April
अप्रैल
2026

खंड/Vol. : 51 अंक/Issue : 63

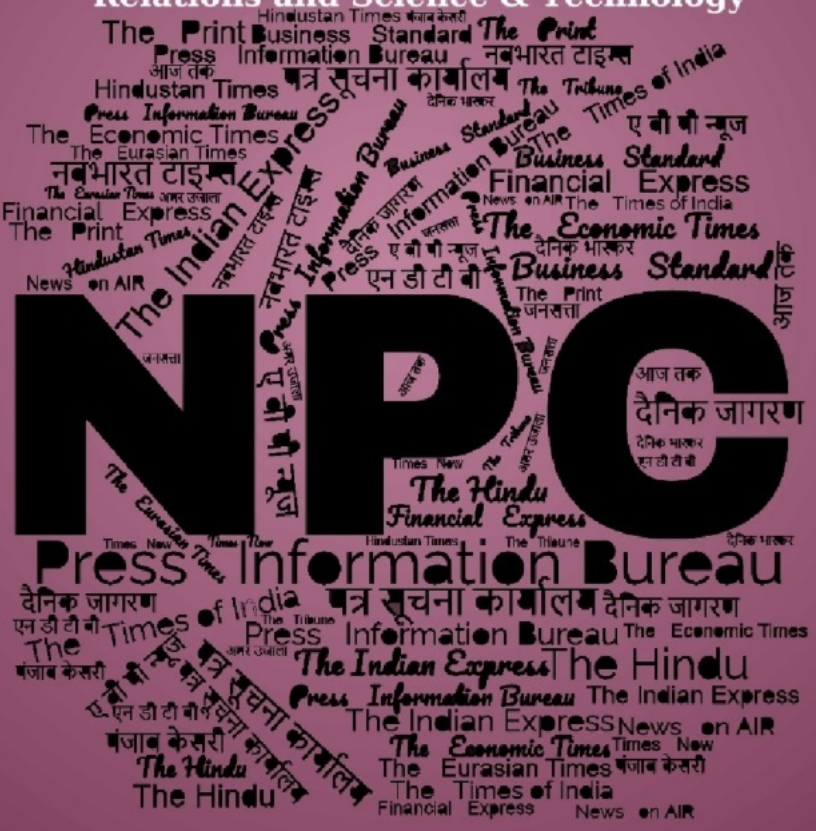
03-06/04/2026

समाचार पत्रों से चयनित अंश

Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



रक्षा विज्ञान पुस्तकालय
Defence Science Library
रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र
Defence Scientific Information & Documentation Centre
मेटकॉफ हाउस, दिल्ली - 110 054
Metcalfe House, Delhi - 110 054

CONTENTS

DRDO

Raksha Mantri lays foundation stone of Large Cavitation Tunnel at NSTL, Visakhapatnam to boost naval research & testing capabilities

Source: Press Information Bureau, Dt. 03 Apr 2026

Raksha Mantri Shri Rajnath Singh, on April 03, 2026, laid the foundation stone of the state-of-the-art Large Cavitation Tunnel (LCT) facility at the Naval Science & Technological Laboratory (NSTL), a premium laboratory of DRDO in Visakhapatnam, Andhra Pradesh. The facility will significantly enhance India's naval research and testing capabilities, marking a major step towards achieving technological self-reliance.

Addressing scientists, researchers, and personnel at NSTL, Raksha Mantri asserted that India, with this initiative, will be able to design, develop and test its equipment, systems & sub-systems indigenously utilising its own resources, position itself as a strong naval power & a leader in defence technology. "Until now, even after successfully developing equipment, systems, and sub-systems, we often had to look abroad for critical testing. This situation will now change. This facility is not merely an infrastructure project, but an enabling system, which will strengthen our capabilities in advancing propulsion systems, enable focused efforts on noise reduction and further strengthen stealth capabilities. It will serve as a foundational backbone for the design and development of submarines & ships, supporting future advancements in naval engineering and maritime defence systems," he said.

Shri Rajnath Singh described the project as a symbol of the success of Prime Minister Shri Narendra Modi's resolve of Aatmanirbhar Bharat. He stated that the Government's determination to make India self-reliant is intrinsically linked to the national security apparatus, and despite challenges, the country has achieved complete Aatmanirbharta in various sectors due to the concerted efforts of the domestic industry, academia, MSMEs, youth, and researchers.

During the visit, Raksha Mantri was briefed about the NSTL projects/programmes by the Secretary, Department of Defence R&D and Chairman DRDO Dr Samir V Kamat. Shri Rajnath Singh also

visited the Seakeeping and Manoeuvring Basin, where he witnessed an impressive display of advanced underwater systems, including torpedoes, naval mines, decoys, and autonomous underwater vehicles (AUVs).

A live demonstration of a swarm of man-portable AUVs showcased India's growing prowess in autonomous maritime operations and next-generation underwater warfare technologies, underlining the nation's focus on future-ready defence systems. Raksha Mantri also inspected some of the vital products realised as spin-off technologies by the Naval Systems Materials cluster labs post Operation Sindoor.

Shri Rajnath Singh commended NSTL for carrying out research and setting benchmarks in a number of areas, including torpedo systems, underwater mines, decoys, and AUVs, while propelling India forward on the path to becoming a formidable naval power. He also acknowledged the demonstration of swarm technology and ongoing work in lithium-ion battery development, calling them crucial for future warfare preparedness.

Raksha Mantri urged NSTL to continue working with dedication towards nation-building by bolstering the security infrastructure of the country. "The systems and technologies boost the confidence and morale of sailors deployed at sea. Reliable and robust technological support significantly enhances the operational effectiveness of the defence forces," he said. Chief of Defence Staff General Anil Chauhan, Chief of the Naval Staff Admiral Dinesh K Tripathi, Flag

Officer Commanding-in-Chief, Eastern Naval Command Vice Admiral Sanjay Bhalla and other senior officials were present on the occasion.

About Large Cavitation Tunnel

Conceived as a strategic national asset, the project is a significant step in strengthening indigenous capabilities in hydrodynamic research, aimed at supporting the design and development of next-generation ships, submarines and underwater platforms. The project, sanctioned by the Government and being executed in turnkey mode with international technical collaboration, reflects a seamless blend of global expertise and indigenous innovation. The facility is poised to emerge as a globally unique infrastructure with its capability to conduct both closed-loop simulations essential for submarine studies and free surface simulations critical for surface ship research within a single integrated setup. Once operational, it will significantly enhance the country's shipbuilding ecosystem by enabling precise validation of hydrodynamic designs and propulsion systems for major naval platforms, including destroyers and aircraft carriers.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2248898&reg=3&lang=1

*

Defence News

बड़ी नौसेना की साख, दुश्मन होगा पल भर में खाक

Source: Dainik Jagran, Dt. 04 Apr 2026

विशाखापत्तनम, प्रेट्र: वर्तमान वैश्विक परिदृश्य में किसी भी देश के लिए ताकतवर नौसेना एक आवश्यकता है। इसी दिशा में कदम बढ़ाते हुए शुक्रवार को स्वदेश निर्मित परमाणु पनडुब्बी अरिदमन, स्टेल्थ युद्धपोत तारागिरी को नौसेना में शामिल कर लिया गया। आइएनएस अरिदमन अरिहंत श्रेणी की तीसरी परमाणु पनडुब्बी है। इनके नौसेना में शामिल होने से दुनियाभर में भारतीय नौसेना की साख और उसकी मारक क्षमता में भी काफी बढ़ोतरी हुई है।

