

NASA probes hit moon twice (Update 2)

October 9 2009



This artist's rendering provided by NASA via Brown University shows the Centaur upper stage rocket separating from its shepherding spacecraft on a trajectory toward the moon. On Friday, Oct. 9, 2009, NASA will crash the Lunar Crater Observation and Sensing Satellite, or LCROSS, into a crater on the moon's south pole to search for evidence of water ice. (AP Photo/NASA)

NASA's Lunar Crater Observation and Sensing Satellite, or LCROSS, created twin impacts on the moon's surface early Friday in a search for water ice. Scientists will analyze data from the spacecraft's instruments to assess whether water ice is present.

The satellite traveled 5.6 million miles during an historic 113-day mission that ended in the Cabeus crater, a permanently shadowed region

near the moon's south pole. The spacecraft was launched June 18 as a companion mission to the Lunar Reconnaissance Orbiter from NASA's Kennedy Space Center in Florida.

"The [LCROSS](#) science instruments worked exceedingly well and returned a wealth of data that will greatly improve our understanding of our closest celestial neighbor," said Anthony Colaprete, LCROSS principal investigator and project scientist at NASA's Ames Research Center in Moffett Field, Calif. "The team is excited to dive into data."

In preparation for impact, LCROSS and its spent Centaur upper stage rocket separated about 54,000 miles above the surface of the [moon](#) on Thursday at approximately 6:50 p.m. PDT.

Moving at a speed of more than 1.5 miles per second, the Centaur hit the lunar surface shortly after 4:31 a.m. Oct. 9, creating an impact that instruments aboard LCROSS observed for approximately four minutes. LCROSS then impacted the surface at approximately 4:36 a.m.

"This is a great day for science and exploration," said Doug Cooke, associate administrator for the Exploration Systems Mission Directorate at NASA Headquarters in Washington. "The LCROSS data should prove to be an impressive addition to the tremendous leaps in knowledge about the moon that have been achieved in recent weeks. I want to congratulate the LCROSS team for their tremendous achievement in development of this low cost [spacecraft](#) and for their perseverance through a number of difficult technical and operational challenges."

Other observatories reported capturing both impacts. The data will be shared with the LCROSS science team for analysis. The LCROSS team expects it to take several weeks of analysis before it can make a definitive assessment of the presence or absence of water ice.



Image of the Centaur separation as viewed from the infrared camera. LCROSS Centaur Separation occurred at 9:50 p.m. EDT (6:50 p.m. PDT), Oct. 8. After separation, the spacecraft performed a 180 degree pitch maneuver (turning around) to reorient the LCROSS science payload towards the receding Centaur.
Credit: NASA

"I am very proud of the success of this LCROSS mission team," said Daniel Andrews, LCROSS project manager at Ames. "Whenever this team would hit a roadblock, it conceived a clever work-around allowing us to push forward with a successful mission."

The images and video collected by the amateur astronomer community and the public also will be used to enhance our knowledge about the moon.

"One of the early goals of the mission was to get as many people to look at the LCROSS impacts in as many ways possible, and we succeeded," said Jennifer Heldmann, Ames' coordinator of the LCROSS observation campaign. "The amount of corroborated information that can be pulled out of this one event is fascinating."

"It has been an incredible journey since LCROSS was selected in April 2006," said Andrews. "The LCROSS Project faced a very ambitious schedule and an uncommonly small budget for a mission of this size. LCROSS could be a model for how small robotic missions are executed. This is truly big science on a small budget."

More information: NASA's LCROSS site: <http://www.nasa.gov/lcross>

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