

# Course excellent, adjustment postponed

December 2 2011, By Guy Webster

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This artist concept features NASA's Mars Science Laboratory Curiosity rover, a mobile robot for investigating Mars' past or present ability to sustain microbial life. Credit: NASA/JPL-Caltech

Excellent launch precision for NASA's Mars Science Laboratory mission has forestalled the need for an early trajectory correction maneuver, now not required for a month or more.

That first of six planned course adjustments during the 254-day journey from Earth to [Mars](#) had originally been scheduled for 15 days after the mission's Nov. 26 launch on a United Launch Alliance [Atlas V](#) rocket. Now, the correction maneuver will not be performed until later in December or possibly January.

"This was among the most accurate interplanetary injections ever," said Louis D'Amario of NASA's Jet Propulsion Laboratory, Pasadena, Calif.

He is the mission design and navigation manager for the Mars [Science Laboratory](#).

Engineers deliberately planned the spacecraft's initial trajectory to miss Mars by about 35,000 miles (56,400 kilometers). This precaution protects Mars from Earth's microbes, because the Centaur upper stage of the launch vehicle, which is not thoroughly cleaned the way the spacecraft is, leaves Earth on the same trajectory as the spacecraft. The planned trajectory ensures that the Centaur will not hit Mars.

The launch put the spacecraft on an actual trajectory missing Mars by about 38,000 miles (61,200 kilometers). Planned trajectory correction maneuvers will put the spacecraft on course and on timing to land at Mars' Gale Crater on Aug. 6, 2012, Universal Time (evening of Aug. 5, Pacific Daylight Time).

The spacecraft experienced a computer reset on Tuesday apparently related to star-identifying software in the attitude control system. The reset put the spacecraft briefly into a precautionary safe mode. Engineers restored it to normal operational status for functions other than attitude control while planning resumption of star-guided attitude control.

Also on Tuesday, thrusters were used as planned to slow the spacecraft's rotation rate from 2.5 rotations per minute to 2.05 rotations per minute. Telecommunications are active at a downlink rate of 25 kilobits per second. Electrical output from the cruise stage solar array is 800 watts. Thrusters warmed by catalytic bed heaters were originally warmer than expected, but use of the heaters has been reduced to keep the thrusters at intended temperatures.

As of 9 a.m. PST (noon EST) on Friday, Dec. 2, the [spacecraft](#) will have traveled 10.8 million miles (17.3 million kilometers) of its 352-million-

mile (567-million-kilometer) flight to Mars, and will be moving at 7,500 mph (12,000 kilometers per hour) relative to Earth and at 73,800 mph (118,700 kilometers per hour) relative to the sun.

The Mars Science Laboratory mission will use its car-size rover, Curiosity, to investigate whether the selected region on Mars has offered environmental conditions favorable for supporting microbial life and favorable for preserving clues about whether life existed.

JPL, a division of the California Institute of Technology in Pasadena, manages the Mars Science Laboratory mission for the [NASA](#) Science Mission Directorate, Washington.

Provided by JPL/NASA

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