

CONTENTS

S. No.	TITLE	Page No.
DRDO News		1-3
DRDO Technology News		1-3
1.	DRDO Develops Lightest Bullet Proof Jacket for Protection against Highest Threat Level 6 of BIS	<i>Press Information Bureau</i> 1
2.	DRDO ने बनाई सबसे हल्की बुलेट प्रूफ जैकेट:स्नाइपर की 6 गोलियां नहीं भेद सर्की; आर्मी चीफ बोले- देश युद्ध में जाने से नहीं हिचकिचाएंगे	दैनिक भास्कर 1
3.	DRDO Develops Country's Lightest Bulletproof Jacket	<i>The Times of India</i> 2
Defence News		3-10
Defence Strategic: National/International		3-10
4.	AFMS & ICMR Join Hands to Undertake Biomedical Research for Armed Forces	<i>Press Information Bureau</i> 3
5.	Indian Coast Guard & Royal Oman Police Coast Guard Officials Meet in New Delhi to Combat Transnational Illegal Activities at Sea & Promote Regional Cooperation	<i>Press Information Bureau</i> 4
6.	Successful Test of New Version of Medium-Range Ballistic Missile	<i>Press Information Bureau</i> 4
7.	Crystal Maze 2: भारत ने 250 किलोमीटर की मारक क्षमता वाली मिसाइल का किया सफल परीक्षण, इस्राइल से है यह नाता	अमर उजाला 5
8.	इजरायल की क्रिस्टल मेज- 2 मिसाइल कितनी खतरनाक, भारत ने अंडमान में किया सफल टेस्ट	नवभारत टाइम्स 5
9.	'India's Security can't be Outsourced': Army Chief Stresses on Self-reliance	<i>Hindustan Times</i> 6
10.	Indian Army Becoming Self-reliant in Weapon Production: Manoj Pande	<i>Business Standard</i> 7
11.	Recent Geo-politics Shows Nations won't Hesitate to Go to War: Manoj Pande	<i>The Economic Times</i> 9
12.	भारत की बढ़ेगी वायु रक्षा क्षमता, अगले साल S-400 की शेष दो रेजीमेंट की आपूर्ति करेगा रूस	अमर उजाला 9
13.	PM Sunak: UK to Spend 2.5% of GDP on Defence by 2030	<i>The Times of India</i> 10
Science & Technology News		11-13
14.	ISRO to Carry out Test to Validate Safety of Crew Module for Gaganyaan Mission by 30 April	<i>The Print</i> 11
15.	New Type of Host Defence against Zika, Dengue Infections Revealed	<i>The Hindu</i> 12



Press Information Bureau
Government of India

Ministry of Defence

Tue, 23 Apr 2024

DRDO Develops Lightest Bullet Proof Jacket for Protection against Highest Threat Level 6 of BIS

DRDO's Defence Materials and Stores Research and Development Establishment (DMSRDE), Kanpur has successfully developed the lightest Bullet Proof Jacket in the country for protection against 7.62 x 54 R API (Level 6 of BIS 17051) ammunition. Recently, this bullet proof jacket was successfully tested at TBRL, Chandigarh as per BIS 17051-2018. This jacket is based upon new design approach, where novel material along with new processes have been used. The front Hard Armour Panel (HAP) of this jacket defeats multiple hits (06 shots) of 7.62 x 54 R API (Sniper rounds) in both ICW (In-conjunction with) and Standalone design. The ergonomically designed front HAP is made up of monolithic ceramic plate with polymer backing which enhances the wearability and comfort during the operation. The areal density of ICW Hard Armour Panel (HAP) and standalone HAP is less than 40 kg/m² and 43 kg/m² respectively.

Secretary Department of Defence R&D and Chairman DRDO has congratulated DMSRDE for the successful development of this lightest bullet proof jacket for protection against highest threat level.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2018661>



Wed, 24 Apr 2024

DRDO ने बनाई सबसे हल्की बुलेट प्रूफ जैकेट:स्नाइपर की 6 गोलियां नहीं भेद सर्कीं; आर्मी चीफ बोले- देश युद्ध में जाने से नहीं हिचकिचाएंगे

रक्षा अनुसंधान एवं विकास संगठन (DRDO) ने देश की सबसे हल्की बुलेट प्रूफ जैकेट बनाई है। रक्षा मंत्रालय ने मंगलवार (23 अप्रैल) को इसकी जानकारी शेयर की।

पॉलिमर बैकिंग और मोनोलिथिक सिरेमिक प्लेट से तैयार की गई जैकेट को 6 स्नाइपर गोलियां भी भेद नहीं सर्कीं। मंत्रालय ने कहा कि जैकेट का इन-कंजक्शन (ICW) और स्टैंडअलोन डिजाइन सैनिकों को 7.62x54 RAPI (BIS 17051 के लेवल 6) गोला-बारूद से सुरक्षा प्रदान करेगा। जैकेट को कानपुर में मौजूद DRDO के रक्षा सामग्री और

