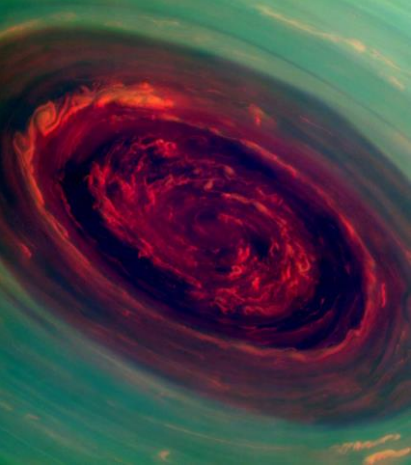

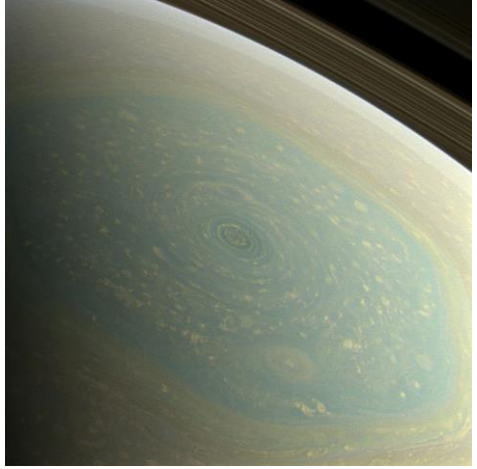
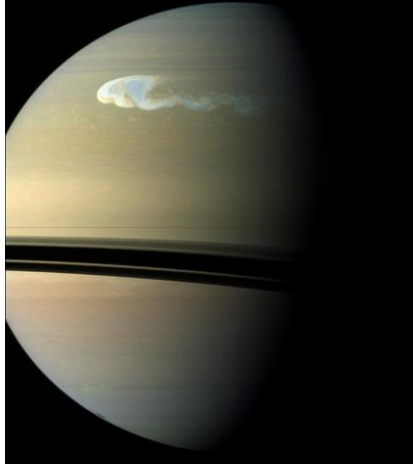

Science Planning & Sequence Team
CASSINI

SATURN TARGET WORKING TEAM

Rev 159_160 Segment Legacy Package

Segment Boundary: January 3, 2012 – January 24, 2012
2012-003T18:23:00 – 2012-024T22:55:00 (SCET)

Integration Began 03/28/2011
Segment Delivered to S71 Sequence 05/27/2011
Lead Integrator was Shawn Boll

Legacy Package Assembled by Shawn Boll

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*** N.A. = Slide present but content not available.**

Segment Overview and Final Products

Segment Summary

- This segment's activities occurred during the first equatorial phase (EQ-1) of the Solstice Mission. It started just before Rev 159 periapse and ended just after Rev 160 apoapse. It was approximately three weeks in length.

- The first few days focused on periapse science and then the vast majority of the segment was filled primarily with CAKE (Cassini Apoapse for Kronian Exploration) templated activities.

- Periapse science included high priority observations such as a CIRS Limbmap PIE (Pre-Integrated Event), UVIS Ring Stellar Occultation PIE, and an Enceladus Plume PIE. Additionally, VIMS-led Saturn mapping and an ISS Emission Angle Scan were also included.

- Apoapse activities followed the standard CAKE "recipe" of UVIS EUV/FUVs, wind studies, and CIRS composition and mapping. Out-of-discipline activities were limited to the usual Titan Cloud Monitoring and some time was given to ISS small rock observations and a MAG calibration roll.

- The path of the sun mildly impacted the science planned just prior to periapse, requiring the use of a waypoint with an offset. Sun avoidance was handled within the instrument pointing designs and no constraint management or flight rule waivers were requested.

Final Sequenced SPASS (1 of 3)

