

नवंबर

Nov

2024

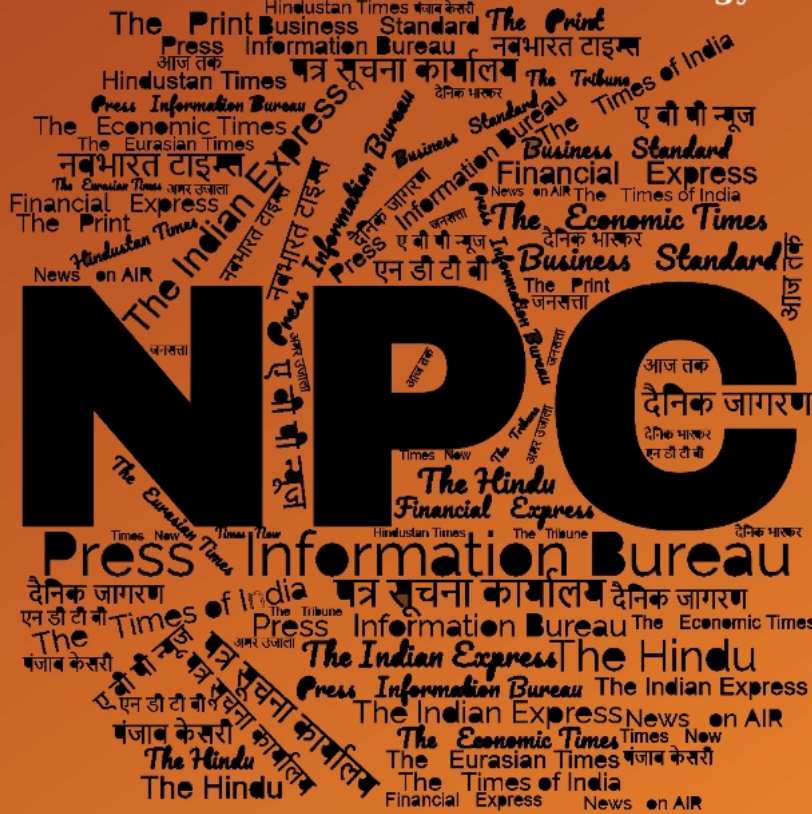
खंड/Vol. : 49 अंक/Issue : 206

07/11/2024

समाचार पत्रों के 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



रक्षा विज्ञान पुस्तकालय

Defence Science Library

रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र

Defence Scientific Information & Documentation Centre

मेटकॉफ हाउस, दिल्ली - 110 054

Metcalf House, Delhi - 110 054

CONTENTS

S. No.	Title	Source	Page No.
DRDO News			1-2
1	CDS visits Pune to review defence industry growth	ANI	1
Defence News			3-16
Defence Strategic: National/International			
2	21st Edition of India – US Military Cooperation Group meeting held in New Delhi	Press Information Bureau	3
3	The Hon'ble President Of India, Smt Droupadi Murmu To Witness Indian Naval Operations Onboard Aircraft Carrier INS Vikrant	Press Information Bureau	4
4	ICG lays foundation stone for the Tier-III Data Centre of Project Digital Coast Guard in New Delhi	Press Information Bureau	4
5	Global arms major Sig Sauer ties up with Nibe group, to make firearms in India	The Economic Times	5
6	Autonomous surface vessel completes 1,500-km voyage from Mumbai to Thoothukudi	The Hindu	6
7	India, Bangladesh Army chiefs talk, discuss 'issues of mutual interest'	The Indian Express	7
8	थिएटर कमांड पर किस तरह आगे बढ़ रही सेना? आर्मी चीफ ने डिटेल में बताई 3 स्टेप अप्रोच वाली बात	NavBharat Times	8
9	Indian Army advances 'SMART Soldier' initiative with tech-driven modernisation efforts	The Statesman	9
10	Is 114 fighter jet tender necessary for IAF? First ask what price India is willing to pay	The Print	10
11	Southern Command Chief stresses state-Army coordination Telangana	Deccan Chronicles	12
12	Trump triumph may add more muscle to India-US defence ties	The Times of India	13
13	IAF's Uber Deal Sparks Outcry: Army Vice Chief Subramani Calls for Caution and Respect	Financial Express	14
Science & Technology News			16-20
14	RNA editing promises to go where DNA editing can't	The Hindu	16
15	Scientists stir 'supersolid' matter for first time	The Times of India	18
16	Fusion Energy on the brink of success: Boron could be protect reactor walls	News Nine	19



