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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

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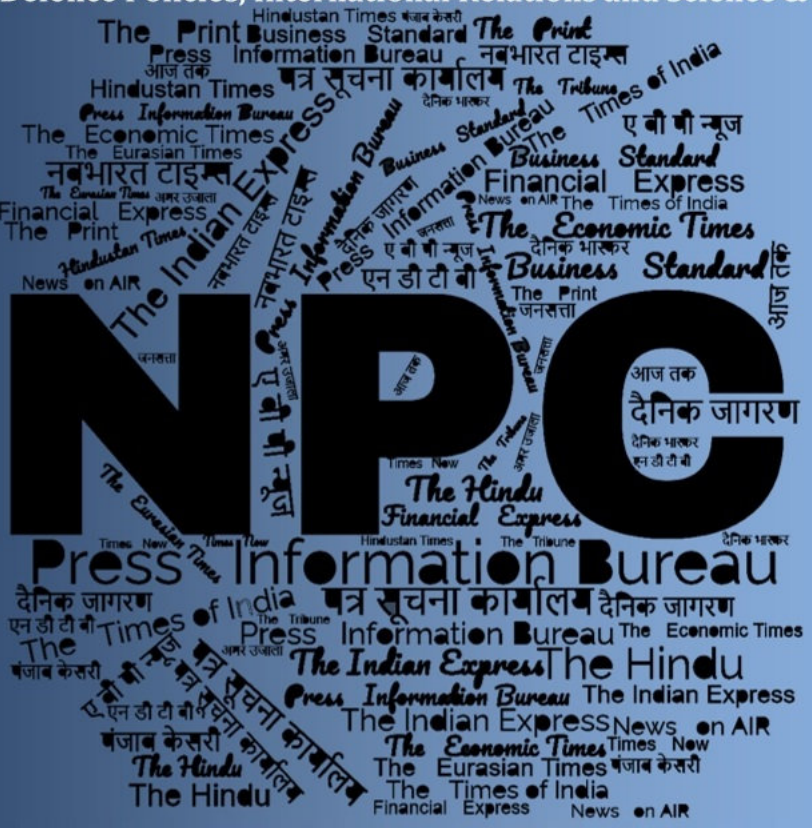

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CONTENTS

DRDO News

Naval Armament Organisation concludes 24th Officers-In-Charge (OIC) Conference and 7th IT, Project And Infrastructure Meeting (IPIM)

Source: Press Information Bureau, Dt. 13 Feb 2026

The Naval Armament Organisation (NAO) has successfully concluded its annual 24th Officers-in-Charge (OiC) Conference and 7th IT, Project and Infrastructure Meeting (IPIM) at **Institute of Technology Management (ITM), DRDO, Mussoorie** on 12-13 Feb 2026 under the chairmanship of Shri Divakar Jayant, INAS, Director General of Naval Armament.

Senior INAS officers serving as Chief General Managers/General Managers of Naval Armament Depots attended both the high-level interactions focused on administrative efficiencies, personnel management, engineering technologies within the organisation, and progress of ongoing IT initiatives and infrastructure projects.

The events served as a pivotal platform for the top leadership of the Naval Armament Organisation to synchronise strategic objectives and review the readiness of HR and critical infrastructure across the field units to support the Indian Navy's growing operational footprint. During his address, the Director General commended the depots for their unwavering support to the fleet and emphasised the need for Aatmanirbharta (self-reliance) in armament maintenance and infrastructure development. He urged the officers to adopt sustainable and innovative practices to meet the evolving security challenges in the maritime domain.

The two-day event concluded with a roadmap for the digital transformation of the NAO by leveraging advancements in information technology, ensuring that the organisation remains future-ready and technologically advanced to support the maritime interests of the nation.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2227814&reg=3&lang=1

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Defence News

India, France to sign MoU for joint production of HAMMER missiles

Source: The Tribune, Dt. 16 Feb 2026

India and France are set to sign a Memorandum of Understanding (MoU) to establish a joint venture for the production of HAMMER precision-guided missiles in India. The HAMMER (Highly Agile Modular Munition Extended Range) is a precision strike weapon manufactured by French defence company Safran, capable of engaging ground targets with high accuracy.

The weapon was used during Operation Sindoor against Pakistan in May last year and is already integrated with the Indian Air Force's existing Rafale fighter fleet. The proposed joint venture will manufacture the missiles in India for the forthcoming order of 114 Rafale jets, which was approved by the Defence Acquisition Council on February 12.

The development comes just ahead of the expected announcement of India's acquisition of 114 additional Rafale fighter aircraft from French plane maker Dassault Aviation. Defence Minister Rajnath Singh will co-chair the sixth India-France Annual Defence Dialogue with his French counterpart, Catherine Vautrin, in Bengaluru on February 17, where the MoU for the HAMMER missile is expected to be discussed.

The meeting will review the full spectrum of bilateral defence cooperation, with a focus on expanding industrial collaboration, especially as French companies increasingly participate in India's 'Make in India' programme. Apart from Dassault, which is expected to manufacture a majority of the Rafale jets in India, Safran already has a joint venture with public sector aerospace major Hindustan Aeronautics Limited (HAL) to produce helicopter engines.

Singh and Vautrin are also expected to renew the defence cooperation agreement for another 10 years. An announcement may also be made regarding reciprocal deployment of officers at Indian Army and French Land Forces establishments. The two ministers are likely to witness the virtual inauguration of the H125 Light Utility Helicopter final assembly line of Tata Airbus by Prime Minister Narendra Modi and French President Emmanuel Macron at Vemagal in Karnataka.

Defence has traditionally been a key pillar of India-France relations. The strength of bilateral ties was reflected in 2024-2025 through a series of high-profile exchanges. Prime Minister Modi was the Guest of Honour at the Bastille Day Parade in July 2023, while President Macron was the Chief Guest at India's Republic Day Parade in 2024.

The recent India-EU Security and Defence Partnership also marks a significant step in deepening engagement with European nations, with military-to-military cooperation steadily increasing. This will be Catherine Vautrin's maiden visit to India since she assumed office as French Defence Minister on October 12, 2025. The India-France Annual Defence Dialogue is a structured ministerial-level meeting to review and guide defence and security cooperation. The fifth edition was held in France from October 11 to 13, 2023.

https://www.tribuneindia.com/news/india/india-france-to-sign-mou-for-joint-production-of-hammer-missiles-2/

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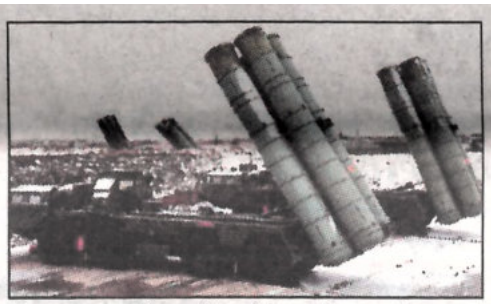
रूस से 288 एस-400 मिसाइल भारत खरीदेगा

Source: Punjab Kesari, Dt. 14 Feb 2026

नई दिल्ली, (पंजाब केसरी): भारत और रूस के रक्षा संबंधों के लिए दो दिनों में दो अच्छी और सकारात्मक खबर मिली है। गुरुवार 12 फरवरी, को रूस से एस-400 एयर डिफेंस सिस्टम के दो बाकी स्क्वाड्रन इसी साल मिलने की जानकारी आई और 13 फरवरी, 2026 को इसमें इस्तेमाल होने वाली 288 सरफेस टू एयर मिसाइल खरीदने की डील को हरी झंडी मिलने की खबर मिली। इन मिसाइलों की रेंज 40 किलो मीटर से लेकर 400 किलो मीटर तक है। ऑपरेशन सिंदूर के दौरान इसने जिस तरह से पाकिस्तानी फौज की कमर तोड़ी थी, वह उस झटके से अभी तक पूरी तरह से उबर नहीं पाया है। रक्षा मंत्री राजनाथ सिंह की अगुवाई वाले 'रक्षा अधिग्रहण परिषद' ने रूस



