

Crew Escape System

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Crew Escape System Latest News

ISRO has developed a cost-effective, single-stage Test vehicle powered by the Vikas engine to validate the crew escape system (CES).

About Crew Escape System

- It is an **emergency escape measure** designed to quickly pull the crew module along with the astronauts to a safe distance from the launch vehicle in the event of a launch abort.
- The CES is classified into two types based on the way it extracts the crew module:
 - **Puller type:** It is used in Gaganyaan, where the CES pulls the **crew module away from the launch vehicle**;
 - **Pusher type:** It is used in vehicles like SpaceX's Falcon 9, where the crew module is pushed away using compact, high-thrust liquid-fuel engines.
- The U.S.'s Saturn V, Russia's Soyuz, and China's **Long March** vehicles also use puller-type CES designs.

Working of Crew Escape System

- Once the CES has moved the crew module a safe distance away from the failing vehicle, the module will be **released and decelerated by a multistage parachute system.**
- It will **reduce the module's velocity in steps**, ensuring it splashes down safely in the sea without exceeding the crew's physiological limits upon impact.
- Typically, the crew will remain inside the **module until splashdown.**
- The **Integrated Vehicle Health Management system (IVHM)**, which is a network of sensors, electronics, and software, will aid in **taking a decision to activate the CES** when a contingency arises.
 - It will **monitor all vital parameters of vehicle systems** and crew health in real time.
 - Based on the synthesised information and the flight regime, it will ensure prompt anomaly detection, minimise false alarms, and activate the CES early enough to protect the crew.

Source: TH

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