Gaps 1 ,2,3 – Left Empty

Gap 4

Gap 5

Gaps 6 & 7 – Left Empty

Gap 8

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S71, length = 70 days		2011-320T03:02:00		069T19:53:00	2012-024T22:55:00			
SATURN_159_160 Segment		2012-003T18:23:00		021T04:32:00	2012-024T22:55:00			
SP_159SA_WAYPTTURN003_PRIME		2012-003T18:23:00		000T00:40:00	2012-003T19:03:00	ISS_NAC to Saturn (0.0,0.0,12.0 deg. offset)	NEG_X to NSP	
NEW WAYPOINT		**2012-003T19:03:00**		**001T18:35:00**	**2012-005T13:38:00**	**ISS_NAC to Saturn (0.0,0.0,12.0 deg. offset)**	**NEG_X to NSP**	
ISS_159EN_PLMHPHR001_PIE	U	2012-004T00:00:00		000T03:00:00	2012-004T03:00:00	ISS_NAC to Enceladus	NEG_X to NSP	SOST PIE
CIRS_159SA_LIMBMAP001_PIE	V	2012-004T06:30:00		000T07:30:00	2012-004T14:00:00	CIRS_FPB to Saturn	NEG_X to NSP	Collaborative Rider(s): VIMS. PIE
Periapse R = 4.419 Rs, lat ...		2012-004T13:02:30		000T00:00:01	2012-004T13:02:31			
UVIS_159ST_URIOTORI001_PIE		2012-004T14:06:00		000T02:34:00	2012-004T16:40:00	UVIS_HSP to 83.858/-5.91	NEG_X to NSP	
VIMS_159SA_HIRESMAP001_PRIME	C, M	2012-004T16:40:00		000T11:00:00	2012-005T03:40:00	ISS_NAC to Saturn	NEG_X to NSP	
ISS_159SA_EMASCAN001_PRIME	C, V	2012-005T03:40:00		000T09:18:00	2012-005T12:58:00	ISS_NAC to Saturn	NEG_X to NSP	Custom hand-off to ISS_NAC to Saturn, NEG_X to 24.490/81.568
SP_159EA_DLTURN005_PRIME		2012-005T12:58:00		000T00:33:00	2012-005T13:31:00	XBAND to Earth (0.0,0.0,12.0 deg. offset)	POS_X to NSP	
SP_159EA_DLTURN405_PRIME		2012-005T13:31:00		000T00:07:00	2012-005T13:38:00	XBAND to Earth	POS_X to NSP	
NEW WAYPOINT		**2012-005T13:38:00**		**000T11:10:00**	**2012-006T00:48:00**	**XBAND to Earth**	**POS_X to NSP**	
ENGR_159SC_KPTYBIAS005_PRIME		2012-005T13:38:00		000T01:30:00	2012-005T15:08:00	NEG_Z to DELTA_H (0.0,0.0,-74.994 deg. offset)	NEG_X to Sun	
SP_159EA_C70METNON005_PRIME	C	2012-005T15:08:00		000T09:00:00	2012-006T00:08:00	XBAND to Earth	6_Hr_Rolling	POS_X to NSP or NEP, CAPS
SP_159SA_WAYPTTURN006_PRIME	I	2012-006T00:08:00		000T00:40:00	2012-006T00:48:00	ISS_NAC to Saturn	NEG_X to 45.4/82.1	
NEW WAYPOINT		**2012-006T00:48:00**		**001T12:35:00**	**2012-007T13:23:00**	**ISS_NAC to Saturn**	**NEG_X to 45.4/82.1**	
ISS_159OT_YMIPHA002_PRIME	I, U	2012-006T00:48:00		000T08:00:00	2012-006T08:48:00	UVIS_FUV to Rocks	NEG_X to 45.4/82.1	No Preference to secondary pointing
UVIS_159SA_EUVFUV001_PRIME	I	2012-006T08:48:00		000T13:00:00	2012-006T21:48:00	UVIS_FUV to Saturn	NEG_X to 45.4/82.1	
VIMS_159SA_REGMAP002_PRIME	I	2012-006T21:48:00		000T10:00:00	2012-007T07:48:00	ISS_NAC to Saturn	NEG_X to 45.4/82.1	
ISS_159SA_EMASCAN002_PRIME	C, I, V	2012-007T07:48:00		000T04:55:00	2012-007T12:43:00	ISS_NAC to Saturn	NEG_X to 45.4/82.1	
SP_159EA_DLTURN007_PRIME		2012-007T12:43:00		000T00:40:00	2012-007T13:23:00	XBAND to Earth	NEG_Y to 295.7/11.7	Custom pick-up from ISS_NAC to Saturn, NEG_X to 24.490/81.568
NEW WAYPOINT		**2012-007T13:23:00**		**000T11:10:00**	**2012-008T00:33:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
SP_159EA_YBIAS007_PRIME		2012-007T13:23:00		000T01:30:00	2012-007T14:53:00	XBAND to Earth	NEG_Y to 295.7/11.7	
SP_159EA_C70METNON007_PRIME	C	2012-007T14:53:00		000T09:00:00	2012-007T23:53:00	XBAND to Earth	Rolling	NEG_Y to Saturn (0,0,-9.5), MIMI
SP_159SA_WAYPTTURN007_PRIME	I	2012-007T23:53:00		000T00:40:00	2012-008T00:33:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	
NEW WAYPOINT		**2012-008T00:33:00**		**001T06:20:00**	**2012-009T06:53:00**	**ISS_NAC to Saturn**	**NEG_Z to 45.4/82.1**	
ISS_159TI_M60R3CLD008_PRIME	I	2012-008T00:33:00	E159_M60R3CLD008+000T00:00:00	000T01:30:00	2012-008T02:03:00	ISS_NAC to Titan	NEG_Z to 45.4/82.1	
CIRS_159SA_MIRTMAP001_PRIME	I, V	2012-008T02:03:00		000T22:00:00	2012-009T00:03:00	CIRS_FP3 to Saturn	NEG_Z to 45.4/82.1	
SP_159EA_DLTURN009_PRIME	R	2012-009T06:13:00		000T00:40:00	2012-009T06:53:00	XBAND to Earth	NEG_Y to 295.7/11.7	
NEW WAYPOINT		**2012-009T06:53:00**		**000T11:10:00**	**2012-009T18:03:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
SP_159EA_YBIAS009_PRIME	R	2012-009T06:53:00		000T01:30:00	2012-009T08:23:00	XBAND to Earth	NEG_Y to 295.7/11.7	
SP_159EA_G34BWGNON009_PRIME	C, R	2012-009T08:23:00		000T09:00:00	2012-009T17:23:00	XBAND to Earth	6_Hr_Rolling	NEG_Y to Saturn (0,0,-9.5), MIMI
SP_159SA_WAYPTTURN009_PRIME	I	2012-009T17:23:00		000T00:40:00	2012-009T18:03:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	
NEW WAYPOINT		**2012-009T18:03:00**		**001T12:51:00**	**2012-011T06:54:00**	**ISS_NAC to Saturn**	**NEG_Z to 45.4/82.1**	
ISS_159TI_M60R3CLD009_PRIME	C, I, V	2012-009T18:03:00	E159_M60R3CLD009+000T00:00:00	000T01:30:00	2012-009T19:33:00	ISS_NAC to Titan	NEG_Z to 45.4/82.1	
ISS_159SA_WIND5HR001_PRIME	I, V	2012-009T19:33:00		000T05:00:00	2012-010T00:33:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	collaborative with CIRS
CIRS_159SA_COMPSIT002_PRIME	I	2012-010T00:33:00		000T06:00:00	2012-010T06:33:00	CIRS_FP1 to Saturn	NEG_Z to 45.4/82.1	
ISS_159SA_WIND5HR002_PRIME	I, V	2012-010T06:33:00		000T05:00:00	2012-010T11:33:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	collaborative with CIRS
ISS_159SA_WIND5HR003_PRIME	I, V	2012-010T11:33:00		000T05:00:00	2012-010T16:33:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	collaborative with CIRS
CIRS_159SA_COMPSIT003_PRIME	I	2012-010T16:33:00		000T06:00:00	2012-010T22:33:00	CIRS_FP1 to Saturn	NEG_Z to 45.4/82.1	
ISS_159SA_WIND5HR004_PRIME	I, V	2012-010T22:33:00		000T05:00:00	2012-011T03:33:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	collaborative with CIRS
SP_159EA_DLTURN011_PRIME		2012-011T06:14:00		000T00:40:00	2012-011T06:54:00	XBAND to Earth	NEG_Y to 295.7/11.7	
NEW WAYPOINT		**2012-011T06:54:00**		**000T11:10:00**	**2012-011T18:04:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
ENGR_159SC_KPTYBIAS011_PRIME		2012-011T06:54:00		000T01:30:00	2012-011T08:24:00	POS_Z to DELTA_H (0.0,0.0,-80.002 deg. offset)	NEG_X to Sun	
SP_159EA_G70METNON011_PRIME	C	2012-011T08:24:00		000T09:00:00	2012-011T17:24:00	XBAND to Earth	Rolling	NEG_Y to Saturn (0,0,-9.5), MIMI
SP_159SA_WAYPTTURN011_PRIME	I	2012-011T17:24:00		000T00:40:00	2012-011T18:04:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	
NEW WAYPOINT		**2012-011T18:04:00**		**000T05:05:00**	**2012-011T23:09:00**	**ISS_NAC to Saturn**	**NEG_Z to 45.4/82.1**	
ISS_159TI_M90R3CLD011_PRIME	C, I, V	2012-011T18:04:00	E159_M90R3CLD011+000T00:00:00	000T01:30:00	2012-011T19:34:00	ISS_NAC to Titan	NEG_Z to 45.4/82.1	
ISS_159SA_MONITOR001_PRIME	I	2012-011T19:34:00		000T02:55:00	2012-011T22:29:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	

Final Sequenced SPASS (2 of 3)

