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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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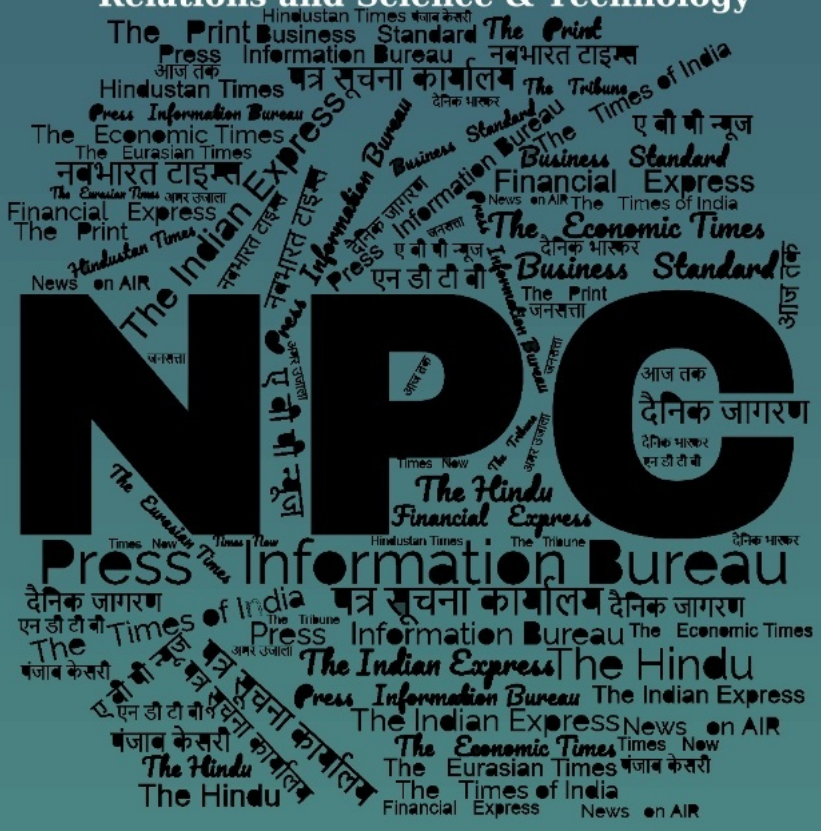

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हाइपरसोनिक मिसाइल तकनीक में भारत ने लगाई बडी छलांग

Source: Dainik Jagran, Dt. 10 May 2026

भारत ने ऐसी मिसाइल तकनीक की दिशा में बड़ी सफलता हासिल की है, जो भविष्य के युद्धों की तस्वीर बदल सकती है। डीआरडीओ ने हाइपरसोनिक मिसाइल कार्यक्रम के तहत 'स्क्रैमजेट कांबस्टर' का लंबी अवधि वाला सफल परीक्षण किया। रक्षा मंत्रालय के अनुसार, हैदराबाद स्थित डिफेंस स्क्रैमजेट इंजन, चुनिंदा देशों रिसर्च एंड डेवलपमेंट लेबोरेटरी में हुए परीक्षण में स्क्रैमजेट इंजन 1,200 सेकेंड यानी 20 मिनट सफलतापूर्वक चलता रहा। जनवरी में 700 सेकेंड का परीक्षण किया गया था। इस तकनीक की मदद से मिसाइलें आवाज की गति से पांच गुना या उससे भी ज्यादा रफ्तार से उड़ान भर सकती हैं। इन्हें रोकना मौजूदा एयर डिफेंस सिस्टम के लिए बेहद कठिन है। रक्षा विशेषज्ञों के मुताबिक, इस उपलब्धि से भारत भविष्य में स्वदेशी हाइपरसोनिक क्रूज मिसाइल विकसित करने के काफी करीब पहुंच गया है। अमेरिका, रूस और चीन जैसे देशों के पास पहले से इस क्षेत्र में क्षमता है। स्क्रैमजेट इंजन हवा से ही आक्सीजन लेकर काम करता है, इसलिएं इसे अलग से आक्सीजन ढोने की जरूरत नहीं पड़ती।

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DRDO tests combustor of new hypersonic cruise missile

Source: The Indian Express, Dt. 11 May 2026

Marking a further breakthrough in hypersonic missile technology for India, the Defence Research and Development Organisation (DRDO) achieved a 1,200-second runtime of its actively cooled scramjet full-scale combustor on Saturday. The test was conducted at the Scramjet Connect Pipe Test (SCPT) facility in Hyderabad, building on the successful 700-plus second test carried out in January.

Fig: *DRDL conducted second successful extensive long-duration test of the actively cooled full-scale scramjet combustor, achieving a run time of over 1200 seconds.*

The hypersonic cruise missile is capable of exceeding five times the speed of sound, or over 6,100 km per hour, for extended periods. The speed is achieved through a cutting-edge air-breathing engine, which utilises supersonic combustion to sustain long-duration flight.

The test was conducted at the SCPT facility at the Defence Research and Development Laboratory (DRDL), Hyderabad-based premier facility of the DRDO, which is responsible for the design and development of state-of-the-art Missile Systems and technologies.

“This successful test positions India at the forefront of advanced aerospace capabilities and continuously emerging war technologies. The remarkable feat is achieved through a cutting-edge supersonic air-breathing engine, which utilises indigenously developed liquid hydrocarbon endothermic fuel, high-temperature thermal barrier coating and advanced manufacturing processes. The ground tests conducted at the SCPT facility have successfully validated the design of an advanced active cooled scramjet combustor as well as the capabilities of a state-of-the-art test facility,” the Ministry of Defence (MoD) said in a statement.

Scramjet combustor incorporates an innovative flame stabilisation technique that holds a continuous flame inside the combustor with an air speed of more than 1.5 km per second. DRDO scientists studied many novel and promising ignition and flame-holding techniques over multiple ground tests before arriving at the scramjet engine configuration.

With regard to the specialised fuel for the system, the MoD said an indigenous endothermic scramjet fuel jointly developed for the first time by the DRDL and industry partners is central to the breakthrough. The fuel offers dual benefits of significant cooling improvement and ease of ignition.

Another key achievement amid the development of hypersonic technologies is the development of Thermal Barrier Coating (TBC), designed to withstand extreme temperatures encountered during hypersonic flight. A new advanced ceramic TBC having high thermal resistance and capable of operating beyond the melting point of steel has been jointly developed by DRDL and Department of Science and Technology (DST) facilities.

Hypersonic weapons have the potential to beat existing air defence systems available with major military powers across the world and deliver rapid and high-impact strikes. Several nations, including the US, Russia, India, and China, are actively pursuing hypersonic technology and have demonstrated various levels of development.

https://indianexpress.com/article/cities/pune/drdo-hypersonic-missile-scramjet-test-hyderabad-1200-seconds-breakthrough-10682502/

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नई अग्नि मिसाइल ने हिंद महासागर क्षेत्र में साधे कई निशाने

Source: Dainik Jagran, Dt. 10 May 2026

भारत ने अपनी सामरिक शक्ति को और मजबूत करते हुए ओडिशा के डा. एपीजे अब्दुल कलाम द्वीप से शुक्रवार की रात एडवांस अग्नि मिसाइल का सफल परीक्षण किया। इस मिसाइल की सबसे बड़ी खासियत इसकी आधुनिक मल्टीपल इंडिपेंडेंटली टारगेटेड री-एंट्री व्हीकल (एमआइआरबी) तकनीक है। एमआइआरवी तकनीक का मतलब है कि एक ही मिसाइल कई लक्ष्यों पर अलग-अलग हमला कर सकती है। इस मिसाइल में कई वारहेड लगे होते हैं जिसे ट्रैक करना एयर डिफेंस सिस्टम के लिए मुश्किल होता है। मालूम हो कि

हाल ही में ईरान और इजरायल युद्ध में ऐसी मिसाइलों ने जमकर तबाही मचाई है। रक्षा मंत्री राजनाथ सिंह ने डीआरडीओ, भारतीय सेना और उद्योग जगत को सफल परीक्षण कें लिए बधाई दी। उन्होंने कहा कि मौजूदा वैश्विक सुरक्षा चुनौतियों के बीच यह उपलब्धि भारत की रक्षा तैयारियों को अभूतपूर्व मजबूती प्रदान करेगी।

Fig: *ओडिशा के डा .कलाम द्वीप से किए गए एमआइआरवी तकनीक से लैस अग्नि मिसाइल के परीक्षण का दृश्य*

