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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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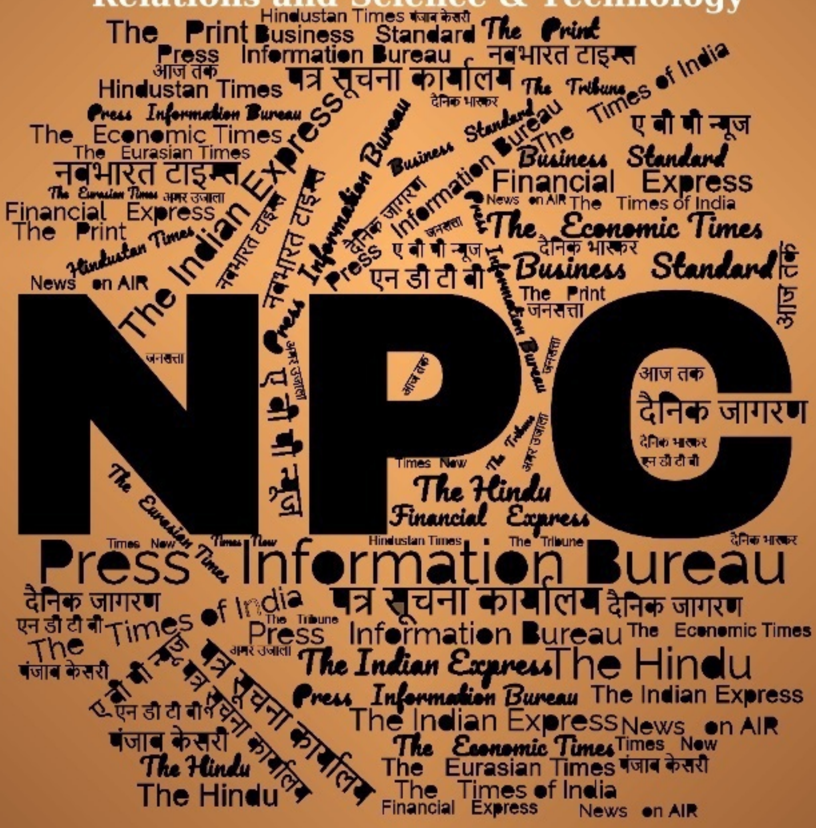

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DRDO News

DRDO carries out successful flight trials of VSHORADS missile systems

Source: The Pioneer, Dt. 28 Feb 2026

PRESS TRUST OF INDIA ■ New Delhi

The defence ministry on Friday said three flight-trials of a very short-range air defence missile system were conducted successfully from Chandipur off the coast of Odisha.

It said the trials were carried out to "revalidate" the capability of the VSHORADS (Very Short-Range Air Defence System) missile system in neutralising high-speed threats flying at varying speed, range, and altitude.

The VSHORADS is a man-portable air defence system designed and developed indigenously by Research Centre Imarat (RCI) in collaboration with other DRDO (Defence Research & Development Organisation) laboratories and Indian industry partners.

"During all the flight-tests, the missiles intercepted and destroyed the high-speed aerial targets mimicking enemy aircraft in various threat scenarios meeting all extreme engagement points," the ministry said in a statement.

"The tests were carried out in final deployment configuration, where target acquisition and missile firing were carried out by field operators," it said.

Defence Minister Rajnath Singh congratulated the DRDO, armed forces and the industries for the successful flight-tests of the missile system. The three consecutive flight trials of VSHORADS are a great success, and the system can soon be inducted into armed forces, he said.

"The flight data captured by various range instruments like telemetry, electro-optical tracking system and radars deployed by Integrated Test Range, Chandipur, validated the effectiveness of VSHORADS against a wide range of aerial threats," the ministry said.

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Defence News

IAF showcases combat prowess, gives peek into Operation Sindoor missions at Exercise Vayu Shakti

Source: The Indian Express, Dt. 28 Feb 2026

The Indian Air Force demonstrated its combat prowess and firepower capabilities, and presented glimpses of missions undertaken during Operation Sindoor through simulated strikes at the Pokharan Field Firing Range under Exercise 'Vayu Shakti' in the presence of President Droupadi Murmu on Friday.

The day-dusk-night demonstration, held in the Thar desert of western Rajasthan near the India-Pakistan border, was also attended by Defence Minister Rajnath Singh, Rajasthan Governor Haribhau Bagade and Union Minister Gajendra Singh Shekhawat, among other dignitaries. IAF chief, Air Chief Marshal A P Singh, senior officials of the force and others were also present.

A presentation on Operation Sindoor was made at the beginning of the exercise, followed by a detailed display of day target layouts spread across a three-kilometre area. The simulated targets included an enemy runway, a petroleum storage facility, bunkers, radar sites, tank and armoured convoys, a communication centre, a terror camp, ammunition storage, a hangar and a command-and-control centre.

Fighter jets and attack helicopters carried out synchronised operations, displaying strategy formulation, target identification and calibrated destruction. The IAF showcased a calibrated response for controlled escalation and precision strikes as part of the simulated mission. Jaguar and Mirage fighter aircraft struck designated targets simultaneously, replicating coordinated attack patterns demonstrated during Operation Sindoor.

IAF Rapid deployment of fighters was displayed, and a simulated airborne target was successfully engaged and destroyed.

A Sukhoi fighter aircraft carried out a strike on a simulated terror camp, while suppression and destruction of enemy air defence systems were demonstrated to neutralise hostile capabilities. The demonstration also featured decoy operations and loitering missions akin to those undertaken during Operation Sindoor. A radar cluster was neutralised in a simulated strike to “blind” enemy surveillance systems. Rapid deployment of fighters was displayed, and a simulated airborne target was successfully engaged and destroyed. The indigenously developed HAL Light Combat Helicopter Prachand demonstrated its agility by striking a simulated refuelling point. Apache attack helicopters, Mirage fighter jets and Mi-17 V5 helicopters also participated in the coordinated operations, underlining the IAF’s multi-platform integration capability. Howitzer guns were deployed by Chinook helicopters in operational locations.