भंडार अनुसंधान और विकास प्रतिष्ठान (DMSRDE) ने तैयार किया है। जैकेट की TBRL चंडीगढ़ में BIS 17051-2018 के तहत टेस्टिंग की गई।

रक्षा विभाग के अनुसंधान एवं विकास सचिव और डीआरडीओ अध्यक्ष ने हल्के बुलेटप्रूफ जैकेट को तैयार करने पर DMSRDE को बधाई दी है।

वही, भारतीय सेना के प्रमुख जनरल मनोज पांडे ने कहा कि देश युद्ध में जाने से नहीं हिचकिचाएंगे। राष्ट्र की सुरक्षा को न तो आउट सोर्स किया जा सकता है और न ही दूसरों की उदारता पर निर्भर किया जा सकता है।

पॉलिमर बैकिंग और मोनोलिथिक सिरेमिक प्लेट बना है HAP

रक्षा मंत्रालय ने कहा कि एर्गोनॉमिक तरीके से डिजाइन किया गया फ्रंट हार्ड आर्मर पैनल (HAP) पॉलिमर बैकिंग और मोनोलिथिक सिरेमिक प्लेट से बना है। ऑपरेशन के दौरान पहनने सैनिकों के लिए पहले से ज्यादा आरामदायक और सुरक्षित रहेगा।

मंत्रालय ने जानकारी दी है कि ICW हार्ड आर्मर पैनल (HAP) की एरियल डेंसिटी 40 kg/M² और स्टैंडअलोन HAP की एरियल डेंसिटी 43kg/M² से कम है।

<https://www.bhaskar.com/national/news/drdo-develops-indias-lightest-bulletproof-jacket-for-protection-132920280.html>

THE TIMES OF INDIA

Tue, 23 Apr 2024

DRDO Develops Country's Lightest Bulletproof Jacket

A unit of the Defence Research and Development Organisation (DRDO) located in Kanpur, has successfully developed the lightest bulletproof jacket in India.

The Defence Materials and Stores Research and Development Establishment (DMSRDE) developed the jacket that offers protection against the highest threat level 6, as per BIS 17051-2018 standards. The jacket's design incorporates novel materials and processes, resulting in its lightweight construction.

A ministry of defence press released stated that, "DRDO's Defence Materials and Stores Research and Development Establishment (DMSRDE), Kanpur has successfully developed the lightest Bullet Proof Jacket in the country for protection against 7.62 x 54 R API (Level 6 of BIS 17051) ammunition.

— DRDO_India (@DRDO_India)

The bulletproof jacket was tested at TBRL, Chandigarh, where it successfully withstood multiple hits (six shots) of 7.62x54 R API (sniper rounds) ammunition in both in-conjunction with (ICW) and standalone designs. The front hard armour panel (HAP) of the jacket is ergonomically designed, featuring a monolithic ceramic plate with polymer backing for enhanced wearability and comfort during operations.

"Recently, this bullet proof jacket was successfully tested at TBRL, Chandigarh as per BIS 17051-2018. This jacket is based upon new design approach, where novel material along with new processes have been used. The front Hard Armour Panel (HAP) of this jacket defeats multiple hits (06 shots) of 7.62 x 54 R API (Sniper rounds) in both ICW (In-conjunction with) and Standalone design. The ergonomically designed front HAP is made up of monolithic ceramic plate with polymer backing which enhances the wearability and comfort during the operation. The areal

density of ICW Hard Armour Panel (HAP) and standalone HAP is less than 40 kg/m² and 43 kg/m² respectively," the statement further revealed.

The DRDO chairman and secretary of the Department of Defence R&D commended DMSRDE "for the successful development of this lightest bullet proof jacket for protection against highest threat level".

<https://timesofindia.indiatimes.com/india/drdo-develops-countrys-lightest-bulletproof-jacket/articleshow/109540514.cms>

Defence News

Defence Strategic: National/International



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Ministry of Defence

Tue, 23 Apr 2024

AFMS & ICMR Join Hands to Undertake Biomedical Research for Armed Forces

Armed Forces Medical Services (AFMS) signed a Memorandum of Understanding (MoU) for collaborative research and training with Indian Council of Medical Research (ICMR) on 23 April 2024. The MoU was signed by Secretary, Department of Health Research & Director General, ICMR Dr Rajiv Bahl, and Director General Armed Forces Medical Services Lt Gen Daljit Singh. The aim of the MoU is to undertake cooperative and collaborative activities, in the field of biomedical research and academics, which will address multidisciplinary scientific, technological and educational problems of relevance to the country and the Armed Forces.

AFMS and ICMR have joined hands for health research in High Altitude, Battle related trauma/Post-traumatic stress disorder, Aerospace medicine, Infectious diseases and other health issues faced Armed Forces Personnel.