Wed, 06 Nov 2024

CDS visits Pune to review defence industry growth

In a significant display of support for India's manufacturing growth, Chief of Defence Staff General Anil Chauhan on Wednesday visited the industrial units in Pune including the NIBE Group of Companies in.

This momentous occasion showcased the country's commitment to self-reliance in defence production. Industry leaders, including L&T, Thales, BSE, and Centum Electronics, attended the event to show their support, alongside cadets from NCC and Engineering students, a NIBE group statement said.

The key highlights of the event:

Exhibition of MSMEs and Start-ups: Over 30 innovative MSMEs and start-ups displayed their cutting-edge solutions, followed by a meet and greet with General Anil Chauhan.

Tribute to Chhatrapati Shivaji Maharaj: The event featured the unveiling of the Gate of Raigad Fort, paying homage to the legendary leader.

Capability Showcase of Missiles & Small Arms Complex: NIBE Group showcased its latest state-of-the-art complex, demonstrating its advanced capabilities in defence manufacturing.

The address by CDS: General Anil Chauhan emphasized the importance of transformation in the defence sector, reflecting on the need for evolution and the notion of Survival-of-the-Fittest by referencing Charles Darwin, Newton, and the Bhagvad Geeta.

Strategic Partnerships:-

TOT Agreements with DRDO: NIBE Group signed various Technology Transfer (TOT) agreements with the **Defence Research and Development Organisation (DRDO)** to enhance indigenous defence capabilities; such as Anti-terrorist Vehicle (ATV), OPX Revelator, Laser Photo-acoustic spectroscopy, 70T tank transporter, and Shelter.

MOU with Sig Sauer (USA): NIBE Group entered into a Memorandum of Understanding(MOU) with Sig Sauer, a world-renowned firearms manufacturing company from theUSA to establish a joint venture (JV) in India.

The JV will focus on the indigenous manufacturing of small arms, aligning with India's growing defence and manufacturing capabilities. This partnership aims to enhance local production while reducing dependency on foreign imports, read the statement.

MOU with HBE (South Korea): NIBE Group also signed an MOU with HBE, a South Korean defence firm, to set up a state-of-the-art Forging facility in India.

This collaboration will bolster India's manufacturing capacity by leveraging advanced Forging technologies, contributing to the production of high-quality components for the defence and aerospace sectors, such as in Ammunition and Aeronautics, it added.

These strategic moves reflect a commitment to advancing India's defence manufacturing capabilities and fostering long-term economic growth through technology transfer, local production, and enhanced supply chain integration, read the statement.

The partnerships and initiatives highlighted today underscore NIBE Group's commitment to contributing to India's defence excellence and self-reliance, aligning with the government's vision of "Atma Nirbhar Bharat". General Anil Chauhan's visit reinforces the importance of collaboration between the defence sector and Indian industries.

Balakrishnan Swamy, the CEO of the NIBE Group shed light on the future expansion plans of the company, saying "NIBE's singular focus is on contributing to India's ambition of becoming a global leader in defence and security. India's defence sector is undergoing a monumental shift, and NIBE is strategically venturing into various domains focusing on cutting-edge technology and manufacturing, such as in Small Arms, Ammunition, Space, and Maritime."

The Chairman and Managing Director of NIBE Group, Ganesh Nibe, emphasized on the role of collaboration in the defence ecosystem, and the nurturing of the next generation, to achieve the vision, saying "Inspired by Chhatrapati Shivaji Maharaj's leadership, NIBE aims to safeguard India's interests and transform the country into a global manufacturing and technological powerhouse. To achieve this, we recognize the critical role MSMEs and start-ups play in driving innovation and growth, providing platforms for these entrepreneurs to thrive through events like the MSME Expo today and the Maharashtra MSME Defence Expo in February. NIBE also nurtures the next generation of innovators through strategic partnerships with engineering colleges and universities, offering internships to students. Our goal remains fostering self-reliance in defense, aligning with Atmanirbhar Bharat's vision, ensuring India's defense forces.