से एस-400 में उपयोग होने वाले 288 मिसाइल खरीदने के लिए 'आवश्यकता की स्वीकृति' को मंजूर कर लिया है। रिपोर्ट के अनुसार इस मामले की जानकारी रखने वाले लोगों ने बताया है कि यह सौदा 10,000 करोड़ रुपये का होगा। एस-400 में 400 किमी, 200 किमी, 150 किमी और

- **10,000 करोड़ की मैगा डील**
- **इसने ही तोड़ी थी ऑपरेशन सिंदूर में पाकिस्तान की कमर**

40 किमी की रेंज तक के सरफेस टू एयर मिसाइल इस्तेमाल होते हैं। अभी जो 'आवश्यकता की स्वीकृति' वाली मंजूरी मिली है, रिपोर्ट के अनुसार उसकी खरीदारी फास्ट ट्रैक प्रक्रिया के तहत होनी है, जिसमें 120 कम रेंज वाली और 168 लंबी रेंज वाली मिसाइलें आनी हैं। इससे पहले रूस ने भारत को एस-400 के पांच स्क्वाड्रन में से बाकी बचे दो में से चौथा जून तक और आखिरी या पांचवां नवंबर तक देने का भरोसा दिया है।

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हाईवे पर हिंद की शक्ति

Source: Punjab Kesari, Dt. 15 Feb 2026

पंजाब केसरी/गुवाहाटी

प्रधानमंत्री नरेंद्र मोदी ने शनिवार असम के डिब्रूगढ़ स्थित मोरान एयरस्ट्रिप पर भारतीय वायुसेना के सी-130 सुपर हरक्यूलिस विमान से एक ऐतिहासिक लैंडिंग की। ये पहली बार है जब कोई प्रधानमंत्री हाईवे पर निर्मित एयरस्ट्रिप पर उतरा है। बता दें कि ये 4.2 किलोमीटर लंबा रनवे रणनीतिक रूप से बेहद महत्वपूर्ण है, क्योंकि ये चीन सीमा से मात्र 300 किलोमीटर और म्यामांर की सीमा से 200 किलोमीटर दूरी पर स्थित है। सामरिक रूप से महत्वपूर्ण इस लैंडिंग पर हिन्दुस्तान की शक्ति देखने को मिली। इस एयरस्ट्रिप पर प्रधानमंत्री की लैंडिंग ने दुनिया को भारत की सुरक्षा तैयारियों का एक मजबूत संदेश दिया है। ये देश की पहली इमरजेंसी लैंडिंग फैसिलिटी है, जो युद्ध के हालात में या किसी आपात स्थिति में सेना के फाइटर जेट्स, सुखोई-30, राफेल, डोर्नियर सर्विलांस विमान, ट्रांसपोर्ट प्लेन और चौपर आदि की इमरजेंसी लैंडिंग की सुविधा प्रदान करेगा। इतना ही नहीं इस पर सी-130 सुपर हरक्यूलिस जैसा भारी भरकम प्लेन भी लैंड कर सकता है। इमरजेंसी लैंडिंग फैसिलिटी का निर्माण चीन की सीमा के करीब किया गया है, ऐसे में भविष्य में किसी गतिरोध के बीच भारतीय वायु सेना को एक वैकल्पिक रनवे मिलेगा। इसी तरह से देशभर में कुल 28 इमरजेंसी लैंडिंग फैसिलिटी के निर्माण की योजना है। अधिकारियों ने बताया कि 100 करोड़ रुपये की लागत से निर्मित है। यह भारतीय वायु सेना के लड़ाकू विमानों और परिवहन विमानों के लिए एक रणनीतिक और बहुउद्देशीय हवाई पट्टी के रूप में कार्य करेगा और रक्षा, रसद और आपदा राहत प्रयासों को मजबूती प्रदान करेगा।

(पृष्ठ 2 भी देखें)

भारतीय वायुसेना का ए सी-130जे विमान जिससे प्रधानमंत्री नरेन्द्र मोदी हाइवे पर उतरे। ऐसा करने वाले दुनिया के पहले प्रधानमंत्री हैं। (छाया : प्रे.ट्रू.)

मोरान (असम): प्रधानमंत्री नरेन्द्र मोदी ने असम के डिब्रूगढ़ जिले में आपातकालीन लैंडिंग सुविधा (ईएलएफ) पर शनिवार को वायु सेना के लड़ाकू विमानों और परिवहन हेलीकॉप्टर के हवाई करतब देखे। पूर्वोत्तर क्षेत्र में अपनी तरह की पहली 4.2 किलोमीटर लंबी यह ईएलएफ मोरान में विकसित की गई है, जिसका उद्घाटन प्रधानमंत्री ने अपने एक दिवसीय दौरे के दौरान किया। बीस मिनट से अधिक समय के हवाई करतब के दौरान वायुसेना के पायलटों ने मोरान बाईपास स्थित ईएलएफ से सटीक उड़ान भरी और यहां उतरे। अवरोधक के पीछे कतार में खड़े स्थानीय लोग इस कार्यक्रम को देखने के लिए काफी उत्साहित नजर आ रहे थे। सबसे पहले सुखोई-30 एमकेआई और उसके बाद राफेल विमान ने उड़ान भरी। थोड़ी दूरी के साथ उड़ान भरने वाले ये दोनों विमान उड़ान भरने के बाद तुरंत मिशन या युद्ध में इस्तेमाल किए जा सकते हैं। माल और यात्रियों दोनों के परिवहन के लिए डिजाइन वायुसेना के 'वर्कहॉर्स' एएन-32 विमान ने भी करतब दिखाया। इसके बाद सुखोई-30 एमकेआई और राफेल के तीन-तीन विमानों के समूह ने तेजी से लगातार अंतराल में मोरान के आसमान में उड़ान भरी। पायलटों ने हैरतअंगेज करतब दिखाए, जिनमें से दो विमान हवाई पट्टी के ऊपर से निकल गए जबकि तीसरा विमान ईएलएफ पर उतरा। इसी तरह, तीन राफेल विमानों के समूह ने भी करतब दिखाए, जिनमें से दो विमान हवाई पट्टी के पास उड़ान भरते हुए गुजरे और तीसरा यहां उतरा। विशेष हेलीकॉप्टर-आधारित अभियान और उन्नत हल्के हेलीकॉप्टरों ने मानवीय सहायता और आपदा राहत अभियान का प्रदर्शन किया। एसएचबीओ के तहत दो एएलएच हेलीकॉप्टर ईएलएफ पर उतरे और भारतीय वायु सेना की अभियानगत तैयारी का प्रदर्शन करते हुए कमांडो हेलीकॉप्टर से उतरकर अपनी-अपनी जगह तैनात हो गए। कमांडो को उतारने के बाद, इन दोनों हेलीकॉप्टर ने तेजी से उड़ान भरी और दो अन्य हेलीकॉप्टर ने चिकित्सा निकास अभ्यास का प्रदर्शन किया।

यह आपातकालीन लैंडिंग सुविधा दुश्मन देशों से मुकाबला करने के लिए बहुत सफल होगी

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Defence spend, upgrade in line with current realities: PM Modi

Source: The Times of India, Dt. 16 Feb 2026

Prime Minister Narendra Modi on Sunday cited the global context to argue in favour of modernising India's defence sector, while calling upon the private sector to step up its act and share the gains with workers and shareholders. "Since Day 1, our govt has been clear we will do whatever it takes to support our defence forces and strengthen them. Yes, this year's allocation is a record high, but viewing it in isolation only provides a limited perspective...As technology reshapes the world, our armed forces must be equipped with the best of Indian innovation and industry. As a nation that is playing an increasingly important role in the world, we have a duty to modernise our defence sector in line with current realities," PM Modi told PTI in an interview.

