OSIRIS-REx spacecraft in good health after testing its thrusters

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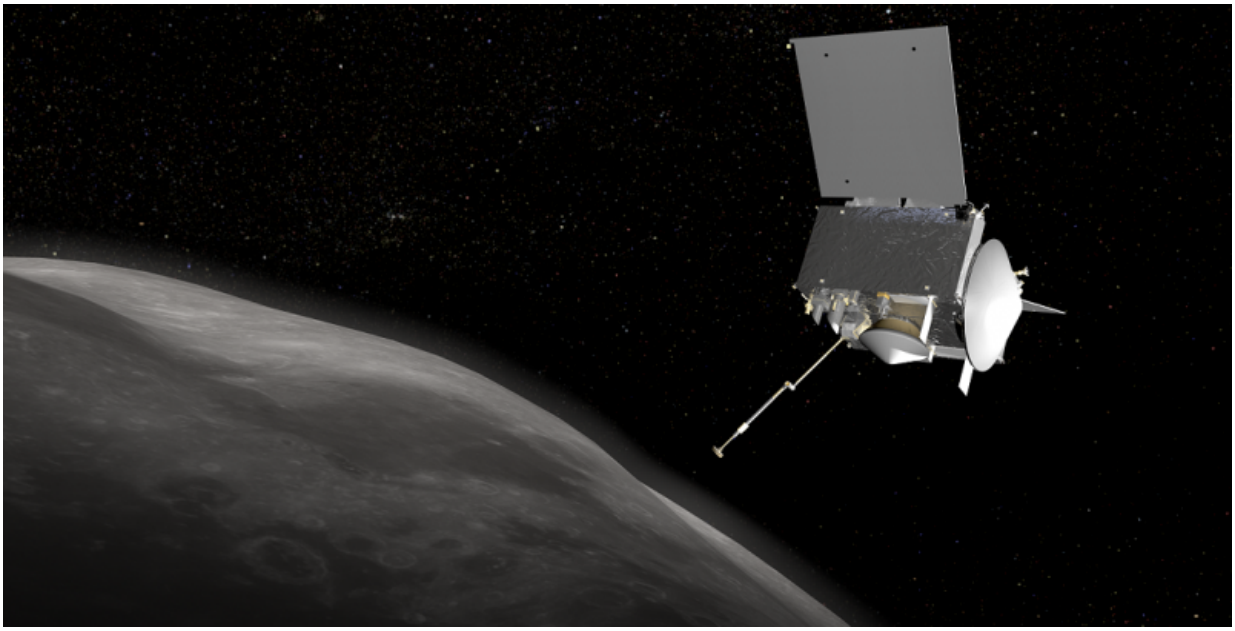

Credit: Astrowatch.net

NASA's OSIRIS-REx spacecraft continues its so far flawless journey to asteroid Bennu, after successfully completing its first trajectory correction maneuver (TCM-1) on Oct. 7. According to the mission's deputy principal investigator, the probe is currently in good health and all of its instruments are working properly.

"The spacecraft, which is now in outbound cruise phase, is in good

health. All five science instruments were powered on and passed their initial checks the week of Sept. 19. We received data back from each of them as expected and captured our first images of star fields from the OSIRIS-REx Camera Suite (OCAMS)," Heather Enos, OSIRIS-REx's Deputy Principal Investigator at the University of Arizona, told Astrowatch.net.

Launched atop an Atlas V booster on Sept. 8, 2016, the Origins, Spectral Interpretation, Resource Identification, Security, Regolith Explorer (OSIRIS-REx) spacecraft is on track for its rendezvous with the asteroid Bennu in August 2018. Besides thoroughly studying Bennu, the mission has an ambitious goal of returning a pristine sample of the asteroid to Earth in 2023 for detailed analysis.

In the second half of September, the mission team was busy checking the spacecraft's instruments. The set of tests started on Sept. 19 with OCAMS, when it was powered on, allowing the controllers to conduct a test sequence with no issues. Next, the OSIRIS-REx Laser Altimeter (OLA), fired its laser and all telemetry received from this instrument was obtained as expected.

On Sept. 20, data from the OSIRIS-REx Visible and Infrared Spectrometer (OVIRS) and the OSIRIS-REx Thermal Emissions Spectrometer (OTES), acquired during the checkout, showed that the instruments were healthy. Next, the Regolith X-ray Imaging Spectrometer (REXIS) passed its functional test with no problems. And finally, on Sept. 22, the Touch and Go Camera System (TAGCAMS) navigational camera was powered on and operated as expected.

"On Sept. 22, OSIRIS-REx also switched on the Touch and Go Camera System (TAGCAMS) to demonstrate proper operation in space. TAGCAMS is composed of two navigation cameras, called NavCams, and one color camera called StowCam. The StowCam portion of the

system, which will document proper stowage of the asteroid sample once it is collected in 2020, captured a great image of the spacecraft's Sample Return Capsule," Enos said.

With all the instruments working as expected, OSIRIS-REx was ready for its crucial first trajectory correction maneuver (TCM-1) scheduled for Oct. 7. The 12-second-long maneuver that began at 1:00 p.m. EDT was planned to slightly adjust the spacecraft's trajectory towards Bennu.

However, due to the fact that the Atlas V launcher has accurately inserted the probe into the right orbit, the correction was unnecessary. Therefore, the controllers used this maneuver to test the TCM thrusters, practicing before next maneuver scheduled for December 2016.

"This maneuver was originally included in the flight plan to fine-tune the spacecraft's trajectory, if needed, after launch. But our rocket—a ULA Atlas V 411 – performed so accurately that we really didn't need to adjust the spacecraft's trajectory. Instead, the team used TCM-1 to test out the TCM thrusters and as practice for a much larger propulsive maneuver scheduled for December," Enos said.

The maneuver in December will fire the spacecraft's main engine (ME) thrusters to target the probe for its Earth gravity assist scheduled for Sept. 22, 2017. This fly-by of Earth will provide OSIRIS-REx an additional boost to increase its orbital inclination and sling it into space for a rendezvous with asteroid Bennu.

"If things continue the way they have been going since launch, it should be smooth sailing to Bennu. Our next big milestone is our first deep space maneuver, scheduled for December, which will put us on course for our Earth Gravity Assist on Sept. 22, 2017," Enos concluded.

The spacecraft is now about 10 million miles (16 million kilometers)

from Earth. It currently travels towards Bennu at a velocity of about 26 miles per hour (11.6 meters per second).

Source: Astrowatch.net