Under the ambit of this MoU, various joint academic activities are also planned, including opportunity for AFMS officers to register for PhD under ICMR-AcSIR PhD programme.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2018626>



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Tue, 23 Apr 2024

Indian Coast Guard & Royal Oman Police Coast Guard Officials Meet in New Delhi to Combat Transnational Illegal Activities at Sea & Promote Regional Cooperation

The 5th Annual High-Level Meeting between the Indian Coast Guard (ICG) and the Royal Oman Police Coast Guard (ROPCG) took place in New Delhi on April 23, 2024, marking a significant milestone in the collaborative efforts to combat transnational illegal activities at sea and promote regional cooperation. The discussions were led by Director General Rakesh Pal from the ICG. The ROPCG delegation was headed by Assistant Officer Commanding Colonel Abdul Aziz Mohammed Ali Al Jabri.

The meeting focused on bolstering bilateral engagements through a capacity-building programme, cross ships' visit, implementation of Sea Rider programme, establishing professional linkages between pollution reporting centers and other collaborative arrangements. Both sides expressed their commitment to enhancing mutual cooperation in addressing maritime challenges, thereby strengthening the maritime safety and security framework in the region.

A meeting between an ROPCG delegation and representatives from Society of Indian Defence Manufacturers is planned in New Delhi on April 25, 2024 to acquaint it with India's shipbuilding capabilities under 'Aatmanirbhar Bharat'.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2018604>



Press Information Bureau
Government of India

Ministry of Defence

Tue, 23 Apr 2024

Successful Test of New Version of Medium-Range Ballistic Missile

A successful launch of the new variant of a Medium-Range Ballistic Missile was carried out under the aegis of the Strategic Forces Command on April 23, 2024. The user launch has proven the operational capability of the Command and validated new technologies.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2018638>

Crystal Maze 2: भारत ने 250 किलोमीटर की मारक क्षमता वाली मिसाइल का किया सफल परीक्षण, इस्राइल से है यह नाता

भारत ने मध्यम दूरी तक मार करने वाले बैलिस्टिक मिसाइल के नए संस्करण का सफल परीक्षण किया है। हवा से सतह तक मार करने वाली यह मिसाइल 250 किलोमीटर की दूरी तक लक्ष्य भेदने में सक्षम है। स्ट्रैटेजिक फोर्स कमान के तहत बैलिस्टिक मिसाइल के प्रक्षेपण ने परिचालन क्षमता साबित की। अंडमान और निकोबार द्वीप समूह में भारतीय वायु सेना द्वारा परीक्षण की गई मिसाइल इस्राइल मूल की क्रिस्टल मेज 2 एयर-लॉन्च बैलिस्टिक मिसाइल है जिसे रॉक्स (ROCKS) के नाम से भी जाना जाता है।

राष्ट्रीय सुरक्षा प्रतिष्ठान के वरिष्ठ सूत्रों ने एनआई को बताया कि अंडमान में द्वीप के क्षेत्र में एक परीक्षण रेंज में पिछले हफ्ते सुखोई-30 एमकेआई लड़ाकू जेट द्वारा मिसाइल का सफलतापूर्वक परीक्षण किया गया था। अंडमान एवं निकोबार तीनों सेनाओं की कमान के तहत आने वाले इलाके में परीक्षण की तैयारियां की गईं। भारतीय वायु सेना अब मेक इन इंडिया के माध्यम से बड़ी संख्या में इन इस्राइली मिसाइलों को हासिल करने की योजना बना रही है क्योंकि यह देश को एक अनूठी क्षमता प्रदान करती है।

भारतीय वायुसेना द्वारा सुखोई-30 लड़ाकू विमान से दागी गई यह मिसाइल ऊपर की ओर यात्रा करती है और फिर तेज गति से अपने लक्ष्य की ओर बढ़ती है। क्रिस्टल मेज 2 क्रिस्टल मेज 1 से बिल्कुल अलग है जिसे इस्राइल से भारतीय वायु सेना में बहुत पहले शामिल किया गया था। क्रिस्टल मेज 2 एक विस्तारित स्टैंड-ऑफ रेंज एयर-टू-सतह (हवा से जमीन पर मार करने वाली) मिसाइल है। भारतीय वायुसेना द्वारा इसका उपयोग भारतीय दुश्मनों के लंबी दूरी के रडार और वायु रक्षा प्रणालियों जैसे लक्ष्यों पर हमला करने के लिए करने की योजना है। यह बैलिस्टिक मिसाइल वायु रक्षा प्रणालियों द्वारा संरक्षित क्षेत्रों में भी अपने लक्ष्य के खिलाफ प्रभावी हो सकती है।

<https://www.amarujala.com/india-news/india-successfully-tests-new-250-km-strike-range-air-launched-ballistic-missile-in-andamans-2024-04-23>

