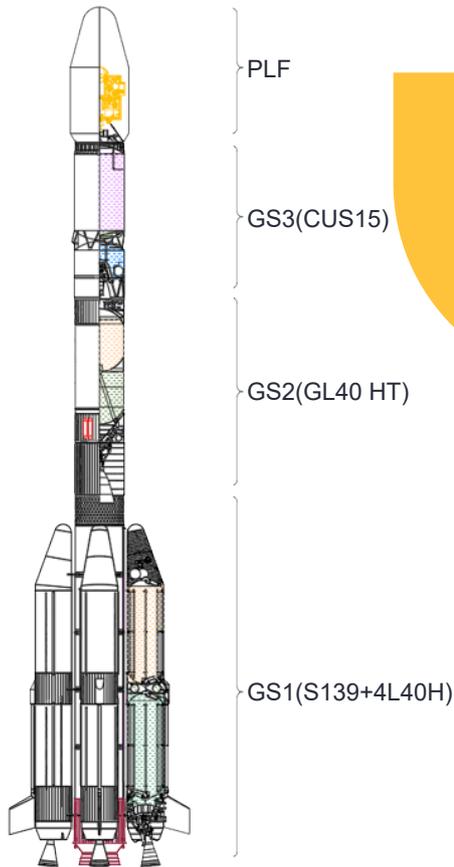




## GSLV-F15/NVS-02 MISSION

GSLV-F15 is the 17<sup>th</sup> flight of India's Geosynchronous Satellite Launch Vehicle (GSLV) and 11<sup>th</sup> flight with Indigenous Cryo stage. It is the 8<sup>th</sup> operational flight of GSLV with an indigenous Cryogenic stage and 100<sup>th</sup> Launch from the India's Spaceport Sriharikota. GSLV-F15 payload fairing is a metallic version with a diameter of 3.4 meters.

The GSLV-F15 with indigenous Cryogenic stage will place NVS-02 satellite into a Geosynchronous Transfer Orbit & the launch will take place from the Second Launch Pad (SLP) at Satish Dhawan Space Centre, SHAR.



Vehicle Configuration

**17<sup>th</sup>**  
Flight of  
**GSLV**

**100<sup>th</sup>**  
**Launch**  
from  
**SDSC-SHAR**

**8<sup>th</sup>**  
Operational  
Flight with  
Indigenous  
Cryostage

### GSLV-F15 Vehicle Characteristics

Vehicle Height	50.9 m
Lift off Mass	420.7 t
Stages	3
First Stage (GS1)	S139+4L40H
Second Stage (GS2)	GL40HT
Third Stage (GS3)	CUS 15 (Indigenous)

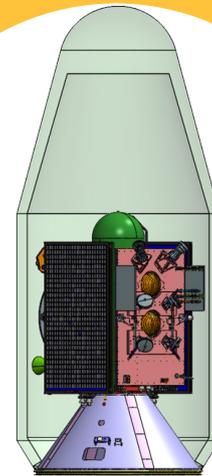
**GSLV-F15 Stage Configuration**  
**(S139+4L40H+GL40HT+CUS15+ø3.4m Metallic PLF)**

**GSLV-F15 Stages at a Glance**

Stages	First Stage (GS1)		Second Stage (GS2)	Third Stage (GS3)
	S139	4L40H	GL40HT	CUS
Parameter				
Length (m)	20.176	19.682	11.958	9.894
Diameter (m)	2.8	2.1	2.8	2.8
Propellant	HTPB	UH25 + N <sub>2</sub> O <sub>4</sub>	UH25 + N <sub>2</sub> O <sub>4</sub>	LH <sub>2</sub> + LOX
Propellant Mass (t)	138.1	170.7	42.15	14.96
Stage Mass at Lift-Off (t)	160.7	191	47.3	17.6

**GSLV-F15 Mission Specification**

Orbit	<b>GTO</b>
Perigee	170 km
Apogee	36577 km
Argument of Perigee	178 ± 0.5 deg.
Inclination	20.79 ± 0.1 deg.
Launch Azimuth	106 deg.
Payload Mass	2250 kg

