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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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Defence News

Defence Strategic: National/International

Raksha Rajya Mantri-led Indian delegation takes part in the opening ceremony of 17th Langkawi International Maritime & Aerospace Exhibition in Malaysia

Source: Press Information Bureau, Dt. 20 May 2025, URL: <u>https://www.pib.gov.in/PressReleasePage.aspx?PRID=2130009</u>

An Indian delegation led by Raksha Rajya Mantri Shri Sanjay Seth participated in the opening ceremony of the 17th edition of the Langkawi International Maritime and Aerospace Exhibition (LIMA 2025), at Langkawi, Malaysia on May 20, 2025. The five-day event was inaugurated by the Prime Minister of Malaysia Dato' Seri Anwar bin Ibrahim.

Raksha Rajya Mantri inaugurated the India pavilion at LIMA 2025, which showcases India's prowess of indigenous defence industry with participation of key Defence Public Sector Undertakings and private companies. The event underscores India's strategic push for self-reliance in defence, with the Indian Pavilion showcasing indigenous technologies including BrahMos and Hindustan Aeronautics Limited-made Dornier aircraft. India's impressive pavilion in the midst of major countries speaks volumes of growing India's stature in the area of defence production.

Raksha Rajya Mantri also visited exhibition stalls at the venue and met other dignitaries & senior officials from various countries. India and Malaysia have a robust & multifaceted relationship which has expanded into several strategic areas, including defence and security, under the vision of Comprehensive Strategic Partnership established during the visit of the Prime Minister of Malaysia to India in 2024. An Indian Naval Ship will also participate in LIMA 2025. LIMA, established in 1991 and held biennially, is regarded as one of the largest and most significant maritime and aerospace exhibitions in the Asia-Pacific region.

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Indian Navy to Induct Traditionally Built 'Ancient Stitched Ship'

Source: Press Information Bureau, Dt. 20 May 2025, URL: <u>https://www.pib.gov.in/PressReleasePage.aspx?PRID=2129794</u>

Indian Navy will induct and unveil the name of the Ancient Stitched Ship during a ceremonial event on 21 May 2025 at Naval Base, Karwar. The Hon'ble Minister of Culture, Shri Gajendra

Singh Shekhawat, will preside over the ceremony as the Chief Guest, formally marking the induction of the ship into Indian Navy.



The Indian Navy has overseen the entire spectrum of implementation of this project, including concept development, design, technical validation and construction in collaboration with M/s Hodi Innovations and traditional artisans. The design and construction posed unique technical challenges. With no surviving blueprints or physical remnants, the design had to be extrapolated from a two-dimensional artistic iconography. The project demanded a unique interdisciplinary approach, combining archaeological interpretation, Naval architecture, hydrodynamic testing and traditional craftsmanship. Unlike any modern vessel, the stitched ship is equipped with square sails and steering oars, which are entirely alien to modern-day ships. The hull geometry, rigging and sails had to be reimagined and tested from first principles. The Indian Navy collaborated with the Department of Ocean Engineering, IIT Madras, to conduct model testing to validate the vessel's hydrodynamic behaviour at sea. Further, the Indian Navy undertook an in-house structural analysis to assess the wooden mast system, designed and constructed without the use of contemporary materials.

Every aspect of the ship had to balance historical authenticity with seaworthiness, leading to design choices that were both innovative and true to the maritime traditions of ancient India. The combination of a stitched hull, square sails, wooden spars, and traditional steering mechanisms makes the vessel unlike any ship currently in Naval service anywhere in the world. The successful completion of the construction of the Ancient Stitched Ship represents the completion of the first and most formidable phase, bringing to life, from an artistic depiction, a fully functional sea-going vessel.

Post induction, the project will enter its second important phase, where the Indian Navy will undertake the ambitious challenge of sailing this vessel along traditional maritime trade routes, reviving the spirit of ancient Indian seafaring. Preparations for the vessel's maiden transoceanic voyage from Gujarat to Oman are already underway.



The completion of the stitched ship construction not only reaffirms India's rich shipbuilding legacy but also reflects the Indian Navy's commitment to preserving and operationalising the living traditions of India's Maritime Heritage.

India, U.S. discuss carrier cooperation

Source: The Hindu, Dt. 20 May 2025, URL: <u>https://www.thehindu.com/news/national/india-us-discuss-carrier-cooperation/</u> <u>article69598616.ece</u>

Continuing the dialogue on aircraft carrier cooperation, India and the U.S. discussed plans for future co-operation under various aspects of Aircraft Carrier Technology at the 8th round of the India-U.S. Joint Working Group on Aircraft Carrier Technology Cooperation (JWGACTC), constituted under the Defence Technology and Trade Initiative (DTTI), the Navy said in Tuesday.



A six-member U.S. delegation headed by Rear Adm. Casey Moton, Programme Executive Officer (PEO), Aircraft Carriers, was in Delhi for the dialogue held from May 13 to 16; they also visited various defence establishments in Delhi and Goa. From India, the dialogue was co-chaired by Rear Adm. Vishal Bishnoi, Assistant Controller Carrier Projects. The working group held its first meeting in 2015 and the last edition was held in the U.S. in April 2024.



"Both sides appreciated the remarkable work undertaken by the Joint Working Group towards valuable information exchange on Aircraft Carriers. Plans for future co-operation under various aspects of Aircraft Carrier Technology were discussed and a Joint Statement was also released," the Navy said.

At Goa, professional interactions were undertaken with the Indian Navy's aviation specialists on carrier operations and technical aspects, it added.

The Indian Navy currently operates two carriers — INS Vikramaditya, acquired from Russia, and the indigenously designed and manufactured INS Vikrant — both of which operate the Mig-29K fighter jets. Unlike the bulk of the U.S. nuclear-powered super carriers displacing 100,000 tonnes, the Indian carriers are medium-sized with a displacement of over 40,000 tonnes, conventionally powered and use a ski-jump to launch aircraft.

Why India needs a third aircraft carrier

The ambitious DTTI initiative between India and the U.S. was announced a decade ago with two joint working groups and four path funder projects for co-development and co-production, though they made no progress.

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Why India should bet big on defence partnership with EU

Source: The Indian Express, Dt. 20 May 2025, URL: <u>https://indianexpress.com/article/opinion/columns/why-india-should-bet-big-on-defence-partnership-with-eu-10017632/</u>

The European Commission of the European Union (EU) issued a "Joint White Paper (WP) for European Defence Readiness 2030" on March 19. It has come in the wake of the protracted war in Ukraine and the recent stress experienced in the trans-Atlantic partnership with the United States. At the same time, the WP makes it clear that the EU does not reject the existing partnership with the US or the NATO alliance. The UK, too, continues to be regarded as "an essential European ally."

The WP intends to support member states in achieving full defence readiness by 2030. The target is to mobilise additional defence expenditure of up to 1.5 per cent of the GDP. Based on projections of gradual progression, defence investment could reach at least EUR 800 billion over the next four years.

While calling upon EU member states to strengthen collective defence, engage in joint defence procurements, promote the defence-industrial complex and streamline military logistics, the WP identifies seven priority areas: Air and missile defence, artillery systems, ammunition and missiles, including stockpiles of ammunition, missiles and components, drones and counter-drone systems, military mobility, AI, quantum, cyber and electronic warfare, and strategic enablers and critical infrastructure protection.

Beyond the EU member states, the WP underscores the need to explore defence-industrial cooperation with Indo-Pacific partners such as Japan, the Republic of Korea (ROK), Australia, and

New Zealand. More importantly, it calls for further exploring a "Security and Defence Partnership" (SDP) with India.

