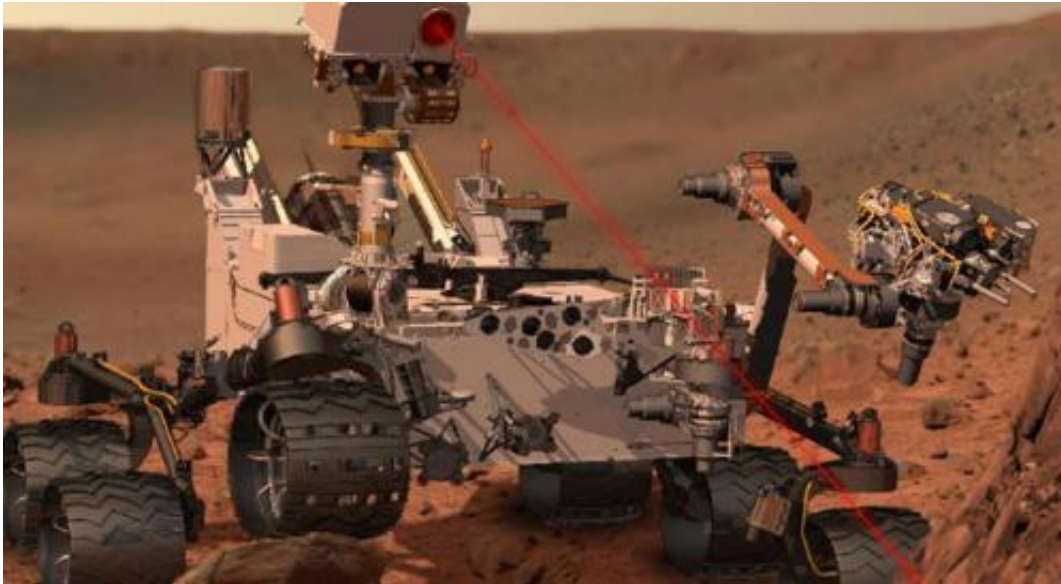


Mars science laboratory launch milestones

November 24 2011



This artist's concept depicts the rover Curiosity, of NASA's Mars Science Laboratory mission, as it uses its Chemistry and Camera (ChemCam) instrument to investigate the composition of a rock surface. ChemCam fires laser pulses at a target and views the resulting spark with a telescope and spectrometers to identify chemical elements. The laser is actually in an invisible infrared wavelength, but is shown here as visible red light for purposes of illustration.

(PhysOrg.com) -- NASA's Mars Science Laboratory is tucked inside its Atlas V rocket, ready for launch on Saturday, Nov. 26, 2011 from Cape Canaveral Air Force Station in Florida. The Nov. 26 launch window extends from 7:02 a.m. to 8:45 a.m. PST (10:02 a.m. to 11:45 a.m. EST). The launch period for the mission extends through Dec. 18.

The [spacecraft](#), which will arrive at Mars in August 2012, is equipped with the most advanced rover ever to land on another planet. Named Curiosity, the rover will investigate whether the landing region has had environmental conditions favorable for supporting [microbial life](#), and favorable for preserving clues about whether life existed.

On Nov. 26, NASA Television coverage of the launch will begin at 4:30 a.m. PST (7:30 a.m. EST). Live launch coverage will be carried on all NASA [Television channels](#). For NASA Television downlink information, schedule information and streaming video, visit: www.nasa.gov/ntv . The launch coverage will also be streamed live on Ustream at www.ustream.tv/nasa/jpl .

If the spacecraft lifts off at the start of the [launch window](#) on Nov. 26, the following milestones are anticipated. Times would vary for other launch times and dates.

Launch

--The rocket's first-stage common core booster, and the four [solid rocket](#) boosters, will ignite before liftoff. Launch, or "T Zero", actually occurs before the rocket leaves the ground. The four solid [rocket boosters](#) jettison at launch plus one minute and 52 seconds.

Fairing Separation

--The nose cone, or fairing, carrying Mars Science Laboratory will open like a clamshell and fall away at about three minutes and 25 seconds after launch. After this, the rocket's first stage will cut off and then drop into the Atlantic Ocean.

Parking Orbit

--The rocket's second stage, a Centaur engine, is started for the first time at about four minutes and 38 seconds after launch. After it completes its first burn of about 7 minutes, the rocket will be in a parking orbit around Earth at an altitude that varies from 102 miles (165 kilometers) to 201 miles (324 kilometers). It will remain there from 14 to 30 minutes, depending on the launch date and time. If launch occurs at the beginning of the launch Nov. 26 launch window, this stage will last about 21 minutes.

On the Way to Mars

-- The second Centaur burn, continuing for nearly 8 minutes (for a launch at the opening of the Nov. 26 launch window), lofts the spacecraft out of Earth orbit and sends it toward Mars.

Spacecraft Separation

--Mars [Science Laboratory](#) will separate from the rocket that boosted it toward Mars at about 44 minutes after launch, if launch occurs at the opening of the Nov. 26 window. Shortly after that, the separated Centaur performs its last task, an avoidance maneuver taking itself out of the spacecraft's flight path to avoid hitting either the spacecraft or Mars.

Sending a Message of Good Health

--Once the spacecraft is in its cruise stage toward Mars, it can begin communicating with Earth via an antenna station in Canberra, Australia, part of NASA's Deep Space Network. Engineers expect to hear first contact from the spacecraft at about 55 minutes after [launch](#) and assess the spacecraft's health during the subsequent 30 minutes. The spacecraft will arrive at the Red Planet Aug. 6, 2012, Universal Time (evening of Aug. 5, 2012, PDT).

Provided by JPL/NASA

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