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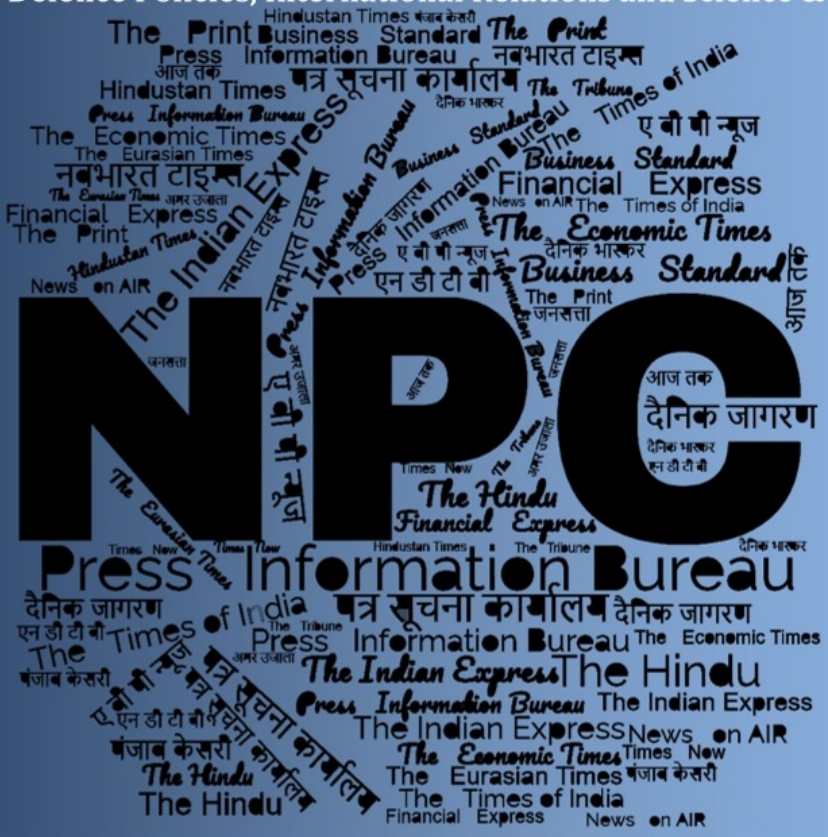
समाचार पत्रों से चयनित अंश

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

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



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DRDO News

ADA set to shortlist Indian firms for stealth fighter project

Source: Hindustan Times, Dt. 19 Jun 2025

The Aeronautical Development Agency (ADA) on Wednesday invited expression of interest (EOI) for the development of the advanced medium combat aircraft (AMCA) to shortlist Indian companies capable of building prototypes and supporting flight test and certification of the indigenous fifth-generation stealth fighter. The ADA, which comes under the Defence Research and Development Organisation (DRDO), is executing the AMCA programme through industry partnerships. The applicant may be a single company, joint venture or a consortium of companies, compliant with Indian laws and regulations, the EOI document seen by HT said.

“Reputed Indian companies experienced in aerospace and defence sector with capability to absorb the design of AMCA and have adequate experience in the field of development & engineering, manufacturing, equipping, integration, testing, quality management, customer support etc will be shortlisted,” it said.

On May 27, the defence ministry unveiled its long-awaited plan to fast-track the development of AMCA, announcing that the execution model will be competitive and provide equal opportunities to public and private sector firms to participate in one of the country’s most significant military projects. The approval of the industry partnership model by defence minister Rajnath Singh came at a critical moment as state-run plane maker Hindustan Aeronautics Limited (HAL) --- the sole manufacturer of fighter jets in the country --- was till then believed to be the frontrunner for the project.

The shortlisted entity must be capable of setting up a manufacturing facility for the series production of AMCA, the EOI said. “The duration of the contract for development, prototyping, flight test and certification of AMCA shall not exceed eight years from the effective date of contract.”

A pre-EOI meeting will be held in the first week of July 2025 to provide an opportunity to the Indian firms to seek clarifications regarding the project. The deadline for EOI submission is August 16. The first prototype of the stealth fighter is expected to make its maiden flight in 2029, and AMCA’s development is likely to be completed by 2034 before it goes into production a year later.

The execution model unlocks new possibilities for the local aerospace industry, including firms such as Tata Advanced Systems Limited, Larsen & Toubro, Adani Defence and Aerospace and the Mahindra Group. To be sure, HAL is still a strong contender for the project. Speeding up the AMCA programme is critical as China has already deployed the J-20 fifth-generation fighters, it is rolling out the J-35 stealth fighters that Pakistan is looking at buying, and it has tested two so-called sixth-generation platforms designated J-36 and J-50.