Challenges outlined in the paper cover terrorism and violent extremism, hybrid attacks, the actions of international organised crime groups, and networks of cybercriminals. The security of supply chains for critical raw materials is part of the spectrum of concerns, alongside transnational challenges such as rapid technological change, migration, and climate change. China is clearly identified as an authoritarian state seeking to assert its authority and control in Europe's economy and society.

The priority areas identified by the WP present an opportunity for Indian defence industries to acquire or establish start-ups and SMEs (small and medium-sized enterprises) in Europe.

In the short term, the emphasis in the WP is on urgently replenishing the stocks of ammunition, weapons, and military equipment of member states. This may provide an opportunity for India to export to Europe Made in India ammunition, which is rapidly emerging as a success story of India's atmanirbharta in defence manufacturing and exports. Efforts should also be made to explore sales of competitive defence equipment such as the Advanced Towed Artillery Guns (ATAGs), the Pinaka Multi-Barrel Rocket Launcher, and air defence missiles and radars meeting NATO standards.

India's total defence exports for FY 2024-25 reached a record Rs 23,622 crore (approximately \$2.76 billion). Clearly, a foundation has been laid for a higher quantum of sales in the future.

Presently, India does not export arms and ammunition to Ukraine because of its neutral posture in the latter's ongoing conflict against Russia. Europeans using Indian-origin defence items against Russia in the future is akin to China or Pakistan using Russian defence equipment against India.

The focus in the WP on critical and foundational technologies (AI, quantum, bio, and hypersonic) and their classification as dual-use with both economic and military implications offers India scope for collaboration with EU member states. Sharing the EU's military mobility corridors, space assets, and services with Ukraine is seen as integral to the latter's defence.

Cooperation with Ukraine is regarded as a two-way process in which the EU, while helping strengthen Ukraine's defence, would seek to benefit from the latter's "highly innovative and thriving defence industry," especially in sectors such as AI and drones.

The key lies in Indian companies being embedded early in the evolving defence ecosystem of the EU and Ukraine, during the process of their internal integration and the harmonisation of the regulatory framework.

As the EU moves to higher levels of excellence in innovation and R&D, India should explore opportunities for acquisitions and joint research in defence technologies. India should closely study the evolving EU model and adopt the best practices to improve its own roadmap for atmanirbharta in aerial mobility, particularly the development of domestic civil transport aircraft manufacturing and maintenance, repair, and overhaul (MRO) hubs.

The EU's Defence Omnibus Package offers India a chance to collaborate and engage the EU in the cross-certification of defence products to create the basis for a future market. There could be fresh

opportunities for cooperation in space and cybersecurity. Job opportunities for skilled human resources from India might also increase. India should also engage on migration and mobility issues in the context of the ongoing FTA negotiations.

The EU's harmonisation of rules and procedures for defence procurement could lead to some changes in export regulations. Major European producers of defence equipment could find their capacities committed to national needs for the "ReArm Europe" plan. India would have to examine the impact, if any, on its supply chains emanating from Europe.

India could explore the possibility of joining the EU Defence Innovation Scheme (EUDIS), drawing from its experience in initiatives such as INDUS-X with the US. Engineering, procurement, and construction (EPC) companies from India should explore the potential for securing contracts for the expansion of EU multimodal corridors, including ports and terminals.

The emergence of the EU "Defence Union" will mark a scaling up of all existing European defence and security structures. Rapidly rearming Europe is seen as a way to secure its future against the strategic threat posed by Russia, reasserting Europe's strategic autonomy in securing itself and Ukraine, along with strengthening the EU's defence contributions to the trans-Atlantic partnership. As an aspiring global power and strategically autonomous pole, India should bet big on this partnership.

Indian Army showcases indigenous defence technology used during Op Sindoor along LoC

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Source: ANI News, Dt. 21 May 2025,

URL: <u>https://www.aninews.in/news/national/general-news/indian-army-showcases-indigenous-defence-technology-used-during-op-sindoor-along-loc20250521025550/</u>

In a major boost to indigenous defence capabilities, the Indian Army successfully deployed homegrown artillery systems under the "Atmanirbhar Bharat" initiative during Operation Sindoor along the Line of Control (LoC) in Jammu and Kashmir.

The operation marked a significant milestone in showcasing the operational readiness and effectiveness of Made-in-India defence technologies in responding to enemy aggression.

Operation SINDOOR, initiated on May 7 in the aftermath of the Pahalgam terror attack, which claimed the lives of 26 innocent civilians, showcased a calibrated, tri-services response that embodied precision, professionalism, and purpose.

Speaking on it, an Indian Army personnel emphasised that robust infrastructure, rigorous training, and tactical readiness played a key role in the success of Operation Sindoor along the Line of Control (LoC).

"Robust infrastructural development, hard training, and tactical readiness have ensured that while we are fully prepared to undertake our primary task of maintaining sanctity of the LoC, as also undertaking zero infiltrations here. We are also fully geared up and stand steadfast in our resolve to give a bloody punch to the enemy in case of any aggression as seen in Op Sindoor... In many

places, it was also seen that the enemy was found running away, abandoning his post, just by virtue of our small arms fire... The defence infrastructure included an underground command post from where the entire operations were synchronised and operated across the sector", the personnel said.

The Indian Army has emphasised that its artillery regiment played a "major role" behind its success in Operation Sindoor against Pakistan. According to an Indian Army personnel, the artillery weapons were deployed in such a way that they could destroy the enemy's resources, such as battalion headquarters, gun areas, and logistic echelons.

"During Op Sindoor, the Regiment of Artillery had a major role to play in this sector. Our artillery guns were employed in a way such that they could target and destroy the enemy's battalion headquarters, gun areas, and logistic echelons. We received orders from the fire direction centres. Our gunners were so energised and coordinated that all our targets were destroyed", Indian Army personnel Amman Ali told ANI.

Another officer of the Army said that Pakistan was "rattled" because it could not inflict any damage or casualties.

"Pakistan targeted Indian Army forward positions and depth gun areas and was rattled because it could not inflict any damage or casualties. This was possible because our positions were strengthened, and our troops and jawans were well-trained and well-conditioned. When the enemy started targeting our civilian areas, we decided that we needed to move from a proportional response to a punitive response," he said.

Operation Sindoor still on, we remain alert and vigilant: Indian Army deploys advanced surveillance technology

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Source: The Economic Times, Dt. 20 May 2025,

URL: <u>https://economictimes.indiatimes.com/news/defence/operation-sindoor-still-on-we-remain-alert-and-vigilant-indian-army-deploys-advanced-surveillance-technology/articleshow/121294615.cms</u>

During Operation Sindoor, which started on May 7, the Indian Army successfully destroyed several Pakistposts and terror camps across the Line of Control (LoC).ration SINDOOR, launched in the aftermath of the Pahalgam terror attack, which claimed the lives of 26 innocent civilians, showcased a calibrated, tri-services response that embodied precision, professionalism, and purpose.

The operation, which involved precise targeting, was supported by advanced surveillance technology deployed to monitor enemy movements in forward areas.

An officer stationed at the LoC explained the importance of the Army's training and preparation on Tuesday.

"We were undergoing round-the-clock training. It is rightly said, 'The more we sweat in peace, the less we bleed in war'. When we were selecting targets to be destroyed, it was well thought of, and

we identified targets used by the terrorists. The kind of losses suffered by the enemy this time, it will not dare to repeat the same mistake again. All terror launchpads are under surveillance," the officer told ANI.

In addition to the strikes on terrorist infrastructure, Indian Army officials also condemned the Pakistan Army's violation of the cessation of hostilities.

An officer posted at the LoC remarked, "Pakistan unilaterally broke the ceasefire understanding that was there between both the armies. They indiscriminately started firing and engaging the forward posts. They also targeted innocent civilians living in Poonch."

