

- A Dual Playback for High Value Science has been planned
- Based on DSN requests, SMT results indicate it will fit within this segment
- A SPLAT item has been opened until the DSN negotiations for this time period are complete

Flyby	Driving Instrument	BEGHIVAL	ENDHIVAL	P4 Dual Playback	SSR-A empty after first playback?	Anything nonstandard?
T91	RADAR	T91-18 min	T91+30 min	705.8 Mb	Yes	Carryover until final downlink, Caboose observation period

A “standard” dual playback: no carryover coming in, single observation period, first downlink empties SSR, no caboose observation period, second downlink empties SSR

Notes

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- Pointing:
 - Waypoint goes bad during C/A period, but RADAR is handling all pointing at that time.
 - Some CIRS heating during waypoints at waiveable levels
 - No YGAP prior to post-C/A downlink as flyby is on thrusters
- Data Volume:
 - SMT warnings on loss of RADAR data during warmup period are OK
- DSN:
 - No issues
- Resource checker:
 - Telemetry mode changes during ISS observations are OK with ISS.
- Opmodes:
 - ISS and VIMS are asleep during RADRWA periods, on during RADRCS
- Hydrazine:
 - Early work predicts 494 g from AACCS FSDS simulation
 - Deadband set at (.5, .5, 2) for RADAR
 - Rework of RADAR design/deadband may change these numbers
- Special Activities:
 - None known

Liens

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Sequence Liens (should all be SPLAT items):

- RADAR waiting for approval from project office to confirm level of hydrazine useage concerns. Due to this, outbound transition time (RCS to RWA) may change prior to kickoff meeting.
- Dual Playback