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
SP_159EA_DLTURN411_PRIME		2012-011T22:29:00		000T00:40:00	2012-011T23:09:00	XBAND to Earth	NEG_Y to 295.7/11.7	
NEW WAYPOINT		**2012-011T23:09:00**		**000T11:10:00**	**2012-012T10:19:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
SP_159EA_YBIAS411_PRIME		2012-011T23:09:00		000T01:30:00	2012-012T00:39:00	XBAND to Earth	NEG_Y to 295.7/11.7	
SP_159EA_M34BWGNON012_PRIME	C, R	2012-012T00:39:00		000T09:00:00	2012-012T09:39:00	XBAND to Earth	6_Hr_Rolling	NEG_Y to Saturn (0,0,-9.5), MIMI
SP_159SA_WAYPTTURN012_PRIME	I	2012-012T09:39:00		000T00:40:00	2012-012T10:19:00	ISS_NAC to Saturn	NEG_X to 45.4/82.1	
NEW WAYPOINT		**2012-012T10:19:00**		**000T12:50:00**	**2012-012T23:09:00**	**ISS_NAC to Saturn**	**NEG_X to 45.4/82.1**	
ISS_159TI_M90R3CLD012_PRIME	C, I, V	2012-012T10:19:00	E159_M90R3CLD012+ 000T00:00:00	000T01:30:00	2012-012T11:49:00	ISS_NAC to Titan	NEG_X to 45.4/82.1	
UVIS_159SA_EUVFUV002_PRIME	I	2012-012T11:49:00		000T10:40:00	2012-012T22:29:00	UVIS_FUV to Saturn	NEG_X to 45.4/82.1	
SP_159EA_DLTURN012_PRIME		2012-012T22:29:00		000T00:40:00	2012-012T23:09:00	XBAND to Earth	NEG_Y to 295.7/11.7	
NEW WAYPOINT		**2012-012T23:09:00**		**000T11:10:00**	**2012-013T10:19:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
SP_159EA_YBIAS012_PRIME		2012-012T23:09:00		000T01:30:00	2012-013T00:39:00	XBAND to Earth	NEG_Y to 295.7/11.7	
SP_159EA_M34HEFNON013_PRIME	C	2012-013T00:39:00		000T09:00:00	2012-013T09:39:00	XBAND to Earth	Rolling	NEG_Y to Saturn (0,0,-9.5), MIMI
SP_159SA_WAYPTTURN013_PRIME	I	2012-013T09:39:00		000T00:40:00	2012-013T10:19:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	
NEW WAYPOINT		**2012-013T10:19:00**		**000T12:50:00**	**2012-013T23:09:00**	**ISS_NAC to Saturn**	**NEG_Z to 45.4/82.1**	
ISS_159TI_M90R3CLD013_PRIME	C, I, V	2012-013T10:19:00	E159_M90R3CLD013+ 000T00:00:00	000T01:30:00	2012-013T11:49:00	ISS_NAC to Titan	NEG_Z to 84.524/84.426	
CIRS_159SA_COMPSIT004_PRIME	I, M, V	2012-013T11:49:00		000T10:40:00	2012-013T22:29:00	CIRS_FP1 to Saturn	NEG_Z to 45.4/82.1	
SP_159EA_DLTURN013_PRIME	M	2012-013T22:29:00		000T00:40:00	2012-013T23:09:00	XBAND to Earth	NEG_Y to 295.7/11.7	
NEW WAYPOINT		**2012-013T23:09:00**		**000T11:10:00**	**2012-014T10:19:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
SP_159EA_YBIAS013_PRIME	M	2012-013T23:09:00		000T01:30:00	2012-014T00:39:00	XBAND to Earth	NEG_Y to 295.7/11.7	
SP_159EA_M34BWGSEQ014_PRIME	C, M	2012-014T00:39:00		000T09:00:00	2012-014T09:39:00	XBAND to Earth	6_Hr_Rolling	NEG_Y to Saturn (0,0,-9.5), MIMI
SP_159SA_WAYPTTURN014_PRIME	I, M	2012-014T09:39:00		000T00:40:00	2012-014T10:19:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	
NEW WAYPOINT		**2012-014T10:19:00**		**000T12:50:00**	**2012-014T23:09:00**	**ISS_NAC to Saturn**	**NEG_Z to 45.4/82.1**	
ISS_159TI_M90R3CLD014_PRIME	C, I, M, V	2012-014T10:19:00	E159_M90R3CLD014+ 000T00:00:00	000T01:30:00	2012-014T11:49:00	ISS_NAC to Titan	NEG_Z to 85.184/84.019	
CIRS_159SA_COMPSIT005_PRIME	I, V	2012-014T11:49:00		000T10:40:00	2012-014T22:29:00	CIRS_FP1 to Saturn	NEG_Z to 45.4/82.1	
SP_159EA_DLTURN014_PRIME		2012-014T22:29:00		000T00:40:00	2012-014T23:09:00	XBAND to Earth	NEG_Y to 295.7/11.7	
NEW WAYPOINT		**2012-014T23:09:00**		**000T11:10:00**	**2012-015T10:19:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
SP_159EA_YBIAS014_PRIME		2012-014T23:09:00		000T01:30:00	2012-015T00:39:00	XBAND to Earth	NEG_Y to 295.7/11.7	
SP_159EA_M34BWGSEQ015_PRIME	C	2012-015T00:39:00		000T09:00:00	2012-015T09:39:00	XBAND to Earth	Rolling	NEG_Y to Saturn (0,0,-9.5), MIMI
SP_159SA_WAYPTTURN015_PRIME	I, M	2012-015T09:39:00		000T00:40:00	2012-015T10:19:00	ISS_NAC to Saturn	NEG_X to 45.4/82.1	
NEW WAYPOINT		**2012-015T10:19:00**		**000T14:20:00**	**2012-016T00:39:00**	**ISS_NAC to Saturn**	**NEG_X to 45.4/82.1**	
ISS_159TI_M90R2CLD015_PRIME	C, I, M, V	2012-015T10:19:00	E159_M90R2CLD015+ 000T00:00:00	000T01:30:00	2012-015T11:49:00	ISS_NAC to Titan	NEG_X to 45.4/82.1	
UVIS_159SA_EUVFUV003_PRIME	I, M	2012-015T11:49:00		000T12:10:00	2012-015T23:59:00	UVIS_FUV to Saturn	NEG_X to 45.4/82.1	
SP_159EA_DLTURN015_PRIME	M	2012-015T23:59:00		000T00:40:00	2012-016T00:39:00	XBAND to Earth	NEG_Y to 295.7/11.7	
NEW WAYPOINT		**2012-016T00:39:00**		**001T09:26:00**	**2012-017T10:05:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
SP_159EA_M34HEFOTP016_PRIME	C, E, M, N	2012-016T00:39:00		000T09:00:00	2012-016T09:39:00	XBAND to Earth	4_Hr_Rolling	NEG_Y to Saturn (0,0,-9.5), MIMI
MAG_159SU_CALROLL001_PRIME		2012-016T09:39:00		000T07:00:00	2012-016T16:39:00	NEG_X to Earth (0.0,0.0,-30.0 deg. offset)	Rolling	
Apoapse Per = 24.2 d, inc ...		2012-016T15:46:37		000T00:00:01	2012-016T15:46:38			
SP_160EA_M70METOTB017_PRIME	C, M, N	2012-017T00:25:00		000T09:00:00	2012-017T09:25:00	XBAND to Earth	Rolling	same as OTP pass, MIMI
SP_160SA_WAYPTTURN017_PRIME	I, M	2012-017T09:25:00		000T00:40:00	2012-017T10:05:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	
NEW WAYPOINT		**2012-017T10:05:00**		**001T02:35:00**	**2012-018T12:40:00**	**ISS_NAC to Saturn**	**NEG_Z to 45.4/82.1**	
ISS_160TI_M60R2CLD017_PRIME	C, I, M, V	2012-017T10:05:00	E160_M60R2CLD017+ 000T00:00:00	000T01:30:00	2012-017T11:35:00	ISS_NAC to Titan	NEG_Z to 123.093/75.354	
ISS_160SA_WIND2HR001_PRIME	I, M	2012-017T11:35:00		000T02:00:00	2012-017T13:35:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	collaborative with CIRS
CIRS_160SA_COMPSIT002_PRIME	I, M	2012-017T13:35:00		000T09:00:00	2012-017T22:35:00	CIRS_FP1 to Saturn	NEG_Z to 45.4/82.1	
ISS_160SA_WIND2HR002_PRIME	I	2012-017T22:35:00		000T02:00:00	2012-018T00:35:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	collaborative with CIRS
CIRS_160SA_COMPSIT003_PRIME	I, V	2012-018T00:35:00		000T11:00:00	2012-018T11:35:00	CIRS_FP1 to Saturn	NEG_Z to 45.4/82.1	
SP_160EA_DLTURN018_PRIME		2012-018T12:00:00		000T00:40:00	2012-018T12:40:00	XBAND to Earth	NEG_Y to 295.7/11.7	
NEW WAYPOINT		**2012-018T12:40:00**		**000T11:10:00**	**2012-018T23:50:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
SP_160EA_YBIAS018_PRIME		2012-018T12:40:00		000T01:30:00	2012-018T14:10:00	XBAND to Earth	NEG_Y to 295.7/11.7	
SP_160EA_C34BWGSEQ018_PRIME	C, M, R	2012-018T14:10:00		000T09:00:00	2012-018T23:10:00	XBAND to Earth	6_Hr_Rolling	NEG_Y to Saturn (0,0,-9.5), MIMI
SP_160SA_WAYPTTURN018_PRIME	I, M	2012-018T23:10:00		000T00:40:00	2012-018T23:50:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	
NEW WAYPOINT		**2012-018T23:50:00**		**001T12:50:00**	**2012-020T12:40:00**	**ISS_NAC to Saturn**	**NEG_Z to 45.4/82.1**	
ISS_160TI_M60R3CLD018_PRIME	C, I, M, V	2012-018T23:50:00	E160_M60R3CLD018+ 000T00:00:00	000T01:30:00	2012-019T01:20:00	ISS_NAC to Titan	NEG_Z to 335.333/37.697	
ISS_160SA_WIND5HR001_PRIME	I, M, V	2012-019T01:20:00		000T05:00:00	2012-019T06:20:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	collaborative with CIRS

