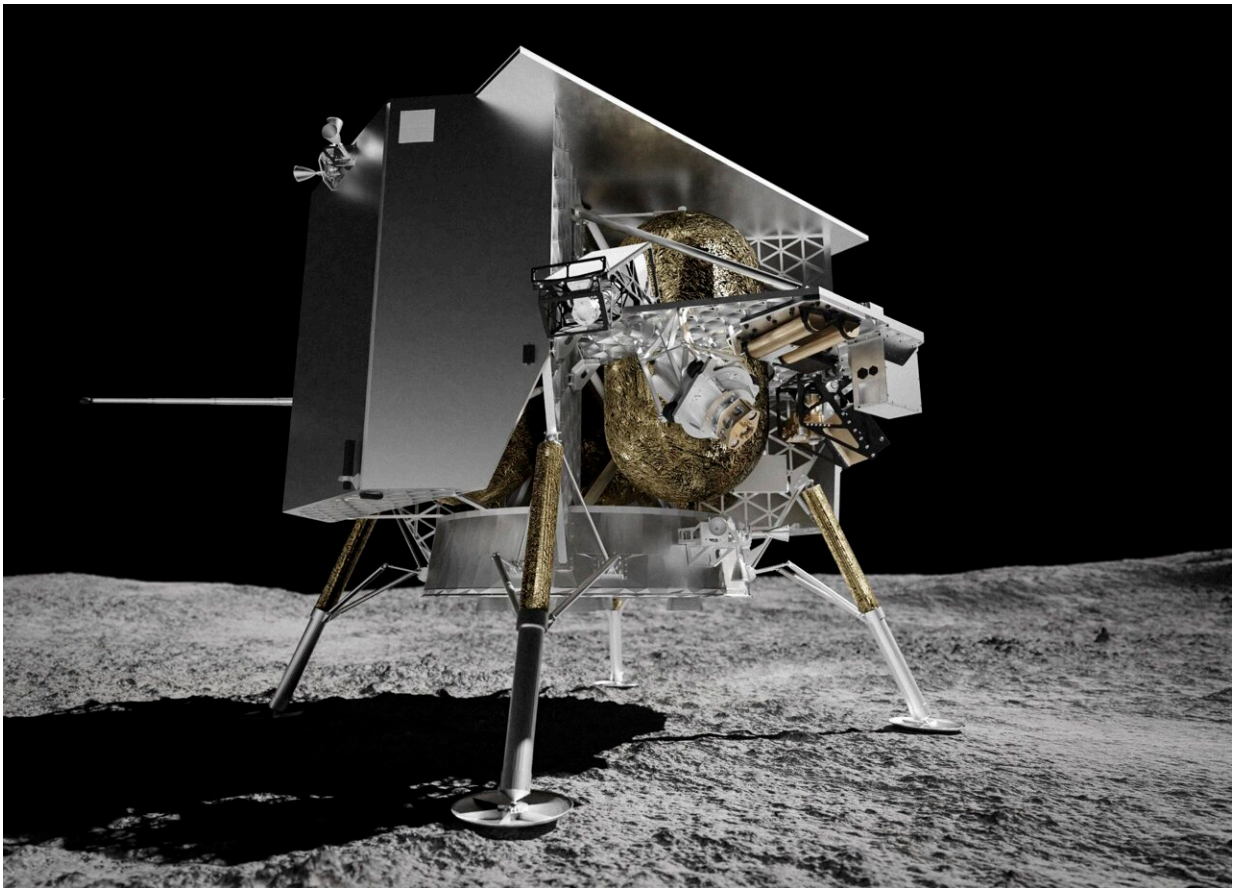


Moon landing attempt by US company appears doomed after 'critical' fuel leak

January 9 2024, by Marcia Dunn



This illustration provided by Astrobotic Technology in 2024 depicts the Peregrine lunar lander on the surface of the moon. Its expected launch date is Monday, Jan. 8, 2024. Credit: Astrobotic Technology via AP

The first U.S. moon landing attempt in more than 50 years appeared to be doomed after a private company's spacecraft developed a "critical" fuel leak just hours after Monday's launch.

Pittsburgh-based Astrobotic Technology managed to orient its lander toward the sun so the solar panel could collect sunlight and charge its battery, as a special team assessed the status of what was termed "a failure in the propulsion system."

It soon became apparent, however, that there was "a critical loss of fuel," further dimming hope for what had been a planned moon landing on Feb. 23.

Late Monday, the company said the leak was continuing and estimated that the lander would start losing solar power in about 40 hours.

The trouble was reported about seven hours after Monday's predawn liftoff from Cape Canaveral Space Force Station. United Launch Alliance's Vulcan rocket provided the lift for Astrobotic's lander, named Peregrine, putting it on a long, roundabout path to the moon.

