CASSINI TOST_253 SEGMENT

Rev 253 Handoff Package

Segment Boundary 2016-350T04:36:00 – 2016-351T21:43:00

3 Jun 2016

Karl Mitchell

Science Highlights

Notes & Liens

SMT Report

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DATA VOLUME SUMMARY --- TRANSFER FRAME OVERHEAD INCLUDED (80 BITS PER 8800-BIT FRAME)
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| | | | 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_253EA_G70METNON351_PRIME	351 13:43	351 21:43	0	1707	140	1847	3322	1475	0	170	47	2064	2067	3	3 0%	0

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SSR PARTITION SIZE SUMMARY - SELECTED SSR CONFIGURATION: DOUBLE
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| | SSR A/B | | |
OBSERVATION PERIOD	P4 Size (Frames)	P5 Size (Frames)	P6 Size (Frames)
SP_252NA_OBSERV350_NA	188954	10	38863

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DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED
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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	350 04:36	351 13:43	0.0	62.4	379.5	11.9	775.0	85.6	101.3	0.0	133.3	0.0	142.5	0.0	138.4	1830.0
SP_253EA_G70METNON351_PRIME	351 13:43	351 21:43	0.0	15.1	75.6	2.9	0.0	14.2	24.5	0.0	31.6	4.4	0.0	0.0	0.0	168.3
DAILY TOTAL SCIENCE	350 04:36	351 21:43	0.0	77.5	455.1	14.8	775.0	99.8	125.8	0.0	164.9	4.4	142.5	0.0	138.4	

	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)	0.0	77.5	455.1	14.8	775.0	99.8	125.8	0.0	164.9	4.4	142.5	0.0

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

Science Highlights

DOY 350/Dec 15, 2016 - **ISS** will acquire a series of medium-resolution (~2 km) global-scale mosaics, observing Titan's surface and atmosphere: inbound, over Titan's leading hemisphere approaching over Menrva; near C/A, over Titan's high northern latitude lake district; and outbound, over Punga and Kraken Maria. The series of observations over ~30 hours allows ISS to monitor Titan to track clouds and the evolution thereof, of particular scientific interest as Titan's northern summer equinox approaches. And the ground-track over high northern latitudes provides an opportunity to compare to ISS images from late 2013 and early 2014 to look for surface changes. The geometry of this flyby also makes it possible for ISS to fill the gap that remains in surface mapping coverage at northern mid-latitudes on the sub-Saturnian hemisphere. **CIRS** will perform several temperature scans over Titan's northern hemisphere and pole, mapping temperature field and gas concentrations. These maps will show how Titan's atmosphere is evolving over the summer pole, and provide contrasting information to the winter (southern) pole. The maps can also be used as constraints on dynamical/chemical models. **VIMS** will monitor the evolution of cloud coverage at the North Pole in particular and the evolution of the South Polar Vortex.

DOY 351/Dec 16, 2016 - ISS will acquire a series of medium-resolution (~2 km) global-scale mosaics, observing Titan's surface and atmosphere, most notably over Punga and Kraken Maria. The series of observations over ~30 hours allows ISS to monitor Titan to track clouds and the evolution thereof, of particular scientific interest as Titan's northern summer equinox approaches . And the ground-track over high northern latitudes provides an opportunity to compare to ISS images from late 2013 and early 2014 to look for surface changes. The geometry of this flyby also makes it possible for ISS to fill the gap that remains in surface mapping coverage at northern mid-latitudes on the sub-Saturnian hemisphere. CIRS will perform several temperature scans over Titan's northern hemisphere and pole, mapping temperature field and gas concentrations. These maps will show how Titan's atmosphere is evolving over the summer pole, and provide contrasting information to the winter (southern) pole. The maps can also be used as constraints on dynamical/chemical models. VIMS will monitor the evolution of cloud coverage at the North Pole in particular and the evolution of the South Polar Vortex. RSS will characterize the solar corona at 2 frequency bands (X and Ka or X and S depending on DSN downlink antenna available), and assess the electron content and possible Faraday rotation, during the solar conjunction period.

