NASA Space Launch System Operations Strategy

Joan A. Singer, Deputy Program Manager
Jerry R. Cook, Associate Program Manager

Space Launch System Program Office
NASA Marshall Space Flight Center 35812
U.S.A.

Abstract

The National Aeronautics and Space Administration's (NASA) Space Launch System (SLS) Program, managed at the Marshall Space Flight Center, is charged with delivering a new capability for human and scientific exploration beyond Earth orbit. The SLS also will provide backup crew and cargo services to the International Space Station, where astronauts have been training for long-duration voyages to destinations such as asteroids and Mars. For context, the SLS will be larger than the Saturn V, providing 10 percent more thrust at liftoff in its initial 70 metric ton (t) configuration and 20 percent more in its evolved 130 t configuration. The SLS Program knows that affordability is the key to sustainability. This paper will provide an overview of its operations strategy, which includes initiatives to reduce both development and fixed costs by using existing hardware and infrastructure assets to meet a first launch by 2017 within the projected budget. It also has a long-range plan to keep the budget flat using competitively selected advanced technologies that offer appropriate return on investment. To arrive at the launch vehicle concept, the SLS Program conducted internal engineering and business studies that have been externally validated by industry and reviewed by independent assessment panels. A series of design reference missions has informed the SLS operations concept, including launching the Orion Multi-Purpose Crew Vehicle on an autonomous demonstration mission in a lunar flyby scenario in 2017, and the first flight of a crew on Orion for a lunar flyby in 2021. Additional concepts address the processing of very large payloads, using a series of modular fairings and adapters to flexibly configure the rocket for the mission. This paper will describe how the SLS, Orion, and 21st Century Ground Systems programs are working together to create streamlined, affordable operations for sustainable exploration.