IAF SPACE EXPLORATION SYMPOSIUM (A3)
Space Exploration Overview (1)

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NASA'S PATH FROM LOW-EARTH ORBIT TO THE MOON AND ON TO MARS

Abstract

In the next decade, NASA plans to set the foundation for human expansion to the Moon and establish a sustained presence there. Through innovative partnerships and strategic leadership on and around the Moon, NASA and its partners will collaborate to contribute scientific and technological components to ensure that a long-term presence at the Moon will be based not only on the merits of exploring our nearest neighbor, but also on the conditions that position humanity to work together toward human missions to Mars. Pulling on the top talent in the agency, collaborating with international partners, and tapping U.S. industry, NASA will lead a diverse band of contributing organizations to foster the immediate, near- and long-term investments. The agency and its partners will continue to leverage the International Space Station to advance and validate key life-sustaining technologies. Through multiple contracts and partnerships with U.S. industry, the major lunar components will come together at the Moon, leveraging the powerful Space Launch System and Orion crew vehicle, as well as the robust and growing commercial launch market. With one of the strongest budgets in recent history, NASA is able to move at full speed toward the Moon, while at the same time continue architectural development of Mars missions that will build on the rich data returned from robotic missions to Mars orbit and the surface. This paper will discuss the near-term work on the International Space Station to validate life support systems and help prepare humans for the arduous journeys ahead to the Moon and Mars, as well as the current status of lunar systems and the vision for long-term lunar activities, before identifying current architectural considerations for human missions to Mars.