<https://www.aninews.in/news/national/general-news/cds-visits-pune-to-review-defence-industry-growth20241106202901/>



**Press Information Bureau
Government of India**

Ministry of Defence

Wed, 06 Nov 2024

21st Edition of India – US Military Cooperation Group meeting held in New Delhi

The 21st edition of India – US Military Cooperation Group (MCG) meeting was conducted from 05 to 06 November 2024 at the Manekshaw Centre, New Delhi. The meeting covered a wide range of topics, including capacity building, training exchanges, defence industrial cooperation and the advancement of joint exercises that bolster preparedness for conventional and hybrid threats.

The meeting was co-chaired by Chief of Integrated Defence Staff Lieutenant General JP Mathew, representing India and Deputy Commander of the US Indo-Pacific Command Lieutenant General Joshua M Rudd, representing the US. Senior officials from both countries took the opportunity to review the ongoing initiatives and explore new areas of cooperation.

Both sides emphasised the importance of the Indo-US defence partnership and committed to strengthening this strategic relationship through proactive engagement and enhanced interoperability. They also reaffirmed their commitment to expanding the scope of Indo-US military cooperation with a shared understanding of the dynamic challenges facing the Indo-Pacific region.

The MCG is a landmark forum aimed at enhancing defence cooperation and fostering strategic and operational defence collaboration between the Armed Forces of both countries. The 21st MCG meeting represents a step forward in advancing the shared objectives of India and US to ensure regional and global security, counter emerging threats and build mutual capabilities.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2071242>



**Press Information Bureau
Government of India**

Ministry of Defence

Wed, 06 Nov 2024

**The Hon'ble President Of India, Smt Droupadi Murmu To
Witness Indian Naval Operations Onboard Aircraft Carrier
INS Vikrant**

The Hon'ble President of India, Smt. Droupadi Murmu will embark indigenous aircraft carrier INS Vikrant and witness 'Naval Operations' at sea on 07 Nov 24.

Admiral Dinesh K Tripathi, the Chief of the Naval Staff, will receive the Hon'ble President at INS Hansa (Naval Air Station at Goa) and present a 150-men Ceremonial Guard of Honour. Soon thereafter, the Hon'ble President will embark the indigenous aircraft carrier INS Vikrant at sea off Goa.

This is maiden sailing of the Hon'ble President of India, Smt. Droupadi Murmu onboard aircraft carrier INS Vikrant to witness the full spectrum of multi-domain naval operations. The scheduled operations include surface ships ops, battle actions, submarine exercises, air power demo including take off and landings by deck-based fighter aircraft/ helicopters and a flypast by naval aircraft.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2071256>



**Press Information Bureau
Government of India**

Ministry of Defence

Wed, 06 Nov 2024

**ICG lays foundation stone for the Tier-III Data Centre of
Project Digital Coast Guard in New Delhi**

Deputy Director General (Policy & Plans), Indian Coast Guard (ICG), Inspector General (IG) Anand Prakash Badola laid the foundation stone for the Tier-III Data Centre of Project Digital Coast Guard (DCG) on November 05, 2024 at Mahipalpur, New Delhi. Equipped with latest technology, the Project DCG's Tier-III Data Centre will serve as the brain centre to monitor and administer all the applications & vital IT resources, thereby providing critically important support to the administrative functioning of ICG.

Project DCG, being executed by Telecommunications Consultants India Limited, includes construction of state-of-the-art Data Centre in New Delhi, 'Disaster Recovery Data Centre' at New

Mangalore, Karnataka & Pan-India connectivity among ICG locations including ships and also implementation of an 'Enterprise Resource Planning' application.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2071089>

THE ECONOMIC TIMES

Wed, 06 Nov 2024

Global arms major Sig Sauer ties up with Nibe group, to make firearms in India

Having already secured a contract to supply around 1,45,000 assault rifles to the Indian Army, American arms maker Sig Sauer on Wednesday said that it will manufacture a portion of these firearms in India.