The comments come in the backdrop of an increasingly-fragile world, which is undergoing a shift in the power equations with the US and China seeking to stamp their expansionist policies, while conflicts in Ukraine and West Asia have been going on with no immediate resolution in sight. India has to contend with hostilities in the neighbourhood with cyber technology adding to challenges. The PM referred to Operation Sindoor, which showed India's familiarisation with the tech warfare.

https://timesofindia.indiatimes.com/india/defence-spend-upgrade-in-line-with-current-realities-pm-modi/articleshow/128400513.cms

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पहली बार इंटरनेशनल फ्लीट रिव्यू में फिलीपींस, यूएई के वॉरशिप

Source: NavBharat Times, Dt. 15 Feb 2026

■ **नई दिल्ली :** इंटरनैशनल फ्लीट रिव्यू में इस बार पहली बार फिलीपींस और UAE के वॉरशिप भी शामिल होंगे। साथ ही पहली बार जर्मनी के मेरीटाइम पेट्रोल एयरक्राफ्ट फ्लीट रिव्यू का हिस्सा बनेंगे। 18 फरवरी को विशाखापत्तनम में आर्म्ड फोर्सेस की सुप्रीम कमांडर राष्ट्रपति द्रौपदी मुर्मु इंटरनैशनल फ्लीट रिव्यू करेंगी। पहला इंटरनैशनल फ्लीट रिव्यू (IFR) साल 2001 में किया गया था। तब 20 देशों के 97 वॉरशिप शामिल हुए थे जिनमें 24 विदेशी वॉरशिप थे। IFR का दूसरा एडिशन साल 2016 में आयोजित किया गया था। कुल 50 देशों करीब 100 वॉरशिप इसमें शामिल हुए थे। फिलीपींस, UAE और जर्मनी तो पहली बार अपने एसेस्ट्स के साथ फ्लीट रिव्यू का हिस्सा बन ही रहे है। इसके अलावा भी कई लैंडलॉक देश (ऐसे देश जिसकी कोई समुद्री सीमा नहीं है) भी पहली बार इसमें शामिल होंगे। जर्मनी का मेरीटाइम पेट्रोल एयरक्राफ्ट P-8 इंडियन नेवी के P-8I की तरह ही है। जर्मनी ने अपनी नेवी की समुद्री निगरानी क्षमता बढ़ाने के लिए अमेरिका से P-8 मल्टी-मिशन मेरीटाइम पेट्रोल एयरक्राफ्ट खरीदा है। यह मुख्य रूप से पनडुब्बियों का पता लगाने, समुद्री सतह पर निगरानी और लंबी दूरी की निगरानी के लिए इस्तेमाल किया जाता है। जर्मनी के लिए P-8 खास तौर पर NATO की सामूहिक सुरक्षा, उत्तरी सागर-बाल्टिक क्षेत्र में निगरानी और रूस की बढ़ती समुद्री गतिविधियों पर नजर रखने के लिहाज से अहम माना जाता है। इंटरनैशनल फ्लीट रिव्यू में जर्मनी का P-8 फ्लाईपास्ट में शामिल होगा।

18 फरवरी को राष्ट्रपति मुर्मु करेंगी फ्लीट का रिव्यू

इसके अलावा फिलीपींस का मिगेल मालवार (BRP Miguel Malvar (FFG-06)) वॉरशिप भी पहली बार इंटरनैशनल फ्लीट रिव्यू का हिस्सा बन रहा है। ये फिलीपींस नेवी का एक अत्याधुनिक गाइडेड-मिसाइल फ्रिगेट है। इसे पिछले साल मई में फिलीपींस नेवी में शामिल किया गया था। ये 3200 टन का है, जिसमें वर्टिकल लॉन्च मिसाइल सिस्टम, एंटी-शिप मिसाइल, टॉरपीडो और आधुनिक रडार लगे है। UAE की नेवी का वॉरशिप Al Emarat भी पहली बार फ्लीट रिव्यू में आएगा।

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20 से ज्यादा अफ्रीकी देश होंगे शामिल

इंटरनैशनल फ्लीट रिव्यू और मिलन एक्सरसाइज में कई अफ्रीकी देश भी शामिल होंगे। ये इसलिए अहम है क्योंकि चीन पिछले एक दशक से अपना फोकस अफ्रीकी देशों पर भी किए हुए है। भारत के लिए अफ्रीकी देश सामरिक और व्यापारिक तौर पर अहम है। इंटरनैशनल फ्लीट रिव्यू में शामिल होने वाले देशों में 20 से ज्यादा अफ्रीकी देश है।

अधिकारियों के साथ लेंगे हिस्सा

इंटरनैशनल फ्लीट रिव्यू और मिलन एक्सरसाइज में शामिल होने वाले देश अफ्रीका के ईस्ट कोस्ट के साथ ही वेस्ट कोस्ट से भी है। नेवी के मुताबिक, सेशेल्स और साउथ अफ्रीका अपने वॉरशिप के साथ शामिल होंगे, जबकि बाकी देश अपने अधिकारियों के साथ हिस्सा लेंगे।

US, Russia among 72 nations to take part in fleet review

Source: The Times of India, Dt. 15 Feb 2026

The Indian Navy is gearing up to mark a defining moment in India's maritime story as Visakhapatnam will host both the International Fleet Review (IFR) and Exercise MILAN from Feb 15 to 25, placing the 'City of Destiny' once again at the heart of India's Indo-Pacific strategy.

"The current edition of IFR and MILAN exercise will be larger in scope and deeper in meaning as navies of 72 countries, including US and Russia, will participate and the mega joint naval events will feature over 60 warships and naval aircraft of three countries," a Navy source told TOI. The IFR will position India's eastern seaboard as a focal point for naval diplomacy and multilateral maritime engagement. Warships and assets from Germany, Philippines and the UAE are participating for the first time, including the Philippines' 'BRP Miguel Malvar' (FFG-06) and a UAE Navy warship, Al Emarat. Since 2001, India has used IFRs and opened its ports to allied navies to project maritime strength.

The star of Operation Sindoor's naval leg, aircraft carrier INS Vikrant, is all set to be the centre of attraction at the fleet review. The Vikrant carrier battle group, deployed in the northern Arabian Sea, played a key role in the strategy of compellence, thereby forcing the Pakistan Navy to be in a defensive posture.

https://timesofindia.indiatimes.com/india/us-russia-among-72-nations-to-take-part-in-fleet-review/articleshow/128368676.cms

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INDO-PACOM Chief praises Operation Sindoor, calls for vigilance, deeper India-U.S. defence cooperation

Source: The Hindu, Dt. 16 Feb 2026

Admiral Samuel J. Paparo, Commander of the United States Indo-Pacific Command (INDO-PACOM), on Sunday (February 15, 2026) praised the tactical execution of Operation Sindoor, highlighting the seriousness with which its lessons were examined and the introspection that followed. Speaking to a select group of journalists in the national capital, Admiral Paparo said he held “tremendous reverence” for the terrible event (Pahalgam attack) that triggered the crisis, acknowledging the gravity of what had unfolded. At the same time, he made it clear that he would reserve further comment, describing the matter as sovereign and best addressed by the country directly involved.

He also commended the restraint demonstrated during the operation, underlining the importance of preventing escalation in a volatile security environment. Referring to the use of Chinese-origin weapons by Pakistan during Operation Sindoor, Admiral Paparo stressed that constant vigilance and readiness are essential. “One never knows when a crisis may emerge. Maintaining a strong deterrent posture is critical,” he said, adding that every operation must yield lessons for future preparedness.

He noted that modern long-range weapons rely on complex “kill chains”, the integration of sensors, communications, propulsion systems, warheads, and seekers. In the 21st century, he observed, geography is no longer the decisive factor it once was. Capabilities in space, information systems,

propulsion technologies and seeker technologies have become more widely accessible. Success in modern conflict, he said, will depend on mastering the information environment, including space and counterspace operations, electronic warfare, low observability and artificial intelligence, to enhance both lethality and survivability.

Admiral Samuel J. Paparo, Commander of the United States Indo-Pacific Command (INDO-PACOM)

Admiral Paparo also praised India's vision of leveraging artificial intelligence for the benefit of people in the 21st century. He said AI has significant defence applications and that INDO-PACOM is at the forefront of employing AI in military operations. These areas present substantial opportunities for India and the United States to deepen cooperation, he added. Describing the security environment as dynamic and complex, he said it has contributed to the rapid growth of the India-U.S. security partnership. "Our cooperation dates back many years, including agreements in 2018 for Apache helicopters, and more recently MQ-9 platforms, GE-414 engines, P-8I aircraft, and MH-60 Romeo helicopters," he said.

