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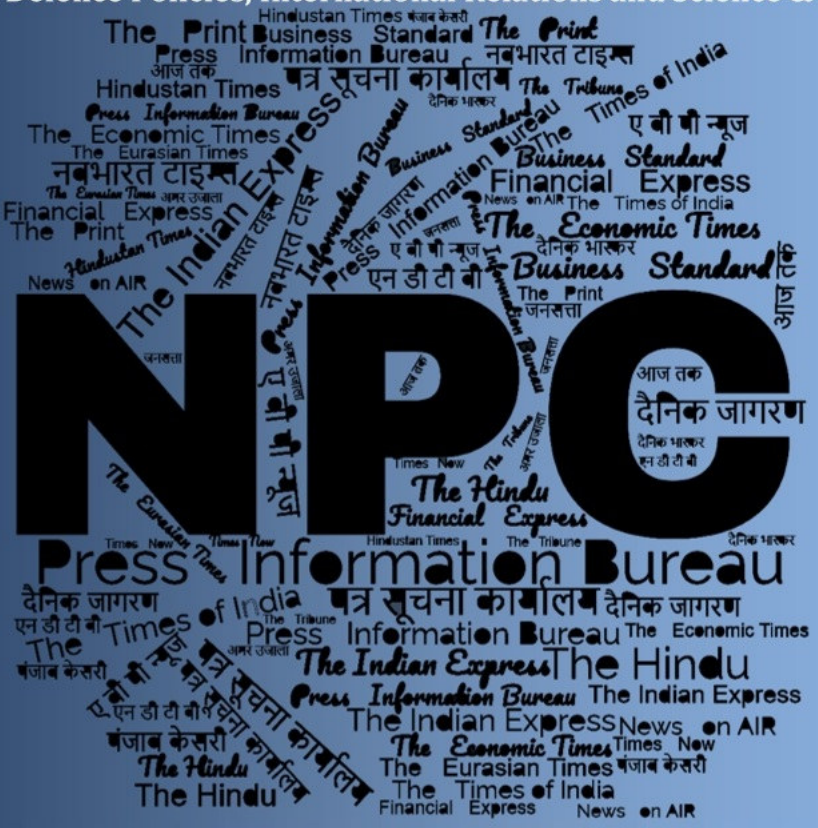
समाचार पत्रों से चयनित अंश

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

To expand defence manufacturing base, DRDO transfers tech on 9 systems

Source: The Times of India, Dt. 09 Jun 2025

DRDO has transferred technologies of nine land systems and weapon platforms, including for mounted artillery guns and CBRN (chemical, biological, radiological and nuclear) reconnaissance vehicles, to defence PSUs and private companies for production.

In line with the govt's vision to establish a robust defence industrial ecosystem, DRDO laboratory Vehicles Research & Development Establishment (VRDE) located near Ahmednagar in Maharashtra handed over the licencing agreements to the different companies on Saturday, officials said.

DRDO chairman Samir V Kamat, speaking on the occasion, praised the "exceptional performance" of indigenous systems like the Akash air defence missiles during Operation Sindoor. The country's defence industry should also plan for "surge capacity" during such situations, he said.

The technologies transferred by VRDE included CBRN recce vehicle (tracked) Mark-II to defence PSU Bharat Electronics (BEL) and the mounted gun system to private sector company Bharat Forge.

The others were anti-terrorist vehicles (tracked) to Metaltech Motor Bodies Private Ltd; expandable mobile shelter to BEL; Vajra riot control vehicles to Tata Advanced Systems Ltd; and multi-purpose decontamination systems to Dass Hitachi Limited and Goma Engineering Private Limited.

The other technologies were connected to the Arjun main-battle tanks. The full trailer tank transporter to BEML, Tata International Vehicle Applications, SDR Auto Private Ltd and John Galt

International. The technologies for the maintenance vehicle and repair vehicle for the Arjun tanks, in turn, was given to BEML.

https://timesofindia.indiatimes.com/india/to-expand-defence-manufacturing-base-drdo-transfers-tech-on-9-systems/articleshow/121713005.cms

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वायुसेना को मिलेगा स्वदेशी 'I-Star' जासूसी विमान सिस्टम, खासियत देख उड़ जाएंगे दुश्मनों के होश

Source: Dainik Jagran, Dt. 08 Jun 2025

पाकिस्तान के खिलाफ चल रहे आपरेशन सिंदूर के बीच भारतीय वायुसेना के लिए तीन अत्याधुनिक जासूसी विमानों की खरीद की जाएगी। ये टोही युद्धक विमान रडार स्टेशन, वायु रक्षा इकाइयां और अन्य मोबाइल वस्तुएं की मदद से वायु-से-भूमि लक्ष्यों पर सटीक हमले करने में कारगर होंगे।

खुफिया जानकारी और निगरानी करने वाले यह युद्धक विमान स्वदेशी आइ-स्टार प्रणाली से संचालित होंगे। दस हजार करोड़ रुपये के इस प्रोजेक्ट को रक्षा मंत्रालय की उच्चस्तरीय बैठक में प्रस्तावित किया जाएगा।

कब होगा मंजूर?

रक्षा मंत्रालय की एक बैठक इस संबंध में इसी महीने के चौथे हफ्ते में होनी है। यह प्रोजेक्ट 'इंटेलिजेंस, सर्विलांस, टारगेट एक्विजिशन और रीकान्नेसेंस' (यानी आइ-स्टार) के लिए है जिसे रक्षा मंत्रालय आने वाले कुछ समय में मंजूर कर सकता है।

आइ-स्टार प्रणाली सैन्य बलों को वायु-से-भूमि निगरानी प्रदान करती है, जिससे उन्हें सटीक हमले करने में सहायता मिलती है। यह जासूसी विमान परियोजना रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) ने विकसित की है।

DRDO ने क्या विकसित किया?

इसके परियोजना के तहत बोइंग और बाम्बार्डियर जैसे विदेशी विमान कंपनियों से खुली निविदा के जरिये तीन विदेशी युद्धक विमानों की खरीद की जानी है। विमानों पर लगे सिस्टम पूरी तरह से स्वदेशी होंगे, क्योंकि डीआरडीओ के 'सेंटर फार एयरबोर्न सिस्टम्स' (कैब्स) ने पहले ही इन्हें सफलतापूर्वक विकसित कर लिया है।

ये सिस्टम पहले ही कैब्स द्वारा सिद्ध और विकसित किए जा चुके हैं और इन्हें केवल तीन विमानों के साथ असेंबल करना होगा, जिन्हें इस उद्देश्य के लिए अधिग्रहित और आवश्यकतानुसार परिवर्तित किया जाएगा।

इस क्लब में शामिल होगा भारत

आइ-स्टार प्रणाली के विकास से भारत उन चुनिंदा देशों के क्लब में शामिल हो जाएगा, जिनके पास ऐसी क्षमता है। इसमें अमेरिका, ब्रिटेन, इजरायल कुछ अन्य देश शामिल हैं। आइ-स्टार इस प्रकार गतिशील और समयबद्ध तरीके से संवेदनशील लक्ष्यों की पहचान करने की क्षमता प्रदान करता है और राष्ट्र की सुरक्षा लक्ष्यों को पूरा करने में महत्वपूर्ण योगदान देता है।

यह अव्यक्त शत्रुतापूर्ण खतरों के पैमाने और जटिलता को सीमित करने में मदद करेगा। इसमें असामान्य बलों का पता लगाने, स्थान निर्धारित करने और बहुस्तरीय निगरानी करने की क्षमता है।

आई-स्टार की खासियत

- आइ-स्टार प्रणाली का उपयोग दिन और रात दोनों समय इंटेलिजेंस संग्रह, निगरानी, रीकान्नेसेंस और लक्ष्यों की पहचान के लिए किया जाएगा, जो स्टैंड-आफ रेंज से किया जाएगा।

- आइ–स्टार सिस्टम अत्यधिक ऊंचाई पर बड़े स्टैंड–आफ रेंज से संचालित होते हैं और इसका उपयोग इंटेलिजेंस प्रोसेसिंग, शोषण, प्रसार और सामान्य परिचालन चित्र के निर्माण के लिए किया जाएगा।
- आइ–स्टार विमान एक प्रणाली होगी जिसमें एयरबोर्न और ग्राउंड सेगमेंट शामिल होंगे।

https://www.jagran.com/news/national-air-force-indigenous-i-star-spy-plane-system-enemies-stunned-features-23959125.html

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Defence News

Navy set to induct 1st of 16 desi shallow water craft on June 18

Source: The Times of India, Dt. 09 Jun 2025

The Navy is now set to commission the first of the 16 specialised small warships, designed for anti-submarine warfare and low-intensity maritime operations along the coast, being built at Indian shipyards at an overall cost of Rs 12,622 crore.

The first anti-submarine warfare shallow water craft, built by Kolkata-based defence shipyard Garden Reach Shipbuilders & Engineers (GRSE) in collaboration with L&T Shipbuilders, will be commissioned as INS Arnala at Visakhapatnam in the presence of chief of defence staff General Anil Chauhan on June 18.