रक्षा मंत्री राजनाथ सिंह ने सीडीएस जनरल अनिल चौहान, नौसेना प्रमुख एडमिरल दिनेश के. त्रिपाठी की मौजूदगी में आइएनएस अरिदमन, आइएनएस तारागिरी को नौसेना में शामिल किया। आइएनएस अरिदमन को 'प्रोजेक्ट एटीवी' के तहत विशाखापत्तनम में बनाया गया है। इस परमाणु पनडुब्बी के शामिल होने से देश की न्यूक्लियर ट्राएड के नौसैनिक घटक को काफी मजबूती मिली है। इसका मतलब है कि भारत थल, थल और आकाश से परमाणु मिसाइलें लांच करने की क्षमता में ताकतवर हुआ है। राजनाथ सिंह ने एक इंटरनेट मीडिया पोस्ट में कहा, 'यह शब्द नहीं, बल्कि शक्ति है- अरिदमन।' भारत उन छह चुनिंदा देशों में शामिल है जिनके पास परमाणु पनडुब्बियां हैं। पांच अन्य देश रूस, अमेरिका, ब्रिटेन, फ्रांस, चीन हैं।

नौसेना में सम्मिलित किए जाने के दौरान स्टेल्थ युद्धपोत तारागिरी • प्रेट्र

स्वदेश निर्मित परमाणु पनडुब्बी अरिदमन

- स्वदेशी परमाणु पनडुब्बी अरिदमन और युद्धपोत तारागिरी नौसेना में शामिल
- ब्रह्मोस व अन्य मिसाइलों से लैस है तारागिरी, भारत के पास अब तीन परमाणु पनडुब्बी

भारतीय व्यापारिक जहाजों व तेल टैंकरों की सुरक्षा करती है नौसेना

रक्षा मंत्री राजनाथ सिंह ने कहा कि नौसेना महत्वपूर्ण समुद्री मार्गों, चोक प्वाइंट्स और डिजिटल इंफ्रास्ट्रक्चर की सुरक्षा करती है। तनाव के दौर में व्यापारिक जहाजों व तेल टैंकरों की सुरक्षा सुनिश्चित करती है। राजनाथ ने बताया कि नौसेना फारस की खाड़ी से लेकर मलक्का स्ट्रेट तक मौजूद रहती है और संकट के समय हमेशा सबसे आगे रहती है। उन्होंने इस बात पर जोर दिया कि भारत का विकास और ऊर्जा सुरक्षा समुद्र से गहराई से जुड़े हुए हैं, इसलिए एक मजबूत नौसेना का होना बेहद जरूरी है। उन्होंने कहा कि भारतीय नौसेना ने साबित कर दिया है कि वह न केवल देश के हितों की रक्षा करने में सक्षम है, बल्कि जरूरत पड़ने पर अपने नागरिकों और व्यापार मार्गों की सुरक्षा सुनिश्चित कर सकती है।

राजनाथ सिंह

नौसेना का लक्ष्य स्पष्ट है- युद्ध के लिए तैयार, विश्वसनीय, एकजुट और भविष्य के लिए तैयार सेना बने रहना। इस लक्ष्य के तहत रक्षा मंत्रालय की मदद से भारतीय नौसेना ने पिछले एक वर्ष में 12 जहाज, एक पनडुब्बी और विमानों की एक स्क्वाड्रन को शामिल किया है। - एडमिरल दिनेश के. त्रिपाठी, नौसेना प्रमुख

नौसेना में शामिल हुआ स्टेल्थ फ्रिगेट आइएनएस तारागिरी 'प्रोजेक्ट-17ए' के तहत निर्मित चौथा प्लेटफार्म है। 6,670 टन वजनी इस युद्धपोत को मुंबई स्थित मझगांव डाक शिपबिल्डर्स लिमिटेड ने बनाया है। यह आधुनिक रडार, सोनार, अन्य अत्याधुनिक हथियारों के साथ मध्यम दूरी की सतह से हवा में मार करने वाली मिसाइलों व सुपरसोनिक ब्रह्मोस मिसाइलों से लैस है। इसमें एक खास पनडुब्बी-रोधी युद्ध प्रणाली भी लगी है।

*

Indian Navy gets its third indigenous nuclear submarine, Rajnath Singh commissions INS Aridaman in service

Source: Hindustan Times, Dt. 04 Apr 2026

Defence Minister Rajnath Singh on Friday formally commissioned the indigenous nuclear-powered subAprine INS Aridhaman into the Indian Navy, Aprking a significant step in India's strategic Apritime capabilities.

The INS Aridhaman is the third vessel of the Arihant class nuclear subAprines being built for the Indian Navy under the Project ATV at Vishakhapatnam. The induction of Taragiri comes at a time when the strategic and Apritime importance of India's eastern seaboard continues to grow, driven by evolving regional security dynamics and India's deepening engagement in the Indo-Pacific.

The commissioning of Taragiri highlights the Navy's sustained focus on strengthening its combat readiness and operational might through its ambitious fleet augmentation programme. As the fourth potent platform of the Project 17A class, Taragiri is not merely a ship; it is a 6,670-tonne embodiment of the 'Make in India' spirit and the sophisticated engineering capabilities of our indigenous shipyards.

Built by Mazagon Dock Shipbuilders Limited (MDL), Mumbai, this Frigate represents a generational leap over earlier designs, offering a sleeker form and a significantly reduced Radar Cross-Section that allows it to operate with lethal stealth. With indigenous content exceeding 75 per cent, the ship highlights the maturity of a domestic industrial ecosystem that now spans over 200 Micro, Small and Medium Enterprises (MSMEs), contributing to the GoI's Aatmanirbharta initiatives supports thousands of Indian jobs.

Driven by a Combined Diesel or Gas (CODOG) propulsion plant, Taragiri is designed for 'High-Speed - High Endurance' versatility and multi-dimensional Apritime operations. The ship's weapon suite is world-class, featuring supersonic Surface-to-Surface Missiles, Medium Range Surface-to-Air Missiles, and a specialised Anti-SubAprine Warfare suite. These systems are seamlessly integrated through a state-of-the-art Combat Management System, ensuring that the crew can respond to threats with split-second precision.

Beyond its role as a premier hunter of the seas, Taragiri is built for the complexities of modern diplomacy and humanitarian crises. Its flexible mission profile makes it ideal for everything from high-intensity combat to Humanitarian Assistance and Disaster Relief (HADR).

The Indian Navy continues to grow as a combat-ready, cohesive, credible, Aatmanirbhar force, safeguarding the seas for a Viksit, Samriddha Bharat guarded by ships designed by Indians, built by Indians and operated by Indians. Taragiri stands ready for a promising future as a beacon of rising Apritime power and an ironclad guardian of the country's blue frontiers.

https://www.hindustantimes.com/india-news/indian-navy-gets-its-third-indigenous-nuclear-submarine-rajnath-singh-commissions-ins-aridaman-in-service-101775232851357.html

*

Indigenously built stealth frigate INS Taragiri commissioned into Indian Navy at Visakhapatnam

Source: The Hindu, Dt. 04 Apr 2026

In a significant boost to India's Apritime security and the 'Aatmanirbharta' initiative, the guided-missile stealth frigate INS Taragiri was commissioned into the Indian Navy at the Eastern Naval Command base in Visakhapatnam on Friday (April 03).

The ceremony, attended by Defence Minister Rajnath Singh, Chief of Defence Staff General Anil Chauhan and Chief of the Naval Staff Admiral Dinesh K Tripathi, Aprked the induction of a vessel that represents a generational leap in naval engineering. INS Taragiri commissioning at the Naval Dockyard in Visakhapatnam on Friday.

During the event, the Defence Minister commended Mazagon Dock Shipbuilders Limited (MDL) and other defence public sector undertakings (DPSUs) for their role in driving India's defence exports to a record high of ₹38,424 crore in financial year 2025-26 — a massive jump from ₹1,200 crore just over a decade ago.