Looking ahead, he said both countries are expanding cooperation not only in technical capabilities but also through joint exercises such as Tiger Triumph, Malabar, Cope India, and RIMPAC. "Across shared interests, joint exercises and enhanced capabilities, the relationship is on a steep upward trajectory," he said. On maritime domain awareness, Admiral Paparo said the U.S. views India as a major contributor to security in the Indian Ocean Region and commends it for that role. Maritime domain awareness, including undersea domain awareness, remains a key area of bilateral cooperation, he added.

https://www.thehindu.com/news/national/indo-pacom-chief-praises-operation-sindoor-calls-for-vigilance-deeper-india-us-defence-cooperation/article70635948.ece

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India-US security ties on upward trajectory, says US Commander

Source: The Indian Express, Dt. 16 Feb 2026

The relationship between India and the US on the security front has seen a “steeply upward trajectory”, driven by exigencies arising from greater security threats and a changing technology environment, a top US military officer said on Sunday. During a brief interaction with a select group of reporters, Admiral Samuel J Paparo Jr, Commander of the US Indo-Pacific Command, also commended the tactical execution and restraint shown by India during Operation Sindoor.

“We applaud the restraint that was exhibited, and we hope to work together to see that such a terrible event it preceded (Pahalgam terror attack) doesn’t happen again. And you know, I think all peace-loving nations are concerned when we see operations of this kind,” he said. He also underlined the need for constant vigil and readiness so that when the unforgiving hour comes, the importance of maintaining a strong deterrent posture is evident. Citing the various agreements signed between the two countries, including for the procurement of Apache helicopters, GE-414 jet engines, P8I aircraft, MH60 Romeo helicopters, he said India and US have increasingly cooperated in these areas, aside from various military exercises such as Tiger Triumph, Malabar, Yudh Abhyas and Cope India.

“And we think our partnerships have an exponential effect on deterrence, because it demonstrates a unity of purpose among us to maintain the peace and a peace through strength.…I think as our policy leaders are managing the relationships, it’s the duty of our military leaders to keep a close eye on capability and to be ready to contest that capability at any moment,” he said. He also commended India as a great net contributor to the security of the Indian Ocean region, adding that maritime domain awareness, and specifically undersea domain awareness, are important points of cooperation, aside from various maritime-based exercises that both sides had conducted.

“…We’re always looking for other means of cooperation, both from an exercise standpoint, information sharing, and then finally, the physical capability in our platforms,” he said. Speaking about lessons from Operation Sindoor, he said, “… Complex long range weapons have complex long range kill chains… meaning this combination of sensors, communication, propulsion, warheads, seekers, and in the 21st Century, geography is no longer a commodity.”

“…Given the commoditisation in space… the 21st Century will be won by those actors who master the information environment, and that is space, counter space, electronic warfare, low observability and other technologies,” he added. “So, I think, the lesson is that many of the technologies have been commoditised, and states are in constant cycles of overmatch. And we must heed those lessons very closely,” he said.

On potential areas of defence cooperation in future, he said undersea domain awareness is a key focus for maritime cooperation, to have capability to see and sense undersea. On India’s possible plans to procure a fifth-generation fighter aircraft, he said, “We view that as being purely a sovereign matter as India addresses its air superiority challenges. And you know, we will, we treasure the partnership among us. India will make its choices, and we will respect those choices.”

https://indianexpress.com/article/india/india-us-security-ties-on-upward-trajectory-says-us-commander-10534184/

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Army Chief set for 4-day visit to Australia to boost defence ties

Source: The Tribune, Dt. 15 Feb 2026

Army Chief General Upendra Dwivedi is set to embark on a four-day visit to Australia to further strengthen India-Australia defence cooperation and reinforce the growing convergence between the two nations. The Ministry of Defence on Saturday said during his visit from February 16 to 19, the Army Chief will hold extensive discussions with senior leaders of the Australian Defence Force, aimed at strengthening army-to-army cooperation through training, joint exercises, professional exchanges, and capacity-building initiatives. In Sydney, General Dwivedi will engage with the senior hierarchy of Forces Command (FORCOMD), Special Operations Command (SOCOMD), and 2nd Division. It is noteworthy that the troops of the 2nd Division are to participate in the bilateral Army Exercise AUSTRAHIND, the next edition of which is scheduled to take place in India in 2026.

On arrival in Canberra, the Chief will be accorded a ceremonial welcome and Guard of Honour, followed by interaction with Lieutenant General Simon Stuart, Chief of the Australian Army. Both Gen Dwivedi and his counterpart, Lt Gen Stuart, are alumni of the US Army War College Class of 2015 and share a strong professional bond. The meeting will be followed by a comprehensive round table discussion in the Australian Defence Forces Headquarters on the aspects of defence cooperation, modernisation, and futuristic operations. The Army Chief will also interact with the Commander of the Australian Defence College and address the officers at the Australian Command and Staff College.

In a series of high-level meetings, General Dwivedi will call-on Chief of Defence Forces (CDF) and also the Secretary of the Department of Defence. He will also visit Headquarters Joint Operations Command (HQJOC), where he will meet the Commander Joint Operations and will be briefed on operational dynamics of the Australian Defence Forces, including integrated and multi-domain operations. Army Chief will lay a wreath at the Australian War Memorial to pay homage to the fallen soldiers and honour the shared legacy of sacrifice and service. He will also meet the Indian Defence Veterans residing in Australia, underscoring the enduring bond between the Indian Armed Forces and its veterans.

https://www.tribuneindia.com/news/india/army-chief-set-for-4-day-visit-to-australia-to-boost-defence-ties

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MoD proposes higher indigenous content in defence procurement

Source: The Tribune, Dt. 15 Feb 2026

The Ministry of Defence (MoD) is looking to introduce major changes to the defence acquisition process by giving greater weightage to domestic manufacturers. The MoD has released a draft to revamp the Defence Acquisition Procedure (DAP), laying down clearer parameters for defining “indigenous design” of equipment, weapons and systems. It is also proposing to raise the minimum requirement for indigenous content in defence equipment. Currently, the benchmark is 50 per cent, which is proposed to be increased to 60 per cent for indigenously designed, developed and

manufactured products. The revised DAP is aimed at promoting jointness, self-reliance and force modernisation, while speeding up acquisition timelines and scaling up production by the domestic defence industry.

The new procedure will replace the existing DAP 2020 and seeks to strengthen India's defence industrial ecosystem, reduce import dependence and streamline procurement through higher indigenous content mandates and innovative acquisition categories. Under the proposed changes, subject experts will be involved in finalising specifications for equipment, with greater oversight during trials. New procedures are also being introduced for long-term bulk acquisitions. A new procurement category based on "Technology Readiness Level" has been proposed to benchmark the maturity of required technologies. The draft also proposes allowing procurement even if only a single vendor qualifies, provided the product is sourced from within India. Current rules prohibit purchases in cases where only one vendor meets technical parameters.

In addition, a framework will be introduced to appoint a domestic "development-cum-production partner" for projects led by the Defence Research and Development Organisation (DRDO). The MoD said the revised DAP aims to align defence acquisitions with evolving geo-strategic challenges, economic growth and the expansion of India's private defence industry. The draft also proposes faster procedures for equipment with short technological cycles, pragmatic evaluation of indigenous content and greater utilisation of indigenous military materials. The MoD said the new policy would boost defence manufacturing and exports, while restricting imports to only critical requirements.

https://www.tribuneindia.com/news/india/mod-proposes-higher-indigenous-content-in-defence-procurement/

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IAF, Royal Thai Air Force jointly conduct air combat exercise in Indian Ocean Region

Source: The Hindu, Dt. 14 Feb 2026

The Indian Air Force (IAF) conducted an in-situ bilateral exercise with the Royal Thai Air Force (RTAF) in the Indian Ocean Region (IOR) from February 9 to 12, 2026, aimed at strengthening military cooperation and enhancing operational synergy between the two countries.

According to the Ministry of Defence, the engagement was executed as an air combat training exercise featuring the IAF's Su-30MKI multirole fighter aircraft and the RTAF's SAAB Gripen jets. The IAF's IL-78 mid-air refuelling tankers enabled extended-range maritime operations, underscoring the force's long-distance deployment capabilities.

The exercise was conducted under the enhanced surveillance and command network of the IAF's Airborne Warning and Control System (AWACS) aircraft, while Ground Control Interception (GCI) elements of the RTAF provided coordinated control support, the Ministry added.

