

Metzli: An International Space Station Approach to Lunar Exploration

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Session: Space Access Technologies / Enterprise

At the International Space University (ISU) Summer Session 2003, a team of 46 participants from 20 countries produced a vision for creating a permanent human lunar presence. This diverse team sought to define innovative options for a lunar program that takes advantage of the uniqueness and capabilities of the International Space Station (ISS). The established international partnership and political will already associated with the ISS were the driving motivations for using it as a platform for lunar exploration. Although the ISS was not designed to encompass lunar missions, the team identified some promising scientific, political, and social lunar applications for the station. In addition, the team addressed the possibility of turning the ISS, at the end of its planned mission, directly into a lunar project.

The study results are documented in a 100-page report. The report begins by outlining a lunar framework, which emphasizes research into in-situ resource use and environmental control and life support systems (ECLSS) through existing programs such as NASA INTEGRITY. The report then addresses, with an international effort emphasis, innovative ways of using the ISS in this framework not only technically and scientifically, but also as an outreach tool to raise public interest in the Moon. An ISS Lunar Working Group is proposed to coordinate these uses. The report then examines the possibility of using the ISS in new lunar missions by outlining three possible cases: 1) Cislunar operations and technology demonstration, 2) Crewed Earth-Moon cyler, 3) Crewed lunar orbiter. For these proposed cases, the team considered the required operations, support, and management and discussed all aspects within the report. Finally, an International Lunar Organization to facilitate communication among groups related to lunar exploration is recommended as a framework for successful mission completion.

This report presents a new perspective of a lunar program, a result of the unique environment that ISU provides. At ISU, an international, intercultural, and interdisciplinary group must work closely together over a very limited time to pursue an innovative approach to an open-ended problem, free from organizational constraints.