Gaps 9 & 10 – Left Empty

Final Sequenced SPASS (3 of 3)

Gap 11 – Left Empty

Gap 12

Gap 13

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
CIRS_160SA_COMPSIT004_PRIME	I, M	2012-019T06:20:00		000T06:00:00	2012-019T12:20:00	CIRS_FP1 to Saturn	NEG_Z to 45.4/82.1	
ISS_160SA_WIND5HR002_PRIME	C, I, M, V	2012-019T12:20:00		000T05:00:00	2012-019T17:20:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	Collaborative Rider(s): CIRS. collaborative with CIRS
ISS_160SA_WIND5HR003_PRIME	C, I, V	2012-019T17:20:00		000T05:00:00	2012-019T22:20:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	Collaborative Rider(s): CIRS. collaborative with CIRS
CIRS_160SA_COMPSIT005_PRIME	I	2012-019T22:20:00		000T06:00:00	2012-020T04:20:00	CIRS_FP1 to Saturn	NEG_Z to 45.4/82.1	
ISS_160SA_WIND5HR004_PRIME	I, V	2012-020T04:20:00		000T05:00:00	2012-020T09:20:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	collaborative with CIRS
SP_160EA_DLTURN020_PRIME		2012-020T12:00:00		000T00:40:00	2012-020T12:40:00	XBAND to Earth	NEG_Y to 295.7/11.7	
NEW WAYPOINT		**2012-020T12:40:00**		**000T11:10:00**	**2012-020T23:50:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
SP_160EA_YBIAS020_PRIME		2012-020T12:40:00		000T01:30:00	2012-020T14:10:00	XBAND to Earth	NEG_Y to 295.7/11.7	
SP_160EA_C70METSEQ020_PRIME	C	2012-020T14:10:00		000T09:00:00	2012-020T23:10:00	XBAND to Earth	Rolling/SRU	NEG_Y to Saturn (0,0,-9.5), MIMI
SP_160SA_WAYPTTURN020_PRIME	I	2012-020T23:10:00		000T00:40:00	2012-020T23:50:00	ISS_NAC to Saturn	NEG_X to 45.4/82.1	
NEW WAYPOINT		**2012-020T23:50:00**		**001T12:35:00**	**2012-022T12:25:00**	**ISS_NAC to Saturn**	**NEG_X to 45.4/82.1**	
ISS_160TI_M60R3CLD020_PRIME	C, I, V	2012-020T23:50:00	E160_M60R3CLD020+ 000T00:00:00	000T01:30:00	2012-021T01:20:00	ISS_NAC to Titan	NEG_X to 321.343/-56.06	
UVIS_160SA_EUVFUV001_PRIME	I	2012-021T01:20:00		000T16:00:00	2012-021T17:20:00	UVIS_FUV to Saturn	NEG_X to 45.4/82.1	
ISS_160SA_EMASCAN001_PRIME	C, I, V	2012-021T17:20:00		000T10:00:00	2012-022T03:20:00	ISS_NAC to Saturn	NEG_X to 45.4/82.1	
SP_160EA_DLTURN022_PRIME		2012-022T11:45:00		000T00:40:00	2012-022T12:25:00	XBAND to Earth	NEG_Y to 295.7/11.7	
NEW WAYPOINT		**2012-022T12:25:00**		**000T11:10:00**	**2012-022T23:35:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
SP_160EA_YBIAS022_PRIME		2012-022T12:25:00		000T01:30:00	2012-022T13:55:00	XBAND to Earth	NEG_Y to 295.7/11.7	
SP_160EA_C34BWGSEQ022_PRIME	C	2012-022T13:55:00		000T09:00:00	2012-022T22:55:00	XBAND to Earth	5_Hr_Rolling	NEG_Y to Saturn (0,0,-9.5), MIMI
SP_160SA_WAYPTTURN022_PRIME	I	2012-022T22:55:00		000T00:40:00	2012-022T23:35:00	ISS_NAC to Saturn	NEG_Z to 45.4/82.1	
NEW WAYPOINT		**2012-022T23:35:00**		**001T00:10:00**	**2012-023T23:45:00**	**ISS_NAC to Saturn**	**NEG_Z to 45.4/82.1**	
ISS_160TI_M60R3CLD022_PRIME	C, I, V	2012-022T23:35:00	E160_M60R3CLD022+ 000T00:00:00	000T01:30:00	2012-023T01:05:00	ISS_NAC to Titan	NEG_Z to 45.4/82.1	
CIRS_160SA_MIRMAP001_PRIME	I, V	2012-023T01:05:00		000T22:00:00	2012-023T23:05:00	CIRS_FP3 to Saturn	NEG_Z to 45.4/82.1	
SP_160EA_WAYPTTURN023_PRIME		2012-023T23:05:00		000T00:40:00	2012-023T23:45:00	XBAND to Earth	NEG_Y to 295.7/11.7	
NEW WAYPOINT		**2012-023T23:45:00**		**000T23:10:00**	**2012-024T22:55:00**	**XBAND to Earth**	**NEG_Y to 295.7/11.7**	
ISS_160OT_SIAPOL089_PRIME	I, U	2012-023T23:45:00		000T12:40:00	2012-024T12:25:00	UVIS_FUV to Rocks (0.0,0.0,5.0 deg. offset)	NEG_Z to Earth	
ENGR_160SC_YBIASRTC024_PRIME		2012-024T12:25:00		000T01:30:00	2012-024T13:55:00	POS_Z to DELTA_H	NEG_X to Sun	
SP_160EA_C70METSEQ024_PRIME	C	2012-024T13:55:00		000T09:00:00	2012-024T22:55:00	XBAND to Earth	NEG_Y to 295.7/11.7	NEG_Y to Saturn (0,0,-9.5), MIMI

Final Sequenced SMT and Data Volume (1 of 3)

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

			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_159EA_C70METNON005_PRIME	005 15:08	005 21:23	232	3092	189	3513	3322	-190	0	183	37	3542	2294	-1249	-591	-4%	1248
SP_159EA_C70METNON007_PRIME	007 14:53	007 23:53	1248	2491	175	3914	3322	-591	0	198	53	3573	3331	-242	-238	-1%	242
SP_159EA_G34BWGNON009_PRIME	009 08:23	009 17:23	242	1412	137	1791	3322	1531	0	180	53	2024	637	-1387	-238	-3%	1387
SP_159EA_G70METNON011_PRIME	011 08:24	011 13:44	1387	2010	165	3561	3322	-238	0	116	31	3469	1990	-1480	0	0%	1480
SP_159EA_C70METNON011_PRIME	011 13:44	011 17:24	1480	0	0	1480	3322	1842	0	89	22	1590	1177	-414	0	0%	414
SP_159EA_M34BWGNON012_PRIME	012 00:39	012 08:54	414	804	31	1248	3322	2074	0	193	49	1489	563	-927	53	1%	926
SP_159EA_M34HEFNON013_PRIME	013 00:39	013 09:39	926	549	67	1542	3322	1780	0	211	53	1806	664	-1143	53	0%	1142
SP_159EA_M34BWGSEQ014_PRIME	014 00:39	014 09:39	1142	723	63	1928	3322	1394	0	211	53	2192	607	-1585	53	0%	1585
SP_159EA_M34BWGSEQ015_PRIME	015 00:39	015 09:39	1585	723	63	2371	3322	951	0	211	53	2635	612	-2024	53	0%	2023
SP_159EA_M34HEFOTP016_PRIME	016 00:39	016 09:39	2023	570	63	2656	3322	666	0	211	53	2921	540	-2381	53	0%	2381
SP_160EA_M70METOTB017_PRIME	017 00:25	017 09:25	2381	237	62	2680	3322	642	0	211	53	2945	2940	-5	53	0%	4
SP_160EA_C34BWGSEQ018_PRIME	018 14:10	018 23:10	4	1304	121	1430	3322	1892	0	205	53	1688	788	-901	53	1%	901
SP_160EA_C70METSEQ020_PRIME	020 14:10	020 23:10	901	2204	165	3269	3322	53	0	208	53	3530	3657	126	156	2%	0
SP_160EA_C34BWGSEQ022_PRIME	022 13:55	022 22:55	0	1653	164	1817	3322	1505	0	205	53	2075	796	-1279	29	1%	1279
SP_160EA_C70METSEQ024_PRIME	024 13:55	024 22:55	1279	1849	165	3293	3322	29	0	187	53	3533	3671	137	137	4%	0

* NOTE: Negative SSR (P4) Margins did not result in data loss due to compression/under-utilization.