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) के अनुसार इस परीक्षण में मिसाइल को कई पेलोड यानी वारहेड के साथ छोड़ा गया। इन वांर्हेड्स (मिसाइल या बम का वह हिस्सा, जिसमें विस्फोटक सामग्री भरी होती है और जो लक्ष्य पर पहुंचकर हमला करता है) को हिंद महासागर क्षेत्र में फेले अलग-अलग लक्ष्यों की ओर भेजा गया। परीक्षण के दौरान जमीन और समुद्र में तैनात कई ट्रैकिंग स्टेशनों ने मिसाइल की उड़ान पर नजर रखी गई। प्रक्षेपण से लेकर सभी लक्ष्यों पर वारहेड के पहुंचने तक की निगरानी की गई। उड़ान से मिले आंकड़ों ने पुष्टि की कि परीक्षण के सभी उद्देश्य पूरी तरह सफल रहे।

इस परीक्षण के साथ ही भारत ने यह साबित कर दिया कि वह एक ही मिसाइल प्रणाली से कई ठिकानों को निशाना बनाने की क्षमता रखता है।

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Test of advanced Agni missile with multiple warheads technology a success: Defence Ministry

Source: The Times of India, Dt. 10 May 2026

The defence ministry on Saturday confirmed that India had successfully conducted a flight-trial of an advanced Agni missile with the multiple independently targeted re-entry vehicle (MIRV) system from Dr APJ Abdul Kalam Island off Odisha coast on Friday.

MIRV technology allows a single ballistic missile to evade defences and deliver multiple nuclear warheads to different targets, significantly increasing its firepower. The Agni missile was flight-

tested with multiple payloads, aimed at different targets spatially distributed over a large geographical area in the Indian Ocean Region, the ministry said in a statement. With this successful trial, India had once again demonstrated the capability to target multiple strategic targets using a single missile system, it said.

Fig: *India test fire advanced Agni-5*

This was the second known test of the advanced Agni-5, also referred to as 'Mission Divyastra' -- an MIRV-capable iteration of Agni-5 -- which was first tested in March 2024. The nuclear-capable Agni-5 has an officially declared strike range of over 5,000 km, placing targets deep in Asia, including China, parts of Europe and Africa within its strike range.

Complimenting Defence Research and Development Organisation (DRDO), Indian Army and the industry on successful flight-test, defence minister Rajnath Singh said, "This will add an incredible capability to the country's defence preparedness against growing threat perceptions."

The telemetry and tracking of flight-trial was carried out by multiple ground and ship-based stations. These systems tracked the entire missile trajectory from lift-off to the impact of all payloads. Flight data confirmed that all mission objectives were met, the ministry statement said. The missile has been developed by DRDO's laboratories with support of industries across the country. The trial was witnessed by senior scientists of DRDO and Indian Army personnel.

https://timesofindia.indiatimes.com/defence/news/test-of-advanced-agni-missile-with-multiple-warheads-technology-a-success-defence-ministry/articleshow/130982862.cms

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भारत ने बनाया सटीक लक्ष्य भेदने वाला पहला स्वदेशी ग्लाइड हथियार

Source: Dainik Jagran, Dt. 09 May 2026

रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) व भारतीय वायु सेना ने ओडिशा के चांदीपुर तट पर सामरिक उन्नत रेंज संवर्धन (टैक्टिकल एडवांस्ड रेंज आगमेंटेशन- टीएआरए) हथियार का पहला सफल परीक्षण किया। यह भारत की पहली स्वदेशी ग्लाइड हथियार प्रणाली है, जोसाधारण बमों को सटीक निर्देशित हथियारों में बदलकर लंबी दूरी के लक्ष्यों को नष्ट करने की क्षमता रखती है। रक्षा मंत्री राजनाथ सिंह ने इस सफल परीक्षण के लिए संबंधित संगठनों को बधाई दी है और इसे भारत की स्वदेशी रक्षा क्षमता बढ़ाने की दिशा में महत्वपूर्ण कदम बताया है। डीआरडीओ के अध्यक्ष डा. समीर वी कामत ने भी सफल उड़ान परीक्षण से जुड़ी टीमों को बधाई दी।

टीएआरए एक विशेष रेंज एक्सटेंशन किट है, जिसे बम के साथ जोड़ा जाता है। इसके बाद बम हवा में लंबी दूरी तक जा सकता है और तय लक्ष्य पर अधिक सटीकता से हमला कर सकता है। इससे विमान को दुश्मन के बेहद करीब जाने की जरूरत कम पड़ती है। यह प्रणाली साधारण यानी बिना गाइडेंस वाले बम या वारहेड को सटीक निशाना लगाने वाले स्मार्ट हथियार में बदल देती है। इसकी मदद से वायु सेना के लड़ाकू विमान दुश्मन के ठिकानों पर दूर से ही ज्यादा सटीक हमला कर सकेंगे। इसे माड्यूलर तरीके से तैयार किया गया है, यानी जरूरत के अनुसार इसे अलग-अलग हथियारों के साथ इस्तेमाल कियां जा सकता है। इस हथियार प्रणाली कीखास बात यह है कि यह कम खर्च में सामान्य हथियारों की मारक क्षमता, दूरी और सटीकता तीनों बढ़ा देती है। इसे हैदराबाद स्थित इमारत अनुसंधान केंद्र (आरसीआइ) ने डीआरडीओ की प्रयोगशालाओं के सहयोग से विकसित किया है।

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DRDO, IAF successfully conduct maiden trial of indigenous TARA glide weapon

Source: The Hindu, Dt. 09 May 2026

Fig: *DRDO and the Indian Air Force successfully conducted the maiden flight trial of the TARA weapon system off the coast of Odisha*

Defence Research and Development Organisation and the Indian Air Force have successfully conducted the maiden flight-trial of the Tactical Advanced Range Augmentation (TARA) weapon system off the coast of Odisha on May 7.

TARA is India's first indigenous glide weapon system capable of converting conventional unguided warheads into precision-guided weapons for accurately engaging ground-based targets.

https://www.thehindu.com/news/national/india-carries-out-maiden-flight-trial-of-new-weapon-system-tara/article70954147.ece

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How new DRDO system helps air missiles fly longer, strike better

Source: The Indian Express, Dt. 11 May 2026

The Defence Research and Development Organisation (DRDO) and the Indian Air Force (IAF) on Thursday (May 7) successfully carried out the first flight trial of a system that can transform an unguided missile into a guided one.

The homegrown Tactical Advanced Range Augmentation (TARA) system is essentially a kit that can be attached to a conventional missile. This kit helps the missile glide over long distances, and accurately strike a target. Here's a look at why this system is strategically important.

How does the system work?

The TARA glide weapon system is primarily a modular kit that can be attached to a conventional unguided warhead. DRDO scientists say the system can be fired from multiple fighter jets in the IAF's service.

Once released from an aircraft at a certain altitude and speed, foldable wings and aerodynamic surfaces come into play, allowing the weapon to glide over long distances instead of falling directly onto the target. An on-board navigation and guidance system corrects the missile's flight path to improve its accuracy.

The speed at which the aircraft is moving at the time of the launch is a key factor in this system's operation. The system is believed to use a combination of inertial navigation and satellite-based positioning to steer the missile towards the target. The TARA system glides, rather than relying on a rocket motor. This makes it lightweight and cost-effective while still extending the missile's range. The modular design also means the kit can potentially be integrated with different classes of warheads depending on requirements.

Strategic and logistic significance

Strategically, TARA is significant because it enhances the IAF's stand-off strike capability. This means an aircraft can hit targets from a distance that puts it out of the reach of air defence systems.

In a battlespace, the capability to accurately strike a target from a distance can increase the chances of a fighter jet's survival and lend it greater flexibility. Unguided bombs, which are referred to as gravity bombs or dumb bombs, can thus be upgraded to smart bombs, or precision-guided munitions, with relatively low effort. This can reduce the need to develop entirely new missile systems.

This approach can substantially reduce costs while allowing rapid scaling of precision strike inventory. The use of indigenous low-cost systems and its production by Indian industry partners will also reduce import dependence. It is learnt that three TARA versions, with different weight variants, are being produced. These are to be used with warheads of different weights ranging from 250 to 500 kg.

Path to deployment

The TARA system was tested from an IAF fighter off the coast of Odisha. TARA has been designed and developed by the Hyderabad-based DRDO facility Research Centre Imarat (RCI) in collaboration with other DRDO laboratories and industry partners.