IAF assets operated from airbases in the Andaman and Nicobar Islands, demonstrating strategic reach into the IOR, while the Thai Gripen fighters were launched from bases in Thailand. The drill showcased interoperability between the two air forces and provided operational exposure, including the exchange of best practices in air combat and maritime domain operations.

The exercise reflects the growing defence engagement between India and Thailand and marks a significant step in expanding the ambit of India's "Act East" policy into the aerospace domain, defence sources say.

https://www.thehindu.com/news/national/iaf-royal-thai-air-force-jointly-conduct-air-combat-exercise-in-indian-ocean-region/article70629238.ece

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चीन ने पंचशील को माना महज़ व्यापारिक समझौता: सीडीएस

Source: Dainik Jagran, Dt. 14 Feb 2026

राज्य ब्यूरो, जागरण. देहरादून: चीफ आफ डिफेंस स्टाफ अनिल चौहान ने पंचशील समझौते को लेकर देश के प्रथम प्रधानमंत्री जवाहर लाल नेहरू की मंशा और चीन के रवैये पर टिप्पणी की। उन्होंने कहा कि पंचशील समझौते के पीछे नेहरू की मंशा दोनों देशों के बीच सीमा को स्थिरता प्रदान करने की रही। उस समय माना गया कि समझौते के बाद सीमा संबंधी मुद्दा काफी हद तक सुलझ जाएगा, लेकिन चीन ने इसे महज व्यापारिक समझौते के रूप में देखा। चीन ने पंचशील समझौते के बाद भी हिमाचल व उत्तराखंड की सीमाओं से सटे इलाकों में उपस्थिति दर्ज की और भारतीय सेना पर सीमा में घुसपैठ के आरोप लगाए। इसी क्षेत्र में सीमा को लेकर विवाद शुरू हुआ था।

सीडीएस जनरल चौहान शुक्रवार को लोक भवन में णनीतिक विचार मंच 'भारत हिमालयन इंटरनेशनल स्ट्रेटेजिक मंच (भीष्म)' के शुभारंभ अवसर पर बतौर विशिष्ट अतिथि व्याख्यान दे रहे थे। उन्होंने कहा कि स्वतंत्रता के बाद अंग्रेजों ने देश छोड़ दिया और यह भारत को तय करना था

लोक भवन में शुक्रवार को रणनीतिक विचार मंच 'भीष्म' के कार्यक्रम में विचार रखते सीडीएस जनरल चौहान • सूवि

कि सीमा कहां है। नेहरू जानते थे कि पूर्व में मैकमोहन रेखा जैसी कुछ सीमाएं हैं और लद्दाख क्षेत्र में भी हमारा कुछ दावा है, लेकिन वह सीमा तिब्बत पर नहीं थी। शायद इसीलिए उन्होंने चीन के साथ अच्छे संबंध बनाने के लिए पंचशील समझौते पर हस्ताक्षर किए। इसी के साथ सीमा पर स्थिरता के लिए वर्ष 1954 में भारत ने तिब्बत को चीन के भाग के रूप में मान्यता दी। दोनों देशों के बीच दो बार मानचित्रों का आदान-प्रदान किया गया। इन प्रक्रियाओं ने वास्तविक नियंत्रण रेखा की अवधारणा को आकार देने का मार्ग प्रशस्त किया।

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India believed that Panchsheel pact settled border: CDS Anil Chauhan

Source: The Hindu, Dt. 14 Feb 2026

Chief of Defence Staff (CDS) General Anil Chauhan on Friday (February 13, 2026) said that independent India was keen on building a good relationship with China. He said that after Independence, it was for India to decide where the frontiers lay. "[Jawaharlal] Nehru probably knew that we had something like the McMahon Line in the east, and we had some kind of claim in the

Ladakh area, but it was not clearly defined. That is why he wanted to go in for the Panchsheel Agreement... probably," General Chauhan said.

"And the Chinese also, when they had so-called liberated Tibet and had moved into Lhasa and into Xinjiang, this particular area was extreme from both ends. So, they probably wanted stability in this region and that is why this area assumed priority," the CDS added. General Chauhan said that once Tibet was occupied by China, "India gave up those privileges". "India recognised China and supported its permanent seat in the United Nations. The Himalayan buffer that existed between us and Tibet evaporated and was converted into a direct border," he said. The CDS added that in 1954, India recognised Tibet as part of China, and both countries signed the Panchsheel Agreement. With this, India assumed that it had settled its northern border and the only area not settled through a formal treaty, from India's perspective, rested on the Panchsheel Agreement, he said.

General Chauhan said India believed that the legitimacy of the border had been reinforced by identifying six passes through which trade and pilgrimage would take place – Shipki La, Mana, Niti, Kungri Bingri, Darma, and Lipulekh. "However, the Chinese position was that the agreement was negotiated only for trade and did not reflect their stand on the border dispute," he added. The CDS underlined the increasing strategic importance of the Himalayan frontiers. He highlighted the government's focused efforts on infrastructure development in border areas and emphasised the need for integrated, forward-looking strategic planning.

General Chauhan was speaking on the topic 'Frontiers, Borders and LAC: The Middle Sector' during the inauguration of Bharat Himalayan International Strategic Manch (BHISM), a think tank in Dehradun. He noted that issues such as climate change, water security, border management, military modernisation and disaster preparedness required a holistic Himalayan perspective. Lieutenant General Ajay Kumar Singh (retd.), also part of BHISM, outlined the objectives of the project and stated that the forum would provide informed policy recommendations to the Government of India on strategic issues related to the Himalayan region, while fostering collaboration with academic and research institutions in and around Dehradun.

Governor Lieutenant General Gurmit Singh (Retd.) inaugurated the BHISM at Lok Bhavan on Friday (February 13, 2026). On the occasion, he also unveiled the logo and official website of the forum. Conceived as a strategic think tank, BHISM seeks to bring together Dehradun's rich intellectual capital and position Uttarakhand as a leading national hub for strategic thought and policy discourse.

The initiative is being guided by General Anil Chauhan, Chief of Defence Staff, along with Lieutenant General Ajay Kumar Singh (Retd.), Member of the National Security Advisory Board. The core group comprises distinguished experts from the fields of defence, administration, academia and strategic affairs, including Colonel (Dr.) Girija Shankar Mungli (Retd.), Shri Sanjeev Chopra, IAS (Retd.), Prof. Durgesh Pant, Prof. Diwan Singh Rawat, Prof. Surekha Dangwal, Shri Nitin Gokhale and Shri Rajan Arya. Addressing the gathering, the Governor described the launch of BHISM as a moment of pride for Uttarakhand and the nation. He expressed confidence that the forum would evolve into a credible and influential platform for dialogue and policy inputs in the domain of national security and strategic affairs.

https://www.thehindu.com/news/national/after-independence-india-wanted-good-ties-with-china-cds-anil-chauhan/article70629465.ece

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A first: 30 foreign scribes invited to military exercises

Source: The Tribune, Dt. 16 Feb 2026

In a first move of its kind, India has invited about 30 foreign journalists to showcase its military prowess and exercises, besides the growing ecosystem in the manufacturing of defence equipment.The visiting journalists hail from countries where India is a partner on multiple fronts, trying to collaborate on defence manufacturing or is already selling guns, vehicles and ships. Among the visiting group of journalist, there is a fair representation from the developed world, global south as well as small island nations. Journalists hail from Vietnam, Indonesia, Malaysia, Japan, South Korea, Israel and Armenia. European countries include Sweden, Italy and Netherlands. Besides, journalists have been invited from several African countries, including Egypt, South Africa, Kenya, Nigeria, Algeria and Morocco; as well as South American nations, including Brazil, Argentina and Guyana.

“This visit is a part of the ‘familiarisation’ effort to get media- reporters of these countries exposed to what India is doing in militarily,” said sources. This is the first time that the Ministry of External Affairs and the Ministry of Defence, along with the armed forces, is opening up the military exercises for foreign journalists to see. Globally, the European Union, Israel, the US, the UK and France, among others, do such ‘familiarisation’ trips, inviting journalists from other countries to witness military exercises or industrial complexes.