The 77-metre-long craft, with a displacement of 1,490 tonne and equipped with state-of-the-art underwater sensors, is the largest Indian warship till now to be propelled by a diesel engine-waterjet combination.

"The warship incorporates over 80% indigenous content and integrates advanced systems from leading Indian defence firms, including Bharat Electronics Limited, L&T and Mahindra Defence," an officer said.

GRSE and Cochin Shipyard are each building eight of these warships under twin Rs 6,311 crore contracts inked with them in April 2019. All the warships are supposed to be delivered by 2028.

Named after the historic Arnala Fort off Vasai in Maharashtra, the first of these 16 warships reflects India's rich maritime heritage.

https://timesofindia.indiatimes.com/india/navy-set-to-induct-1st-of-16-desi-shallow-water-craft-on-june-18/articleshow/121684496.cms

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समुद्र में दुशमनों की खैर नहीं, इंडियन नेवी के बेड़े में शामिल हुई ये घातक स्वदेशी सबमरीन!

Source: Punjab Kesari, Dt. 08 Jun 2025

भारतीय नौसेना 18 जून 2025 को एक नया इतिहास रचने जा रही है. दरअसल वह अपने बेड़े में पहला स्वदेशी "एंटी–सबमरीन वॉरफेयर शैलो वाटर क्राफ्ट" शामिल करेगी. विशाखापट्टनम स्थित नेवल डॉकयार्ड से यह जहाज जल में उतारा जाएगा. इसका नाम है INS अर्नाला, जो इस कैटेगिरी का पहला पोत है. कुल 16 ऐसे जहाज बनाए जाने हैं और यह परियोजना आत्मनिर्भर भारत की दिशा में एक बड़ी उपलब्धि है.

मीडिया रिपोर्ट के अनुसार, आईएएनएस अर्नाला का निर्माण गार्डन रीच शिपबिल्डर्स एंड इंजीनियर्स, कोलकाता द्वारा एलएंडटी शिपबिल्डर्स के सहयोग से किया गया है. यह परियोजना पब्लिक–प्राइवेट पार्टनरशिप मॉडल के अंतर्गत चल रही है. इस पोत का 80% से अधिक भाग देश में ही निर्मित किया गया है. इसमें भारत इलेक्ट्रॉनिक्स लिमिटेड, एलएंडटी, महिंद्रा डिफेंस और एमईआईएल जैसी स्वदेशी कंपनियों की तकनीकी भागीदारी है. इसके निर्माण में 55 एमएसएमई कंपनियों का भी योगदान है.

अर्नाला की विशेषताएं

यह युद्धपोत 77 मीटर लंबा है और इसका कुल वजन 1490 टन है. इसमें डीजल इंजन आधारित वाटरजेट सिस्टम लगाया गया है, जिससे यह 25 नॉटिकल मील प्रति घंटे की रफ्तार पकड़ सकता है. एक बार में यह जहाज 3300 किलोमीटर की यात्रा करने में सक्षम है.

पनडुब्बी रोधी क्षमता

INS अर्नाला को इस तरह से तैयार किया गया है कि यह समुद्र में 100 से 150 नॉटिकल मील की दूरी से भी दुश्मन की पनडुब्बियों का पता लगा सके. यह क्राफ्ट उथले जल क्षेत्रों (30–40 मीटर गहराई) में भी प्रभावी ढंग से कार्य कर सकता है, जहां पारंपरिक जहाजों के लिए काम करना मुश्किल होता है. इसमें एंटी–सबमरीन रॉकेट लॉन्चर, हल्के तारपीडो, 30 मिमी की तोप, एडवांस्ड सोनार सिस्टम और एएसडब्ल्यू कॉम्बैट सूट जैसे आधुनिक हथियार लगे हैं.

ऐतिहासिक विरासत से जुड़ा नाम

इस युद्धपोत का नाम महाराष्ट्र के वसई स्थित अर्नाला किले के नाम पर रखा गया है, जिसे 1737 में मराठाओं द्वारा बनाया गया था. इसके क्रेस्ट में नीले रंग की पृष्ठभूमि पर एक स्टाइलाइज्ड ऑगर शेल दिखाया गया है, जो जीवटता और सतर्कता का प्रतीक है. इसका आदर्श वाक्य "अर्नवे शौर्यम" इसकी वीरता और प्रतिबद्धता को दर्शाता है.

खरीद को कब दी गई मंजूरी?

भारत सरकार ने 2013 में ऐसे 16 शैलो वाटर क्राफ्ट की खरीद को मंजूरी दी थी. वर्ष 2019 में इस परियोजना के लिए समझौते पर हस्ताक्षर हुए. इसमें से आठ जहाज कोचिन शिपयार्ड में और आठ गार्डन रीच शिपबिल्डर्स में बनाए जा रहे हैं. ये नए पोत पुराने अभय क्लास कोर्वेट की जगह लेंगे. सभी जहाजों को 2026 तक भारतीय नौसेना को सौंप दिया जाएगा. इस परियोजना की अनुमानित लागत 13,500 करोड़ रुपये है.

भारत की समुद्री ताकत में इजाफा

समुद्री सीमा से सटे देशों के लिए ऐसे पोत रणनीतिक दृष्टि से अत्यंत आवश्यक हैं, खासकर चीन और पाकिस्तान जैसे पड़ोसियों की बढ़ती पनडुब्बी क्षमताओं को देखते हुए. अब भारत न केवल ऐसे जहाजों का निर्माण स्वयं कर रहा है, बल्कि रक्षा क्षेत्र में एक आत्मनिर्भर राष्ट्र के रूप में उभर रहा है.

https://www.punjabkesari.com/india-news/enemies-will-be-in-trouble-at-sea-this-deadly-indigenous-submarine-has-joined-the-indian-navy-fleet

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Navy to commission up to 10 warships by December, led by first ASW Shallow-Water Craft ‘Arnala’

Source: The Indian Express, Dt. 07 Jun 2025

The Indian Navy will induct nine to 10 warships between June and December 2025, significantly expanding its fleet. The first of these—the Anti-Submarine Warfare Shallow-Water Craft (ASW-SWC) Arnala—is scheduled for commissioning on 18 June at the Naval Dockyard in Visakhapatnam.

This would significantly bolster India's naval fleet and most of the ships to be commissioned have been made indigenously, officials said.

According to the Navy, the commissioning programme includes the ASW-SWC class of ships, beginning with ASW-SWC Arnala on 18 June at Naval Dockyard Visakhapatnam. Officials told The Indian Express that one or two more ASW-SWC vessels are also expected to be commissioned this year.

The Navy said that Arnala's commissioning will mark the formal induction of the first of sixteen ASW-SWC ships into the Indian Navy. These vessels have been designed and constructed by Garden Reach Shipbuilders & Engineers (GRSE), Kolkata, under a Public–Private Partnership with L&T Shipbuilders.

Named after the historic Arnala Fort in Vasai, Maharashtra, Arnala is equipped for a range of anti-submarine warfare operations, including subsurface surveillance, search-and-rescue missions, and low-intensity maritime tasks.

At 77.6 m in length and over 1,490 gross tonnes, Arnala is the largest Indian naval warship to be propelled by a diesel-engine–waterjet combination, the Navy said.

INS Tamal, the second Talwar-class stealth frigate under a 2016 Indo-Russian agreement, is set to be commissioned by the end of this month. Tamal is one of four frigates acquired in a $2.5 billion deal with Russia: two were constructed in Russia, and two at Goa Shipyard Limited (GSL) with Russian technology transfer. Its sister ship, INS Tushil, was commissioned in December 2024 at Russia's Yantar Shipyard and reached India in February 2025.

Other vessels awaiting induction include a diving support ship under construction at Hindustan Shipyard Limited; at least one Project 17A (Nilgiri-class) frigate, being built jointly by Mazagon Dock Shipbuilders Limited and GRSE; and a large survey vessel from GRSE. A second Nilgiri-class frigate may also be commissioned before year-end, an official said.

The Indian Navy aims to become a 175-ship by 2035.

An official said that the Navy is close to achieving full self-reliance in warship building and this is showing in the way ships are getting commissioned faster than before.

“The time taken from design to delivery of new ships has come down drastically due to technological advances, indigenisation efforts of the industry and the navy’s direct involvement in the IDDM (indigenously designed, developed and manufactured) process by being a part of the chain,” the official said.

INS Vagsheer, the sixth Kalvari-class submarine under Project 75, was commissioned in January 2025. This diesel-electric submarine operates underwater on battery power and on the surface using diesel engines, offering silent patrol capability close to the coast.

Staff evaluation and cost negotiations for Project 75I—which will build six advanced conventional attack submarines—are currently under way.