Final Sequenced SMT and Data Volume (2 of 3)

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

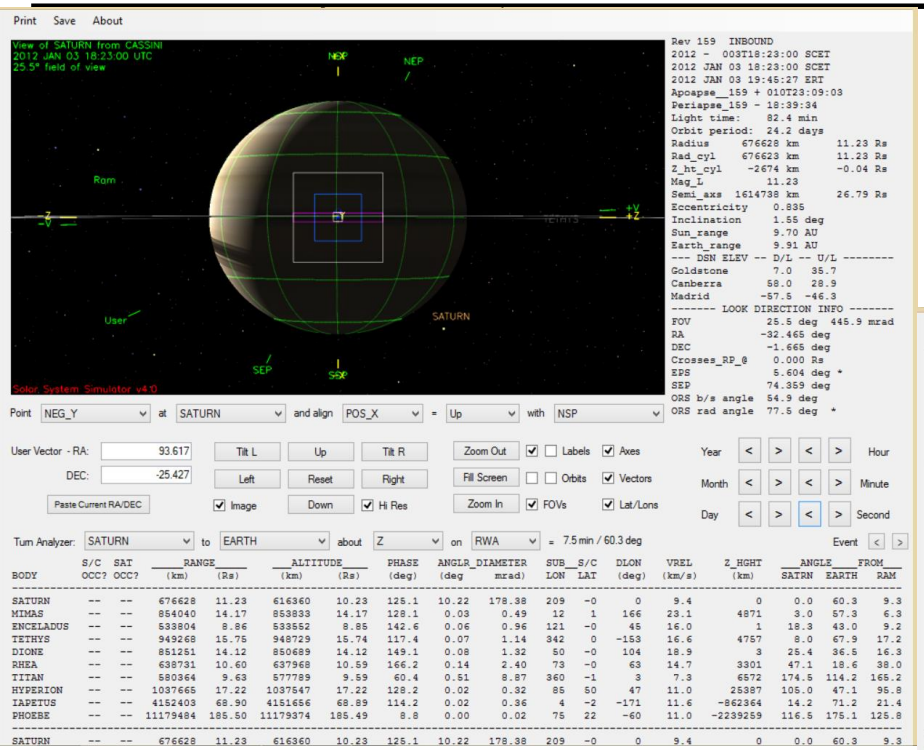
Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	003 18:23	005 15:08	141.3	190.1	223.0	16.1	583.5	39.8	136.9	0.0	756.2	89.6	887.1	0.0	187.0	3250.4
SP_159EA_C70METNON005_PRIME	005 15:08	005 21:23	22.5	44.8	56.7	2.3	0.0	11.1	19.1	0.0	23.5	1.7	0.0	0.0	0.0	181.7
DAILY TOTAL SCIENCE	003 18:23	005 21:23	163.8	234.9	279.7	18.4	583.5	50.9	156.1	0.0	779.6	91.3	887.1	0.0	187.0	
OBSERVATION_NOR	005 21:23	007 14:53	178.0	53.9	158.7	9.2	661.0	73.8	92.1	0.0	295.3	266.4	680.0	0.0	173.4	2641.8
SP_159EA_C70METNON007_PRIME	007 14:53	007 23:53	32.4	8.5	86.4	1.6	0.0	16.0	19.4	0.0	29.2	2.5	0.0	0.0	0.0	196.0
DAILY TOTAL SCIENCE	005 21:23	007 23:53	210.4	62.4	245.1	10.9	661.0	89.8	111.6	0.0	324.5	268.8	680.0	0.0	173.4	
OBSERVATION_NOR	007 23:53	009 08:23	81.9	30.7	316.8	5.9	99.5	28.9	70.2	0.0	105.3	0.0	660.0	0.0	135.8	1535.0
SP_159EA_G34BWGNON009_PRIME	009 08:23	009 17:23	22.7	8.5	86.4	1.6	0.0	8.0	19.4	0.0	29.2	2.5	0.0	0.0	0.0	178.3
DAILY TOTAL SCIENCE	007 23:53	009 17:23	104.6	39.1	403.2	7.5	99.5	36.9	89.6	0.0	134.4	2.5	660.0	0.0	135.8	
OBSERVATION_NOR	009 17:23	011 08:24	98.3	36.8	108.0	7.0	970.2	34.7	84.3	0.0	126.4	115.9	410.0	0.0	163.1	2154.7
SP_159EA_G70METNON011_PRIME	011 08:24	011 13:44	19.2	10.1	46.8	1.0	0.0	4.7	14.4	0.0	17.3	1.5	0.0	0.0	0.0	114.9
SP_159EA_C70METNON011_PRIME	011 13:44	011 17:24	13.2	6.9	39.6	0.7	0.0	5.3	9.9	0.0	11.9	1.0	0.0	0.0	0.0	88.4
DAILY TOTAL SCIENCE	009 17:23	011 17:24	130.7	53.8	194.4	8.6	970.2	44.7	108.6	0.0	155.6	118.4	410.0	0.0	163.1	
OBSERVATION_NOR	011 17:24	012 00:39	26.1	13.7	21.6	1.3	57.2	12.9	19.6	0.0	634.0	0.0	10.0	0.0	30.3	826.6
SP_159EA_M34BWGNON012_PRIME	012 00:39	012 08:54	29.7	15.6	78.3	1.5	0.0	14.7	22.3	0.0	26.7	2.3	0.0	0.0	0.0	191.0
DAILY TOTAL SCIENCE	011 17:24	012 08:54	55.8	29.2	99.9	2.8	57.2	27.6	41.9	0.0	660.7	2.3	10.0	0.0	30.3	
OBSERVATION_NOR	012 08:54	013 00:39	56.7	29.7	106.5	2.8	48.2	28.0	42.5	0.0	51.0	168.5	10.0	0.0	65.8	609.8
SP_159EA_M34HEFNON013_PRIME	013 00:39	013 09:39	32.4	17.0	86.4	1.6	0.0	16.0	24.3	0.0	29.2	2.5	0.0	0.0	0.0	209.3
DAILY TOTAL SCIENCE	012 08:54	013 09:39	89.1	46.7	192.9	4.5	48.2	44.0	66.8	0.0	80.2	171.0	10.0	0.0	65.8	
OBSERVATION_NOR	013 09:39	014 00:39	54.0	28.3	98.4	2.7	48.2	26.7	40.5	0.0	48.6	38.6	330.0	0.0	62.7	778.7
SP_159EA_M34BWGSEQ014_PRIME	014 00:39	014 09:39	32.4	17.0	86.4	1.6	0.0	16.0	24.3	0.0	29.2	2.5	0.0	0.0	0.0	209.3
DAILY TOTAL SCIENCE	013 09:39	014 09:39	86.4	45.3	184.8	4.3	48.2	42.7	64.8	0.0	77.8	41.1	330.0	0.0	62.7	
OBSERVATION_NOR	014 09:39	015 00:39	54.0	28.3	98.4	2.7	48.2	26.7	40.5	0.0	48.6	38.6	330.0	0.0	62.7	778.7
SP_159EA_M34BWGSEQ015_PRIME	015 00:39	015 09:39	32.4	17.0	86.4	1.6	0.0	16.0	24.3	0.0	29.2	2.5	0.0	0.0	0.0	209.3
DAILY TOTAL SCIENCE	014 09:39	015 09:39	86.4	45.3	184.8	4.3	48.2	42.7	64.8	0.0	77.8	41.1	330.0	0.0	62.7	
OBSERVATION_NOR	015 09:39	016 00:39	54.0	28.3	109.2	2.7	48.2	26.7	40.5	0.0	48.6	196.4	10.0	0.0	62.7	627.2
SP_159EA_M34HEFOTP016_PRIME	016 00:39	016 09:39	32.4	17.0	86.4	1.6	0.0	16.0	24.3	0.0	29.2	2.5	0.0	0.0	0.0	209.3
DAILY TOTAL SCIENCE	015 09:39	016 09:39	86.4	45.3	195.6	4.3	48.2	42.7	64.8	0.0	77.8	198.8	10.0	0.0	62.7	
OBSERVATION_NOR	016 09:39	017 00:25	53.2	27.9	0.0	2.7	0.0	63.6	39.9	0.0	47.8	0.0	0.0	0.0	61.7	296.7
SP_160EA_M70METOTB017_PRIME	017 00:25	017 09:25	32.4	17.0	86.4	1.6	0.0	16.0	24.3	0.0	29.2	2.5	0.0	0.0	0.0	209.3
DAILY TOTAL SCIENCE	016 09:39	017 09:25	85.6	44.8	86.4	4.3	0.0	79.6	64.2	0.0	77.0	2.5	0.0	0.0	61.7	