The visiting delegation, over the next fortnight, would be attending key military exercises conducted by the Navy, Indian Air Force and the Army and also visit several private and public sector companies in the field of manufacturing. They will start at the International Fleet Review, which begins on February 17 at Vishakhapatnam. INS Vikrant, India’s first indigenously-built aircraft carrier, is the centre of attraction at the IFR. This will be followed by the week-long exercise, Milan, to be conducted from February 19 to 26. It would feature the US, Russia and Iran among 60 countries. Japan and Australia, both partners in the Quad, would also be there displaying New Delhi’s multi alignment policy.

The delegation would also witness the IAF exercise, Vayu Shakti, in the deserts of Rajasthan and be part of a firing display, hosted by the Army 12 corps headquartered at Jodhpur. The delegation will then visit Bharat Electronics Limited, along with private companies like domestic small arms maker SSS Defence, aerospace company New Space, and sensor and thermal imager making company Tonbo.

https://www.tribuneindia.com/news/india/a-first-30-foreign-scribes-invited-to-military-exercises/

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QA-Industry Conclave showcases digital transformation as the cornerstone of trusted & time-bound defence quality assurance

Source: Press Information Bureau, Dt. 13 Feb 2026

The Quality Assurance (QA)-Industry Conclave themed ‘Traceability, Speed and Trust – Leveraging Technology for Smarter Quality Assurance’ took place in New Delhi on February 13, 2026. It brought together senior leadership from the Ministry of Defence, Indian Navy, QA

organisations, defence shipyards, public sector undertakings and leading private industry partners on a single platform to deliberate upon the future roadmap for a technology-driven quality assurance ecosystem.

The conclave underscored the transformative role of digital technologies in redefining quality assurance processes across the defence manufacturing value chain. Deliberations focused on enabling end-to-end traceability, reducing procedural timelines, enhancing transparency in inspection and certification, and creating a responsive framework that promotes trust between Quality Assurance agencies and industry. The discussions reflected a clear consensus that the integration of digital tools, data-centric methodologies and collaborative policy frameworks is essential for achieving speed, accuracy, and reliability in complex shipbuilding and defence production programmes.

A major outcome of the event was the release of the Indian Naval & Marine Industry – A Capability Catalogue, a comprehensive compendium aimed at providing structured visibility to indigenous industrial capabilities and facilitating stronger engagement between the Services & the domestic manufacturing ecosystem. The promulgation of the Joint Service Guidelines on the Common Information Model for integrated data management of combat systems and sensors marked a significant milestone towards standardisation, interoperability & seamless digital exchange of technical and quality data across stakeholders. The conferment of Green Channel Status and grant of Self-Certification to eligible industry partners in recognition of their proven quality performance reflected a progressive shift towards a trust-based, performance-oriented quality assurance regime that rewards consistency, reliability, and process maturity.

The technical sessions witnessed in-depth and forward-looking discussions on digital QA for shipbuilding, policy compliance in a rapidly evolving industrial landscape, and quality assurance challenges in naval ship construction and replenishment orders for spares. The participants shared practical experiences, best practices and emerging requirements, leading to a rich exchange of ideas and identification of actionable pathways for process optimisation. The deliberations brought out the need for real-time data visibility, integrated inspection planning, harmonised documentation, risk-based certification models and enhanced industry participation in quality planning from the design stage onwards.

The addresses by Chief of Material of the Indian Navy Vice Admiral B Sivakumar and other senior dignitaries highlighted the evolving nature of defence manufacturing in India and the need for

quality assurance systems to keep pace with technological advancements, modular construction practices, integrated combat systems and network-centric operations. The speakers emphasised that quality assurance is no longer a terminal activity, but a continuous, technology-enabled process embedded across design, production, testing and lifecycle support. The importance of aligning QA procedures with the national vision of Aatmanirbhar Bharat and fostering a trust-based compliance environment for capable industry partners was also brought out prominently.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2227778&reg=3&lang=1

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India, S Korea hold 6th Foreign Policy & Security Dialogue

Source: The Tribune, Dt. 14 Feb 2026

India and South Korea on Friday reviewed the full spectrum of bilateral ties and agreed to advance their Special Strategic Partnership during the 6th Foreign Policy and Security Dialogue held in Seoul. The talks were co-chaired by Secretary (East) P Kumaran and First Vice-Foreign Minister Park Yoon-joo of South Korea's Foreign Ministry during Kumaran's February 12-13 visit to the country. Both sides agreed to maintain regular high-level engagements in 2026, including a visit by South Korea's Deputy PM and Minister of Science and ICT to India for the AI Impact Summit, a Foreign Ministers-led Joint Commission Meeting and several ministerial and senior-official consultations.

The discussions covered political, economic and commercial cooperation as well as defence, security, science and technology and cultural exchanges. India highlighted opportunities for Korean companies in shipbuilding and maritime sectors and stressed the importance of strengthening economic security cooperation. The two sides also explored collaboration in critical minerals and resilient supply chains, along with emerging technologies such as artificial intelligence, semiconductors and green hydrogen. Regional and global developments, including the situation on the Korean Peninsula and the Indo-Pacific, also figured in the talks, along with cooperation in multilateral forums.

During the visit, Kumaran called on Foreign Minister Cho Hyun and held separate meetings with senior national security and foreign affairs officials, with both sides reaffirming commitment to further deepen bilateral relations. The visit forms part of a series of high-level engagements between the two countries aimed at expanding cooperation across strategic and economic domains.

https://www.tribuneindia.com/news/india/india-s-korea-hold-6th-foreign-policy-security-dialogue/

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China's secret nuclear expansion: New warhead facilities detected in Sichuan mountains

Source: The Times of India, Dt. 16 Feb 2026

In the mist-covered valleys of southwest China's Sichuan Province, satellite imagery is revealing a rapid expansion of the country's nuclear weapons infrastructure, part of what experts say is a broader effort to strengthen China's position in an era of intensifying superpower rivalry. These

secretive nuclear-related sites, including facilities near Zitong and Pingtong, have expanded and been upgraded in recent years. Analysts say the changes fit a wider national push to modernize China's nuclear arsenal, complicating efforts to revive global arms control after the expiration of the last remaining US-Russia nuclear treaty. Washington argues that any future agreement must also include China, but Beijing has shown no interest.

According to the Pentagon's latest estimate, as reported by The New York Times, China possessed more than 600 nuclear warheads by the end of 2024 and could reach 1,000 by 2030. Although that total remains far below the stockpiles of the United States and Russia, analysts say the pace of growth is concerning. "I think without a real dialogue on these topics, which we lack, it's really hard to say where it's going, and that, for me, is dangerous," said Matthew Sharp, a former State Department official now at the Massachusetts Institute of Technology.

"Because now we're forced to react and plan around the worst-case interpretation of a concerning trend line." One valley lies near Zitong, where engineers have been constructing new bunkers and ramparts. A newly built complex there is threaded with pipes, suggesting it handles highly hazardous materials. Another valley houses a heavily secured site known as Pingtong, where specialists believe plutonium cores for nuclear warheads are produced.

The main structure at Pingtong, marked by a 360-foot ventilation stack, has been refurbished with new vents and heat dispersers, and further construction is underway nearby. Above the entrance, large characters bearing leader Xi Jinping's slogan—"Stay true to the founding cause and always remember our mission"—are visible from space. Experts say Pingtong's layout resembles plutonium pit production plants in other countries, including the Los Alamos National Laboratory in the United States. At Zitong, the new bunkers and fortified areas are likely used to test high explosives — the chemical charges that compress nuclear material to trigger a chain reaction.

"You have a layer of high explosives and the shock wave at the same time implodes into the center. This needs blast tests to perfect them," said Hui Zhang, a physicist at Harvard University who reviewed the findings, as quoted by NYT. The precise purpose and scale of the upgrades remain uncertain. "We don't know how many warheads have been produced, but we just see the plant expansion," Zhang said. Some changes could reflect safety improvements or preparations to adapt warhead designs for new weapons systems such as submarine-launched missiles.

"The changes we see on the ground at these sites align with China's broader goals of becoming a global superpower. Nuclear weapons are an integral part of that," said Renny Babiarz, a geospatial intelligence expert who analyzed satellite images of the locations. "There's been evolution at all of these sites, but broadly speaking, that change accelerated starting from 2019," he said.