The officer further emphasised the cultural harmony in Poonch, which was targeted by Pakistan's actions.

"Poonch has been at a confluence of all the religions... The enemy understood the harmony that existed in Poonch, and it was purely by design that, within 20 minutes, everything unfolded. This shows the utter lack of professionalism in the Pakistan Army. They have got no might to fight the Indian Army, so this is what they can do best," he added.

Operation Sindoor continues as the Indian Army remains vigilant along the LoC. "Operation Sindoor is still on and we continue to remain alert and vigilant," the officer said.

Operation SINDOOR was conceived as a punitive and targeted campaign to dismantle the terror infrastructure across the Line of Control and deeper inside Pakistan.

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Indian Armed Forces begin combat exercise in Assam forest

Source: The Economic Times, Dt. 20 May 2025,

URL: <u>https://economictimes.indiatimes.com/news/defence/indian-armed-forces-begin-</u> <u>combat-exercise-in-assam-forest/articleshow/121296809.cms</u>

The Indian Armed Forces on Tuesday started a multi-dimensional combat exercise, which will continue till August, at Dulung reserve forest in Lakhimpur district of Assam, officials said. The Dulung Mukh range of the forest near the Assam-Arunachal Pradesh border has been activated for bombing, rocket launching and shooting exercises of the Indian Army from May 20 to August 31, according to a senior official.

The exercise will include testing of different explosive prowess and aerial firepower, he added.

"This marks the first instance of full-spectrum rocket and aerial bombardment exercises at Dulung. The expansion in military activity in this area near China signifies a bolstered security posture in the strategically sensitive Northeastern frontier," the official said.

The district administration and the Forest Department have prohibited people from entering the forest during this period.

"We have issued the directive to the local people to avoid any untoward incident and to prevent injury or damage to life and property," a district official said.

Dulung Mukh is the practice range used by the Indian Air Force for aerial drills, originating from the Tezpur air base in neighbouring Sonitpur district of Assam.

The range has witnessed combat aircraft like Sukhoi-30 MKI coming from the Indian Air Force base and returning after their regular exercises.

"Close cooperation with India is more important than ever," Netherlands Defence min says

Source: The Economic Times, Dt. 20 May 2025,

URL: <u>https://economictimes.indiatimes.com/news/defence/close-cooperation-with-india-is-more-important-than-ever-netherlands-defence-min-says/articleshow/</u>121284782.cms

Ruben Brekelmans, Minister of Defence of the Netherlands, discussed the security challenges in Europe and Asia with External Affairs Minister S Jaishankar at The Hague.

Brekelmans said that today, cooperation with India has assumed greater importance.

In a post on X, he said, "In these turbulent times close cooperation with India is more important than ever. Great honour to receive Minister of Foreign Affairs S Jaishankar. We discuss security challenges in Asia/Europe and our Defence partnership. Looking forward to deepening our cooperation!"

Defence Minister Ruben Brekelmans and Jaishankar discussed the benefits of a bilateral defence partnership between the two nations.

"Pleased to meet Defence Minister Ruben Brekelmans in The Hague today. Exchanged views on our respective security perspectives and challenges. Also spoke about the benefits of forging a bilateral defence partnership," Jaishankar stated.

The EAM also engaged with the Indian community in the Netherlands, noting the value of the community's contribution to building a stronger relationship between India and the Netherlands.

"Interacted with representatives of the Indian community this evening. Value the contribution of the community to building a stronger relationship between India and the Netherlands," the EAM stated.

EAM Jaishankar arrived in the Netherlands early Monday (IST) to hold discussions with the country's leadership.

According to a statement from the Ministry of External Affairs (MEA), EAM Jaishankar is on an official visit to the Netherlands, Denmark, and Germany from May 19 to 24.

During the visit, the EAM will meet with the leadership of the three countries and discuss the entire range of bilateral relations. Discussions will also take place on global and regional matters of mutual interest.

EAM Jaishankar's visit to Germany came after Friedrich Merz took over the office as the new Federal Chancellor of Germany earlier this month.

In the wake of the dastardly Pahalgam terror attack, the three countries were a part of the several countries from across the world that had expressed solidarity with India.

Operation Sindoor: Pakistani troops unable to handle drones from another country; Indian Army targeted posts with Medium Machine Guns

Source: The Economic Times, Dt. 20 May 2025,

URL: https://economictimes.indiatimes.com/news/defence/op-sindoor-pak-troopsunable-to-handle-drones-from-another-country-indian-army-targeted-pakistan-postswith-medium-machine-guns/articleshow/121295491.cms

The Indian Army used Medium Machine Guns (MMGs) to target Pakistan Army forward posts along the Line of Control (LoC), inflicting heavy casualties during a ceasefire violation on the intervening night of May 7-8. The action was part of the Indian Army's swift and decisive response to Pakistan's unprovoked aggression.

Operation Sindoor, initiated on May 7 in the aftermath of the Pahalgam terror attack, which claimed the lives of 26 innocent civilians, showcased a calibrated, tri-services response that embodied precision, professionalism, and purpose.

A soldier of the Indian Army explained, "This episode took place on the intervening night of 7-8 May. Pakistan violated the ceasefire. We studied the pattern of fire and retaliated accordingly within seconds. We destroyed their bunkers and launching pads and inflicted heavy casualties. This is a Medium Machine Gun (MMG), and it has heavy firepower.

He added, "When Pakistan could not retaliate to our fire on their posts, they started targeting our civilian areas. The enemy sent drones as well, but since the drones were from another country, the Pakistani troops were not well trained to handle them. We destroyed their drones also."

The Indian Army's swift retaliation continued with precise targeting of Pakistan's positions.

An Army Lieutenant added, "On May 7, around 1:30 am- 2 am, Pakistan violated the ceasefire. Their biggest crime was that they targeted our civilians. Our battalion was prepared for it. In the next 10 minutes, we fired indiscriminately on their forward posts and launching pads. We destroyed all their posts, which can be seen in the visuals. Our fire was effective and accurate, but the enemy fire either never hit the target or hit civilian areas. This is why we destroyed these posts."

Army Captain shared further details of the combat, stating, "A face-to-face battle was fought with direct firing weapons, and our mortars supported us from the back. We indiscriminately fired on the enemy post and destroyed it. Pakistan Army started an unprovoked artillery fire, and we retaliated accordingly. We even used ATGMs (Anti-Tank Guided Missiles) to destroy their posts.

There are 10-12 posts in the Poonch area that we destroyed. After they failed to destroy our military posts, they started firing on civilian areas. We destroyed their ammunition storage as well."

The fencing along the LoC remains heavily guarded, with the morale of Indian forces at an all-time high after the success of Operation Sindoor. Despite the ongoing threat, the Indian Army continues to maintain vigilance and preparedness along the volatile border.

Operation SINDOOR was conceived as a punitive and targeted campaign to dismantle the terror infrastructure across the Line of Control and deeper inside Pakistan.

Trump says 'Star Wars-like' \$175 billion Golden Dome missile defence will be ready by 2029

Source: The Economic Times, Dt. 21 May 2025,

URL: <u>https://economictimes.indiatimes.com/news/defence/trump-says-star-wars-like-175-billion-golden-dome-missile-defence-will-be-ready-by-2029/articleshow/121303399.cms</u>

US President Donald Trump on Tuesday announced that his administration's "Golden Dome" missile defence system would be fully operational within three years, promising it will be completed before the end of his second term in 2029. Speaking from the Oval Office, Trump said the system will integrate existing defence infrastructure with new technologies to defend the US from foreign missile threats, including those launched from space.

"This design for the Golden Dome will integrate with our existing defence capabilities and should be fully operational before the end of my term. So we'll have it done in about three years," Trump said, as reported by The Hill.

