

Day 288 (10/15/18)

Status Summary:

All instruments are nominal and powered off. AAM-2 was executed this morning; the post-burn status meeting is occurring today. Today's Daily Phase Function and OpNav images, as well as all data from last week's activities, were received on the ground before the maneuver.

During the downlink on Sunday (DOY 287), the SPOC database experienced a 2-hour outage, causing processing of OpNav images to stall. Seven of the OpNav images were processed before the outage; the rest were processed once the database was back online. We initiated a replay for the full HGA pass to fill in any remaining gaps. PFR-31 has been opened for this issue. Delay of the OpNav images, which were criticality-5, did not have a negative effect on the OpNav team's operations (they were notified of the issue and informed the SPOC personnel that they did not plan to process the images until Monday morning).

Bashar Rizk gave an update on OCAMS data. Bennu has transitioned from a point source to an extended object in the PolyCam field of view, reaching almost four pixels wide over the weekend. Data as of today appear to agree with expectations—in particular, today's measurement of pixel width versus DN/sec very closely matches predictions. The data indicate that we do not need to alter our planned exposure times.

The REXIS team reported on last week's CXB calibration activity. A transient voltage violation caused an unexpected alarm; the team will look into it, but it is not a cause of immediate concern; the rest of the data do not appear degraded. The instrument unexpectedly captured Sco X-1, a bright x-ray source. Iron-55 peaks in last week's data are somewhat offset from those in L+22 data, the reason for which is under exploration—but it can be corrected in processing. See the slides for details.

Looking ahead: Tomorrow (16 October, DOY 299), we will collect 755 images for part 2 of the MapCam Full Rotation Phase Function activity; we will also collect OpNav images using MapCam for the first time. On Wednesday (17 October, DOY 290), SMM-3 will be executed, followed by deployment of the TAGSAM cover; after a 12-hour cool-down, SMM-4 will help confirm that the cover has in fact deployed. MapCam will collect OpNav and Daily Phase Function images Wednesday; we will transition back to PolyCam OpNav and MapCam Daily Phase Function on the subsequent days of the week. The C1 contingency burn opportunity for AAM-2 (Friday 19 October, DOY 292) is not needed.

There are scheduled passes every day this week. Some passes will be short, and time for science data transmission during Wednesday's pass will be limited by the cover deployment activity; however, there are no data volume concerns.

Day 289 (10/16/18)

Status Summary:

All instruments are green. OCAMS is powered on. No updates to DSN equipment status.

Yesterday's AAM-2 was successful, with very small errors. The C1 and C2 contingency burns are not needed. The team is assessing whether to perform AAM-2A, which would take place Monday (22 October, DOY 295).

All of today's MapCam OpNav images and about half of today's MapCam Full Rotation Phase Function images have been received on the ground.

[PFR-31](#) has been opened regarding the SPOC database ingest issue that occurred during Sunday's downlink.

Bashar Rizk noted that Bennu is now 1 pixel wide in MapCam's view and will ramp up to 5 pixels wide next week.

Looking ahead: Tomorrow (17 October, DOY 290), we will execute the pre-cover-opening sample mass measurement, SMM-3. This will be followed by OpNav and Daily Phase Function image collection (both with MapCam), then the TAGSAM cover deployment. The cover deployment will occur during the HGA pass; no science data will be transmitted during that activity. On Thursday (18 October, DOY 291), we will execute the post-cover-opening sample mass measurement, SMM-4, followed by MapCam Daily Phase Function and PolyCam OpNav. All data should be down by the end of Thursday's pass.

Daily downlink, SOPG, and Science Weekly meetings are being recorded to help with capturing the minutes.

Day 290 (10/17/18)

Status Summary:

All instruments are green. OCAMS is powered on. No updates to DSN equipment status.

Part 2 of the MapCam Full Rotation Phase Function activity was completed yesterday. 577 of the 755 images are down.

