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PSLV-C62 Failure — Two Consecutive Failures and What It Means for India's Space Ambitions

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SCIENCE & TECH

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WHY IN NEWS

ISRO's PSLV-C62, launched on January 12, 2026 from Satish Dhawan Space Centre, Sriharikota, suffered a Stage 3 anomaly causing the loss of 16 satellites — including the primary payload EOSN1. This was ISRO's second consecutive PSLV failure, both involving Stage 3 anomalies, raising serious questions about the reliability of India's most trusted launch vehicle.

PSLV — INDIA'S WORKHORSE ROCKET

The **Polar Satellite Launch Vehicle (PSLV)** is ISRO's most celebrated rocket, having flown over 60 successful missions since its first operational success in 1994. Its reliability record — with a single previous failure (PSLV-C61 in 2025, and the first flight PSLV-D1 in 1993) — made it the vehicle of choice for India's most critical missions including Chandrayaan-1, Mars Orbiter Mission (Mangalyaan), and hundreds of commercial satellites.

PSLV configuration: 4-stage vehicle with alternating solid and liquid propulsion:

Stage	Propulsion	Fuel
Stage 1 (PS1)	Solid	HTPB (Hydroxyl-Terminated Polybutadiene)
Stage 2 (PS2)	Liquid	N ₂ O ₄ + UDMH
Stage 3 (PS3)	Solid	HTPB
Stage 4 (PS4)	Liquid	MMH + MON

Stage 3 is a **solid-propellant stage** — once ignited, it cannot be throttled or shut down. Anomalies in solid stages are therefore catastrophic, with no recovery option once ignition occurs.

WHAT HAPPENED IN PSLV-C62

Timeline on January 12, 2026:

10:17 AM IST: PSLV-C62 lifted off from the First Launch Pad (FLP), Sriharikota

Stages 1 and 2: Normal performance

Stage 3 ignition: A **roll-rate disturbance** developed during Stage 3 burn — the rocket began rotating around its longitudinal axis beyond control parameters

Before Stage 3 separation: The rocket lost attitude control; flight termination conditions were met

Impact: Rocket entered a suborbital trajectory of approximately **-3,800 × 390 km** at 98° inclination; debris impacted the **Southern Indian Ocean** near 75°E, 18°S

The only partial survivor was the **Spanish re-entry capsule “KID”** (Keel Internal Device), which separated from the rocket before Stage 3 separation and transmitted telemetry data for approximately 3 minutes while experiencing peak deceleration of 28g before ocean impact.

PAYLOADS LOST

PSLV-C62 was carrying **16 satellites** across multiple categories:

EOSN1 — Primary payload; Earth Observation Satellite; next-generation imaging satellite for India (ISRO)

DRDO microsatellite — Electronic intelligence/surveillance (classified)

Nepali satellite — Small research satellite from Nepal

Spanish payloads — Commercial and technology demonstration

Mauritian and Brazilian satellites — Small commercial/educational

The loss represents not just the satellite value but also **customer confidence** — ISRO’s commercial launch arm **NewSpace India Limited (NSIL)** had booked the co-passenger slots as commercial launches.

THE ALARMING PATTERN — TWO CONSECUTIVE STAGE 3 FAILURES

The previous PSLV failure, **PSLV-C61** in **May 2025**, also involved a **Stage 3 anomaly** — making this the second consecutive failure attributable to the third stage of India’s most trusted rocket.

This is unprecedented for PSLV. The pattern raises critical questions:

Common root cause? Were both failures caused by the same design defect, manufacturing deviation, or quality control failure in the solid motor?

Vendor issues? ISRO’s solid propellant technology for PSLV Stage 3 involves VSSC (Vikram Sarabhai Space Centre) and SDSC-SHAR. Were there batch-level quality issues with the propellant casting or motor assembly?

Insufficient post-C61 investigation? Was the failure investigation after PSLV-C61 thorough enough before clearing PSLV-C62 for flight?

ISRO Chairman **V. N. Narayanan** announced the constitution of a **Failure Analysis Committee (FAC)** — the standard ISRO protocol for investigating mission anomalies.

IMPLICATIONS FOR INDIA'S SPACE PROGRAMME

Commercial launch market impact: ISRO/NSIL had been growing its commercial satellite launch business, competing with SpaceX's Falcon 9, Arianespace, and China's Long March rockets. Two consecutive failures will:

- Cause commercial customers to seek alternative launch vehicles
- Reduce ISRO's pricing power in the global commercial launch market
- Potentially delay NSIL's revenue projections

Gaganyaan delay risk: While Gaganyaan uses **LVM3 (GSLV Mk-III)** and not PSLV, the broader institutional credibility and workforce morale impact of consecutive failures creates indirect pressure on all ISRO programmes.