Announcing its partnership with Pune-based Nibe Group, the company stated that India is its "largest procurement source" globally.

Sig Sauer's CEO and President Ron Cohen told that by 2025, the company plans to manufacture a complete product in India, initially for the Indian market, including the Ministry of Defence (MOD) and the Ministry of Home Affairs (MHA).

Cohen also revealed that the company has recently received an additional order for 73,000 Sig 716 assault rifles, which it will deliver throughout 2025.

"A few years ago, we won a significant order for the armed forces as part of their modernisation efforts. We successfully delivered 72,500 Sig 716 rifles, and the troops are highly satisfied. Recently, we received an additional order for 73,000 units, which we will deliver over the course of 2025. This will be executed in partnership with Ganesh Nibe and the Nibe Group, enabling us to bring our technology, quality innovation, and capacity to meet the substantial product demand projected for the next 5 to 10 years," Cohen said.

He added, "We've been active in India for nearly 20 years, sourcing numerous components from its defence industry. India has become our largest procurement source worldwide for Sig Sauer, which operates across 93 countries. We are the world's largest manufacturer of firearms."

Looking to the future, Cohen mentioned that Sig Sauer envisions using India as a regional hub to serve the eastern hemisphere.

"In 2025, we'll be producing a fully Indian-made product for the domestic market, targeting both the MOD and MHA. Over time, India will serve as our operational base to cover the majority of the eastern hemisphere. We see India as a source of engineering and manufacturing expertise. The growth of Indian technology and the market's potential make it an attractive hub for Sig Sauer beyond the United States... With Nibe's dynamic approach, I'm confident there won't be any challenges. We also have a procurement office in Delhi," he said.

"We're continually increasing the percentage of components manufactured in India. Sig Sauer is a premium company and the largest firearms supplier to the US military. Our quality requirements are exceptionally stringent, and we find the necessary standards met abundantly in India," he added.

<https://economictimes.indiatimes.com/news/defence/global-arms-major-sig-sauer-ties-up-with-nibe-group-to-make-firearms-in-india/articleshow/115025797.cms>



Wed, 06 Nov 2024

Autonomous surface vessel completes 1,500-km voyage from Mumbai to Thoothukudi

An autonomous surface vessel built by Sagar Defence Engineering has completed a 1,500-km voyage from Mumbai to Thoothukudi under without human intervention, in an endeavour supported by the Indian Navy.

"This first-of-its-kind journey highlights India's growing expertise in autonomous maritime technology and establishes a significant milestone in developing cutting-edge, unmanned systems for national security," the company said in a statement on Wednesday. It is supported by the Indian Navy's Naval Innovation and Indigenisation Organisation (NIIO), Technology Development Acceleration Cell (TDAC), and the Innovations for Defence Excellence (iDEX) initiative under the Defence Innovation Organisation (DIO).

The 'Sagarmala Parikrama' journey was virtually flagged off by Union Defence Minister Rajnath Singh on October 29 during Swavlamban, the annual event of NIIO. The project's success was made possible by the guidance and expertise provided by the Indian Navy, including access to testing facilities and operational feedback, the company said.

"The Sagarmala Parikrama's success demonstrates India's ability to build autonomous maritime systems indigenously, which is critical to our national security.

This journey is a testament to the power of innovation, partnership, and our vision for Aatmanirbharta in defence technology," stated Captain Nikunj Parashar, CEO of Sagar Defence Engineering.

The Sagarmala Parikrama aligns with global advancements in autonomous surface and underwater systems, offering transformative applications in both military and civilian sectors.

By integrating autonomous vessels capable of supporting missions such as littoral patrol, coastal surveillance, high-speed Interdiction, and low-intensity maritime operations, Sagar Defence Engineering is advancing the capabilities of the Indian Navy through technology tailored to meet India's unique security needs, the company stated. This historic milestone paves the way for future

deployment of autonomous vessels in critical sea lanes, coastal surveillance, and anti-piracy operations, expanding the Indian Navy's operational reach, it added.

