# Return to the Moon

## Mission Overview

The new millennium is still young, but humans are preparing to **Return to the Moon**, spurred on by the verification of ice water on the lunar surface by Lunar Prospector in 1998. Composed of hydrogen and oxygen – the elements that make up water – the lunar ice provides a core resource for long-term human presence on the lunar surface.

Lunar Prospector was followed by a series of successful robotic missions designed to probe the concept that the ice water could be harvested. Once collected, the ice water can be turned into drinking water, oxygen for life support of a lunar base, nutrients as the basis for agriculture, components needed for rocket fuel, or when combined with lunar soil, the basics for construction materials. Not only did those robotic missions successfully prove that concept, but since then, additional robotic staging missions have landed and begun manufacturing these essential resources.

As part of the **Return to the Moon** mission, this crew of astronauts will – for the first time since the Apollo 17 mission in 1972 – land on the surface of the Moon. This time the astronauts are there to establish a permanent base with the core goals of:

1. establishing an observation program to study the Earth and other Solar System bodies without the interference of the Earth's atmosphere
2. testing the feasibility of a self- sustaining, off-planet settlement
3. serving as a staging area for additional human exploration of our Solar System.

The **Return to the Moon** mission begins with the spacecraft in Earth's orbit and the Mission Control team monitoring the crew's status. The crew aboard the spacecraft will leave Earth's orbit and travel to the Moon using the lastest in transport technology to reduce the travel time. In addition to verifying the best site for the establishment of the lunar base, during the course of the mission, the crew will recover a probe that is stranded in space and access the damage to the probe, and then build and launch an equipment module to the lunar surface.

Some information has been previously obtained from the potential lunar base sites. A detailed study has determined that the base site must contain solid, metals, and potentially useful resources such as helium-3. Rock and soil samples, soil composition, and seismic information have been gathered by previous missions from a portion of the potential sites. Experiments on soil and rock samples from other possible sites must be performed in order to determine the best site for the lunar base.

The crew will navigate their spacecraft to the Moon and plot an acceptable orbit. Together the crew will place their spacecraft into lunar orbit and make the important decision of the location of the first permanent lunar base. To gather the data needed to analyze potential lunar base sites, the crew will have to function as a team and utilize their best communication and analytical skills.

RETURN TO THE MOON®