



CASSINI SOST SEGMENT

Rev 214 Handoff Package

Segment Boundary 2015-100T20:13:00 – 2015-102T20:13:00

1 August 2014

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SMT report and SPASS

Science Highlights

Notes & Liens

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

SMT report

SOST rev 214

Data volume summary https://cassini.jpl.nasa.gov/sp/icy/rev214/SOST_214_SMT_140801.txt

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)	MARGN (Mb)	OPNAV (Mb)	SCI (Mb)	ENGR (Mb)	TOTAL (Mb)	CPACTY (Mb)	MARGN (Mb)	NET_MARGN (Mb)	(%)	CAROVR (Mb)
SP_214EA_C70METNON102_PRIME	102 11:13	102 20:13	0	3158	165	3323	3322	0	0	247	53	3623	3834	211	211	6%	0

SPASS

SOST rev 214

https://cassini.jpl.nasa.gov/sp/icy/rev214/SPASS_SOST_214_140801.xls

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S88, length = 69 days		2015-052T16:52:00		069T01:53:00	2015-121T18:45:00			
SOST_214 Segment		2015-100T20:13:00		002T00:00:00	2015-102T20:13:00			
ISS_214OT_PAASUPA058_PRIME	V	2015-100T20:13:00		000T08:27:00	2015-101T04:40:00	UVIS_FUV to Rocks	NEG_Z to Sun	
SP_214TE_WAYPTTURN101_PRIME		2015-101T04:40:00		000T00:20:00	2015-101T05:00:00	NEG_Y to Tethys	NEG_Z to 126.1/42.9	
NEW WAYPOINT		2015-101T05:00:00		000T17:00:00	2015-101T22:00:00	NEG_Y to Tethys	NEG_Z to 126.1/42.9	
CIRS_214TE_FP3SCAN001_PRIME	U, V	2015-101T05:00:00		000T01:00:00	2015-101T06:00:00	NEG_Y to Tethys	NEG_Z to 126.1/42.9	
ISS_214TE_GLOCOLOR001_PRIME	C, U, V	2015-101T06:00:00		000T00:45:00	2015-101T06:45:00	ISS_NAC to Tethys	NEG_Z to 126.1/42.9	Collaborative Rider(s): CIRS
CIRS_214TE_FP3SCAN002_PRIME	U, V	2015-101T06:45:00		000T03:15:00	2015-101T10:00:00	NEG_Y to Tethys	NEG_Z to 126.1/42.9	
ISS_214TE_UVSTARE001_PRIME	C, U, V	2015-101T10:00:00		000T00:45:00	2015-101T10:45:00	ISS_NAC to Tethys	NEG_Z to 126.1/42.9	Collaborative Rider(s): CIRS
CIRS_214TE_FP3SCAN003_PRIME	M, U, V	2015-101T10:45:00		000T03:45:00	2015-101T14:30:00	NEG_Y to Tethys	NEG_Z to 126.1/42.9	
ISS_214TE_UVMOSAIC001_PRIME	C, U, V	2015-101T14:30:00		000T00:45:00	2015-101T15:15:00	ISS_NAC to Tethys	NEG_Z to 126.1/42.9	Collaborative Rider(s): CIRS
CIRS_214TE_FP1SCAN001_PRIME	V	2015-101T15:15:00		000T00:45:00	2015-101T16:00:00	NEG_Y to Tethys	NEG_Z to 126.1/42.9	
ISS_214TE_TETHYS001_PIE	C, U, V	2015-101T16:00:00		000T01:30:00	2015-101T17:30:00	ISS_NAC to Tethys	NEG_Z to 126.1/42.9	Collaborative Rider(s): CIRS, UVIS
Periapse R = 5.582 Rs, lat ...		2015-101T17:09:07		000T00:00:01	2015-101T17:09:08			