नवभारत टाइम्स

इजरायल की क्रिस्टल मेज- 2 मिसाइल कितनी खतरनाक, भारत ने अंडमान में किया सफल टेस्ट

भारतीय वायु सेना ने अंडमान में हवा से जमीन पर मार करने वाली मिसाइल का सफल परीक्षण किया है। इस मिसाइल का नाम क्रिस्टल मेज- 2 है। क्रिस्टल मेज- 2 मिसाइल 250 किलोमीटर से अधिक दूरी तक लक्ष्य को मार सकती है। अंडमान और निकोबार द्वीप समूह में भारतीय वायु सेना ने जिस मिसाइल का परीक्षण किया है, उसे हवा से लॉन्च किया जाता है। इसे ROCKS के नाम से भी जाना जाता है। इस मिसाइल का परीक्षण अंडमान के एक परीक्षण रेंज में एक परीक्षण रेंज में Su-30 MKI फाइटर जेट के जरिए किया गया था। भारतीय वायुसेना अब मेक इन इंडिया के जरिए बड़ी संख्या में इस इजरायली मिसाइल को हासिल करने की योजना बना रही है।

कितनी शक्तिशाली है क्रिस्टल मेज- 2 मिसाइल

क्रिस्टल मेज- 2 मिसाइल को हवा से जमीन पर मौजूद लक्ष्यों पर दागा जा सकता है। मिसाइल पहले ऊपर की ओर जाती है और फिर तेज गति से अपने लक्ष्य की ओर बढ़ती है। क्रिस्टल मेज- 2 काफी समय पहले इजरायल से

भारतीय वायु सेना में शामिल की गई क्रिस्टल मेज-1 से बिल्कुल अलग है। क्रिस्टल मेज- 2 एक एक्सटेंडेड स्टैंड-ऑफ रेंज वाली हवा से सतह पर मार करने वाली मिसाइल है। इसे भारतीय वायु सेना द्वारा दुश्मनों के लंबी दूरी के रडार और वायु रक्षा प्रणालियों जैसे हाई वैल्यू वाले स्थिर और लगातार स्थान बदलने वाले लक्ष्यों पर हमला करने के लिए उपयोग करने की योजना है।

दुश्मनों के एयर डिफेंस को कर सकती है तबाह

क्रिस्टल मेज- 2 दुश्मन के बैलिस्टिक मिसाइल डिफेंस सिस्टम को आसानी से चकमा दे सकती है। यह मिसाइल गैर जीपीएस क्षेत्र में भी अपने लक्ष्य पर सटीकता से हमला कर सकती है। चीन में जीपीएस काम नहीं करता। ऐसे में क्रिस्टल मेज- 2 मिसाइल चीन के खिलाफ प्रभावी हमला कर सकती है। क्रिस्टल मेज मिसाइल अपने लक्ष्य पर बेहद सटीकता से हमला कर सकती है। इसे वारहेड को हवा में ब्लास्ट करने के लिए भी डिजाइन किया जा सकता है। इससे मिसाइल की मार करने के क्षेत्र में इजाफा हो सकता है।

क्रिस्टल मेज-2 की रेंज 200 किमी

इजरायली क्रिस्टल मेज- 2 मिसाइल की रेंज 200 किमी है। इस मिसाइल में उड़ान के दौरान लक्ष्य को बदला भी जा सकता है। यह मिसाइल हर मौसम में फायर की जा सकती है। इसे पुराने और नई पीढ़ी के लड़ाकू विमान से आसानी से फायर किया जा सकता है। इस मिसाइल को सुखोई-30 एमकेआई, मिराज-III/V, मिराज F1, चीता और SU-24 पर लगाया जा सकता है। इसके अलावा क्रिस्टल मेज मिसाइल को मिग-29, एसयू-27/30, मिराज 2000 और टॉरनेडो के साथ भी इंटीग्रेट किया जा सकता है।

<https://navbharattimes.indiatimes.com/world/uae/crystal-maze-2-missile-india-news-indian-air-force-successfully-tests-new-missile-in-andaman/articleshow/109540747.cms>



Tue, 23 Apr 2024

‘India’s Security can’t be Outsourced’: Army Chief Stresses on Self-reliance

Army chief General Manoj Pande on Tuesday said the country’s security can neither be outsourced nor be dependent on the largesse of others, as he drew attention to the importance of self-reliance in the defence sector.

“In the context of capability development, if we are importing and are dependent for critical technologies on countries that possess them, we must be very clear that we will always remain one technology cycle behind,” he said while delivering a talk on Relevance of Hard Power in India’s Rise at a conclave organised by All India Management Association.

