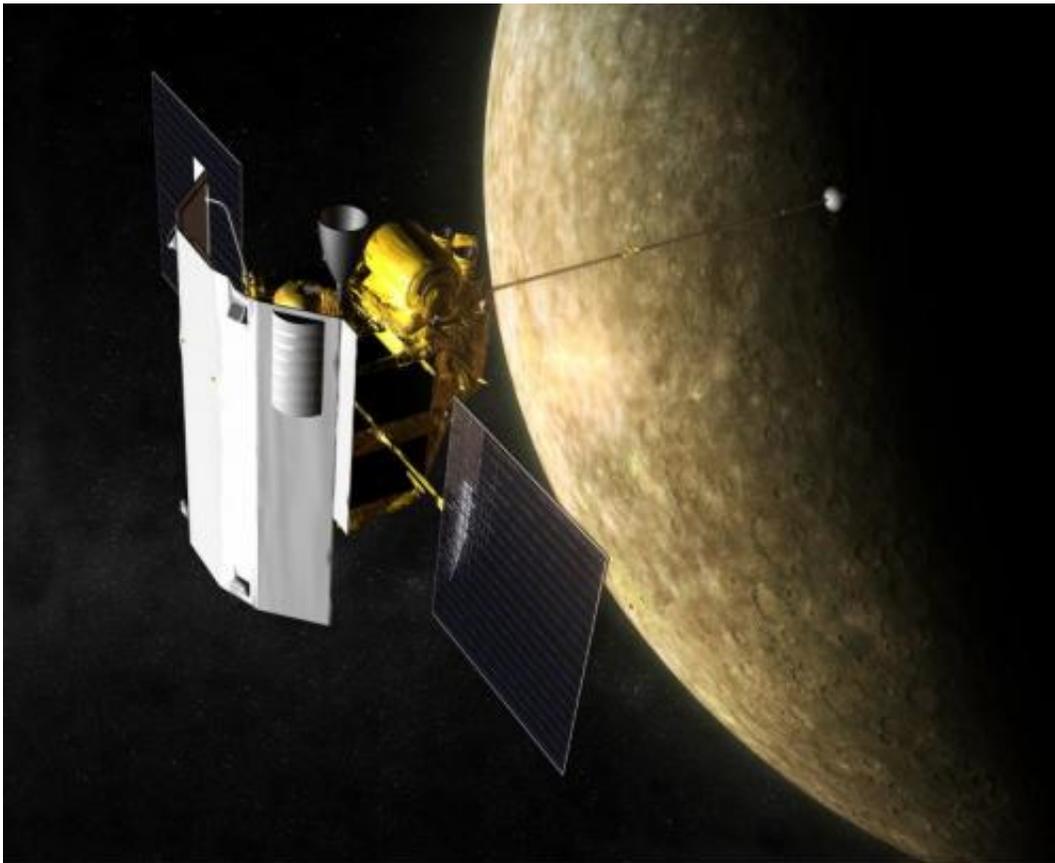


Planned maneuver further extends MESSENGER orbital operations

April 4 2015



Artist depiction of the MESSENGER spacecraft in orbit around Mercury.
Credit: NASA / JHU/APL

MESSENGER mission controllers at the Johns Hopkins University Applied Physics Laboratory (APL) in Laurel, Md., conducted a

maneuver yesterday to raise the spacecraft's minimum altitude sufficiently to extend orbital operations and further delay the probe's inevitable impact onto Mercury's surface.

The previous [maneuver](#), completed on March 18, raised MESSENGER to an altitude at closest approach from 11.6 kilometers (7.2 miles) to 34.4 kilometers (21.4 miles) above the planet's surface. Because of progressive changes to the orbit over time in response to the gravitational pull of the Sun, the spacecraft's minimum altitude continued to decrease.

At the time of yesterday's maneuver, MESSENGER was in an orbit with a closest approach of 5.5 kilometers (3.4 miles) above the surface of Mercury. With a velocity change of 2.96 meters per second (6.63 miles per hour), four of the spacecraft's 12 smallest monopropellant thrusters nudged the spacecraft to an orbit with a closest approach altitude of 27.5 kilometers (17.1 miles). This maneuver also increased the spacecraft's speed relative to Mercury at the maximum distance from Mercury, adding about 1.2 minutes to the spacecraft's eight-hour, 17.6-minute orbit period.

The second orbit-correction maneuver (OCM) in MESSENGER's low-altitude hover campaign, also called the extension of the second extended mission, OCM-14 is the first propulsive course correction since December 2006 to use the two small thrusters that point sunward from the sunshade center panel. This view shows MESSENGER's orientation at the start of the maneuver.

MESSENGER was 200.6 million kilometers (124.6 million miles) from Earth when the 6.7-minute maneuver began at about 4:30 p.m. EDT. Mission controllers at APL verified the start of the maneuver 11.2 minutes later, after the first signals indicating spacecraft thruster activity reached NASA's Deep Space Network tracking station in Goldstone, Calif. The next maneuver, on April 6, will again raise the spacecraft's

minimum altitude, allowing scientists to continue to collect images and data from MESSENGER's instruments. The 3.8 days between OCM-14 and OCM-15 will be the shortest time between any two MESSENGER maneuvers.

Provided by NASA

Citation: Planned maneuver further extends MESSENGER orbital operations (2015, April 4) retrieved 19 April 2024 from <https://phys.org/news/2015-04-maneuver-messenger-orbital.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.