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Lunar Reconnaissance Orbiter - Launch May 20, 2009

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Author Topic: Lunar Reconnaissance Orbiter - Launch May 20, 2009 (Read 9531 times)

jacqmans
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Online

Posts: 5213
Location: Houten, The Netherlands

Lunar Reconnaissance Orbiter - Launch May 20, 2009

< on: 01/10/2008 08:04 PM >

Jan. 10, 2008

RELEASE: 08-004

NASA'S NEXT MOON MISSION SPACECRAFT UNDERGOING CRITICAL TESTS

GREENBELT, Md. - NASA's next mission to Earth's closest astronomical body is in the midst of integration and testing at NASA's Goddard Space Flight Center in Greenbelt, Md. The Lunar Reconnaissance Orbiter, known as LRO, will spend at least a year mapping the surface of the moon. Data from the orbiter will help NASA select safe landing sites for astronauts, identify lunar resources and study how the moon's environment will affect humans.

Engineers at Goddard are building the orbiter and rigorously testing spacecraft components to ready them for the harsh environment of space. After a component or entire subsystem is qualified, it is integrated into the LRO spacecraft. The core suite of avionics for the orbiter is assembled and undergoing system tests.

"This is a major milestone for the mission," said Craig Tooley, LRO project manager at Goddard. "Our team has been working nearly around the clock to get us to this point. Reaching this milestone keeps us on the path to sending LRO to the moon later this year."

Various components of the avionics and mechanical subsystem are in the process of going through their qualification program. Six instruments and one technology demonstration aboard the spacecraft will provide important data to enable a safe and productive human return to the moon. The six instruments are scheduled to arrive at Goddard in the coming months for integration.

The spacecraft will ship to NASA's Kennedy Space Center, Fla., in August in preparation for launch. The orbiter and the Lunar Crater Observation and Sensing Satellite will launch aboard an Atlas V rocket in late 2008. The trip to the moon will take approximately four days. The Lunar Reconnaissance Orbiter initially will enter an elliptical orbit, also called the commissioning orbit. Once moved into its final orbit, a circular polar orbit approximately 31 miles above the moon, the spacecraft's instruments will map the lunar surface.

For more information about the Lunar Reconnaissance Orbiter, visit:

<http://lro.gsfc.nasa.gov>

For more information about NASA's exploration program to the moon and beyond, visit:

<http://www.nasa.gov/exploration>



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Jacques :-)

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Lunar Reconnaissance Orbiter - Launch May 20, 2009

« on: 01/10/2008 08:04 PM »

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jacqmans

Moderator

Full Member

☆☆☆☆☆

Online

Posts: 5213

Location: Houten, The
Netherlands

RE: Lunar Reconnaissance Orbiter - (Launch late) 2008

« Reply #1 on: 01/14/2008 09:18 PM »

RELEASE: 08-006

NASA'S QUEST TO FIND WATER ON THE MOON MOVES CLOSER TO LAUNCH

MOFFETT FIELD, Calif. - Cameras and sensors that will look for the presence of water on the moon have completed validation tests and been shipped to the manufacturer of NASA's Lunar Crater Observation and Sensing Satellite.

The science instruments for the satellite, which is known as LCROSS, departed NASA's Ames Research Center in Moffett Field Calif., for the Northrop Grumman Corporation's facility in Redondo Beach, Calif. to be integrated with the spacecraft. A video file is available on NASA Television. LCROSS is scheduled to launch with the Lunar Reconnaissance Orbiter aboard an Atlas V rocket from Cape Canaveral, Fla., by the end of 2008.

"The goal of the mission is to confirm the presence or absence of water ice in a permanently shadowed crater at the moon's south pole," said Anthony Colaprete, LCROSS principal investigator at Ames. "The identification of water is very important to the future of human activities on the moon."

In 2009, LCROSS will separate into two parts and create a pair of impacts on the permanently dark floor of one of the moon's polar craters. The spent Centaur upper stage of the Atlas V rocket will hit the moon, causing an explosion of material from the crater's surface. The instruments aboard the satellite will analyze the plume for the presence of water ice or water vapor, hydrocarbons and hydrated materials. The satellite then will fly through the plume on a collision course with the lunar surface. Both impacts will be visible to Earth and lunar-orbiting instruments.

Northrop Grumman is designing and building the spacecraft. After installing the instruments on the satellite, Northrop Grumman will test the entire spacecraft system to ensure it is flight worthy.