Master Timeline

253TI	344971

Start Time	End Time	Prime Activity	Obs. Detail	Op Mode	TLM Mode	Comments
2016-350T04:36:00	**2016-350T05:16:00**	SP Turn to WP	NEG_Y to Titan/NEG_X to Sun	DFPW Normal	S_N_ER_3	Secondary is preferred by MIMI. Handoff Xband to Earth, NEG_Y to 153.5/-32.5.
2016-350T05:16:00	2016-350T06:16:00	ISS	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	
2016-350T06:16:00	2016-350T16:21:00	CIRS	(TC1b)	DFPW Normal	S_N_ER_3	ISS collaboratives (several sit and stares scattered within cf. template A2 or M2, details of duration and number of instances TBD)
2016-350T16:21:00	2016-350T17:21:00	ISS_253TI_CLOUD001_PIE	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	TOST priority 1: approaches over Menrva, North Pole from Saturn side, recedes over Kraken!! 70°N, 90°W at C/A Ligeia?
2016-350T17:21:00	2016-350T21:21:00	CIRS	(TC1b)	DFPW Normal	S_N_ER_3	
2016-350T21:21:00	2016-350T22:21:00	ISS_253TI_CLOUD002_PIE	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	
2016-350T21:52:38		**CLOSEST APPROACH**				
2016-350T22:21:00	2016-351T02:21:00	CIRS	(TC1b)	DFPW Normal	S_N_ER_3	
2016-351T02:21:00	2016-351T03:21:00	ISS_253TI_CLOUD003_PIE	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	
2016-351T03:21:00	2016-351T04:51:00	CIRS	(TC1b)	DFPW Normal	S_N_ER_3	
2016-351T04:51:00	2016-351T05:51:00	ISS	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	Gap fill coverage
2016-351T05:51:00	2016-351T07:21:00	CIRS	(TC1b)	DFPW Normal	S_N_ER_3	
2016-351T07:21:00	2016-351T08:21:00	ISS_253TI_CLOUD004_PIE	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	
2016-351T08:21:00	2016-351T10:33:00	CIRS	(TC1b)	DFPW Normal	S_N_ER_3	
2016-351T10:33:00	2016-351T11:33:00	ISS_253TI_CLOUD005_PIE	(TC1a, TC1b, TN1a, TN2c, TN2d)	DFPW Normal	S_N_ER_3	
2016-351T11:33:00	**2016-351T12:13:00**	SP Turn to Earth for downlink	XBAND to Earth/NEG_Y to Saturn (0,0,-9.5 offset)	DFPW Normal	S_N_ER_3	Secondary is preferred by MIMI
2016-351T12:13:00	**2016-351T13:43:00**	Ybias Gap		DFPW Normal	S_N_ER_3	
2016-351T13:43:00	**2016-351T21:43:00**	Goldstone 70M		RSS2RWAF	RTE_N_SPB	RSS SCE

SPASS

SPASS for Delivery: **TOST_253**   Records 1-21 (Page **1** of **1**)   Observation Attitude

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S97, length = 72 days		2016-328T05:43:00		072T01:22:00	2017-034T07:05:00			
TOST_253 Segment		2016-350T04:36:00		001T17:07:00	2016-351T21:43:00			
SP_252TI_WAYPTTURN350_PRIME		2016-350T04:36:00		000T00:40:00	2016-350T05:16:00	NEG_Y to Titan	NEG_X to Sun	MIMI.NEG_X to Sun
NEW WAYPOINT		**2016-350T05:16:00**		**001T06:57:00**	**2016-351T12:13:00**	**NEG_Y to Titan**	**NEG_X to Sun**	
ISS_252TI_LRMONITOR001_PRIME	V	2016-350T05:16:00		000T01:00:00	2016-350T06:16:00	ISS_NAC to Titan	NEG_X to Sun	
CIRS_252TI_COMPMAP001_PRIME	I, V	2016-350T06:16:00		000T04:00:00	2016-350T10:16:00	CIRS_FPB to Titan	NEG_Z to NTP	Collaborative Rider(s): ISS. CIRS_FPB to 80S; arrays span 70S-90S; FP1 on disk
Apoapse Per = 7.2 d, inc =...		2016-350T07:51:31		000T00:00:01	2016-350T07:51:32			
CIRS_253TI_MIDIRTMAP001_PRIME	V	2016-350T10:16:00		000T06:05:00	2016-350T16:21:00	CIRS_FPB to Titan	PIC	Template A2: CIRS-ISS
ISS_253TI_CLOUD001_PIE	C, V	2016-350T16:21:00		000T01:00:00	2016-350T17:21:00	ISS_NAC to Titan	NEG_X to Sun	
CIRS_253TI_COMPMAP001_PRIME	I, V	2016-350T17:21:00		000T04:00:00	2016-350T21:21:00	CIRS_FPB to Titan	NEG_Z to NTP	CIRS_FPB to 80S; arrays span 70S-90S; FP1 on disk
ISS_253TI_CLOUD002_PIE	C, V	2016-350T21:21:00		000T01:00:00	2016-350T22:21:00	ISS_NAC to Titan	NEG_X to Sun	
CIRS_253TI_MIDIRTMAP002_PRIME	V	2016-350T22:21:00		000T04:00:00	2016-351T02:21:00	CIRS_FPB to Titan	PIC	Template A2: CIRS-ISS
ISS_253TI_CLOUD003_PIE	C, V	2016-351T02:21:00		000T01:00:00	2016-351T03:21:00	ISS_NAC to Titan	NEG_X to Sun	
CIRS_253TI_COMPMAP002_PRIME	I, V	2016-351T03:21:00		000T01:30:00	2016-351T04:51:00	CIRS_FPB to Titan	NEG_Z to NTP	CIRS_FPB to 80S; arrays span 70S-90S; FP1 on disk
ISS_253TI_LRMONITOR002_PRIME	C, V	2016-351T04:51:00		000T01:00:00	2016-351T05:51:00	ISS_NAC to Titan	NEG_X to Sun	
CIRS_253TI_MIDIRTMAP003_PRIME	V	2016-351T05:51:00		000T01:30:00	2016-351T07:21:00	CIRS_FPB to Titan	PIC	Template A2: CIRS-ISS
ISS_253TI_CLOUD004_PIE	C, V	2016-351T07:21:00		000T01:00:00	2016-351T08:21:00	ISS_NAC to Titan	NEG_X to Sun	
CIRS_253TI_MIDIRTMAP004_PRIME	V	2016-351T08:21:00		000T02:12:00	2016-351T10:33:00	CIRS_FPB to Titan	PIC	Template A2: CIRS-ISS
ISS_253TI_CLOUD005_PIE	C, V	2016-351T10:33:00		000T01:00:00	2016-351T11:33:00	ISS_NAC to Titan	NEG_X to Sun	
SP_253SA_DLTURN351_PRIME		2016-351T11:33:00		000T00:40:00	2016-351T12:13:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	NEG_Y to Saturn	MIMI.NEG_Y to Saturn (0.0,0.0,-9.5)
NEW WAYPOINT		**2016-351T12:13:00**		**000T09:30:00**	**2016-351T21:43:00**	**XBAND to Earth (0.0,0.0,-9.5 deg. offset)**	**NEG_Y to Saturn**	
SP_253EA_YGAP351_PRIME	E	2016-351T12:13:00		000T01:30:00	2016-351T13:43:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	NEG_Y to Saturn	MIMI.NEG_Y to SA (0,0,-9.5 offset)
SP_253EA_G70METNON351_PRIME	C, R	2016-351T13:43:00		000T08:00:00	2016-351T21:43:00	XBAND to Earth (0.0,0.0,-9.5 deg. offset)	NEG_Y to Saturn	MIMI. NEG_Y to SA (0,0,-9.5)