A propulsion system problem "threatens the ability of the spacecraft to soft land on the moon," the company said. The lander is equipped with engines and thrusters for maneuvering, not only during the cruise to the moon but for lunar descent.



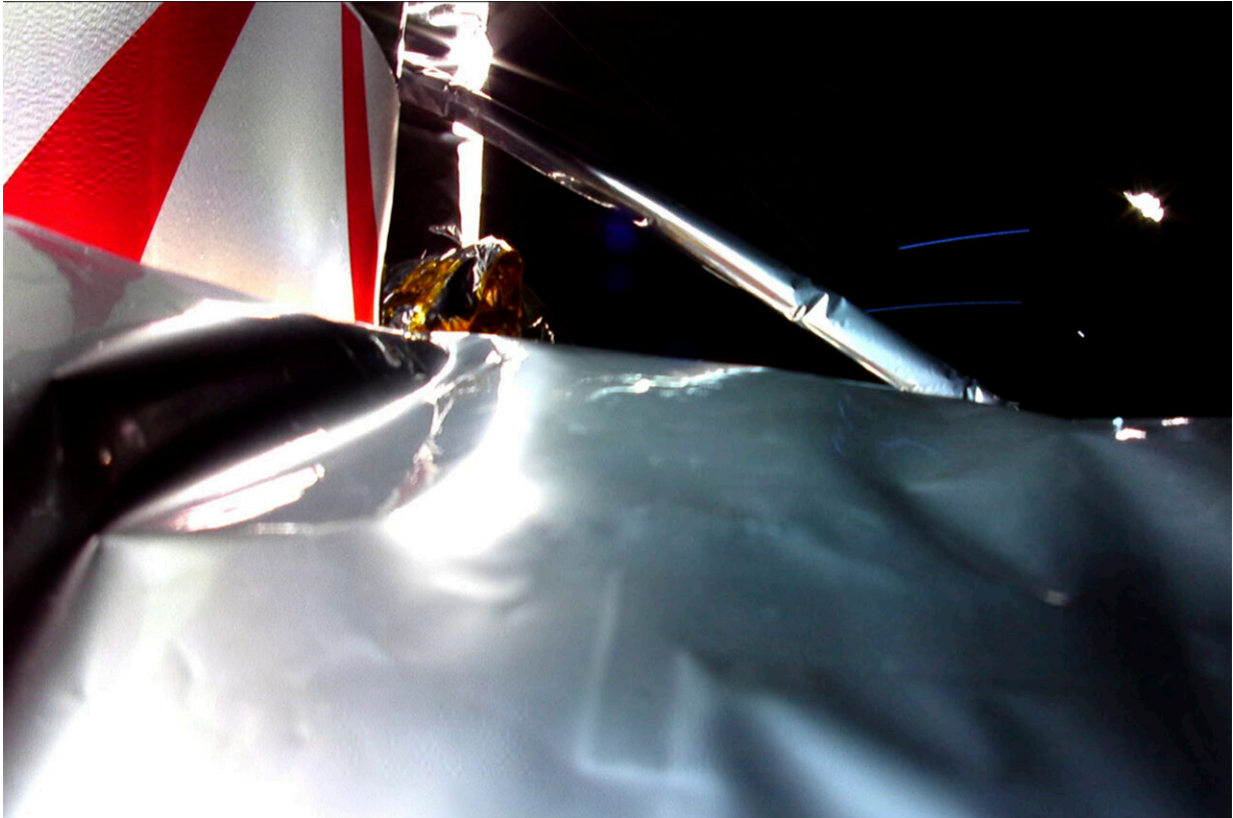
United Launch Alliance launches its next-generation Vulcan rocket on its maiden flight at 2:18 a.m. EST Monday Jan. 8, 2024, from Launch Complex 41 at Cape Canaveral Space Force Station in Florida. Credit: Malcolm Denmark/Florida Today via AP

Astrobotic released a photo from a lander-mounted camera, which the company said showed a "disturbance" in a section of thermal insulation. That aligns with what is known so far of the problem, the company said.

Astrobotic was aiming to be the [first private business to successfully land](#) on the moon, something only four countries have accomplished. A second lander from a Houston company is due to launch next month. NASA gave the two companies millions to build and fly their own lunar landers.

The [space agency](#) wants the privately owned landers to scope out the

place before astronauts arrive while delivering tech and [science experiments](#) for the space agency, other countries and universities as well as odds and ends for other customers. Astrobotic's contract with NASA for the Peregrine lander was \$108 million and it has more in the pipeline.



