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{ TAKE-OFF ABILITY IN FOCUS } NEXT CHANDRAYAAN?

After Vikram's 'hop', Isro eyes next lunar leap: Missions to bring back samples from the Moon

Soumya Pillai
letters@hindustantimes.com

NEW DELHI: After the success of Chandrayaan-3, India's third mission to the Moon, the Indian Space Research Organisation (Isro) is developing expertise in missions that would be capable of returning samples to Earth, and a hop carried out on the lunar surface by the Vikram lander on September 3 was a move in that direction, officials said.

The findings from Chandrayaan-3, especially the successful hop experiment, will form the basis of future lunar missions, an Isro official said, declining to be named. Based on experiments on the moon, the space agency will design programmes where samples can be brought back to Earth, he said.

"There is no definitive timeline for this yet, but we are working on developing our systems in a way that it can undertake a return flight," the official said. "The hop experiment was only a demonstration of the larger plan."

Few countries have demonstrated the ability to take off from another celestial object, making the hop — for which the Vikram lander on September 3 fired up its rockets to elevate to a height of 40cm and land back again — a crucial trial.

"Chandrayaan-3 Mission: Vikram soft-landed on, 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

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CHANDRAYAAN

away. Importance: This 'kickstart' 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 said after the experiment at the time.

The space agency is also working with Japan for a lunar mission, the Lunar Polar Exploration (LUPEX) project, an initiative to explore the Moon for water and other resources and gaining expertise in exploring its surface.

The LUPEX project is an international cooperative project, with the Japan Aerospace Exploration Agency in charge of the lunar rover and Isro responsible for the lander that will carry the rover. Observation instruments from National Aeronautics and Space Administration (Nasa) and European Space Agency (ESA) will be mounted on the rover.

"Analyses of various observational data over recent years suggest that water may be present in the lunar polar regions," the Japanese agency said in a mission document. "If water can be found in these regions, it could be used as an energy source for future human activities on the Moon."