He described the 16 DPSUs as hubs of self-reliance, proving that India is increasingly standing on its own feet in the global security arena. Admiral Dinesh K Tripathi highlighted the rich legacy of the Taragiri name, recalling the original Leander-class frigate commissioned in 1980 that pioneered the

Navy's anti-subAprine warfare capabilities. He underscored the growing complexities of the Indian Ocean Region and reaffirmed the Navy's commitment to remaining a combat-ready and future-proof force.

INS Taragiri features a sleeker form and a significantly reduced radar cross-section for stealth, with over 75% indigenous content involving more than 200 MSMEs. Powered by a combined diesel or gas propulsion engine and equipped with supersonic surface-to-surface missiles and advanced anti-subAprine suites, the frigate is now a cornerstone of the Eastern Fleet. The commissioning sends a strong geopolitical signal of India's status as a premier builder of complex warships, dedicated to regional stability under the vision of 'Mahasagar'.

https://www.thehindu.com/news/cities/Visakhapatnam/indigenously-built-stealth-frigate-ins-taragiri-commissioned-into-indian-navy-at-visakhapatnam/article70819518.ece

*

Rajnath highlights Navy's role in securing trade routes

Source: The Pioneer, Dt. 04 Apr 2026

Underlining that 95 per cent of the country's trade, including energy supplies, is conducted through sea, Defence Minister Rajnath Singh on Friday noted the Indian Navy's indispensable role in securing commercial shipping lanes and oil tankers against emerging Apritime threats.

Speaking at the commissioning ceremony of Indian Navy Ship (INS) Taragiri here, the Defence Minister said the Indian Navy continuously maintains its presence in the Indian Ocean — whether it is the Persian Gulf or the Malacca Strait. His comments assume significance following the disruption of oil supplies and blockage of oil tankers in view of the prevailing situation in West Asia.

According to him, a strong and capable navy is not an option for the country, but a necessity. "There are many sensitive points in the sea where our Navy has continuously made its active presence to ensure the smooth supply of goods. Whenever there is a situation of tension there, the Indian Navy has ensured the security of our commercial ships and oil tankers," Rajnath Singh said. The Indian Navy has proven that it is not only capable of protecting the interests of the country, but if necessary, can also take every step to ensure the safety of its citizens and trade routes around the world, he added.

Citing history, the defence minister said that without strengthening the naval power, no country can be considered powerful in the right sense, and therefore, when Prime Minister Narendra Modi talks about Viksit Bharat by 2047, the basis of Aprine power becomes very important. As the fourth platform under Project 17A, Taragiri is a 6,670-tonne warship built by Mazagon Dock Shipbuilders Limited, Mumbai, showcasing advanced design and engineering excellence. The warship features a sleeker structure with a significantly reduced radar cross-section, enabling stealth operations and enhanced survivability in complex Apritime environments.

With indigenous content exceeding 75 per cent, the ship highlights the maturity of India's domestic defence ecosystem, involving over 200 Micro, Small and Medium Enterprises (MSMEs) and supporting thousands of jobs. Taragiri is powered by a Combined Diesel or Gas (CODOG) propulsion system, offering high-speed and high-endurance capabilities for diverse naval operations. The frigate is equipped with advanced weapon systems, including supersonic surface-to-surface missiles, medium-range surface-to-air missiles and a specialised anti-subAprine warfare suite. These systems are integrated through a modern combat management system, enabling swift and precise responses to emerging threats. Apart from combat roles, Taragiri is designed for humanitarian assistance and disaster relief operations, enhancing its operational versatility in both peace and conflict scenarios.

https://dailypioneer.com/news/rajnath-highlights-navys-role-in-securing-trade-routes

*

HAL imposes damages on GE Aerospace for delays in supplying Tejas Mk-1A engines

Source: Hindustan Times, Dt. 03 Apr 2026

Hindustan Aeronautics Limited (HAL) has imposed liquidated damages on GE Aerospace for delays in supplying F404-IN20 engines for the Tejas Mk-1A, its chairman and managing director DK Sunil said on Thursday. He added that the Indian Air Force's LCA Mk-1 fleet (the first Tejas variant), grounded for nearly two months, will be cleared for flying next week after a software snag in the fighter jet's brake system was fixed.

A local modification committee has cleared the correction. The contract for 99 engines specifies liquidated damages for any supply delay, and that clause is being invoked every time an engine is delayed, he said. "It is being done in line with the contract." The US firm has so far delivered only six of the 99 engines ordered by HAL in 2021 for $716 million — the first engine was supplied in Aprch 2025. GE Aerospace had attributed the delays to supply chain bottlenecks and said production was being ramped up to fulfil the Indian order.

The engines are meant for 83 LCA Mk-1As ordered by the defence ministry for ₹48,000 crore in 2021. HAL was to deliver the first aircraft in Aprch 2024, but deliveries are yet to begin, with the programme hit by engine supply constraints and delays in key certifications. "GE has assured us it will deliver 20 more engines by the year-end. Twenty LCA Mk-1As are ready, including five with new engines. The IAF will review the programme in May. Deliveries will begin after we complete trials of the ASRAAM (advanced short-range air-to-air missile) in the required configuration and some radar software upgrades," Sunil said.

GE has also indicated it will deliver more than 20 engines annually from 2027 onwards, while HAL has the capacity to build 24 LCA Mk-1As a year. The IAF remains concerned about the pace of the

programme, given the risks delays in induction of new fighters could pose to its combat effectiveness. In November 2025, HAL announced it had signed another deal with GE Aerospace for 113 F404-IN20 engines to power 97 additional LCA Mk-1As ordered last September by the defence ministry for ₹62,370 crore. The engine deal is worth $1 billion.

“GE Aerospace values its longstanding partnership with HAL and India, and we’re continuing to work closely with HAL and our other partners to ensure a clear line of sight of production schedules for the F404 engines,” a spokesperson said. An IAF pilot was killed last November after an LCA Mk-1 crashed during a demonstration flight at the Dubai Airshow, the second crash involving the aircraft. Another Tejas jet crashed near Jaisalmer in Aprch 2024 shortly after participating in a tri-services exercise; the pilot ejected safely.

https://www.hindustantimes.com/india-news/hindustan-aeronautics-limited-imposes-penalty-on-ge-aerospace-over-delayed-tejas-mk-1a-engines-101775180700097.html

*

Military supplies from Israel may be delayed, have adequate stocks for current year: HAL CMD

Source: The Indian Express, Dt. 03 Apr 2026

Military supplies from Israel may experience delays due to the ongoing conflict with Iran, but India has sufficient stocks to meet its needs for the current year, said D K Sunil, Chairman and Managing Director of Hindustan Aeronautics Limited, on Thursday. He said he is hopeful that the issue will be addressed once the war ends. He also said drawing from the lessons of the ongoing conflict, HAL has put its weight behind CATS Warrior — a low-observable unmanned combat aerial vehicle — that it is developing.

“What has happened is, because of the bombardment from Iran, the plants (in Israel) have shut down, so there will be a delay. We have enough stocks for the current year; I hope that it (Israel) will catch up. Once this war peters out, things will come back to normal,” Sunil told The Indian Express on the sidelines of a media interaction. Over the last decade, India has purchased a range of military equipment and weapons from Israel including missiles, unmanned aerial vehicles, sensors and radars, air defence systems and small arms. For the indigenous fighter jet Tejas, manufactured by HAL, the radars, electronic warfare suite and the helmet-mounted displays are procured from Israel.

“So, there may be a delay, but generally, what we have seen is that they catch up. Initially, when this war started, their plants shut down. We had our people there working with them, but once it became serious, they asked us to withdraw our people and we called them back,” he said. “So, we will just wait and watch,” he added. Asked about the lesson and trends emerging from the ongoing war influencing future military projects of HAL, Sunil told The Indian Express that the CATS Warrior is essentially its foray into the area. “These will be UCAVs, which can carry weapons and will be remotely piloted. We are focusing on that area. Today, we are building a 3-tonne prototype, and then this will gradually increase in class, from 3 tonne to five and seven tonne.”