After a brief break, during which a live demonstration of a firefighting robotic vehicle and a musical performance were held, the event transitioned into the night phase. A briefing was given on the night targets, including tank clusters, bunker clusters and logistics clusters, which were destroyed by Su-30 and Jaguar fighter aircraft as well as Advanced Light Helicopter Rudra. The night operations began with precision strikes on the designated simulated targets. Integrated combat capabilities were displayed as fighters and helicopters carried out coordinated missions in low-visibility conditions.

An AKASH surface-to-air missile was also fired as part of the demonstration. A simulated hostage rescue operation was conducted by Garud commandos and 10 PARA (SF) personnel. The commandos slithered down from a Mi-17 helicopter onto a makeshift building, positioned themselves on all four sides to assess the situation, and then entered the structure to neutralise threats and rescue hostages.

A mobile field hospital, ‘Bhishm’ was deployed to treat simulated casualties, highlighting the IAF’s role in humanitarian assistance and disaster relief. Transport aircraft C-130J executed an assault landing for the evacuation of casualties, and air-landed operations were demonstrated. Reinforcement operations were also carried out with additional forces inducted into the combat zone through C-295 transport aircraft to support troops engaged in the simulated battle scenario.

The demonstration culminated in a spectacular drone show. Illuminated drones formed various shapes, including the map of India, the SU-30 fighter, the S-400 system, locations of terror camps destroyed in Operation Sindoor, the Parliament of India and the IAF crest, in the night sky. Earlier in the day, President Murmu, clad in an olive green uniform and helmet, undertook a 25-minute sortie as a co-pilot in the indigenously developed Light Combat Helicopter ‘Prachand’ from the Jaisalmer Air Force Station.

The helicopter flew over the Pokharan firing range ahead of the evening demonstration. Before take-off, she was briefed by the captain and waved from the cockpit. From the cockpit, the President, who is the Supreme Commander of the Indian Armed Forces, described the Prachand helicopter as “a powerful symbol of self-reliance” and extended her heartfelt greetings and gratitude to the armed forces personnel. “I extend my heartfelt greetings and deepest gratitude to our brave soldiers. A warm salute to you, Jai Hind, Jai Bharat,” she said. The ‘Vayu Shakti’ demonstration was aimed at showcasing the IAF’s operational preparedness, precision strike capability and ability to undertake multi-domain operations in a near-realistic combat scenario.

https://indianexpress.com/article/india/iaf-showcases-combat-peek-operation-sindoor-missions-exercise-vayu-shakti-10556321/

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IAF's new C-295 transport aircraft makes debut at Vayu Shakti Exercise

Source: The Times of India, Dt. 01 Mar 2026

India's new airlifter, the C-295 tactical transport aircraft, made its debut at the IAF's 'Vayu Shakti-2026' exercise at the Pokharan field firing range, performing specialised assault landings and showcasing its medium-lift capabilities alongside the US-made C-130J Super Hercules and C-17 Globemaster.

For the first time, a C-295 aircraft, which is capable of carrying up to 71 troops or 50 paratroopers, performed a night assault landing drill, demonstrating its capability to land on temporary or unpaved runways in complete darkness.

India is indigenously manufacturing 40 Airbus C-295 aircraft, the next-generation tactical airlifter, at a Tata aircraft complex in Vadodara following the import of 16 planes from the Airbus facility, with the first 'Made in India' unit scheduled to roll out by Sept this year. IAF decided to acquire 56 C-295s in a Rs 21,935 crore deal with Airbus Defence and Space signed in Sept 2021.

The C-295 aircraft, with a payload of 9.25-tonne and 11-hour endurance, will replace the IAF's aging Avro-748 fleet, offering modern, versatile tactical airlift capabilities for troops, cargo and medical evacuation. Along with other transport platforms, the C-295 highlighted Vayu Shakti IAF's logistical reach and ability to execute rapid troop deployment and short-runway operations.

The Vayu Shakti drill, witnessed by President Droupadi Murmu, defence minister Rajnath Singh, IAF chief Air Chief Marshal A P Singh and other senior IAF officials, featured over 130 aircraft, including Rafale and Su-30MKI, and also showcased indigenous defence platforms along the border with Pakistan. It demonstrated IAF's ability to operate in a networked environment and the firepower and accuracy of its air and surface-based weapon systems and special forces. The simulated targets included an enemy runway, a petroleum storage facility, bunkers, radar sites, tank and armoured convoys, a communication centre, a terror camp, ammunition storage dump, a hangar and a command-and-control centre.

"This time in Vayu Shakti 2026, we offered a small glimpse of the Air Force's motto, which now is 'Achook, Abhedya, aur Sateek' (Unerring, Impenetrable, and Precise). And through this, we demonstrated how we executed Operation Sindoor. How, after a trigger event — the Pahalgam attack in which our civilians were killed — we took action, dominated the escalation ladder and forced the enemy to come to the negotiating table through our actions and precise targeting," Wing Commander and IAF PRO Jaideep Singh said.

Hours before the exercise, IAF released a video showcasing for the first time the Sudarshan S-400 long-range air defence missile system in operational deployment, offering a rare glimpse into one of India's most advanced and closely guarded military assets that played a key role in Operation Sindoor. It posted the video with a caption referencing the historic achievement of hitting a target about 314 km deep inside Pakistan territory last May. The overlaid text in the IAF video read: "Longest-ever kill recorded in military history" and "Enemy may be out of sight but never out of reach."

https://timesofindia.indiatimes.com/defence/news/iafs-new-c-295-transport-aircraft-makes-debut-at-vayu-shakti-exercise/articleshow/128903577.cms

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President Murmu undertakes sortie in indigenous combat chopper

Source: The Hindu, Dt. 28 Feb 2026

President Droupadi Murmu on Friday (February 27, 2026) undertook a sortie in the indigenously developed Light Combat Helicopter (LCH) Prachand at Air Force Station Jaisalmer in Rajasthan. The mission was flown as a two-aircraft LCH formation. The President flew in the lead aircraft with Group Captain Nayan Shantilal Bahua, while Chief of the Air Staff Air Chief Marshal A.P. Singh flew as Number 2 in the second aircraft along with Group Captain A. Mahendra.

