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# Lunar Reconnaissance Orbiter finds evidence of ice at lunar polar regions

September 19, 7:38 AM Houston Space News Examiner Mark Whittington

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The Lunar Reconnaissance Orbiter (LRO), which has just begun its main mission after several months of calibrating instruments, has already started to return scientific data. One of the instruments on the Lunar Reconnaissance Orbiter (LRO), the Lunar Exploration Neutron Detector (LEND), has picked up [indications of hydrogen in the permanently shadowed craters at the lunar poles](#). This confirms several previous lunar probes, including the Clementine and Lunar Prospector whose missions were in the 1990s, and more recent missions from China, India, and Japan.

The Lunar Reconnaissance Orbiter's Diviner Lunar Radiometer Experiment has also measured the temperature in those permanently shadowed craters to be at [less than -397 degrees Fahrenheit](#), the coldest measured in the Solar System. The reason is that these shadowed regions never see the sun and therefore are never heated.

The presence of hydrogen and the ultra cold temperatures suggest that there are deposits of

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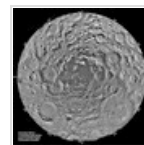
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ice in the permanently shadowed craters at the lunar poles. The ice would have been deposited in these "cold traps" over billions of years of impacts on the Moon by comets.

Next month a second probe, the Lunar Crater Observation and Sensing Satellite (LCROSS) will be deliberately crashed into the lunar surface into one of the shadowed craters, Cabeus A, to try to billow out the presumed ice in that crater. The Lunar Reconnaissance Orbiter will pass overhead to analyze the debris plume to see if there is water within it.

If ice does exist in the permanently shadowed craters of the lunar poles, it would a boom for future lunar settlers. The ice could be mined for drinking water and separated into hydrogen and oxygen for rocket fuel. Lunar ice would enable future lunar settlers to live off of lunar resources and not be as dependent on supplies from Earth to survive.

The Lunar Reconnaissance Orbiter has already imaged some of the Apollo landing sites, tending to [disprove certain conspiracy theories](#) about the Apollo Moon landings. Lunar Reconnaissance Orbiter begins an initial one year mission to map and study the Moon in preparation for planned exploration by human astronauts.

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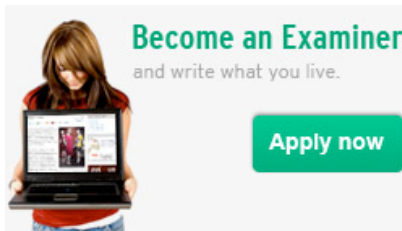
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