Last year, the PM-headed Cabinet Committee on Security (CCS) approved the AMCA’s design and prototype development at a cost of around ₹15,000 crore. This involves the design and development of five twin-engine AMCA prototypes. The IAF’s modernisation map envisages the deployment of around 120 stealth fighters (six squadrons) 2035 onwards, with the advanced planes forming an important element of future air combat.

India is firmly pushing ahead with the AMCA programme even though both the United States and Russia have offered New Delhi their fifth-generation fighters. In February, US President Donald Trump said America is paving the way to provide India the F-35 stealth fighters. Earlier this year, Russia offered to jointly produce its Su-57 stealth fighter in the country. The AMCA is expected to be developed in two phases, as previously reported by HT.

The first two squadrons will consist of the Mk-1 version of AMCA powered by the American F-414 engines, while the remaining four squadrons will have the more advanced Mk-2 version equipped with an even more powerful engine to be built in India with foreign collaboration.

The 25-tonne AMCA will be a swing-role fighter with stealth features to increase survivability in combat, advanced avionics, smart weapons stored internally, top-end mission computers, 360-degree situational awareness, and super-cruise capability that will allow it to fly at supersonic speeds for extended periods without using fuel-guzzling afterburners.

https://www.hindustantimes.com/india-news/ada-set-to-shortlist-indian-firms-for-stealth-fighter-project-101750272825618.html

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No Strings Attached: IIT Delhi Sends Secure Quantum Messages Wire-Free

Source: The Times of India, Dt. 19 Jun 2025

In a significant advancement in quantum technology, researchers have achieved free-space quantum secure communication across a distance exceeding 1km at IIT Delhi, managing to transmit highly secure messages through open air without using cables or wires.

The breakthrough was made possible by a phenomenon known as quantum entanglement, which links two particles in such a way that any change to one instantly affects the other, regardless of the distance between them, making the communication virtually impossible to intercept or hack.

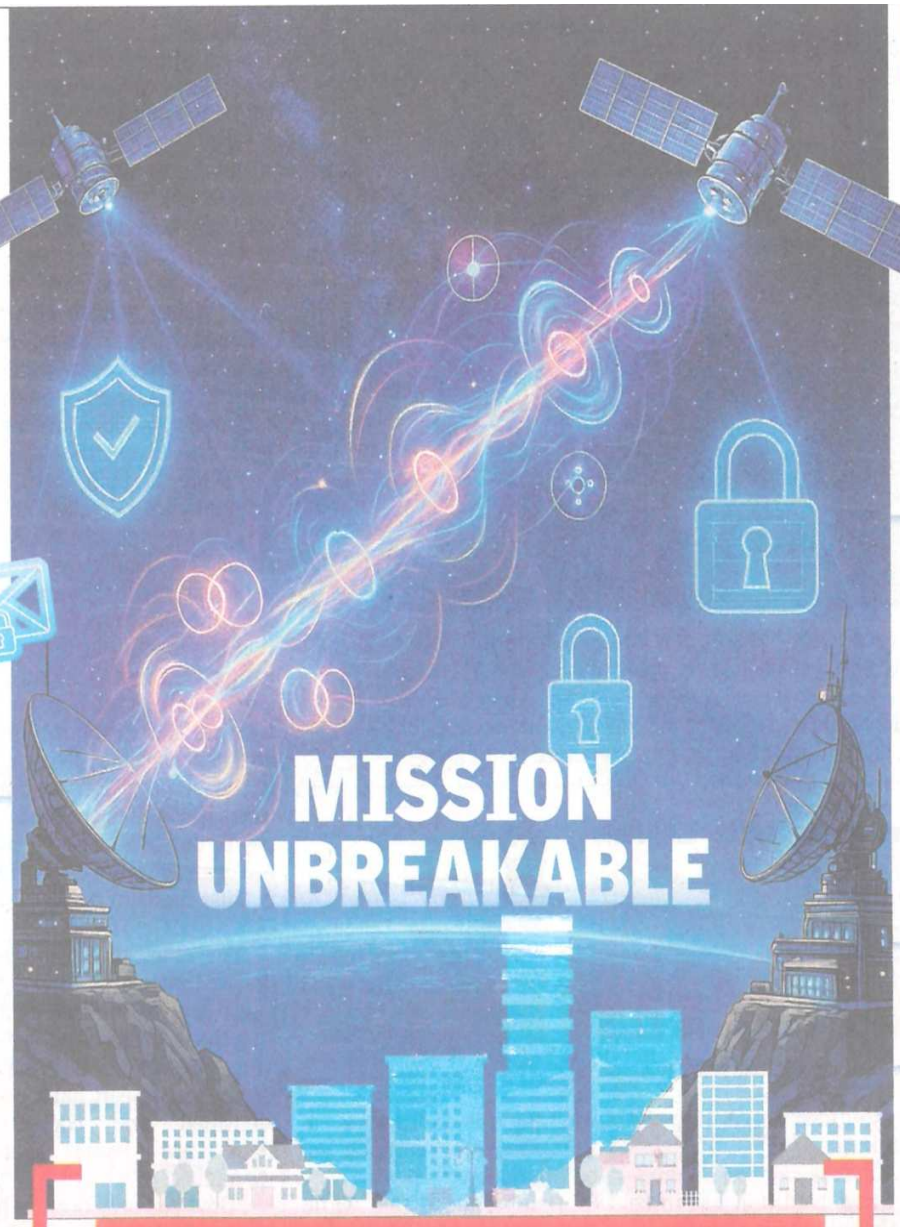
The demonstration was a joint effort by IIT Delhi and Defence Research and Development Organisation (DRDO) and conducted under a project titled ‘Design and Development of Photonic Technologies for Free Space QKD'. It was sanctioned by the Directorate of Futuristic Technology Management and given by Professor Bhaskar Kanseri's research group.