During the approximately 25-minute sortie, the formation flew over Gadisar Lake and Jaisalmer Fort and carried out an attack on a designated tank target, demonstrating the operational capabilities of the indigenous combat helicopter. In a note written in the visitors' book, Ms. Murmu described the experience as enriching and said the sortie had filled her with a renewed sense of pride in the nation's defence capabilities. She congratulated the Indian Air Force and the entire team at Air Force Station Jaisalmer for successfully organising the mission. The sortie coincided with Vayu Shakti 2026, during which the Indian Air Force showcased its precision-targeting capabilities at the Pokhran Range. The exercise featured calibrated precision strikes in a realistic operational scenario, reinforcing deterrence through integrated command and control structures.

The demonstration highlighted the IAF's formidable firepower, operational readiness, and commitment to safeguarding national interests. The President had previously undertaken sorties in the Sukhoi Su-30MKI in 2023, and in the Dassault Rafale in 2025, reflecting her continued

engagement with India's frontline air combat assets. She was scheduled to witness the full-scale Vayu Shakti exercise later in the evening at Jaisalmer.

At the Pokhran field firing ranges, the Indian Air Force conducted a high-intensity day-night exercise that began with the national song and anthem and a ceremonial flypast by Chetak helicopters carrying the national flag, the Air Force ensign and the Operation Sindoor flag. A precisely timed sonic boom by a Rafale fighter set the tone for combat operations.

More than 130 aircraft participated, including the Rafale, Su-30 MKI, Mirage-2000, MiG-29, Jaguar, Hawk, Mi-17, C-130J, C-295, C-17, ALH Dhruv, and LCH Prachand. Fighter jets carried out precision strikes on simulated targets using advanced air-to-ground munitions, highlighting long-range strike capability and accuracy.

Air defence drills featured Akash and Spyder missile systems alongside Army assets, demonstrating jointmanship. Garud and Para SF troops conducted urban intervention and hostage rescue simulations. The night phase showcased integrated air defence, air-landed operations and precision night strikes, concluding with a C-17 flypast and drone display.

https://www.thehindu.com/news/national/president-murmu-flies-sortie-in-lch-prachand-near-india-pakistan-border-in-jaisalmer/article70682778.ece

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Indian Army's tenth Chiefs' Conclave commences in New Delhi

Source: Press Information Bureau, Dt. 27 Feb 2026

The Tenth Chiefs' Conclave commenced in New Delhi today. The event is being conducted from 27 to 28 February 2026. The Conclave is being attended by former Chiefs of the Army Staff and Honorary Generals of the Indian Army from the Nepali Army.

The participation of Honorary Generals from Nepal reflects a globally unique and landmark military tradition, symbolising the exceptional and enduring India-Nepal military relationship based on mutual trust, shared values and a common martial heritage. This distinctive arrangement

resonates with India's civilisational ethos of "Vishwabandhu" and principle of “Neighbourhood First”, underscoring India's commitment to strong, people-centric ties with its immediate neighbours.

The Conclave provides an important institutional platform for professional interaction between the present hierarchy and former Chiefs, reinforcing continuity and collective wisdom across generations. The programme commenced with a wreath laying ceremony at the National War Memorial, followed by interactions on key issues relating to operational preparedness, capability development and contemporary security challenges. The former Chiefs will also visit select Army establishments and cultural landmarks as part of the scheduled engagements. The Chiefs' Conclave reaffirms the Indian Army's commitment to preserving institutional memory, strengthening professional dialogue and reinforcing the enduring spirit.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2233533&reg=3&lang=1

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Navy boosts anti-submarine capabilities with INS Anjadip

Source: The Hindu, Dt. 28 Feb 2026

The Hindu Bureau
CHENNAI

In a move to sharpen its anti-submarine warfare capabilities, the Indian Navy on Friday commissioned its fourth indigenously designed and built anti-submarine warfare shallow water craft *INS Anjadip* at the Chennai Port.

It was commissioned by the Chief of the Naval Staff, Admiral Dinesh K. Tripathi. Senior naval officials were present.

The vessel, which is 77 metres long, has been designed to detect, track, and neutralise enemy submarines in coastal waters.

It has been named ‘Anjadip’ to carry forward the valour of the historic island off the coast of Karwar.

The ship is equipped with indigenous anti-submarine warfare weapons and sensor package.

INS Anjadip being commissioned by Admiral Dinesh K. Tripathi at the Chennai Port on Friday. B. VELANKANNI RAJ

The *INS Anjadip* was constructed at Kattupalli by Garden Reach Shipbuilders & Engineers, Kolkata, and will mainly address the challenges of the littoral combat environment.

“*Anjadip* is equipped with modern shallow-water sonars, lightweight torpedoes, anti-submarine rockets, and combat management system. It is engineered for agility, precision and combat effectiveness,” Admiral Tripathi said at the commissioning ceremony. “The ship and her systems distinctly reflect the growing strength of India’s indigenous design and industrial ecosystem. Aatmanirbharta, today, is moving beyond Make in India to Trust in India,” he added.

It is equipped to undertake coastal surveillance, low-intensity maritime operations, and search and rescue operations.