US officials worry that a larger and more advanced arsenal could affect China's actions in a future crisis, especially over Taiwan. China seeks to ensure it is "in the position where they believe they're largely immune from nuclear coercion by the United States," said Michael S Chase, a former Pentagon official now at RAND. "I think they probably judge that could come into play in a conventional conflict over Taiwan."

https://timesofindia.indiatimes.com/defence/chinas-secret-nuclear-expansion-new-warhead-facilities-detected-in-sichuan-mountains/articleshow/128374313.cms

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Science & Technology News

अंतरिक्ष विज्ञान के क्षेत्र में निजी भागीदारी नई रफ़्तार का संकेत

Source: Jansatta, Dt. 16 Feb 2026

केंद्रीय विज्ञान और प्रौद्योगिकी राज्य मंत्री जितेंद्र सिंह ने कहा

जनसत्ता ब्यूरो
नई दिल्ली, 15 फरवरी।

केंद्रीय विज्ञान और प्रौद्योगिकी राज्य मंत्री जितेंद्र सिंह ने रविवार आइआइटी, मद्रास (चेन्नई) की मौजूदा प्रयोगशाला और शोध केंद्रों का किया। उन्होंने शहरी गतिशीलता, अंतरिक्ष विज्ञान, स्वास्थ्य उपकरण और मस्तिष्क शोध से संबंधित परियोजनाओं की समीक्षा की और कहा, अंतरिक्ष क्षेत्र में प्रौद्योगिकी की बढ़ती भागीदारी और दोबारा इस्तेमाल के लायक राकेट 'अग्निकुल' की दिशा में की गई पहल, इस दिशा में नई रफ्तार का संकेत है।

उन्होंने आइआइटी द्वारा शोध के लिए नवोन्मेष अपनाने की सराहना करते हुए कहा कि समेकित प्रयास से नतीजे तेजी से लागू कर समाधान की तरफ अग्रसर होने में सहायक होते हैं। गतिशीलता के लिए की गई पहल का मकसद भारतीय शहरों में भारी यातायात जाम को दूर करना है।

इस परियोजना का मौजूदा सड़कों के ऊपर ऊंचे ट्रैक पर चलने वाले कृत्रिम मेधा के जरिए छोटे इलेक्ट्रिक गतिशीलता प्रणाली के जरिए करीब 20 मिनट में 15 किलोमीटर का शहरी सफर मुमकिन बनाना है। इससे भीड़भाड़ वाले महानगरीय इलाकों में यात्रा का समय कम होने के साथ सड़कों पर यातायात का दबाव भी कम होगा। जितेंद्र सिंह ने एक निजी अंतरिक्ष प्रौद्योगिकी नवउद्यम अग्निकुल कास्मो की समीक्षा के दौरान कहा कि 30 मई, 2024 को इन स्पेस और इसरो के सहयोग से अपना पहला मिशन सफलतापूर्वक शुरू किया।

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Newly discovered unusual mechanism of heat transport in solids can enable ultra-efficient thermal insulators

Source: Press Information Bureau, Dt. 13 Feb 2026

In a major scientific breakthrough, researchers have discovered an unusual mechanism of heat transport in solids that fundamentally reshapes our understanding of how heat flows in crystalline materials with local disorder. This can have implications in next-generation thermoelectrics and thermal management technologies. Heat in solids is typically carried by phonons, which generally behave like particles that scatter as they move through a crystal lattice. This classical “phonon gas” picture has guided materials design for decades.

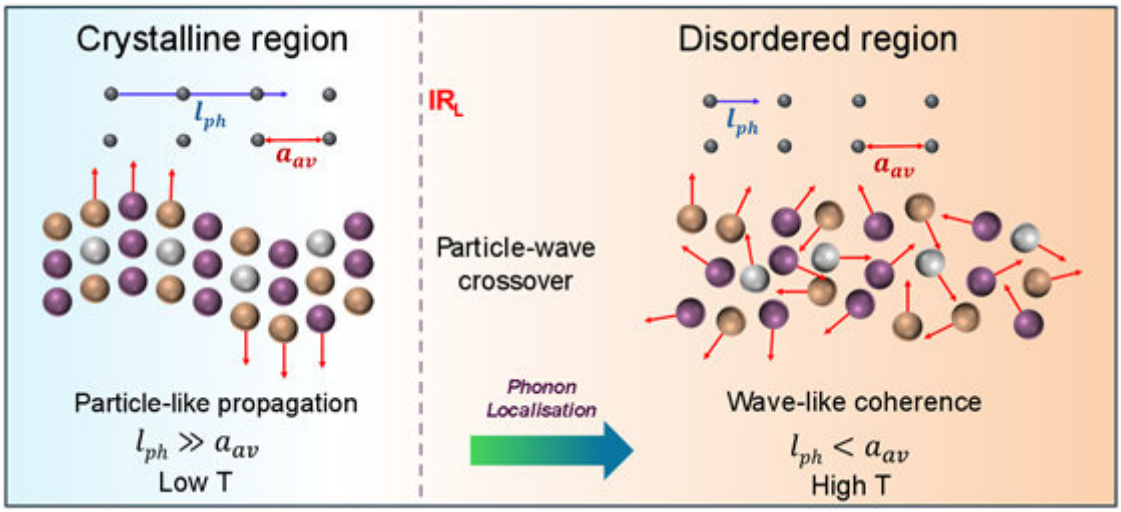
Researchers at Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru, an autonomous institute of Department of Science and Technology (DST) have now demonstrated a rare transition in which phonons stop behaving like particles and instead propagate through wave-like coherence, tunnelling between localized vibrational states. This particle-to-wave-like crossover was observed in a newly studied material which is a zero-dimensional inorganic metal halide, Tl2AgI3.

In this work, led by Prof. Kanishka Biswas from the New Chemistry Unit (NCU), JNCASR, published in the prestigious journal, Proceedings of the National Academy of Sciences, USA (PNAS), the materials exhibits an exceptionally low lattice thermal conductivity of about 0.18 W/m·K. Remarkably, instead of decreasing continuously with temperature as expected for normal crystals, the thermal conductivity becomes nearly temperature independent above around 125 K, signalling a breakdown of conventional phonon gas model.

At the heart of this discovery is the unique crystal chemistry of Tl2AgI3. The structure consists of discrete, cluster-like building blocks rather than an extended three-dimensional network. Nearly a century ago, Nobel laureate Linus Pauling laid the foundations of modern crystal chemistry through a set of rules linking atomic arrangement to structural stability. Taking inspiration from Pauling's third rule, (which states that sharing edges or faces between coordination polyhedra within a crystal structure enhances cation–cation repulsion), the authors anticipated that strong cation–cation repulsion within densely connected coordination units could destabilize the lattice locally.

Guided by this idea, they experimentally uncovered pronounced local distortions of silver atoms, which make the chemical bonds deviate significantly from ideal harmonic motion (anharmonic). This extreme anharmonicity dramatically enhances particle-like phonon scattering, to the point that conventional phonon transport collapses. As a direct consequence, heat begins to propagate through wave-like coherence, with phonons tunnelling between localized vibrational states rather than moving as well-defined particles. At the same time, thalliu

Commenting on the significance of the finding, Prof. Kanishka Biswas said, "Tl_2AgI_3 is a rare example of a material that behaves simultaneously like a crystal and a glass. It retains long-range crystalline order, yet conducts heat in a glass-like manner due to phonon localization and wave-like coherence."



This schematic shows the major findings of this research i.e. how heat transport changes with temperature in Tl2AgI3. Here, lph is the average distance a phonon travels before being scattered, and aav is the average spacing between atoms. At low temperatures, lph⩾aav, so heat is carried by phonons moving like particles through an ordered crystal. As temperature increases, Pauling's third rule mediated cation–cation repulsion induces local structural distortions, leading to strong lattice anharmonicity. This reduces lph so that lph < aav, causing a crossover to wave-like phonon transport.