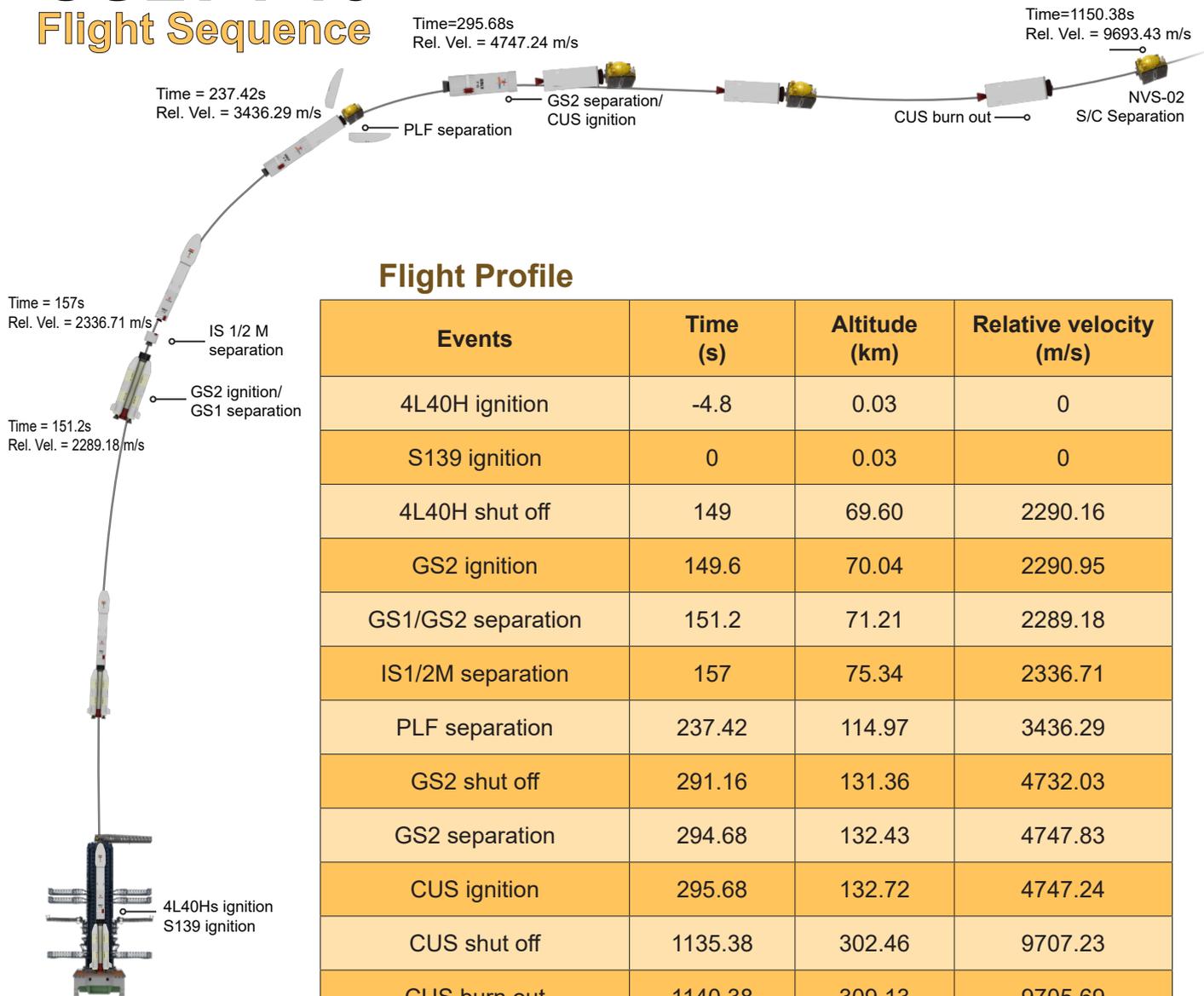


**GSLV-F15**

**Payload**  
Accommodation

# GSLV-F15

## Flight Sequence



## **NVS-02** **Satellite**

Navigation with Indian Constellation (NavIC) is India's independent regional navigation satellite system designed to provide accurate Position, Velocity and Timing (PVT) service to users in India as well as to region extending about 1500 km beyond Indian land mass.

NavIC will provide two types of services, namely, Standard Positioning Service (SPS) and Restricted Service (RS). NavIC's SPS provides a position accuracy of better than 20 m ( $2\sigma$ ) and timing accuracy better than 40 ns ( $2\sigma$ ) over the service area.

Five second-generation NavIC satellites viz., NVS-01/02/03/04/05 are envisaged to augment NavIC base layer constellation with enhanced features for ensuring the continuity of services. The NVS series of satellites incorporate L1 band SPS signals to improve adoption of NavIC services. NVS-01 is the first of the second-generation satellite that has already flown with an indigenous atomic clock on May 29, 2023.



Like its predecessor, NVS-02, the second satellite in the NVS series is configured with Navigation payload in L1, L5 and S band in addition to ranging payload in C-band. It is configured on standard I-2K bus platform with a lift-off mass of 2250 kg and power handling capability of ~3 kW. It will be placed at 111.75°E replacing IRNSS-1E. NVS-02 uses a combination of indigenous and procured atomic clocks for precise time estimation.

## Navigation Payloads

The navigation payload operates in L1, L5, and S bands and employs Tri-band antenna. The heart of the navigation payload is the Rubidium Atomic Frequency Standard (RAFS), an atomic clock which acts as a stable frequency reference for the navigation payload.

## Ranging Payloads

The ranging payload consists of CxC transponder used for two-way CDMA ranging to facilitate precise orbit determination.

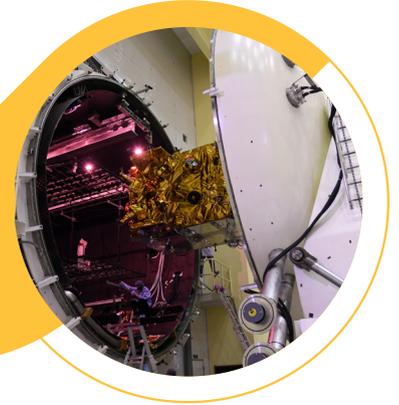
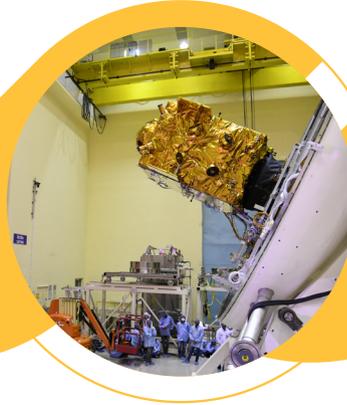


## The Key Applications of NavIC



- ✓ Strategic applications
- ✓ Terrestrial, aerial, and maritime navigation
- ✓ Precision agriculture
- ✓ Geodetic surveying
- ✓ Fleet management
- ✓ Location-based services in mobile devices
- ✓ Orbit determination for satellites
- ✓ Internet-of-Things (IoT) based applications
- ✓ Emergency services
- ✓ Timing services

**NVS-02 undergoing Comprehensive Assembly in Thermo-Vacuum test facility (CATVAC)**



**NVS-02 undergoing Acceptance Vibration Test**



**NVS-02 undergoing Solar Panel Deployment Test**



**NVS-02 undergoing Acoustic Test**





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