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Secretary (Defence Production) holds key meetings with senior Italian defence officials in Rome

Source: Press Information Bureau, Dt. 27 Feb 2026

Secretary (Defence Production) Shri Sanjeev Kumar called on Italy's Under Secretary of State for Defence Mr Matteo Perego di Cremnago and held meetings with National Armaments Director Admiral Giacinto Ottaviani and Chief of Italian Defence Forces General Luciano Portolano during his visit to Rome on February 26 & 27, 2026. During the meeting with Italy's Under Secretary of State for Defence, both nations reaffirmed their shared commitment to facilitate industry partnerships to build respective resilient defence supply chains.

During the meetings with the National Armaments Director and the Chief of Italian Defence Forces, the two sides identified defence cooperation as a key pillar of the bilateral strategic partnership and concurred on the importance of augmenting industrial cooperation by building synergies and linkages between the defence industrial ecosystems.

The Secretary (Defence Production) and the National Armaments Director also delivered keynote addresses at the India-Italy Defence Industry Seminar, which provided a forward-looking agenda for partnership. Shri Sanjeev Kumar highlighted the policy frameworks for defence procurements, FDI norms and the defence industrial corridors in India.

Both sides noted that the India-EU Security and Defence Partnership signed in January 2026 provides new avenues for participation of Indian defence companies in the defence supply chains of the EU. Indian and Italian defence industries had focused B2B meetings to explore joint ventures, technology partnerships and co-manufacturing initiatives. The industry seminar also strengthened institutional cooperation between SIDM and AIAD, building on their MoU signed in April 2025 in Rome.

A networking reception, hosted by the Embassy provided an opportunity for continuing the dialogue among government officials, industry leaders and stakeholders. The Secretary (Defence Production) was accompanied by an industry delegation under the aegis of the Society of Indian

Defence Manufacturers, which included key stakeholders from the Indian Defence Public Sector Undertakings, private sector, SMEs, and start-ups.

The delegation also visited leading Italian defence companies as part of the visit. The discussions focused on opportunities for joint ventures, co-development and co-production leveraging the synergies between the respective defence ecosystems. The visit reflects the deepening of India and Italy defence cooperation and India's commitment to build trusted partnerships in defence manufacturing, in line with the vision of Aatmanirbhar Bharat.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2233581&reg=3&lang=1

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INSV Kaundinya to be flagged into Mumbai Harbour

Source: Press Information Bureau, Dt. 01 Mar 2026

The Indian Naval Sailing Vessel (INSV) Kaundinya will be ceremonially flagged into Mumbai Harbour on 02 Mar 2026 by Shri Sanjay Seth, Raksha Rajya Mantri. The flag-in ceremony marks the successful completion of the vessel's maiden overseas voyage to the Sultanate of Oman and her historic return passage across the Arabian Sea, reaffirming India's enduring maritime heritage and India–Oman linkages across the Indian Ocean.

INSV Kaundinya is a traditionally constructed stitched ship, built entirely using ancient Indian techniques in which wooden planks are hand-stitched together using coir rope and sealed with natural resins. The vessel represents a revival of India's centuries-old maritime craftsmanship and reflects the nation's commitment to rediscovering and preserving its Indic knowledge systems. Conceptualised from a 5th century CE depiction in the Ajanta Caves and constructed under the supervision of the Indian Navy in collaboration with traditional artisans, the vessel embodies the fusion of traditional craftsmanship with modern naval engineering validation.

INSV Kaundinya sailed from Porbandar on 29 Dec 2025 for Muscat, retracing ancient maritime routes once used by Indian mariners. She arrived at Port Sultan Qaboos on 14 Jan 2026, where

she received a ceremonial welcome in the presence of Omani dignitaries and members of the Indian diaspora. During her stay, the vessel was opened to visitors, serving as a floating symbol of maritime heritage and cultural diplomacy. The voyage significantly strengthened India–Oman linkages, rooted in millennia of trade in spices, textiles and frankincense, and reinforced shared seafaring traditions across the Arabian Sea.

The expedition highlighted the Indian Navy's role not only as a maritime security provider but also as a custodian of India's civilisational maritime legacy. Named after the legendary mariner Kaundinya, the vessel symbolises India's ancient tradition of oceanic navigation and outreach across the Indian Ocean. Her successful voyage stands as a testament to the resilience of traditional maritime construction practices and the professionalism of her crew. The flag-in at Mumbai will mark the culmination of a landmark maritime heritage revival project and underscore India's continuing commitment to maritime outreach, cultural diplomacy and the preservation of traditional nautical craftsmanship.

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INS Tarangini arrives at Trincomalee, Sri Lanka

Source: Press Information Bureau, Dt. 01 Mar 2026

Indian Navy's Sail Training Ship INS Tarangini arrived at Trincomalee Harbour, Sri Lanka on a training visit on 27 Feb 2026. The ship was accorded a warm welcome by representatives of the Eastern Naval Area of the Sri Lanka Navy. The visit follows the ship's recent participation in the International Fleet Review 2026 conducted at Visakhapatnam.

During the port call, Commanding Officer of Tarangini called on Cmde Haritha Jayadewathe, Deputy Commander of the Eastern Naval Area and held discussions on avenues of cooperation in sail training. The ship hosted Sri Lankan defence personnel, families, and trainee officers for a familiarisation tour onboard. Community engagement activities and training exchanges are planned during the ship's port call.

Selected trainee officers from the Sri Lankan Naval and Maritime Academy will embark on Tarangini for a passage to Colombo. During the passage, the trainees will be exposed to various

facets of sail training. The visit of INS Tarangini underscores longstanding maritime ties and growing cooperation between the Indian Navy and the Sri Lanka Navy.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2234119&reg=3&lang=1

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India not bound to help US with logistics, surveillance

Source: The Tribune, Dt. 02 Mar 2026

Separate agreements between India and the US on sharing military logistics and on using encrypted communication, do not automatically 'repose' anything on India to join the ongoing conflict in West Asia, or help the US with logistics or surveillance.New Delhi, on its part does not want to be seen taking sides, in the conflict between its civilisational partner Iran and its strategic partners Israel and the US.

