

EDUCATION AND OUTREACH COMPONENTS OF THE LUNAR PROSPECTOR DISCOVERY MISSION; J.E. Gruener, Hernandez Engineering, Inc.; G.D. French, MoonLink™; K.M. Connell, Lockheed Martin.

The Lunar Prospector mission was selected as a NASA Discovery Mission in February of 1995. The objective of the mission is to map the Moon's surface composition, magnetic fields, gravity fields and gas release events to improve the understanding of the origin, evolution, current state, and available resources of the Moon. The mission will be accomplished using a small (285 kg wet), relatively simple, spin-stabilized spacecraft in a polar orbit 100 km above the lunar surface. The spacecraft and science instruments are currently being fabricated, with launch scheduled for October 1997. Mission duration is planned to be a minimum of one year. Associated with the mission is a privately financed effort, MoonLink™, to involve schools and the general public in activities prior to, during, and after the actual mission. Students and interested individuals or groups in all parts of the world will get to actively interact, via the Internet, with mission controllers and scientists conducting spacecraft operations and data acquisition. Throughout the entire mission, participants will also have the opportunity to investigate uniquely one 150 km by 150 km geographic area on the lunar surface. This will help provide "ownership" in the knowledge gained about Moon.

NASA and the planetary science community are becoming aware of the importance of educating the public on the knowledge and benefits that are gained from the exploration of space. An example of this effort is the inclusion of education/outreach requirements in the request for Discovery Mission proposals. Also, as the government funding for space programs continues to decrease, it is a desired goal of NASA to increase private investment and involvement in space exploration. To demonstrate an innovative partnership among the federal government, industry and academia, a privately financed venture called MoonLink™ was created. MoonLink™ will work in association with the Lunar Prospector Discovery Mission to bring the challenges and discoveries of an active space mission to students and the general public. Utilizing global communication networks and new computer and Internet technologies, countries in other parts of the world will also be able to participate in this mission.

Though participation in the Lunar Prospector mission is not restricted to any age group, the primary MoonLink™ mission focus is high school students. It is envisioned that each participating school will have one (or more) mission team(s) consisting of twelve members. Six of the members will function in the role of science instrument Principal Investigators, with each member following a specific experiment on the Prospector mission. The remaining six members will function as mission control operators, following specific spacecraft systems and the orbital mechanics of the satellite. The team(s) will be given pre-mission curriculum packages to inform, educate and prepare the students for the mission. Though the experiments performed on Lunar Prospector are complex, the materials provided by MoonLink™ and the Prospector PI's will enable the students to get an understanding of what the data means.

Participation in the Lunar Prospector mission will occur in three phases. The first phase will include preparatory work to learn about the Moon and the Prospector mission and uses a curriculum and materials supplied by MoonLink™. Curriculum guides for teachers will also be included. In this phase, each team will be asked to identify one 150 km by 150 km geographic location on the lunar surface to study in detail. Hopefully, this will instill a sense of "ownership" in the data collected and inspire the students by their own achievements. The most exciting phase will have the teams interacting with a Lunar Prospector Mission Controller and experiencing a live NASA space mission with real time data acquisition. This phase will last 100 minutes (almost one complete Prospector orbit) and will include an Internet connection

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and sign on, an introduction from the Mission Controller via video and speaker phone, discussion with the Controller, observation of mission control activities, comparison of the data as it comes from the spacecraft to the data accumulated in the team's geographic region, and a debriefing. The third phase will have the team continually monitoring their chosen location throughout the mission duration and school year, as the data set for that location builds up and clearer understanding of the data becomes available. This phase will conclude with the team reporting on their location and providing data in formats relevant to the six Lunar Prospector experiments.

While educating students is an important goal of MoonLink™, educating the general public is just as necessary as their understanding and appreciation of the space program is essential for their support. To that end, exhibits will be available for museums, libraries, and other public gathering places displaying real time mission status and data, via the Internet, as it is accumulated. These exhibits will also provide background information on the mission and exploration of the Moon.

As mentioned above, grade levels other than high school and other interested individuals or groups can participate in the Lunar Prospector mission. It is also possible that collaborative efforts or mentor/student partnerships between universities and high schools could be accommodated. MoonLink™'s plans and educational materials are still in the development stage, but the educational goals of MoonLink™ are in place. They are: to place before students and the public the vision and long term goal of human exploration and settlement of space; to bring more learning tools to educational decision makers, creating a technology-based environment to support teachers and learners; and to expand student skills through collaboration with scientists and engineers to convert data into information, information into knowledge, and knowledge into practice.