SMM-3 and the TAGSAM cover deployment were executed today. Initial telemetry data indicate that the cover deployment sequence executed exactly as expected. SMM-4 will confirm the successful deployment tomorrow.

MapCam Daily Phase Function and OpNav images were collected today. The latter are critical and have been received on the ground.

Today's and tomorrow's passes are short, limiting the amount of science data that we can bring down, but we will have longer passes through the weekend. The OCAMS partition is currently at 17% and will be at 20% at the end of tomorrow's pass. All data should be down by the end of the pass on Friday.

Bashar Rizk presented MapCam data. Bennu is now more than 1 pixel wide in the MapCam view. The most recent data appear to show that the asteroid is darker than predicted, but we also saw this temporarily in the PolyCam data at the transition from point source to extended object. As Bennu widens further in the MapCam view, we'll be better able to evaluate how well the observations and predictions match.

Mike Nolan reported that Mike Moreau expects that with our current trajectory, we will get to a phase angle of 1 degree; this will be discussed at tomorrow's Science Weekly meeting.

Looking ahead: Tomorrow (Thursday 18 October, DOY 291), we will execute the post-cover-opening sample mass measurement, SMM-4. We will have PolyCam OpNav with ride-along MapCam Daily Phase Function each day through the end of the week.

Day 291 (10/18/18)

Status Summary:

All instruments are green. OCAMS is powered on. No updates to DSN equipment status.

SMM-3 and the TAGSAM cover deployment were executed yesterday. SMM-4 was executed today; the expected amount of weight appears to have been lost, indicating that the cover deployment was successful.

We collected MapCam Daily Phase Function images and transitioned back to PolyCam OpNav today. The 18 OpNav images have been received on the ground. 613 of the 755 Full Rotation Phase Function images (collected Tuesday) are on the ground. The partition may drain tomorrow, or if not, the last few images will come down Saturday.

Owing to an error in the implementation process, we will have an extra Natural Satellite Search on DOY 299 (26 October). There are no spacecraft safety concerns. The extra 580 images will push imaging into the overflow partition, but all data are expected to be down by the end of WOY 43. To provide additional assurance that the data will be brought to the ground successfully, the DSN data criticality has been upgraded to 4. To prevent the error from occurring again, an extra step will be added to the flight activity validation process at multiple levels. An ISA will be opened.

Following up on his presentation at this morning's Science Weekly meeting, Bashar Rizk noted that the second observation of the asteroid's surface is in line with predictions, indicating that we do not need to rework planned sequences.

Looking ahead: PolyCam OpNav and MapCam Daily Phase Function will continue through the end of the week. We have long passes for Saturday and Sunday and expect to drain the partition each day. Next week includes the Natural Satellite Search and the TAGSAM arm deployment.

Day 292 (10/19/18)

Status Summary:

All instruments are green. OCAMS is powered on.

We have received all images from this week on the ground, with the exception of 10 frames (a small enough amount of data that the partition registers as empty). Those frames will come down during tomorrow's pass, after OpNav but before Daily Phase Function images.

Several alarms occurred this morning owing to corruption of an uplinked file. The file was sent up again during the pass and arrived intact. ISA-6478 has been opened.

Bashar Rizk showed PolyCam imagery from today, unrotated and rotated about 255 degrees. In the rotated image, the asteroid appears asymmetrical, with the side facing away from the Sun apparently more arcuate, but the image is not resolved sufficiently for interpretation. Imaging data continue to indicate that our planned exposure times do not require an update.

Mike Nolan has created a new Planetary Constant Kernel based on the lightcurve data, which may be pushed through next week, pending review by the AltWG (per our process; this is an AltWG-designated product). AltWG and FDS would be the primary consumers of this product because it feeds into stereophotoclinometry.

Looking ahead: PolyCam OpNav and MapCam Daily Phase Function continue through the weekend, with HGA passes each day. Next week includes the Natural Satellite Search (500+ PolyCam images per observation) and the TAGSAM arm deployment.