The successful flight trial is a critical milestone in the weapon's development. This will pave the way for a series of developmental, validation and user trials before induction into the service. All these trials will evaluate the system's guidance accuracy, range, reliability, performance from different platforms, and effectiveness under varied operational conditions.

"It is the first glide weapon to utilise state-of-the-art low-cost systems. The development of the kit has been undertaken with Development cum Production Partners (DcPPs) and other Indian industries, which have already started the production activity," the Defence Ministry said Friday.

Defence Minister Rajnath Singh has congratulated DRDO, IAF, DcPP, and the industry for the flight-trial, describing it as a significant development in advancing India's indigenous defence capabilities.

https://indianexpress.com/article/explained/tara-system-missiles-fly-longer-10681356/

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Defence News

पाक और चीन मामलों के विशेषज्ञ ले. जनरल सुब्रमणि होंगे अगले सीडीएस

Source: Dainik Jagran, Dt. 10 May 2026

लेफ्टिनेंट जनरल एनएस राजा सुब्रमणि (सेवानिवृत्त) को भारत का अगला चीफ आफ डिफेंस स्टाफ (सीडीएस) नियुक्त किया गया है। ले. जनरल सुब्रमणि सीडीएस जनरल अनिल चौहान की जगह लेंगे जिनका बढ़ाया गया कार्यकाल 30 मई को समाप्त हो रहा है। पाकिस्तान व चीन मामलों के विशेषज्ञ माने जाने वाले लेफ्टिनेंट जनरल सुब्रमणि पिछले साल 3 जुलाई को सेना के उप प्रमुख के रूप में सेवानिवृत्त हुए थे। वह फिलहाल राष्ट्रीय सुरक्षा सलाहकार अजीत डोभाल के नेतृत्व वाले नेशनल सिक्योरिटी काउंसिल सेक्रेटेरिएट (एनएससीएस) में मिलिट्री एडवाइजर हैं। उन्हें पिछले साल एक सितंबर को इस पद पर नियुक्त किया गया था। खास बात यह है कि पहले दो सीडीएस स्व. जनरल बिपिन रावत और जनरल अनिल चौहान भी थलसेना से ही बने। क्षा मंत्रालय के अनुसार सरकार ने ले. जनरल सुत्रमणि का सीडीएस के पद पर चयन किया है औरबे रक्षा मंत्रालय के सैन्य मामलों के विभाग के सचिव के रूप में भी कार्य करेंगे। उन्होंने अपने 40 वर्षों के करियर में विभिन प्रोफाइल में सेवा की है। वह पाकिस्तान और चीन दोनों के खिलाफ अहम आपरेशनल भूमिकाएं निभा चुके हैं। ले.जनरल सुब्रमणि को परम विशिष्ट सेवा मेडल, अति विशिष्ट सेवा मेडल, विशिष्ट सेवा मेडल आदि से सम्मानित किया जा चुका है।

वाइस एडमिरल स्वामीनाथन नए नौसेना प्रमुख नियुक्त

वाइस एडमिरल कृष्णा स्वामीनाथन नए नौसेना प्रमुख नियुक्त किए गए हैं | वह एडमिरल दिनेश के त्रिपाठी का स्थान लेंगे जोकि 3 मई को सेवानिवृत्त हो रहे हैं। वाइस एडमिरल स्वामीनाथन वर्तमान में पश्चिमी नौसेना कमान का नेतृत्व कर रहे हैं | कृष्णा स्वामीनाथन ने एक जुलाई 987 को भारतीय नैसेना में कमीशन प्राप्त करकिया था| परम विशिष्ट सेवा मेडल, अति विशिष्ट सेवा मेडल और विशिष्ट सेवा मेडल प्राप्त स्वामीनाथन ने अपने नौसेना करियर में कई महत्वपूर्ण संचालन, स्टाफ और प्रशिक्षण पदों पर कार्य किया है।

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Theaterisation in focus as Lt Gen NS Raja Subramani named next CDS, Vice Adm Krishna Swaminathan new navy chief

Source: Hindustan Times, Dt. 10 May 2026

India on Saturday appointed Lt Gen NS Raja Subramani (retd) as the next chief of defence staff (CDS) and Vice Adm Krishna Swaminathan as the new navy chief, filling the top military posts ahead of a major command restructuring.

Fig: *Subramani will assume office on May 30, succeeding Gen Anil Chauhan. Swaminathan takes charge on May 31, replacing Adm Dinesh K Tripathi.*

The appointments arrive at a pivotal moment as the armed forces advance theaterisation, a long-awaited reform designed to integrate the military's resources for future conflicts. Subramani currently serves as the military adviser to the National Security Council Secretariat, headed by national security adviser Ajit Doval. He took the position on September 1, 2025, a month after retiring as the army's vice chief.

Swaminathan is the flag officer commanding-in-chief of the Mumbai-based Western Naval Command. Subramani "shall also function as the secretary to Government of India, Department of

Military Affairs, with effect from the date of assumption of charge and until further orders," his appointment order stated. As CDS, he will serve as the permanent chairman of the chiefs of staff committee and the single-point military adviser to defence minister Rajnath Singh.

The new CDS is expected to fast-track the establishment of joint services commands, a key objective of the theaterisation drive. These commands will integrate military elements, assets, and personnel from three services under a single commander-in-chief. The outgoing CDS, Chauhan, recently submitted a detailed proposal to advance theaterisation to the defence minister. The model involves raising a China-centric northern theatre command in Lucknow, a Pakistan-centric western theatre command in Jaipur, and a maritime theatre command in Thiruvananthapuram.

The government identified the establishment of theatre commands for the integrated application of force, operational efficiency, and optimal resource utilisation as a key area for focused intervention in 2025. Under appointment rules, the government can select the CDS from any serving service chief, serving three-star officer, or any retired chief or three-star officer below 62 years of age. The government extended Chauhan's tenure by eight months last September.

Subramani will be the third CDS from the army, following Gens Bipin Rawat and Chauhan. An alumnus of the National Defence Academy in Khadakwasla and the Indian Military Academy in Dehradun, he was commissioned into the 8th battalion of the Garhwal Rifles in 1985. He previously served as the Central Army commander in Lucknow. Subramani also attended the Joint Services Command and Staff College in Bracknell, UK, and the National Defence College in New Delhi.

Swaminathan, the senior-most officer after Tripathi, served as the navy's vice chief before leading the Western Naval Command. He is an alumnus of the National Defence Academy; the Joint Services Command and Staff College in Shrivenham, UK; the College of Naval Warfare in Karanja; and the US Naval War College in Rhode Island. Commissioned into the navy on July 1, 1987, Swaminathan specialises in communication and electronic warfare.

https://www.hindustantimes.com/india-news/theaterisation-in-focus-as-lt-gen-ns-raja-subramani-named-next-cds-vice-adm-krishna-swaminathan-new-navy-chief-101778376423653.html

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Operation Sindoor is a symbol of India's new military ethos: Rajnath Singh

Source: The Hindu, Dt. 09 May 2026

Defence Minister Rajnath Singh on Friday (May 8, 2026) described Operation Sindoor as a defining example of India's swift, precise, and joint military response capability, asserting that the operation had demonstrated the country's ability to compel its adversary to surrender.

Addressing the second edition of the Joint Commanders' Conference in Jaipur, the Defence Minister termed Operation Sindoor a "short-duration, deep-penetration, high-intensity, and high-impact operation" that reflected India's growing military capabilities and national resolve. Calling on the Commanders of the three Services to remain future-ready, Rajnath Singh said the armed forces must continuously adapt to evolving global security challenges and learn from recent operational experiences.

Future warfare

The conference, on the theme of 'Military Capability in New Domains', focused extensively on future warfare, multidomain operations, cyber resilience, artificial intelligence, and other emerging technologies shaping modern battlefields.

Highlighting the changing nature of warfare, the Defence Minister stressed that future conflicts would increasingly involve hybrid threats, information dominance, and simultaneous operations across cyber, space, electromagnetic, and cognitive domains. He underlined the importance of strengthening capabilities in artificial intelligence, autonomous systems, data analytics, and secure communication networks to maintain operational superiority.