In 2016, India and the US inked the Logistics Exchange Memorandum of Agreement (LEMOA), facilitating a pact enabling reciprocal, case-by-case logistical support (refuelling, supplies and repair) between India and the US, strictly for agreed-upon activities like exercises and port calls.

However, it does not mean anything is automatic and does not obligate access, requiring mutual consent for each instance, preserving strategic autonomy. The LEMOA is not an automatic, binding agreement to provide support and it does not lock India into a military alliance or force compliance with the US' military operations.

The two nations also signed the India-US Communications Compatibility and Security Agreement (COMCASA) in 2018. It facilitates the transfer of high-end, encrypted communication equipment from the US to India. It too is not automatic; and does not mandate, oblige or guarantee immediate supply of technology or logistical support. COMCASA allows the Indian forces to use secure, encrypted data links and communication systems on the US-supplied platforms.

According to the sources, the agreements between India and the US don't kick in automatically and a request, if any, is handled on a case-to-case basis. They added that India has not received any such request from the US seeking New Delhi's help with the logistics so far. The agreements don't mean a US plane can land here and seek refuelling or supplies that too during a conflict. Same is the case with sharing encrypted communication and surveillance on board the US-origin planes and helicopters used by the Indian armed forces. The imagery and data is not shared, said the sources.

Meanwhile, India uses the US-made planes, the P-8I for its Navy and the special operations planes, C-17 and C-130, for its Air Force. The Indian Navy also uses the US-made submarine hunting helicopter, the MH60R; and has leased two specialised drones, MQ-9B, which along with the P-8I, provide high resolution persistent surveillance at sea. The data from none of these is shared with anyone. The COMCASA and the LEMOA are what the two sides call 'foundational agreements'. The sources said these agreements do not automatically mean the US forces would intervene and seek data.

India has a history of not siding with any US action. During the first 'Gulf war' in 1991, Prime Minister Chandra Shekhar had allowed refuelling rights for American military planes flying from Pacific bases to the Persian Gulf, but then the facility was withdrawn. In 2003 when the US and its allies launched another campaign in Iraq, Prime Minister Atal Bihari Vajpayee refused refuelling

rights. The Manmohan Singh government in 2014 agreed to pay for arms and equipment from Russia to boost the strength of the Afghan National Army (ANA), but consistently refused to station its troops on ground. Later, the Narendra Modi government also did not agree to join in forces with the US in Afghanistan.

https://www.tribuneindia.com/news/india/india-not-bound-to-help-us-with-logistics-surveillance/

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After Pak 'fiasco' during Op Sindoor, China's HQ-9B defence system now 'fails' to stop US-Israel strikes in Iran

Source: The Times of India, Dt. 02 Mar 2026

The collapse of Iran's key military infrastructure following coordinated US-Israel airstrikes since Saturday has raised a question mark over the performance of Tehran's air defence network, constituted of a mix of old Russian S300 missile system, Chinese-origin HQ-9B surface-to-air missile system and some domestic systems like Bavar-373.

While the Russian S-300 is a Cold War-era system that is still widely used by several countries, the HQ-9B air defence system was recently procured by Iran from China to boost its missile defence arsenal. However, this will be the second time that the Chinese HQ-9B systems have appeared to have failed to foil aerial attacks of the US and Israel after last year's Operation Sindoor when Pakistan was unable to thwart India's air strikes using the same Chinese defence systems.

HQ-9B, inspired by Russian S-300PMU and American Patriot PAC-2 systems, is a fully indigenous air defence system developed by China. It was first tested in 2006 and has been in use for the past decade. According to multiple reports, its range is 260 km. It is known to be operational in sensitive regions, including Beijing, Tibet, Xinjiang and the South China Sea.

Based on multiple reports, Chinese HQ-9B and Russian-supplied air defence systems failed to effectively counter US-Israel aerial attacks through the most advanced and stealth fighter jets, including F35 Lightning II jets, due to a combination of sophisticated suppression techniques, lack of system integration and advanced electronic warfare.

The US-Israel stealth fighter jets and swarm drones reportedly targeted air defence radars and command networks (nervous system of air defence), rendering the Russian and Chinese missile defence systems blind. The aerial strikes targeted radar installations and command nodes,

breaking the connection between sensors and launchers. Without a fully integrated and functioning sensor network, the missile batteries became less effective, a critical vulnerability in a mixed-technology, layered defence system.

The HQ-9B is designed for high-altitude threats, but it struggled against a combination of stealth aircraft (like F-35 jets) and low-altitude and precision-guided missiles. Reports suggest the HQ-9B could not adequately track or engage low-observable aircraft in a dense combat environment. The systems also failed against fast-moving, low-altitude missiles that left little time for reaction. The US-Israel strikes likely used swarm tactics, involving a large number of drones and missiles simultaneously. During Operation Sindoor, India had used loitering munitions such as Harpy and Harop to neutralise Chinese HQ-9B systems positioned across key Pakistani military bases.

https://timesofindia.indiatimes.com/defence/news/after-pak-fiasco-during-op-sindoor-chinas-hq-9b-defence-system-now-fails-to-stop-us-israel-aerial-strikes-in-iran/articleshow/128930843.cms

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Missile interceptors in U.S.-Iran war

Source: The Hindu, Dt. 02 Mar 2026

The outbreak of fresh hostilities between the U.S.-led coalition, including Israel and the United Arab Emirates, and Iran seems to have triggered a newly integrated regional air defence network different from the one these actors deployed during their brief yet intense conflict in June last year.