<https://www.thehindu.com/news/national/autonomous-surface-vessel-completes-1500-km-voyage-from-mumbai-to-thoothukudi/article68837704.ece>



Wed, 06 Nov 2024

India, Bangladesh Army chiefs talk, discuss 'issues of mutual interest'

Three months after the Sheikh Hasina government fell following a violent uprising, Indian Army Chief Upendra Dwivedi on Wednesday had a virtual interaction with his Bangladeshi counterpart General Waker-Uz-Zaman. This is the first such interaction between the Army chiefs of the two countries since the August 5 political upheaval that forced Hasina to flee Bangladesh.

According to a statement by the Indian Army, Dwivedi "interacted with General Waker-Uz-Zaman, Chief of Army Staff, Bangladesh Army, on Video tele call". The two "exchanged views on issues of mutual interest including bilateral Defence Cooperation", the Army statement said.

The interaction is significant in the wake of speculation that amid the political turmoil in the country, Pakistan and China would be working to deepen their influence in Bangladesh. New Delhi and Dhaka have had close ties through the Hasina regime and have enhanced cooperation on various fronts, including defence and internal security.

While historically the armed forces of the two countries have had good relations given the Indian Army's role in the liberation of Bangladesh, defence ties between the two countries are said to have become stronger during the Hasina regime. Over the years, there has been a broad-basing of strategic cooperation between the two countries in terms of regular visits, joint training exercises, and supply of military hardware from India to Bangladesh.

Zaman himself is said to have good relations with the military leadership in India. Continuing military-to-military contact with the Bangladesh Army in addition to keeping diplomatic channels open is also important given that the country is going through a period of political transition where the military is playing an important role in not only ensuring the nation's security but also maintaining law and order for a smooth handover of power.

The meeting also comes in the backdrop of reports of attacks on members of the Hindu community in Bangladesh. The interim government in Bangladesh has assured India it is taking all steps necessary to ensure the safety of minorities in the country. The Bangladesh Army could play an important role in keeping order on that front.

India and Bangladesh also share an over-4,000 km-long border which is porous and prone to smuggling of narcotics, cattle and arms, apart from illegal immigration. In a situation of unrest in Bangladesh, India fears such activities could increase on the borders.

The biannual meeting between border guarding forces of the two countries, supposed to take place this month, already stands postponed. Such meetings have been crucial for sharing mutual concerns and enhancing cooperation on the prevention of trans-border crimes.

<https://indianexpress.com/article/india/india-bangladesh-army-chiefs-talk-discuss-issues-mutual-interest-9656554/>

नवभारत टाइम्स

Wed, 06 Nov 2024

थिएटर कमांड पर किस तरह आगे बढ़ रही सेना? आर्मी चीफ ने डिटेल में बताई 3 स्टेप अप्रोच वाली बात

सेना प्रमुख जनरल उपेन्द्र द्विवेदी ने बुधवार को सशस्त्र बलों में एकजुटता बढ़ाने की दिशा में तीन फेज अप्रोच की रूपरेखा प्रस्तुत की। उन्होंने यह बात ऐसे समय कही है जब सेना निर्णयकर्ताओं के समक्ष अपने थिएटराइजेशन मॉडल को प्रस्तुत करने के लिए तैयार है। भविष्य के युद्धों से लड़ने के लिए सैन्य संसाधनों के सर्वोत्तम उपयोग के लिए थिएटराइजेशन एक लंबे समय से प्रतीक्षित सुधार है। इसके लिए जॉइंटनेस और इंटीग्रेशन की आवश्यकता होती है।

कहां तक पहुंचा इंटीग्रेशन का काम?