Insurance costs: Satellite launch insurance premiums typically rise after a launcher's failure. ISRO's customers will face higher launch insurance costs until PSLV demonstrates consistent reliability again.

Return to flight (RTF): ISRO's RTF timeline will depend on the Failure Analysis Committee's findings. Given two consecutive Stage 3 failures, the FAC investigation is likely to be more thorough than the post-C61 review. A minimum of 6–12 months before the next PSLV flight is probable.

ISRO'S HISTORICAL RELIABILITY RECORD

Vehicle	Flights	Failures	Reliability
PSLV	64	3 (PSLV-D1, PSLV-C61, PSLV-C62)	~95%
GSLV Mk-I/II	15	5–6	~60–67%
LVM3/GSLV Mk-III	7	0	100%
SSLV	3	1 (SSLV-D1)	~67%

PSLV's exceptional track record of ~95% reliability — far better than GSLV — is precisely why these consecutive failures are so damaging. ISRO must demonstrate that the Stage 3 root cause has been fully identified and rectified before flying again.

UPSC RELEVANCE

Prelims: PSLV-C62 (64th PSLV; January 12, 2026; Stage 3 failure; 16 satellites; EOSN1; Sriharikota; ISRO Chairman V.N. Narayanan); PSLV stages (4-stage; solid-liquid alternating); NSIL (NewSpace India Limited — ISRO commercial arm); PSLV history (first success 1994; PSLV-D1 1993 partial failure).

Mains GS-3: India's space economy and commercial launch market; ISRO institutional accountability; failure analysis protocols; implications for Gaganyaan and India's space station ambitions; private space sector growth under IN-SPACe.

★ FACTS CORNER — KNOWLEDGEPEDIA

PSLV-C62 MISSION:

Launch: January 12, 2026; 10:17 AM IST

Launch Pad: First Launch Pad (FLP), SDSC-SHAR, Sriharikota, Andhra Pradesh

Vehicle: PSLV-C62; 64th PSLV flight

Failure: Roll-rate disturbance in Stage 3; loss of attitude control before separation

Impact: Southern Indian Ocean (~75°E, 18°S); suborbital trajectory -3,800 × 390 km

Satellites lost: 16 (EOSN1 + 15 co-passengers: DRDO, Nepal, Spain, Mauritius, Brazil)

Survivor: Spanish re-entry capsule "KID" (transmitted 3 min data; 28g peak deceleration)

ISRO Chairman: V. N. Narayanan

2nd consecutive PSLV failure (PSLV-C61, May 2025 was first; also Stage 3)

PSLV TECHNICAL SPECS:

Type: 4-stage (alternating solid-liquid); expendable

Stage 1: Solid (HTPB); Stage 2: Liquid (N₂O₄ + UDMH); Stage 3: Solid; Stage 4: Liquid

Variants: PSLV-G (standard), PSLV-CA (no strap-ons), PSLV-XL (extended strap-ons)

Mass to LEO: ~3.8 tonnes (XL variant); to SSO: ~1.9 tonnes

Notable missions: Chandrayaan-1 (2008); MOM/Mangalyaan (2013); Astrosat (2015)

ISRO COMMERCIAL ARM:

NSIL: NewSpace India Limited — ISRO's commercial vehicle; handles satellite launches, manufacturing, leasing

IN-SPACe: Indian National Space Promotion and Authorisation Centre; promotes private space sector; established 2020

KEY ISRO CENTRES:

VSSC: Vikram Sarabhai Space Centre, Thiruvananthapuram — rocket design and solid propellant

SDSC-SHAR: Satish Dhawan Space Centre, Sriharikota — launch facility

URSC: U R Rao Satellite Centre, Bengaluru — satellite design and fabrication

SAC: Space Applications Centre, Ahmedabad — payload development

ISRO UPCOMING MISSIONS:

Chandrayaan-4: Lunar sample return; ~2028

Gaganyaan: First crewed mission; target 2026–27

NISAR: Joint ISRO-NASA SAR satellite; L & S band; launch 2024 (delayed)

Shukrayaan: Venus orbiter; ~2028

Sources: Spaceflight Now, ISRO, PIB

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