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Craft kicked up debris on moon after all

David Perlman, Chronicle Science Editor

Saturday, October 17, 2009

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The spacecraft that bombed the moon in search of water last week may have failed to raise the towering plume of dust and rocks that sky watchers had hoped for, but the impact did create a broad pile of fine lunar debris and vapor, scientists reported Friday.

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As a result, they said, the nine instruments aboard the LCROSS spacecraft registered huge quantities of "tantalizing" data from the experiment that will keep them working for months.

"We were blown away by the data returned," said Anthony Colaprete, the mission's chief scientist, in a report from the NASA Ames Research Center in Mountain View, where the flight was conceived and operated.

The empty two-ton Centaur rocket was sent crashing by the Lunar Crater Observation and Sensing Satellite into the 60-mile-wide target crater named Cabeos near the lunar South Pole at 4:31 a.m. on Oct. 9.

The impact created a crater 92 feet wide inside Cabeos and caused a brief flash of light - probably from sodium - that lasted only a second or two. The

flash was picked up by two LCROSS cameras and other instruments transmitted reams of other data back to Earth, Colaprete and the mission scientists reported.

About 10 seconds after the impact, Colaprete said, instruments showed that the dust and debris from the crash had spread as far as 5 miles across the crater floor. But it did not rise high enough to be detected immediately.

The plume of debris would have had to climb about three-quarters of a mile out of the shadow of Cabeos crater's wall into sunlight for that to happen, Colaprete said in an e-mail.

The LCROSS itself crashed into the same crater four minutes after the Centaur's impact, right on schedule, while its companion spacecraft, the Lunar Reconnaissance Orbiter, was flying in lunar orbit 50 miles above the site to gather still more data.

"The impact resulted in significant local heating of the lunar surface," scientists reported after analyzing data they gathered from the infra-red camera, code-named

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Telescopes at 19 major astronomical observatories from New Mexico to Hawaii were watching for a high-altitude debris plume rising from the moon when the Centaur rocket hit near the Lunar South Pole, but 11 reported their astronomers detected nothing.

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