

# **NASA's Lunar Reconnaissance Orbiter Cameras (LROC)**

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The Lunar Reconnaissance Orbiter (LRO) mission is scheduled to launch in the fall of 2008 as part of NASA's Robotic Lunar Exploration Program and is the first spacecraft to be built as part of NASA's Vision for Space Exploration. The orbiter will be equipped with seven scientific instrument packages, one of which is LROC. The Lunar Reconnaissance Orbiter Camera (LROC) has been designed to address two of LRO's primary measurement objectives: landing site certification and monitoring of polar illumination. In order to examine potential landing sites, high-resolution images (0.5 m/pixel) will be used to assess meter-scale features near the pole and other regions on the lunar surface. The LROC will also acquire 100 m/pixel images of the polar regions of the Moon during each orbit for a year to identify areas of permanent shadow and permanent or near-permanent illumination. In addition to these two main objectives, the LROC team also plans to conduct meter-scale monitoring of polar regions under varying illumination angles, acquire overlapping observations to enable derivation of meter-scale topography, acquire global multispectral imaging to map ilmenite and other minerals, derive a global morphology base map, characterize regolith properties, and determine current impact hazards by re-imaging areas covered by Apollo images to search for newly-formed impact craters. The LROC is a modified version of the Mars Reconnaissance Orbiter's Context Camera and Mars Color Imager. The LROC will be made up of four optical elements: two identical narrow-angle telescopes and separate wide-angle optics for the ultraviolet and visible color imaging. The LROC Instrument will be provided by Malin Space Science Systems in San Diego, CA. All data collected from the LROC will be transferred to the Planetary Data Systems (PDS). In all, about 62 terabytes (TB) of data is expected from the LROC investigation including the raw images in the original spacecraft viewing orientation (NASA Level-0) and radiometrically-calibrated images (NASA Level-1) of the entire image collection. Geometrically processed images (NASA Level-1C) from a subset of the image collection and uncontrolled mosaics from a subset of the image collection will also be transferred to the PDS. For further information about LROC see: <http://cps.earth.northwestern.edu/LROC/summary.html>