CASSINI SOST SEGMENT

Rev 127 Handoff Package

Segment Boundary 2010-060T19:04:00– 2010-63T05:04:00

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Links to files

Science Highlights

Notes & Liens

Integration Checklist

Links to files

Master TOL (xls, txt):
https://cassini.jpl.nasa.gov/sp/icy/127RH/SOST_127RH_TOL_090807.xls
https://cassini.jpl.nasa.gov/sp/icy/127RH/SOST_127RH_TOL_090807.txt

SPASS (txt, pdf, xls):
https://cassini.jpl.nasa.gov/sp/icy/127RH/SPASS_SOST_127_090805.txt
https://cassini.jpl.nasa.gov/sp/icy/127RH/SPASS_SOST_127_090805.pdf
https://cassini.jpl.nasa.gov/sp/icy/127RH/SPASS_SOST_127_090805.xls

SMT report:
https://cassini.jpl.nasa.gov/sp/icy/127RH/SOST_127RH_090807.rpt
https://cassini.jpl.nasa.gov/sp/icy/127RH/SOST_127RH_090807.warning

DSN:
https://cassini.jpl.nasa.gov/sp/icy/127RH/SOST_127RH_090805_text.txt
https://cassini.jpl.nasa.gov/sp/icy/127RH/SOST_127RH_090805_nav.txt
https://cassini.jpl.nasa.gov/sp/icy/127RH/SOST_127RH_090805_seg.txt
https://cassini.jpl.nasa.gov/sp/icy/127RH/SOST_127RH_090805_faster.txt

Science Highlights

Mar. 1 – Mar. 3, 2010 (DOY 60-62)
We begin S58 with the R2 (rev 127) Rhea flyby at a closest-approach altitude of 100 km. RADAR observes the surface as we approach Rhea, with MAPS prime at C/A and ORS observing as we move away. In addition, this segment includes ORS observations of Enceladus' plume and Helene. UVIS also observes a Saturn occultation.

DOY 60: ISS starts out the segment with seven hours of Enceladus plume observations as part of the ongoing campaign to determine the phase function of the plume and to look for time-variability.

DOY61: ISS continues to observe Enceladus' plume, followed by UVIS FUV and EUV observations of the plume at high phase, and additional ISS observations of the plume. We then turn Cassini for a short downlink pass to clear part of the SSR in preparation for the flyby of Rhea. This is followed by additional ISS observations of the plume.

Approaching Rhea, RADAR performs a raster scan of the moon's surface to obtain simultaneous scatterometry and radiometry measurements. CAPS takes over prime pointing 45 minutes before closest approach to observe the interaction before Rhea and Saturn's magnetosphere. After closest approach, VIMS and CIRS will image Rhea at visible and infrared wavelengths, with CIRS continuing to observe while Rhea goes into eclipse.

Once past Rhea, UVIS observes an egress Saturn occultation.

DOY62: After UVIS finishes observing the occultation, Cassini turns toward Earth to downlink a further portion of data. ISS then images Helene in a "skeet shoot"-style observation due to quickly changing geometries. This will be the best Helene observation of the mission. Finally, Cassini's optical navigation team will take two pictures before turning the spacecraft's high-gain antenna toward Earth to downlink the remaining data.

Notes and Liens

Notes:

- Pointing:
  - VIMS/CIRS handover in custom pd: from email from CIRS (John Pearl) to VIMS (Roger Clark), who agreed.
    You kindly agreed some time ago to spend the last ten minutes of the VIMS observation targeting a CIRS-preferred location. CIRS would like that to be CIRS FP1 to (Lat., Lon.) = (0, 30), with the secondary orientation at NEG_X to NSP. I will put the CIRS pointing preference in the Agreements field of the CIRS request. CIRS would not mind if that location were targeted for longer than ten minutes, but iDigit indicates that NEG_X to NSP is not a radiator-safe secondary until after T18:10 or so.

    CIRS also agreed to provide stare time for VIMS before the eclipse. Eclipse entry is at T19:11. For ten minutes from the start of the CIRS observation at T18:50, CIRS will make small FP1 and FP3 maps around (0, 330) to characterize temperature conditions on the trailing hemisphere. Then CIRS FP1 will stare at (0, 330) until well into the penumbra. Thereafter CIRS will switch back and forth occasionally between (0, 330) and (0, 30) to study the eclipse in both the leading (bright) and trailing (dark) hemispheres.
- Data Volume:
  - 25 Mb of carryover to following segment, which has been approved by Nancy for MAGTWT. -23 Mb margin on the SSR, which is within acceptable limits.
- DSN:
  - No issues
- Opmodes:
  - All good: accommodating ORS, MAPS, and RADAR (and relevant warm-ups)
- Special Activities:
  - CMT management likely necessary during UVIS Saturn solar occ (2010-061T19:11:25 – 22:49:02)

Sequence Liens:

- CRC items that are OK: RADAR WU starts outside GMB absolute timed and ends inside GMB epoch-relative (at RADAR prime start time); OPNAV SSR Data Class is Support Imaging, not OPNAV (new for S58)

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. Prime RSS observations require the Xband to Earth attitude be a waypoint, use DLTURN with spass type New Waypoint	X
4. Waypoints and downlinks have been checked and are violation free (per CTV). NOTE ON ISSUES PAGE if periods of no valid waypoint	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
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)	± 4 hours, 25 minutes due to close flyby
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. Use rolling_sru if required (not using rolling_bias as a default anymore as of 12/08)	X
11. The secondary axis for downlinks that contain prime and backup OTMs is the same, and inertially fixed	n/a
12. Downlinks that contain OTPs only roll for the first 4 hours of the downlink pass max. OTB: 6_hr rolling OK, unless SRU issues, then 4_Hr_Rolling max	n/a
13. 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
14. Downlinks (attitude/rolling) match XMDLWG plan. Negotiated changes should be reported back to the WG	X
15. (guideline) The downlink attitude secondary vectors (and offsets) are mostly the same between RWA biases	n/a

Segment Checklist p2

Item	Disposition notes, or X if complete
16. Multi-revolution turns about the X-axis have an offset greater than or equal to 30 degrees about X	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 (RSS only)	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 – GMB is for a targeted flyby
21. Check your GMB, LMB, LUB, 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	n/a
23. Run the resource checker in CIMS and fix errors found. Paste remaining notes here with disposition	X – CRC items that are OK: RADAR WU starts outside GMB absolute timed and ends inside GMB epoch-relative (at RADAR prime start time); OPNAV SSR Data Class is Support Imaging, not OPNAV (new for S58)
24. Run SMT, if SSR not empty at end of segment include in notes, and instances of <-90 SSR margin	(see notes page)
25. Examine SMT warnings report, include dispositions here of any items (negative SSR margin already covered)	OK: - RADAR losing 5.4 Mb of DV during blind part of warmup in S_N_ER_3

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).	See #27, #28
27. List any DSN stations requested during maintenance periods, AND JUSTIFICATION	n/a
28. List your percent 70M stations requested - avoid >35% (ha ha)	63%
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	X
32. If sequence boundary at START of your segment, ensure IVPGAP info correct, NO “start before” MAPS requests	X
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? Use table at https://cassini.jpl.nasa.gov/wiki/bin/view/Cassini/XMOpModes	X
35. Compare RSS requests to DSN requests, make sure they jive (ORT, occ, etc), ORTs are integrated.	n/a
36. If conjunction is in your segment, see Conjunction page on SP Wiki	n/a
37. Be aware of any AZSCANSs in your segment (only 2 planned in 2009)	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