CIRS_214TE_SCAN001_PIE	U, V	2015-101T17:30:00		000T01:00:00	2015-101T18:30:00	NEG_Y to Tethys	NEG_Z to 126.1/42.9	Collaborative Rider(s): UVIS
ISS_214TE_TETHYS002_PIE	C, U, V	2015-101T18:30:00		000T01:30:00	2015-101T20:00:00	ISS_NAC to Tethys	NEG_Z to 126.1/42.9	Collaborative Rider(s): CIRS, UVIS
CIRS_214TE_FP1SCAN002_PRIME	V	2015-101T20:00:00		000T00:30:00	2015-101T20:30:00	NEG_Y to Tethys	NEG_Z to 126.1/42.9	
CIRS_214TE_FP3SCAN004_PRIME	U, V	2015-101T20:30:00		000T01:00:00	2015-101T21:30:00	NEG_Y to Tethys	NEG_Z to 126.1/42.9	
SP_214DI_WAYPTTURN101_PRIME		2015-101T21:30:00		000T00:30:00	2015-101T22:00:00	NEG_Y to Dione	NEG_X to 33.0/84.3	
NEW WAYPOINT		2015-101T22:00:00		000T03:25:00	2015-102T01:25:00	NEG_Y to Dione	NEG_X to 33.0/84.3	
CIRS_214DI_FP3SCAN001_PRIME	U, V	2015-101T22:00:00		000T01:00:00	2015-101T23:00:00	NEG_Y to Dione	NEG_X to 33.0/84.3	
ISS_214DI_REGMAP001_PRIME	C, U, V	2015-101T23:00:00		000T01:00:00	2015-102T00:00:00	ISS_NAC to Dione	NEG_X to 33.0/84.3	Collaborative Rider(s): CIRS
CIRS_214DI_FP3SCAN002_PRIME	U, V	2015-102T00:00:00		000T01:00:00	2015-102T01:00:00	NEG_Y to Dione	NEG_X to 33.0/84.3	
SP_214ST_WAYPTTURN102_PRIME		2015-102T01:00:00		000T00:25:00	2015-102T01:25:00	NEG_Y to 201.3/-13.0	NEG_X to 33.0/84.3	
NEW WAYPOINT		2015-102T01:25:00		000T08:18:00	2015-102T09:43:00	NEG_Y to 201.3/-13.0	NEG_X to 33.0/84.3	
UVIS_214IC_ALPVIR001_PRIME	V	2015-102T01:25:00		000T01:40:00	2015-102T03:05:00	UVIS_FUV to 201.298/-11.161	NEG_X to 33.0/84.3	
ISS_214OT_PAASUPB058_PRIME	U, V	2015-102T03:05:00		000T06:18:00	2015-102T09:23:00	UVIS_FUV to Rocks	NEG_X to 33.0/84.3	
SP_214EA_DLTURN102_PRIME		2015-102T09:23:00		000T00:20:00	2015-102T09:43:00	XBAND to Earth	NEG_X to 40.6/83.5	DLWG attitude for MIMI (this is NEG X to NSP)
NEW WAYPOINT		2015-102T09:43:00		000T10:30:00	2015-102T20:13:00	XBAND to Earth	NEG_X to 40.6/83.5	
SP_214EA_YGAP102_PRIME	E	2015-102T09:43:00		000T01:30:00	2015-102T11:13:00	XBAND to Earth	NEG_X to 40.6/83.5	
SP_214EA_C70METNON102_PRIME	C	2015-102T11:13:00		000T09:00:00	2015-102T20:13:00	XBAND to Earth	Rolling	MIMI.NEG_X to 40.6/83.5 (NSP) or NEP.SRU.

Science Highlights

SOST rev 214

Overview: non-targeted SOST segment, Tethys and Dione are key targets

DOY 100: ISS outer irregular moon lightcurve - Paaliaq

DOY 101: ORS Tethys, including a Tethys PIE (2015-101T05:00 to 2015-101T21:30)

DOY 101/102: ORS Dione (2015-101T21:30 to 2015-102T01:00)

DOY 102: ISS irregular moon again - Paaliaq

Detailed science highlights for these targets are on the following page.