"It serves as a proof of concept using quantum entanglement, which makes communication more secure than other quantum communication techniques," said Prof Kanseri, an IHFC chair professor in the Department of Physics, IIT Delhi. During the experiment, researchers managed to securely share secret information at a speed of about 240 bits per second, while keeping errors very low — less than 7%.

This is a big step toward making quantum communication useful for things like online security. It could help create secure ways to share information over long distances, build quantum networks, and eventually lead to a ‘quantum internet'. Normally, someone hacking into a device might steal information. But with quantum entanglement, the link between particles breaks right away, and the users know someone is trying to listen in. This aspect makes it very useful for key areas like defence, banking, telecom and national security.

MISSION UNBREAKABLE

In a significant scientific breakthrough, researchers have successfully demonstrated free-space quantum secure communication at IIT Delhi. The experiment was executed in collaboration with Defence Research and Development Organisation



SO, WHAT EXACTLY IS QUANTUM COMMUNICATION?

Imagine sending a secret message that self-destructs if someone tries to peek. That's the magic of quantum communication. Instead of using regular signals like light or radio waves, it uses tiny particles called photons—particles of light—linked together through a quantum trick called entanglement. These particles, known as qubits (quantum bits), behave very differently from regular data bits

The unique thing about qubits is that any attempt to spy on them changes their state immediately. This means that if someone tries to hack into a quantum communication system, the system instantly knows — making it almost impossible for anyone to secretly eavesdrop

WHY DO WE NEED IT?

1. Let's face it — cyberattacks are everywhere. Almost every week, we see headlines about major data breaches exposing personal information, financial records, or even state secrets. Traditional encryption methods are increasingly at risk, especially as powerful computers (including future quantum computers) could break today's codes

2. Quantum communication offers a way to stay one step ahead. Since it's practically unhackable, it's attracting the attention of governments, militaries, banks, and businesses who want their data safe from prying eyes

HOW DOES IT WORK? THE SIMPLE VERSION

Today's system and its problem

Right now, sensitive information is scrambled (encrypted) and sent along fibre-optic cables using special digital codes called keys. These travel as regular bits — simple 1s and 0s — which clever hackers can secretly copy without being detected

Enter the quantum advantage

Quantum particles can exist in a superposition—a way of saying they can be both 1 and 0 at the same time. This makes them incredibly sensitive

Hackers beware

If anyone tries to intercept or measure these qubits while they're being transmitted, the delicate quantum state collapses instantly into a definite 1 or 0. This collapse signals that someone is snooping, alerting both the sender and the receiver. In short: you can't secretly hack a quantum message

CHALLENGES, ESPECIALLY IN DELHI

There are significant challenges due to atmospheric disturbances, such as turbulence, air flow and pollution

