GSLV-F18 successfully launches NVS-03 navigation satellite – a boost to restoring NavIC

Science, Sports, Defence & International · 1 November 2026 · https://www.shanmugamiasacademy.in/current-affairs-english/2026/11/01



News

ISRO's GSLV-F18 lifted off from the Second Launch Pad of Satish Dhawan Space Centre, Sriharikota, at 11:51 pm IST on 30 October 2026 and successfully placed the NVS-03 navigation satellite in the intended Geosynchronous Transfer Orbit (GTO). It was the 20th flight of the GSLV. NVS-03, the third satellite of the next-generation NVS series, carries an indigenous atomic clock along with procured atomic clocks and adds the L1 signal to the existing L5 and S-band signals. The first orbit-raising burn was carried out on 31 October; ISRO Chairman V. Narayanan was reported as saying that NavIC now has the minimum number of satellites needed to restore its services.

Key facts

Launch	30 Oct 2026, 11:51 pm IST – Second Launch Pad, Satish Dhawan Space Centre, Sriharikota (Andhra Pradesh)
Rocket	GSLV-F18 – 20th flight of GSLV; about 50 m tall, about 420 t at lift-off; 3 stages (S139 + 4 L40H strap-ons, GL40HT, cryogenic CUS15)
Satellite	NVS-03 – 3rd of the next-generation NVS series; payload about 2,250 kg

Orbit	GTO (planned 170 km × 37,023 km, inclination 20.75°); to be raised to geosynchronous orbit (GSO)
Signals	New L1 + L5 + S-band; indigenous atomic clock + procured atomic clocks
Coverage	Indian landmass and about 1,500 km beyond its boundary
NavIC status	As of July 2026 only 3 satellites (IRNSS-1B, IRNSS-1I, NVS-01) were working; at least 4 are needed for standalone positioning

Background – NavIC and GSLV

- NavIC (IRNSS – Indian Regional Navigation Satellite System): approved in 2006; first satellite IRNSS-1A launched on 1 July 2013 by PSLV-C22. Design – 7 satellites: 3 geostationary (32.5°E, 83°E, 131.5°E) + 4 inclined geosynchronous (55°E, 111.75°E).
- Atomic-clock problem: all three rubidium atomic clocks of IRNSS-1A failed in 2016. Its replacement IRNSS-1H did not reach orbit on 31 Aug 2017 because the heat shield of PSLV-C39 failed to separate.
- NVS-01: launched on 29 May 2023 by GSLV-F12 – the first NavIC satellite with an indigenous atomic clock (replaced IRNSS-1G).
- NVS-02: launched on 29 Jan 2025 by GSLV-F15 – ISRO's 100th launch from Sriharikota. Its oxidiser valves did not open, so it could not be raised to its orbit. With NVS-03, the NavIC series has 12 satellites (IRNSS-1A to 1I = 9, plus NVS-01, 02, 03).
- GSLV (Mk II): a three-stage rocket whose third stage is an indigenous cryogenic stage (liquid hydrogen + liquid oxygen); can carry about 2,250 kg to GTO. Heavier satellites go on LVM3.
- Navigation systems of the world: GPS (USA), GLONASS (Russia), Galileo (European Union), BeiDou (China) – global; NavIC (India), QZSS (Japan) – regional.

Tamil Nadu link: Tamil Nadu link: GSLV's cryogenic engine (CE-7.5) is tested at the ISRO Propulsion Complex (IPRC), Mahendragiri, Tirunelveli district; GSLV's second stage (GS2) and L40 strap-on stages are also integrated there. (The launch site, Sriharikota, is in Andhra Pradesh.)

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