The Twelve-Day War in 2025 was until then the most significant test of the Integrated Air and Missile Defence, with the alliance faced with having to blunt retaliation by Iran that included more than 500 ballistic missiles and over twice as many ‘suicide drones’. This time, with the theatre of conflict including the Persian Gulf, the U.A.E. has brought to bear its South Korean defence system together with the debut of U.S. systems that were only prototypes last year. While many of these systems showcase new abilities, they also highlight the U.S.’ and Israel’s need to ‘ration’ them to keep costs down and ensure they’re still available should the conflict drag on.

What is missile defence?

Missile defence refers to a military system that finds and destroys incoming missiles before they hit their targets. These systems use sensors — including satellites in earth orbit and radar stations on the ground — to watch the sky and, when they spot an enemy missile, track its speed and direction.

Then, military command centres use powerful computers and military personnel to receive the data from the sensors and based on that calculate which targets the missile endangers and which response is most suitable. One important kind of response is the interceptor — which is a missile that flies towards the incoming threat with the purpose of destroying it. In addition to saving lives and property, missile defence can discourage enemies from starting conflicts that could require missiles, since the interceptors could render them ineffective, as well as give leaders more time to deliberate.

How an interceptor works

Let’s use the example of the U.S. Patriot system, which consists of several components connected by cables or wireless data links. Its radar unit remains stationary on the ground rather than spinning, like the radar you see in airports. It steers thousands of radio beams across the sky to

scan for objects. When these beams hit an aircraft or incoming missile, they bounce back to the radar and a computer analyses the returning signals to estimate the object's speed, location, altitude, and direction. If the object is deemed to be a threat, a connected computer can concentrate the radar's energy at that point in the sky. Such focused tracking is called a lock, and in this condition the radar will update the target's position continuously.

Meanwhile, the computers at the Engagement Control Station (ECS), a mobile command centre operated by soldiers, calculate the trajectory of the object and determine when to fire a counter-measure. When the system commands a launch, a signal goes to a launcher truck, which ignites the rocket motor of an interceptor. As the interceptor lifts off, the ground radar will continue to track both the target and the missile simultaneously. The ECS will compare the positions of both objects and send commands to the interceptor to guide it through the air.

In the final seconds of flight, the interceptor will use its onboard seeker — a component that acts like its driver — to find the target. Since interceptors often move at multiple times the speed of sound, seekers have to be very precise. The interception itself can happen in one of two ways. Older missiles use a proximity fuse that senses when the target is nearby and blows up a powerful warhead, destroying the object with shrapnel. Newer interceptors are hit-to-kill: the missile steers itself directly into the body of the target, using the kinetic energy of the collision to shatter it. The radar observes the impact to confirm the target has been destroyed before resetting to engage the next threat.

How effective are interceptors?

The efficacy of an interceptor varies depending on the target. The short-range rockets that Israel uses as part of its 'Iron Dome' system is effective against simple, slow-moving rockets, with the country reporting 80-97% success rates in recent conflicts. The U.S. Patriot system on the other hand deals with targets moving much faster and is less successful in absolute terms. For example, in May 2023, about a year after Russia's invasion of Ukraine had begun, Patriot had 100% success against six Russian Kinzhal hypersonic missiles on one night over Kyiv and more than 60% against the Iskander-M ballistic missiles.

After that, Russia modified Iskander-M to release decoys and make sharp turns through the air just before it strikes. Russia has also been launching larger groups of missiles and drones at once. So even if a Patriot battery has a high success rate, it only carries a limited number of interceptors. Altogether, its rate has reportedly dropped to around 10% since. According to the Center for Arms Control and Non-Proliferation, "The only program designed to protect the entire United States homeland from a long-range missile attack is the GMD [Ground-based Midcourse Defence] program. GMD has a failing test record: a success rate of just 55% in highly scripted tests, including three misses in the last six tries."

A narrow gulf

In the ongoing conflict, the U.A.E. has activated a missile defence involving the South Korean Cheongung II missiles while the alliance has been using the Terminal High Altitude Area Defence (THAAD) and the Patriot batteries supplied by the U.S. The U.A.E. acquired Cheongung from South Korea to intercept low-flying Iranian cruise missiles and tactical ballistic missiles over the Gulf. These missiles use a hit-to-kill technology similar to the U.S. Patriot system but are also optimised for threats in the Persian Gulf.

A missile launched from coastal Iran can reach the U.A.E. within minutes. Older versions of Patriot used radars that scanned for objects in a 120° cone. If a threat came from outside this cone, the

battery had to physically rotate, losing precious seconds. Cheongung II however uses a 'Vertical Launch System' fit with a rotating multi-function radar that can fire in 360° without moving the launcher. Missiles called "skimmers" can fly just above the surface of the Gulf's waters to stay under the radar's view, so the Cheongung II missile is also equipped with a radar in its nose, which it turns on in the final seconds of flight to not have to depend on the ground radar as it approaches impact.

Expensive shots

While the U.S. relied heavily on its expensive Patriot defence system during the June 2025 conflict, it has deployed its new Indirect Fire Protection Capability to protect bases in the U.A.E. and Kuwait. This system uses AIM-9X Sidewinder missiles as interceptors and helps with rationing Patriot. Patriot's cost is relevant because Iran's strategy, called a saturation attack, has been to fire a flurry of cheap missiles to exhaust the alliance's interceptors. The system's PAC-3 Missile Segment Enhancement (MSE) interceptors however cost around $4 million per shot.

The U.S. Navy has deployed SM-6 missiles in their 'dual' configuration, in which they can intercept ballistic missiles in their terminal phase as well as Iranian fast-attack craft. Finally, after Israel introduced it during the Twelve-Day War, the country's 'Iron Beam' high-energy laser has become the primary defence against drone swarms. As with the U.S. and Patriot, Iron Beam is reportedly allowing Israel to ration its Arrow 3 and Stunner.