Integration is key

"Future wars will not be won solely through weaponry, but through innovative thinking and enhanced synergy," Mr. Singh said, while emphasising greater integration among the Army, Navy, and Air Force. The Defence Minister also urged military commanders to cultivate the "element of surprise" to remain unpredictable to adversaries while ensuring preparedness against enemy actions. During the conference, Mr. Singh released a documentary film on Operation Sindoor, the Hindi version of Vision 2047, and the Joint Doctrine for Integrated Communication Architecture aimed at enhancing interoperability and integrated communications across the armed forces.

https://www.thehindu.com/news/national/operation-sindoor-is-a-symbol-of-indias-new-military-ethos-rajnath-singh/article70956000.ece

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Need to better capabilities in AI, autonomous systems: Rajnath Singh

Source: The Tribune, Dt. 09 May 2026

Marking the first anniversary of Operation Sindoor, the skirmish with Pakistan last May, Defence Minister Rajnath Singh today said there was a need to strengthen capabilities in artificial intelligence, autonomous systems, data analytics and secure communication networks.

The Defence Minister highlighted the transformative impact of emerging technologies and stressed on the importance of ensuring integrated national preparedness across all spectrums of conflict. He was addressing the Tri-Services Joint Commanders Conference at Jaipur and emphasised that future conflicts would increasingly be shaped by hybrid threats, information dominance and operations conducted simultaneously across cyber, space, electromagnetic and cognitive domains.

On Operation Sindoor, he said it is a testament to the swift, precise and joint response of the Indian defence forces to safeguard national interests. He called upon the Commanders of the three Services to remain future-ready by learning from the operation as well as the current global security landscape. He described Operation Sindoor as a short-duration, deep-penetration, high-intensity and high-impact operation which showcased India's ability to compel its adversary to surrender. The operation was a demonstration of India's growing capabilities and a symbol of the nation's collective resolve and new military ethos, he added.

https://www.tribuneindia.com/news/india/need-to-better-capabilities-in-ai-autonomous-systems-rajnath/

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From ground to the skies: How drones are reshaping operations along borders

Source: The Indian Express, Dt. 11 May 2026

In the early hours of June 26, 2021, two consecutive blasts rocked the highly fortified Indian Air Force station in Jammu. This was the first terror attack in which drones were used to airdrop bombs on a major security installation. Though the explosions caused no serious damage, the attack reflected a paradigm shift in the tactics of Pakistan-based terror groups: the threat had moved from the ground to the air, rendering traditional security measures permanently inadequate.

The use of drones, however, had already been a regular feature across the restive Line of Control and International Border in J&K for over a year. One such drone, carrying a US-made M4 semi-automatic carbine, two magazines, 60 rounds and seven Chinese grenades, was shot down by the BSF near Kathua district's Rathua village on June 20, 2020. The payload was reportedly marked with the name of Ali Bhai — believed to be a code name for a Jaish-e-Mohammad operative.

The introduction of drones has rendered established security measures obsolete and fundamentally changed how border security is conceived. According to a Ministry of Home Affairs report last year, two to three drones were sighted, and one drone incursion occurred daily, over the past five years. While the focus of incursions in Punjab and Rajasthan is primarily smuggling, the situation in J&K is especially challenging.

In J&K, drones are being used to airdrop weapons, ammunition and narcotics, conduct tactical surveillance, guide infiltrating militants and carry out attacks. Soon after the beginning of Operation Sindoor last year, drones became the weapon of choice — the first such use of drone swarms in an Indo-Pak conflict, changing the nature of border warfare permanently.

Between May 7 and 8 last year, Pakistan launched drone attacks using nearly 300-400 drones targeting around three dozen locations from Kashmir to Sir Creek in Gujarat. A large number targeted Jammu and Kashmir, and almost all were neutralised by Indian defence forces, an Army officer said.

Indian armed forces deployed SkyStriker Kamikaze drones, HAROP and Nagastra-1 during their campaign. Counter-drone systems were activated, including Man-Portable Air Defence Systems (MANPADS), Direct Energy Weapons (DEWs) and the indigenous anti-drone D-4 system. A laser system called KAVACH has also been put into action in J&K to detect drone infiltration attempts and send early warnings. Forces have additionally deployed jammers to disrupt hostile drone flights and High-Altitude Long-Endurance (HALE) drones to monitor difficult terrain. The BSF, primarily responsible for border security, raised its first drone squadron last year to bolster its capabilities.

In the air, but also on the ground

While drones have transformed military operations over India's borders since Operation Sindoor, the shift is equally visible on the ground. A senior Army officer in the Northern Command told The Indian Express that the "advent of drone and anti-drone technologies changed the dynamics along the Indo-Pak border to a great extent."

He described an array of advanced sensors — thermal imagers, underground sensors (UGS), fibre-optic sensors, radar and sonar — that form an invisible electronic barrier even where physical patrolling is impossible, providing round-the-clock real-time monitoring. Drones also help "carry out

effective surveillance," reduce troop fatigue from physical domination patrols, enhance reaction capabilities and overcome weather and terrain-related difficulties. Optical fibre cable-based and tethered drones, which are not prone to jamming, provide an added advantage, he said.

Another officer put it starkly: "Everything is different after Op Sindoor. The very nature of military campaigns has changed across the world. I think drones have done to military strategy what cellular phones did to telephone communication. Till recently, physical patrolling was the only way to confront infiltration attempts. It was a tiresome exercise that continued round the year. Now there is additional support to keep watch."

Officials in the security forces and the UT administration say that Pakistan's frequent use of drones has significantly altered security dynamics along both the International Border and the Line of Control. The technology-driven approach has contributed to a sharp fall in infiltration attempts and a significant decrease in militant skirmishes on the border.

"Earlier, we used to consider only the five-kilometre belt along the borders as crucial for maintaining vigil and accordingly impose dusk-to-dawn curfew restricting all movement there," a senior UT administration official said. "Now, with the advent of drones from Pakistan, joint teams of security forces and police patrol and establish nakas behind this five-kilometre belt as well, to rule out drone droppings near civilian areas." Policing in border areas has been further intensified through the recruitment of Village Defence Guards from local youth, who patrol and keep vigil in their respective areas around the clock.

The shift is evident from the sharp fall in human infiltration bids — from 143 in 2018 to just 34 in 2021. Since that year, contraband, arms, ammunition, explosives and even Indian currency, which earlier came mainly through cross-border land routes and underground tunnels, are being dropped in J&K by Pakistani drones. J&K Police and other security agencies have seized nearly 68,000 kg of narcotics valued at around Rs 30,000 crore across the Union Territory. Of these, heroin tops the list by value, with more than 539 kg — valued at nearly Rs 3,200 crore — seized by J&K Police in Jammu region alone over the past five years.

Nearly 1,000 weapons, mostly AK rifles, along with over 28,000 rounds of ammunition and 252 detonators, were seized between 2021 and May 2023 across J&K. In the Jammu region, police alone have seized 247 weapons, 182 IEDs, 409 grenades, more than 11 kg of explosives, two packets of RDX, cash worth Rs 2.53 crore and 15,000 US dollars.

Why Pakistan made the switch

Former J&K DGP Kuldeep Khoda said Pakistan turned to drones because border fencing, night vision devices, lasers and other monitoring systems made ground infiltration along both the International Border and LoC near impossible. "As drones were easier to penetrate, it started sending weapons and narcotics through them to keep low-grade terrorism alive in J&K. Through drones, it managed to avoid the human chain used earlier for sending weapons and the hawala network for funding terrorism. Now, drones are dropping weapons for use by terrorists and narcotics to fund terrorism through their sale proceeds," he said.

Former DGP S P Vaid described drone use as part of Pakistan's continuously evolving tactics. "Earlier, it sent arms through guides; when India raised fences, they gave militants wire cutters. When India electrified the fence, they used plastic ladders and tunnels. Drones are just the latest tactic to try and destroy India," he said, acknowledging that despite counter-drone measures, some drones continue to get through.

A retired senior Army officer noted that drone introduction has brought a new type of soldier — one who is well-versed in technology and capable of responding to modern warfare. He cautioned that not every drone can be picked up by radar due to factors like coverage area and low-altitude flight, making 24×7 vigilance imperative.

“Earlier, troops were especially alert at night along borders — during the day, everything coming through land routes was visible. Now they have to cover the borders around the clock,” he said. He also flagged a tactical concern: Pakistan may be using drones to keep troops occupied watching the sky while pushing terrorists through land routes.

Within the Army, significant investment has gone into drone training. Drone competitions are now held between units, brigades and divisions, with battalions purchasing equipment from regimental funds to train on obstacles. As drones and high-tech equipment become integral to infantry units, expertise in operating them is a priority — though, the officer stressed, without compromising on basic physical fitness.

https://indianexpress.com/article/india/from-ground-to-the-skies-how-drones-are-reshaping-operations-along-borders-10681619/

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India, Australia review defence ties at 10th policy talks

Source: The Pioneer, Dt. 09 May 2026

India and Australia on Friday here reviewed the entire spectrum of their ties and acknowledged the strategic importance of defence industrial collaboration and engagement. These issues were discussed during the 10th edition of Defence Policy Talks, the Defence Ministry said.