High Priority Observations

Sequence 253ti: Summary of PIEs and Other High Priority Observations

Discipline	CIMS Request Name	Start Time	End Time	Flexibility in secondary pointing	Comments (e.g., pointing tolerance, uniqueness; relative priority)	Science Traceability Matrix Code(s)	Pointing designer POC
Titan	ISS_253TI_CLOUD001_PIE	2016-350T16:21:00	2016-350T17:21:00	Flexible		TC1a, TC1b, TN1a, TN2c, TN2d	Jason Perry <volcanopele@gmail.com>
Titan	ISS_253TI_CLOUD002_PIE	2016-350T21:21:00	2016-350T22:21:00	Flexible		TC1a, TC1b, TN1a, TN2c, TN2d	Jason Perry <volcanopele@gmail.com>
Titan	ISS_253TI_CLOUD003_PIE	2016-351T02:21:00	2016-351T03:21:00	Flexible		TC1a, TC1b, TN1a, TN2c, TN2d	Jason Perry <volcanopele@gmail.com>
Titan	ISS_253TI_CLOUD004_PIE	2016-351T07:21:00	2016-351T08:21:00	Flexible		TC1a, TC1b, TN1a, TN2c, TN2d	Jason Perry <volcanopele@gmail.com>
Titan	ISS_253TI_CLOUD005_PIE	2016-351T10:33:00	2016-351T11:33:00	Flexible		TC1a, TC1b, TN1a, TN2c, TN2d	Jason Perry <volcanopele@gmail.com>

Y bias and RSS

No biases during RSS Solar Conjunction Experiment, RSS_253EA_SCE13017_RSS (2016-351T13:43:00-2016-351T21:43:00). Prime is SP_253EA_G70METNON351_PRIME. YGAP has been placed immediately prior.

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

Notes

- Pointing:
  - N/A
- Data Volume:
  - N/A
- DSN:
  - N/A
- Resource checker:
  - N/A
- Opmodes:
  - RSS Solar Conjunction Experiment starts on final downlink pass: RSS requests <u>RSS2RWAF</u> on DSS-14. If DSN station changes during DSN negotation, please check with RSS (contact Aseel Anabtawi) for revised opmode.
- Hydrazine:
  - N/A
- Special Activities:
  - Conjunction observation starts (conjunction in later segment).

Science Planning & Sequence Team CASSINI

Liens

Sequence Liens (should all be SPLAT items):

- RSS bias keep out zone during RSS_253EA_SCE13017_RSS (2016-351T13:43:00-2016-351T21:43:00). Prime is SP_253EA_G70METNON351_PRIME.

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