SOST

Rev 47

2007-178T02:08 - 2007-180T02:05

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05/09/04

SOST Rev 47

- This segment includes the best flyby of Tethys in the tour (non-targeted).
- Much effort was placed on accommodating MAPS instruments by careful choices in secondary axes
- The timeline also includes
  - the RSS occultation (egress) immediately prior to the dust ring hazard avoidance period
  - A UVIS stellar occultation
  - Key ORS Mimas and Enceladus phase/longitude coverage
  - RADAR Rhea and Mimas
  - Saturn/aurorae coverage (CIRS and UVIS)

Request	Riders	Start (SCET)	Start (Epoch)	Duration	End (SCET)	Primary	Secondary	Comments
Sequence S031, length = 33 ...		2007-162T03:10:00	E046_SEQUENCE_031+000T00:00:(	032T21:56:00	2007-195T01:06:00			
SOST rev 47 Segment		2007-178T02:08:00		001T23:57:00	2007-180T02:05:00			
SP_047SA_WAYPTTURN178_PRIME	M	2007-178T02:08:00		000T00:22:00	2007-178T02:30:00	ISS_NAC to Saturn	POS_X to NSP	6.2 min turn; safe WP
NEW WAYPOINT		**2007-178T02:30:00**		**000T15:10:00**	**2007-178T17:40:00**	**ISS_NAC to Saturn**	**POS_X to NSP**	
UVIS_047SA_AURORA001_PRIME	C, M	2007-178T02:30:00		000T02:30:00	2007-178T05:00:00	ISS_NAC to Saturn	NEG_X to Sun	S&ER3
CIRS_047SA_NADIROCC005_PRIME	C, M	2007-178T05:00:00		000T03:00:00	2007-178T08:00:00	ISS_NAC to Saturn	NEG_Z to NSP	SNER_3
SP_047EA_DLTURN178_PRIME		2007-178T08:00:00		000T00:10:00	2007-178T08:10:00	XBAND to Earth	POS_X to NSP	6.2 min turn
SP_047EA_M34HEFOTB178_PRIME	M, N	2007-178T08:10:00		000T09:00:00	2007-178T17:10:00	XBAND to Earth	POS_X to NSP	
SP_047TE_WAYPTTURN178_PRIME	M	2007-178T17:10:00		000T00:30:00	2007-178T17:40:00	ISS_NAC to Tethys (0.0,-65.0,0.0 deg. offset)	NEG_X to Sun	22.2 min turn; safe WP
NEW WAYPOINT		**2007-178T17:40:00**		**000T03:45:10**	**2007-178T21:25:10**	**ISS_NAC to Tethys (0.0,-65.0,0.0 deg. offset)**	**NEG_X to Sun**	
SP_047NA_DEADTIME178_PRIME	**M**	**2007-178T17:40:00**		**000T00:30:00**	**2007-178T18:10:00**	**ISS_NAC to Tethys (0.0,-65.0,0.0 deg. offset)**	**NEG_X to Sun**	
ISS_047TE_PHOTOM001_PRIME	C, M, U, V	2007-178T18:10:10	GMB_E047_Peri-000T06:55:00	000T00:15:00	2007-178T18:25:10	ISS_NAC to Tethys (0.0,-65.0,0.0 deg. offset)	NEG_X to Sun	
CIRS_047TE_FP1FAZOP5386_PRIME	M, U, V	2007-178T18:25:10	GMB_E047_Peri-000T06:40:00	000T00:30:00	2007-178T18:55:10	ISS_NAC to Tethys (0.0,-65.0,0.0 deg. offset)	NEG_X to Sun	SNER_3; secondary for CAPS. 15 min. cut for dead time to be recovered (if possible) in aftermarket.
ISS_047TE_GEOLOG001_PRIME	C, M, U, V	2007-178T18:55:10	GMB_E047_Peri-000T06:10:00	000T00:15:00	2007-178T19:10:10	ISS_NAC to Tethys (0.0,-65.0,0.0 deg. offset)	NEG_X to Sun	
CIRS_047TE_FP1WINPOL001_PRIME	M, U, V	2007-178T19:10:10	GMB_E047_Peri-000T05:55:00	000T00:50:00	2007-178T20:00:10	CIRS_FP1 to Tethys (0.0,-65.0,0.0 deg. offset)	NEG_X to Sun	SNER_2 for RPWS; secondary for CAPS.
ISS_047TE_GEOLOG002_PRIME	C, M, U, V	2007-178T20:00:10	GMB_E047_Peri-000T05:05:00	000T00:50:00	2007-178T20:50:10	ISS_NAC to Tethys (0.0,-65.0,0.0 deg. offset)	NEG_X to Sun	
UVIS_047TE_ICYOCC051_PRIME	C, M, V	2007-178T20:50:10	GMB_E047_Peri-000T04:15:00	000T00:20:00	2007-178T21:10:10	UVIS_HSP to 111.023/-29.303	NEG_X to Sun	S&ER3; secondary for CAPS
SP_047TE_WAYPTTURN478_PRIME	C, M, R, V	2007-178T21:10:10	GMB_E047_Peri-000T03:55:00	000T00:15:00	2007-178T21:25:10	ISS_NAC to Tethys (0.0,30.0,0.0 deg. offset)	POS_X to NSP	9.1 min turn; safe WP
NEW WAYPOINT		**2007-178T21:25:10**		**000T01:55:00**	**2007-178T23:20:10**	**ISS_NAC to Tethys (0.0,30.0,0.0 deg. offset)**	**POS_X to NSP**	