“In our quest to achieve and sustain a ‘hard power’ quotient, we need to be alive to the implication of external dependency to meet defence requirements. The impact of supply chain disruptions and weaponisation of denial regimes came to the fore during the Covid-19 pandemic and from the lessons of the ongoing Russia-Ukraine conflict. These developments have underscored that the security of the nation can neither be outsourced nor be dependent on the largesse of others,” he said. The army is shaping ‘hard power’ capabilities through atmanirbharta or self-reliance in the defence manufacturing sector, he stressed.

While economic power is the fountainhead of the nation’s growth, it is the military strength that lends it the ability to shape the outcomes necessary to protect and further its multifarious interests, Pande said.

“Recent geo-political powerplays have displayed that where national Interests are concerned, countries will not hesitate to go to war. These developments have reaffirmed the relevance of hard power.”

The unprecedented trends in the geo-strategic landscape, the limitless potential of disruptive technologies, the transforming character of modern wars and the profound changes in the socio-economic domain are the four key drivers of the army’s transformation efforts, the army chief said.

“The army’s vision for the future is to transform into a modern, agile, adaptive, technology enabled and self-reliant future ready force capable to deter and win wars in a multi-domain operational environment across the full spectrum of operations to protect our national interests, in synergy with the other two services,” he said.

Pande highlighted the steps taken by the government to boost indigenisation including simplification of industrial licencing, participation of the private sector, foreign investment liberalisation, incentivisation for transfer of technology, promulgation of positive indigenisation lists and dedicated budget for domestic capital procurement.

“Currently, we have 340 indigenous defence industries working towards fructification of 230 contracts by 2025, which entails an outlay of ₹2.5 lakh crore,” he said.

In early April, the army said it plans to boost the ongoing atmanirbharta drive by setting up specialised Army Design Bureau (ADB) cells at various command headquarters, with the organisational restructuring aimed at absorption of niche technology for capability development.

“Organisational and procedural transformation will be undertaken to ensure induction/ absorption of niche technology towards futuristic capability development with a focus on Atmanirbharta. Towards this, the innovation potential of ADB will be upscaled, besides ADB cells being established at command headquarters,” the army said.

An initiative of the Narendra Modi government, ADB was launched in August 2016 and tasked with promoting research and development and acting as a bridge between the army and the private sector to meet the army’s requirements.

The move to set up new cells is expected to empower command headquarters, formations and unit commanders in the self-reliance pursuit, facilitating greater outreach to the industry, and identification and trials of niche technology.

<https://www.hindustantimes.com/india-news/indias-security-can-t-be-outsourced-army-chief-stresses-on-selfreliance-101713882380648.html>

Business Standard

Wed, 24 Apr 2024

Indian Army Becoming Self-reliant in Weapon Production: Manoj Pande

Chief of the Army Staff (COAS) General Manoj Pande on Tuesday stated that the Indian Army is changing from being a buyer of weapons to becoming a partner of Indian industry in development and production.

The concept of “national champions” has been adopted in order to build up weapons suppliers with national and global scale, he said.

Pande's remarks came while he was addressing the national leadership conclave of the All India Manufacturers' Association (AIMA) in Delhi.

The COAS stated that Indian defence industry is investing in research and advanced production techniques and that the forces are supporting them by providing a viable market.

He mentioned that about 340 indigenous arms producers across the country have been awarded defence contracts worth Rs 2.6 lakh crore.

Even so, India remains the world's biggest arms importer, says the Stockholm International Peace Research Institute (SIPRI), a Swedish think tank that tracks global arms transfers.

SIPRI says that Russia remains India's biggest weapons supplier, accounting for 36 per cent of India's arms imports. France is at second place with 33 per cent of India's arms imports and the US, which is at third place, accounts for 13 per cent.

Meanwhile, senior army officers have complained about the shortfall of quality weaponry in the army's arsenal. In 2018, the army's vice chief, Lieutenant General Sarath Chand, while deposing before the parliamentary standing committee on defence, stated that 65 per cent of its arsenal is obsolete.

Chand testified that the military lacks the artillery, missiles and helicopters needed to fight on two fronts against China and Pakistan.

Pande said the Indian Army is aiming to increase the ratio of state-of-the-art weapon systems in its inventory by 2030; and meanwhile reduce the share of obsolescent systems. This, he said, would take time.

"Immediate replacement of the vintage systems is neither feasible nor desirable, and we will space out upgrades," he said.

The COAS pointed out that the Indian army's ammunition inventory has 175 variants, of which 134 are made by the Defence R&D Organisation (DRDO) and public sector defence companies (DPSUs), while private companies are being onboarded. "The payoff from the indigenization strategy are visible," Pande said, pointing out that India's defence exports reached Rs 21,000 crore in 2023-24. That is an increase of 30 times over the past five years, and a lot of those exports came from the private sector. In addition to promoting self-reliance in weapon production, India's military is running 120 projects to indigenize development of 45 niche technologies to make Indian forces future ready, according to General Pande. "We need to speed up the adoption of commercially available technologies," he said.