“We are focusing on that area where we are having the bigger impact. The kind of SHAHED (Iranian) drones you’re seeing are very small and very low cost, and there are a lot of players in the Aprket today. A lot of startups are doing that already.” “We are seeing almost every day somebody has got something similar, like the SHAHED, which they are now testing, so we are not

going into that space," he said. The CATS Warrior, he said, is a self-funded project. "We have done the detailed design. The parts are under manufacture, and the fuselage is also under manufacture, so it is in the prototyping stage," he told The Indian Express.

Responding to questions from the media over the delivery of the Tejas Mk 1A jets, which have been significantly delayed, their current status, and the possible revised timeline for delivery to the Indian Air Force, Sunil said five jets are ready with the engines, and the sixth engine from GE Aerospace is on its way. He said that GE assured HAL that 20 engines would be delivered between June and December. It is learnt that the contract with GE includes a provision stating that if there is a delay in the delivery of F-404 engines for the Light Combat Aircraft, liquidated damages will be imposed on GE and accordingly, the cost is being imposed as per the contract. Sunil said a major review of the status of the LCA Mk 1 A delivery is expected with the IAF next month, which will help finalise the delivery timelines.

Asked when the existing squadrons of LCA Tejas would be operational — they underwent extensive maintenance checks following one of the aircraft being involved in an accident at a forward air base last month — he said the jets are set to fly again next week onwards as a flaw detected in the braking software has been fixed. Asked about possible plans to get Russian Su-57 fighter jets for the IAF, he said presentations have been made to the Air Force team regarding the capabilities of the aircraft. "We have had one estimation of the capacity of our plants for the Russian equipment. A committee of Russians has also studied and said that roughly 50% of the facilities can be used for producing this aircraft, but some new investments will be required," he said. "We are awaiting the Russian quotation about the investment. Then we will approach the Air Force that these are the kind of numbers required to produce these aircraft and these are the timelines," he said.

https://indianexpress.com/article/india/military-supplies-from-israel-may-be-delayed-have-adequate-stocks-for-current-year-hal-cmd-10616346/

*

रक्षा निर्यात में रिकॉर्ड छलांग, 38 हजार करोड़ के बराबर

Source: Dainik Jagran, Dt. 03 Apr 2026

जागरण ब्यूरो, नई दिल्ली: लंबे समय से रक्षा उपकरणों के आयात पर निर्भर भारत का रक्षा निर्यात अब धीरे-धीरे गति पकड़ने लगा है। अभी समाप्त हुए वित वर्ष 2025-26 के दौरान देश के रक्षा निर्यात में पिछले साल की तुलना में हुई 62% से ज्यादा की रिकार्ड बढ़ोतरी इसका प्रमाण है। सरकारी आकड़ों के अनुसार, बीते एक वर्ष के दौरान भारत ने 38 हजार करोड़ रुपये से अधिक के रक्षा उपकरणों का निर्यात किया है। रक्षा निर्यात की इस बदलती तस्वीर पर खुशी जाहिर करते हुए रक्षा मंत्री राजनाथ सिंह ने इसे देश की स्वदेशी

ब्रह्मोस मिसाइल ●इंटरनेट मीडिया

रक्षा उत्पादन की मजबूत होती क्षमता का प्रमाण बताया है।

रक्षा निर्यात के इस बढ़ते आकार में ब्रह्मोस, आकाश मिसाइल और लाइट कांबैट एयरक्राफ्ट तेजस से लेकर कुछ अन्य रक्षा उपकरणों की अहम भूमिका है। रक्षा मंत्रालय ने 2025-26 में देश के रक्षा निर्यात के आंकड़े जारी करते हुए बताया कि इस दौरान कुल निर्यात 38,424 करोड़ के स्तर पर पहुंच गया है, जो अब तक का सबसे अधिक है। पिछले वित्त वर्ष में 23,622 करोड़ रुपये का निर्यात हुआ और इस साल इसमें 14,802 करोड़ रुपये यानी 62.66% की वृद्धि हुई है। रक्षा क्षेत्र की सरकारी कंपनियों की भागीदारी जहां 54.84% है तो निजी क्षेत्र का योगदान 45.16% रहा है। इस वर्ष के रक्षा निर्यात में निजी क्षेत्र का योगदान 17,353 करोड़ का तो सार्वजनिक क्षेत्र के उपक्रमों का योगदान 21,071 करोड़ का है। निर्यात की यह बढ़ती गति भारत में निर्मित रक्षा उत्पादों की बढ़ती वैश्विक स्वीकृति और अंतरराष्ट्रीय आपूर्ति श्रृंखलाओं में इस क्षेत्र के बढ़ते एकीकरण का भी संकेत है। रक्षा मंत्रालय के अनुसार, वर्ष 2025-26 तक भारत 80 से अधिक देशों को रक्षा उपकरण निर्यात कर रहा है। राजनाथ सिंह ने एक्स पर पोस्ट में रक्षा उत्पादन विभाग, भारतीय रक्षा निर्यातकों और अन्य सभी हितधारकों की इस दिशा में पहल की सराहना करते हुए कहा, भारत रक्षा उपकरणों का वैश्विक निर्माण केंद्र बनने की दिशा में बढ़ रहा है।

*

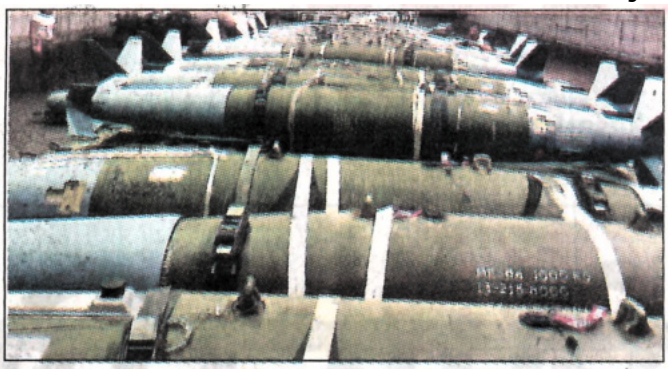
वायुसेना के लिए एक हज़ार किलो का स्वदेशी बम बनाने की तैयारी

Source: Punjab Kesari, Dt. 05 Apr 2026

नई दिल्ली, (पंजाब केसरी): रक्षा मंत्रालय ने भारतीय वायुसेना के लिए एमके-84 के समान 1000 किलोग्राम वजनी हवाई बम के स्वदेशी डिजाइन और विकास की प्रक्रिया शुरू कर दी है जिसका उद्देश्य इस क्षेत्र में भारत की 'आत्मनिर्भरता' को बढ़ावा देना है। वरिष्ठ अधिकारियों ने यह जानकारी दी। इस परियोजना के दो चरण होंगे। पहले चरण में छह प्रोटोटाइप (सक्रिय और निष्क्रिय) का डिजाइन और विकास शामिल है, जिसमें संबंधित टेल यूनिट और उपकरण भी शामिल हैं। दूसरा चरण खरीद का है, जो योग्य विकास एजेंसियों को प्रस्ताव के लिए वाणिज्यिक अनुरोध (आरएफपी) जारी करने के साथ शुरू होगा।

एक वरिष्ठ अधिकारी ने बताया कि यह प्रणाली भारतीय वायुसेना द्वारा वर्तमान में संचालित रूसी और पश्चिमी मूल के विमानों (दोनों के साथ) सुसंगत होने के लिए बनाई गई है। अधिकारी ने कहा कि रक्षा मंत्रालय ने रक्षा अधिग्रहण प्रक्रिया (डीएपी) 2020 के प्रावधानों के तहत 1,000 किलोग्राम के हवाई बम (एमके-84 के समान) के डिजाइन, विकास और खरीद के लिए टेल यूनिट और संबंधित उपकरणों के साथ अभिरुचि की अभिव्यक्ति (ईओआई) जारी की है।