These factors make it particularly difficult to demonstrate in locations like Delhi, a city that regularly battles some of the highest levels of air pollution, combined with urban heat effects and unpredictable air patterns

Even minor fluctuations in air density can interfere with the alignment and precision required for successful transmission

THE CURRENT DEMONSTRATION

In India, the previous record for free-space quantum communication was achieved by ISRO in 2023, with a distance of 300 metres

The current demonstration has successfully crossed the 1-kilometre mark

In theory, it is 100% hack-proof. Ongoing research aims to identify and eliminate loopholes to achieve 100% hack-proof communication practically

THE ROAD AHEAD

Although still largely experimental, quantum communication is rapidly advancing *Successful demonstrations — such as India's recent milestone — suggest that a highly secure, quantum-based internet may become a reality within the next decade

This technology holds the potential to transform global cybersecurity, offering an unbreakable layer of protection for the most critical data in the digital age

Moreover, as the experiment used free space (through the air) instead of optical fibres (underground wires), it can work even in areas where laying cables is difficult or expensive, like mountains or crowded cities. "It can safeguard digital transactions, such as credit card payments,

UPI transfers, online banking, medical records, sensitive data, emails and messaging, directly benefiting common citizens," said Prof Kanseri.

However, achieving the breakthrough wasn't easy, especially in a city like Delhi. "Free-space quantum communication is extremely challenging due to atmospheric disturbances, such as turbulence, air currents and pollution. Delhi's elevated levels of these factors make it particularly difficult to conduct such experiments," he added. India's previous free-space quantum communication record, achieved by Isro in 2023, was limited to 300 metres, as per experts. The latest demonstration, surpassing the 1km mark, represents a major advancement for the country's quantum research capabilities.

https://timesofindia.indiatimes.com/city/delhi/no-strings-attached-iit-delhi-sends-secure-quantum-messages-wire-free/articleshow/121937588.cms

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Defence News

पनडुब्बी-रोधि पहला युधपोता 'अरनाला' नौसेना में शामिल

Source: Dainik Jagran, Dt. 19 Jun 2025

विशाखापत्तनम, प्रेट्र : भारत की तटीय रक्षा क्षमताओं को बढ़ावा देते हुए नौसेना ने बुधवार को विशाखापत्तनम डाकयार्ड में भारत के पहले स्वदेशी रूप से डिजाइन और निर्मित एंटी सबमरीन वारफेयर शैलो वाटर क्राफ्ट (एएसडब्ल्यू-एसडब्ल्यूसी) आइएनएस अर्णाला को शामिल किया। इस समारोह की अध्यक्षता चीफ आफ डिफेंस स्टाफ जनरल अनिल चौहान ने की।

कोलकाता के गार्डन रीच शिपबिल्डर्स एंड इंजीनियर्स द्वारा निर्मित आइएनएस अर्णाला तटीय रक्षा को बढ़ाने के लिए विकसित किए जा रहे एएसडब्ल्यू-एसडब्ल्यूसी की श्रृंखला में पहला है। इस तरह के कुल 16 पनडुब्बी रोधी युद्धपोत निर्मित होने हैं। इसका नाम महाराष्ट्र के वसई के ऐतिहासिक अर्णाला किले के नाम पर रखा गया है। यह युद्धपोत 77 मीटर लंबा है। इसका सकल भार 1490 टन से अधिक है। यह डीजल इंजन-वाटरजेट संयोजन द्वारा संचालित होने वाला सबसे बड़ा भारतीय नौसैनिक युद्धपोत है। रक्षा मंत्रालय के अनुसार, यह निगरानी, खोज और बचाव कार्यों और कम तीव्रता वाले समुद्री अभियान के लिए डिजाइन किया गया है। इसका आदर्श वाक्य अर्णवे शौर्यम या महासागर में वीरता इसके चालक दल के साहस को दर्शाता है। यह युद्धपोत नौसना को मजबूत करने में अहम कदम उठाएगा।

- भारत की पहली स्वदेशी रूप से डिजाइन और निर्मित एंटी सबमरीन वारफेयर शैलो वाटर क्राफ्ट
- इंजीनियर्स ने निगरानी, खोज और बचाव कार्यों के लिए किया है इसका डिजाइन, मजबूत होगी नौसेना

विशाखापत्तनम में आइएनएस अर्णाला को नौसेना में शामिल करते समय सीडीएस जनरल अनिल चौहान (मध्य) भी उपस्थित रहे ● प्रेट्र

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Navy gets 1st indigenous shallow water sub hunter

Source: The Tribune, Dt. 19 Jun 2025

NEW DELHI, JUNE 18

The Indian Navy today commissioned the INS Arnala, the first of the next-generation ships capable of detecting enemy submarines in shallow waters.