सेना प्रमुख जनरल द्विवेदी ने नेशनल डिफेंस कॉलेज में एक कार्यक्रम के दौरान ये बातें कहीं। जनरल द्विवेदी ने कहा कि पहला चरण, या 'संयुक्तता 1.0', अधिग्रहण योजना, पाठ्यक्रम और परिचालन संयुक्त लॉजिस्टिक नोड्स को एकीकृत करने पर केंद्रित है। इसमें तीन पूरी तरह से चालू हैं और चार और प्रगति पर हैं। उन्होंने कहा कि ज्वाइंटनेस 2.0 में सिद्धांतों, एसओपी को अलाइन करने और प्रमुख प्लेटफार्मों के लिए संयुक्त रखरखाव संगठन बनाने में प्रगति हुई है।

ज्वाइंटनेस 3.0 को करेंगे लागू

जनरल द्विवेदी ने कहा कि ज्वाइंटनेस 3.0 की लागू करने की दिशा में, सेना का टारगेट आम स्टैंडर्ड ऑपरेटिंग प्रोसीजर, टेक्निकल शेयरिंग के साथ ही यूएवी और आईएसआर (खुफिया, निगरानी और टोही) सिस्टम जैसे रिसोर्सेज का विस्तार करना है। केंद्रीय सशस्त्र पुलिस बलों को एकीकृत करने के प्रयास जारी हैं। उन्होंने कहा कि जॉइंटनेस के लिए लगभग 180 क्षेत्रों की पहचान की गई है। इनमें से 30% लक्ष्य प्राप्त कर लिए गए हैं और बाकी बचे पर काम तेजी से किया जा रहा है।

क्या है इंटीग्रेटेड थिएटर कमांड

केंद्र सरकार तीनों सेनाओं में तालमेल को अधिक बेहतर बनाने के लिए 'इंटीग्रेटेड थिएटर कमांड' बना रही है। थिएटर कमांड यानी एकीकृत कमांड एक ऐसा सिस्टम होगा जिसके तहत आर्मी, नेवी और इंडियन एयरफोर्स बेहतर तालमेल के साथ एक दूसरे की क्षमताओं का कुशलता से इस्तेमाल करेंगी। सेना में जिस थियेटरिकरण मॉडल को अपनाया जा रहा है, उसमें लखनऊ में चीन-केंद्रित उत्तरी थियेटर कमान, जयपुर में पाकिस्तान-केंद्रित पश्चिमी थियेटर कमान और तिरुवनंतपुरम में समुद्री थियेटर कमान की स्थापना शामिल है।

5 सितंबर को लखनऊ में हुई थी मीटिंग

सेना प्रमुख ने 1 अक्टूबर को कहा था कि शुरू में कुछ दिक्कतें थीं और गति धीमी थी। लेकिन अब गति बहुत तेज होगी। 5 सितंबर को लखनऊ में संयुक्त कमांडरों के सम्मेलन में संयुक्तता पर जोर दिया गया। रक्षा मंत्री राजनाथ सिंह ने एक संयुक्त दृष्टिकोण विकसित करने, भविष्य के युद्धों की तैयारी करने और उकसावे पर एक समन्वित, तेज और आनुपातिक प्रतिक्रिया देने पर जोर दिया।

<https://navbharattimes.indiatimes.com/india/indian-army-chief-general-upendra-dwivedi-on-integrated-theatre-command-three-steps-approach-know-all-about-it/articleshow/115025289.cms>

The Statesman

Wed, 06 Nov 2024

Indian Army advances 'SMART Soldier' initiative with tech-driven modernisation efforts

The Indian Army is accelerating its modernisation efforts with a focus on creating "SMART Soldiers" equipped with advanced technologies such as F-INSAS (Futuristic Infantry Soldier as a System), cutting-edge mobility vehicles, and night combat capabilities, announced Chief of Army Staff General Upendra Dwivedi at the 64th National Defence College (NDC) Course on Wednesday.

General Dwivedi highlighted that these advancements are part of a larger push to prepare the Army for future conflicts through enhanced weapons, systems, and logistics suitable for high-altitude and varied terrains.

Speaking on "Decade of Transformation: Indian Army in Stride with the Future and Nation Building," the COAS emphasised that the modernisation aligns with India's vision of "Viksit Bharat@2047," making the Army a future-ready, self-reliant force.

