CASSINI SOST SEGMENT

Rev 091 Handoff Package

Segment Boundary: 2008-304T19:37:00 – 2008-307T19:22:00

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Links to files

Science Highlights

Notes & Liens

Integration Checklist

Links to files

Timeline plot:
https://cassini.jpl.nasa.gov/sp/icy/091EN/SOST_091EN_timeline_080418.pdf

TOL (xls, txt):
https://cassini.jpl.nasa.gov/sp/icy/091EN/SOST_091EN_TOL_080418.xls
https://cassini.jpl.nasa.gov/sp/icy/091EN/SOST_091EN_TOL_080418.txt

SPASS (txt, pdf, xls):
https://cassini.jpl.nasa.gov/sp/icy/091EN/SPASS_SOST_091EN_080418.txt
https://cassini.jpl.nasa.gov/sp/icy/091EN/SPASS_SOST_091EN_080418.pdf
https://cassini.jpl.nasa.gov/sp/icy/091EN/SPASS_SOST_091EN_080418.xls

SMT report:
https://cassini.jpl.nasa.gov/sp/icy/091EN/SOST_091EN_080418.rpt

DSN (text, nav, seg):
https://cassini.jpl.nasa.gov/sp/icy/091EN/SOST_091EN_080418_text.txt
https://cassini.jpl.nasa.gov/sp/icy/091EN/SOST_091EN_080418_nav.txt
https://cassini.jpl.nasa.gov/sp/icy/091EN/SOST_091EN_080418_seg.txt

Oct. 30 - Nov. 2, 2008 (DOY 304-307)

This targeted flyby of Saturn's active moon Enceladus is primarily an Optical Remote Sensing (ORS) flyby. However, the Radio Science Subsystem (RSS) has gravity passes on the wings (before and after closest approach) to help measure the gravity field of Enceladus by decorrelating the mass from other coefficients. More primary observations of this type will be 39 revolutions later during the Enceladus encounter on Rev. 130.

The Imaging Science Subsystem (ISS) has prime control of the spacecraft at the point when Cassini is closest to Enceladus. Just after closest approach, ISS will image the South Polar Terrain and active tiger stripes at very high spatial resolution (as high as 8m/pixel). This observation complements coverage obtained in the last ORS Enceladus flyby 11 revolutions previous (Rev. 80, mid-August 2008). For both, ISS will image active vent regions in unprecedented detail to identify geological structure modifications of the tiger stripe rifts that accompany ongoing eruptions. High resolution imaging of surface features in between the tiger stripes will provide details that could be used to characterize the surface modification effects of fallback from the plumes adjacent to eruption centers. ISS will also obtain high-resolution (25 - 100m/pixel) multi-spectral mosaics of the tiger stripes to search for temporal changes in composition associated with possible time variability of the eruptions. By combining the results of E4 (mid-August 2008 flyby) and E6 (this flyby) closest-approach imaging, ISS will obtain stereo coverage of the tiger-stripes to produce high-definition three-dimensional topographic maps of both active and inactive eruption centers.

This observation is closely coordinated with the other ORS instruments. The Composite Infrared Spectrometer (CIRS) will obtain thermal imaging of eruptive centers along active tiger stripes and possibly even measure the temperatures of the active tiger stripe valley floors. The Visible and Infrared Mapping Spectrometer (VIMS) will obtain multispectral data that can be used to measure spatial variations of ice grain-size in unprecedented detail, and along with the Ultraviolet Imaging Spectrograph (UVIS), spatial heterogeneity in the surface composition among the different geological features of the South Polar Terrain region.

Notes and Liens (p.1)

Notes:

- Pointing:
  - OK. - Note: Following resource checker error is acceptable: *Telemetry Mode change during an ISS observation ISS_091EN_ENCELCA001_PRIME*. ISS and riders agree to this plan. (Additional info. in related observation period CIMS request.)
- Data Volume:
  - OK - Dual playback of high value data occurs from C/A - 30 min. to C/A +45 min. (855 Mb total)
- DSN: Here are the **RSS Level 2 requests in S45**. Level 2 is requested from the earliest pre-cal to the latest EOT, but for bistatic experiments, it is requested from earliest pre-cal to last post-cal:

  1. Rev91 Enceladus Gravity Observation - First Segment
  08 305 0140 0310 0930 0945 DSS-55 CAS TP RSS EN Grav N750
  08 305 0430 0600 0930 0945 DSS-54 CAS RSS EN Grav N748
  (Level 2 from 305/0140 to 305/0930)

  2. Rev91 Enceladus Gravity Observation - Second Segment
  08 305 2345 0115 0355 0410 DSS-34 CAS RSS EN Grav N750
  08 305 0140 0310 0730 0745 DSS-55 CAS TP RSS EN Grav N750
  08 305 0245 0415 0730 0745 DSS-54 CAS RSS EN Grav N748
  (Level 2 from 305/2345 to 306/0730)

  - RSS pass SP_091NA_M34BWG2ND305_SP overlaps start of DSS-54 weekly maintenance by 2.3 hours. RSS is aware and will push for maintenance to shorten or move.

Notes and Liens

Notes:

- Opmodes:
  - OK - Note: RSSKRWAF (full, not slow) being used on DOY 305 and 306. L.Burke edited these in April 2008, so although this opmode technically expires in Rev 86 with the power cutoff of 690.1 W, the predict for DOY 305 and 306 of ~688.8 W is apparently close enough.
- Special Activities:
  - E6 -- Targeted Enceladus flyby

Sequence Liens:

- No liens.
- Standard disclaimer: A waiver may be needed for turns or observation designs near closest approach that require the faster turn rates (for turns >60°). SP manager is aware and concurs.