The Navy is also due to receive two more MH-60R Seahawk helicopters from the United States within a month. Of the 24 ordered, 13 have been delivered so far.

https://indianexpress.com/article/india/indian-navy-commission-10-warships-december-arnala-10053433/

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ICG Inaugurates Dedicated Jetty at Vizhinjam Harbour in Kerala to Boost Coastal Security Operations

Source: Press Information Bureau, Dt. 08 Jun 2025

The Indian Coast Guard (ICG) Director General (DG) Paramesh Sivamani, inaugurated a new dedicated ICG jetty at Vizhinjam Harbour, Kerala on June 07, 2025. The 76.7-metre state-of-the-art berth will support faster deployment and turnaround of ICG vessels, enhancing mission readiness for coastal surveillance, search & rescue, anti-smuggling, and fisheries protection.

Strategically located just 10 nautical miles from key international shipping lanes and adjacent to the Vizhinjam International Transshipment Deepwater Port, the jetty is expected to play a critical role in securing India’s southwestern coastline.

DG Paramesh Sivamani highlighted the strategic importance of the new facility, calling it a major step forward in strengthening the coastal security architecture and ensuring faster response capabilities in the region.

The event was attended by Commander, ICG Region (West) Inspector General Bhisham Sharma along with senior officials from Vizhinjam International Seaport Ltd, Government of Kerala, Kerala Maritime Board, State Police, Port Authorities, Indian Army, Adani Ports Pvt. Ltd., and the Fisheries Department.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2134960

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सुखोई और एस-400 को तबाह करने के पाकिस्तान के दावे की अमेरिकी विशेषज्ञ ने खोली पोल

Source: Dainik Jagran, Dt. 09 Jun 2025

- प्रसिद्ध तस्वीर विश्लेषक डेमियन सिमोन बोले- पुरानी तस्वीरों से छेड़छाड़ कर पाकिस्तान ने किया है फर्जी दावा
- नालिया एयरबेस, जम्मू व श्रीनगर एयरपोर्ट पर तबाही दिखाने वाली तस्वीरें भी डिजिटली संपादित कर जारी की गईं

जागरण न्यूज नेटवर्क, नई दिल्ली: पहलगाम आतंकी हमले के बाद भारत ने 'आपरेशन सिंदूर' चलाकर पाक में आतंकी ठिकानों को ध्वस्त कर दिया। इससे झल्लाए आतंकियों के सरपरस्त पाकिस्तान ने कई तस्वीरें जारी कर दावा किया कि उसने भी जवाबी कार्रवाई में आदमपुर एयरबेस समेत कई जगह भारत को काफी नुकसान पहुंचाया है। एक सुखोई लड़ाकू विमान और एस-400 रडार प्रणाली को तबाह कर दिया, लेकिन पाक के इन सब दावों की एक प्रसिद्ध अमेरिकी तस्वीर विश्लेषक डेमियन सिमोन ने पोल खोलकर रख दी है। विश्लेषण के दौरान उन्होंने पाया कि पाकिस्तान के दावे पूरी तरह फर्जी हैं। सिमोन ने कहा कि कुछ पुरानी तस्वीरों से छेड़छाड़ कर उन्हें एक्स पर पोस्ट करके पाकिस्तान ने उन्हें आपरेशन सिंदूर के बाद की तस्वीरें बताया है। यानी पाकिस्तान ने भारतीय वायुसेना के ठिकानों पर हमले की सफलता का एक झूठा नेरेटिव पेश करने का प्रयास किया। यह पाकिस्तान की जनता को खुश करने के लिए उसकी आंखों में धूल झोंकने से ज्यादा कुछ नहीं है।

पाकिस्तान के एयरबेस पर भारतीय हमलों के बाद व्यापक क्षति: अमेरिकी विशेषज्ञ ने कहा कि पाकिस्तान के दावे सत्यापन में पूरी तरह विफल रहे हैं। असल में भारतीय स्थलों को कोई नुकसान नहीं पहुंचा है। इसके विपरीत, पाकिस्तान के एयरबेस पर भारतीय हवाई हमलों के बाद व्यापक तौर पर जो नुकसान पहुंचा, उसकी मरम्मत गतिविधियां जरूर देखी गई हैं। पाक ने इन संरचनाओं और विमानों को टारपोलिन शीट्स से ढका हुआ है। साफ है कि उसने खुद को हुए भारी नुकसान को छिपाने के लिए ऐसा किया हुआ है।

बता दें कि एआइ-विश्लेषण फर्म द इंटेल लैब के जियो इंटेलिजेंस रिसर्चर सिमोन युद्धों की वास्तविकता पर छाए भ्रम और संदेह को वर्षों से दूर करते आ रहे हैं। इसके लिए वे सार्वजनिक रूप से उपलब्ध सेटेलाइट डाटा और तस्वीर विश्लेषण का इस्तेमाल करते हैं।

संबंधित ›› पेज 7

दावा: पाकिस्तान ने दावा किया कि उसने आदमपुर एयरबेस पर एक सुखोई-30एमकेआइ को नुकसान पहुंचाया।

आदमपुर एयरबेस की 21 मार्च, 2025 की तस्वीर

पड़ताल: असल में पाकिस्तान ने लड़ाई से दो माह पहले मार्च 2025 में ली गई एक सेटेलाइट तस्वीर शेयर की है, जिसमें मिग-29 का रखरखाव कार्य चल रहा था और इंजन टेस्ट पैड के पास दिखाई देने वाली कालिख आम बात है। सिमोन ने साफ कर दिया है कि आदमपुर एयरबेस बिल्कुल सही सलामत है।

दावा: एक अन्य तस्वीर में पड़ोसी मुल्क ने भुज में एक एस-400 रडार प्रणाली को तबाह करने की बात कही है।

भुज एयरफोर्स स्टेशन की 24 फरवरी, 2025 की तस्वीर

पड़ताल: एक सैन्य बेस के एप्रन पर काले धब्बे दिखाए हैं। यह रखरखाव यार्ड के तेल के धब्बे थे। यह तस्वीर भारत-पाक संघर्ष से पहले की है। पाक ने नालिया एयरबेस की भी एक तस्वीर प्रसारित की, जिसमें बमबारी के हमले का संकेत दिखाया गया है, जबकि असल में यह केवल एक ओवरहेड बादल की छाया थी।

पाकिस्तान की ओर आदमपुर एयरबेस 21 मार्च, 2025 की तस्वीर और भुज एयरफोर्स स्टेशन की 24 फरवरी, 2025 की तस्वीर में छेड़छाड़ कर सुखोई लड़ाकू विमान व एस-400 रडार प्रणाली को तबाह करने का दावा किया जा रहा है ● सौ-एक्स@डेमियन सिमोन (सभी तस्वीरें)

दावा: पाक ने जम्मू एयरपोर्ट पर नुकसान दिखाते हुए एक तस्वीर जारी की है, जिसमें रनवे और एप्रन क्षेत्र में काले धब्बे थे।

पड़ताल: असल में इस तस्वीर को डिजिटल रूप से संपादित किया गया। वहां किसी तरह के विस्फोट और तबाही के कोई निशान नहीं हैं। इसी तरह छेड़छाड़ कर एक धुंधली तस्वीर में श्रीनगर एयरपोर्ट पर नागरिक एप्रन को बम से नुकसान पहुंचने के तौर पर दिखाया गया है, जबकि श्रीनगर एयरपोर्ट पूरी तरह सही सलामत है।

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Army to procure 4,000 'top-attack' mines

Source: The Tribune, Dt. 07 Jun 2025

The Indian Army has projected a requirement for 4,000 advanced "top-attack" anti-tank mines to enhance its capability to deal with hostile armoured vehicles. These mines are used to protect important areas, act as a deterrent against aggression and slow down enemy advances.

The employment of several types of anti-tank mines has been witnessed during the ongoing Russia-Ukraine war by both the sides, especially along major roads and logistical corridors.

India last laid mines during Operation Parakram in 2001-02, in the wake of a terrorist attack on Parliament, when large tracts along the International Border with Pakistan were heavily mined.

"Top-attack mines are a crucial element of modern defensive warfare, offering effective area denial capabilities and battlefield superiority against advancing mechanised forces," a request for information issued by the Ministry of Defence on June 5 states. They are more effective against modern tanks with improved frontal armour and can also be deployed in various terrains.

At present, mechanised warfare is not only the domain of plains and deserts as in areas like Punjab and Rajasthan but has also become a part of high-altitude operations in Ladakh and the North-East.

The Indian Army has deployed T-90 and T-72 tanks, along with BMP-2 mechanised infantry combat vehicles, in high-altitude areas along the Line of Actual Control. China also has armoured and mechanised elements on its side.

These mines are advanced land-based munitions designed to engage and neutralise armoured vehicles by targeting their most vulnerable area — armour plates on top of the vehicles. Unlike traditional bottom-attack mines that detonate upon direct contact with the vehicle's tracks or wheels, top-attack mines utilise advanced sensors and warhead technology to strike from above.

The top attack mines employ a combination of seismic, acoustic and infrared sensors to detect and classify approaching targets. Upon detection, the mine launches a sub-munition or Explosively Formed Penetrator (EFP) in a near-vertical trajectory to penetrate the vehicle's top armour. Some variants use explosively generated shock waves or shaped charges to achieve the same effect.