The Indian delegation was led by Joint Secretary Amitabh Prasad, while the Australian side was headed by First Assistant Secretary, International Policy Bernard Philip. The discussion reaffirmed the India-Australia Comprehensive Strategic Partnership.

Both sides welcomed the recent advancements in bilateral defence cooperation. The establishment of the annual India-Australia Defence Ministers’ Dialogue in 2025 has enhanced consultation and reflected the growing trust between the two countries. The two sides acknowledged the recent finalisation of key implementing arrangements and continued high momentum of first-time milestones. They looked forward to holding the first India-Australia Joint Staff Talks later this year.

The co-chairs reviewed the implementation of outcomes from the 2024 India-Australia Annual Leaders’ Summit to renew and strengthen the Joint Declaration on Defence and Security Cooperation, and develop a Joint Maritime Security Collaboration Roadmap.

Both sides welcomed the increased frequency and complexity of joint exercises. They expressed commitment to deepen maritime cooperation and looked forward to continued collaboration between the two countries, enhancing strategic ties & fostering a shared commitment to regional stability. India and Australia agreed on the next steps to deepen interoperability across all domains. Reaffirming their Defence Ministers’ ambitions, they agreed to continue enhancing cooperation with regional partners.

Both nations discussed various training exchanges that have taken place, such as General Bipin Rawat Memorial Young Officers Exchange Programme and the visits between Indian Military

Academy and Royal Military College, Duntroon. Such training exchanges build mutual trust, people-to-people connections and sharing of each other's regional and global perspectives.

The two sides acknowledged the strategic importance of defence industrial collaboration and engagement. They welcomed efforts to facilitate defence industry integration, including the first India-Australia Defence Industry Roundtable in Sydney in 2025, Australia's first defence trade mission to India in 2025, and the defence industry strategic roundtable at Raisina Dialogue in New Delhi in 2026.

https://dailypioneer.com/news/india-australia-review-defence-ties-at-10th-policy-talks

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PM's UAE visit to advance Strategic Defence Partnership

Source: The Economic Times, Dt. 11 May 2026

PM Narendra Modi's brief visit to the UAE enroute to Europe this week will seek to advance Strategic Defence Partnership, the Letter of Intent for which was signed in January during the visit of UAE President Sheikh Mohamed bin Zayed Al Nahyan.

While the key focus of the visit will be on showcasing solidarity with the UAE leadership amid war, Strategic Defence Partnership (SDP) will be on the agenda bolstering New Delhi's strategic footprints in the region in the backdrop of Pakistan's efforts over the past year to regain its influence in West Asia, according to persons familiar with India's outreach to the region.

The SDP will span defence industry collaboration, innovation, special operations, interoperability, cyber security and counter-terrorism. The SDP's intended aim is to build on the already existing robust partnership between India and the UAE.

"The Letter of Intent signed during the official visit of the President of the UAE provides for working towards a framework agreement for strategic defence partnership to expand the existing bilateral defence cooperation across a number of areas such as defence industrial cooperation, defence innovation, advanced technology in the area of defence, counter-terrorism, threats in the cyberspace domain and training. The agreement builds upon existing defence cooperation between India and the UAE and seeks to strengthen it further," according to the answer provided by Minister of State for External Affairs Kirti Vardhan Singh in reply to a question in Lok Sabha this March. Understandably, during the PM's visit, a key focus of dialogue with the UAE President will be on the regional situation in the backdrop of the war and attacks on the UAE that also injured Indians.

Last week, Modi strongly condemned the attack on the Fujairah Petroleum Industries Zone in the UAE that left three Indian nationals injured. He had said that India stood in firm solidarity with the UAE, reiterating New Delhi's support for the peaceful resolution of all issues through dialogue and diplomacy.

The Ministry of External Affairs (MEA), in a statement, had noted that the attack on Fujairah, which injured three Indian nationals, is unacceptable. "We call for the immediate cessation of these hostilities and the targeting of civilian infrastructure and innocent civilians. India continues to stand for dialogue and diplomacy to deal with the situation, so that peace and stability may be restored across West Asia. We also call for free and unimpeded navigation and commerce through the

Strait of Hormuz in keeping with international law. India stands ready to support all efforts for a peaceful resolution of issues."

Since the beginning of the war, the PM had twice spoken to the UAE President expressing his solidarity and appreciated his efforts for safeguarding the Indian population.

https://economictimes.indiatimes.com/news/defence/pms-uae-visit-to-advance-strategic-defence-partnership/articleshow/131001502.cms?from=mdr

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Army's K9 warriors display combat skills in slithering exercise

Source: The Pioneer, Dt. 10 May 2026

K9 Warriors of the Red Shield Division of the Indian Army carried out a slithering exercise on May 8 at the Leimakhong Military Station in Manipur. Five dog teams participated in this highly specialised training aimed at enhancing rapid heli-borne insertion capabilities, operational coordination, combat readiness and synergy amongst troops during the challenging operational scenarios.

The exercise showcased professionalism, confidence and teamwork of the handlers and trained military dogs, highlighting their vital role in disaster management response, search and rescue operations and terrorist neutralisation missions.

https://dailypioneer.com/news/slug-lite/armys-k9-warriors-display-combat-skills-in-slithering-exercise?year=2026

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चीन ने माना, भारत से संघर्ष में पाक का किया था सहयोग

Source: NavBharat Times, Dt. 09 May 2026

चीन ने पहली बार स्वीकार किया है कि उसने पिछले साल भारत-पाक संघर्ष के दौरान पाकिस्तान को रण क्षेत्र मेंतकनीकी सहायता दी थी। चीन के सरकारी टीवी ने एविएशन इंडस्ट्री कॉरपोरेशन ऑफ चाइना के इंजीनियर झांग हेंग का इंटरव्यू प्रसारित किया जिसमें उन्होंने यह जानकारी दी। झांग ने बताया कि उनकी टीम ने चार दिन चले संघर्ष के दौरान पाकिस्तान को तकनीकी सहायता प्रदान की।

उन्होंने कहा कि टीम का लक्ष्य यह सुनिश्चित करना था कि चीन निर्मित हथियार और उपकरण अपनी पूरी युद्ध क्षमता के साथ काम करें। पाकिस्तान की वायुसेना के पास चीन निर्मित जे-10सीई लड़ाकू विमानों का बेड़ा है, जिन्हें एवीआईसी की सहयोगी कंपनी बनाती है। झांग ने कहा कि संघर्ष के दौरान उनकी टीम लगातार दबाव में काम कर रही थी। हालांकि, चीन के विदेश मंत्रालय ने पहले इस बात से इनकार किया था।

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China admits providing support to Pakistan during Operation Sindoor against India last May

Source: The Economic Times, Dt. 09 May 2026

China has for the first time confirmed that it provided on-site technical support to Pakistan during last year's conflict with India, the SCMP reported quoting Chinese state broadcaster CCTV. According to the report, CCTV aired an interview on Thursday featuring Zhang Heng, an engineer from the Aviation Industry Corporation of China's Chengdu Aircraft Design and Research Institute, who said he had provided technical support to Pakistan during the four-day conflict in May last year.

The conflict followed India's launch of Operation Sindoor on May 7, 2025, after the Pahalgam terror attack. The operation was described as a targeted military campaign aimed at dismantling terror infrastructure across the Line of Control and deeper inside Pakistan-occupied Jammu and Kashmir and Pakistan. More than 100 terrorists were killed during the operation.

Pakistan's air force operates Chinese-made J-10CE fighter jets produced by a subsidiary of AVIC. During the conflict, Chinese officials claimed that one of the aircraft had shot down an Indian fighter jet. According to the report, it marked the first time the Chinese fighter model was reported to have downed an enemy aircraft in combat. India has denied reports of losing any aircraft during Operation Sindoor.

Chinese engineers describe wartime support

Zhang told CCTV that the support team operated under difficult wartime conditions. "At the support base, we frequently heard the roar of fighter jets taking off and the constant wail of air-raid sirens. By late morning, in May, the temperature was already approaching 50 degrees Celsius. It was a real ordeal for us, both mentally and physically," he said. He added that his team remained motivated by the desire to improve on-site support and ensure the aircraft performed effectively during combat operations.