He added that the project marks the fulfilment of his long-standing campaign promise to develop an advanced shield capable of intercepting missiles at every phase of flight.

"In the campaign, I promised the American people that I would build a cutting-edge missile defence shield to protect our homeland from the threat of foreign missile attack. And that's what we're doing today."

Multi-layered defence drawing on space power

The Golden Dome will include both ground-based and space-based elements. According to The Hill, the system is designed to counter threats at four key stages: pre-launch, initial boost, mid-course, and final impact. That means it will be capable of tracking, neutralising, and intercepting missiles as soon as they are launched—whether from land or space.

Planners at the Pentagon have been developing a range of options for the project. These range from medium to "extra high" in terms of cost and capability, depending on the number of satellites, sensors, and the inclusion of space-based interceptors. A US official involved in the planning,

speaking on condition of anonymity, described ongoing debates about system complexity and procurement needs.

Trump has insisted that the technology is within reach.

"Once fully constructed, Golden Dome will be capable of intercepting missiles even if they are launched from other sides of the world and even if they are launched from space, and we will have the best system ever built," he said.

Modelled on Israel's Iron Dome but global in scope

Inspired by Israel's Iron Dome, Trump said the US version would be significantly expanded to defend against long-range missile threats from adversaries like China, Russia, Iran, and North Korea. The entire system, he emphasised, would be manufactured within the United States.

Canada, Trump said, had also shown interest in joining the initiative. "We are open to working with them," he added.

Defence Secretary Pete Hegseth, along with Republican Senators Dan Sullivan, Jim Banks, and Kevin Cramer, stood beside Trump during the announcement. Behind them, posters depicted a golden shield covering the US with the words: "This is a Very Dangerous World." System to be led by top space official, with major budget uncertainties.

Trump named General Michael Guetlein, the current Vice Chief of Space Operations, as the official in charge of the Golden Dome's development. Guetlein will oversee the project's implementation, testing, and integration.

Congress is currently considering a \$25 billion allocation to kick-start the programme under a Republican-backed reconciliation bill. But full funding remains uncertain. Though Trump estimated the system's total cost at \$175 billion, the Congressional Budget Office warned the price could exceed \$500 billion over two decades due to its complexity.

SpaceX concerns, internal divisions in Congress

Democrats have raised ethical concerns over the possible involvement of Elon Musk's SpaceX, due to his advisory role in the Trump administration and potential conflicts of interest. Meanwhile, some moderate and conservative Republicans are also expressing hesitation, demanding changes to the bill before approving funds.

Trump listed Alaska, Florida, Georgia, and Indiana as states likely to contribute to the system, due to their defence and aerospace infrastructure. Major contractors such as Lockheed Martin, Raytheon, and L3Harris Technologies are potential contenders for key roles.

Echoes of Reagan's 'Star Wars' project

Trump positioned the Golden Dome as the realisation of a plan first envisioned during the Reagan era. In the 1980s, President Ronald Reagan launched the Strategic Defense Initiative—often nicknamed "Star Wars"—which aimed to develop a space-based missile shield. That effort was eventually abandoned due to technological limitations.

"Ronald Reagan (40th US President) wanted it many years ago, but they didn't have the technology. But it's something we're going to have. We're going to have it at the highest level," Trump said. "We will truly be completing the job President Reagan started 40 years ago."

Trump claimed the system's technology is "about as close to perfect as you can have", even as some of its components remain untested. Next steps involve testing and procurement.

The Pentagon is expected to begin testing a variety of components, including interceptors, sensors, and satellites. Once validated, these technologies will be procured for the wider Golden Dome network. The plan includes hundreds of satellites to track and potentially neutralise missiles in flight.

Pakistan may take a year to rebuild Army posts destroyed by India in PoK: Sources

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Source: The Week,Dt. 20 May 2025,URL: https://www.theweek.in/news/defence/2025/05/20/pakistan-may-take-a-year-to-rebuild-army-posts-destroyed-by-india-in-pok-sources.html

It may take at least eight to 12 months for Pakistan to rebuild the military infrastructure at Leepa Valley in Pakistan-Occupied Kashmir (PoK), destroyed by Chinar Corps of the Indian Army during Operation Sindoor.

The Pakistani military infrastructure was demolished by the Indian side as Indian Army responded to the ceasefire violations in the second week of May during Operation Sindoor, reported news agency PTI. According to an Army official, Pakistan Army used heavy weaponry, including aerial platforms, to target Indian positions, but failed to inflict any damage. "Our indigenously developed Akashdeep radar system performed brilliantly while our air defence guns neutralised their aerial platforms. Our military infrastructure remains intact, while the enemy's has been decimated," the official said.

"We completely destroyed at least three posts, an ammunition depot, fuel storage facility, and gunnery, among other targets. Our retaliation was so devastating that it will take Pakistan at least 8-12 months to rebuild, possibly longer," the news agency quoted another Army official as saying.

According to the officials, while there are many military structures in Leepa Valley, the Indian Army targeted only those on which they could inflict the maximum damage.

The officials said at least 64 Pakistani military personnel were killed and 96 injured by the Chinar Corps during the retaliatory strikes in the second week of May. "The message was clear: our retaliation follows a 1:3 ratio, meaning the Indian Army will strike three times as hard for every Pakistani ceasefire violation," a top Chinar Corps official said.

According to them, India's coordinated strikes near Muzaffarabad in PoK on May 7 under Operation Sindoor were so intense that the commander of PoK's 75th Infantry Brigade urged troops to prioritise saving lives over protecting assets. "Intercepted communication revealed how a

Pakistan Army commander, hiding inside a mosque, was instructing troops to save lives first. One message was 'save lives first, offices can reopen later'," according to a senior Chinar Corps official.

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India's military revival hinges on overestimating Pakistan Army

Source: The Print, Dt. 20 May 2025, URL: <u>https://theprint.in/opinion/indias-military-revival-hinges-on-overestimating-pakistan-army/2631507/</u>

It now seems that we are in the thick of a certain military/strategic trajectory with Pakistan that is troublesome and wasteful. The trajectory looks like this. Pakistan engineers a spectacle-focused terror attack. This leads to an Indian military response aimed at both punishing as well as restoring deterrence. India concludes that deterrence has been achieved until the next similar terror attack, when India has to re-restore deterrence. Given the comprehensive power differential as well as the contrasting future trajectories—a future great power vs a poly-crises-stricken Pakistan—such a state of affairs cannot be allowed to hold too firmly.

A comprehensive diagnosis of this problem will take several years of scholarship and involve aspects related to diplomacy, economics, society and politics. However, in the immediate aftermath of the latest round of escalation, what needs to be asked is whether our existing framework of military-based deterrence may itself need repair. Let me explain.

We are used to framing the problem of Pakistan-sponsored terror attacks as one of deterrence. However, it is Pakistan—as the weaker power—that is the deterring power (classically speaking) in a military-to-military contest. India's task, on the other hand, is one of compellence. This unfortunate misnomer has crept in only because of the anomaly of Pakistan's use of terror proxies as a core part of its grand strategy. Pakistan, after all, wants to deny India victory over Kashmir, and terror appears to be the method it has chosen for this. Hence, our use of the term deterrence emanates from this sense of gross violation of the 'peace' and our rights that is both unprovoked and unanticipated.

However, deterrence pertains to dissuading an adversary from taking a particular action, "if you do X, then we will do Y and Z". For Pakistan, terror-use is not a singular act but an established policy with varying volume levels that are adjusted based on immediate needs. This logic nudges India towards compellence instead of deterrence. Compellence, put simply, entails the application of force on another power with the intent to make it alter an already chosen path, "if you do not abandon X, then we will do Y and Z". The main import of this distinction is that whereas deterrence is achievable even for a power that is far weaker, given the advantage of a defender's resolve, compellence requires significant power gaps in your favour in order to yield results.