Offering increased lethality and versatility, these are capable of defeating heavily armoured vehicles that may be resistant to traditional underbelly mines. These can be deployed in a variety of terrains, including open fields, forests, deserts and urban environments.

Advanced mines can also be activated, deactivated or self-destructed remotely to reduce the risk of civilian casualties after cessation of hostilities. After Operation Parakram, the army spent months in de-mining operations, manually removing mines.

https://www.tribuneindia.com/news/india/army-to-procure-4000-top-attack-mines/

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Govt to revive battalions of border home guards in wake of Pahalgam terror attack

Source: The Tribune, Dt. 09 Jun 2025

In the wake of the Pahalgam terror attack, the Union Home Ministry is fast-tracking a proposal to revive and modernise Border Wing Home Guards Battalions in frontier states, aiming to strengthen India's civil defence infrastructure. The battalions — originally created to serve as auxiliary forces to the Indian Army and the Border Security Force (BSF) during times of external aggression — have, over time, become largely defunct, barring Rajasthan. Officials say the units in several border states are now barely functional.

Highly placed sources informed The Tribune that the long-pending proposal had gained urgency following the April 22 terror strike in Pahalgam, in which 26 persons were killed, and India's

retaliatory military operation, Operation Sindoor, against Pakistan. It has also been spurred by concerns raised during recent national-level mock drills assessing preparedness for external aggression and natural disasters.

The drills, conducted on May 7 and again on May 31 under Operation Shield, exposed critical gaps in the country's civil defence readiness, particularly in Punjab, Rajasthan, Gujarat and Jammu & Kashmir. The revived Home Guards plan is among the key remedial steps being expedited, officials confirmed.

According to official data, there are currently 15 Border Wing Home Guards Battalions — six in Punjab, four in Rajasthan, two in Gujarat and one each in Meghalaya, Tripura and West Bengal. These units are meant to assist the BSF in guarding international borders and coastal areas, preventing infiltration and protecting critical infrastructure during wartime.

The proposed overhaul includes fresh recruitment, modernised training modules and stricter deployment protocols, making the Home Guards a more effective civil defence backup. Home Guards are raised under the Home Guards Act and Rules of the states/union territories, comprising citizens from diverse backgrounds who volunteer their time in service of community safety and national preparedness.

https://www.tribuneindia.com/news/india/govt-to-revive-battalions-of-border-home-guards-in-wake-of-pahalgam-terror-attack/

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Rail line to Kashmir: Strategic asset, boon for economy

Source: The Tribune, Dt. 07 Jun 2025

The Udhampur-Srinagar-Baramulla Rail Link (USBRL), poised to transform travel to the Kashmir Valley, is being hailed as a strategic game-changer, which also has the potential to significantly boost the region's economy.

The direct rail link will enhance the rapid mobilisation of Army troops during emergencies. On May 13, at the height of hostilities with Pakistan, around 800 soldiers were reportedly sent to the Valley via this route, even before the train service was officially launched. This move gave a major logistical advantage to the defence forces, which previously relied on slow-moving road convoys to reach the Valley. The new rail connection will also facilitate the swift deployment of paramilitary forces when needed.

Economically, the direct rail link is expected to revolutionise the transportation of dry fruits and apples from Kashmir to distant markets across India. Currently, it takes several days for Kashmiri apples to reach destinations like Delhi due to the slow and often disrupted movement of trucks on the Srinagar-Jammu National Highway (NH), which is prone to frequent landslides and road closures. Prime Minister Narendra Modi also highlighted how the new train service would benefit apple growers in Kashmir. Fruit producers say the direct rail connection will not only reduce travel time but also significantly lower transportation costs.

Fayaz Malik, president of Sopore Fruit Mandi, explained the economic advantage: "Currently, transporting one box of apples from Kashmir to Kolkata by truck costs around Rs 150. With the train, it will be reduced to Rs 20–30. While a truck takes 5–6 days to reach Mumbai, the train will

deliver the fruits in just 30 hours." He added that the rail link will allow growers to access markets that were previously out of reach.

The region's industrial sector also views the rail link as a transformative development. Rahul Sahai, chairman of the Indian Chamber of Commerce (ICC), Jammu, described the inauguration of the rail corridor as a "landmark day in the history of J&K."

"The rail link will be a game-changer for the regional economy. It will open up new avenues for trade, tourism, logistics and industrial linkages. Jammu will emerge as a critical economic hub — a gateway for goods, people, and ideas flowing into and out of the Kashmir Valley," Sahai said. He added that the connectivity would bolster local businesses, MSMEs, transporters and the service sector, creating much-needed employment opportunities for the youth.

https://www.tribuneindia.com/news/j-k/rail-line-to-kashmir-strategic-asset-boon-for-economy/

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सुरक्षा चुनौतियों का प्रभावी ढंग से जवाब देने की क्षमता को मजबूत करने पर जोर

Source: Jansatta, Dt. 09 Jun 2025

जनसत्ता ब्यूरो
नई दिल्ली, 8 जून।

मंगोलिया के उलानबातर में जारी द्विपक्षीय अभ्यास में भाग ले रहे भारत और मंगोलिया के सैन्य दल आतंकवाद विरोधी अभियानों और अचूक निशाना साधने के क्षेत्र में सर्वोत्तम कार्यप्रणालियों का सक्रिय रूप से आदान-प्रदान कर रहे हैं।

अधिकारियों ने रविवार को कहा कि संयुक्त अभ्यास के माध्यम से दोनों सेनाएं समकालीन सुरक्षा चुनौतियों का प्रभावी ढंग से जवाब देने की अपनी क्षमता को मजबूत करने के लिए काम कर रही हैं। संयुक्त सैन्य अभ्यास 'नोमैडिक एलीफेंट' का 17वां संस्करण 31 मई से 13 जून तक उस देश के विशेष बल प्रशिक्षण केंद्र में आयोजित किया जा रहा है। इस अभ्यास का उद्देश्य दोनों सेनाओं के बीच अंतर-संचालन क्षमता को बढ़ाना है। भारतीय सेना के एक वरिष्ठ अधिकारी ने कहा कि संयुक्त राष्ट्र के आदेश के तहत अर्ध-शहरी और पहाड़ी इलाकों में गैर-पारंपरिक अभियानों के संचालन पर केंद्रित इस अभ्यास का उद्देश्य दोनों सेनाओं की परिचालन क्षमताओं को बढ़ाना है। भाग लेने वाले दल सक्रिय रूप से 'आतंकवाद-रोधी अभियानों और अचूक निशाना साधने में सर्वोत्तम कार्यप्रणालियों' का आदान-प्रदान कर रहे हैं, जिससे अंतर-संचालन क्षमता में सुधार हो रहा है। दो सप्ताह तक चलने वाला यह अभ्यास भारत और मंगोलिया में बारी-बारी से आयोजित होने वाला एक वार्षिक आयोजन है। इसका पिछला संस्करण जुलाई 2024 में मेघालय के उमरोई में आयोजित किया गया था। यह अभ्यास भारत और मंगोलिया के बीच बढ़ते रक्षा सहयोग को दर्शाता है।

एक अधिकारी ने कहा कि आपसी समन्वय और तैयारियों को बढ़ाने के लिए व्यापक प्रशिक्षण गतिविधियां आयोजित की जा रही हैं। दोनों देशों के सैनिक अपनी परिचालन रणनीति को निखार रहे हैं।

भारतीय रक्षा मंत्रालय ने अभ्यास से पहले एक बयान में कहा था कि भारतीय दल में 45 जवान शामिल हैं, जिनमें मुख्य रूप से अरुणाचल स्काउट्स की एक बटालियन के जवान शामिल होंगे। मंगोलियाई सशस्त्र बल की टुकड़ी, जिसमें समान संख्या में सैनिक शामिल होंगे, का प्रतिनिधित्व 150 विशेष बल इकाई द्वारा किया जाएगा।

रक्षा सहयोग बढ़ाएंगे दोनों देश

'नोमैडिक एलिफेंट' केवल सैन्य अभ्यास नहीं, बल्कि यह सांस्कृतिक आदान-प्रदान और रणनीतिक सोच का भी मंच है। इस दौरान दोनों देशों के सैनिक संचालनात्मक अनुभव साझा करेंगे, नए दृष्टिकोण सीखेंगे, और एक-दूसरे की संस्कृति को गहराई से समझ पाएंगे। यह अभ्यास भारत और मंगोलिया के साझा दृष्टिकोण को रेखांकित करता है- क्षेत्रीय शांति, स्थिरता और सुरक्षा बनाए रखना। यह संबंध एशिया में रणनीतिक साझेदारी को और मजबूत करने की दिशा में एक ठोस कदम है। नोमैडिक एलिफेंट 2025 भारत और मंगोलिया के बीच स्थायी मित्रता, पारस्परिक विश्वास, और साझा मूल्यों का सशक्त प्रतीक है। यह दोनों देशों की सेनाओं के बीच व्यावसायिक सैन्य सहयोग, रणनीतिक एकजुटता, और भविष्य के लिए तैयारी को उजागर करता है।

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Ukraine's AI-powered war has lessons for India and the world

Source: The Times of India, Dt. 08 Jun 2025

THE UNDERAGE OPTIMIST

CHETAN BHAGAT

Given the scale of impact artificial intelligence is expected to have on the world, India isn't discussing it nearly enough. Globally, hundreds of billions of dollars are being invested into AI — from building advanced hardware and training powerful models to helping nearly every major business adapt to this new technological paradigm. The potential transformation is massive.

