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HUMAN EXPLORATION OF THE MOON AND MARS SYMPOSIUM (A5)
Near Term Strategies for Lunar Surface Infrastructure (1)

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FROM APOLLO TRAVERSES TO FUTURE EVAS USING A MOBILE LABORATORY

Abstract

Apollo traverses

Lunar exploration has increased the limitations in comparison with the field work carried out on Earth: logistics, cost, life support requirements, power, communications, time restrictions etc... The main aspects that we can highlight about the field work done by the Apollo program are related with the intensive simulation and training of the astronauts in geological field work, not just about geological basic settings, also they were trained in a systematic, logical and highly disciplined oral description of samples and environment, due the impossibility of carry with them a field notebook and a pencil. We noted the work realized by pre-Apollo programs in imaging and orbital coverage of potential landing sites. All traverses were carefully prepared, distance traveled- by Rover or walking- , sampling stations and estimated time for each operation. The crew was supplied with photographic maps with traverses superposed and major landmarks indentified in order to facilitate the assimilation of data by astronauts in real time. Also, it was necessary optimize the tools to the needs of the astronauts and the field work, and to the limitations space suits.

Future field exploration and GeoLab

After the programs conducted after Apollo missions we have access to more complete and detailed element, mineralogical and topographical maps of the Moon. Improved hands free equipment, rover and minimized experiments packages are available. It is time to focus in the development of tools that allow a first compositional analysis of samples in situ and a more efficient methodology of sampling and documentation. Furthermore, we have now the possibility to locate a mobile laboratory, GeoLab, on the Moon for analysis and measurements in situ without needing to bring the samples to the Earth, facilitating data collection, taking the opportunity to discard non interesting samples, or even being able to go back for more samples if necessary.