Missile defence in 2025

During the Twelve-Day War, the first line of defence comprised the Israeli Arrow 3 system and U.S. Navy destroyers with SM-3 missiles. Arrow 3 engaged medium-range ballistic missiles in space, before they reentered the atmosphere, although the intensity of the barrage rapidly depleted Israeli stockpiles by the second week of the conflict. Likewise U.S. destroyers in the Red and the Mediterranean Seas recorded the heaviest use of the SM-3 missiles in combat until then.

The endo-atmospheric defence system used U.S. THAAD batteries and Israel's legacy Arrow 2 system. Then came Israel's David Sling with its Stunner interceptors, with Patriot forming the last line. Against the 'suicide drones', the alliance used the 'Iron Dome' and its Tamir interceptors and 'Iron Beam', with help from air to air missiles fired by the U.S. Air Force and Navy, the Royal Air Force, and France's Rafales. As of January this year, an important focus area for the U.S. and its allies was to replenish the expended munitions. The U.S. Department of Defence has already quadrupled production orders for THAAD and PAC-3 MSE interceptors and has accelerated the deployment of directed-energy systems to naval vessels.

This said, "Production of all munitions—interceptors for THAAD, Patriot, Arrow, David's Sling, and Iron Dome…—is far slower than current combat use or anticipated future high-intensity war requirements," Charles Corcoran and Ari Cicurel wrote in RealClearDefence in January 2026. Maj. Gen. Corcoran is a former chief of staff of the U.S. Air Forces Central Command and Cicurel is the associate director of foreign policy at the Jewish Institute for National Security of America. They added that "Replenishing THAAD shortages … will take at least 1.5 years at current production capacity" and that U.S. manufacturing has "not scaled for high-tempo operations in decades".

Iran's capabilities

Iran's most advanced interceptor is an upgraded version of the Bavar-373 system using the Sayyad-4B missile, reportedly designed to intercept targets at ranges exceeding 300 km. Iran also

recently unveiled its Arman Ballistic Missile Defence system, which it has said is optimised to intercept short- to medium-range ballistic missiles with 360° radar coverage.

To counter cruise missiles as well as F-35 and F-15 fighter jets, the military is using the Sevom-e-Khordad missile system. It's highly mobile, which means it can fire from one place and quickly relocate to another, making it harder for U.S. forces to destroy its radars. Iran is reportedly using Sayyad-3 missiles with this system to protect its Natanz and Isfahan nuclear facilities. With reports of strikes near the offices of Ayatollah Ali Khamenei and other government compounds in Tehran, Iran is also using the Russia-made Tor-M1 short-range missiles to intercept precision-guided bombs and the Majid and Azarakhsh systems to counter low-flying drones and cruise missiles.

This said, reports of explosions in Tehran and Isfahan indicate the U.S. and Israeli barrage could be overwhelming Iran's interceptors with sheer volume. This is possible because once a battery fires one batch of around six missiles, it needs to reload, leaving the site defenseless until then. The Bavar-373 system's purported ability to detect stealth aircraft has also been in question since the alliance has struck targets in Tehran.

https://www.thehindu.com/sci-tech/science/missile-interceptors-in-us-iran-war-explained/article70689390.ece

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Science & Technology News

Women in Science are Catalysts of "Viksit Bharat": Dr. Jitendra Singh at National Science Day Celebration 2026

Source: Press Information Bureau, Dt. 27 Feb 2026

Union Minister of State (Independent Charge) for Science & Technology, Earth Sciences, MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh, today said that women in science are not merely participants but powerful "catalysts" in India's journey towards Viksit Bharat. Addressing the National Science Day Celebration–2026 at the INSA Auditorium, New Delhi, the Minister underlined that scientific growth and national development are inseparable, and that inclusive participation especially of women is essential to sustaining India's innovation momentum.

Speaking on the focal theme "Women in Science: Catalyzing Viksit Bharat," Dr. Jitendra Singh emphasized that India's scientific ecosystem must nurture talent across gender and geography. He highlighted the growing representation of women in research, leadership positions and innovation-driven sectors, noting that the transformation of India's science landscape requires both policy support and institutional commitment.

Dr. Jitendra Singh further observed that India's science policy framework has increasingly focused on enabling ecosystems rather than isolated achievements. He stressed that sustained institutional support, early-stage mentoring, and translational pathways are critical to ensuring that research outcomes convert into tangible societal impact. He noted that initiatives announced during the celebration reflect a continuum from student engagement to innovation clusters—designed to strengthen India's long-term scientific capacity.

The Minister also underlined that science communication and public engagement are central to building a scientific temperament. He said that empowering young students, particularly girls, through structured exposure to laboratories and research institutions will create a multiplier effect in the years ahead. He emphasized that India's demographic dividend must be aligned with its scientific aspirations to achieve the goals of Viksit Bharat.

During the programme, several key initiatives were launched and released. These included the Hydrogen Valley Innovation Cluster and the ANRF-Venture Centre Outreach Initiative. The Mission Innovation India Report was also released, along with the book Indigenous Architecture of Northeast India. A DST-supported technology on copper-doped nano titania coating for heritage stones was formally transferred to M/s Rebuild Technologies Services Pvt. Ltd., marking a significant step towards translating laboratory research into societal applications.

The Copper-Doped Nano Titania ($Cu–TiO_2$) coating technology represents an advanced scientific solution for the preservation of heritage stone monuments. The technology, developed through nano-titania and Cu-doped nano-titania coatings embedded in a Paraloid B-72 matrix, has demonstrated enhanced hydrophobicity, UV resistance and aesthetic compatibility for marble, sandstone and granite surfaces. The Cu-doped formulation retained high hydrophobic performance even after prolonged UV exposure, underscoring its durability and suitability for long-term conservation of heritage structures.

Another significant announcement was the launch of the "Engage with Science" Programme, conceptualized by the National Council for Science & Technology Communication (NCSTC), DST. The programme aims to provide immersive, one-week residential exposure to students of Classes 8 and 9 across 16 autonomous DST institutions, encouraging early interest in research and development. The initiative spans seven thematic areas including Materials Science, Biological Sciences, Astronomy, Medical Technology, Indigenous Knowledge Systems and Earth Sciences, thereby fostering scientific curiosity among young learners and nurturing future scientific ambassadors.