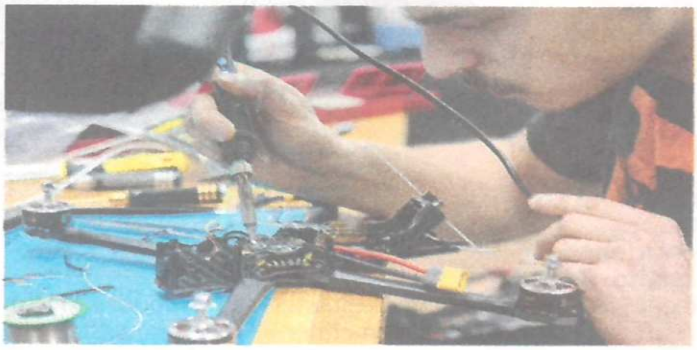
In India, AI is occasionally a topic of conversation, but such discussions often devolve into empty nationalism — statements like "we will build our own AI," or "we are no less than the West," or even worse, "thousands of years ago, India was so advanced that..." This shows a fundamental lack of understanding about what is actually unfolding in the world.

AI's impact on jobs across sectors, including in India, is already becoming visible. Our software industry — which has long been a global supplier of coding talent — is facing an existential threat. AI can now code better than many human programmers. Corporate white-collar jobs, especially those involving repetitive tasks like writing memos, creating presentations, and compiling spreadsheets are also vulnerable. The labour market isn't immune: robots are arriving, capable of replacing factory and domestic workers — without any of the challenges that come with managing people.

Even creative industries are at risk. Google recently launched Veo 3, a tool that can generate movie-quality videos with sound and AI-generated actors — all from simple text prompts. If you watch Veo 3 demos online, you are likely to be stunned. And this is just the beginning.

Does this mean all jobs will vanish? Certainly not. As with any tech revolution, new kinds of jobs will emerge. However, we don't know yet what these will look like. The only way to remain relevant is to actively invest in and engage with AI development from the outset. Does India have a national AI strategy, especially when it comes to defence? If so, what is it? These are the questions we should be debating on television rather than having slanging matches on Pakistan. Those who ask how AI is related to national security and terrorism should look at how AI-powered drones have changed the war in Ukraine. Earlier this week, Ukraine used First Person View (FPV) AI-enhanced drones to reportedly destroy 40 Russian planes at military airbases and inflict billions of dollars in damages. Russia has since retaliated with a barrage of drones and missiles.

Advancements in AI will inevitably change the future tactics of terrorists. Unlike previous Indo-Pak conflicts, Operation Sindoor was the first time so many unmanned drones were deployed to inflict damage. While we managed to shoot most of them down, what happens if the attacker does a 'Trojan Horse' attack like Ukraine? Ukraine hid drones in wooden mobile cabins and snuck them into Russia in a cleverly planned operation. Imagine a similar scenario in India. There could be destruction unleashed in public areas — all without any human perpetrator.



PREP FOR FUTURE: India should treat AI as a national priority, creating a separate ministry if needed

Think robots are still years away? Tesla claims it will have a consumer-grade robot ready within five years. That means anyone could soon buy a robot to make a sandwich or clean the house. And no, not all robots look like metallic humanoids. Some can be just everyday objects like say, a lawnmower or a bicycle. 'Killer robots' aren't too far away either. South Korea is already testing the first quadruped robot for military use, and Ukraine is deploying robotic units equipped with machine guns and is said to be developing a hovering unmanned copter. Robotic terrorism may sound far-fetched right now. But ten years ago, did we imagine thousands of drones attacking our cities? Or that Ukraine's factories would be churning out three to four million drones a year?

What does this mean for India? First, we must treat AI as a national priority. If that requires a dedicated ministry — just as we created one for information technology decades ago — so be it. We need to develop top-tier AI capabilities and build our own advanced robots. In drone tech, we are already making substantial leaps. Second, we must prepare for tech-driven terrorism and warfare. This will require a radically different defense strategy — one that goes beyond traditional law enforcement chasing human suspects.

Finally, there's a broader message here — not just for India, but for the entire world. As AI becomes more advanced, the destructive potential of each side in a conflict will increase dramatically. That means long-standing disputes can no longer be resolved through violence. The best defence against malicious tech is good tech, yes — but ultimately, the only sustainable path forward is through communication, diplomacy, and dialogue. ■

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चर्चा में क्यों है मेटा का स्मार्ट हेलमेट

Source: NavBharat Times, Dt. 08 Jun 2025

NBT रिपोर्ट: अमेरिकी सैनिकों के लिए मेटा और एंड्यूरिल इंडस्ट्रीज ने EagleEye नाम से अडवांस हेलमेट बनाया है। ऑगमेंटेड रियलिटी (AR) और वर्चुअल रियलिटी (VR) से लैस यह हेलमेट युद्ध क्षेत्र का नक्शा, दुश्मन की ताजा स्थिति और अपने सहयोगी सैनिकों की लोकेशन दिखाता है। यह रीयल-टाइम ड्रोन अलर्ट, दुश्मन के हमले के रास्ते और सेफ रूट आदि की सूचनाएं भी देगा।

मेटा और एंड्यूरिल इंडस्ट्रिज ने मिलकर अमेरिकी फोर्स के लिए बनाया हेलमेट

मेटा का Llama AI मॉडल और एंड्यूरिल का Lattice कमांड प्लैटफॉर्म मिलकर कई स्रोतों जैसे ड्रोन, सैटलाइट और ग्राउंड सेंसर से डेटा लेकर रियल टाइम एनालिसिस करते हैं। इन सूचनाओं के आधार पर कमांडर और सैनिक बहुत तेज और सूझबूझ वाले निर्णय लेने में सक्षम हो जाते हैं। Lattice प्लैटफॉर्म युद्ध क्षेत्र का इंटीग्रेटेड व्यू तैयार करता है, जिससे महत्वपूर्ण लक्ष्यों की पहचान और तत्काल ऐक्शन लेने में आसानी हो जाती है। हेलमेट में अडवांस ऑप्टिकल सिस्टम है जो कम रोशनी या मुश्किल परिस्थितियों में भी साफ और सटीक विजुअल देता है। इस हेलमेट में ऑडियो और विजन से जुड़े सारे उपकरण एक ही फ्रेम में होते हैं।

सॉफ्टवेयर ने बनाया इतना स्मार्ट

इस हेलमेट की सबसे बड़ी ताकत इसके पीछे काम करने वाला सॉफ्टवेयर है। मेटा का Llama AI मॉडल और एंड्यूरिल का Lattice सिस्टम मिलकर युद्ध में महत्वपूर्ण जानकारियां जुटाते और एनालिसिस करते हैं। हेलमेट से जुड़े AI सॉफ्टवेयर कई सोर्स जैसे आसमान में उड़ते ड्रोन, छुपकर निगरानी करने वाले सैटलाइट और जमीन पर लगे सेंसर से डेटा लेते हैं। हेलमेट का पावरफुल AI मॉडल इस डेटा को रियल टाइम में प्रोसेस करता है। ऐसे में डेटा के आधार पर युद्ध के मैदान में बनने वाले मैप को सैनिक आसानी से देख सकते हैं।

कम रोशनी में भी तेजी से सर्विलांस

युद्ध क्षेत्र अक्सर अंधेरा, धुंधला या स्मोक से भरा हो सकता है। EagleEye का ऑप्टिकल सिस्टम खासतौर पर ऐसे हालात के लिए बनाया गया है। इसमें सिलिकन कार्बाइड के लेंस हैं जो युद्ध के मैदान का वाइड व्यू और रंगों की सटीकता बनाए रखते हैं, भले ही रोशनी कम हो। ऐसे में रात में या जंगली इलाकों में भी सैनिकों को साफ इमेज दिखती है। इसके साथ ही हेलमेट में थर्मल या नाइट-विजन जैसे अडवांस्ड सेंसर भी लगे हैं, जो दूर से ही इंसानों और गाड़ियों को डिटेक्ट कर लेते हैं।

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Science & Technology News

Finance Ministry rolls back restrictions on procurement of scientific equipment

Source: The Hindu, Dt. 08 Jun 2025

Amid complaints from scientists on sub-standard equipment affecting their research, the Finance Ministry has rolled back restrictions imposed on how scientific labs procured equipment, through a circular issued on Thursday (June 5, 2025).

The first significant change was allowing affiliated scientific institutions to bypass the Government e-marketplace (GEM), a Commerce Ministry initiative meant to prioritise made-in-India equipment. Existing norms require all government purchases — from laptops to furniture — to be made with the cheapest vendor identified through the GEM portal.