In this image released by Astrobotic Technology, an image from a mounted camera shows a disturbed section of insulation on the Peregrine lander, while on its way to land on the moon, Monday, Jan. 8, 2024. Astrobotic said the moon landing is in jeopardy because of a fuel leak that developed hours after the spacecraft's launch. Credit: Astrobotic Technology via AP

Before the flight, NASA's Joel Kearns, deputy associate administrator

for exploration, noted that while using private companies to make deliveries to the moon will be cheaper and quicker than going the usual government route, there will be added risk. He stressed that the space agency was willing to accept that risk, noting Monday: "Each success and setback are opportunities to learn and grow."

The last time the U.S. launched a moon-landing mission was in December 1972. Apollo 17's Gene Cernan and Harrison Schmitt became the 11th and 12th men to walk on the moon, closing out an era that has remained NASA's pinnacle.

The space agency's new Artemis program—named after the twin sister of Apollo in Greek mythology—looks to return astronauts to the moon's surface within the next few years. First will be a [lunar fly-around with four astronauts](#), possibly before the end of the year.



In this photo provided by United Launch Alliance, the Astrobotic Peregrine lunar lander is prepared for encapsulation in a payload fairing for launch atop a United Launch Alliance Vulcan rocket in Cape Canaveral, Fla., in December 2023. The expected launch date is Monday, Jan. 8, 2024. Credit: United Launch Alliance via AP

Highlighting Monday's moonshot was the long-delayed initial test flight of the Vulcan rocket. The 202-foot (61-meter) rocket is essentially an upgraded version of ULA's hugely successful workhorse Atlas V, which is being phased out along with the company's Delta IV. Jeff Bezos' rocket company, Blue Origin, provided the Vulcan's two main engines.

ULA declared success once the lander was free of the rocket's upper stage, nearly an hour into the flight and before the spacecraft's propulsion system malfunctioned and prevented the solar panel from properly pointing toward the sun.

Landing on the moon has long been a series of hits and misses. The Soviet Union and the U.S. racked up a string of successful moon landings in the 1960s and 70s, before putting touchdowns on pause. China joined the elite club in 2013 and [India in 2023](#). But last year also saw landers from Russia and a private Japanese company slam into the moon. An Israeli nonprofit crashed in 2019.



A United Launch Alliance Vulcan rocket lifts off from Cape Canaveral Space Force Station Monday, Jan. 8, 2024. This is the inaugural launch of the rocket, carrying Astrobotic's lunar lander. Credit: Craig Bailey/Florida Today via AP

Next month, SpaceX will provide the lift for a lander from Intuitive Machines. The Houston [company](#)'s Nova-C lander takes a more direct one-week route to the moon.

Besides flying experiments for NASA, Astrobotic drummed up its own freight business, packing the 6-foot-tall (1.9-meter-tall) Peregrine lander. On board the lander: a chip of rock from Mount Everest, toy-size cars from Mexico and ashes and DNA of deceased space enthusiasts, including "Star Trek" creator Gene Roddenberry and science fiction writer Arthur C. Clarke.

The Navajo Nation recently sought to have the launch delayed because of the human remains. saying it would be a "profound desecration" of a celestial body revered by Native Americans. Astrobotic chief executive John Thornton said the December objections came too late but promised to try to find "a good path forward" with the Navajo for future missions.



This photo provided by Astrobotic Technology shows the Peregrine lunar lander at the company's facility in Pittsburgh in October 2023. The expected launch date is Monday, Jan. 8, 2024. Credit: Jordan K Reynolds/Astrobotic Technology via AP



A United Launch Alliance Vulcan rocket lifts off from Cape Canaveral Space Force Station Monday, Jan. 8, 2024. This is the inaugural launch of the rocket, carrying Astrobotic's lunar lander. Credit: Craig Bailey/Florida Today via AP



A United Launch Alliance Vulcan rocket lifts off from Cape Canaveral Space Force Station in Florida, Monday, Jan. 8, 2024. This is the inaugural launch of the rocket, carrying Astrobotic's lunar lander. Credit: Craig Bailey/Florida Today via AP

One of the spaceflight memorial companies that bought room on the [lander](#), Celestis, said in a statement that no single culture or religion owns the [moon](#) and should not be able to veto a mission. More remains are on the rocket's upper stage, which was boosted into a perpetual orbit around the sun reaching as far out as Mars.

Cargo fares for Peregrine ranged from a few hundred dollars to \$1.2 million per kilogram (2.2 pounds), not nearly enough for Astrobotic to break even. But for the first flight, that's not the point, according to

Thornton.

"A lot of people's dreams and hopes are riding on this," Thornton said days before the flight.

© 2024 The Associated Press. All rights reserved. This material may not be published, broadcast, rewritten or redistributed without permission.

Citation: Moon landing attempt by US company appears doomed after 'critical' fuel leak (2024, January 9) retrieved 27 April 2024 from <https://phys.org/news/2024-01-moon-company-doomed-critical-fuel.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.