CASSINI SOST SEGMENT

Rev 246 Handoff Package

Segment Boundary 2016-296T01:01:00 to 2016-298T07:31:00

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Science Highlights

Notes & Liens

Science Highlights

The main objective for ISS in REV 246 is to participate in and support, both as a rider and as a prime observer in a coordinated ORS observation campaign to obtain multi-spectral coverage of a variety of mid- to large-sized icy satellites observed at moderately long-range. More specifically, ISS seeks to obtain NAC color and polarization imaging of the whole disk as well as low-resolution disk-resolved broadband color observations in coordination with other ORS instruments. Especially important will be to obtain overlapping broadband spectral coverage that ties to wavelength overlap with the other ORS instruments. These opportunities focus mainly north polar and mid-latitude coverage of terrains that were poorly illuminated (or not at all) earlier in the mission.

DOY 296:

UVIS_246EN_ICYLON001_PIE Solar phase curves at ultraviolet wavelengths reveal information about the nature and scattering properties of icy surfaces. These observations of Enceladus fill in missing coverage in the global phase / longitude matrix. No ridealongs

ISS_246RH_GLOCOLN002_PRIME This observation provides additional mapping coverage of the North Polar region, plus additional time coverage for CIRS to derive the thermal inertia of the surface. It observes the northern trailing-side part of Rhea from 930000 km altitude at a phase angle of 78 deg. Rhea's diameter is ~270 pxl in north-south direction. CIRS, UVIS, VIMS are in in ridealong.

ISS_246DI_GLOCOLN003_PRIME This observation of Dione offers observations of the North Polar region at moderate phase angles, which are good for mapping composition, morphology and global color. It observes the northern sub-Saturn hemisphere of Dione from ~820000 km distance (Dione size ~228 NAC pxl, NAC resolution ~5 km/pxl). The phase angle is 19 deg, the sub-spacecraft location on the surface +43degN/36degW. CIRS, UVIS, VIMS are in in ridealong.

UVIS_246ST_URZETCEN001_PIE - This is a full radial occultation of the entire ring system by a particularly bright star that allows measurements of structure in the C ring that have not been explored by many occultations. Opportunities for this coverage are rare in the last year of the tour. This occultation will provide valuable information on the long-term variability of small-scale structures throughout the ring system as well as improve our understanding of particle size distributions, clumps, and the evolution of waves in the rings.

ISS_246TE_GLOCOLN004_PRIME This observation offers a nice view of the PacMan feature and Odysseus, as well as the southern polar regions - to build up local time coverage to help understand thermal properties of the surface. Also, the conclusion that there are few “red streaks” in the south polar region of Tethys can be confirmed. It observes the North Pole and Saturn-facing hemisphere over a range that decreases from 703000 km to 664000 km (pixel diameter increasing from 259 to 274 pixels). Especially important is that the phase angle is fairly low (between 10 degrees and 13 degrees, which is valuable both for multi-spectral imaging and for investigating the color-dependence of phase curves for Tethys. CIRS, UVIS, VIMS are in in ridealong.

ISS_246TE_GLOCOLN006_PRIME Continuing the coverage of the trailing hemisphere of Tethys, with the other ORS instruments in ridealong. ISS views the leading-hemisphere of Tethys from 465000 km and 51-deg phase. Toward the end of the observation, Tethys is observed from a range of 423000 km at 61-deg phase. Odysseus is near the illuminated limb and the region eastward is plainly visible. Over the observation, the diameter of Tethys increases from 392-430 pixels.

CIRS_246MI_COMPGLBL001_PRIME This observation continues mapping pacmen and other thermal anomalies on Mimas, as well as building up local times to understand the thermal inertia. Closest approach will be at 176000 km altitude (~1.1 km/pxl; Mimas diameter ~360 to 390 pxl in the NAC) over the anti-Saturn/trailing hemisphere just west of crater Herschel. ISS, CIRS, UVIS, VIMS are in in ridealong.

DOY 297:

CIRS_246RI_TDIFSOUTH001_PIE - The timing of this CIRS observation of Saturn's rings was chosen so that the observation geometry mirrors that of the corresponding CIRS_246RI_TDIFNORTH001_PIE observation on DOY 294. The phase and elevation angles of the rings will be the same, but CIRS_246RI_TDIFSOUTH001_PIE will focus on the unlit side of the rings. By comparing such scans, CIRS scientists hope to constrain how thermal energy is transported between the lit and unlit sides of the rings. This, in turn, has implications for the overall dynamics of Saturn's ring particles.

ISS_246DI_PLUMESEAR001_PRIME Dione shows several lines of evidence that it is currently exhibiting a low level of activity. One of the ways of detecting this activity is to observe plumes at large solar phase angles, when the plumes are backlit. During the observation, the range to Dione shrinks from 502000 to 582000 km, resulting in spatial resolutions of 3.1 to 3.5 km/pxl (NAC). The phase angle increases from 148 deg to 165 deg. Sub-spacecraft point is at ~37 deg South latitude / 33 deg West longitude. The eastern limb of Dione coincides with the wispy-streak terrain on the trailing side. Saturnshine will limit the exposure durations. The other ORS instruments are in ridealong.

CIRS_246RH_COMPGLBL001_PRIME This observation is meant to search for thermal anomalies on Rhea and derive its thermal inertia. CIRS, UVIS, VIMS are in in ridealong.

Notes & Liens

- Pointing:
  - CIRS_246MI_COMPGLBL001_PRIME has 67 degrees target motion over 7.5 hours (see SPLAT items)
  - All designs filled out SOST observation checklist

- Data Volume:
  - 333 Mb carryover to XD, OK with them.

- DSN:
  - No Level 3 requests.
  - 50% 70M stations (1 of 2)

- Resource checker:
  - Ignore complaint about waypoint change (DLTURN) during a custom period, this RC is to be deleted

SP	2016-297T20:56:00	SP_246EA_DLTURN297_PRIME	Waypoint change cannot occur during a Custom Period	Remove waypoint change from custom period or LMB

- Opmodes:
  - None

- Hydrazine:
  - N/A

- Special Activities:
  - None

- **Sequence Liens (should all be SPLAT items):**
  - **One for the target motion during** CIRS_246MI_COMPGLBL001_PRIME