



CASSINI TOST T83 SEGMENT

Rev 166 Handoff Package

Segment Boundary 2012-142T08:31:00 – 2012-144T02:01:00

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SMT report and SPASS

Science Highlights

Notes & Liens

SMT report

TOST rev 166

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

DOWNLINK PASS NAME	OBSERVATION_PERIOD		DOWNLINK_PASS														
	Start doy hh:mm	End doy hh:mm	P4							P5	RECORDED		PLAYBACK				
			START (Mb)	SCI (Mb)	HK+E (Mb)	TOTAL (Mb)	CPACTY (Mb)	MGRN (Mb)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGN (Mb)	NET_MARGN (Mb)	(%)	CAROVR (Mb)
SP_166EA_M70METNON143_PRIME	143 16:01	144 01:01	0	3021	144	3165	3322	157	0	222	53	3440	3472	31	32	1%	0
SP_166EA_G70METNON143_PRIME	144 01:01	144 02:01	0	0	0	0	3322	3322	0	429	6	434	431	-3	0	0%	3

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	142 08:31	143 16:01	229.1	59.4	254.1	21.4	646.4	98.7	105.8	863.3	474.0	18.1	223.2	0.0	142.1	3135.5
SP_166EA_M70METNON143_PRIME	143 16:01	144 01:01	22.7	17.0	86.4	3.2	0.0	16.0	27.5	0.0	42.4	4.9	0.0	0.0	0.0	220.2
SP_166EA_G70METNON143_PRIME	144 01:01	144 02:01	2.5	1.9	10.8	0.4	0.0	1.8	3.1	0.0	4.7	0.0	0.0	0.0	399.5	424.6
DAILY TOTAL SCIENCE	142 08:31	144 02:01	254.3	78.3	351.3	25.0	646.4	116.5	136.4	863.3	521.2	23.1	223.2	0.0	541.6	

	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)
TOTAL RECORDED (OPNAV data not included)	254.3	78.3	351.3	25.0	646.4	116.5	136.4	863.3	521.2	23.1	223.2	0.0