Seen from this perspective, Operation Sindoor was a grand operational success and marks a new chapter in the Indian way of warfare. This part is not ambiguous. But there is still the feeling that Pakistan has not learnt the right lessons (and sufficiently so). A much weaker Pakistan—on the brink of bankruptcy and severe civil strife—needed to only stay in the fight and achieve a

semblance of retaliatory parity in order to 'win'. This, the Pakistan army and strategic community, believe, has been achieved. Both compellence as well as deterrence, after all, lie in the minds of the adversary and not the deterring/compelling state.

Where compellence lies: The operational environment

There has been a strong expectation amongst Indian citizens that in any military contest, India is likely to easily triumph over Pakistan. After all, India has overwhelming size advantages in terms of population, territory, economy, as well as annual defence budget. However, Indian punitive actions in response to Pakistan are a different kettle of fish compared to conventional attrition-based warfare. Bound by the fact of nuclear weapons in the sub-continent as well as India's need to avoid a long-drawn, wasteful war, such actions have been domain-specific, brief and swift, and yet extricable in theory. Macro-advantages in terms of overall national power do not significantly impact this operational environment, and their influence is somewhat limited.

In 2019, post the Pulwama attacks, India carried out deterrence-restoring punitive military strikes predominantly in the air domain. Post Op Sindoor, this choice of domain is likely to continue—perhaps with a greater role for precision and mass artillery strikes.

Air options, such as drones and missiles, are cleaner, politically impactful, and extricable by nature. Hence, air-based operations are fit for purpose as a punitive option that a civilian administration would like to have during a crisis with Pakistan. Rather than overall military strengths, it is niche capabilities that matter more and immediately in this operational environment.

India's strategy of emphasising air operations makes perfect sense given these realities. However, this creates a challenge: Pakistan, with significant Chinese assistance, has been specifically investing in capabilities designed to counter India's air advantage and reduce the operational power gap between the two nations—to serve deterrence. The air domain remains key, and by the same token, it is losing the element of surprise—leading to both focused investment by Pakistan and higher forms of escalatory exchanges.

An increasingly dynamic military balance

While the 2019 Balakot strike was a great success in heralding a fresh strategic doctrine for a new India, it also demonstrated the distance the Pakistan Air Force (PAF) has covered since the early 2000s in terms of both platforms and modernisation, particularly after the Kargil war and Operation Parakram.

India had learnt operational lessons from Balakot, and hence, there has been a focus on filling niche tech-based gaps. This has entailed a focus on procuring or inducting Airborne Warning and Control System (AWACS) jets, data link systems, and the procurement of Software Defined Radios (SDR) to protect against jamming, as well as the successful induction of 36 4.5-generation Rafael jets and the formidable S-400 Air Defense (AD) system. However, this has been an ongoing, albeit incomplete, process. It's no secret that the Indian Air Force (IAF) has faced challenges, particularly in procurement, upgradation, and maintenance, due to erratic supplies from a war-engaged Russia. This has been widely discussed and written about, and even noted by former Air Chief Marshal BS Dhanoa, as well as the present Air Chief, AP Singh.

However, it is worth noting that post-Balakot, Pakistan did not remain idle and sought to enhance its deterrence in response to India. This occurred in the form of China's J-10 and JF-17, intense tech-heavy training, along with a focus on newer AD systems. Through exercises with China's People's Liberation Army Air Force (PLAAF), the PAF has sought to familiarise itself with Suseries Indian platforms, as well as refine electronic counter-countermeasures (ECCM). The costefficiency of Chinese jets and missiles also works to Pakistan's relative advantage, as it can acquire advanced jets and missiles in much greater numbers, partially offsetting lower defence spending compared to India.

In terms of missiles, drones, and AWACS, Pakistan is close to equalling India operationally, and especially in the context of a short and swift military contest where attrition does not come into play. India has been particularly concerned about the AWACS gap with Pakistan since 2019 and has made strong efforts to offset the same. However, the gap has remained, allowing Pakistan to achieve greater situational awareness and sensor-radar separation, thereby increasing the stealth and lethality for a first strike. In this context, Pakistan has also benefited greatly from China's strategic and collusive assistance. As military analyst and China-watcher Craig Singleton described during Op Sindoor, "Beijing's long-standing support for Islamabad – through hardware, training, and now increasingly AI-enabled targeting – has quietly shifted the tactical balance." Delhi needs to pay greater attention to such subtle but important shifts for the future.

The next crisis: Higher thresholds?

Op Sindoor can be viewed as Balakot air strikes magnified exponentially. The next military conflict is likely to start with deeper and harder strikes (a higher threshold) and with both military targets seen as fair game sooner than has been the norm. India's decision to prioritise de-escalation by not targeting AD units during the airstrikes may have resulted in the loss of valuable military assets. This will influence politico-military choices during the next crisis. The latest crisis saw limited engagement in the naval and land domains. In the next confrontation, this could change, and it is more likely to occur in the ground domain (greater artillery strikes and troop movements for risk manipulation). Finally, war stamina is likely to play a greater role in the next confrontation —requiring each side to stack up stockpiles, create redundancies, and secure emergency supply arrangements from 'allies' in the interim.

Therefore, developing decisive conventional and operational superiority over Pakistan represents the most elegant solution to break these dangerous cycles of retaliation. Without operational domination, India's future military options will remain high-risk, constrained, and unable to deter Pakistan's 'misadventures' in response to India's punitive strike. With operational domination, India will have greater coercive leverage during peacetime as well as more flexible and lower-risk military options during a near-war crisis.

Given that Pakistan's procurement plans, as well as its modernisation efforts, are ongoing and rapid, India will have to offset these developments on its way toward striving for a clearer imbalance of power. Instead of denigrating and pooh-poohing the Pakistan armed forces, India's military revival would actually hinge on overestimating them, regardless of the emotional dissatisfaction involved in the thought.

Op Sindoor has demonstrated what India is capable of when pushed to the brink, and its restraint is taken for granted. But it has also demonstrated how much more is achievable in the coming years, especially in the area of increasing jointness as well as indigenisation. This, along with a higher defence budget of 2.5 per cent of GDP constitutes the pathway that converts Comprehensive National Power to overall military asymmetry, a favourable operational environment (mainly air) for power projection, and the material architecture for supporting strategic and political objectives pertaining to compellence (rather than tit for tat deterrence). In fact, this same road is certain to bolster deterrence vis-à-vis China (by reducing operational asymmetries) over the long term as well. Even as the last crisis was a close shave in terms of loss of escalation control, the future holds great promise and potential if the right lessons are learnt.

At UN, India stresses maritime, anti-terror strategy for national security

Source: Business Standard, Dt. 21 May 2025, URL: <u>https://www.business-standard.com/external-affairs-defence-security/news/at-un-india-stresses-maritime-anti-terror-strategy-for-national-security-</u> 125052100149 1.html

India told the UN Security Council that it views maritime security and countering terrorism as central to its national security and economic interests as it continues to evolve its strategy in response to new threats and geopolitical shifts in the Indo-Pacific region.

India, having a long coastline, extensive seafarer community, and capable maritime forces, is actively pursuing its role as a responsible maritime power to safeguard its interests and address emerging threats, India's Permanent Representative to the UN Ambassador Parvathaneni Harish said Tuesday.

He was addressing the UNSC high-level open debate on Maintenance of international peace and security: Strengthening Maritime Security through International Cooperation for Global Stability' presided over by Greek Prime Minister Kyriakos Mitsotakis under Greece's Presidency of the Council for the month of May.