Indian Army is observing 2024 as the year of technology absorption with emphasis on indigenously sourcing all that is necessary to fight - not just weapons but also ammunition, spares and maintenance needs, he said.

General Pande stressed that India needs to increase its hard power to support the growth of its economy. He said that in the current geostrategic landscape, countries are not hesitating to go to war.

https://www.business-standard.com/external-affairs-defence-security/news/arms-self-reliance-to-come-from-national-champion-companies-army-chief-124042300913_1.html

Recent Geo-politics Shows Nations won't Hesitate to Go to War: Manoj Pande

The army's dependence on imports to maintain combat capability has come down to 'near zero' in the past two financial years, Army Chief General Manoj Pande has said, adding that having a robust indigenous industry is vital to maintaining hard power in an era where countries are not hesitating to go to war to protect national interests. The top officer said that there is a need for partnering with the industry to develop new technologies for future wars and creating 'national champions' to develop a strong defence industry eco system at the scale of global arms manufacturers.

"Weapons manufacturing, aerospace, shipbuilding and electronics are some of the sectors where we must create our own equivalent to Northrop Grumman, Lockheed Martin or Raytheon Technologies, to name a few," Gen Pande said in an address at a conclave by the All India Management Association. The General said that "Indigenise to Modernise" is the motto for the Army's capability development plans which are oriented towards substantially increasing state of the art equipment by 2030.

The Army chief said that an indigenous defence manufacturing ecosystem is vital, given the recent developments where changes have taken place at unprecedented scale and speed. "Recent geopolitical power plays have displayed that where national interests are concerned, countries will not hesitate to go to war. These developments have reaffirmed the relevance of hard power," he said.

He said indigenous manufacturing of ammunition and spares is vital to sustain the armed forces. He added that of the 175 variants of ammunition of different calibre and types, 134 have already been indigenised by DRDO and the Defence Public Sector Units.

"We have put in place a time-bound indigenisation plan for currently imported ammunition and diversifying sources of supply, by onboarding private industry," he said. The General said investing into the defence industry in the past years has already shown results, pointing to the increase in volume of Indian defence exports to Rs 21,000 crore in the last financial year, with the private industry accounting for 60% of the military sales abroad.

<https://economictimes.indiatimes.com/news/defence/recent-geo-politics-shows-nations-wont-hesitate-to-go-to-war-manoj-pande/articleshow/109541183.cms>

अमर उजाला

Tue, 23 Apr 2024

भारत की बढ़ेगी वायु रक्षा क्षमता, अगले साल S-400 की शेष दो रेजीमेंट की आपूर्ति करेगा रूस

भारत नई समयसीमा के तहत अगले साल तक सतह से हवा में मार करने वाली मिसाइल प्रणाली एस-400 ट्रायम्फ की शेष दो रेजीमेंट हासिल करने के लिए तैयार है। यूक्रेन में युद्ध के मद्देनजर इसकी आपूर्ति में कुछ देरी हुई। आधिकारिक सूत्रों ने मंगलवार को यह जानकारी दी।

रूस पहले ही 5.5 अरब डॉलर के सौदे के तहत भारत को लंबी दूरी की इस मिसाइल प्रणाली की तीन इकाइयों की आपूर्ति कर चुका है। सूत्रों ने बताया कि सितंबर तक भारत को युद्धपोत तुशिल भी मिलने की उम्मीद है। इस रूस के द्वारा निर्मित किया गया है। उन्होंने कहा कि दूसरा युद्धपोत तमाल की जनवरी में रूस द्वारा आपूर्ति की जाएगी।

उन्होंने बताया कि मूल समयसीमा के मुताबिक जहाजों की आपूर्ति 2022 तक होनी थी। लेकिन यूक्रेन में युद्ध के कारण डिलीवरी में देरी हुई। रूस 2018 में हुए चार फ्रिगेट सौदे के तहत स्टील्थ फ्रिगेट की आपूर्ति कर रहा है। शेष दो जहाज भारत में बनाए जा रहे हैं। एस-400 मिसाइल प्रणाली की आपूर्ति अगले साल तक पूरी हो जाएगी।

चीन से पैदा होने वाली सुरक्षा चुनौतियों से निपटने के लिए भारत मिसाइल प्रणालियां खरीद रहा है, ताकि अपनी वायु शक्ति क्षमता को बढ़ाया जा सके। भारत ने अक्टूबर 2018 में रूस के साथ एस-400 वायु रक्षा प्रणाली की पांच इकाई खरीदने के लिए 5.5 अरब डॉलर के समझौते पर हस्ताक्षर किए थे। हालांकि, अमेरिका ने चेतावनी दी थी कि अनुबंध आगे बढ़ने पर सीएएटीएसए के तहत प्रतिबंध लग सकते हैं।