"That wasn't just a recognition of the J-10CE; it was also a testament to the deep bond we formed through working side by side, day in and day out," Zhang said in the interview. Another engineer from the Chengdu Aircraft Design and Research Institute, Xu Da, also described his role in supporting Pakistan during the conflict. "We nurtured it, cared for it, and finally handed it over to the user. And now, it was facing a major test," Xu said while comparing the fighter jet to a child.

He added that the aircraft's reported battlefield performance did not come as a surprise to the team. "In fact, it felt inevitable. The aircraft just needed the right opportunity. And when that moment came, it delivered exactly as we knew it would," Xu said.

Pakistan's use of Chinese fighter aircraft

The comments by the engineers marked the first public confirmation that Chinese personnel were involved in support operations during the India-Pakistan clash over Kashmir last year, SCMP reported quoting CCTV.

The J-10CE is the export version of China's J-10C 4.5-generation fighter aircraft and is regarded as the most advanced variant in the J-10 series. The aircraft is equipped with an active electronically scanned array radar and can carry advanced Chinese air-to-air missiles. Pakistan

remains the only known foreign operator of the J-10C fighter jets. In 2020, the country ordered 36 aircraft along with 250 PL-15 missiles from China.

According to the Stockholm International Peace Research Institute, China accounted for up to 80 percent of Pakistan's arms imports between 2021 and 2025. Apart from the J-10CE, the Pakistan Air Force also operates the JF-17 fighter jet, which was jointly developed by China and Pakistan and serves as one of its primary combat aircraft.

https://economictimes.indiatimes.com/news/defence/china-admits-providing-support-to-pakistan-during-operation-sindoor-against-india-last-may/articleshow/130962018.cms?from=mdr

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समुद्री सुरक्षा को और अटल करेगा 'अचल'

Source: Dainik Jagran, Dt. 10 May 2026

भारतीय समुद्री सीमा की सुरक्षा को और पुख्ता करते हुए शनिवार को फास्ट पैट्रोल वेसल (त्वरित गश्ती पोत) 'अचल' को आधिकारिक रूप से भारतीय तटरक्षक बल में शामिल कर लिया गया। गोवा शिपयार्ड लिमिटेड द्वारा निर्मित यह जहाज 'अदम्य' श्रेणी के आठ जहाजों की श्रृंखला का पांचवां जहाज है। रक्षा मंत्रालय में अतिरिक्त - सचिव ए. अनबरसु ने वरिष्ठ अधिकारियों की उपस्थिति में इसे सेवा में समर्पित किया।

'अचल' का निर्माण पूरी तरह से स्वदेशी तकनीक पर आधारित है, जिसमें 60 प्रतिशत से अधिक उपकरण भारतीय हैं। यह 'मेक इन इंडिया' और 'आत्मनिर्भर भारत' अभियान की सफलता को दर्शाता है। 5 मीटर लंबा यह जहाज आधुनिक डिजाइन और दक्षता का बेजोड़ संगम है। इसे गुजरात के वाड़िनार में तैनात किया जाएगा, जहां से यह उत्तर-पश्चिम समुद्री क्षेत्र की निगरानी करेगा। इसकी तैनाती से भारत के उत्तर-पश्चिमी समुद्री तटों पर सुरक्षा और चौकसी और अधिक सुदृढ़ होगी। कमांडेंट नवीन कुमार के नेतृत्व में पांच अधिकारियों और 34 कर्मियों का दल इस पर तैनात रहेगा।

तकनीकी रूप से 'अचल' बेहद शक्तिशाली है। यह जहाज तीन हजार किलोवाट के दो डीजल इंजनों द्वारा संचालित है, जो इसे 27 समुद्री मील की अधिकतम गति प्रदान करते हैं। इसकी परिचालन क्षमता 1,500 समुद्री मील है, जिससे यह लंबे समय तक समुद्र में टिक सकता है। सुरक्षा के लिए इसमें 30 एमएम सीआरएन-9 गन और दो 2.7 एमएम रिमोट-कंट्रोल गन लगी हैं।

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ICGS ACHAL Commissions in Indian Coast Guard

Source: Press Information Bureau, Dt. 09 May 2026

The Indian Coast Guard marked a significant enhancement in its operational capability with the commissioning of Indian Coast Guard Ship (ICGS) Achal, the latest vessel in the new-generation Adamya-class Fast Patrol Vessel series, at Goa Shipyard Limited on May 09, 2026. Named Achal, meaning 'firm', the vessel symbolizes the Indian Coast Guard's steadfast commitment towards safeguarding national maritime interests, protecting life at sea, and ensuring the security of India's maritime frontiers. The vessel will undertake a wide spectrum of maritime operations, including

coastal and offshore surveillance, interdiction, Search and Rescue (SAR), anti-smuggling operations, and marine pollution response.

Fig: *ICGS ACHAL*

The ship was formally commissioned into service by Shri A. Anbarasu, Additional Secretary & Director General (Acquisition), Ministry of Defence, in the august presence of Inspector General Tekur Sashi Kumar, Commander, Coast Guard Region (North-West), senior officials of the Central and State Governments, and representatives of Goa Shipyard Limited.

Designed and built indigenously by M/s Goa Shipyard Limited, it represents a significant milestone in India's shipbuilding capabilities. Incorporating more than 50 percent indigenous components, the vessel underscores the nation's growing self-reliance in defence manufacturing and aligns with the Government of India's Atmanirbhar Bharat and Make in India initiatives.

The commissioning of ICGS Achal marks another important step in the Indian Coast Guard's ongoing fleet expansion programme and will significantly contribute towards strengthening coastal security and enhancing operational readiness.

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INS Sagardhwani enhances India–Vietnam maritime & scientific cooperation

Source: Press Information Bureau, Dt. 10 May 2026

INS Sagardhwani, the Indian Navy's oceanographic research vessel, concluded a successful visit to Cam Ranh, Vietnam from 04-08 May 2026, reinforcing the strong maritime and scientific partnership between India and Vietnam.

During the visit, Commanding Officer, INS Sagardhwani called on Sr Col Tran Van Cuong, Deputy Head of Khanh Hoa Military Command and Sr Capt Nguyen Huu Minh, Deputy Political Commissar Naval Region 4. Discussions highlighted avenues for deeper maritime engagement,

professional interactions, training cooperation and scientific endeavours coinciding with a decade of India-Vietnam Strategic Partnership. Recently, a Vietnam People's Navy (VPN) ship participated in International Fleet Review 26 and MILAN 26 at Visakhapatnam in Feb 2026.

As part of the professional exchange, the Commanding Officer interacted with Sr Capt Ho Thanh Hoa, Deputy Director of the Naval Academy, Vietnam. Deliberations focused on expanding cooperation in naval training and education. Officers and cadets of the Academy also visited the ship and gained insights into its operational role and onboard capabilities.

Reflecting the spirit of friendship and camaraderie, personnel of the Indian Navy and Vietnam People's Navy participated in friendly volleyball matches and joint yoga sessions during the harbour stay.

Strengthening collaboration in oceanographic studies, scientists from NPOL (Naval Physical and Oceanographic Laboratory), DRDO engaged with researchers from the Institute of Oceanography, Nha Trang. The interactions centred on research collaboration, knowledge sharing and capacity building in the field of oceanographic science and technology. Scientists from the National Oceanographic Institute also visited the ship during the port call.

The visit marks a testament to the growing bilateral maritime partnership and scientific engagement between the two countries in the region.

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IOS Sagar arrives at Chattogram, Bangladesh during multinational deployment

Source: Press Information Bureau, Dt. 09 May 2026

Indian Ocean Ship (IOS) Sagar arrived at Chattogram, Bangladesh on 08 May 2026 as part of the IOS SAGAR 2026 deployment. The visit aims to further strengthen maritime cooperation and professional ties between the Indian Navy and the Bangladesh Navy. On entering Bangladesh waters, IOS Sagar was received by Bangladesh Navy Ship BNS Ali Haider (F17), which escorted the ship into harbour.

During the visit, the Commanding Officer of IOS Sagar is scheduled to call on Senior Officials of the Bangladesh Navy, including the Commander Chittagong Naval Area (COMCHIT), Commander Bangladesh Naval Fleet (COMBAN) and the Area Superintendent Dockyard (ASD). The interactions are intended to enhance professional engagement and cooperation between the two Navies.

The Commanding Officer of IOS Sagar will pay tribute at the Chattogram War Cemetery as part of the commemorative activities during the visit. A number of professional and social activities have been planned during the port call. Professional engagements will include interactions with the Chairman of the Chittagong Port Authority (CPA), along with cross-deck visits between personnel of the Bangladesh Navy and the multinational crew embarked onboard IOS Sagar.