During development of the LCROSS payload, Ames engineers and scientists built new spaceflight hardware and used new testing procedures to take advantage of lower cost, commercially available instruments. The team subjected the commercial instruments and NASA-developed components to conditions simulating the harsh environment of spaceflight. Working closely with the commercial

instrument manufacturers, all safety and operational concerns were addressed quickly and efficiently.

"This payload delivery represents a new way of doing business for the center and the agency in general," said Daniel Andrews, LCROSS project manager at Ames. "LCROSS primarily is using commercial-off-the-shelf instruments on this mission to meet the mission's accelerated development schedule and cost restraints."

"This arrangement has proven to work very well," Andrews added. "The vendors work with their products and develop a spaceflight knowledge base, and the LCROSS project gets very mature products for deployment on this mission."

For more information about the Lunar Crater Observation and Sensing Satellite mission, visit:

<http://lcross.arc.nasa.gov>

For more information about the Lunar Reconnaissance Orbiter, visit:

<http://lunar.gsfc.nasa.gov>

For more information about NASA's exploration plans to the moon and beyond, visit:

<http://www.nasa.gov/exploration>

For NASA TV downlink, schedule and streaming video information, visit:

<http://www.nasa.gov/ntv>

-end-

 L Logged

Jacques :-)

<http://www.spacepatches.nl/>

Big Al
Full Member
☆☆☆☆
Offline

Posts: 77

Re: Lunar Reconnaissance Orbiter - (Launch late) 2008

« **Reply #2 on:** 01/27/2008 03:43 AM »

This mission needs to fly before we start talking about changing our manned exploration from the moon to an asteroid. The discovery of significant water ice on the moon will open up the prospect of self sustained lunar exploration.

 L Logged

MKremer
Elite Veteran
Full Member
☆☆☆☆☆
Online

Posts: 3107

Re: Lunar Reconnaissance Orbiter - (Launch late) 2008

« **Reply #3 on:** 01/28/2008 03:19 PM »

Never hurts to always talk about alternatives beforehand - it's never good policy to lock future plans in stone based on something you're not sure of yet.

Suppose LRO/LCROSS really doesn't find anything new, then what?

 L Logged

Big Al
Full Member
☆☆☆☆
Offline

Posts: 77

Re: Lunar Reconnaissance Orbiter - (Launch late) 2008

« **Reply #4 on:** 01/31/2008 05:30 AM »

Water ice or not there is allot of exploration to be done on the moon, my vision of the future of man on the moon is mining the moon. To live there on an ongoing basis, there will be pressurized tunnels under ground to provide stable temperature and allow pressurization for a habitable environment.

Probably the most important technology for the development of long term occupation of the moon is the development of remote TBM's (tunnel boring machines)

 L Logged

Big Al
Full Member
☆☆☆☆
Offline

Posts: 77

Re: Lunar Reconnaissance Orbiter - (Launch late) 2008

« **Reply #5 on:** 02/03/2008 12:35 AM »

Back to the mission....It would be great if LCROSS had a hi-def TV camera on it. Remember the Ranger photos? What a rush! They had huge PR value to them. Imagine a set of those photos in high definition format; it would really help build public interest in lunar exploration.

 Logged

jacqmans
Moderator
Full Member
☆☆☆☆☆
Online

Posts: 5213
Location: Houten, The Netherlands

RE: Lunar Reconnaissance Orbiter - (Launch late) 2008

« **Reply #6 on:** 04/16/2008 08:39 PM »

RELEASE: 08-102

NEW NASA MOON MISSION BEGINS INTEGRATION OF SCIENCE INSTRUMENTS

GREENBELT, Md. -- Several instruments that will help NASA characterize the moon's surface have been installed on the Lunar Reconnaissance Orbiter, or LRO. The powerful equipment will bring the moon into sharper focus and reveal new insights about the celestial body nearest Earth.

Engineers and technicians on the LRO Integration and Test Team work almost around the clock in a clean room at NASA's Goddard Space Flight Center in Greenbelt, Md., to ready the spacecraft for testing and eventual launch later this year. "The spacecraft really is coming together now," said Cathy Peddie, LRO deputy project manager at Goddard. "We are in the space assembly homestretch and making solid progress. You can begin to see what LRO will look like in all of its glory."