VIMS_047TE_TETHYS001_PRIME	C, M, R, U, V	2007-178T21:25:10	GMB_E047_Peri-000T03:40:00	000T00:30:00	2007-178T21:55:10	ISS_NAC to Tethys (0.0,30.0,0.0 deg. offset)	POS_X to NSP	SNER_3; secondary, offset for CAPS and MAG
ISS_047TE_GEOLOG003_PRIME	C, M, R, U, V	2007-178T21:55:10	GMB_E047_Peri-000T03:10:00	000T00:15:00	2007-178T22:10:10	ISS_NAC to Tethys (0.0,30.0,0.0 deg. offset)	POS_X to NSP	
CIRS_047TE_FP1FAZOP5387_PRIME	M, R, U, V	2007-178T22:10:10	GMB_E047_Peri-000T02:55:00	000T00:45:00	2007-178T22:55:10	ISS_NAC to Tethys (0.0,30.0,0.0 deg. offset)	POS_X to NSP	SNER_3; secondary, offset for CAPS and MAG.
SP_047EA_WAYPTTURN178_PRIME	M, R	2007-178T22:55:10	GMB_E047_Peri-000T02:10:00	000T00:25:00	2007-178T23:20:10	XBAND to Earth	NEG_X to NSP	22.2 min turn; safe WP
NEW WAYPOINT		**2007-178T23:20:10**		**000T00:47:50**	**2007-179T00:08:00**	**XBAND to Earth**	**NEG_X to NSP**	
RSS_047SA_OCCOUT001_PRIME	M	2007-178T23:20:10	GMB_E047_Peri-000T01:45:00	000T00:40:00	2007-179T00:00:10	XBAND to Earth	NEG_X to NSP	SNER_3; Secondary axis for MAG and CAPS
SP_047DR_RAMAVOID179_PRIME	M, R	2007-179T00:00:10	GMB_E047_Peri-000T01:05:00	000T00:07:50	2007-179T00:08:00	NEG_Z to Dust_RAM (0.0,0.0,30.0 deg. offset)	NEG_X to NSP	4.75 min turn; S&ER-5a for 15 min
NEW WAYPOINT		**2007-179T00:08:00**		**000T00:58:10**	**2007-179T01:06:10**	**NEG_Z to Dust_RAM (0.0,0.0,30.0 deg. offset)**	**NEG_X to NSP**	
MP_047DR_DUSTHAZRD002_PRIME	M, R	2007-179T00:08:00		000T00:37:00	2007-179T00:45:00			S&ER-3 starting at Peri-00:50
SP_047DR_WAYPTTURN179_PRIME	M, R	2007-179T00:45:10	GMB_E047_Peri-000T00:20:00	000T00:21:00	2007-179T01:06:10	NEG_X to Dust_RAM	POS_Y to NSP	18,3 min turn; safe WP
NEW WAYPOINT		**2007-179T01:06:10**		**000T00:18:50**	**2007-179T01:25:00**	**NEG_X to Dust_RAM**	**POS_Y to NSP**	
INMS_047CO_RNGATM001_PRIME	M, R	2007-179T01:06:10	GMB_E047_Peri+000T00:01:00	000T00:05:00	2007-179T01:11:10	NEG_X to Dust_RAM	PIC	S & ER 3
SP_047MI_WAYPTTURN179_PRIME	M, R	2007-179T01:11:10	GMB_E047_Peri+000T00:06:00	000T00:13:50	2007-179T01:25:00	ISS_NAC to Mimas (0.0,20.0,0.0 deg. offset)	POS_X to NSP	10.8 min turn; safe WP
NEW WAYPOINT		**2007-179T01:25:00**		**001T00:40:00**	**2007-180T02:05:00**	**ISS_NAC to Mimas (0.0,20.0,0.0 deg. offset)**	**POS_X to NSP**	
SP_047NA_DEADTIME179_PRIME	**M, R**	**2007-179T01:25:00**		**000T00:30:00**	**2007-179T01:55:00**	**ISS_NAC to Mimas (0.0,20.0,0.0 deg. offset)**	**POS_X to NSP**	
ISS_047MI_GLOCOL001_PRIME	C, M, R, U, V	2007-179T01:55:00		000T00:15:00	2007-179T02:10:00	ISS_NAC to Mimas (0.0,20.0,0.0 deg. offset)	POS_X to NSP	
RADAR_047MI_SCATTRAD001_PRIME	C, M	2007-179T02:10:00		000T02:10:00	2007-179T04:20:00	NEG_Z to Mimas	POS_X to NSP	RADAR must control primary and secondary axes to obtain correct polarization.
UVIS_047ST_URZETORI001_PRIME	M	2007-179T04:20:00		000T01:40:00	2007-179T06:00:00	UVIS_FUV to 85.19/-1.942	POS_X to NSP	S&ER3; secondary for MAG
CIRS_047SA_FTRACK010_PRIME	M, R	2007-179T06:00:00		000T06:30:00	2007-179T12:30:00	ISS_NAC to Saturn	POS_X to NSP	S&er-3 to S&ER-5a 11:30-11:45, then back to S&ER-3; secondary for MAG
ISS_047EN_GLOCOL001_PRIME	C, M, R, U, V	2007-179T12:30:00		000T01:00:00	2007-179T13:30:00	ISS_NAC to Enceladus	POS_X to NSP	
RADAR_047RH_SCATTRADL001_PRIME	M	2007-179T13:30:00		000T02:05:00	2007-179T15:35:00	NEG_Z to Rhea	POS_X to NSP	RADAR must control primary and secondary axes to obtain correct polarization.
SP_047EA_DLTURN179_PRIME	M	2007-179T15:35:00		000T00:21:00	2007-179T15:56:00	XBAND to Earth	POS_X to NEP	18.3 min turn
SP_047EA_G70METOPN179_PRIME		2007-179T16:05:00		000T10:00:00	2007-180T02:05:00	XBAND to Earth	Rolling	waive maintenance on this stn; safe att throughout? - YES