"India views maritime security and countering terrorism as central to its national security and economic interests. Its approach balances robust defence capabilities, regional diplomacy, international cooperation and domestic infrastructure development. It continues to evolve its strategy in response to new threats and geopolitical shifts in the Indo-Pacific region, Harish said.

India underlined that maritime security is a cornerstone of economic growth as critical trade routes, energy supplies, and geopolitical interests are tied to the oceans.

Harish said that India's maritime security strategy is broad and multifaceted, addressing both traditional threats from state actors and non-traditional threats from piracy, contraband smuggling, illegal human migration, unreported and unregulated fishing, maritime incidents, hybrid threats and maritime terrorism.

He further said that India is committed to promoting a free, open and rules-based maritime order in accordance with the principles of the UN Convention on the Law of the Sea (UNCLOS).

Furthering this objective, India is undertaking capacity-building efforts to tackle contemporary security challenges and strengthen maritime combat, strategy, and governance, he said.

UN Secretary General Antonio Guterres, addressing the high-level debate, said the discussion underscores that the basic condition to preserve maritime security is the respect by all countries of the UN Charter and international law as reflected in UNCLOS.

Guterres said that over the years, the Security Council has sought to address a range of threats that undermine maritime security and global peace - from piracy, armed robbery, trafficking and organised crime to destructive acts against shipping, offshore installations and critical infrastructure and terrorism in the maritime domain. These, he said, pose significant threats to international security, global trade and economic stability.

Voicing concern that no region is spared, Guterres said the problem is getting worse. He said that after a modest global decrease in reported piracy and armed robbery incidents in 2024, the first quarter of 2025 saw a sharp upward reversal.

According to the International Maritime Organisation, reported incidents rose by nearly half, 47.5 per cent, compared to the same period in 2024.

Guterres noted that incidents in Asia nearly doubled, especially in the Straits of Malacca and Singapore.

In the Red Sea and Gulf of Aden, attacks by the Houthis on commercial vessels have disrupted global trade and increased tensions in an already volatile region. The Gulf of Aden and the Mediterranean Sea remain treacherously active routes for migrant smuggling and the trafficking of weapons and human beings.

Heroin from Afghanistan continues to reach East Africa through the Indian Ocean. Cocaine moves through the coasts of the Western Hemisphere and across the Atlantic Ocean to West Africa and European ports.

Cyber-attacks are a fast-emerging security threat for ports and shipping companies. Facing these and other threats, the world's maritime routes and the people depending on them are sending a clear SOS, Guterres said.

Harish told the Council that over the last year, in response to shipping attacks and rising incidents of piracy in the Western Arabian Sea, the Indian Navy deployed more than 35 ships in the region, carried out more than 1,000 boarding operations and has responded to over 30 incidents.

The credible and swift actions of the Indian Navy saved more than 520 lives, irrespective of the nationality of the crew, he said.

The Indian Navy safely escorted over 312 merchant vessels, carrying over 11.9 million metric tonnes of cargo, valued at more than 5.3 billion dollars, he said, adding that India also actively engages in SAR (Search and Rescue) and Humanitarian Assistance and Disaster Relief (HADR), especially in the Indian Ocean Region.

Harish recalled that the importance of maritime security was highlighted by Prime Minister Narendra Modi at the first ever open debate on the topic held during India's Presidency of the Security Council in August 2021.

He reiterated the five basic principles that indicate the holistic manner of India's approach to maritime security - removal of barriers from legitimate maritime trade; peaceful settlement of disputes as per international law; jointly addressing natural disasters and maritime threats created by non-state actors; preservation of the marine environment and resources and encouragement of responsible maritime connectivity.

India believes that States should resolve disputes in the maritime security domain through peaceful means, including by adhering to pronouncements of international institutions that are established by a rules-based framework, Harish said, adding that inclusiveness and cooperation are key principles of India's maritime approach.

Indo-Pak conflict: The nuclear bogey is here to stay

Source: The Tribune, Dt. 21 May 2025, URL: <u>https://www.tribuneindia.com/news/comment/indo-pak-conflict-the-nuclear-bogey-is-here-to-stay/</u>

LIKE Banquo's ghost in Macbeth, the spectre of nuclear weapons has hovered over India-Pakistan conflicts in recent decades. Notwithstanding disclaimers, it does so over the Operation Sindoor strikes as well.

Looking back, the risk of an actual nuclear outbreak seems to be low, almost negligible. But as the events unfolded, several pathways that could have led to that dreaded event became visible.

The urgency of addressing these pathways seems to have prompted the US to shift from its armslength posture to active diplomacy and help broker a ceasefire. The Indian proposition is that the ceasefire was reached bilaterally, but it's apparent that it was brokered by Uncle Sam, who does not tire of reminding us about it.

On May 12, speaking at the White House on the eve of his visit to Qatar, US President Trump declared, "My administration helped broker a full and immediate ceasefire, I think a permanent one, between India and Pakistan, ending a dangerous conflict of two nations with lots of nuclear weapons." The previous day, he praised the Indian and Pakistani leadership for ending the "current aggression" and said "millions of good and innocent people could have died."

Even before the crisis escalated, Pakistan had hinted at a nuclear response. Following the suspension of the Indus Waters Treaty (IWT) by India, a statement from the Pakistan Prime Minister's office said any attempt to stop or divert the waters would be considered as an act of war "and responded to with full force across the complete spectrum of national power." This reference to "complete spectrum" clearly related to nuclear weapons.

Then, as the crisis escalated, Pakistan sent more nuclear signals. On May 10, Prime Minister Shehbaz Sharif called a meeting of the National Command Authority, the top body that takes

decisions on the country's security as well as those related to nuclear weapons. This was later conveniently denied by Pakistan.

There was a lot of misinformation swirling around developments relating to nuclear weapons. One came from the landing of a Beechcraft Super King Air 350 aircraft — purportedly of the US Department of Energy — in Sargodha shortly after an Indian strike on Kirana Hills, where some Pakistani nuclear weapons are reportedly stored. It transpired later that this aircraft, which did belong to the US agency, had been bought by Pakistan in 2010 and its presence had nothing to do with anything nuclear.

India denied that it conducted a strike on Kirana Hills, a mountain range located about 15 km from the Mushaf airbase near Sargodha, which it did strike. But there is evidence of two hits near the entrance of the facilities at Kirana Hills. Let's be clear their strikes on Nur Khan base near Rawalpindi, Malir near Karachi and on Kirana Hills was clear messaging since these facilities are host or adjacent to facilities relating to nuclear weapons.

This became explicit on May 12 when Prime Minister Narendra Modi, in his address to the nation, declared that "India will not tolerate nuclear blackmail. India will strike precisely and decisively at the terrorist hideouts developing under the cover of nuclear blackmail."

This is a new doctrinal assertion, since in the past 40 years in which India has suffered from crossborder terrorism, it was the nuclear factor that had stayed the Indian hand. On May 13, in his official briefing, Ministry of External Affairs spokesperson Randhir Jaiswal rejected Trump's account of the ceasefire and also insisted that "the military action was entirely in the conventional domain."

India has a nuclear doctrine, which says that its nuclear weapons are only for retaliation against a nuclear, chemical or biological weapon attack on India or Indian forces anywhere. Pakistan does not have an enunciated doctrine, but it has asserted at various times that India is the target of its weapons, which will be used if it suffered major territorial loss, destruction of key military assets or economic strangulation.

It would be foolhardy to ignore the prospect of a nuclear war even if there is a self-conscious effort to keep it in the conventional domain. These dangers have been evident in the recent Indian strikes on Pakistani Air Force (PAF) facilities. The Op Sindoor strikes were limited — they initially struck at terrorist facilities, and hit Pakistani military facilities only after the PAF launched attacks on Indian aircraft over Indian territory. All this was limited to the 48 or so hours of the main conflict.