The crew will also visit the Issa Khan Training Complex and the Bangladesh Naval Academy to exchange views on training practices and capacity building. In addition, friendly sports fixtures are planned to promote goodwill and camaraderie between the two Navies. The visit reflects the close

maritime relationship between India and Bangladesh and supports India's vision of regional cooperation and mutual growth in the Indian Ocean Region under the MAHASAGAR initiative.

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A significant visit marking new avenues of collaboration

Source: The Statesman, Dt. 10 May 2026

Lt.Gen. Rajiv Kumar Sahni, AVSM,VSM, PhD, Director General of Electronics and Mechanical Engineers (DGEME) & Colonel Commandant of the Corps of EME, "Indian Army" visited Broadcast Engineering Consultants India Limited (BECIL) and interacted with Commodore D.K. Murali, IN (Retd.), CMD BECIL and other officers. During the interaction, a detailed presentation on BECIL's capabilities and ongoing initiatives was made. This was followed by focused discussions on potential collaboration in various projects for the Indian Army.

Speaking on the occasion, the Chairman and Managing Director, BECIL, Commodore D.K. Murali, IN (Retd.), stated, "BECIL remains committed to work together with the Indian Army by using its technical expertise to support collaborative initiatives and future projects.

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Science & Technology News

Orchestrating tech-innovation on 'National Technology Day'

-by Jitendra Singh, Minister of State (Independent Charge) for Science & Technology

Source: The Pioneer, Dt. 11 May 2026

National Technology Day — 'Tech', celebrated on May 11, commemorates India's landmark technological achievement marked by the successful Pokhran nuclear tests of 1998. The occasion also highlights the nation's enduring commitment to scientific innovation, technological advancement, and the synergy between science, society, and industry in shaping India's development journey.

Over the last decade, under the leadership of Prime Minister Narendra Modi, India's technological ecosystem has witnessed unprecedented growth, marked by rapid innovation, expanding digital infrastructure, and significant advancements across emerging sectors. There has been a greater emphasis on self-reliance and the translation of scientific innovations into real-world impact. Considerable progress has been made in frontier technology-driven areas such as quantum communication, space, biotechnology, artificial intelligence, semiconductors, renewable energy, and climate-resilient systems. Biomanufacturing is a key technology for Viksit Bharat, enabling sustainable innovation, healthcare resilience, and a strong bioeconomy through the production of high-value biologics, vaccines, fuels, and materials using biological systems. India's success with the Chandrayaan-3 mission and recent milestones, such as the attainment of criticality in the indigenous Prototype Fast Breeder Reactor at Kalpakkam, further highlight the country's progress in strategic sectors and its commitment to long-term technological sovereignty.

This progress is also reflected in various key national metrics. India has significantly improved its position in the Global Innovation Index released by the World Intellectual Property Organization (WIPO), rising from 81st in 2015 to 38th in 2025. The number of patents granted in the country has increased from a few thousand in 2014-15 to around 1.5 lakh in 2025. India's startup ecosystem has also expanded significantly, with more than 1.5 lakh DPIIT-recognised startups across sectors, including nearly fifteen thousand working in emerging technology domains such as AI, robotics, and additive manufacturing. The transformation is further evident in the expansion of renewable energy capacity to over 250 GW of non-fossil sources and the growth of the bioeconomy from $10 billion to $195 billion in a decade.

Policy reforms implemented by the Government over the past decade have played a crucial role in this transformation. These include the rapid expansion of the startup and incubation ecosystem, opening strategic sectors such as space and nuclear energy to private players, and the establishment of enabling frameworks such as the ANRF, the BioE3 (Biotechnology for Economy, Environment and Employment) Policy, and the recently launched Rs 1 lakh crore Research, Development and Innovation (RDI) Fund. These initiatives have strengthened India's innovation architecture and reinforced the focus on translating scientific outcomes into societal and economic impact. Science is now moving from laboratories to markets and from ideas to impact.

The Government is providing the right impetus through proactive policies, the removal of outdated regulations, and is successfully creating an ethical yet level-playing field for Indian innovators. It is also moving beyond being merely a primary funder to becoming a primary enabler. With the establishment of the Anusandhan National Research Foundation (ANRF) as the central apex body designed to provide strategic direction for research, innovation, and entrepreneurship across India, the aim is to transition India into a knowledge-driven economy and a global leader in innovation. The broader objective is to ensure that this journey is powered by indigenous intellectual property, ethical frameworks, and a "whole-of-government" approach for a "whole-of-society" commitment to science and technology.

'Tech' reflects this journey, with science as the foundational core, technology as the enabler, and innovation as the outcome. The national exhibition, scheduled for May 11, 2026, at the BRIC-National Institute of Immunology (NII), New Delhi, showcases over 350 deep technologies developed indigenously by leading national research institutions and laboratories under 14 Ministries and Departments of the Government of India. These indigenous technologies span key thematic sectors including Biopharma and Health Technologies, Bioindustrial and Green Chemicals, Space and Geospatial Technologies, Climate and Agri-Food Technologies, Deep-Tech Materials and Advanced Engineering Technologies, Electronics, Semiconductors and Energy, and Deep Sea and Atmospheric Technologies. Many of these technologies have already been licensed or commercialised, while others will soon be available for licensing and deployment.

The common thread across these innovations is the shift from siloed research to an integrated, ecosystem-driven approach. Public research institutions are increasingly working closely with startups and industry to ensure that technologies move rapidly from laboratories to markets. India's next phase of technological growth would require deeper integration between academia, industry, startups, and government, beginning from the stage of conceptualisation of research programmes itself. Stronger industry-academia partnerships can improve alignment of research with national priorities, market needs, and societal challenges, while fundamental research must continue to be encouraged for breakthrough innovation and scientific excellence. National institutions and laboratories would also need to work in a more collaborative and mission-mode manner to address

emerging challenges in frontier areas such as artificial intelligence, robotics, advanced materials, quantum technologies, space exploration, and medical technologies.

As science and technology evolve at an unprecedented pace, regulatory frameworks must also become more adaptive, streamlined, and innovation-friendly. Emerging domains such as cell and gene therapy, monoclonal biologics, synthetic biology, and autonomous systems require agile and evidence-based regulatory frameworks that balance innovation, safety, and ethics. Dynamic mechanisms such as regulatory sandboxes can help accelerate responsible innovation. Greater participation of States (e.g., BioE3 Cells) and regional innovation ecosystems, especially in Tier-II and Tier-III cities, can help promote a more decentralised and bottom-up approach to scientific and technological development aligned with regional priorities and challenges, ensuring that science and technology become powerful instruments for improving quality of life across the country.

The transformative power of science and technology will play a pivotal role in realising the vision of Viksit Bharat by driving economic growth, improving governance, enhancing productivity, and fostering inclusive development. Government initiatives such as the India Semiconductor Mission and the National Quantum Mission, alongside advancements in biomanufacturing, precision biotherapeutics, and AI-enabled solutions in agriculture and healthcare, highlight India's strategic focus on strengthening innovation and leadership in emerging technologies. India is transitioning from being primarily a consumer of technology to becoming a global hub of innovation.

As India advances towards 2047, Science, Technology and Innovation will continue to play an increasingly important role in catalysing economic growth, strategic autonomy, societal transformation, and a sustainable future.

https://dailypioneer.com/news/orchestrating-tech-innovation-on-national-technology-day

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India moving at a "very fast pace" in Quantum, AI and Future Technologies; youth to drive Viksit Bharat by 2047: Dr. Jitendra Singh

Source: Press Information Bureau, Dt. 08 May 2026

Union Minister of State (Independent Charge) for Science & Technology, Earth Sciences and MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh today inaugurated "Lakshya 2047" Centre for Future Skills, Cadaveric Centre and Advanced Medical Simulation facilities at Parul University here.

Speaking on the occasion, Dr Jitendra Singh said India is moving at a "very fast pace" in emerging technologies including Quantum, Artificial Intelligence, Semiconductors and Deep-Tech, with the country's youth set to play the central role in building a Viksit Bharat by 2047.