यह परियोजना 'मेक-II' (उद्योग-वित्तपोषित) उप-श्रेणी के तहत कार्यान्वित की जाएगी, जिसके बाद 'बाय (इंडियन-आईडीडीएम)' श्रेणी के तहत खरीद की जाएगी।



- डिजाइन और विकास की प्रक्रिया शुरू
- पहले चरण में छह प्रोटोटाइप का डिजाइन और विकास शामिल है

आईडीडीएम का अर्थ है स्वदेशी रूप से डिजाइन, विकसित और निर्मित। अधिकारियों ने बताया कि डीएपी 2020 के प्रावधानों के अनुसार 'बाय (इंडियन-आईडीडीएम)' श्रेणी के तहत कुल 600 हवाई बम खरीदने की योजना है। वरिष्ठ अधिकारी ने बताया कि वर्तमान में एमके-84 श्रेणी के सामान्य प्रयोजन बम विदेश के मूल उपकरण निर्माताओं से खरीदे जाते हैं और भारतीय वायुसेना में सेवा में हैं। उन्होंने बताया कि प्रस्तावित हवाई बम को 'प्राकृतिक रूप से विखंडनीय, उच्च क्षमता वाला गोला-बारूद बताया गया है जो दुश्मन के लक्ष्यों के विरुद्ध उच्च विस्फोटक प्रभाव और अधिक दबाव (पीओपी) उत्पन्न करने में सक्षम है। अधिकारी ने बताया कि परियोजना का पहला चरण चयनित विकास एजेंसियों द्वारा किया जाएगा, जिसमें एकल-चरण समग्र परीक्षण शामिल है।

*

Defence exports hit a record ₹38,424 crore in FY26, surge 63% year-on-year

Source: The Hindu, Dt. 03 Apr 2026

India's defence exports touched an all-time high of ₹38,424 crore in the financial year 2025–26, Aprking a sharp increase of ₹14,802 crore (62.66%) over the previous fiscal's figure of ₹23,622 crore, the Ministry of Defence said on Thursday. The milestone reflects strong contributions from both public and private players, with Defence Public Sector Undertakings (DPSUs) accounting for 54.84% of the exports and the private sector contributing 45.16%, the MoD said.

It further mentioned that the achievement is seen as a significant step towards Prime Minister Narendra Modi's vision of positioning India among the world's leading defence exporters. Defence Minister Rajnath Singh hailed the performance of the Department of Defence Production, defence exporters, and other stakeholders, saying the country is steadily advancing towards becoming a global manufacturing hub for defence equipment. In a post on X, he said that under the Prime Minister's leadership, India is scripting an impressive defence export success story.

Exports by DPSUs surged by an impressive 151% compared to the previous year, while private sector exports rose by 14%, indicating sustained momentum across the industry. In value terms, the private sector exported defence equipment worth ₹17,353 crore, while DPSUs contributed ₹21,071 crore, compared to ₹15,233 crore and ₹8,389 crore, respectively in the previous financial year. The Ministry further said that the latest figure represents an increase of around three times

over the past five years, underlining the long-term growth of India's defence manufacturing and export capabilities.

The sharp rise also points to the growing global acceptance of Indian-made defence products and the sector's deeper integration into international supply chains. India exported defence equipment to more than 80 countries in FY26, supplying complete systems as well as sub-systems. The number of registered defence exporters increased from 128 to 145 , a rise of 13.3% over the previous fiscal. According to the government, sustained policy measures aimed at ease of doing business and export facilitation have helped create a performance-oriented and globally competitive defence industry. To support exporters, the Department of Defence Production has streamlined regulatory procedures through a revamped online portal and simplified Standard Operating Procedures for export authorisations.

https://www.thehindu.com/news/national/indias-defence-exports-hit-record-38424-crore-in-fy-25-26/article70814413.ece

*

IAF plans to deploy heavy-lift airship at 30,000 ft for border watch

Source: The Times of India, Dt. 06 Apr 2026

Aiming to boost the country's intelligence, surveillance and reconnaissance (ISR) capabilities, the Indian Air Force (IAF) has started work on a plan to build an unmanned airship for carrying out long-endurance monitoring missions. The IAF has invited bids from domestic defence companies to design, develop and manufacture a 'Medium Altitude Heavy Lift Airship' that can operate at an altitude of "10,000 feet from sea level (up to 30,000 ft above mean sea level) and can carry payload at least 2,000 kg (up to 5,000 kg desirable)".

Such an airship should be capable of operating in Global Navigation Satellite Systems (GNSS), Indian Regional Navigation Satellite System, NAVIC (desi navigation system) and also under GNSS-denied environment. In the future, such an airship can be a launch platform for projectiles and drones. The induction of such a platform will be a force-multiplier for the IAF as it will boost monitoring of India's sensitive and long borders, and alert forces against incursions and drone threats. The platform "should be a multi-utility airship, preferably operating on hydrogen and will be used towards carrying out persistent ISR, communication akin to airborne radars like AWACS and AEW&C, and having capability to operate special payloads as well as act as a launch platform for projectiles or drones", the proposal stated, adding such an airship should have "either line-of-sight communication of at least 250 km or the ability to operate via satellite links".

Hydrogen is preferred as it is lighter than air, cheap and non-toxic gas, abundantly available. The bid proposed an initial minimum order of 10 such platforms. The system must be robust enough and capable of autonomous vertical take-off and landing (VTOL) from an uneven surface. The platform's development will result in acquisition from a successful development agency through the Buy Indian-IDDM category with a minimum 50% indigenous content, the proposal said.

https://timesofindia.indiatimes.com/defence/news/iaf-plans-to-deploy-heavy-lift-airship-at-30000-ft-for-border-surveillance/articleshow/130048517.cms

*

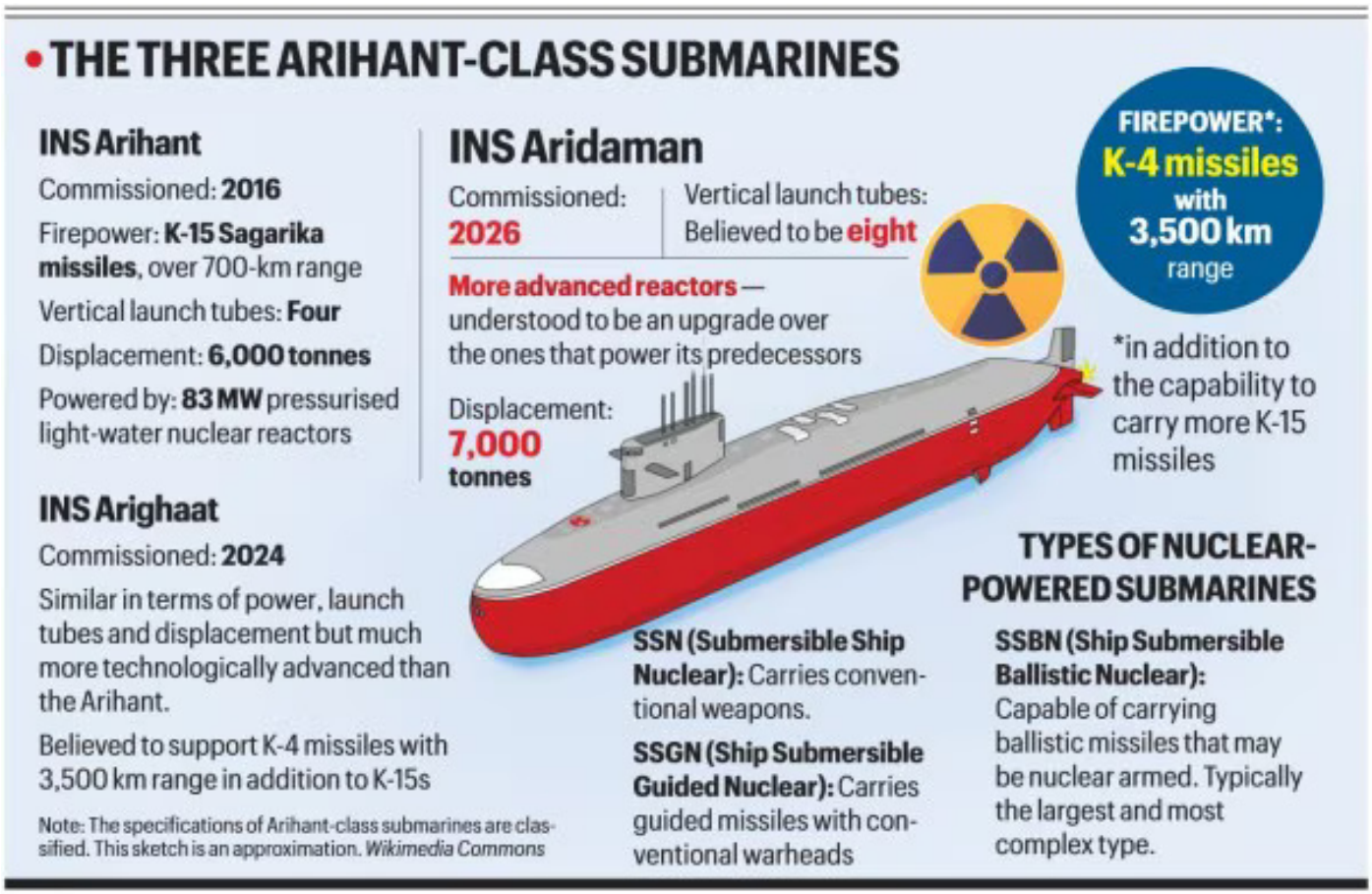
INS Aridaman: The significance of India's third nuclear submarine

