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Key test today for India's human spaceflight mission

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NEW DELHI: The stage is set for a crucial step in India's human space flight mission as a rocket carrying a replica of the Gaganyaan crew module was scheduled to take flight at 8am on Saturday from the first launchpad of the Satish Dhawan Space Centre in Sriharikota, the Indian Space Research Organisation (ISRO) said on Friday.

Last-minute checks were on for a test flight that will enable the agency to carry out a series of safety tests for the Gaganyaan mission, one of the officials aware of the matter said.

"On Saturday, Isro will conduct in-flight abort demonstration of Crew Escape System (CES) at Mach 1.2 with the newly developed test vehicle followed by crew module separation and safe recovery," Isro's test flight brochure read.

Isro aims to evaluate the sub-systems of the test vehicle, crew escape systems, and various separation systems.

It will also check the characteristics of the crew module to determine its deceleration characteristics at a higher altitude, and its recovery plan.

The liquid propelled single stage test vehicle, or TV-DL, uses a modified VIKAS engine with crew module and crew escape system mounted at its fore end.

Gaganyaan, India's first human spaceflight mission, envisages to launch a crew of three members to an orbit of 400km for a three-day mission, and bring them back safely. Leading up to the actual



Isro will commence the flight tests for the Gaganyaan Mission from Satish Dhawan Space Centre, in Sriharikota. ANI

manned mission, the space agency will conduct several rounds of tests to ensure the systems are safe to carry and bring back astronauts – called Vyommans – safely to Earth. It

is likely to be launched in 2025, officials have indicated.

The mission is the next ambitious leap for India's space agency after a staggering couple of successes this year. Isro put

the first spacecraft near the south pole of the Moon (Chandrayaan-3) and sent a probe to survey the Sun (Aditya-L1), challenging the space programmes of countries with much deeper pockets and far longer history of space exploration.

After the TV-DL test flight demonstration, the space agency will also carry out a test flight with the robot Vyommitra – a humanoid astronaut – and an unmanned flight, according to officials from the department of space.

The prerequisites for Gaganyaan mission include the development of several critical technologies, including a human-rated launch vehicle to carry the crew to space, a life support system to provide an Earth-like environment, crew emergency escape provisions, and systems for the recovery and rehabilitation of crew.

For Saturday's test flight, the crew escape system consists of five types of quick-acting solid motors – crew escape system jettisoning motor (CJM), high-altitude escape motor (HEM), low-altitude escape motor (LEM), low-altitude pitch motor (LPM), and high-altitude pitch motor (HPM).

"An Indian Navy team will lead the recovery of TV-DL crew module after touchdown, approximately 10km from the Sriharikota coast. Recovery ships positioned at a safe range in sea waters will approach the crew module and a team of divers will attach a buoy, hoist the crew module using a ship crane and bring to the shore," the test flight brochure said.