As The Hindu had previously reported, this was often a stumbling block for scientists who required customised equipment conforming to high-quality standards to replicate experiments. The vendors of the GEM, scientists had told The Hindu, were often unable to meet such standards. For procurement outside the GEM universe, scientists had to first establish that the necessary wares were unavailable on the site. This often led to delays and compromise on research goals.

Thursday's (June 5, 2025) notification allowed Directors of select institutes and Vice-Chancellors or Chancellors of universities to make "non-Government e-market place procurement of scientific equipment and consumables".

The Director of a leading biology institute, who declined to be identified, said he could "scarcely believe" that the government had eased procurement norms via GEM in a "single stroke". "This has been a major demand from the scientific community and a restriction imposed after 2019. It is a positive development and should greatly ease research and development," he told The Hindu. "This reverts back to how procurement used to happen before the GEM, where institute heads had greater autonomy."

The circular of June 5 also allows heads of scientific institutions to approve “Global Tender Enquiry” (GTE) up to ₹200 crore. Prior to this, departmental Secretaries – such as the heads of the Department of Science and Technology, Department of Biotechnology or Ministry of Earth Sciences (MoES) – were required to issue such clearances. This usually led to “pile up” of requests and concomitant procurement delays, a scientist in one of the Ministries told The Hindu.

The circular has also doubled the ceiling on goods that can be procured by scientific departments without quotations from ₹1 lakh to ₹2 lakh. For a Purchase Committee, the ceiling was raised from ₹10 lakh to 25 lakh and for Tender Enquiries, the upper limit was increased from ₹50 lakh to ₹1 crore. These limits were revised in July 2024 too and easing them reflects inflation while allowing scientific institutions greater control at a local level in choosing appropriate vendors.

However, all of these concessions are strictly for scientific equipment and consumables and meant only for organisations affiliated to the Ministry of Science and Technology, Council of Scientific and Industrial Research, Department of Atomic Energy and Space, Indian Council of Medical Research, Indian Council for Agricultural Research and educational institutions conducting postgraduate research under various Ministries.

Science Minister Jitendra Singh posted on X that this was a “landmark” step. “This will reduce delays, also enhance autonomy and flexibility for research institutions – empowering them to innovate faster.” He credited Prime Minister Narendra Modi for the “transformative reform”.

https://www.thehindu.com/sci-tech/science/finance-ministry-rolls-back-restrictions-on-procurement-of-scientific-equipment/article69668799.ece

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Russia patents drone tech: Orbital station to launch spacecraft automatically; robots to maintain station

Source: The Times of India, Dt. 07 Jun 2025

Russia has developed and patented a new technology that allows spacecraft to be launched automatically from an orbital station, Russian news agency TASS reported. This system also includes robotic maintenance features, making it the first of its kind in the world.

The technology will be tested at the upcoming Russian Orbital Station (ROS), and later used in future lunar exploration missions. Russia’s first deputy Prime Minister Denis Manturov informed President Vladimir Putin about the developments of this technology, emphasising at Russia’s need to transition to its own orbital station, module-by-module by 2030.

The ROS “will become the world's first drone platform equipped with robots for its maintenance. This is a patented solution of the Russian Federation,” Manturov said during the meeting on Friday, as reported by PTI. The meeting was chaired by Putin through a televised medium to assess the current national projects, particularly in the field of space. Work is currently underway to develop the Russian Orbital Station (ROS), which is planned for deployment in a near-polar orbit between 2027 and 2033.

The scientific and power module (SPM), representing the first segment of the ROS, is scheduled for launch at the end of 2027. By 2030, additional components including the universal-node, gateway, and base modules are planned for launch, which together with the SPM will form the

station's core infrastructure. The second phase of the station's deployment will involve expanding the facility by docking two target modules between 2031 and 2033.

The deployment of Russia's orbital station is expected to begin after the scheduled deorbiting of the International Space Station by 2030. This transition comes after valuable joint space collaboration experience between Roscosmos and Nasa.

https://timesofindia.indiatimes.com/science/russia-patents-drone-tech-orbital-station-to-launch-spacecraft-automatically-robots-to-maintain-station/articleshow/121694802.cms

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Scientists detect heavist proton emitter astatine-188

Source: The Hindu, Dt. 08 Jun 2025

R. Prasad

An international collaboration led by researchers at the University of Jyväskylä, Finland, has detected and measured the half-life of the heaviest proton emitter, the ^{188}At isotope, which decayed by emitting a proton. While isotopes often undergo radioactive decay by emitting alpha, beta, and gamma particles, they rarely emit a proton. The study was published in *Nature Communications*.

"The measured half-life for ^{188}At is 190 microseconds, which defines the timescale for the proton emission," Henna Kokkonen, the first and one of the corresponding authors from the University of Jyväskylä, said in an email to *The Hindu*.

"For a nucleus with given proton and neutron numbers, if we keep on adding more protons, we will reach a limit where the last-added proton would simply drip away," Paramasivan Arumugam, Professor in the Department of Physics at IIT Roorkee and coauthor of the paper, said. He added that this is the first instance where "proton emission was detected and studied in a lab" and that doing so required "specialised experimental facilities" and "theoretical descriptions".

Dr. Kokkonen added: "The measurement techniques and the analysis have advanced significantly during the past years allowing us to study more and more exotic nuclei."

The heaviest astatine nucleus, with atomic number 85, was produced in a fusion-evaporation reaction by irradiating a silver target with strontium ions. Of the several nuclei that were formed, ^{188}At was identified using a Recoil-Ion Transport Unit recoil separator.

"When 188-astatine emits the proton, it becomes 187-polonium, which has a half-life of only 1.4 ms. The 187-polonium isotope then decays via alpha decay into 183-lead and so on, until it reaches a stable nucleus," Dr. Kalle Auranen, the other corresponding author, said in an email.

The IIT Roorkee team, led by Prof. Arumugam, ascertained the proton emission with theoretical calculations. Sophisticated measurements undertaken at the University of Jyväskylä need such corroboration. "We have been developing the theory for proton emission since 2008 in collaboration with the Universidade de Lisboa in Lisbon, Portugal," Prof. Arumugam said. "The theoretical calculations allowed us to determine the shape of the astatine nucleus to be strongly prolate (watermelon-shaped)," he said. "The structure of the nucleus is represented by the shape parameter, and the half-life strongly depends on the shape parameter."

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Countdown begins for Shukla's space odyssey

Source: The Tribune, Dt. 09 Jun 2025

EXPLAINER

VIJAY MOHAN
TRIBUNE NEWS SERVICE

CHANDIGARH, JUNE 8

The countdown has begun for the scheduled June 10 launch of Axiom-4 mission, the four-member mission to the International Space Station (ISS) that includes an Indian astronaut. With earlier concerns about the mission being derailed due to tensions between US President Donald Trump and SpaceX chief Elon Musk now easing, Indian Air Force Group Captain Shubhanshu Shukla is one step closer to becoming the second Indian to travel to space.

Gp Capt Shukla, a seasoned fighter pilot and test pilot, is the designated pilot of the Dragon C-213, a partially reusable spacecraft developed by SpaceX that will transport the crew to the ISS and back into the Earth's atmosphere after about 14 days.

Other members of the crew include mission commander Peggy Whitson, US' most experienced astronauts and commander of Axiom-2, and mission specialists Slawosz Uznanski-Wisniewski, a scientist from Poland, and Tibor Kapu, an engineer from Hungary.

The Axiom-4 mission will "realise the return" to human spaceflight for India, Poland and Hungary, with each nation's first government-sponsored flight in more than 40 years, the mission's website states.

"While Ax-4 marks these countries' second human spaceflight mission in history, it will be the first time all three nations will execute a mission on board the International Space Station," it adds.

The Falcon-9 rocket on its launch pad in Florida on Sunday. SPACEX

How will the crew reach ISS

The Dragon, carrying the crew, will be launched from the Kennedy Space Centre in Florida on June 10 at 8.22 Eastern Daylight Time (EDT) onboard Falcon-9, a two-stage, medium-lift launch vehicle developed by SpaceX.

Nine minutes and 38 seconds after lift-off, the Dragon will separate from the Falcon's second stage and begin its own journey towards the ISS that orbits 408 km above the Earth at a speed of 27,600 km/h, completing 15-16 rounds every day.

The Dragon is scheduled to dock with the ISS on June 11 at 12.30 pm EDT. It will use its onboard navigation systems to autonomously set course and align with the ISS, slowing down and making adjustments to match its orbit and speed to those of the ISS.

The Dragon's docking port will align with ISS's docking adapter and thereafter the docking mechanism will capture and latch onto the station, followed by checks and validation.

The next step is pressure equalisation between the visiting spacecraft and the host ISS. Once all checks and safety procedures are complete, the Dragon's hatch will be opened, allowing the crew to enter the ISS, remove their space suits and transfer cargo.

