Indian Space Research Organisation (ISRO)’s 100th launch

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Context:

The **Indian Space Research Organisation (ISRO)** has successfully completed its **100th launch** with the successful placement of the **NVS-02 satellite** into **Geosynchronous Transfer Orbit (GTO)** using the **GSLV-F15** launch vehicle from the **Satish Dhawan Space Centre** in Sriharikota, Andhra Pradesh. Here's a breakdown of this historic achievement:

About:

- **Launch Vehicle**: The **GSLV-F15** is a three-stage vehicle equipped with a **CUS 15 cryogenic engine** in the third stage.
- **NVS-02 Satellite**: The **NVS-02** is the second satellite in the **NavIC** series, which is part of India's **Navigation with Indian Constellation (NavIC)**. This satellite strengthens India's regional navigation satellite system.

About NavIC:

- **NavIC** (formerly known as **IRNSS** or Indian Regional Navigation Satellite System) is a **regional satellite navigation system** developed by ISRO.
- **Constellation**: It consists of **7 satellites**, with 3 positioned in **geostationary orbit** and 4 in **inclined geosynchronous orbit**.
- **Coverage Area**: The system covers **India and a region extending 1500 km beyond** the Indian boundary.
- **Services**:
- **Standard Positioning Service (SPS)**: For civilian users.
- **Restricted Service**: For strategic users.
- **Accuracy**:
- The **SPS** offers an **accuracy of better than 20 meters**.
- **Timing accuracy**: better than **40 nanoseconds**.
- **Interoperability**: NavIC’s **SPS signals are compatible with other global navigation systems** like **GPS** (USA), **GLONASS** (Russia), **Galileo** (EU), and **BeiDou** (China).

About ISRO:

- **Formation**: Established on **August 15, 1969**, ISRO was preceded by the **Indian National Committee for Space Research (INCOSPAR)**, formed in 1962 under the vision of **Dr. Vikram Sarabhai**.
- **Headquarters**: **Bengaluru**, Karnataka.
- **Mission**: ISRO focuses on the **development and application of space technology** for national progress and security.

- **First Launch**: ISRO's first experimental flight, the **SLV-3** (carrying the **Rohini Technology Payload**) took place in **1979**, led by **Dr. A.P.J. Abdul Kalam**.

Timeline:

The **Indian Space Research Organisation (ISRO)**'s journey began with a modest but significant first launch on **August 10, 1979**, when the **Satellite Launch Vehicle-3 (SLV-3 E10)** was launched carrying the **Rohini Technology Payload**.

This mission was **only partially successful**.

Notably, **Dr. A.P.J. Abdul Kalam**, who later became the **President of India**, was the **Director of the mission** at the time.

His leadership and perseverance, along with the dedication of ISRO officials, led to a breakthrough the following year.

On **July 18, 1980**, just a year after the setback, ISRO successfully launched the **SLV-3E2** mission, successfully placing the **Rohini Satellite (RS-1)** into orbit.

This was the first time ISRO placed an indigenously developed satellite into orbit, marking a major success for the organization.

Since then, ISRO has launched a range of missions, including:

- **SLV Missions**: ISRO carried out **two more SLV missions** following the success of the **SLV-3E2**.
- **ASLV Missions**: The **Augmented Satellite Launch Vehicle (ASLV)** program had **four missions**.
- **PSLV Missions**: The **Polar Satellite Launch Vehicle (PSLV)**, known as ISRO’s workhorse, has completed an impressive **62 missions**.
- **GSLV Missions**: The **Geosynchronous Satellite Launch Vehicle (GSLV)** program has conducted **16 missions**.
- **LMV3 Missions**: The **Launch Vehicle Mark 3 (LMV3)**, a more recent development, has completed **seven missions**.
- **SSLV Missions**: The **Small Satellite Launch Vehicle (SSLV)** program has conducted **three missions**.
- **RLV Mission**: ISRO also tested its **Reusable Launch Vehicle (RLV)** with **one mission**.
- **Gaganyaan Programme**: As part of India's **human spaceflight program**, ISRO has tested crucial components with **one Test Vehicle Abort Mission (TVAM)** and **one Pad Abort Test (PAT)**.

Each of these milestones represents significant advancements in ISRO’s capabilities, from launching small satellites to preparing for India’s **first crewed space mission**, **Gaganyaan**, which aims to send Indian astronauts to space.