सीएएटीएसए रूसी रक्षा और खुफिया क्षेत्रों के साथ लेनदेन में लगे किसी भी देश के खिलाफ दंडात्मक कार्रवाई का प्रावधान करता है। रूस ने दिसंबर 2021 में मिसाइल प्रणाली की पहली रेजीमेंट की आपूर्ति शुरू की और इसे भारत के उत्तरी क्षेत्र में चीन के साथ लगी सीमा और पाकिस्तान के साथ लगी सीमा को कवर करने के लिए तैनात किया गया है। एक सूत्र ने कहा, आपूर्ति 2024 तक पूरी होनी थी। रूस-यूक्रेन संघर्ष के कारण एस-400 मिसाइलों की आपूर्ति में कुछ देरी हुई। आपूर्ति के लिए एक नई समयसीमा तय की गई है।

<https://www.amarujala.com/world/russia-to-supply-remaining-two-regiments-of-s-400-triumf-missile-systems-to-india-by-next-year-2024-04-23>

THE TIMES OF INDIA

Wed, 24 Apr 2024

PM Sunak: UK to Spend 2.5% of GDP on Defence by 2030

PM Rishi Sunak said on Tuesday he would lift defence spending to 2.5% of GDP to reach 87 billion pounds (\$108bn) a year by 2030, saying Britain could not be complacent when the world was at its most dangerous since the Cold War. Standing alongside Nato chief Jens Stoltenberg, Sunak said defence would get an additional 75 billion pounds over six years to ramp up the production of munitions, making Britain the second-largest defence spender in Nato.

He said one of the central lessons of the war in Ukraine was that countries needed deeper stockpiles of munitions, and that they needed to be able to replenish them more quickly. "We will put the UK's own defence industry on a war footing," he said.

<https://timesofindia.indiatimes.com/world/uk/pm-sunak-uk-to-spend-2-5-of-gdp-on-defence-by-2030/articleshow/109546712.cms>

ISRO to Carry out Test to Validate Safety of Crew Module for Gaganyaan Mission by 30 April

The Indian Space Research Organisation (ISRO) is preparing for another important milestone of the Gaganyaan mission — India’s first human spaceflight. And the first integrated air drop test (IADT) is likely to happen by April end.

“It is likely to happen around 30 April,” ISRO chairperson S. Somanath told ThePrint Tuesday.

As part of the three-day Gaganyaan mission — expected to take flight in 2025 — three astronaut designates will be launched on a low-Earth orbit for 400 km and will be brought back safely to Earth.

ISRO will be carrying out a series of tests to ensure the safety of the crew module and to prepare for its safe recovery. For the first IADT, the crew module will be dropped from an Indian Air Force (IAF) helicopter from a height of around 4-5 km above ground level.

Senior officials from ISRO said that these tests will confirm the secure recovery of the crew module — where the astronauts will be housed — and ensure safe landing for the astronauts upon their return to Earth.

During the drop, first the stabiliser parachute will be separated, followed by the top cover of the module. The drogue chutes will then be deployed followed by the primary chutes, which will help the crew module make a controlled touchdown. These chutes will control the speed of the crew module at various levels and help it stabilise.

After the integrated air drop tests, the space agency will also be carrying out a series of test vehicle missions, pad abort tests (a trial run for its launch abort system) and two rounds of unmanned flights before the manned mission is finally launched. The unmanned tests are likely to happen by 2024 end.

“The year 2024 is going to be the year of Gaganyaan. Preparations are going on at a satisfactory rate. Unlike other missions, we have to be doubly sure of the safety of the missions,” Somanath had said earlier this year.

Previous test

Four astronaut designates — Indian Air Force group captain Prasanth Balakrishnan Nair, group captain Ajit Krishnan, group captain Angad Pratap, and wing commander Shubhanshu Shukla — have been training extensively for the mission for the past five years in Russian and Indian facilities.

They were awarded the “Antriksh Yatri Pankh” (astronaut wings) by Prime Minister Narendra Modi in February. An extra member will be trained as a backup for a contingency situation, as in any human spaceflight.

Last year in October, ISRO had successfully launched the test vehicle development flight (TV-D1) as part of the Gaganyaan programme. This involved simulating an emergency situation to ensure the crew module could safely remove itself from the test vehicle and land in the sea.

The aim of the test flight was to demonstrate and evaluate the sub-systems of the test vehicle and crew escape exercise. Along with this, it also tested various separation systems of the crew module and the demonstration of deceleration systems at a higher altitude, and its recovery.

The liquid-propelled single-stage test vehicle, or TV-D1, uses a modified VIKAS engine with a crew module and crew escape system mounted at its fore-end.

<https://theprint.in/science/isro-to-carry-out-test-to-validate-safety-of-crew-module-for-gaganyaan-mission-by-30-april/2053143/>



Wed, 24 Apr 2024

New Type of Host Defence against Zika, Dengue Infections Revealed

The mere presence of a virus in a bodily fluid doesn't mean it is transmitted via that route. The Zika, dengue, and chikungunya viruses are present in fluids like saliva and semen but don't spread orally or sexually. This fact has puzzled scientists for years, and now a research team has finally explained why.