Final Sequenced SMT and Data Volume (3 of 3)

DATA VOLUME REPORT --- TRANSFER FRAME OVERHEAD NOT INCLUDED

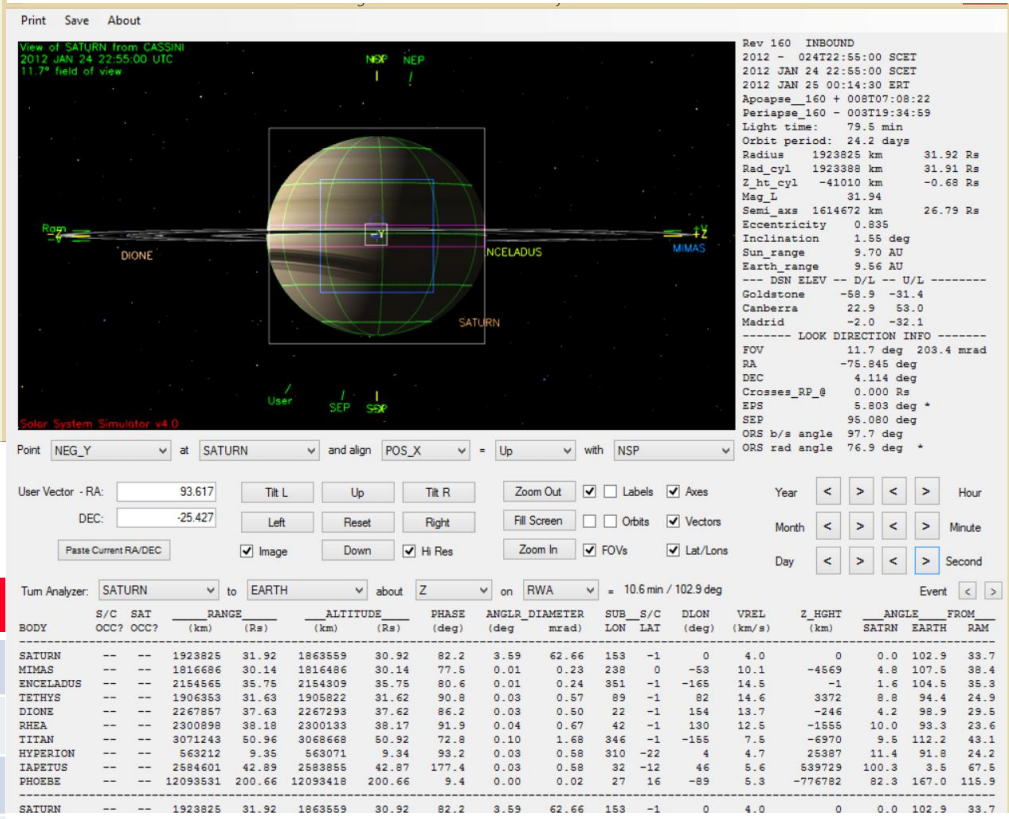
Event	Start doy hh:mm	End doy hh:mm	CAPS (Mb)	CDA (Mb)	CIRS (Mb)	INMS (Mb)	ISS (Mb)	MAG (Mb)	MIMI (Mb)	RADAR (Mb)	RPWS (Mb)	UVIS (Mb)	VIMS (Mb)	PROBE (Mb)	ENGR (Mb)	TOTAL (Mb)
OBSERVATION_NOR	017 09:25	018 14:10	72.4	48.8	165.6	5.2	293.9	36.9	72.4	0.0	169.9	87.0	340.0	0.0	120.2	1412.3
SP_160EA_C34BWGSEQ018_PRIME	018 14:10	018 23:10	29.9	15.3	86.4	1.6	0.0	16.0	22.7	0.0	29.2	2.5	0.0	0.0	0.0	203.5
DAILY TOTAL SCIENCE	017 09:25	018 23:10	102.4	64.1	252.0	6.8	293.9	52.9	95.1	0.0	199.1	89.4	340.0	0.0	120.2	
OBSERVATION_NOR	018 23:10	020 14:10	140.4	66.2	180.0	7.0	970.2	69.4	98.3	0.0	126.3	115.9	410.0	0.0	163.0	2346.8
SP_160EA_C70METSEQ020_PRIME	020 14:10	020 23:10	32.4	15.3	86.4	1.6	0.0	16.0	22.7	0.0	29.2	2.5	0.0	0.0	0.0	206.0
DAILY TOTAL SCIENCE	018 23:10	020 23:10	172.8	81.5	266.4	8.6	970.2	85.4	121.0	0.0	155.5	118.4	410.0	0.0	163.0	
OBSERVATION_NOR	020 23:10	022 13:55	139.5	54.8	208.8	7.0	336.1	68.9	97.7	0.0	180.4	264.9	280.0	0.0	162.0	1800.0
SP_160EA_C34BWGSEQ022_PRIME	022 13:55	022 22:55	32.4	12.7	86.4	1.6	0.0	16.0	22.7	0.0	29.2	2.5	0.0	0.0	0.0	203.5
DAILY TOTAL SCIENCE	020 23:10	022 22:55	171.9	67.6	295.2	8.6	336.1	84.9	120.3	0.0	209.5	267.4	280.0	0.0	162.0	
OBSERVATION_NOR	022 22:55	024 13:55	98.7	55.2	338.4	7.0	368.9	35.2	98.3	0.0	126.3	34.4	670.0	0.0	163.0	1995.5
SP_160EA_C70METSEQ024_PRIME	024 13:55	024 22:55	22.7	12.7	86.4	1.6	0.0	8.0	22.7	0.0	29.2	2.5	0.0	0.0	0.0	185.7
DAILY TOTAL SCIENCE	022 22:55	024 22:55	121.4	67.9	424.8	8.6	368.9	43.2	121.0	0.0	155.5	36.9	670.0	0.0	163.0	

Segment Geometry



Seg Start (Left)

Seg End (below)



	Saturn Range	Phase Angle	Sub-S/C Lat.
Segment Start	11.23	125.1	0
Periapse	4.42	123.2	2
Apoapse	49.17	56.6	-2
Segment End	31.92	82.2	-1

Solar Geometry – ORS Boresight Concerns

* NEG_Y to Saturn not safe from 2012-004T07:03 to 08:43 (ORS to Sun < 15 deg.).
  - Minimum ORS to SUN angle is appx. 13.75 deg (CIRS Operational FR Zone).