In an actual war, even one that lasts two or three weeks, the bombing would be much more intense. This is where problems can occur. As of now, India keeps its nuclear weapons de-mated — the weapon and the fissile core separate — so as to promote nuclear safety and political oversight. But in the case of Pakistan, where the military runs the show, both the weapons and cores are mated and held by the Army.

The big danger in an all-out war, even if India intends to keep it entirely conventional, is that it may inadvertently end up hitting a large number of nuclear weapons storage sites using weapons like the SCALP (Storm Shadow), Crystal Maze and Paveway-type bombs that can penetrate fortified bunkers. Without intending to do so, it may degrade the Pakistani nuclear arsenal to the

point where the country is confronted with a "use it or lose it" dilemma. In this event, it may find itself being compelled to escalate things to the use of nuclear weapons.

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ड्रोन तकनीक में महारथ हासिल, ऑपरेशन सिंदूर में दुनिया ने देखी भारत की ताकत

Source: NavBharat Times, Dt. 20 May 2025, URL: <u>https://navbharattimes.indiatimes.com/india/operation-sindoor-indian-army-masters-drone-and-anti-drone-technology-prepares-indigenous-counter-drone-system-for-tanks/articleshow/121296304.cms</u>

ऑपरेशन सिंदूर में जिस तरह ड्रोन और काउंटर ड्रोन का इस्तेमाल हुआ उसमें भारतीय सेना ने यह भी दिखा दिया कि तेजी से सेना ने नई तकनीक को सिर्फ शामिल ही नहीं किया है बल्कि उसमें महारथ भी हासिल की है। सेना के पास स्वदेशी अटैक ड्रोन से लेकर स्वॉर्म ड्रोन तक है।भारतीय सेना में पिछले तीन से चार सालों में कई अलग अलग तरह के ड्रोन शामिल हुए हैं। इसमें FPV ड्रोन, सर्विलांस कॉप्टर, नैनो ड्रोन, मिनी यूएवी, रिमोटली पायलेटेड एरियल वीइकल, टीथर्ड ड्रोन, लॉजिस्टिक ड्रोन, स्वॉर्म ड्रोन भी शामिल हैं।

FPV ड्रोन का मतलब है फर्स्ट पर्सन व्यू ड्रोन। सेना के एक अधिकारी ने कहा कि जब भी कोई विशेष उपकरण सेना में इंडक्ट किया जाता है तो उसकी ट्रेनिंग ओईएम (मूल उपकरण निर्माता) देता है। इसके साथ ही संबंधित ट्रेनिंग स्कूल और फील्ड फॉर्मेशन में भी ट्रेनिंग के कार्यक्रम किए जा रहे हैं। जहां भी अप्लाई होता है वहां सभी संबंधित कोर्स के सैलेबस में ड्रोन ट्रेनिंग से जुड़े पहलुओं को शामिल किया गया है। साथ ही जरूरत के मुताबिक जरूरी बदलाव किए गए हैं। सभी तरह के ड्रोन की ट्रेनिंग सही से हो सके इसलिए सभी ट्रेनिंग इंस्टिट्यूशंस में पर्याप्त संख्या में ड्रोन भी उपलब्ध कराए गए हैं।

इसके साथ ही भारतीय सेना को अपने टैंकों को ड्रोन अटैक से बचाने के लिए प्लेटफॉर्म आधारित काउंटर ड्रोन सिस्टम लेने पर भी आगे बढ़ रही है। जिसके लिए सेना ने सभी स्वदेशी कंपनियों और पीएसयू से जानकारी मांगी है। सेना अपने टैंकों के लिए इन काउंटर ड्रोन सिस्टम को मेक इन इंडिया के तहत लेना चाहती है। सेना को अपने T-90 और T-72 टैंकों के लिए इस तरह के करीब 75 प्लेटफ़ॉर्म आधारित काउंटर ड्रोन सिस्टम की जरूरत है। टैंक में आर्मर प्रोटेक्शन बढ़ाकर उसकी सुरक्षा बढ़ाने का ज्यादा स्कोप नहीं है क्योंकि उससे उसकी गतिशीलता और घातकता भी प्रभावित होती है। इसलिए टैंकों को प्लेटफ़ॉर्म आधारित एंटी ड्रोन सिस्टम से लैस करना जरूरी है।

सेना ने अपनी जरूरत बताते हुए कहा कि टैंकों के लिए ऐसा सिस्टम हो जिसमें ड्रोन को पहचाने की एक्टिव और पेसिव क्षमता हो। सिस्टम सभी तरह के ड्रोन जैसे फर्स्ट पर्सन व्यू (FPV) ड्रोन, स्वार्म ड्रोन, लॉएटरिंग UAV और कामिकाज़े ड्रोन की पहचान कर सके। साथ ही सॉफ्ट किल और हार्ड किल का सिस्टम हो। यह सिस्टम इस तरह का हो कि और 1–72 टैंकों में इस तरह इंटीग्रेट किया जा सके, जिससे टैंकों की युद्धक क्षमता पर कोई गलत असर ना पड़े।

Science & Technology News

Neurotrophin peptidomimetic drugs offer promise for treating neurodegenerative disorders

Source: Press Information Bureau, Dt. 20 May 2025, URL: <u>https://www.pib.gov.in/PressReleasePage.aspx?PRID=2129956</u>

Peptidomimetic drugs – or synthetic molecules that mimic the structure of natural proteins can be repurposed to provide an effective therapeutic strategy to treat neurodegenerative diseases (NDs) by promoting neuronal growth and survival.

Neurodegenerative diseases (NDs) have been a major global health challenge. While neurotrophins, proteins crucial for neuronal survival and function, have shown promise as potential treatments, their instability and rapid degradation have hindered their therapeutic application.

Neurotrophin peptidomimetics are developed to target specific biological functions and can be valuable tools in drug discovery, especially when natural peptides have limitations like poor oral bioavailability or susceptibility to degradation.



Fig: This illustration highlights that neurotrophin peptidomimetics address key limitations of endogenous neurotrophins, offering enhanced stability, improved brain permeability, and lower immunogenicity, making them promising candidates for treating neurodegenerative diseases.

One of the significant advantages of peptidomimetics is their improved stability and bioavailability compared to endogenous neurotrophins. This means they can be delivered more effectively to the brain and maintain their therapeutic activity for a longer duration. Additionally, peptidomimetics can be designed to be more specific to their target receptors, reducing the risk of side effects.

A team of scientists at the Indian Association for the Cultivation of Science (IASST), an autonomous institute of the Department of Science and Technology (DST), has been exploring

peptidomimetics, synthetic compounds designed to mimic neurotrophins, as a potential solution to these limitations.

Led by Prof. Ashis K. Mukherjee, the IASST researchers have conducted extensive studies on neurotrophin peptidomimetics. Their research, published in the Journal *Drug Discovery Today* focused on understanding the signaling pathways involved in neuronal growth and survival, the potential pharmacological targets of peptidomimetics, and their therapeutic applications for NDs.

The researchers have highlighted the potential of peptidomimetics to treat NDs by promoting neuronal growth and survival. They have also explored the possibility of repurposing existing peptidomimetic drugs for other diseases, such as cancer, and the potential for developing new drug prototypes based on neurotrophins mimetics.

As research progresses, the hope is that peptidomimetics could become a key therapeutic strategy, offering new hope for managing and treating neurodegenerative disorders for future generations.