The Minister outlined the government's broader push to align higher education with emerging technologies such as artificial intelligence, semiconductors, cybersecurity and quantum technologies. He said the Centre, developed in collaboration with the National Skill Development Corporation (NSDC), Ethnotech and Cambridge University Press and Assessment, would train students in nine future-technology domains with globally recognised certifications. Highlighting progress under the National Quantum Mission, the Minister said India has already completed 1,000 km of secure quantum communication within just three years, achieving the target in less

than half the projected timeline, and added that the eight-year Mission is advancing rapidly through four thematic hubs and collaborations with institutions across the country.

The Minister said the India AI Mission launched in 2024 is creating a strong ecosystem around compute infrastructure, datasets, innovation and future skills. Referring to India's growing global standing in innovation, he said the country today ranks third globally in the startup ecosystem and has crossed one lakh patents, a majority of them filed by Indian residents. India also ranks among the top nations globally in scientific publications, with Indian research increasingly receiving international citations and recognition.

Dr. Jitendra Singh said the pace of technological evolution has made continuous skilling and re-skilling essential, especially in areas such as Artificial Intelligence, Cybersecurity, Quantum Technologies and Semiconductor Design. He said India's demographic advantage, with nearly 70 percent of the population below the age of 40 years, presents a major opportunity to emerge as a global skilled workforce hub over the next two to three decades.

The Minister said the Government under Prime Minister Narendra Modi has adopted an integrated and collaborative approach towards innovation, research and skilling, moving beyond traditional silos and encouraging greater participation from academia, startups and the private sector. He referred to initiatives such as the National Education Policy 2020, the National Quantum Mission, India AI Mission, Anusandhan National Research Foundation (ANRF), Atal Tinkering Labs and various startup-support programmes aimed at nurturing innovation from the school level onwards.

Highlighting the Government's emphasis on inclusive scientific growth, Dr. Jitendra Singh spoke about dedicated programmes for women scientists, school students, Scheduled Castes and Scheduled Tribes, as well as support mechanisms for universities and young researchers through schemes such as PURSE, FIST, STUTI and technology innovation platforms. He said these initiatives are designed to democratise access to science, research infrastructure and innovation opportunities across the country.

On Artificial Intelligence, the Minister said India is pursuing an approach rooted in inclusion, responsibility and public good. Referring to the Global South AI Summit hosted by India earlier this year and the adoption of the Delhi Declaration on responsible AI, he said technology must serve the most vulnerable and underserved sections of society. "One has to be intelligent enough to use Artificial Intelligence," he remarked, adding that AI guided by ethics and equity can become a powerful force for healthcare, governance and social transformation.

Dr. Jitendra Singh also referred to the opening of India's nuclear sector for greater private participation, including in nuclear medicine research and applications, describing it as a major step towards expanding innovation and vocational opportunities in advanced healthcare technologies.

Calling upon the youth to become active partners in the journey towards Viksit Bharat, the Minister said the year 2047 will belong to the present generation of young Indians, who will be at the peak of their energy, careers and capabilities when the country completes 100 years of Independence. He said the Government's responsibility is to build their capacity and create opportunities so that India's growth story is driven by innovation, science and skilled human resources.

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Massive stars regulate star formation in nearby molecular cloud

Source: Press Information Bureau, Dt. 08 May 2026

New evidence has been unearthed which show that massive stars can initiate star formation in nearby areas thus helping shape the evolution of star-forming regions. Stars are born inside vast clouds of gas and dust known as molecular clouds. While most stars in our Galaxy have masses similar to the Sun, a few are much larger (more than eight times the mass of the Sun). Although these massive stars are rare, they play a significant role in shaping their surroundings and sometimes even contribute to the formation of the next generation of stars.

Scientists from the Aryabhatta Research Institute of Observational Sciences (ARIES), Nainital, an autonomous research institute under the Department of Science and Technology (DST), Government of India, investigated a region known as Bright Rimmed Cloud 44 (BRC 44), situated approximately 900 parsecs from Earth within the Cepheus OB2 star-forming complex and found that massive stars give out UV radiation that propagates into the cloud, giving birth to new stars.

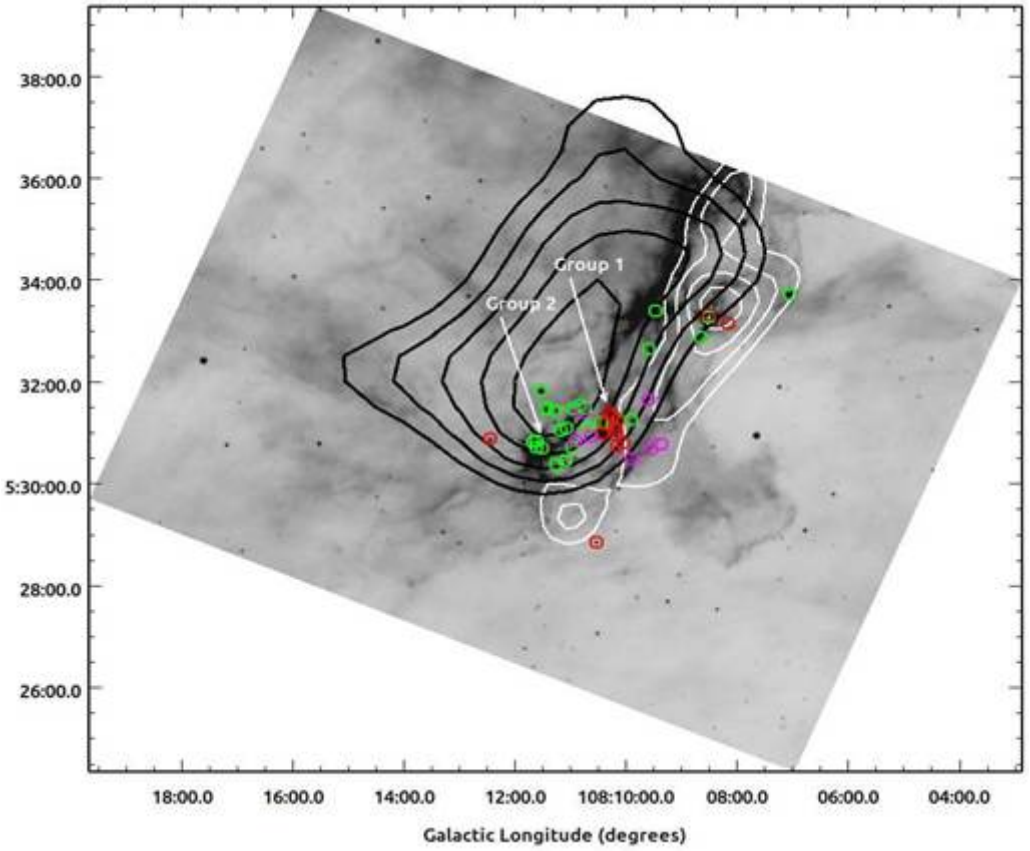

Fig: *The CO (black color) and 1.4 GHz NVSS (white color) contours are overplotted on the 8 μm Spitzer image of the region. Circles represent the identified YSO candidates. The red circles are optically visible YSOs (Group 1), green circles are embedded. Young YSOs(Group 2), and magenta circles are identified as BD candidates.*

Bright Rimmed Clouds get their name from their glowing edges, which shine brightly when exposed to intense ultraviolet (UV) radiation from nearby massive stars. In the case of BRC 44, the researchers found that UV radiation from a massive star ionizes the surface of the cloud, which leads to heating and compression of the gas. This compression creates shock waves that propagate into the cloud, increasing its density and triggering the formation of new stars.

The research, led by Mr. Rishi C., a PhD scholar along with Dr. Neelam Panwar and other researchers from India, UK, China & Thailand, employed a multi-wavelength approach to study the region. Observations were done using the 3.6-m Devasthal Optical Telescope (DOT) and the Devasthal Fast Optical Telescope (DFOT) in India, along with the data from the Spitzer Space Telescope and radio observations from the Purple Mountain Observatory in China. By combining optical, infrared, and radio data, the scientists were able to study both the stars and the surrounding gas in great detail.

One of the most exciting results of the study is the discovery of 22 new young stellar objects in BRC 44. Among these are several brown dwarfs—objects that are smaller than normal stars to sustain hydrogen fusion in their cores. Finding such low-mass objects provides essential clues about how stars and sub-stellar objects form under the influence of massive stars. Apart from this finding, they also found two groups of young stars, with one group formed from the interplay of cloud and radiation from the nearby massive star and the other group formed around the same time as the massive star.

The results, published in The Astrophysical Journal, show that massive stars play a complex role in the Galaxy. Instead of only destroying their surroundings, they can also trigger new star formation.

Publication Link: https://doi.org/10.3847/1538-4357/ae0f03

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