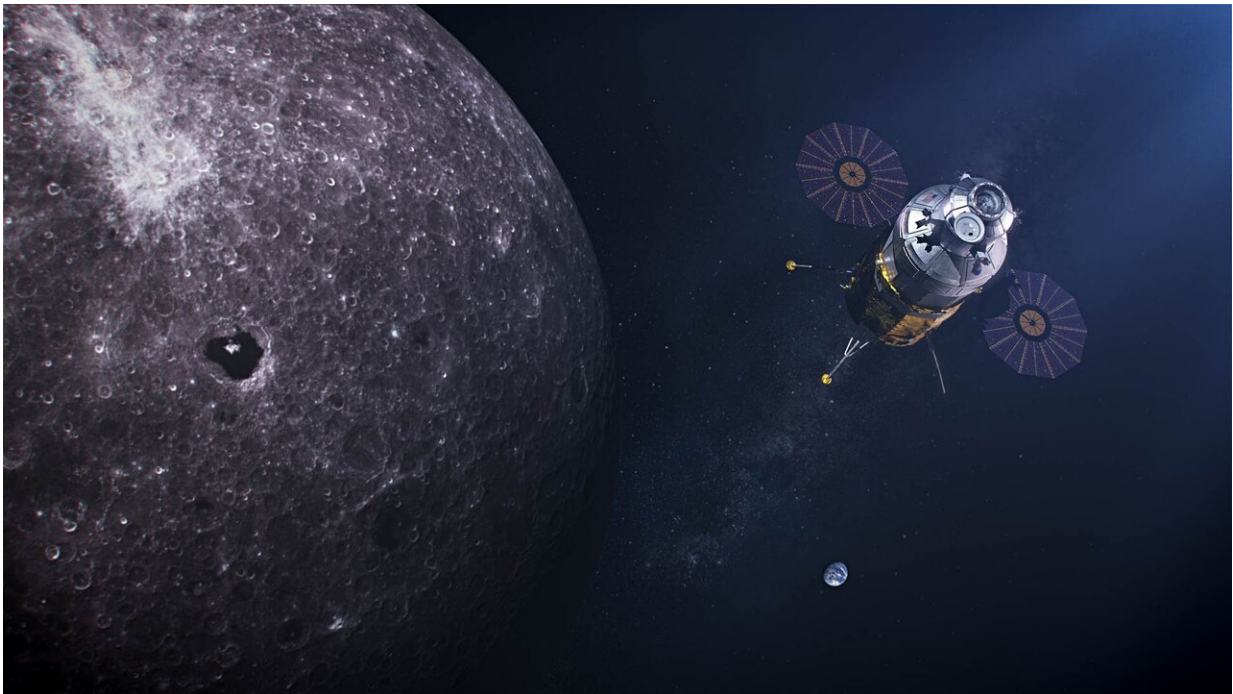


NASA, human lunar lander companies complete key Artemis milestone

October 23 2020, by Erin Mahoney



Credit: NASA

NASA's Human Landing System (HLS) Program recently checked off a key milestone in its progress toward landing the first woman and the next man on the Moon by 2024. The HLS Program conducted Certification Baseline Reviews (CBR) with the three U.S. companies competing to provide landers that will deliver Artemis astronauts to the Moon. These virtual meetings were the culmination of critical work by NASA and the

companies since NASA announced the base period selections in April.

Since then, NASA has worked closely with the Blue Origin-led team, Dynetics, and SpaceX to better understand their human landing system proposals and approach for the agency's Artemis program. The primary purpose of the CBRs was to finalize the functional and performance requirements for the companies' landing system designs, confirm the standards to be applied to lander development, establish the baseline designs, schedules, and management plans for HLS contract execution and human spaceflight certification. Dr. Lisa Watson-Morgan, the HLS program manager at NASA's Marshall Space Flight Center in Huntsville, Alabama, chaired the CBR board that approved the certification baseline for each contractor.

Seeking to leverage NASA's human spaceflight experience and the commercial sector's speed and innovation, the agency specified a concept of operations and high-level requirements and standards but did not dictate approach or design, allowing the contractors to propose their own designs. This was a departure from NASA's traditional procurement approach of providing contractors with highly detailed specifications for building spacecraft hardware.

"We wanted to be as open as possible in our procurement approach, to accelerate the process and to encourage innovation," said Watson-Morgan. "It worked. Within one year, we were able to select three very different design solutions to accomplish the bold and challenging objective of sending astronauts to the lunar South Pole."

During the CBR meetings, NASA examined how each contractor has been proceeding with the design of their landing system, and NASA and the contractors confirmed the results of an intensive adjudication process that established design, construction, safety, and health and medical standards for each proposed landing system. Companies also

provided development and testing schedules, identified top risks, and provided plans for safety and mission assurance, verification, validation, and certification.

The CBR is part of the base period for the three contracts. Running from May 2020 to February 2021, the base period is about mid-way through—the ideal time to conduct the CBR in the fast-paced development process, according to Watson-Morgan. "With firm-fixed price contracts it is important to come to an agreement up front about how each contractor will proceed," she noted. "While NASA wants to be as flexible as possible to achieve success, late changes can be costly and add to schedule risk."

Next Steps to Land Artemis Astronauts on the Moon

Concurrent with the base period, NASA is running an active federal procurement for the next phase of HLS development, Option A, which will determine which design(s) will be selected to continue development to flight. The three HLS base period contractors, having passed CBR, are the only eligible offerors for Option A.

After receiving Option A proposals in late 2020, NASA plans to select up to two HLS Option A contracts near the end of the base period, providing a seamless transition to the next phase of HLS development that ultimately culminates in crewed demonstration missions to the lunar surface beginning with the Artemis III mission in 2024.

Through Artemis, NASA will land the first woman and next man on the Moon in 2024 and establish sustainable lunar surface exploration with our commercial and international partners by 2028. Artemis is the next step in human exploration and is a part of NASA's broader Moon to Mars strategy. Specifically, NASA's lunar operations will provide the agency with the experience and knowledge necessary to enable a historic

human mission to Mars.

More information: For more information about the Human Landing System Program, visit: www.nasa.gov/content/more-about...nding-system-program

For more information about the Artemis program, visit: www.nasa.gov/specials/artemis/

Provided by NASA

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