Four of six instruments have been mated to the spacecraft, with one to be installed soon and one to arrive in the near future. The instruments are:

The Lyman-Alpha Mapping Project was built and developed at the Southwest Research Institute in San Antonio. The instrument will map the entire lunar surface in the far ultraviolet spectrum and search for surface ice and frost in the polar regions. It will provide images of permanently shadowed regions that are illuminated only by starlight.

The Cosmic Ray Telescope for the Effects of Radiation, or CRaTER, was built and developed by Boston University and the Massachusetts Institute of Technology in Boston. CRaTER will characterize the lunar radiation environment, allowing scientists to determine potential impacts to astronauts and other life. It also will test models on the effects of radiation and measure radiation absorption by a type of plastic that is like human tissue. The results could aid in the development of protective technologies to help keep future lunar crew members safe.

Diviner Lunar Radiometer Experiment was built and developed by the University of California, Los Angeles, and the Jet Propulsion Laboratory in Pasadena, Calif. Diviner will measure surface and subsurface temperatures from orbit. It will identify cold traps and potential ice deposits as well as rough terrain and other landing hazards.

The Lunar Orbiter Laser Altimeter was conceived and built by scientists and engineers at Goddard. The instrument will measure landing site slopes and lunar surface roughness and generate high resolution three-dimensional maps of the moon. The instrument also will measure and analyze the lunar topography to identify both permanently illuminated and shadowed areas.

The Russian-built Lunar Exploration Neutron Detector has arrived from the Institute for Space Research in Moscow. The detector will create high-resolution maps of hydrogen distribution and gather information about the neutron component of lunar radiation. Its data will be analyzed for evidence of water ice near the moon's surface.

The remaining instrument, the Lunar Reconnaissance Orbiter Camera from Arizona State University in Tempe, Ariz., will provide high resolution imagery to help identify landing sites and characterize the moon's topography and composition. It should arrive at Goddard in May.

Also on board will be the Mini-RF Technology Demonstration experiment sponsored by NASA's Exploration Systems and Space Operations Mission Directorates. The miniaturized radar will be used to image the polar regions and search for water ice. The communications capabilities of the system also will be tested during the mission.

The satellite is scheduled to launch from NASA's Kennedy Space Center, Fla., in late 2008 on an Atlas V rocket. It will spend one year in low polar orbit on its primary exploration mission, with the possibility of three more years to collect additional detailed scientific information about the moon and its environment. That information will help ensure a safe and productive human return to the moon.

The spacecraft is being built and managed by Goddard for the Exploration Systems Mission Directorate at NASA Headquarters in Washington. It will transition to the Science Mission Directorate in 2010.


For more information about LRO on the Web, visit:

<http://lro.gsfc.nasa.gov>

 Logged

Jacques :-)

<http://www.spacepatches.nl/>

simonbp
Science Guy
Full Member

Offline

Posts: 2478



Re: Lunar Reconnaissance Orbiter - (Launch late) 2008

« Reply #7 on: 04/17/2008 01:50 AM »

Quote

MKremer - 28/1/2008 8:19 AM

Suppose LRO/LCROSS really doesn't find anything new, then what?

It will find something new, as the results for polar subsurface ice are pretty vague right now; at worst case, it will constrain the amount of polar to a being small; at best, it will provide definitive proof.

Either way, the real result of LRO will be to help build up the lunar science community, who can be powerful stakeholders in keeping Constellation alive...

Simon 😊

 Logged

Zachstar
Expert
Full Member

Offline

Posts: 2243
Location: Shreveport,
Louisiana



Re: Lunar Reconnaissance Orbiter - (Launch late) 2008

« Reply #8 on: 04/24/2008 04:35 PM »

Quote

Big Al - 2/2/2008 6:35 PM

Back to the mission....It would be great if LCROSS had a hi-def TV camera on it. Remember the Ranger photos? What a rush! They had huge PR value to them. Imagine a set of those photos in high definition format; it would really help build public interest in lunar exploration.

www

I think JAXA's orbiter is doing fine on that front.

No what is more important in my view is that this Orbiter stay as long as possible to collect the most detailed map of the moon yet.

In my view what we know now of the moon is pathetic compared to the rate we are learning about Mars. We need that detailed view of the moon to help convince congress to keep the moon dream alive or Mars will be FAR delayed.

 L Logged
jacqmans

Moderator
Full Member
★★★★★
Online

Posts: 5213
Location: Houten, The Netherlands

RE: Lunar Reconnaissance Orbiter - (Launch late) 2008

« Reply #9 on: 05/02/2008 08:20 AM »

RELEASE: 08-110

SEND YOUR NAME TO THE MOON WITH NEW LUNAR MISSION

WASHINGTON -- NASA invites people of all ages to join the lunar exploration journey with an opportunity to send their names to the moon aboard the Lunar Reconnaissance Orbiter, or LRO, spacecraft.