Daily Science Highlights

DOY 004: Inbound to periapse, ISS observed Enceladus' plumes and CIRS performed a Saturn Limb Map to obtain stratospheric thermal structure by means of limb sounding in the mid-IR. Following periapse, UVIS measured a stellar occultation of the rings and VIMS finished up the day by executing a hi-resolution regional map of Saturn.
DOY 005: ISS and VIMS performed a Saturn emission angle scan.
DOY 006: ISS observed the irregular moon Ymir. UVIS performed EUV/FUV imaging of Saturn. VIMS executed another high-resolution regional map of Saturn, focusing on northern mid-latitudes.
DOY 007: The ORS instruments teamed up on another Saturn emission angle scan.
DOY 008: ISS observed Titan as part of the Titan monitoring campaign. CIRS recorded a Saturn mid-IR map to determine stratospheric and upper tropospheric temperatures.
DOY 009: The ORS teams observed at Titan once again.
DOY 010: The day was filled with a set of complementary observations by ISS and CIRS to measure Saturn winds and composition.
DOY 011: The ORS teams monitored Titan and then ISS turned its attention to Saturn to monitor the planet for storm activity.
DOY 012: Following more Titan monitoring, UVIS performed EUV/FUV imaging of Saturn.
DOY 013: Following another look at Titan for the monitoring campaign, CIRS performed a COMPSIT of Saturn to primarily measure oxygen compounds in the stratosphere as a function of latitude.
DOY 014: Following another look at Titan for the monitoring campaign, CIRS performed another COMPSIT of Saturn to measure oxygen compounds in the stratosphere over latitude.
DOY 015: Following another look at Titan for the monitoring campaign, UVIS performed more EUV/FUV imaging of Saturn.
DOY 016: MAG performed a calibration activity by rolling about an axis other than "Z" for determination of sensor offsets.
DOY 017: Following another look at Titan for the monitoring campaign, the day was filled with a set of complementary observations by ISS and CIRS to measure Saturn winds and composition.
DOY 018: CIRS performed another COMPSIT of Saturn to measure the latitudinal variability of stratospheric oxygen compounds.
DOY 019-020: Following another look at Titan for the monitoring campaign, the day was filled with two sets of complementary observations by ISS and CIRS to measure Saturn winds and composition.
DOY 021-022: Following a Titan observation for the monitoring campaign, UVIS acquired EUV/FUV imagery of Saturn. ISS then led a joint-ORS Saturn emission angle scan.
DOY 023: Following another look at Titan for the monitoring campaign, CIRS recorded a Saturn mid-IR map to determine stratospheric and upper tropospheric temperatures.
DOY 024: ISS observed the irregular moon Siarnaq.

Segment Integration Planning

Timeline Gaps and Suggested Observations

GAP	Start (SCET)	Duration	Saturn Range (Rs)	Saturn Phase
1	2012-003T19:03:00	000T04:57:00	11	126.4
2	2012-004T03:00:00	000T05:00:00	7.5	148.5
3	2012-004T14:00:00	000T00:06:00	4.5	111.1
4	2012-004T16:40:00	000T20:18:00	5.1	79.2
5	2012-006T16:48:00	000T19:55:00	22.6	20.9
6	2012-009T00:03:00	000T05:10:00	34.8	34.9
7	2012-011T03:33:00	000T02:41:00	42.1	42.7
8	2012-011T19:34:00	000T02:55:00	43.7	44.6
9	2012-016T17:19:00	000T04:56:00	49.2	56.8
10	2012-018T11:35:00	000T00:25:00	48.4	60.9
11	2012-020T09:20:00	000T02:40:00	45.9	65.6
12	2012-021T17:20:00	000T18:25:00	43.2	69.4
13	2012-023T23:05:00	000T12:40:00	36.2	77.3

Suggested Observations:

*** GAP 4 – VIMS Regional Map**

*** Several gaps were intentionally left empty because of data volume and DSN resource limitations.**

Initial SMT and Data Volume

Beginning of Integration:

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

			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_159EA_C70METNON005_PRIME	005 15:08	006 00:08	0	2265	189	2454	3322	868	0	202	53	2709	3266	**556**	2675	21%	0
SP_159EA_C70METNON007_PRIME	007 14:53	007 23:53	0	816	164	979	3322	2343	0	180	53	1212	3331	**2118**	2119	21%	0
SP_159EA_G34BWGNON009_PRIME	009 08:23	009 17:23	0	1401	137	1538	3322	1784	0	180	53	1771	637	-1134	48	0%	1134
SP_159EA_G70METNON011_PRIME	011 08:24	011 17:24	1134	1976	165	3274	3322	48	0	180	53	3507	3273	-235	1391	14%	235
SP_159EA_M34BWGNON012_PRIME	012 00:39	012 09:39	235	140	31	405	3322	2917	0	180	53	638	597	-42	1756	17%	41
SP_159EA_M34HEFNON013_PRIME	013 00:39	013 09:39	41	490	63	595	3322	2728	0	180	53	827	664	-164	1756	17%	163
SP_159EA_M34BWGSEQ014_PRIME	014 00:39	014 09:39	163	662	63	888	3322	2434	0	180	53	1121	607	-514	1756	13%	514
SP_159EA_M34BWGSEQ015_PRIME	015 00:39	015 09:39	514	662	63	1239	3322	2083	0	180	53	1472	612	-860	1756	14%	860
SP_159EA_M34HEFOTP016_PRIME	016 00:39	016 09:39	860	490	63	1413	3322	1909	0	180	53	1646	540	-1107	1756	14%	1106
SP_160EA_M70METOTB017_PRIME	017 00:25	017 09:25	1106	198	62	1367	3322	1956	0	180	53	1599	2940	**1340**	1756	15%	0
SP_160EA_C34BWGSEQ018_PRIME	018 14:10	018 23:10	0	1243	121	1365	3322	1957	0	180	53	1598	788	-811	365	4%	810
SP_160EA_C70METSEQ020_PRIME	020 14:10	020 23:10	810	1982	165	2957	3322	**365**	0	180	53	3190	3657	466	1657	20%	0
SP_160EA_C34BWGSEQ022_PRIME	022 13:55	022 22:55	0	869	164	1033	3322	2289	0	180	53	1266	796	-470	1190	27%	470
SP_160EA_C70METSEQ024_PRIME	024 13:55	024 22:55	470	1498	165	2132	3322	**1190**	0	180	53	2365	3671	1305	1306	36%	0

Waypoint Selection

RBOT - Friendly

OBSERVATION PERIOD	START	END	POS_X	NEG_X	POS_Z	NEG_Z
SP_159NA_OBSERV003_NA	2012-003T18:23:00	2012-005T15:08:00	------	------	------	------
SP_159NA_OBSERV006_NA	2012-006T00:08:00	2012-007T14:53:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_159NA_OBSERV007_NA	2012-007T23:53:00	2012-009T08:23:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_159NA_OBSERV009_NA	2012-009T17:23:00	2012-011T08:24:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_159NA_OBSERV011_NA	2012-011T17:24:00	2012-012T00:39:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_159NA_OBSERV012_NA	2012-012T09:39:00	2012-013T00:39:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_159NA_OBSERV013_NA	2012-013T09:39:00	2012-014T00:39:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_159NA_OBSERV014_NA	2012-014T09:39:00	2012-015T00:39:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_159NA_OBSERV015_NA	2012-015T09:39:00	2012-016T00:39:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_159NA_OBSERV016_NA	2012-016T09:39:00	2012-017T00:25:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_160NA_OBSERV017_NA	2012-017T09:25:00	2012-018T14:10:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_160NA_OBSERV018_NA	2012-018T23:10:00	2012-020T14:10:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_160NA_OBSERV020_NA	2012-020T23:10:00	2012-022T13:55:00	------	45.4/ 82.1	------	45.4/ 82.1
SP_160NA_OBSERV022_NA	2012-022T22:55:00	2012-024T13:55:00	------	45.4/ 82.1	------	45.4/ 82.1