The commissioning was done at the Naval Dockyard in Visakhapatnam. The ship has been made by Garden Reach Shipbuilders and Engineers (GRSE) Kolkata, a public sector company. Constructed through a public-private-partnership mode, it's a first of its kind in India.

The INS Arnala is the warship for which the GRSE was awarded the Defence Ministers Award in 2022, for designing the 'most silent ship'. The chief guest at the ceremony was Chief of Defence Staff Gen Anil Chauhan.

The Navy will gett 16 such ships, which being made at a cost of nearly Rs 13,000 crore. Cochin Shipyard Limited and GRSE have been contracted to manufacture eight ships each.

Called the 'Anti-Submarine Warfare Shallow Water Craft' (ASW-SWC), the primary role of these ships is to detect, track and prosecute enemy submarines, particularly in coastal and shallow water regions.

Equipped with advanced underwater sensors such as the hull-mounted sonar Abhay, underwater acoustic communication system and low-frequency sonar, these vessels are capable of comprehensive underwater surveillance.

The ships feature a state-of-the-art weapon suite, including lightweight torpedoes, rockets, anti-torpedo decoys and advanced mine-laying capabilities. The INS Arnala is 77.6 m long, with a gross tonnage of over 1490 tonnes. — TNS

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Allies eye India data on Chinese weapons

Source: Hindustan Times, Dt. 19 Jun 2025

As India's armed forces continue sifting through and analysing the information gathered during last month's clashes with Pakistan, there is growing interest among New Delhi's strategic partners in gaining access to electronic and digital signatures of Chinese-origin weaponry scooped up by Indian air defence systems.

The air forces of India and Pakistan were involved in several engagements between May 7, when New Delhi launched Operation Sindoor to target terrorist infrastructure in retaliation for the Pahalgam terror attack, and May 10, when the two sides reached an understanding on halting military actions. Experts have characterised these as the most intense air-to-air combat engagements in recent times.

People familiar with the matter said on condition of anonymity that Indian air defence systems and radars gathered considerable information on Chinese-origin equipment, particularly the J-10C and JF-17 combat jets, PL-15 active radar-guided beyond-visual-range air-to-air missile and HQ-9 long-range surface-to-air missile. This was the first known use in combat for most of this equipment, they said.

China, which hasn't fought a war in more than four decades, has emerged as Pakistan's main supplier of military hardware, accounting for 81% of weapons imported by Islamabad, according to the Stockholm International Peace Research Institute (SIPRI). According to experts, the clashes were the first test for China's military exports such as the J-10C jets and PL-15 missiles.

"All the information gathered by the Indian side would be of great relevance to many countries in the Indo-Pacific, which encounter Chinese aircraft and weaponry in regions such as the South and East China Sea and are preparing for possible hostilities involving such weapon systems," said a diplomat from an Asian nation engaged in a maritime dispute with China, declining to be named.

A defence official from an European nation acknowledged that France, in particular, would be keen to get an insight into the electronic and digital signatures of Chinese-origin weaponry gathered by India's air defence systems, especially in the context of numerous reports about the shooting down of a Rafale combat jet.

"The parameters of weapons systems can be reconfigured for export versions but if one has access to basic information on the Chinese-origin equipment such as electronic signatures, a country's defensive equipment can be set up better to counter such threats," the defence official. "In that sense, all this information on equipment that hasn't been used in combat before would be invaluable."

Indian officials declined to comment on the matter. It also could not be immediately ascertained whether any of India's strategic partners have made formal requests for access to information on Chinese-origin equipment.

Chris Clary, an associate professor of political science at the University at Albany, State University of New York, who closely tracks security matters related to India and Pakistan, pointed to the importance of electronic and digital signatures in developing counter-measures.

"Comprehensive and up-to-date threat libraries are crucial for electronic warfare to defeat adversary threats. In addition to recovering physical debris in the May clashes, which will be of intense interest, India scooped up emissions data during its operations against Pakistan," Clary said. "This will give India some opportunities to barter with its strategic partners."

In addition to jointly developing the JF-17 combat jet, China and Pakistan have conducted increasingly sophisticated joint exercises. Reports have suggested that the Chinese side rushed emergency supplies to Pakistan during the clashes and backed it with intelligence, surveillance and reconnaissance (ISR).