The Send Your Name to the Moon Web site enables everyone to participate in the lunar adventure and place their names in orbit around the moon for years to come. Participants can submit their information at <http://www.nasa.gov/lro>, print a certificate and have their name entered into a database. The database will be placed on a microchip that will be integrated onto the spacecraft. The deadline for submitting names is June 27, 2008.

"Everyone who sends their name to the moon, like I'm doing, becomes part of the next wave of lunar explorers," said Cathy Peddie, deputy project manager for LRO at NASA's Goddard Space Flight Center in Greenbelt, Md. "The LRO mission is the first step in NASA's plans to return humans to the moon by 2020, and your name can reach there first. How cool is that?"

The orbiter, comprised of six instruments and one technology demonstration, will provide the most comprehensive data set ever returned from the moon. The mission will focus on the selection of safe landing sites and identification of lunar resources. It also will study how the lunar radiation environment could affect humans.

LRO will also create a comprehensive atlas of the moon's features and resources that will be needed as NASA designs and builds a planned lunar outpost. The mission will support future human exploration while providing a foundation for upcoming science missions. LRO is scheduled for launch in late 2008.

The Lunar Reconnaissance Orbiter is being built at Goddard. The mission also will be managed at the center for NASA's Explorations Systems Mission Directorate in Washington.

Send Your Name to the Moon is a collaborative effort among NASA, the Planetary Society in Pasadena, Calif., and the Johns Hopkins Applied Physics Laboratory in Laurel, Md.

To send your name to the moon, visit:

<http://www.nasa.gov/lro>

 L Logged

Jacques :-)

<http://www.spacepatches.nl/>

eeergo

Phystronaut
Full Member
★★★★★
Online

Posts: 3294
Location: Oviedo, Spain

**RE: Lunar Reconnaissance Orbiter - (Launch late) 2008**

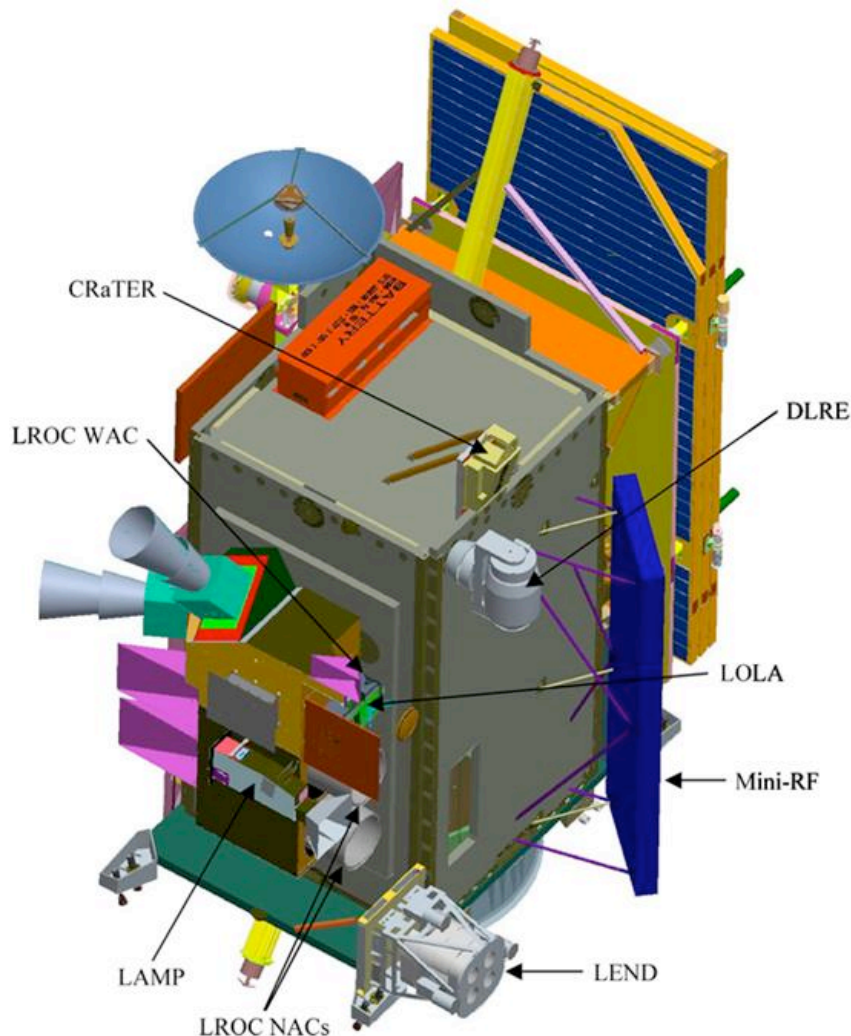
« Reply #10 on: 05/02/2008 02:47 PM »