**** Tethys:**

Throughout the encounter period, CIRS and ISS share the observation, alternating respectively, between CIRS scans and ISS multi-spectral imaging of Tethys. The broad objective is to investigate the relationship between thermophysical properties of Tethys surface identified by CIRS and the related optical and surface physical characteristics revealed by ISS, VIMS, and UVIS spectrophotometry of the regolith, all within the geological context of surface features mapped in high-resolution ISS mosaics. Of special interest will be the contrast in the properties of the "pacman" feature with surrounding Tethys terrains. Dedicated ISS requests begin at 2015-101T06:00:00 with a 45-minute ISS multicolor NAC stare at the hemisphere that features Odysseus impact crater and exposures of material from the pacman feature from a range of just under 210,000 km. At 10:00, from a range of 121,000 km, ISS will acquire a 2x2 panel mosaic of Tethys in which Odysseus and pacman materials are visible near the limb. This mosaic and the 3x3 mosaic that follows later at 14:30 will concentrate on obtaining imaging coverage through the ISS Narrow Angle Camera ultraviolet filters. The UV coverage will provide spectral tiepoints and geological context to coordinated UVIS observations. The lower albedo of icy regolith materials in the UV compared to longer wavelengths is advantageous for spectrophotometric analysis because it diminishes the obscuring effects of multiply scattered light, which otherwise masks diagnostic reflectance behavior that can be used to characterize surface texture and regolith compaction. After the dedicated ISS ultraviolet observations, ISS will obtain two 4x4 NAC mosaics in coordination with VIMS at moderately low phase angles (between 30° and 50°) suitable for multi-spectral mapping of the hemisphere surrounding 220°W longitude. The first, at 16:00 will be as the spacecraft range decreases from 59,550 km to 53,790 km. The second, at 18:30, will as the spacecraft recedes from 53,945 km to 61,829 km. The comparable spatial resolutions but different parallax angles of these two mosaics, in concert with earlier high-resolution imaging will provide improvements for accurate digital topographic (3-dimensional) mapping of the surface.

**** Dione:**

The 1-hr Dione observation starting at 2015-101T23:00 UTC will map the trailing hemisphere (including the "wispy streaks" area) from a range of ~110,000 km at a spatial resolution of 660 m/pxl. A couple of 1x2 mosaics will be done in clear and color filters. The request time also covers a close passage (mutual event) with Rhea which is ~5x further away from Cassini.

**** Irregular moon Paaliaq:**

Paaliaq requests are sidereal rotation period, pole-direction, and shape determination. The requests in SOST are particularly useful for the task of determining a very precise period; this is one requirement for getting a unique pole and shape solution. It will be done joint with closeby Paaliaq requests in the XD segment.

Additional science summaries provided by CIRS and UVIS:

CIRS:

For Tethys: high priority opportunity to increase spatial and temporal coverage (and thus understanding) of Tethys' thermally anomalous region (aka Pac-Man). The series of observations that take place during this encounter will provide great coverage of the west boundary of the anomalous region, to investigate just how sharp it is and where it begins. This will help constrain the formation mechanism and its correlation to the IR/UV color variation.

For Dione: a good opportunity to investigate the wispy terrain, to look at how the surface properties vary over this terrain and to continue searching for signs of activity.

UVIS: In Rev 214, critical first-ever UV observations of Tethys' trailing hemisphere will be made, by both UVIS in the far-UV and ISS in the near-UV. This region on Tethys displays a unique absorption in the UV that is important to study to understand the combined effects of the different exogenic processes in the Saturn system.

ISS: (provided previous slide content)

Notes

SOST rev 214

- Pointing:
 - Nothing unusual to note
- Data Volume:
 - No carryover. No negative margin. No warnings.
- DSN:
 - No maintenance on the stations used. No warnings. One 70m downlink is all the segment has.
- Resource checker:
 - No issues.
- Opmodes:
 - Nothing to note.
- Hydrazine:
 - Thrusters not used.
- Special Activities:
 - No special activities.