OTHER WAYPOINTS

PRIMARY : NEG_Y to SATURN

OBSERVATION PERIOD	START	END	POS_X_2_NSP	POS_X_2_NEP	NEG_X_2_NSP	NEG_X_2_NEP	POS_Z_2_NSP	POS_Z_2_NEP	NEG_Z_2_NSP	NEG_Z_2_NEP	NEG_X_2_SUN	NEG_Z_2_EARTH
SP_159NA_OBSERV003_NA	2012-003T18:23:00	2012-005T15:08:00	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**	**BAD**
SP_159NA_OBSERV006_NA	2012-006T00:08:00	2012-007T14:53:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_159NA_OBSERV007_NA	2012-007T23:53:00	2012-009T08:23:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_159NA_OBSERV009_NA	2012-009T17:23:00	2012-011T08:24:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_159NA_OBSERV011_NA	2012-011T17:24:00	2012-012T00:39:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_159NA_OBSERV012_NA	2012-012T09:39:00	2012-013T00:39:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_159NA_OBSERV013_NA	2012-013T09:39:00	2012-014T00:39:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_159NA_OBSERV014_NA	2012-014T09:39:00	2012-015T00:39:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_159NA_OBSERV015_NA	2012-015T09:39:00	2012-016T00:39:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_159NA_OBSERV016_NA	2012-016T09:39:00	2012-017T00:25:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_160NA_OBSERV017_NA	2012-017T09:25:00	2012-018T14:10:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_160NA_OBSERV018_NA	2012-018T23:10:00	2012-020T14:10:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_160NA_OBSERV020_NA	2012-020T23:10:00	2012-022T13:55:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK
SP_160NA_OBSERV022_NA	2012-022T22:55:00	2012-024T13:55:00	**BAD**	**BAD**	OK	OK	**BAD**	**BAD**	OK	OK	OK	OK

*** NEG_Y to Saturn not safe from 2012-004T07:03 to 08:43 (ORS to Sun < 15 deg.).**

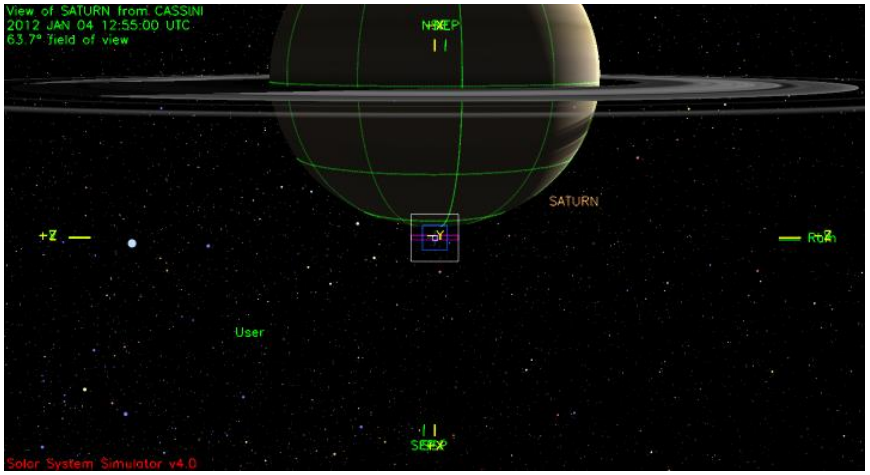
- Minimum ORS to SUN angle is appx. 13.75 deg (CIRS Operational FR Zone).

Options:

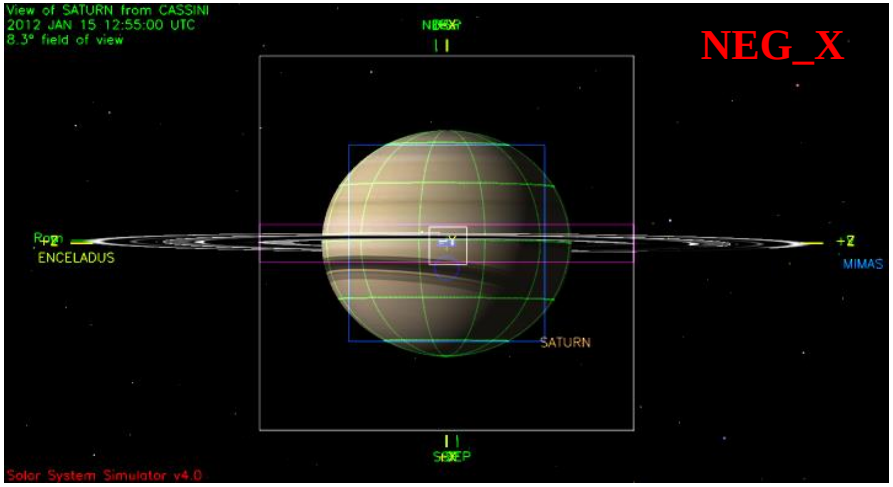
1. **CIRS waives Operational FR.**
2. **Offset waypoint from Saturn Center by TBD degrees.**

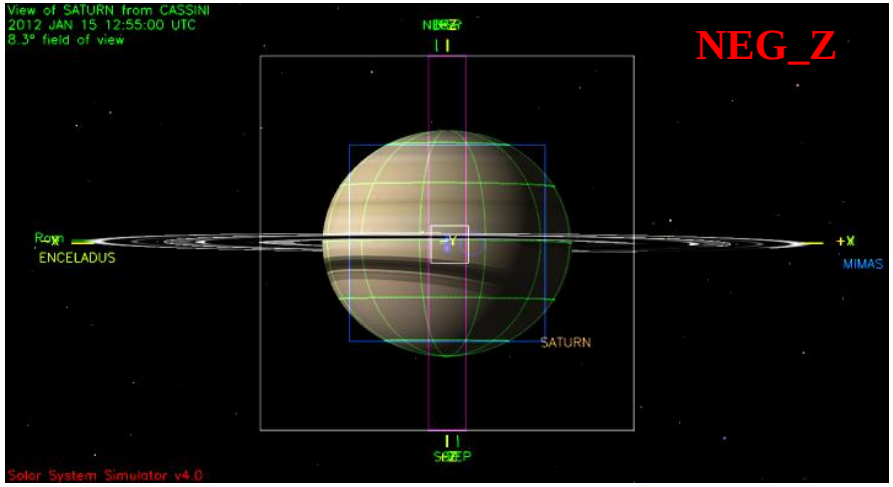
Waypoints Chosen

Waypoint 1 (2012-003T19:03:00 – 2012-005T13:38:00):
ISS_NAC to Saturn (0.0,0.0,12.0 deg. offset); NEG_X to NSP



Remainder of the Segment: ISS_NAC to Saturn, NEG_X or NEG_Z to 45.4/82.1





Notes & Liens

- Pointing:
  - The >3hr-60deg rule applies to CIRS_159SA_LIMBMAP001_PIE. CIRS will place a quiescent, inertially fixed period in their design. The inertial pointing will target a star for a VIMS stellar occultation which is a collaborative rider.
  - RBOT friendliness of delivery: RBOT secondaries were used except at 159 periapse, where a safe attitude was not specified in the RBOT-friendly spreadsheet.
  - The inclusion of the MAG CALROLL on DOY 016 violates the “2 of 3” rule. AACS advised placing it close to the ME OTM on DOY 016. SPST manager approved this strategy.
- Data Volume:
  - No issues
- DSN:
  - There are RSS DSNMONCALs over the downlinks on DOYs 009, 012 & 018. Consult if a change of station is considered for those downlinks.
- Opmodes:
  - No issues
- Special Activities:
  - None

Sequence Liens:

- None other than those covered above.