On March 29, 2020, the World Health Organisation (WHO) posted a tweet that sparked concerns among scientists and prompted many to contact the WHO to say there was enough evidence to discredit the tweet's contents, and suggest it steer clear of such assertions. The tweet was later proven to be factually incorrect but the WHO remained unconvinced for almost two years.

Transmission is a crucial event in a virus's life cycle, yet studying it has been very tricky. A virus that can't transmit is of no consequence to anyone. Successful viruses have extraordinary adaptations selected through years of evolution to ensure they can jump to new hosts.

What does a virus do inside the body?

Most human viruses achieve this by ensuring they are present in bodily fluids that contact the outer environment, and subsequently a new host.

Once inside the new host, a virus must be present at the correct location to infect new target cells. Viruses are usually highly selective in the cells they infect. This phenomenon, called tropism, occurs because most viruses have special proteins on their outer surface that make contact with a receptor on the host cell. Any cell-type that makes the receptor can be infected by the virus.

For example, the receptor for HIV is a protein called CD4. Only cells that make the CD4 protein, such as T-cells and macrophages, can be infected by HIV. Similarly, SARS-CoV-2 uses a receptor called ACE2. Cells of the respiratory tract and some cardiovascular cells all express ACE2, and are target cells for SARS-CoV-2. HIV can't infect respiratory cells and SARS-CoV-2 can't infect T-cells or macrophages.

Viral transmission is an outcome of a chase inside the host: between the virus making copies of itself and the immune system trying to destroy the virus and infected cells. The virus must transmit before the immune system beats it or the host dies. One strategy viruses use to achieve this is by making proteins on the surface that have receptors on multiple cell-types. Such a strategy will

allow them to infect different cell-types, allowing access to multiple body fluids, enabling faster transmission.

What is the PS receptor?

One such receptor is for a protein called phosphatidyl serine (PS). The PS protein is usually expressed by dying cells in the body, as a signal to the immune cells to destroy them. The immune cells express the PS receptor and fuse themselves with these cells, quietly destroying them. Viruses hijack this pathway with a process called apoptotic mimicry: by expressing the PS protein on their own surfaces, allowing them to infect the very cells that will destroy them.

The WHO's tweet and its subsequent withdrawal exemplifies the difficulties of studying viral transmission. The problem is especially challenging when we're studying viruses that can use the PS receptor for entry. Since the PS receptor is expressed by many cells – apart from some cells of the immune system – the virus tends to be present in multiple compartments. Yet the mere presence of a virus in a given compartment wouldn't guarantee transmission from that route.

For example, the Zika virus can be detected in semen, saliva, and breast milk but rarely spreads through these means despite the presence of target cells in the oral and genital cavities. Zika transmits mainly via mosquitoes.

How does the body fend off these viruses?

Now, scientists at the Institute of Molecular Virology at the Ulm University Medical Centre, Germany, have identified a novel defence mechanism the human body uses to prevent Zika and some other viruses from transmitting via non-conventional routes. The study, published in the journal *Nature Microbiology* on March 25, explains how the body uses extracellular vesicles in these bodily fluids to inhibit viral infection.

Vesicles are small structures enclosed by fat that a cell uses to transport substances from one part of the cell to another. When they are secreted outside the cell, they're called extracellular vesicles. The researchers discovered these extracellular vesicles are abundant in saliva and semen and contain the same PS proteins on their surface that viruses like Zika use for infection. The team also discovered the concentration of these extracellular vesicles that contain PS is low in blood and high in saliva and semen.

Through a series of experiments, they demonstrated the PS-containing vesicles compete for the same receptors the viruses use for entry, thus crowding the latter out and preventing an infection.

What does the discovery portend?

The group also showed that all viruses that use the PS receptor for apoptotic mimicry – the dengue, chikungunya, West Nile, ebola, and the vesicular stomatitis viruses – are inhibited by the presence of extracellular vesicles. The vesicles' presence didn't affect the infectivity of viruses that don't use the PS receptor for entry, such as HIV and SARS-CoV-2.

The discovery of PS-coated vesicles for immunity represents a novel type of host defence against viral infection. While it is too early to speculate on potential therapeutic applications from this discovery, it opens up avenues for further research.

One thought-provoking, but also far-fetched, notion arising from the study is the possibility that PS-containing vesicles in humans could have influenced the evolution of mosquito-borne viruses. Perhaps these viruses were forced to look for an alternative when they couldn't spread through saliva or semen and, to paraphrase Michael Crichton, "life found a way".

<https://www.thehindu.com/sci-tech/science/new-type-of-host-defence-against-zika-dengue-infections-revealed/article68097589.ece>

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