

Juno's two Deep Space Maneuvers are 'back-to-back home runs'

September 18 2012, by Maria Martinez



A computer-generated image depicts NASA's Juno spacecraft firing its main engine. Credit: NASA/JPL-Caltech

(Phys.org)—NASA's Juno spacecraft successfully executed a second Deep Space Maneuver, called DSM-2 last Friday, Sept. 14. The 30 minute firing of its main engine refined the Jupiter-bound spacecraft's trajectory, setting the stage for a gravity assist from a flyby of Earth on

Oct 9, 2013. Juno will arrive at Jupiter on July 4, 2016.

The maneuver began at 3:30 p.m. PDT (6:30 p.m. EDT), when the Leros-1b main engine began to fire. The burn ended at 4 p.m. PDT (7 p.m. EDT). Based on telemetry, the Juno project team believes the burn was accurate, changing the spacecraft's velocity by about 867 mph (388 meters a second) while consuming about 829 pounds (376 kilograms) of fuel.

The burn occurred when Juno was more than 298 million miles (480 million kilometers) from Earth.

Juno executed its first deep space maneuver (DSM-1), one of comparable duration and [velocity change](#), on Aug. 30. Together, both maneuvers placed Juno on course for its [Earth flyby](#), which will occur as the spacecraft is completing one [elliptical orbit](#) around the sun. The Earth flyby will boost Juno's velocity by 16,330 mph (about 7.3 kilometers per second), placing the spacecraft on its final [flight path](#) for Jupiter. The closest approach to Earth, on Oct. 9, 2013, will occur when Juno is at an altitude of about 348 miles (560 kilometers).

"It feels like we hit back-to-back home runs here with the near-flawless [propulsion system](#) performance seen during both DSM-1 and DSM-2." said Juno Project Manager Rick Nybakken of NASA's Jet Propulsion Laboratory in Pasadena, Calif. "These successes move us closer to being ready for our most critical mission event, the Jupiter Orbit Insertion main engine burn in July 2016. We're not in the playoffs yet, as that will come in 2016 when we arrive at Jupiter, but it does feel fantastic to have hit both of these DSMs out of the park."

Juno was launched on Aug. 5, 2011. Once in orbit, the spacecraft will circle Jupiter 33 times, from pole to pole, and use its collection of eight science instruments to probe beneath the gas giant's obscuring cloud

cover. Juno's science team will learn about Jupiter's origins, structure, atmosphere and magnetosphere, and look for a potential solid planetary core.

Juno's name comes from Greek and Roman mythology. The god Jupiter drew a veil of clouds around himself to hide his mischief, and his wife, the goddess [Juno](#), was able to peer through the clouds and reveal Jupiter's true nature.

More information: More information about Juno is online at www.nasa.gov/juno and missionjuno.swri.edu .

Provided by NASA

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