Subject: Rev 266 Rings Occultation Completed

Date: Wednesday, March 22, 2017 at 4:33:28 PM Pacific Daylight Time

From: Anabtawi, Aseel (332K)

To: RSS@cdsa.jpl.nasa.gov

Dear All,

The Rev 266 rings occultation took place today (March 22/DOY 095-096) and was covered by Canberra's DSS-43 and DSS-35. DSS-43 provided the uplink throughout.

The 2-hr thermal stabilization period that preceded the observation was while the spacecraft was Earth-pointed. We used that time to check the pointing at both antennas. At DSS-43, we enabled Conscan for about 45 minutes. The offsets were small and were cleared when Conscan was disabled. As for DSS-35, the station enabled Monopulse soon after Ka-band was turned on and no jump in power was observed (an indication that the pointing model, which was updated prior to the experiment, was good). However, the Network Operations Analyst (NOA) reported that his displays were showing a potential issues with Monopulse and that it may not be working properly. We asked the station to switch to another receiver (#6) and saw no improvement in Ka-band signal power. The station rebooted the first receiver (#9) and switched back to it, and again, there was no improvement. We asked the station to disable Monopulse, enable Conscan on X-band, and re-enable Monopulse, and still no change, so we cleared the Conscan offsets. The station re-enable Monopulse and the Ka-band signal was stable and the power levels were as expected, so Monopulse appeared to be working properly even though the displays continued to show a potential issue (the NOA explained that the issue is with 20% of data going from the receiver to the antenna being discarded and the antenna rejecting these data). A Discrepancy Report (DR #C112607) was opened to document the issue, but we don't believe that it was of impact to the data quality.

The rings occultation completed nominally. The DST intermittently lost lock twice during ring B: The first was for a couple of seconds, and the second for about two minutes.

The end of the rings occultation was mixed with atmosphere. Since we had no limb track maneuver planned and no compensation for the atmospheric Doppler, the signals started to drift when we reached the top of the Troposphere. The X- and Ka-band signals drifted outside the open-loop 1 KHz recording bandwidth. As expected, we lost the Ka-band signal first and then X-band. The S-band 2-way signal continued for a while, and at around 2210, we lost it.

The DSS-43 baseline recordings showed X-band spurs at +/- 180 and +/- 300 Hz from the carrier. We've observed similar spurs in the past, and they've also been reported by Essam.

We are in the process of playing back the data. We'll let you know when they are available.

Regards,
Aseel