

NASA fuels moon rocket in test, hit again with pesky leaks

September 21 2022, by MARCIA DUNN



The NASA moon rocket for the Artemis mission stands on Pad 39B at the Kennedy Space Center Wednesday, Sept. 21, 2022. A hydrogen leak was detected on the rocket during a tanking test this morning. Credit: AP Photo/John Raoux

NASA's new moon rocket sprouted more fuel leaks Wednesday in a test

ahead of a possible launch attempt next week, but engineers managed to get them down to acceptable levels.

There was no immediate decision on whether NASA would try for a liftoff Tuesday given the sporadic nature of the hydrogen leaks, which have bedeviled the launch team for months.

Launch director Charlie Blackwell-Thompson wouldn't commit to a launch attempt date, although she said the test went well.

"We'll go take a look at the data," she said. "I'd like the team to have an opportunity to look at that before I speculate."

The daylong demo had barely begun when hazardous hydrogen fuel began escaping at the same place and same time as before, despite new seals and other repairs. Engineers halted the flow and warmed the lines in hopes of plugging the leak, and proceeded with the test. But the leak persisted before dropping to acceptable levels. Hours later, another leak cropped up elsewhere, before tapering down.

Blackwell-Thompson said all test objectives were met. But managers need to review the results before determining whether the 322-foot (98-meter) rocket is ready for its first test flight, a lunar-orbiting mission with mannequins instead of astronauts.

[Hydrogen leaks spoiled the first two launch attempts](#), as well as earlier countdown tests. So much hydrogen escaped during the countdown earlier this month that it exceeded NASA's limit by more than double. Wednesday's leak almost got that big again.

After hours of fits and starts, NASA finally managed to load nearly 1 million gallons (4 million liters) of fuel into the rocket.



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Kennedy Space Center Wednesday, Sept. 21, 2022. A hydrogen leak was detected on the rocket during a tanking test this morning. Credit: AP Photo/John Raoux

Following the Sept. 3 launch delay, [NASA replaced two seals in the leaky line](#). One seal had a tiny indentation; it measured a mere one-hundredth of an inch.

"Now that doesn't sound like a lot, but again we're dealing with hydrogen," the smallest element on the periodic table, said mission manager Mike Sarafin.

NASA also altered the fueling process, easing slowly into the loading of the super-cold liquid hydrogen and oxygen. After Wednesday's big leak appeared, the launch team moved even more slowly to subject the plumbing to even less stress.

In a separate matter, NASA still needs the U.S. Space Force to extend the certification of on-board batteries that are part of the flight safety system before another launch attempt.

Once launched, the crew capsule atop the rocket will be the first to orbit the moon in 50 years. The \$4.1 billion mission should last more than five weeks, ending with a splashdown in the Pacific. Astronauts would climb aboard for the second test flight, dashing around the moon in 2024. The third mission, targeted for 2025, would see a pair of astronauts actually landing on the moon.

NASA's Space Launch System rocket is more powerful than the Saturn V rocket that sent Apollo astronauts to the moon during the late 1960s and early 1970s. The engines and boosters are carryovers from the now

retired space shuttles. Just like now, NASA struggled with elusive hydrogen leaks during the shuttle era, especially during the early 1990s.

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