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)	(%)	CAROVI (Mb)
SP_047EA_M34HEFOTB178_PRIME	178 08:10	178 17:10	0	164	21	185	3493	3308	0	401	53	639	774	135	423	10%	0
SP_047EA_G70METOPN179_PRIME	179 16:05	180 02:05	0	2901	83	2985	3493	508	0	162	59	3205	3494	289	288	8%	0

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)	TOTAI (Mb)
OBSERVATION_NOR	178 02:08	178 08:10	21.7	3.3	60.5	1.1	0.0	13.0	25.7	0.0	28.5	9.1	0.0	0.0	0.0	162.8
SP_047EA_M34HEFOTB178_PRIME	178 08:10	178 17:10	177.4	33.2	0.0	1.6	0.0	29.0	50.8	0.0	103.3	2.5	0.0	0.0	0.0	397.8
DAILY TOTAL SCIENCE	178 02:08	178 17:10	199.1	36.5	60.5	2.7	0.0	42.1	76.4	0.0	131.8	11.5	0.0	0.0		
OBSERVATION_NOR	178 17:10	179 16:05	571.7	54.1	154.5	8.2	406.8	135.6	82.5	495.5	560.1	254.8	150.9	0.0	0.0	2874.8
SP_047EA_G70METOPN179_PRIME	179 16:05	180 02:05	36.0	18.7	0.0	1.8	0.0	21.6	32.4	0.0	47.2	2.7	0.0	0.0	0.0	160.4
DAILY TOTAL SCIENCE	178 17:10	180 02:05	607.7	72.8	154.5	10.0	406.8	157.2	114.9	495.5	607.3	257.5	150.9	0.0		