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ISRO-NASA to conduct outreach activities as part of Axiom-4 mission

Source: The Hindu, Dt. 20 May 2025,

URL: <u>https://www.thehindu.com/news/national/karnataka/isro-nasa-to-conduct-outreach-activities-as-part-of-axiom-4-mission/article69598940.ece</u>

The Indian Space Research Organisation (ISRO) and National Aeronautics and Space Administration (NASA) will conduct two outreach activities as part of Indian astronaut Group Captain Shubhanshu Shukla's Axiom-4 mission (Ax-4) to the International Space Station (ISS) which is scheduled to be launched on June 8, 2025 from NASA's Kennedy Space Center in Florida.

Dana Weigel, manager, International Space Station Program, NASA in virtual mission overview press conference for the upcoming Ax-4 said, "As part of this mission NASA is partnering with the ISRO to host a joint public downlink event to showcase the strength of the international collaboration and our show of commitment to expanding access to space NASA and ISRO will also conduct five joint science investigation in addition to two outreach activities."

Student events

Further elaborating on the outreach activities Sudeesh Balan, project director, ISRO said that the space agency is planning two student events in which the astronaut would be interacting directly with the student community.

"One activity is a student event where the astronaut would be interacting directly with the student community... We are planning two such events across the country. Apart from that there is an amateur radio link which is an existing tradition in the ISS. There will be an amateur radio contact with the student community... we have identified the students and these activities are currently in progress. We have located two places in India where this will be happening," he said.

ISRO has already shortlisted seven microgravity research experiments proposed by Indian Principal Investigators (PIs) from various national R&D laboratories and academic institutions for implementation on the ISS. In addition to this ISRO and NASA will be conducting five more experiments which will mainly be on human research programmes which Group Captain Shukla will be participating in.

Crew members

Apart from Group Captain Shukla who is the pilot of the Ax-4 mission the other four crew members are Commander Peggy Whitson of the U.S., Mission Specialist Sławosz Uznański-Wiśniewski of Poland, and Mission Specialist Tibor Kapu of Hungary. A SpaceX Falcon 9 rocket will launch the Ax-4 crew aboard a Dragon spacecraft to the International Space Station from Launch Complex 39A at NASA's Kennedy Space Center in Florida.

Sarah Walker, director, Dragon Mission Management, SpaceX, said that the teams are currently carrying Dragons final integration campaign. "We expect to transport the Dragon to our hangar next week to be integrated with the rocket for launch," she said. Ms. Weigel added that on May 21 the station programme will hold the flight readiness review for this mission.

M.R. Srinivasan, nuclear scientist and former Atomic Energy Commission Chairman, passes away

Source: The Hindu,Dt. 20 May 2025,URL: https://www.thehindu.com/news/national/tamil-nadu/former-atomic-energy-commission-chairman-mr-srinivasan-passes-away/article69596104.ece

M.R. Srinivasan, the former Chairman of the Atomic Energy Commission and Secretary of the Department of Atomic Energy, passed away in Udhagamandalam on Tuesday (May 20, 2025). He was 95-years-old.



Srinivasan joined the Department of Atomic Energy (DAE) in September 1955 and began his distinguished career working alongside Dr. Homi Bhabha on the construction of India's first nuclear research reactor, Apsara, which achieved criticality in August 1956.

In August 1959, he was appointed Principal Project Engineer for the construction of India's first atomic power station. His leadership continued to shape the nation's nuclear program when, in 1967, he took charge as Chief Project Engineer of the Madras Atomic Power Station.

Srinivasan held several key positions of national importance. In 1974, he became Director of the Power Projects Engineering Division, DAE, and in 1984, Chairman of the Nuclear Power Board. In these roles, he oversaw the planning, execution, and operation of all nuclear power projects across the country.

In 1987, he was appointed Chairman of the Atomic Energy Commission and Secretary of the Department of Atomic Energy. That same year, he became the Founder-Chairman of the Nuclear Power Corporation of India Limited (NPCIL). Under his leadership, 18 nuclear power units were developed — seven of which were operational, seven under construction, and four in the planning stage.

His contributions to India's nuclear energy landscape will be remembered for generations to come, his daughter, Sharada Srinivasan said in a statement released by the family. In recognition of his contributions to India's nuclear energy program, Srinivasan was awarded the Padma Vibhushan, one of the nation's highest civilian honours.

Prof Jayant Narlikar, astrophysicist who proposed an alternative to Big Bang theory, passes away at 86

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Source: The Indian Express, Dt. 20 May 2025, URL: <u>https://indianexpress.com/article/cities/pune/prof-jayant-narlikar-astrophysicist-pune-passes-away-10017032/</u>

Eminent astrophysicist Prof Jayant Narlikar, one of India's best known scientists, passed away in his sleep on Tuesday. He would have turned 87 this July. He is survived by three daughters.

The veteran astrophysicist was the founder-director of the Inter University Centre for Astronomy and Astrophysics (IUCAA) in Pune and is known for his seminal works in the areas of cosmology and most importantly, for believing in an alternate model to the popular Big Bang theory for the origin of the universe. He was also a well-known science communicator.

Narlikar was an alumnus of Cambridge University, Banaras Hindu University and has worked at the Tata Institute of Fundamental Research.

According to close associates of Prof Narlikar, the scientist had undergone a surgery for a hip fracture at a city hospital a fortnight ago. He was recovering at home. Doctors said that he passed away peacefully at his residence.

Prof R Srianand Director of IUCAA told The Indian Express that it was an unimaginable loss. "He has been an inspiration and father of Indian cosmology. Till the last minute, Prof Narlikar was thinking of various aspects of science and science popularisation and would always say that research institutes had a great responsibility in spreading awareness about science," Srianand said.



Prof Jayant Narlikar seated next to his wife Mangala Narlikar who passed away in July 2023. He was the founder-director of the Inter University Centre for Astronomy and Astrophysics (IUCAA) in Pune

Born on July 19, 1938 in Kolhapur, Maharashtra, Prof Narlikar received his early education in the campus of Banaras Hindu University (BHU), where his father Vishnu Vasudeva Narlikar was Professor and Head of the Mathematics Department. His mother Sumati Narlikar was a Sanskrit scholar. After a brilliant career in school and college, Narlikar got his B.Sc. degree at BHU in 1957. He went to Cambridge for higher studies, becoming a Wrangler and Tyson Medallist in the Mathematical Tripos.

He got his Cambridge degrees in mathematics: B.A.(1960), Ph.D. (1963), M.A. (1964) and Sc.D. (1976), but specialized in astronomy and astrophysics. He distinguished himself at Cambridge with the Smith's Prize in 1962 and the Adams Prize in 1967. He later stayed on at Cambridge till 1972, as Fellow of King's College (1963-72) and Founder Staff Member of the Institute of Theoretical Astronomy (1966-72).

During this period he laid the foundations of his research work in cosmology and astrophysics in collaboration with his mentor Fred Hoyle. Narlikar returned to India to join the Tata Institute of Fundamental Research (1972-1989) where under his charge the Theoretical Astrophysics Group expanded and acquired international standing.

In 1988 the University Grants Commission invited him to set up the proposed Inter-University Centre for Astronomy and Astrophysics (IUCAA) as its Founder Director. He held the Directorship of IUCAA until his retirement in 2003. Under his direction IUCAA has acquired a world-wide reputation as a centre for excellence in teaching and research in astronomy and astrophysics. He

was Emeritus Professor at IUCAA. In 2012 the Third World Academy of Sciences awarded him their prize for setting up a centre for excellence in science.

In 1966, Narlikar married Mangala Rajwade. She is a Ph.D. in mathematics. They have three daughters, Geeta, Girija and Leelavati, all of whom have opted for research careers in science. Narlikar is internationally known for his work in cosmology, for championing models alternative to the popularly believed big bang model.

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