Surveillance capabilities are being boosted with nano drones, satellite technology, and dedicated R&D centres for drone development. Precision strike capabilities are also being refined, focusing on accuracy, long-range munitions, and post-strike assessments. Communication infrastructure is receiving upgrades such as Software Defined Radios, SAMBHAV secure networks, and anti-drone technology, while new assets like light tanks and swarm drones enhance operational readiness.

Additionally, logistics are being improved through the use of logistic drones, robotic mules, and a tri-service approach to inventory management.

General Dwivedi outlined structural changes aimed at optimising warfighting capabilities, introducing Rebal 1.5 to streamline command, control, and training, and Rebal 2.0 to adapt to emerging Diplomatic, Informational, Military, and Economic (DIME) interdependencies.

Key initiatives include establishing Integrated Battle Groups for the Mountain Strike Corps, forming specialised units like the Signals Technology Experimentation & Adaptation Group (STEAG) for secure communications, and expanding cyber, electronic warfare, and intelligence

capabilities. The Army Knowledge & Enabler Corps will further support linguistic and cyber skills, while artillery regiments will standardise to 155mm guns and expand roles for Territorial Army units.

<https://www.thestatesman.com/india/indian-army-advances-smart-soldier-initiative-with-tech-driven-modernisation-efforts-1503361920.html>

ThePrint

Wed, 06 Nov 2024

Is 114 fighter jet tender necessary for IAF? First ask what price India is willing to pay

Given the near-certainty that India plans to purchase 114 foreign fighter jets, it is imperative to question the rationale, approach, and timeline of any possible procurement. What capabilities does the Indian Air Force require? What price is India willing to pay? Most importantly, if the IAF's needs haven't changed substantially since the last fighter competition, is another tender necessary, or are we simply delaying a critical decision?

The IAF down-selected the Dassault Rafale and the Eurofighter Typhoon in the 2008 Medium Multi-Role Combat Aircraft (MMRCA) competition for 126 aircraft following a thorough evaluation, ultimately opting for the Rafale. Yet, due to various issues and delays during negotiations, the tender couldn't be completed, leading instead to a government-to-government (G2G) purchase of 36 Rafales in 2015 and the subsequent withdrawal of the tender that included manufacturing 108 jets in India. Re-opening a competition now — and considering the same set of options — seems redundant and likely to reignite the diplomatic and political pressures associated with such a high-stakes procurement.

If India were to choose a different fighter, it would imply the Rafale selection and acquisition was flawed, undermining both the credibility of the nation's defence evaluation and the decision-making process. It will also reopen the controversy over the decision to buy it. Ironically, one reason the government wants another tender may be to avoid such controversies; however, this process could create exactly what it seeks to prevent. The government should avoid such an outcome by streamlining its options and aligning closely with IAF's operational priorities and the amount it is willing to spend.

Defeating the purpose

The current contenders present a mismatched mix of single- and twin-engine fighters, spanning medium- and heavy-weight categories. Including options like the American F-21 and Swedish Gripen—both single-engine jets—seems off-track if the IAF's goal is exclusively twin-engine, medium fighters. There are other considerations as well. Why spend time and resources assessing the Russian MiG-35 when India already operates the MiG-29, or the Su-35, given the IAF's substantial fleet of Su-30MKIs? The IAF is generally averse to acquiring additional Russian

fighters, as they lack the technological sophistication of Western models and come with high maintenance demands and lower operational availability. Similarly, the American F/A-18 and F-15EX, both heavy fighters, are unlikely choices for the IAF, despite India's growing stock of US-origin platforms and strengthening ties with Washington.

The Rafale remains the most pragmatic option. It is already in service with the IAF with training and logistics infrastructure in place along with operational experience. India has also invested €1.7 billion in developing India-specific enhancements. If the government is prepared to invest around \$20 billion in a larger Rafale fleet, a G2G agreement with France would not only maintain operational consistency but also deepen India's strategic relationship with a trusted ally. Choosing any other fighter, especially heavier models, would not only be expensive but also complicate logistics and maintenance due to the need to integrate a new platform. Additionally, opting for American fighters could draw criticism of yielding to their pressure, which will certainly be there. The US was very disappointed at losing out in the MMRCA competition.