Source: The Indian Express, Dt. 04 Apr 2026

With INS Aridaman's induction, India will have three operational ballistic missile subAprines at sea for the first time. The indigenous SSBN (ship submersible ballistic nuclear) is designed to carry more long-range nuclear-tipped missiles than INS Arihant and INS Arighaat, which were commissioned in 2016 and 2024, respectively.

The latest induction will also strengthen India's nuclear triad. India is part of a select group of countries with nuclear triad capabilities. These include the US, Russia, China, and France. A nuclear triad refers to the ability to launch nuclear missiles from platforms in the air, land and at sea. In the case of India, such missiles (such as the Agni series) can be launched from land, and fighter aircraft such as the Rafales, Su-30MKIs, and Mirage 2000s can deliver nuclear warheads from the air.

Although India's nuclear doctrine stipulates a "no first use" policy — it is committed to using nuclear weapons solely for deterrence and retaliation — SSBNs guarantee India's second-strike capability. Should an adversary deliver a first nuclear strike on India's land and air bases, an SSBN can launch a retaliatory nuclear attack, establishing deterrence.



About INS Aridaman

INS Aridaman, a 7,000-tonne vessel, is believed to have eight vertical launching system tubes — around double the number of its predecessors. This means it can carry more K-15 nuclear-capable subAprine-launched ballistic missiles (SLBM), which have a range of more than 700 km. They can also carry the longer-range K-4 SLBMs that can hit targets 3,500 km away.

It is also powered by advanced reactors — understood to be an upgrade over the ones that power its predecessors — to ensure it can remain submerged for longer durations (months together) without needing to surface every few days. A fourth SSBN is also currently under construction, and, like the Aridaman, will also be able to carry more K-4 missiles owing to its larger size.

INS Arihant and INS Arighaat

India's nuclear-powered subAprine project was initiated more than three decades ago, involving both private firms and the Defence Research & Development Organisation, with help from Russia. INS Arihant was launched in 2009 and commissioned into the Navy in 2016 as its first nuclear-powered subAprine. This provided India with a Apritime strike capability for the first time.

INS Arihant conducted its first deterrence patrol in 2018, thus establishing India's nuclear triad. In October 2022, the Ministry of Defence announced the successful launch, "with very high accuracy", of an SLBM in the Bay of Bengal by Arihant.

The induction of the 6000-tonne INS Arighaat in 2024 was yet another boost to this nuclear strike capability. Both INS Arihant and INS Arighaat are powered by 83 MW pressurised light-water nuclear reactors, which allow it to remain submerged and undetected for much longer than conventional diesel-electric subAprines. Among the two, INS Arighaat is significantly more technologically advanced than INS Arihant, according to the Ministry of Defence.

The construction of Arighaat involved advanced design and manufacturing technology, detailed research and development, utilisation of special materials, complex engineering, and highly skilled workmanship, a statement from the government had noted.

Future plans

India is pursuing a nuclear-powered attack subAprine (SSN) programme. The Navy plans to build two SSNs indigenously and acquire one on lease from Russia, which is expected to arrive by 2027-28 and bridge the capability gap until India's own boats are ready.

India and Germany are finalising a deal for the Project-75I subAprine program, as part of which Germany's ThyssenKrupp Aprine Systems will partner with India's Mazagon Dock Shipbuilders Ltd to construct six advanced AIP-equipped conventional subAprines in India. There is no clarity yet on the plans to get three additional Scorpene-class subAprines.

India's subAprine strength

Aside from the SSBNs, the Indian Navy has 16 conventional subAprines in service. This includes six Kalvari-class attack subAprines built at India's Mazagon Dock in partnership with France's Naval Group, four ShishuApr class subs, and seven Kilo (Sindhughosh) class subs.

To carry out its full spectrum of operations, the Navy is authorised to have 18 subAprines. However, at any time, around 30 per cent of the fleet is under refit (repair and renovation), which brings down the strength of operational subAprines. The US has 14 Ohio-class SSBNs and 53 fast-attack subAprines. China has 12 nuclear subAprines, of which six are nuclear-powered attack subAprines.

https://indianexpress.com/article/explained/ins-aridaman-the-significance-of-indias-third-nuclear-submarine-10617950/

*

India-Bangladesh discuss boosting defence ties, regional cooperation

Source: The Pioneer, Dt. 03 Apr 2026

M Riaz Hamidullah, Bangladesh's High Commissioner to India, met Chief of Army Staff Upendra Dwivedi in the national capital on Thursday, with both sides exploring ways to strengthen bilateral defence cooperation, including joint training initiatives. According to sources, "at the meeting, both sides underlined the important role played by the two Armed Forces in forging understanding and stabilizing the relations between Delhi and Dhaka in the context of wider bilateral relations, particularly during recent times of strained ties."

The interaction focused on expanding collaboration between the militaries while identifying avenues to promote peace and stability in the region. The Indian Army said the discussions reflected a shared commitment to deepening strategic engagement and enhancing mutual understanding through institutional partnerships.

The meeting comes amid a broader push by both nations to reinforce their historically close ties. Earlier, Union Minister of State for External Affairs Kirti Vardhan Singh reiterated India's support for Bangladesh's new Government, emphasising that the relationship between the two neighbours is rooted in shared history, culture and language. Speaking at Bangladesh's Independence Day celebrations in New Delhi, he noted that the legacy of the 1971 Liberation War continues to shape bilateral ties, fostering a partnership built on trust, shared values and a common vision for regional prosperity.

India has also expressed its intent to further strengthen cooperation with the new administration led by Tarique Rahman. External Affairs Ministry spokesperson Randhir Jaiswal said New Delhi is keen to expand engagement across sectors, including connectivity, trade and capacity-building initiatives. With ongoing collaboration in infrastructure, energy and cross-border projects, both countries are looking to advance a resilient, people-centric partnership while maintaining dialogue on all aspects of bilateral engagement.

https://dailypioneer.com/news/india-bangladesh-discuss-boosting-defence-ties-regional-cooperation

*

CDS General Anil Chauhan Reviews Operational Readiness of Chinar Corps

Source: Press Information Bureau, Dt. 04 Apr 2026

Chief of Defence Staff (CDS), General Anil Chauhan visited the strategically important areas under Chinar Corps, Srinagar on April 04, 2026. During the visit CDS reviewed the security landscape and operational posture along LoC in North Kashmir and commended the formation's exemplary operational preparedness, doctrinal coherence and resolute professionalism. At Baramulla, he was briefed on Future Force Application & Technology Infusion.