I've been having a look at LRO's homepage and, specifically, the instruments the probe is carrying. I'll make a short summary to give some background and for further reference (you can click on the name of the instruments and it will take you to each one's official website):

- **CRaTER** : Radiation measurement device, to better characterize the cislunar radiation environment, and test its effects on electronics samples or samples similar to human tissue.
- **LEND** : Russian instrument to measure neutron flux with high resolution. Hydrogen absorbs a lot of neutrons, and hydrogen can be related to water, furthermore if high hydrogen concentrations are found in polar craters.

- **Diviner/DLRE** : Instrument to generate a global temperature map of the moon (useful for non-equatorial latitudes missions) and help with the search for water and moon geology.
- **LOLA** : Laser altimeter and geodetic instrument, to create a global and local elevation maps of the moon's surface, as well as roughness of the terrains.
- **LAMP** : Ultraviolet imager to look inside permanently shadowed regions, and contribute to the search for water ice trapped there. It can also probe the moon's geology and its tenuous atmosphere with a newly developed technique. Its technology could prove useful for future missions too.
- **LROC** : The much-anticipated cameras, which will provide the detailed imagery (among which will be the first images of the Apollo missions since the astronauts departure), as well as useful topographic and mineralogical composition of the regolith.
- **Mini-RF**: This is a technology demonstrator for a lunar SAR (Synthetic Aperture Radar)


This is a good image of the instruments' locations on LRO, found in LEND's website:



And, latest news is that LEND is integrated, LOLA is being integrated too, and they're proceeding with thermal vacuum tests for the High Gain Antenna, as well as thermal blanket installation and production.

 Logged

-David-

jacqmans
Moderator
Full Member

Online

Re: Lunar Reconnaissance Orbiter - (Launch late) 2008

« **Reply #11 on:** 06/03/2008 03:54 PM »

RELEASE: 08-59

Posts: 5213
Location: Houten, The Netherlands

MEDIA INVITED FOR NASA LRO MEDIA DAY

NASA Goddard Space Flight Center in Greenbelt, Md. invites reporters to participate in a special media day that will highlight NASA's upcoming Lunar Reconnaissance Orbiter (LRO) mission. LRO Media Day will be held on Thursday, June 12, 2008 from 9:30 a.m. to 1 p.m. EDT.

Media Day will provide reporters with an opportunity to learn more about this upcoming mission. A panel briefing will begin at 10 a.m. The briefing will be followed by a question and answer session with the panelists. Opportunities for one on one interviews with panel members will be provided following the Q&A session. Following the briefing, reporters will be taken to Goddard's Integration and Test Facilities to view the LRO cleanroom where media will be briefed on activities going on inside the cleanroom. The final tour stop will be the LRO Mission Operations Center where LRO data will be received and processed from the spacecraft.

Reporters interested in attending should contact Nancy Neal Jones at 301-286-0039, or at nancy.n.jones@nasa.gov by June 9 to reserve a space and provide names for security badges. Foreign nationals must RSVP by June 5 to allow for proper clearance. Reporters should meet at the Goddard Visitor's Center, located off Greenbelt Road (State Route 193) and ICESat Road no later than 9:15 a.m. EDT to allow sufficient time for everyone to receive badges. A shuttle will take reporters to the various sites.

LRO will create a comprehensive atlas of the moon's features and resources that will be needed as NASA designs and builds a planned lunar outpost. LRO focuses on the selection of safe landing sites, identification of lunar resources, and studies of how the lunar radiation environment will affect humans. The mission will support future human exploration while providing a foundation for upcoming science missions. LRO is scheduled for launch in late 2008.


The spacecraft is being built and managed by Goddard for the Exploration Systems Mission Directorate at NASA Headquarters in Washington. It will transition to the Science Mission Directorate in 2010.

