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Office of the President

TO MEMBERS OF THE COMMITTEE ON OVERSIGHT OF THE DEPARTMENT OF ENERGY LABORATORIES:

DISCUSSION ITEM

For Meeting of November 15, 2012

UPDATE ON THE DEPARTMENT OF ENERGY LABORATORIES

Committee Chair Pattiz will introduce Los Alamos National Laboratory (LANL) Director Charlie McMillan and the ChemCam team who will present a short video on the ChemCam instrument that is on board the Mars Curiosity rover.

Mars Curiosity rover has three LANL technologies on board

Three Los Alamos technologies are aboard the Mars Science Laboratory (MSL) mission's Curiosity rover that touched down on the surface of Mars in August 2012.

- **Radioisotope batteries** are providing power and heat—these power sources will help drive the 10 scientific instruments on board the vehicle.

- **CheMin** uses X-ray diffraction to determine the composition of samples that are collected and dropped into a funnel on the rover.

- **ChemCam** is mounted on the rover's mast and uses extremely powerful pulses of laser light to vaporize pinhead-sized areas of the Martian surface from as far away as 23 feet. The tiny flashes created by these pulses will be analyzed by a spectrometer to provide scientists with crucial information about the composition of Mars surface materials.

"ChemCam is designed to look for lighter elements such as carbon, nitrogen, and oxygen, all of which are crucial for life," said Roger Wiens, principal investigator of the MSL mission's ChemCam team. "The system can provide immediate, unambiguous detection of water from frost or other sources on the surface, as well as carbon—a basic building block of life as well as a possible byproduct of life. This makes the ChemCam a vital component of Curiosity's mission."

Scores of LANL researchers are involved with the mission, which is designed to answer the burning question of whether Mars is or was habitable. More than 30 people at LANL worked directly on the ChemCam instrument, and many others played supporting roles.

In an effort that comprised the expertise of nearly 50 researchers and technicians, LANL also provided the plutonium canisters that will provide power and heat to the rover.

The Curiosity rover landed on Mars on August 6, 2012, after traveling nearly 354 million miles from Earth. Curiosity will roam the planet's surface for about 98 weeks, or the period of one Martian year.