In his address to the Officers of the Chinar Corps, he highlighted that the character of warfare is undergoing profound transformation, necessitating a shift from Domain-Centric Approach to Multi-Domain Operations (MDO), underpinned by a robust & integrated architecture. He underscored the centrality of jointness, stressing that seamless integration across Land, Air, Maritime, Cyber, Space and Cognitive domains is indispensable for achieving decisive outcomes. He called for accelerated Joint Training for Futuristic Warfare, Harmonisation of Doctrines and development of Interoperable Command and Control Structures to enable synchronised effects, across all domains.

The CDS emphasised the need for a deliberate roadmap to counter emerging challenges - one that fosters technological adaptation, cognitive resilience and collective preparedness through integrated efforts. He reiterated that preparation for the threats envisaged must be anchored in foresight, innovation, a unified warfighting philosophy and Whole of a Nation effort. He highlighted the importance of operational readiness and resilience in the face of evolving security challenges.

Gen Chauhan exhorted all ranks to maintain operational excellence, embrace jointness as a way of life and remain prepared to dominate the full spectrum of future conflict. He also interacted with representatives of Civil Administration, eminent personalities and functionaries in Baramulla and reviewed the efforts towards Nation Building.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2248961&reg=3&lang=1

*

Indian Naval Ship Trikand calls at Dar-Es-Salaam, Tanzania

Source: Press Information Bureau, Dt. 05 Apr 2026

INS Trikand, frontline guided missile frigate of the Indian Navy, arrived at Dar-es-Salaam, Tanzania on 03 Apr 2026, as part of its ongoing deployment in the South West Indian Ocean Region. The visit aims to strengthen maritime cooperation and enhance bilateral ties between India and Tanzania.

Engagements during the port call include professional interactions - joint training activities with the Tanzania Navy to enhance interoperability and maritime cooperation. In addition, a range of social and community engagements are planned, including friendly sports fixtures and yoga. A cultural evening will also be hosted onboard, fostering goodwill, and people to people connections. Critical stores ferried from India will be handed over during the visit.

Captain Sachin Kulkarni, Commanding Officer of the ship, will call on senior dignitaries of the Tanzania People's Defence Forces and Government of the United Republic of Tanzania. The port call by INS Trikand is aligned with India's vision of MAHASAGAR – Mutual and Holistic Advancement for Security and Growth Across Regions.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2249175&reg=3&lang=1

*

India and Mozambique holds Fifth Joint Defence Working Group Meet

Source: Press Information Bureau, Dt. 02 Apr 2026

India and Mozambique conducted the Fifth Joint Defence Working Group (JDWG) meeting from 1-2 April, 2026 in Maputo, Mozambique. The deliberations were focused on expansion in structured military exchanges, joint training opportunities, maritime domain awareness, conducting military exercises and promoting collaboration in supply of defence equipment.

The issues regarding strengthening of defense cooperation between the two countries were discussed. Both sides undertook a comprehensive review of the progress made since the previous JDWG meeting and charted out a forward-looking roadmap for defence engagement.

Shri Amitabh Prasad, Joint Secretary, MoD led the Indian delegation comprising senior representatives from the Ministry of Defence, the Indian Armed Forces and Indian Coast Guard. High Commissioner of India to Mozambique Shri Robert Shetkintong and India's Defence Attache also joined the meet. Mr Casimiro Augusto Muieo, Permanent Secretary, Defence headed the Mozambican delegation. The meeting reaffirmed the strong ties between the two countries and their shared commitment to regional security and stability

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2248512&reg=3&lang=1

*

Science & Technology News

53 साल बाद फिर चाँद की ओर इंसान

Source: NavBharat Times, Dt. 03 Apr 2026

*

Astronauts reach safe orbit in Nasa's Moon Mission

Source: Hindustan Times, Dt. 03 Apr 2026

The Artemis II crewed lunar mission lifts off at Kennedy Space Centre in Cape Canaveral, Florida, on Wednesday. AFP

Bloomberg

letters@hindustantimes.com

FLORIDA: Nasa's crew of astronauts launched to space and reached a stable orbit, kicking off a landmark journey that will take them closer to the lunar surface than anyone has been in more than 50 years.

The initial phase of the 10-day mission to lap the moon, a multi-billion-dollar feat about a decade in the making, clears a major hurdle for Nasa and its legacy aerospace contractors as the agency works to establish a base on the lunar surface and ultimately venture to Mars.

The crew's Lockheed Martin Corp.-built Orion capsule, stacked on the shoulders of Boeing Co.'s Space Launch System rocket, thundered off the launchpad at 6:35pm local time at Kennedy Space Centre in Florida.

The rocket system, taller than the Statue of Liberty, reached speeds of around 28,163 kilometres per hour as it hurtled to space. It blazed a trail of fire and smoke as it climbed and eventually shed its spent side boosters, which provided extra thrust.

Inside the capsule, the astronauts could be seen pressed into their seats in bright orange space suits. About eight minutes into the flight, SLS' main engines shut down as expected and the capsule reached space.

"We have a beautiful moonrise. We're headed right at it," Nasa astronaut and mission commander Reid Wiseman said during the live broadcast.

About an hour later, the Orion capsule's main engine ignited, putting the spacecraft and the crew into a stable orbit around Earth. The crew are set to travel farther in space than anyone in history.

The crew will spend roughly four days travelling to the lunar vicinity, where they will swing behind the moon's far side — a vantage that is never seen from Earth. They are slated to perform a flyby of the lunar surface on April 6.

Wiseman, a 27-year Navy veteran and former head of the agency's astronaut office, is joined by Nasa astronauts Victor Glover, the mission's pilot, and Christina Koch, a mission specialist who conducted the first all-female spacewalk. Canadian astronaut Jeremy Hansen, another crew member, is flying to space for the first time on this trip.

*

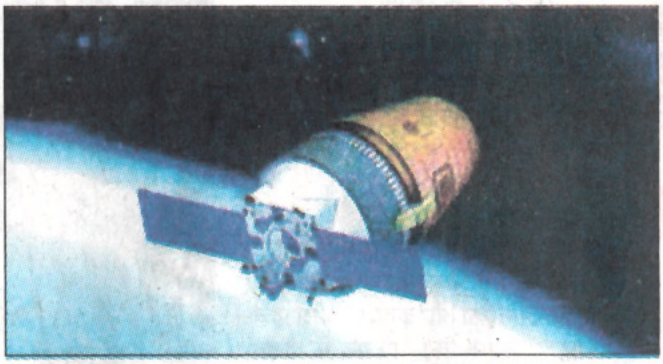
गगनयान के लिए इसरो का मिशन मित्रा शुरू

Source: Punjab Kesari, Dt. 05 Apr 2026

चेन्नई, (पंजाब केसरी): भारत में पहले मानव अंतरिक्ष मिशन गगनयान की तैयारियां तेजी से चल रही हैं। इस बीच, भारतीय अंतरिक्ष अनुसंधान संगठन) ने चालक दल की सुरक्षा एवं प्रदर्शन को सभी मानव अंतरिक्ष उड़ान मिशनों के सबसे महत्वपूर्ण तत्व मानते हुए मिशन मित्रा (मैपिंग ऑफ इंटरऑपरेबल ट्रेड्स एंड रिस्पांस असेसमेंट) शुरू किया है।