In his welcome address, Prof. Abhay Karandikar, Secretary, Department of Science and Technology, highlighted DST's continued efforts to build a robust and inclusive research ecosystem. He emphasized the importance of strengthening innovation clusters, promoting translational research, and ensuring that scientific outcomes are effectively aligned with national priorities. He underscored that initiatives such as the Hydrogen Valley Innovation Cluster and the ANRF outreach efforts are designed to deepen industry-academia collaboration and accelerate research-to-market pathways.

Dr. Rajesh Gokhale, Secretary, Department of Biotechnology, stressed the need to integrate biological sciences and biotechnology innovations with national development missions. He spoke about strengthening institutional linkages, promoting interdisciplinary research, and leveraging innovation ecosystems to ensure that biotechnology solutions contribute meaningfully to healthcare, agriculture and sustainable development goals.

Further, Dr. Jitendra Singh, reiterated that India's scientific advancement must be measured not only by global rankings but by its capacity to deliver solutions for its people. He emphasized that initiatives such as hydrogen innovation clusters, outreach programmes and technology transfers represent a shift towards mission-driven science with societal relevance. He called upon scientific institutions to maintain momentum, deepen collaboration and ensure that the spirit of National Science Day translates into year-round action.

Concluding the programme, the Minister stated that National Science Day is not merely a commemorative event but a reaffirmation of India's scientific resolve. He emphasized that the initiatives launched reflect the Government's commitment to empowering women scientists, strengthening indigenous innovation, preserving cultural heritage through science, and nurturing the next generation of researchers in alignment with the vision of Viksit Bharat.

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Science leaders discuss efficient ways to convert research outcomes to real-world applications

Source: Press Information Bureau, Dt. 28 Feb 2026

Science–policy convergence is essential to realise the vision of Viksit Bharat, said Principal Scientific Adviser (PSA) to the Government of India, Prof. Ajay K. Sood, while chairing the National Science Day Lectures at the National Science Day Celebration–2026 held at Plenary Hall, Vigyan Bhawan, New Delhi.

The celebration, organised under the focal theme "Women in Science Catalysing Viksit Bharat," featured three National Science Day Lectures followed by a panel discussion on Science Policy Interface for Catalysing Viksit Bharat. The event brought together policymakers, scientists, researchers and academicians to deliberate on strengthening India's scientific ecosystem in alignment with national development priorities.

In his address, Prof. Ajay K. Sood emphasized that India's scientific advancement must be closely aligned with policy direction and national missions. He underlined that sectors such as aerospace, defence, critical metals, advanced materials and digital communication require coordinated institutional mechanisms and sustained research investment. He stressed that the science-policy interface plays a decisive role in translating scientific capabilities into national strength.

The PSA highlighted the need for integrated approaches in emerging and strategic domains, noting that research, innovation and policy frameworks must function in synergy. He underscored that future growth will depend on building indigenous technological capacity, fostering interdisciplinary collaboration and ensuring that research outcomes are effectively deployed for societal benefit. Prof. Sood also emphasized the importance of communicating science in Indian languages to enhance public engagement and inclusive outreach.

The National Science Day Lectures included presentations on Made in India technologies for Aerospace and Defence, Roadmap and Solutions for Critical Metals and Materials: An Integrated Approach, and Direct to Mobile Broadcasting. The deliberations highlighted the importance of technological self-reliance and long-term strategic planning in critical sectors.

Prof. Abhay Karandikar, Secretary, Department of Science and Technology (DST), in his address, emphasized that India's science policy architecture must support both frontier research and translational innovation. He highlighted DST's commitment to enabling interdisciplinary research, strengthening institutional collaborations and building capacity in emerging technologies. He noted that science-led development must ensure that research outcomes move efficiently from laboratories to real-world applications. Prof. Karandikar further stressed that empowering researchers, particularly women in science, and building inclusive research ecosystems are essential for sustained national progress. He underlined that policy instruments must accelerate innovation cycles while ensuring equitable access to scientific advancements across sectors and regions.

Prof. Shekhar C. Mande, President, Indian National Science Academy (INSA), during the panel discussion, emphasized the importance of sustained dialogue between scientists and policymakers. He highlighted that evidence-based policymaking must be informed by scientific expertise and rigorous research. He noted that strengthening institutional interfaces between academia and government will be critical for catalyzing Viksit Bharat. Shri Shashi S. Vempati, Former CEO, Prasar Bharati, delivered a lecture on "Direct to Mobile Broadcasting: India's Next Digital Leapfrog." He described Doordarshan's journey across different information and communication technology phases, leading towards direct-to-mobile broadcasting in collaboration with IIT Kanpur and a startup partner.

Dr. K. Balasubramanian, Director, Non-Ferrous Technology Development Centre (NFTDC), delivered a lecture titled "Roadmap & Solutions for Critical Metals: An Integrated Approach." He highlighted India's strengths in process engineering, information technology, and rapid plant-scale capability. He noted that with access to raw materials, operational capacity can be developed in a short time. He called for a shift from serial lab-to-plant development to a mission-mode, systems-based approach in strategic non-ferrous metals relevant to space, defence, and nuclear sectors.

Dr. Shubha V. Iyenger, Former Distinguished Scientist, CSIR–National Aerospace Laboratories (CSIR-NAL), delivered a lecture on "Made in India Technologies for Aerospace and Defence," highlighting "Drishti," India's first indigenous runway visibility measuring system. She was conferred the Padma Shri in 2026 for developing Drishti. The event concluded with a collective resolve to deepen science–policy integration, strengthen institutional collaboration and enhance public engagement with science as India advances towards its long-term development goals.

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