Rough landing cuts short historic private moon lander mission

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After the historic return of the U.S. to the surface of the moon after more than 50 years last week, a private company's lunar lander will likely have its mission cut short because of how it landed.

Houston-based Intuitive Machines managed to touch down on the moon with its Nova-C lander Odysseus, but the craft tipped over to one side, likely because it had one of its landing gear catch, company officials said. The lunar lander is not expected to be able to maintain power or communicate with mission managers beyond tomorrow.

"Flight controllers intend to collect data until the lander's solar panels are no longer exposed to light. Based on Earth and moon positioning, we believe flight controllers will continue to communicate with Odysseus until Tuesday morning," reads an update from the company's website.

That's bad news for NASA, which paid the company $118 million as part of its Commercial Lunar Lander Services program, which tasks private companies to build hardware capable of bringing payloads to the moon. NASA has six payloads on board worth about $12 million that were aiming for eight to nine days of life before the sun set on that part of the moon, although Intuitive Machines' pre-launch target was seven days.

This means two to four days less life than planned.

It's also bad news for students and faculty at Daytona Beach's Embry-Riddle Aeronautical University, which had one of six other non-NASA payloads on board, a set of cameras called EagleCam, named after the university's mascot. EagleCam was originally designed to be ejected from Odysseus as it made its descent so that it could hit the lunar surface beforehand and capture Odysseus' actual landing.

Because of issues with the lander's navigation system that forced a change in how it landed, the decision was made to keep EagleCam in place.

But plans were still to send EagleCam out so that it could at least get a

photo of the lander and send that back to Earth.

Embry-Riddle's team worked over the weekend after the change in plans, concocting how it would be deployed, as telemetry data indicated EagleCam was still fully operational. Troy Henderson, the faculty lead for EagleCam, said in an Embry-Riddle press release that it expected it could be deployed out to somewhere between nine and 15 feet from the lander.

Images would be transmitted back to the lander via Wi-Fi and then have to be transmitted back to Earth.

With the power loss timetable in place, it's uncertain how much data will actually make it back from the mission.

"We're continuing to monitor data and still think we're healthy," Henderson said in an email to the Orlando Sentinel on Monday. "We continue to hope for the best."

An image of the lander's location taken by NASA's Lunar Reconnaissance Orbiter over the weekend revealed the exact landing spot about 185 miles from moon's south pole. The lander came within about 1 mile of its original intended landing site near the Malapert A crater.

And Intuitive Machines revealed the first image sent by the lander since its landing, although it was of its descent to the surface just before touching down.

"After understanding the end-to-end communication requirements, Odysseus sent images from the lunar surface of its vertical descent to its Malapert A landing site, representing the furthest south any vehicle has been able to land on the moon and establish communication with ground

controllers," the company stated.

The efforts still marked a success for the commercial space industry and NASA. It became the first commercial lunar lander to execute a soft landing, despite the tipover. Two private landers from Israel and Japan were destroyed during their attempts in recent years.

It was the second of NASA's long-delayed CLPS missions following the launch in January of Pittsburgh-based Astrobotic Technology's Peregrine lander that never made it to the moon but was forced to return to Earth to burn up on re-entry after a propellant leak. NASA has seven more CLPS contracts in place with at least two more expected to be announced this year.

Three of those seven CLPS missions are on the clock to fly this year, including another Nova-C lander from Intuitive Machines.

Government efforts by both Japan and India in recent months managed successful lunar landings, adding them to the small list of five nations that have managed to survive. The others are the U.S., Soviet Union and China.