यह अपनी तरह का पहला टीम के व्यवहार का अध्ययन है, जिसका उद्देश्य ऊंचाई वाले वातावरण में काम करने वाले चालक दल और जमीनी टीमों की शारीरिक, मनोवैज्ञानिक एवं परिचालन संबंधी गतिशीलता का अध्ययन करना है।

मित्रा भारत की मानव अंतरिक्ष उड़ान संचालन क्षमताओं के लिए एक महत्वपूर्ण कदम है जो कि चालक दल के प्रदर्शन एवं मानवीय कारकों पर उत्पन्न वैज्ञानिक डेटा गगनयान कार्यक्रम और भविष्य के दीर्घकालिक मिशनों में प्रत्यक्ष योगदान देगा। यह मिशन दो से नौ



यह मिशन दो से नौ अप्रैल तक लद्दाख के लेह में लगभग 3,500 मीटर की उच्च ऊंचाई पर चल रहा है

अप्रैल, 2026 तक केंद्र शासित प्रदेश लद्दाख के लेह में चलाया जा रहा है। लेह की लगभग 3,500 मीटर की उच्च ऊंचाई पर हाइपोक्सिया, कम तापमान और अलगाव जैसी पर्यावरणीय परिस्थितियां मौजूद हैं जो अंतरिक्ष उड़ान संचालन के लिए एक प्राकृतिक प्रतिरूप के रूप में कार्य करती हैं। शनिवार को जारी एक अपडेट में, इसरो ने कहा कि सभी मानव अंतरिक्ष उड़न अभियानों में चालक दल की सुरक्षा एवं प्रदर्शन सबसे महत्वपूर्ण तत्व हैं। चालक दल का प्रभावी संवाद करने, तनाव का सामना करने, मानसिक लचीलापन बनाए रखने और एक-दूसरे का सहयोग करने की क्षमता किसी भी मिशन की सफलता एवं सुरक्षा निर्धारित करती है।

अंतरिक्ष एजेंसी ने कहा कि नियंत्रित लेकिन यथार्थवादी परिस्थितियों में संचालित एनालॉग मिशनों का उपयोग यह समझने के लिए किया जाता है कि चुनौतीपूर्ण परिस्थितियों में चालक दल कैसा प्रदर्शन करते हैं।

इस दिशा में, इसरो ने लेह में मिशन मित्रा शुरू किया है, जो इसरो और वायु सेना-इंस्टीट्यूट ऑफ एयरोस्पेस मेडिसिन (आईएएम) द्वारा डिजाइन किया गया अपनी तरह का पहला टीम व्यवहार अध्ययन है, जिसका उद्देश्य उच्च ऊंचाई वाले वातावरण में काम करने वाले चालक दल और जमीनी टीमों की शारीरिक, मनोवैज्ञानिक और परिचालन गतिशीलता का अध्ययन करना है। इस अध्ययन का उद्देश्य गगन यात्रियों एवं जमीनी नियंत्रण टीमों के बीच अंतर-संचालनीयता और पर्यावरणीय एवं परिचालन तनाव के बीच निर्णय लेने की प्रभावशीलता के बारे में महत्वपूर्ण समझ उत्पन्न करना है। बेंगलुरु स्थित भारतीय स्टार्टअप कंपनी मेसर्स प्रोटोप्लेनेट प्राइवेट लिमिटेड इसके प्रबंधन एवं वैधानिक प्रोटोकॉल के लिए जिम्मेदार है।

*

ISRO launches mission in Ladakh to test mental, physical strength of astronauts

Source: The Hindu, Dt. 05 Apr 2026

The Indian Space Research Organisation (ISRO) has announced the launch of a mission in Ladakh to examine the physiological, psychological and operational dynamics of gaganyatris (astronauts) and ground teams functioning in a high-altitude environment. Scientific data generated on crew performance and human factors will contribute directly to the Gaganyaan programme and future long-duration missions.

Known as the Mission MITRA (Mapping of Interoperable Traits and Response Assessment), the study will be conducted until April 9 at an altitude of approximately 3,500 metres in Leh, simulating the environmental conditions of hypoxia, low temperature and isolation as a natural analog for spaceflight operations.

"This study is targeted to generate vital understanding on the team inter-operability between crew (gaganyatris) and ground control teams and effectiveness of decision making under environmental and operational stress," ISRO said in a statement on Friday, April 3, 2026. ISRO and the IAF-Institute of Aerospace Medicine have designed the mission, and Bengaluru-based start-up Protoplanet is responsible for facility management and statutory protocols.

"The crew safety and performance are the most critical elements of all human spaceflight missions. The ability of crew to communicate effectively, adapt to stress, maintain psychological resilience and support one another determines the success and safety of any mission," the statement said. "Analog missions conducted under controlled yet realistic conditions are utilised to understand how crew performs under challenging conditions," it added.

https://www.thehindu.com/sci-tech/health/isro-launches-mission-in-ladakh-to-test-mental-physical-strengths-of-astronauts/article70822968.ece

*

TDB-DST supports Indigenous Energy Storage Technologies Pvt. Ltd. for Commercialization of Bio-Waste Derived Hard Carbon for Sodium-Ion Batteries

Source: Press Information Bureau, Dt. 02 Apr 2026

The Technology Development Board (TDB), Department of Science & Technology (DST), Government of India, has extended financial assistance to Indigenous Energy Storage Technologies Private Limited, Roorkee, Uttarakhand for the project titled “Commercialization of Bio-waste / Agricultural Waste Derived Hard Carbon for Sodium-Ion Batteries.” The project aims to establish indigenous capabilities for the production of advanced anode materials, contributing to the development of cost-effective and sustainable energy storage technologies in the country.

The TDB-supported project focuses on the commercial-scale production of hard carbon derived from bio-waste and agricultural residues, to be used as a key anode material in sodium-ion batteries (SIBs). Sodium-ion technology is emerging as a viable alternative to conventional lithium-ion systems, particularly for applications such as grid-scale energy storage, UPS/inverter systems,

solar street lighting, and low-speed electric mobility, including e-rickshaws, e-scooters, and e-cycles.

Hard carbon, as a class of carbonaceous materials, offers significant advantages for sodium-ion batteries, including high initial coulombic efficiency, stable cycling performance, and enhanced energy storage capacity. Unlike graphite, hard carbon retains its disordered microstructure and porosity even at high temperatures, making it particularly suitable for sodium-ion chemistry. The use of biomass-derived precursors further enhances sustainability by utilizing locally available resources and reducing dependence on imported raw materials.

By leveraging agricultural and bio-waste streams, the project introduces a circular and resource-efficient approach to advanced material manufacturing. The technology also addresses critical supply chain concerns, as sodium and carbon resources are more abundant and geographically distributed compared to lithium, thereby reducing exposure to global supply risks.

With TDB support, Indigenous Energy Storage Technologies Private Limited will scale up its production capabilities and enable the commercialization of indigenous hard carbon materials tailored for sodium-ion battery applications. The initiative is expected to strengthen India's position in next-generation battery technologies while promoting sustainable manufacturing practices.

Speaking on the occasion, Shri Rajesh Kumar Pathak, Secretary, TDB, stated that the development of alternative energy storage technologies is critical for India's clean energy transition. He noted that projects focused on indigenous materials innovation, particularly those leveraging waste-to-value approaches, are essential for building a resilient and self-reliant battery ecosystem in the country.

Promoters of Indigenous Energy Storage Technologies Private Limited expressed appreciation for the support and highlighted that the project will enable the company to accelerate commercialization of sustainable battery materials, while contributing to the development of affordable and scalable energy storage solutions.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2248203&reg=3&lang=1

*

The Tribune
The Statesman
पंजाब केसरी जनसत्ता
The Hindu
The Economic Times
Press Information Bureau
The Indian Express
The Times of India
Hindustan Times
नवभारत टाइम्स
दैनिक जागरण
The Asian Age
The Pioneer