ISRO’s SSLV-D2

Why in News?

In its second attempt, the **Indian Space Research Organisation (ISRO)**’s smallest vehicle, **Small Satellite Launch Vehicle (SSLV-D2)**, was launched from the Satish Dhawan Space Centre, Sriharikota, Andhra Pradesh.

- The **vehicle’s first development flight (SSLV D1)** that took place in August 2022 failed to place the satellites in precise orbit.
- This time **structural changes have been made to the equipment bay,** along with changes in the separation mechanism for stage 2, and logic changes for the on-board system.

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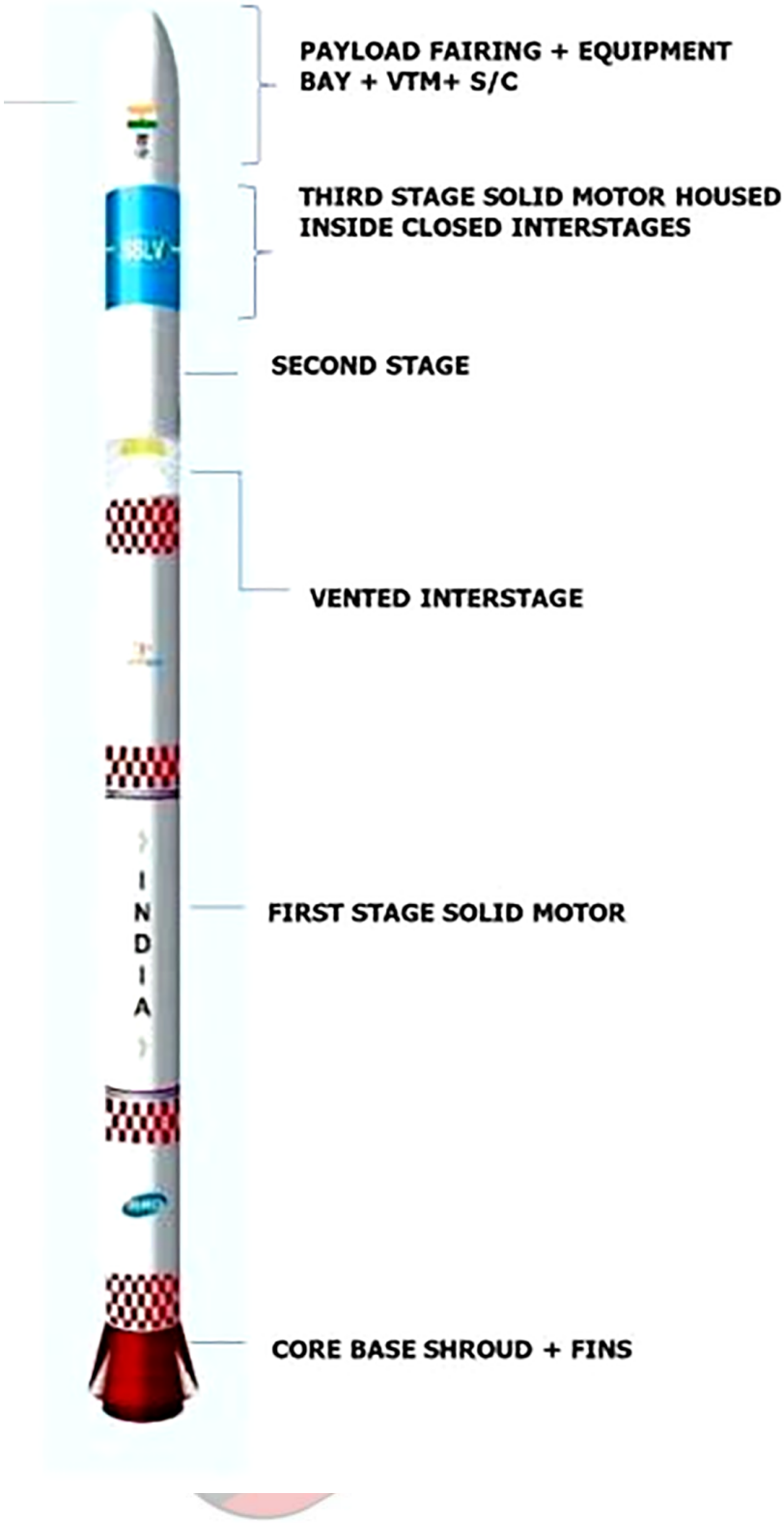

Note

- A new vehicle is declared operational by ISRO after it completes two successful development flights.
- The last vehicle to be declared operational was the **GSLV Mk III,** now called **LVM 3,** when it carried Chandrayaan-2 **in 2019.**

What's Onboard in SSLV-D2?

- SSLV-D2 will place the ISRO's earth observation satellite **EOS-07 and two co-passenger satellites - Janus-1 and AzaadiSat2.**
  - **Janus-1:**
    - It is a technology demonstrator satellite built by US-based Antaris and its Indian partners XDLinks and Ananth Technologies.
    - It is a **six-unit cube satellite** with five payloads on board — two from Singapore, and one each from Kenya, Australia, and Indonesia.
  - **AzaadiSat2:**
    - It is a **Cubesat** weighing around 8 kg and carries 75 different payloads.
    - Girl students from rural regions across the country were provided guidance to build these payloads.
    - The payloads are integrated by the student team of "Space Kidz India".
  - **EOS-07:**
    - EOS-07 is a **156.3 kg satellite designed and** developed by ISRO.
    - Its mission objective is to design and develop payload instruments compatible with microsatellite buses and new technologies for future operational satellites.

What is a Small Satellite Launch Vehicle?

- **About:**
  - SSLV is a 3 **stage Launch Vehicle** configured with three Solid Propulsion Stages and Liquid propulsion-based Velocity Trimming Module (VTM) as a terminal.
  - It is **2 m in diameter and 34m in length with** a lift off weight of 120 tonnes and is capable of launching a 10 to 500 **kg satellite in 500 km planar orbit.**
  - The rocket **can be assembled by a small team in only a few days,** compared to the 6 months and around 600 people it takes for ISRO's workhorse **PSLV.**
- **Objective:**
  - It has been developed to **capture the emerging small (nano-micro-mini) satellite** commercial market, with launches offered on demand.
- **Significance:**
  - It provides **low-cost access to Space**, offers **low turn-around time,** facilitates **flexibility** in accommodating multiple satellites and demands minimal launch infrastructure.

Source: IE