 Logged

Jacques :-)

<http://www.spacepatches.nl/>

jacqmans

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Online

Posts: 5213
Location: Houten, The Netherlands

Re: Lunar Reconnaissance Orbiter - (Launch late) 2008

« Reply #12 on: 06/24/2008 09:17 PM »

RELEASE: 08-156

MOON-BOUND NASA SPACECRAFT PASSES MAJOR PREFLIGHT TESTS

MOFFETT FIELD, Calif. -- Engineering teams are conducting final checkouts of the Lunar Crater Observation and Sensing Satellite, known as LCROSS, that will take a significant step forward in the search for water on the moon.

The mission's main objective is to confirm the presence or absence of water ice in a permanently shadowed crater near a lunar polar region. A major milestone, thermal vacuum testing of the LCROSS spacecraft, was completed June 5 at the Northrop Grumman facility in Redondo Beach, Calif.

To simulate the harsh conditions of space, technicians subjected the spacecraft to 13.5 days of heating and cooling cycles during which temperatures reached as high as 230 degrees Fahrenheit and as low as minus 40 degrees. Previous testing for the LCROSS spacecraft included acoustic vibration tests. Those tests simulated launch conditions and checked mating of connection points to the Atlas V rocket's Centaur upper stage and the adapter ring for the Lunar Reconnaissance Orbiter, known as LRO.

The satellite currently is undergoing final checkout tests. After all tests are complete, the LCROSS spacecraft will be prepared for delivery to NASA's Kennedy Space Center in Florida for launch processing and integration onto the Atlas V as a secondary payload to LRO. Both spacecraft are scheduled to launch from Kennedy in late 2008.

"The spacecraft steadily has taken shape since Ames delivered the science payload in January," said Daniel Andrews, LCROSS project manager at NASA's Ames Research Center in Moffett Field, Calif. "It is a testament to the hard work, perseverance and expertise of the NASA and Northrop Grumman teams that the spacecraft has completed these critical tests ahead of schedule."

After launch, the LCROSS spacecraft and the Atlas V's Centaur upper stage rocket will execute a fly-by of the moon and enter into an elongated Earth orbit to position the satellite for impact on a lunar pole. On final approach, the spacecraft and the Centaur will separate. The Centaur will strike the surface of the moon, creating a debris plume that will rise above the surface. Four minutes later, LCROSS will fly through the debris plume, collecting and relaying data back to Earth before impacting the lunar surface and creating a second debris plume. Scientists will observe both impacts from Earth to gather additional information.

LCROSS is a fast-paced, low-cost mission that is leveraging existing NASA systems, commercial-off-the-shelf components and the spacecraft design and development expertise of integration partner Northrop Grumman Space Technologies. The LCROSS and LRO missions are components of the Lunar Precursor Robotic Program at NASA's Marshall Space Flight Center, Huntsville, Ala. The program manages pathfinding robotic missions to the moon for the Exploration Systems Mission Directorate at NASA Headquarters in Washington.

For more information about the Lunar Crater Observing and Sensing Satellite, visit:

<http://lcross.arc.nasa.gov>

For more information about the Lunar Precursor Robotic Program, visit:

<http://moon.msfc.nasa.gov>

For information about NASA's exploration program to go to the moon and beyond, visit:

<http://www.nasa.gov/exploration>

-end-

 Logged

Jacques :-)

<http://www.spacepatches.nl/>

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Full Member

☆☆☆☆☆

Offline

Posts: 918

Location: Houston, TX

Re: Lunar Reconnaissance Orbiter - (Launch late) 2008

« Reply #13 on: 07/02/2008 03:51 AM »


This photograph, taken today, shows Lunar Reconnaissance Orbiter laying on its side as it undergoes a comprehensive performance test, its first "total checkout" at Goddard Space Flight Center in Greenbelt, Maryland.

For more photos and enlargements, [click here](#).

[www](#)

Attachments



 lro_gsfc01.jpg (50.52 KB, 500x335 - viewed 61 times.)

 Logged

Robert Pearlman
<http://www.collectspace.com/>

Eerie
Member
Full Member
☆☆☆☆☆
Offline

Posts: 454

Re: Lunar Reconnaissance Orbiter - (Launch late) 2008

« **Reply #14 on:** 07/02/2008 11:16 AM »

I got a question regarded to spectacular photos:

Is it possible for lunar spacecraft orbit to be so low that it will pass below some points of terrain?

 Logged

One percent for me!

Mind the "gap".

Tags:

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