Indian officials have said a few hi-tech fighter jets of the Pakistan Air Force were shot down during Operation Sindoor and the Indian Air Force has been poring over technical details to establish hits. "We don't have the wreckage as their (PAF) planes were prevented from entering our airspace. But we have downed a few planes," Air Marshal AK Bharti, director general air operations, said last month.

Chief of defence staff General Anil Chauhan said during the recent Shangri-la Dialogue in Singapore that India lost fighter jets on the opening day of the military confrontation with Pakistan

due to tactical mistakes, which were swiftly rectified before the IAF returned in big numbers and carried out precision strikes deep inside the neighbouring country by punching through its air defences.

Clary also noted that Pakistan has debris of S-400 interceptors, BrahMos and SCALP EG missiles and Harop drones that will be of interest to that country's partners, including China.

https://www.hindustantimes.com/india-news/allies-eye-india-data-on-chinese-weapons-101750273013034.html

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'खेल-खेल' में बनेगा बॉर्डर पर बंकर, दुश्मनों का भी कर देंगे खेल खत्म

Source: Navbharat Times, Dt. 19 Jun 2025

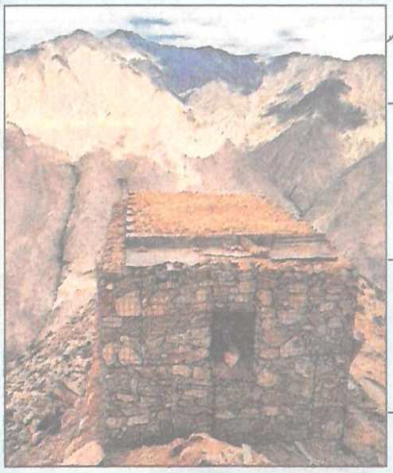
Dipti.Singh@timesofindia.com

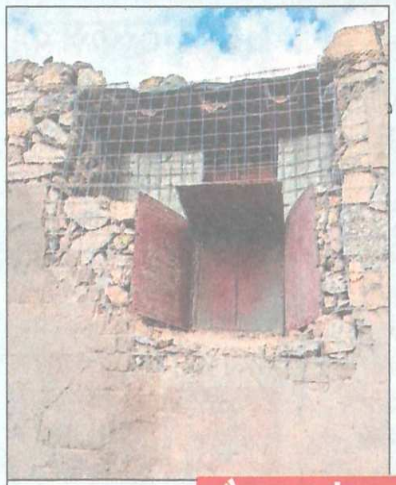
■ पुणे: IIT बॉम्बे और पुणे के कॉलेज ऑफ मिलिट्री इंजीनियरिंग (CME) के शोधकर्ताओं ने ऐसे मॉड्यूलर बंकर विकसित किए हैं, जिन्हें लेगो ब्लॉक्स की तरह जोड़ा जा सकता है। ये बंकर इतने मजबूत हैं कि तोपखाने और मिसाइल हमलों को आसानी से झेल सकते हैं।

IIT शोधकर्ताओं का कहना है कि ये बंकर भारत की सीमाओं पर गेम-चेंजर साबित हो सकते हैं, क्योंकि ये सैनिकों को बिना किसी लॉजिस्टिक चुनौती के बेहतर सुरक्षा प्रदान करते हैं। सबसे अच्छी बात यह है कि इन्हें बनाने के लिए न तो क्रेन की जरूरत है, न ही कंक्रीट मिक्सर की; बस जवानों की एक टीम चाहिए जिनके पास सही लक्ष्य साधने और ब्लॉक्स को जमाने का कौशल हो।

नौ साल की मेहनत के बाद तैयार हुआ यह इनोवेशन पारंपरिक 'परमानेंट डिफेंस' (PD) शेल्टरों से एक बड़ी छलांग है, जो वर्तमान में दुश्मन की सीमा के पास बनाए जाते हैं। रेत की बोरियों, पत्थरों और स्टील शीट से बने पारंपरिक बंकर अक्सर आज के आधुनिक खतरों, जैसे सटीक-निर्देशित हथियारों और उच्च-विस्फोटक तोपखाने के सामने कमजोर पड़ जाते हैं।

इस नई प्रणाली में हर एक ब्लॉक का वजन 20 किलो से भी कम है, जिन्हें हाथ से उठाकर बिना किसी विशेषज्ञ की मदद के दुर्गम इलाकों में भी आसानी से जोड़ा जा सकता है।