SPASS

TOST rev 166

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S73, length = 73 days		2012-097T11:47:00		073T11:11:00	2012-170T22:58:00			
Titan Flyby T83 Segment		2012-142T08:31:00		001T17:30:00	2012-144T02:01:00			
SP_166TI_WAYPTTURN142_PRIME		2012-142T08:31:00		000T00:40:00	2012-142T09:11:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset NEG_Y to Saturn		
NEW WAYPOINT		2012-142T09:11:00		001T16:50:00	2012-144T02:01:00	XBAND to Earth (0.0,0.0,-9.5 deg. of NEG_Y to Saturn		
SP_166TI_DEADTIME142_PRIME		2012-142T09:11:00		000T00:15:00	2012-142T09:26:00	XBAND to Earth (0.0,0.0,-9.5 deg. of NEG_Y to Saturn		
Begin Custom period		2012-142T09:26:00	GMB_E166_TITAN_T83-000T15:44::	000T00:00:01	2012-142T09:26:01			
VIMS_166TI_GLOBMAP001_PRIME	C, I	2012-142T09:26:00	GMB_E166_TITAN_T83-000T15:44:11	000T06:44:11	2012-142T16:10:11	VIMS_IR to Titan	NEG_X to Sun	Collaborative Rider(s): ISS. Pick up at XBAND to Earth (0.0,0.0,-9.5 deg. offset), NEG_Y to Saturn; Hand off at NEG_Y to Titan, XBAND to Earth. Collaborative Rider(s): ISS
CIRS_166TI_MIRLMBINT001_PRIME	I, V	2012-142T16:10:11	GMB_E166_TITAN_T83-000T09:00:00	000T04:00:00	2012-142T20:10:11	CIRS_FP1 to Titan	PIC	Collaborative Rider(s): VIMS. Pick up at NEG_Y to Titan, XBAND to Earth; Hand off at CIRS_FP1 to Titan, PIC.
CIRS_166TI_FIRNADMAP001_PRIME	I, V	2012-142T20:10:11	GMB_E166_TITAN_T83-000T05:00:00	000T02:33:00	2012-142T22:43:11	CIRS_FP1 to Titan	PIC	Collaborative Rider(s): VIMS. Pick up at CIRS_FP1 to Titan, PIC; Hand off at NEG_Y to Titan, XBAND to Earth.
RADAR_166TI_T83INSCAT001_PRIME	I, M, V	2012-142T22:43:11	GMB_E166_TITAN_T83-000T02:27:00	000T01:15:00	2012-142T23:58:11	NEG_Z to Titan	POS_Y to NTP	Collaborative Rider(s): VIMS. Scan to include northern lakes
RADAR_166TI_T83IHISAR001_PRIME	M	2012-142T23:58:11	GMB_E166_TITAN_T83-000T01:12:00	000T00:41:00	2012-143T00:39:11	NEG_Z to Titan	POS_Y to NTP	Collaborative Rider(s): VIMS. Pick up at NEG_Z to Titan, POS_Y to NTP; Hand off at NEG_Z to Titan, POS_Y to NTP.
ENGR_166SC_RADRCS142_PRIME	M	2012-143T00:39:11	GMB_E166_TITAN_T83-000T00:31:00	000T00:01:00	2012-143T00:40:11	NEG_Z to Titan	POS_Y to NTP	Pick up at NEG_Z to Titan, POS_Y to NTP; Hand off at NEG_Z to Titan, POS_Y to NTP. deadband=(2,2,20)
RADAR_166TI_T83INALT001_PRIME	M	2012-143T00:40:11	GMB_E166_TITAN_T83-000T00:30:00	000T00:15:00	2012-143T00:55:11	NEG_Z to Titan	NEG_X to Titan_SC_RAM	Pick up at NEG_Z to Titan, POS_Y to NTP; Hand off at NEG_Z to Titan, NEG_X to Titan_SC_RAM.
RADAR_166TI_T83IRASAR001_PRIME	M	2012-143T00:55:11	GMB_E166_TITAN_T83-000T00:15:00	000T00:10:00	2012-143T01:05:11	NEG_X to Titan_SC_RAM	NEG_Z to Titan	Pick up at NEG_Z to Titan, NEG_X to Titan_SC_RAM; Hand off at NEG_X to Titan_SC_RAM, NEG_Z to Titan.
RADAR_166TI_T83IRASAR002_PRIME	M	2012-143T01:05:11	GMB_E166_TITAN_T83-000T00:05:00	000T00:05:00	2012-143T01:10:11	NEG_X to Titan_SC_RAM	NEG_Z to Titan	Pick up at NEG_X to Titan_SC_RAM, NEG_Z to Titan; Hand off at NEG_X to Titan_SC_RAM, NEG_Z to Titan.
Begin Dual Playback Science		2012-143T01:05:41	GMB_E166_TITAN_T83-000T00:04:30	000T00:00:01	2012-143T01:05:42			
166TI (t) T83 TITAN Outbou...		2012-143T01:10:11		000T00:00:01	2012-143T01:10:12			
RADAR_166TI_T83OUTSAR001_PRIM	M	2012-143T01:10:11	GMB_E166_TITAN_T83+000T00:00:00	000T00:18:00	2012-143T01:28:11	NEG_Z to Titan	NEG_X to Titan_SC_RAM	Pick up at NEG_X to Titan_SC_RAM, NEG_Z to Titan; Hand off at NEG_Z to Titan, NEG_X to Titan_SC_RAM.
End Dual Playback Science		2012-143T01:27:31	GMB_E166_TITAN_T83+000T00:17:20	000T00:00:01	2012-143T01:27:32			
RADAR_166TI_T83OUTALT001_PRIMI	M	2012-143T01:28:11	GMB_E166_TITAN_T83+000T00:18:00	000T00:12:00	2012-143T01:40:11	NEG_Z to Titan	NEG_X to Titan_SC_RAM	Pick up at NEG_Z to Titan, NEG_X to Titan_SC_RAM; Hand off at NEG_Z to Titan, NEG_Y to NTP.
RADAR_166TI_T83OHISAR001_PRIMI	M	2012-143T01:40:11	GMB_E166_TITAN_T83+000T00:30:00	000T00:20:00	2012-143T02:00:11	NEG_Z to Titan	NEG_Y to NTP	Pick up at NEG_Z to Titan, NEG_Y to NTP; Hand off at NEG_Z to Titan, NEG_Y to NTP.
ENGR_166SC_RADRWBIAS143_PPS	M	2012-143T02:00:11	GMB_E166_TITAN_T83+000T00:50:00	000T00:22:00	2012-143T02:22:11	NEG_Z to Titan	NEG_Y to NTP	Pick up at NEG_Z to Titan, NEG_Y to NTP; Hand off at NEG_Z to Titan, NEG_Y to NTP. Deadband=(2, 2, 2)
RADAR_166TI_T83OUTSCT001_PRIM	M	2012-143T02:22:11	GMB_E166_TITAN_T83+000T01:12:00	000T01:03:00	2012-143T03:25:11	NEG_Z to Titan	NEG_Y to NTP	Pick up at NEG_Z to Titan, NEG_Y to NTP; Hand off at NEG_Z to Titan, NEG_Y to NTP.
RADAR_166TI_T83OUTRAD001_PRIME		2012-143T03:25:11	GMB_E166_TITAN_T83+000T02:15:00	000T03:45:00	2012-143T07:10:11	NEG_Z to Titan	NEG_Y to NTP	Pick up at NEG_Z to Titan, NEG_Y to NTP; Hand off at NEG_Y to Titan, XBAND to Earth.
VIMS_166TI_GLOBMAP002_PRIME	C, I	2012-143T07:10:11	GMB_E166_TITAN_T83+000T06:00:00	000T03:00:00	2012-143T10:10:11	VIMS_IR to Titan	NEG_X to Sun	Collaborative Rider(s): ISS. Pick up at NEG_Y to Titan, XBAND to Earth; Hand off at CIRS_FP1 to Titan, XBAND to Earth. Collaborative Rider(s): ISS
CIRS_166TI_FIRNADCMP001_PRIME	I, V	2012-143T10:10:11	GMB_E166_TITAN_T83+000T09:00:00	000T05:35:49	2012-143T15:46:00	CIRS_FP1 to Titan	PIC	Pick up at CIRS_FP1 to Titan, XBAND to Earth; Hand off at XBAND to Earth (0.0,0.0,-9.5 deg. offset), NEG_Y to Saturn.
End Custom period		2012-143T15:06:00	GMB_E166_TITAN_T83+000T13:55:00	000T00:00:01	2012-143T15:06:01			
SP_166NA_DEADTIME143_PRIME		2012-143T15:46:00	GMB_E166_TITAN_T83+000T14:35:00	000T00:15:00	2012-143T16:01:00	XBAND to Earth (0.0,0.0,-9.5 deg. of NEG_Y to Saturn		
SP_166EA_M70METNON143_PRIME	C, R	2012-143T16:01:00		000T09:00:00	2012-144T01:01:00	XBAND to Earth	Rolling	XBAND to Earth, NEG_Y to Saturn (0,0,-9.5); MIMI
Pointer Reset in preparatio...		2012-144T01:01:00		000T00:00:01	2012-144T01:01:01			
SP_166EA_G70METNON143_PRIME	C, R	2012-144T01:01:00		000T01:00:00	2012-144T02:01:00	XBAND to Earth	Rolling	XBAND to Earth, NEG_Y to Saturn (0,0,-9.5); MIMI