Experiments it will perform

Over nearly a fortnight in orbit, the Axiom Mission 4 crew will carry out around 60 scientific studies and activities representing 31 countries, including the US, India, Poland, Hungary, Saudi Arabia, Brazil, Nigeria, the UAE and several European nations. These projects span a wide range of topics, such as medical support for diabetic astronauts, the effects of microgravity on the brain and body and the collection of vital health data.

ISRO'S role

The Indian Space Research Organisation (ISRO) has an expansive programme on space research that involves studying the exosphere and outer space, missions to the Moon, Mars and the Sun, manned space flight and an indigenous space station. The planned scientific experiments are expected to drive significant advancements in space science and technology, while also setting the stage for the next generation of scientists and engineers inspiring for space research.

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Glucose in space: Ax-4 crew to play key role in diabetes study

Source: The Times of India, Dt. 08 Jun 2025

Each astronaut aboard the Axiom- mission (Ax-4), including India's Group Captain Shubhanshu Shukla, is contributing to a first-of-its-kind medical study — an experiment called Suite Ride — that could redefine who gets to go to space. While TOI broke this story in March, more details have now emerged from an exclusive interview with Dr Mohammad Fityan, Clinical Lead for the Suite Ride experiment and Chief Medical Officer at Burjeel Medical City.

He said the crew is central to validating new technologies that could one day allow even insulin-dependent diabetics to safely fly.

“At present, astronauts with diabetes—particularly those requiring insulin—are excluded from spaceflight. This study is laying the groundwork to change that,” said Dr Fityan. The Suite Ride experiment, developed in collaboration between Burjeel Holdings and Axiom Space, is focused on monitoring how glucose behaves in microgravity and whether insulin remains stable during space missions.

None of the four astronauts aboard Ax-4 has diabetes, but each has undergone pre-flight tests to establish individual glucose baselines on Earth. “They act as healthy controls. This allows us to compare data from space against ground-based measures, which is crucial to validate the reliability of continuous glucose monitors (CGMs) in orbit,” Dr Fityan said.

At least one astronaut will wear a CGM (continuous glucose monitoring) device throughout the mission, with real-time metabolic data transmitted back to the research team. In addition, insulin pens—though not used by the crew—have been flown to test how the compound behaves when exposed to space conditions. Samples stored at ambient and refrigerated temperatures will be analysed after the flight to check for degradation.

“Microgravity gives us a chance to observe metabolic functions without the confounding factors of gravity, posture and muscle use,” Dr Fityan said. This makes it easier to isolate how hormones and cells regulate glucose and could reveal early signs of insulin resistance that are harder to detect on Earth. The results, according to him, may eventually influence medical protocols for long-duration missions. “If this technology proves accurate and stable, the exclusion of insulin-treated diabetics could be reconsidered. This would be a step forward in making spaceflight more inclusive.”

Suite Ride also has terrestrial benefits. It could lead to smarter glucose monitoring tools and more effective insulin therapies for people on Earth—particularly those in remote or resource-limited settings. Technologies being tested include blood glucose monitors, i-STAT (blood analyser) devices, lancets, and remote data capture platforms.

The research team—comprising physicians, lab experts and data analysts—is closely collaborating with Axiom Space to evaluate every data point. “Our aim is not just to collect numbers but to extract meaning that can inform future policy and care,” Dr Fityan added. Shukla, a test pilot and astronaut selected by India’s space agency, is on his maiden space mission. Along with his fellow crewmates, his role in this experiment is pivotal.

https://timesofindia.indiatimes.com/science/glucose-in-space-ax-4-crew-to-play-key-role-in-diabetes-study/articleshow/121702460.cms

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रूस ने कर दिखाया एक और कमाल, अंतरिक्ष में बनाएगा अपना ड्रोन प्लेटफॉर्म; रोबोट संभालेंगे जिम्मेदारी

Source: Dainik Jagran, Dt. 08 Jun 2025

अंतरिक्ष में एक ऐसा प्लेटफार्म बनाया जाएगा जिस पर ड्रोन तैनात किए जाएंगे। इस प्लेटफार्म के रखखाव की जिम्मेदारी रोबोट संभालेंगे। यह बात अभी भले ही आपको किसी साइंस फिक्शन फिल्म या कल्पना लगे लेकिन जल्द ही यह बात हकीकत में बदलने वाली है।

रूस ने स्वचालित अंतरिक्षयान या ड्रोन को आर्बिटल स्पेस स्टेशन से संचालित करने के लिए एक तकनीक का पेटेंट कराया है। सामरिक तौर पर ड्रोन की बढ़ती अहमियत के मद्देनजर रूस दुनिया का पहला ड्रोन प्लेटफार्म बनाने जा रहा है। यह प्लेटफार्म रोबोट से लैस होगा। शुरुआत में रूस के ऑर्बिटल स्टेशन (आरओएस) पर इसका परीक्षण किया जाएगा। बाद में चंद्र मिशन में भी इस तकनीक का उपयोग किया जाएगा।

जानिए क्या है रूस का प्लान

रूस के फर्स्ट डिप्टी प्राइम मिनिस्टर डेनिस मंटुरोव ने राष्ट्रपति व्लादिमीर पुतिन को एक बैठक में बताया कि 2030 तक रूस को अपने खुद के अंतरिक्ष स्टेशन के लिए मॉड्यूल–दर–माड्यूल योजनाबद्ध बदलाव करना सुनिश्चित करना होगा। आरओएस दुनिया का पहला ड्रोन प्लेटफार्म बनेगा। यह बैठक पुतिन ने राष्ट्रीय परियोजनाओं का जायजा लेने के लिए बुलाई थी।

अपना ऑर्बिटल स्टेशन बनाने जा रहा रूस

रूस इस समय अपना ऑर्बिटल स्टेशन बनाने जा रहा है। इसे 2027 से 2033 के बीच कक्षा में तैनात करने की योजना है। आरओएस का पहला चरण साइंटिफिक एंड पावर माड्यूल (एसपीएम) को 2027 के अंत में लॉन्च किया जाना है। 2030 तक यूनिवर्सल–नोड, गेटवे और बेस मॉड्यूल भी लांच करने की योजना है। ये सभी मिलकर अंतरिक्ष स्टेशन का आधार बनाएंगे। दूसरे चरण में 2031 से 2033 के बीच दो मॉड्यूल को डाक करके स्टेशन का विस्तार किया जाएगा। अप्रैल 2021 में, रोस्कोस्मोस के अधिकारियों ने 2024 के बाद अंतरराष्ट्रीय अंतरिक्ष स्टेशन से बाहर निकलने की योजना की घोषणा की थी। 2030 तक रूस आइएएस से अलग हो सकता है।

https://www.jagran.com/world/russia-russia-to-build-drone-platform-in-space-managed-by-robots-23958376.html

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जापान का चंद्र मिशन असफल, निजी लैंडर चंद्रमा पर दुर्घटनाग्रस्त

Source: Punjab Kesari, Dt. 06 Jun 2025

जापान की एक निजी अंतरिक्ष कंपनी iSpace का चंद्रमा पर उतरने का प्रयास एक बार फिर विफल हो गया है। शुक्रवार को कंपनी का लैंडर जब चंद्रमा की सतह पर उतरने ही वाला था। तभी उससे संपर्क टूट गया। इस घटना के बाद कई घंटों तक संपर्क स्थापित करने की कोशिश की गई, लेकिन कोई संदेश नहीं मिला। अंततः कंपनी ने मिशन को विफल घोषित कर दिया।

लैंडिंग से पहले टूटा संपर्क

iSpace का यह लैंडर चंद्रमा पर उतरने से महज दो मिनट पहले तक सही काम कर रहा था। पृथ्वी पर मौजूद नियंत्रण कक्ष में सब कुछ सामान्य लग रहा था। लेकिन जैसे ही लैंडिंग का समय आया, लैंडर से सिग्नल आना बंद हो गया। इसके साथ ही लैंडर में एक छोटा रोवर भी भेजा गया था, जो चंद्रमा की सतह से नमूने इकट्ठा करने वाला था।

iSpace CEO ने जताया अफसोस

कंपनी के संस्थापक और मुख्य कार्यकारी अधिकारी ताकेशी हाकामादा ने इस नाकामी पर दुख जताते हुए मिशन में शामिल सभी लोगों से माफी मांगी। उन्होंने कहा– यह दूसरी बार है जब हम चंद्रमा की सतह पर उतरने में असफल रहे हैं। अब हमें इस मामले को और गंभीरता से लेना होगा।

पहला मिशन भी हुआ था असफल

iSpace का यह दूसरा चंद्र मिशन था। इससे पहले करीब दो साल पहले कंपनी ने अपना पहला चंद्र मिशन भेजा था, जो सफल नहीं हो सका। उसी असफलता के बाद कंपनी ने अपने नए लैंडर का नाम 'रेसिलिएंस' रखा था, जिसका मतलब होता संकट में भी डटे रहना है।

एक छोटा रोवर जो चंद्रमा की धूल इकट्ठा करने के लिए फावड़े से लैस था। एक लाल रंग का खिलौनाघर, जिसे एक स्वीडिश कलाकार ने डिजाइन किया था और जिसे चंद्रमा की सतह पर रखने की योजना थी।

वजह जानने की कोशिश जारी

iSpace के अधिकारियों का कहना है कि यह कहना अभी जल्दबाजी होगी कि दोनों मिशन एक ही वजह से फेल हुए हैं या नहीं। फिलहाल टीम जांच कर रही है कि लैंडर के साथ आखिरी समय में क्या गड़बड़ी हुई।

https://m.punjabkesari.in/international/news/japan-s-lunar-mission-fails-private-lander-crashes-on-the-moon-2162548

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NASA, ISRO to study muscle revival in space

Source: The Tribune, Dt. 07 Jun 2025

The National Aeronautics and Space Administration (NASA) and the Indian Space Research Organisation (ISRO) will collaborate on a series of scientific investigations aboard Axiom Mission 4 — the fourth private astronaut mission to the International Space Station — scheduled for launch on June 10. One of the key experiments will study muscle regeneration in space. While this phenomenon has been extensively examined by NASA and other space agencies, the precise reasons why muscle cells fail to repair efficiently in microgravity remain unclear.

