

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Governmental Human Spaceflight Programs (Overview) (1)

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NASA'S HUMAN LUNAR LANDING STRATEGY

Abstract

United States Space Policy Directive-1 instructs NASA to “Lead an innovative and sustainable program of exploration with commercial and international Partners to enable human expansion across the solar system and to bring back to Earth new knowledge and opportunities.” In response, the agency is working to establish humanity’s presence on and around the Moon by sending payloads to its surface, assembling the Gateway outpost in orbit, and ultimately conducting the first human lunar landings since 1972.

This exploration campaign aims to return humans to the Moon in less than 10 years, where crews will conduct research and test new technologies that can take us even farther into the solar system. NASA has performed studies to derive a reference architecture for a Human Landing System (HLS), which includes five components: descent element, transfer vehicle element, refueling element, ascent element, and surface suit element. Study and risk reduction contracts for the descent, transfer vehicle, and refueling elements will be awarded in 2019 through NASA’s Next Space Technologies for Exploration Partnerships

(NextSTEP) solicitation process.

These efforts will leverage decades of NASA experience in developing and testing space flight systems. To conduct this lunar campaign, NASA will also seek opportunities for collaboration with commercial and international partners. These NASA partnerships will develop and test many new technologies needed to enable the next era of exploration. Demonstrations may include precision landing, cryogenic fluid management, in-situ resource utilization, surface nuclear power and more. This paper will discuss the strategic landscape for NASA's exploration campaign, the agency's approach to accessing the lunar surface with a reusable, human-rated landing system, current status, and future plans.