Science Highlights

TOST rev 166

DOY 142: CIRS maps the vertical temperature structure around 25% of the visible disk, and maps surface temperatures to search for diurnal and albedo-related differences. VIMS looks for specular reflection on the Northern lakes, and to detect clouds to monitor climatic changes after the equinox. ISS rides along with VIMS' and CIRS observations to image Titan's surface and atmosphere, including Adiri and the region where changes were observed in Fall 2010. RADAR starts its observations with inbound scatterometry. With closest approach slightly in the dayside ionosphere, MAG will be able to study the diffusion of the external magnetic field at low altitudes and high solar zenith angles.

DOY 143: RADAR uses SAR to detect changes in small lakes seen on the T16 and T19 flybys. There is some overlap with territory seen in T95. Other RADAR observations include inbound and outbound radiometry, HiSAR and altimetry, along with outbound scatterometry. VIMS looks to detect clouds to monitor climatic changes after the equinox, and captures a global map. : CIRS maps the vertical temperature structure around 25% of the visible disk, and maps surface temperatures to search for diurnal and albedo-related differences. ISS rides along with VIMS' and CIRS observations to image Titan's surface and atmosphere, including Adiri and the region where changes were observed in Fall 2010. Flyby data is downlinked to Earth.

DOY 144: Dual playback of T83 C/A data.

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?
T83	RADAR	T83-00:04:30	T83+00:17:20	253.6 Mb	Yes	Carryover coming in, extra downlink before first playback (do SSR-B4 only, no A4), 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

TOST rev 166

- Pointing:
 - No good science-friendly waypoint during segment, so entire period is custom period (pre-approved by SP manager)
 - SP_166TI_WAYPTTURN142_PRIME: hand-edit to change margin from 10 seconds to 2 minutes, change max turn rates/accels to 1.2, 1.5, 2.5/.008, .008, .020
 - PDT warning that rolling extends beyond tracking for downlink is nonissue. Rolling extends through second (dual playback) downlink. Extend tracking to 10 hours to eliminate warning.
 - Possible change in C/A attitude pending discussion with AACCS
 - No YGAP (flyby on thrusters)
 - Pointing not optimized for RBOT friendliness—flyby is on thrusters
- Data Volume:
 - 3 Mb carryover at end of segment, no negotiated agreement with follow-on segment. TOST accepts risk of loss of data.
- DSN:
 - No issues. Note dual playback
- Resource checker:
 - All four CRC items OK
- Opmodes:
 - No unique opmodes
- Hydrazine:
 - 554 g estimated
 - Deadband is (2,2,20) for RADAR/INMS science
- Special Activities:
 - RSS ORT over playback passes

Liens

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Sequence Liens (should all be SPLAT items):

- Dual playback