AVERAGE DATA RATE REPORT (calculated over observation periods and downlink passes)

Event	Start doy hh:mm	End doy hh:mm	CAPS (bps)	CDA (bps)	INMS (bps)	MAG (bps)	MIMI (bps)	RPWS (bps)	UVIS (bps)
SP_047NA_M34OBSOTB178_NA	178 02:08	178 08:10	1000.0	149.9	50.0	600.0	1181.8	1310.0	417.0
SP_047EA_M34HEFOTB178_PRIME	178 08:10	178 17:10	5474.1	1025.8	50.0	896.3	1566.7	3189.2	76.0
SP_047NA_G34OBSOPN179_NA	178 17:10	179 16:05	6930.2	655.5	99.4	1643.6	1000.4	6789.6	3088.1
SP_047EA_G70METOPN179_PRIME	179 16:05	180 02:05	1000.0	519.6	50.0	600.0	900.0	1310.0	76.0

TWT/OST Integration Constraint and Guideline Checklist

Below are Target Working Team (TWT) and Orbiter Science Team (OST) constraints that must be followed during segment implementation. Any exceptions to constraint numbers 3, 4, 6, or 7 must be approved by the Science Planning Manager.

Constraint	C=Comply V=Violate N/A=Not Applicable	Comments	Disposition
1. A. SP has checked all waypoints turns to and from waypoints.	C		
B. All initial downlink attitudes have been checked as waypoints.	C		
2. All turns to and from waypoints checked for violations and margins. ☐CAPS ☐CDA ☐CIRS ☐INMS ☐ISS ☐MIMI ☐MAG ☐NAV ☐RADAR ☐RPWS ☐RSS ☐UVIS ☐VIMS Each Prime Instrument agrees to accept a reduction in observation time during implementation if problems arise.		SOST agreement that all teams are OK	
3. Custom handoffs limited to:			
A. ±3 hours from targeted Icy Satellite flyby	N/A		
B. ±3 hours from targeted Titan Flyby	N/A		
C. OpNavs preceding/following a downlink	N/A		
4. Minimum 30 min SPASS Prime request duration outside ±5 hours from targeted satellite flyby (5 min. integer duration if >30 min.)	V	5 requests are shorter than 30 min; Brian ok'd these	
5. Live and Ground Movable Blocks include appropriate time margins.	C	K. Klaasen's margin for flyby Tethys 47 is 30 min. according to memo dated 6/27/03 (email).	
6. Waypoints changes are ≤3 per day	C		
A. All turns that accomplish the waypoint strategy are requested by SP or OpNav.	V	Brian ok'd additional WPs	
7. Live Movable Blocks limited to the following orbits: 7, 8, 9, 10, 12, 28, 51, 56, 57, 60, 63, 64	N/A		

Guideline	Yes / No	Comments
1. Were repeatable/reusable templates used where possible?		
2. During Pre-Integration: Was 30 min. used for 90º RWA turns and/or 10 min. for RCS turns?		

(DOUBLE-CLICK TO MAKE CHANGES)

Issues

- Waypoints have been checked and are safe.
- Data volume is OK.
- One 9-hr pass per day is scheduled, for 6+hr of 2-way tracking.
- **Goldstone 70 m antenna is scheduled to be in maintenance during the last pass of the segment. Jim Frautnick, Dave Seal and Belinda Arroyo all said that this maintenance can be waived in this situation.**
- The CIRS request at Peri-06:40 is currently 30 min long, but should be increased in duration (starting earlier) when the dead time for this segment is better quantified and shortened. (This request was shortened in SOST when the dead time increased from 15 min to 30 min.)
- Similarly, the ISS request at 179T 01:55 is currently 15 min long, but should be increased in duration (starting earlier) when the dead time for this segment is better quantified and shortened. (This request was shortened in SOST when the dead time increased from 15 min to 30 min.)
- SID may need to be suspended for the INMS waypoint; INMS may need to submit a waiver to a CIRS FR for this observation.