9 साल के शोध और विकास के बाद इन मॉड्यूलर बंकरों को किया गया तैयार

70% तक पतली दीवारें होने के बावजूद पारंपरिक बंकरों से देते हैं बेहतर सुरक्षा

20 किलो से भी कम वजन के ब्लॉक्स को जवान उठाकर दुर्गम इलाकों में भी ले जा सकते हैं

7 से 8 दिन की तुलना में ये नए बंकर सिर्फ 2 से 3 दिनों में बनकर हो सकते हैं तैयार

5 गुना ज़्यादा मज़बूत हैं इन बंकरों की घुमावदार छतें, जो हवाई हमलों को भटकाने में भी हैं सक्षम

पारंपरिक बंकर बनाम मॉड्यूलर बंकर

- **दीवार की मोटाई:** पारंपरिक बंकर की दीवारें 600 मिमी मोटी होती हैं। परीक्षणों से पता चलता है कि मॉड्यूलर बंकर इस मोटाई को 70% तक कम कर सकते हैं।
- **निर्माण:** मॉड्यूलर बंकर हल्के हैं और इन्हें ट्रांसपोर्ट करना भी आसान है। इतना ही नहीं, लेगो ब्लॉक्स की तरह यह जोड़ने में आसान होते हैं।
- **समय:** पारंपरिक बंकरों को बनाने में 7 से 8 दिन लगते हैं; मॉड्यूलर बंकर केवल 2 से 3 दिनों में तैयार हो सकते हैं।

IIT-बॉम्बे और कॉलेज ऑफ मिलिट्री इंजीनियरिंग ने विकसित किए हाई-टेक बंकर, जो तोपखाने और मिसाइल हमलों को झेलने में भी हैं सक्षम।

मौजूदा बंकर से 5 गुना मज़बूत

IIT बॉम्बे के सिविल इंजीनियरिंग विभाग के एसोसिएट प्रोफेसर मनीष कुमार, जिन्होंने इस शोध का नेतृत्व किया। उनका कहना है कि घुमावदार छतें समान मोटाई की सपाट छतों की तुलना में पांच गुना अधिक मजबूत होती हैं। ये न केवल हमले के प्रभाव को बेहतर ढंग से सोखती हैं, बल्कि हवाई हमलों को भी भटका देती हैं। ये हाई-परफॉर्मेंस मॉड्यूलर बंकर सैन्य कर्मियों और संपत्तियों की सुरक्षा सुनिश्चित करने के अलावा सशस्त्र बलों की युद्ध तैयारी और ऑपरेशनल क्षमता को भी बेहतर बनाते हैं।

इनका मैदानी परीक्षण हाल ही में अहिल्यानगर के मैकेनाइज्ड इन्फैंट्री सेंटर एंड स्कूल रेंज में किया गया। हाई-परफॉर्मेंस मॉड्यूलर बंकरों ने पारंपरिक शेल्टरों की तुलना में सिर्फ चौथाई मोटाई में ही उतनी या उससे बेहतर सुरक्षा प्रदान की।

इन मॉड्यूलर यूनिट्स का गोला-बारूद, तोपखाने के हमलों और यहां तक कि उच्च-विस्फोटक हवाई धमाकों के खिलाफ कठोर परीक्षण किया गया है। नतीजा यह रहा कि ब्लॉक्स ने बार-बार हुए मिसाइल हमलों को आसानी से झेल लिया।

– रिसर्चर, CME

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Science & Technology News

एक्सिओम-4 मिशन 22 जून तक स्थगित

Source: Jansatta, Dt. 19 Jun 2025

जनसत्ता ब्यूरो
नई दिल्ली, 18 जून।

भारतीय अंतरिक्ष यात्री शुभांशु शुक्ला समेत चार अंतरिक्ष यात्रियों को अंतरराष्ट्रीय अंतरिक्ष स्टेशन (आइएसएस) ले जाने वाले मिशन एक्सिओम-4 को 22 जून तक के लिए स्थगित कर दिया गया है। एक्सिओम स्पेस ने बुधवार को यह घोषणा की।