Currently, there are no approved drugs or treatments that effectively promote muscle regeneration. During long-duration spaceflights, astronauts experience muscle loss, and the regenerative capacity of their muscle cells declines. Researchers suspect this may be due to microgravity interfering with mitochondrial metabolism. Findings from this study could help develop interventions to maintain muscle health during extended space missions and in people suffering from age-related muscle loss on Earth.

https://www.tribuneindia.com/news/india/nasa-isro-to-study-muscle-revival-in-space/

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Meet India's first gene-edited sheep, born in a Srinagar lab, now a healthy six-month-old

Source: The Indian Express, Dt. 09 Jun 2025

Six months ago, Professor Riyaz Ahmad Shah and his team at the Embryo Biotechnology Lab of Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST) in Srinagar celebrated a quiet success – the birth of a Kashmir Merino, India's first gene-edited sheep. But the team didn't rush to announce its arrival to the world – they waited, given the inherent uncertainties of scientific breakthroughs. The announcement was finally made last week after the results were validated by gene sequencing and standardised.

"This marks a new era in genetic research and has put us on the future path of transgenics in animals (inserting a foreign gene in an animal)," says Prof Shah, Dean of the Faculty of Veterinary Sciences and Animal Husbandry at SKUAST. Gene-editing of livestock animals is a growing area of research in India with significant applications targeted at enhanced meat yield and milk production, disease resistance and resilience to impacts of climate change.

Prof Shah and his team edited the sheep's myostatin gene. "This particular gene is a negative growth regulator. By targeting this gene, we can increase the muscle mass of a sheep by 30 per cent," says Prof Shah. Talking about the significance of the project, Dr Naresh Selokar, Senior Scientist, Animal Biotechnology at National Dairy Research Institute (NDRI) in Karnal, says, "In the Indian context, this (gene-editing of sheep) is a very significant achievement, especially considering the trait (gene) that has been targeted.

"Given our population and the huge demand for meat, without gene-editing, it is impossible to change the trait of a farm animal or to make them disease resistant. This is already an easy and approved method for production globally… In India, we need to have more high-quality, disease-resistant produce through gene editing," says Dr Selokar, who is credited with developing the first gene-edited embryo of a buffalo in 2024.

It was in 2020 that Prof Shah and his core team at SKUAST's Embryo Biotechnology Lab — Dr Suhail Magray, Dr Muneer Dar, Dr Younus Farooq, Dr Nida Handoo, Dr Syed Hilal, Dr Abrar and Dr Nafis — embarked on their ambitious project. The embryo of the sheep was first kept under laboratory conditions for some time and then transferred to a surrogate mother, before being gene-edited in July last year. To edit the myostatin gene of the sheep, the team used CRISPR-Cas9, the genome editing technology, which won Emmanuelle Charpentier and Jennifer Doudna the Nobel Prize in Chemistry that very year.

The gene-edited sheep was finally born in December last year. It's now a healthy six-month-old, housed at a farm on the Shuhama campus of the Faculty of Veterinary Science. The researchers say it weighed 3.15 kg at birth and has gained "significant weight" since then. "We specifically chose the myostatin gene since the goal is to increase the muscle mass of sheep. Any technological advancement in livestock and agriculture is meant to increase the farmer's income and this is an important step towards that," says Prof Shah.

Their journey, says Dr Suhail Magray, wasn't without hurdles. "We tried different techniques to get the desired results. We failed the first three times, before we got the breakthrough," he says. In a span of 15 years, SKUAST's Centre of Animal Biotechnology has taken a leap from cloning to gene-editing. In 2012, when the lab was in its infancy, it developed the world's first pashmina goat clone, which it named Noori, using the somatic cell nuclear transfer technique. The birth of Noori

was seen as a breakthrough in cloning of endangered species. Noori was born on March 9, 2012 and died in March 2023 when it was 11 years old — the average age for the pashmina goat.

Their lab is now working on another gene edit — FGF5 (Fibroblast growth factor) — that will help improve the fibre quality of sheep. “The beginning has been made,” says Dr Magray. “Now, we can work on other genes as well that would help to make the animals disease resistant.” With the success of their latest project, Prof Shah and his team are already preparing for the next leap — transgenics. “We are already working on combining cloning with gene-editing to enhance the technique but our next step is to move towards transgenics,” says Prof Shah.

“Transgenics is important if we are to produce proteins of therapeutic importance – if we can, for instance, produce protein in the milk of an animal, that animal will work as a factory of proteins; animals can be pharmaceutical factories, we can have anti-cancer drugs. But for that, we have to have controlled conditions and bio-secure zones.” A pioneer in genetics, Prof Shah was a PhD student at NDRI, Karnal, and was part of the team that’s credited with the first buffalo cloning in the world. The buffalo, Samrupa, didn’t survive and six months later, the team developed the second buffalo clone, ‘Garima’.

https://indianexpress.com/article/long-reads/india-first-gene-edited-sheep-born-srinagar-lab-10049067

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Why the Tardigrades is going to Space again

Source: The Times of India, Dt. 09 Jun 2025

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They may be tiny and without spines, but tardigrades are champion survivors.

Having endured five mass extinctions, these resilient microscopic organisms, also known as "water bears", possess a survival kit that lets them withstand radiation, vacuum and even total dehydration — conditions that would kill most living creatures instantly.

Measuring just 0.5 to 1.5mm, tardigrades have abilities that have captivated scientists, who hope these insights could one day help protect humans in space or improve cancer treatments on Earth.

Even more ambitiously, understanding tardigrade survival mechanisms could help design sustainable ecosystems on the Moon, and on Mars.

On June 10, the water bears will head to the International Space Station (ISS) again, this time, as part of the Axiom-4 mission (Ax-4), to be piloted by India's Group Captain Shubhanshu Shukla. This mission will add another chapter to a host of studies that have happened on Earth over the past decade.

For instance, biochemist Sandeep Eswarappa and team have spent over five years studying these organisms at the Indian Institute of Science in Bengaluru. His lab discovered a Paramacrobiotus species with an astonishing defence: when exposed to ultraviolet radiation, it absorbs the harmful rays and emits harmless blue fluorescence instead.

"This is the first direct experimental evidence of photoprotective fluorescence in any organism," the team wrote in a paper. Their research could lead to revolutionary compounds for sunscreens and protective screens. It's this 'Bengaluru strain' of the tardigrade that's set to fly to ISS. Other breakthroughs have shed light on how these creatures survive radiation up to 1,000 times what would be lethal to humans.

Group Captain Shubhanshu Shukla will be at the controls as his rocket heads to ISS tomorrow. The payload includes tardigrades, which have been to space before. In a key test in 2007, some 3,000 of them were left in the vacuum of space for about 10 days. All survived

In Oct 2024, experts identified three primary mechanisms behind this ability.

First, tardigrades have acquired genes from bacteria through horizontal gene transfer, enabling them to produce protective compounds called betalains. Second, they have a tardigrade-specific radiation-induced disordered protein that accelerates DNA repair. Finally, special mitochondrial proteins enhance cellular processes crucial to repairing radiation injury.

Nasa scientists too want to see these capabilities.

"We want to see what 'tricks' they use to survive in space, and, over time, what tricks their offspring use," Thomas Boothby, principal investigator of the Cell Science-04 experiment aboard ISS in 2021, had said.

Aside from the tardigrade experiment being carried out by Group Captain Shukla as part of Axiom-4, Sławosz Uznanski-Wisniewski, a Polish astronaut from the European Space Agency will investigate whether a tardigrade gene, integrated into a yeast genome, can protect the yeast from negative effects of microgravity.

"After genetic editing, the yeast will be grown on ISS and analysed on Earth. The research may be used to design off-Earth ecosystems," Axiom Space, which is implementing Ax-4, said.

As humanity ventures deeper into space, facing radiation hazards and extreme conditions, these microscopic survivors might just hold the key to making our journeys safer.

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