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The far side of the Moon

NEW PHOTOS RELEASED
Isro on Monday released new images of the far side of the Moon captured by the Lander Hazard Detection and Avoidance Camera (LHDAC). Isro said all photos shared by the agency so far were taken on August 19, before the lander Vikram entered the pre-landing orbit.

CONTACT ESTABLISHED WITH CHANDRAYAAN-2
The lander of Chandrayaan-3 established a communication link with the orbiter of its predecessor, Chandrayaan-2, on Monday, confirming the "good health" of the craft, Isro said as it readies for Wednesday's landing. →P2

The far side of the Moon is seen as captured by a camera on the lander of the Chandrayaan-3. PTI

{ LINK ESTABLISHED WITH CHANDRAYAAN-2 }

Vikram sends images of the far side of Moon ahead of landing

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NEW DELHI: The lander module of Chandrayaan-3 established two-way communication with the orbiter of its predecessor, Chandrayaan-2, on Monday, confirming the "good health" of the spacecraft, the Indian Space Research Organisation (Isro) said as the agency prepares for landing on August 23.

"Chandrayaan-3 Mission: 'Welcome, buddy!' Ch-2 orbiter formally welcomed Ch-3 LM," Isro said in a post on X, formerly Twitter.

"Two-way communication between the two is established. MOX (Mission Operations Complex) has now more routes to reach the LM," the post said.

The space agency also released images of the far side of the Moon captured by the Lander Hazard Detection and Avoidance Camera (LHDAC).

LHDAC is designed to assist in locating a safe landing area — without boulders or deep trenches — during the descent, and was developed by Isro at its Space Applications Centre (SAC).

Senior Isro scientists said that all images shared so far were taken on August 19, before Chandrayaan-3's lander, Vikram, entered the pre-landing orbit.

The agency will now conduct internal checks on the landing module ahead of the scheduled powered descent at 5.45pm on Wednesday – the day of landing.

There is, meanwhile, a scope for the extension of the mission's life beyond 14 days.

Speaking to HT on Monday, Isro chairman S Somanath said that over the next two days, the health of Chandrayaan-3 will be continuously monitored. The final sequence of landing will also be loaded and tested on Monday, he said.

The far side of the Moon as captured by Chandrayaan-3. PTI

The initial mission plan was for the lander and the rover, Pragyaan, to have a life of 14 Earth days, which is equivalent to one lunar day. But there is a possibility that the span could be extended, Somanath said.

"The lander and rover will be powered by solar energy. This means that once the Sun sets, all equipment will stop working. However, our tests have shown that there is a possibility of the equipment getting recharged once the Sun rises again. In such a scenario, we could get another 14-15 days," he said.

PICK OF THE DAY

Once the lander successfully makes a soft landing near the lunar south pole, the rover will roll out, reach the surface and click pictures of the Moon's surface for the intended experiments.

On Monday, Isro chief also met with the Union minister of science and technology and space Jitendra Singh to update him on the mission progress. "Chairman Isro briefed the minister on the health status of Chandrayaan-3 and said that all systems are working perfectly, and no contingencies are anticipated on Wednesday," a statement issued by the ministry of science and technology said.

"Dr Jitendra Singh expressed his confidence in Chandrayaan-3 making a soft landing this time and hoped that it will script a new history of planetary exploration under the guidance of the Prime Minister Shri Narendra Modi," the statement said.

If Chandrayaan's lander Vikram makes it to the surface as planned, it will be the first time any country's mission has reached the south polar region.

A follow-up mission to the 2019 Chandrayaan-2, the latest programme has three objectives —to demonstrate a safe and soft landing on the lunar surface, to demonstrate rover abilities on the surface of the moon, and to conduct scientific experiments.

A successful landing on the moon will make India the fourth country to land on the surface of the moon after the United States, the erstwhile Soviet Union, and China.

Before this, all the lunar missions have only landed in the equatorial region of the moon — a few degrees north or south of the lunar equator. Only the Surveyor-7, launched by National Aeronautics and Space Administration (Nasa) in 1968, managed to land near 40 degrees south latitude, which is the furthest any spacecraft has landed from the equator.

Soft landings occur when the craft touches down at a safe, slow, and controlled speed. Soft landings are particularly necessary on crewed missions or missions in which the craft is expected to take scientific measurements or perform tests after landing, as is the case with the Chandrayaan-3 mission.

Chandrayaan-3 consists of an indigenous lander module (LM), a propulsion module (PM) and a rover, to develop and demonstrate new technologies required for interplanetary missions. The lander has the capability to soft land at a specified lunar site and deploys the rover, which will carry out in-situ chemical analysis of the lunar surface during the course of its mobility.

After the lander module was separated from the propulsion module, the latter will now continue its journey along the lunar orbit for at least six months.

In the second lunar mission, the soft-landing attempt by the Indian space agency failed, but Isro managed to successfully place its orbiter in path, which continues to provide key information.