भारत, हंगरी और पोलैंड के यात्रियों को अंतरिक्ष में ले जाने वाला यह मिशन पहले 19 जून को निर्धारित था। मिशन के तहत अंतरिक्ष यात्रियों को फ्लोरिडा में नासा के कैनेडी स्पेस सेंटर से स्पेसएक्स के फाल्कन 9 राकेट से आइएसएस भेजा जाना है। एक्सिओम स्पेस ने एक बयान में कहा कि नासा, एक्सिओम स्पेस और स्पेसएक्स अब एक्सिओम मिशन 4 को 22 जून को आइएसएस में भेजने का लक्ष्य लेकर आगे बढ़ रहे हैं। प्रक्षेपण तिथि में परिवर्तन से नासा को अंतरराष्ट्रीय अंतरिक्ष स्टेशन के ज्वेज्दा सर्विस माड्यूल के सबसे पिछले हिस्से में हाल ही में किए गए मरम्मत कार्य के बाद अंतरिक्ष स्टेशन के संचालन का मूल्यांकन जारी रखने का समय मिल गया है।

एक्सिओम-4 वाणिज्यिक मिशन का नेतृत्व कमांडर पैगी व्हिटसन कर रही हैं, जिसमें शुक्ला मिशन पायलट हैं और हंगरी के अंतरिक्ष यात्री टिबोर कापू तथा पोलैंड के स्लावोज उज़नान्स्की-विस्नीव्स्की मिशन विशेषज्ञ हैं।

इस मिशन को मूलतः 29 मई को प्रक्षेपित किया जाना था, लेकिन फाल्कन-9 राकेट के बूस्टर में तरल आक्सीजन के रिसाव और अंतरराष्ट्रीय अंतरिक्ष स्टेशन के पुराने रूसी माड्यूल में भी रिसाव होने का पता चलने के बाद पहले इसे आठ जून, फिर 10 जून और फिर 11 जून के लिए टाल दिया गया। एक्सिओम स्पेस ने 'एक्स' पर कहा कि चालक दल सभी चिकित्सा और सुरक्षा प्रोटोकाल को बनाए रखने के लिए फ्लोरिडा में है। चालक दल का स्वास्थ्य अच्छा है और मनोबल भी काफी ऊंचा है।

एक्सिओम स्पेस ने 'एक्स' पर कहा कि चालक दल सभी चिकित्सा और सुरक्षा प्रोटोकाल को बनाए रखने के लिए फ्लोरिडा में है। चालक दल का स्वास्थ्य अच्छा है और मनोबल भी काफी ऊंचा है।

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Axiom-4 launch delayed again; new date June 22, says ISRO

Source: The Indian Express, Dt. 19 Jun 2025

The Axiom-4 mission carrying Indian astronaut Group Captain Shubhanshu Shukla to the International Space Station (ISS) has been pushed back again — the next probable launch date is June 22, according to the Indian Space Research Organisation (ISRO).

The space agency said that the revised date was arrived at after detailed discussions involving teams from Isro, Poland, and Hungary with Axiom Space; consultations between Axiom Space, Nasa, and SpaceX; and an assessment of the predicted weather conditions in the path of the flight.

Apart from Shukla, the SpaceX Falcon-9 rocket will carry astronauts Peggy Whitson from the US, Poland's Sławosz Uznański-Wiśniewski, and Hungary's Tibor Kapu in the Dragon spacecraft. The mission launch had to be pushed several times owing to a problem in the electrical harness of the Dragon spacecraft, a liquid oxygen leak in the Falcon 9 launch vehicle, and leaks on board the Zvezda module of the ISS.

"Based on the readiness status of the SpaceX Falcon 9 launch vehicle, the Dragon spacecraft, repairs in the Zvezda module of the Space Station, ascent corridor weather conditions, and the

health and preparedness of the crew in quarantine, Axiom Space has informed that the next probable launch date is 22 June 2025," Isro said in a statement. Shukla—referred to as Shux by his crewmates—will become India's second astronaut in space and the first one to go to the ISS.

Wing Commander Rakesh Sharma spent almost eight days on board the Soviet Salyut-7 Orbital Station in 1984. Themed 'Realize the Return', the two other crew members from Poland and Hungary will also take their country back to space after 40 years. At the space station, Shukla will conduct seven Indian experiments and participate in several other international ones. He will also interact with students, academics, people from the country's budding space industry, as well as dignitaries from the space station.

The learnings from the mission will feed into the country's human spaceflight programme. India plans to launch the first human mission by 2027. Isro's vision is to set up a five-module space station by 2035 and send a human to the moon by 2040.

https://indianexpress.com/article/technology/science/shubhanshu-shukla-axiom-4-mission-delayed-launch-date-june-22-10073218/

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