hindustantimes.com
@hindustantimes @httweets @hindustantimes @hindustantimes
VOL. XCIX NO. 211 PRICE ₹6.00/WITH HINDUSTAN ₹10.50 (₹9.50 IN FARIDABAD)/WITH MINT ₹15.50 26 PAGES + 4 PAGES OF HT CITY. AREA SPECIFIC PAGES EXTRA.

Hindustan Times
FIRST VOICE. LAST WORD.

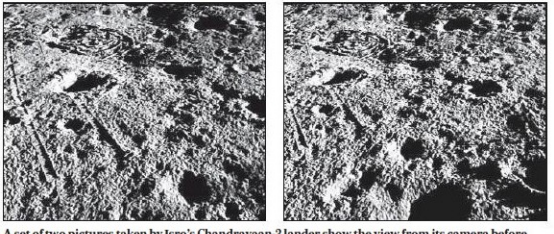
Vikram pulls off a lunar hop before entering sleep mode

Soumya Pillai
letters@hindustantimes.com

NEW DELHI: Hours before being put to "sleep" — at least until the next lunar sunrise on September 22 — the Vikram lander achieved a significant milestone by successfully "hopping" on the lunar surface on Sunday in a manoeuvre that confirmed the capability of future missions where humans can land on the Moon and spacecrafts can return to Earth with samples.

The Indian Space Research Organisation (Isro) said on Monday that the Vikram lander "exceeded its mission objectives" when, late on Sunday, its engines were fired up again, and the lander took flight to elevate itself to a height of around 40cm and landed softly again around 30-40cm away from the Shiv Shakti point, where it made a historic landing on August 23.

"Chandrayaan-3 Mission: Vikram soft-landed on [Moon emoji] again! Vikram Lander exceeded its mission objectives. It successfully underwent a hop experiment. On command, it fired the engines, elevated itself by about 40 cm as expected and landed safely at a distance of 30-40 cm away. Importance: This 'kick-start' enthuses future sample return and human missions! All systems performed nominally and are healthy. Deployed Ramp, ChaSTE and ILSA were folded back and redeployed successfully after the experiment," Isro posted on X.



A set of two pictures taken by Isro's Chandrayaan-3 lander show the view from its camera before (left) and after (right) Vikram took flight to elevate itself to a height of around 40cm and landed softly again around 30-40cm away. ISRO

It also posted a video and photos that showed the lander on the two adjacent landing locations.

With the success of the hop experiment, India has joined the elite club of nations that have developed the technology for return missions from the Moon. US's Surveyor-6 mission was the first to have demonstrated this technology in 1967.

Before termination of operations, on November 17, 1967, Surveyor-6 was commanded to fire its three main liquid propellant thrusters for 2.5 seconds, making it the first spacecraft to be launched from the lunar surface. Surveyor-6 lifted to about 10 feet — around 3m — before landing about 8 feet (around 2.5m) west of its original landing point.

Isro chairman S Somanath explained that this experiment demonstrated that the lander was capable of undertaking a take-off and landing again, while also repeating functions such as deploying and rolling back the ramps etc. This, he said, would be useful when the lander has to undergo return

continued on → 15

VIKRAM'S LUNAR HOP

missions.

"In this mission the lander and the rover will remain on the lunar surface as India's ambassadors on the Moon. But for the future, for instance, we will be advancing lunar missions to take humans to the Moon, where the lander will have to make a return. This experiment was to demonstrate this expertise," he said.

Senior officials from Isro said that the experiment was carried out before the lander was put to "sleep" at 8am on Monday. The Chandrayaan-3 mission, according to Isro, has officially achieved all its objections. However, on September 22, scientists will try to revive the equipment on board the lander and the Pragyan rover to attempt a possible extension. This will happen if the instruments are able to brave the low temperatures recorded during lunar nights. According to findings from earlier expeditions, the nighttime temperatures on the Moon tend to fall to as low as around minus-200°Celsius.

"Vikram Lander is set into sleep mode around 0800 Hrs IST today. Prior to that, in-situ experiments by ChaSTE, RAMBHA-LP and ILSA payloads are performed at the new location. The data collected is received at the Earth. Payloads are now switched off. Lander receivers are kept ON... Hoping for their awakening, around Sept 22, 2023," Isro said.

HT reported on Sunday that Isro had started retiring its instruments in a phased manner as the visibility around India's landing spot had started reducing, owing to the scheduled lunar sunset on September 4. They, however, stressed that they are "extremely satisfied" with the data that has come from the mission and if the mission manages to revive on September 22, it will be a "bonus".

India's third lunar mission, Chandrayaan-3 was launched on July 14 from the Sriharikota spaceport, which commenced the spacecraft's 40-day journey to the moon. On August 23, at lunar dawn — 6.03pm IST — the lander module successfully landed near the lunar south pole, a region hitherto unexplored by any country.