Segment Checklist p1

Item	Disposition notes, or X if complete
1. Disposition all requests in CIMS - approve all pending requests	X
2. Version the SPASS in CIMS, use label INTEG_FIN, in description put date and your name	X
3. Examine SPASS, ensure opnav & SP turns correctly designated PRIME or NEW WAYPOINT	X
4. Waypoints and downlinks have been checked and are violation free (per CTV)	X
5. SP turns have been checked, have adequate time, and are violation free. All large turns >60 degrees use the slower slew rates as specified by AACS in FR07D145 and include turn margin as specified in the Extended Mission slew margin policy. Exceptions to this rule are specified in FR07D145	X - See p.5 “Sequence Liens” disclaimer
8. There are no more than 3 waypoint changes in a 24 hour period	X
6. The minimum prime instrument request duration outside ±5 hours from a targeted satellite flyby is 30 minutes	X
7. Custom handoffs are limited to the following periods: 1) ±3 hours around a targeted Titan flybys, 2) ±3 hours around a targeted Icy Satellite flyby, and 3) for OPNAVs that precede or follow a Downlink (special case)	Custom period > ±3 hours around EN, but can’t track near C/A to have NAC to EN as waypoint. Teams always return to same pseudo-WP (NAC to EN, -X to Sun) with true RA/Dec WP defined for safing/emergencies. (Ok’d by SP manager)
8. Custom periods designated properly with SPASS notes (n/a for opnavs)	X
9. Custom period requests have “pick up at” and “hand off at” information filled in correctly (n/a for opnavs)	X
10. Multi-revolution turns about the X-axis have an offset greater than or equal to 30 degrees about X	N/A
11. An inertially fixed secondary attitude is used for all downlinks that contain prime and backup OTMs	N/A
12. The secondary axis for downlinks that contain prime and backup OTMs is the same	N/A
13. Downlinks that contain OTPs only roll for the first 4 hours of the downlink pass. OTB- no rolling/SRU	N/A
14. There is one downlink pass block per OTM prime or backup window (one wedding cake for a split pass). Exception - if first split downlink pass is ≤4 hours can use 2 cakes, put playback_gap in 2nd pass	N/A

Segment Checklist p2

Item	Disposition notes, or X if complete
15. Downlinks (attitude/rolling) match XMDL working group plan. Negotiated changes should be reported back to the WG	Original DL matches XMDLWG. Added 02:30 and 02:10 duration DLs during RSS activities to clear data before and after C/A.
16. (guideline) The downlink attitude secondary vectors (and offsets) are mostly the same between RWA biases	N/A
17. Live moveable blocks (LMBs) include the appropriate time margin specified as a DEADTIME request in CIMS at the beginning and end of the moveable block. TLM modes in separate OBSMOV request	N/A
18. Live moveable blocks use an LMB epoch and use the appropriate epoch naming conventions. Live Update Blocks use a LUB epoch	N/A
19. All stellar occultation observations include an additional +/-20 minutes of time (40 minutes total) when they occur within -1 day to +2 days of Saturn periapse	N/A
20. All Ground and Live Moveable blocks associated with non-targeted geometric events (e.g., solar and earth occultations) include an additional +/-20 minutes of time margin (40 minutes total) to account for reference trajectory changes.	N/A
21. Check your GMB, LMB, Occ times against current reference trajectory	X
22. Dual playback of high value science data is performed via multiple playbacks within this segment. CIMS entries are correct. Dual playback does not affect downstream segments	X
23. Run the resource checker in CIMS and fix errors found. Paste remaining notes here with disposition. See p.4 “Notes & Liens” Pointing Notes	X - All resource checker items OK.
24. Run SMT, if SSR not empty at end of segment include in notes, and instances of <0 SSR margin	(see notes page)
25. Examine SMT warnings report, include dispositions here of any items (negative SSR margin already covered)	X - no warnings

Segment Checklist p3

Item	Disposition notes, or X if complete
26. Examine “ap_downlink report check” output, include dispositions here of any items (see next two items).	X
27. List any DSN stations requested during maintenance periods, AND JUSTIFICATION --- See DSN bullet on Notes & Liens page 4. (1) RSS overlap	(see notes page)
28. List your percent 70M stations requested - avoid >35% (ha ha)	4 out of 11 = 36%
29. Examine “ap_downlink report nav” output, MP should ensure NAV OK with gaps in 2way	X
30. In CIMS check for “start before”, “end before”, “start after”, “end after” requests - fix if any problems found	X
31. Verify OPNAVs are in SNER5, sanity check rest of tlm modes	N/A
32. If sequence boundary at START of your segment, ensure IVPGAP info correct, NO “start before” MAPS requests	N/A
33. If sequence boundary at END of your segment (ie in the next segment), ensure 5 “SEQ” upload DSN passes - will probably ripple into preceding segment(s), make sure to notify them. NO “end after” MAPS requests	N/A
34. Verify opmodes correct (RSS and RADAR especially), teams going to sleep have agreed?	X
35. Compare RSS requests to DSN requests, make sure they jive (ORT, occ, etc), ORTs are integrated.	X
36. If conjunction is in your segment, see Conjunction page on SP Wiki	N/A
37. Only 3 AZSCANSs per sequence. Each AZSCAN must be preceded and followed by a RWA bias.	N/A
38. RAMAVOID: new waypoint, NOT in custom period	N/A
39. If on thrusters, confirm deadbands	N/A
40. Segment products & this package linked to XM deliveries page	X