Executive Summary

Date Prepared: 16 August 2007

Presenter's Name: Paul D. Spudis
Presenter's Title: Planetary Scientist
Presenter's Organization/Company: Applied Physics Laboratory

Presentation Title

Scientific contributions of lunar robotic precursor missions

Key Ideas

Robotic missions can acquire scientific information to make our return to the Moon safer and more productive. New orbital missions, hard landing probes, soft landing spacecraft, surface rovers, networks and sample returns all can provide important information and gain operational experience in the lunar environment. In addition, data from robotic probes are important to prepare for the characterization and utilization of local resources, a principal objective of lunar return.

Supporting Information

New orbiters carrying advanced, second-generation sensors include global imaging radar, microwave radiometry, VHF sounding, UV spectroscopy, others

Hard landers could include penetrators or crushable microspacecraft. Carry surface analysis instruments (neutron, mass spectrometers; XRF)

Soft landers can analyze a single site in detail and deploy other instruments or spacecraft

Rovers can conduct traverses and explore a region, making measurements and images along the route.

Networks of surface instruments can characterize the global Moon (seismic, heat flow) and study the lunar exosphere

Sample return mission can collect reconnaissance samples of sites in preparation for human study or to site where people won't be going.