By combining state-of-the-art synchrotron X-ray pair distribution function measurements, low-temperature thermal transport experiments, Raman spectroscopy, and advanced first-principles

theoretical calculation, the team provided a comprehensive picture of this phenomenon. Importantly, they employed a recently developed equation (linearized Wigner transport equation) developed by Prof Swapan K Pati's group in JNCASR, to distinguish whether heat flows through independent particle-like scattering or through wave-like contributions. Their analysis reveals that, as temperature increases, coherence-driven wave-like transport overtakes particle-based transport around 175 K.

"This is a rare experimental realization of a concept that was largely theoretical," Prof. Biswas added. "We show that crystalline solids do not have to be strictly particle-like phonon scattering in how they carry heat. Instead, they can access a mixed regime where wave-like coherence dominates, leading to ultralow and glassy thermal conductivity."

The experimental work was led by first author Dr. Riddhimoy Pathak, Ph.D student of Prof. Biswas, who carried out the synthesis, structural characterization, and thermal transport measurements. The study has a joint first author, Mr. Sayan Paul, who is from the group of Prof. Swapan K. Pati from the Theoretical Sciences Unit (TSU), JNCASR, providing crucial theoretical insight into phonon coherence and wave-like heat transport. The discovery with implications in thermal management technologies establishes a new design strategy: using chemical rules and local lattice instability to engineer phonon localization and coherence in crystalline solids.

Authors- Dr. Riddhimoy Pathak (left) and Prof. Kanishka Biswas (right)

The research benefitted from national supercomputing resources and international synchrotron facilities under the India@DESY programme. This achievement underscores India's growing leadership in fundamental materials research and highlights how deep chemical insight, combined with advanced experimental and theoretical tools, can uncover entirely new physical regimes with strong technological relevance.

Publication Link: https://www.pnas.org/doi/10.1073/pnas.2521353123;

https://doi.org/10.1073/pnas.2521353123)

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2227451&reg=3&lang=1

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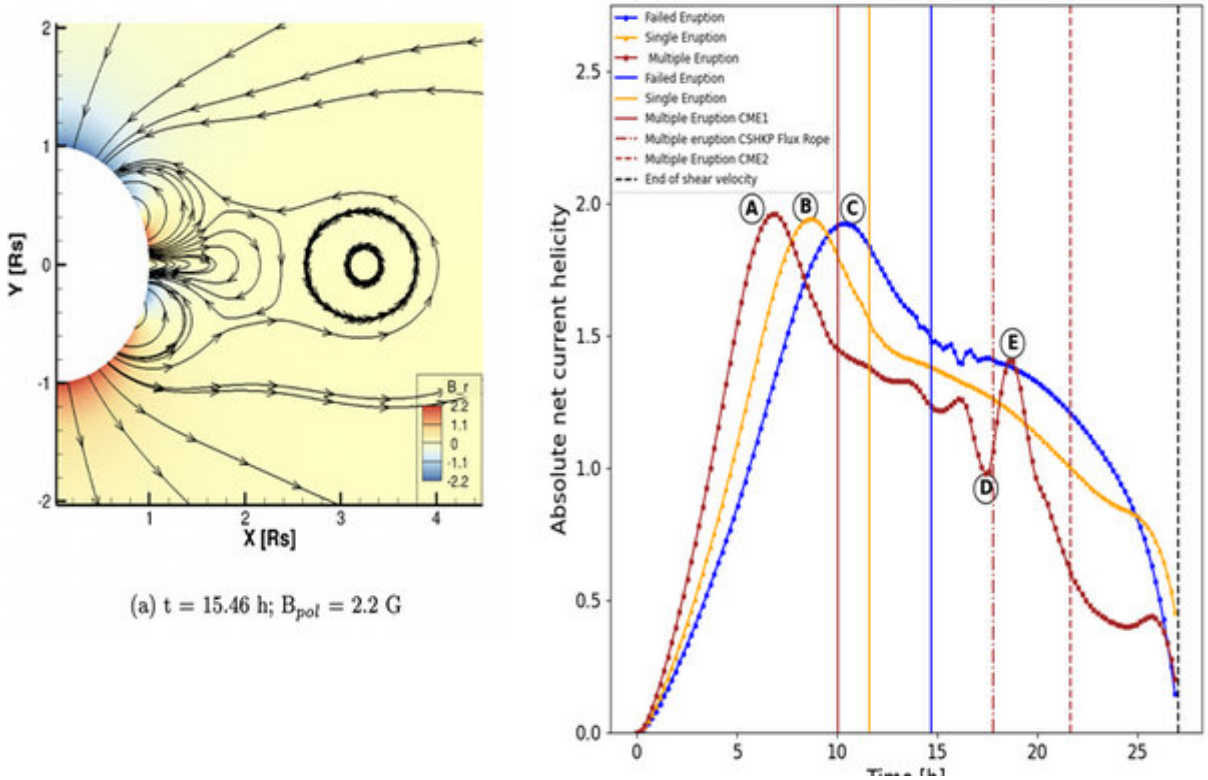
Numerical simulations of Sun reveal a 'Magnetic Cage' controlling solar storms

Source: Press Information Bureau, Dt. 13 Feb 2026

Scientists have taken a significant step forward in understanding origins of explosive solar eruptions that can trigger geomagnetic storms which threaten satellites, disrupt power grids, and endanger astronauts. Predicting which magnetic structures on how the Sun will erupt is a central challenge in space weather forecasting.

In a new study, researchers from the Aryabhatta Research Institute of Observational Sciences (ARIES), an autonomous institute under the Dept. of Science & Technology (DST) , Govt. of India, and their collaborators used computational models that simulate the behavior of electrically conducting fluids like plasma, interacting with magnetic fields (magnetohydrodynamic (MHD) simulations) to uncover two critical factors that govern these eruptions, known as Coronal Mass Ejections (CMEs). The findings reveal that Sun's global magnetic field acts like a 'magnetic cage', while the rapid build-up of magnetic twist provides the key to unlocking it.



Left: A snapshot of the numerical simulations showing the solar eruptions being initiated and escaping the Sun. Right: Temporal evolution of absolute net current helicity for three scenarios (blue, yellow, and red for failed, single, and multiple eruptions, respectively). The blue, yellow and red vertical lines represent the flux rope formation time for the failed, single and multiple eruption cases. The black dotted vertical line represents the end of the shear. Time is measured from the start of the shear.

The new research, led by Nitin Vashishtha, a PhD student, and Dr. Vaibhav Pant, a scientist, from ARIES, tackles this problem by simulating a CME using the "breakout model," a leading theory for how these eruptions are initiated. The numerical simulations demonstrated that a stronger global magnetic field acts like a restraining cage, making it significantly harder for a CME to escape the

Sun's gravity. When the researchers simulated a CME under a weaker background field, it erupted successfully.

However, by slightly increasing strength of this background magnetic field, the eruption was stifled and ultimately failed. This result provides strong support for a theory explaining a recent solar puzzle. Solar Cycle 24 was magnetically weaker than solar cycle 23 but paradoxically produced a high number of CMEs. The team's simulations support the idea that weaker background magnetic field during that cycle lowered the threshold for eruption, allowing even relatively small events to escape into space.

The second major result from the study offers a new tool for forecasting. The team investigated how injecting energy and twist, a property called helicity, into the solar corona affects the outcome. They found that it's not just the amount of helicity that matters, but the rate at which it builds up. By tracking a parameter called Absolute Net Current Helicity (ANCH), among other magnetic parameters such as magnetic energy and Total Unsigned Current Helicity (TUCH), researchers discovered that growth rate of ANCH was the most reliable indicator of an impending eruption. A slow, gradual increase in ANCH led to a "failed eruption," where a magnetic structure formed but fell back to the surface while a rapid, steep increase in ANCH consistently preceded a successful CME. In scenarios with fastest ANCH injection, the simulations even produced multiple, successive CMEs from the same region.

"Our findings indicate that among these parameters, the time rate of absolute net current helicity can serve as the most effective indicator for distinguishing between various eruption scenarios," the authors said. Dr Vaibhav Pant elaborated on the future direction: “These simulations act as our virtual laboratory for the Sun, allowing us to test the fundamental physics of these massive eruptions. The next frontier is to translate these findings, particularly the importance of the energy build-up rate, into a reliable tool for forecasting real-world space weather events and protecting our vital infrastructure.”

Publication Link: https://doi.org/10.3847/1538-4357/adff54

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The Tribune
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