Pragmatic alternatives

If budget constraints and Rafale's price tag are a concern, the Swedish Gripen offers a compelling, cost-effective alternative. The single-engine fighter has solid operational capability, includes an advanced electronic warfare suite that provides a degree of stealth, and is compatible with the Meteor missiles that are already in India's arsenal. It is powered by the GE-F414 engine that is going to power India's own LCA MkII and AMCA, and to be manufactured in India under ToT by GE, thereby providing synergies. Sweden is also open to technology transfer. However, it lacks the geopolitical weight that usually accompanies large defence deals. Here lies a critical question: Can India separate defence acquisitions from political gains? If the answer is yes, the Gripen may offer a solution that balances capability and cost.

The other single engine option, the Lockheed Martin F-21, is unlikely to find favour, as it is considered an old aircraft and its earlier variant, the F-16, is in service with Pakistan.

The timeline and supply chain reality

A key reason for a foreign acquisition is to address the fighter shortfall in the IAF, now reduced to 31 squadrons from its sanctioned 42. This number is set to decline further with the impending retirement of the remaining MiG-21s and the Jaguar fleets. However, some of the jets in contention come with significant backlogs and supply chain hurdles. If these cause delays in delivery timelines, the purpose of procuring foreign fighters to fill immediate gaps will be defeated. There's little value in buying foreign jets if they can't be inducted faster than India's own production rate for the LCA Tejas.

Time to empower private players

Another critical aspect is determining who will lead the manufacturing effort within India should the 114-jet acquisition proceed. In the initial Rafale negotiations, a significant roadblock arose over workshare with Hindustan Aeronautics Limited (HAL), largely due to Dassault's reluctance to guarantee HAL-manufactured fighters, thereby questioning its competence. If India aims to foster a competitive domestic aerospace industry, this is the moment to empower private enterprises, giving the lead to a competent enterprise or a group of them. Engaging capable private players

could not only expedite timelines but also establish a parallel capability that promotes efficiency, innovation, and industry competitiveness.

The bottom line

If India has \$20 billion available for this acquisition, the government should either advance with a Rafale G2G arrangement or consider a more economical option like the Gripen. Another tender will only prolong decision-making, intensify diplomatic pressures, and likely trigger renewed political scrutiny.

Instead of repeating this process and risking a reputation for indecisiveness, India should make a pragmatic choice. Focus on what the IAF truly needs, bring private industry into the fold meaningfully, and evaluate cost, delivery timelines, and long-term strategy. Defence procurement should be a focused, forward-looking decision — not a spectacle.

It's time to end this prolonged debate. Whether by expanding the Rafale fleet or choosing a capable, yet less expensive alternative like the Gripen, India must equip the IAF with the resources it needs without further delay.

<https://theprint.in/opinion/is-114-fighter-jet-tender-necessary-for-iaf-first-ask-what-price-india-is-willing-to-pay/2343898/>

DECCAN Chronicle

Wed, 06 Nov 2024

Southern Command Chief stresses state-Army coordination Telangana

General Officer, Commanding-in-Chief, Southern Command LG Dhiraj Seth, AVSM, stressed the crucial synergy between the state administration and the Indian Army in ensuring swift disaster response and internal security.

During a meeting with Governor Jishnu Dev Verma at the Raj Bhavan on Wednesday LG Seth highlighted the collaboration aimed at tackling emergencies effectively. He also conveyed gratitude on behalf of the ex-servicemen community for the benefits announced during the state managing committee meeting. They also discussed innovative welfare schemes for veterans. LG Seth presented a memento to the Governor.

<https://www.deccanchronicle.com/southern-states/telangana/southern-command-chief-stresses-state-army-coordination-1835970>

Trump triumph may add more muscle to India-US defence ties

Whether it was Bush, Obama, Trump or Biden in the past, or Trump once again now, the expansive bilateral defence cooperation has been and will continue to be the lynchpin of the larger strategic partnership between the US and India.

The strategic convergence over China's aggressive and expansionist behaviour in the crucial Indo-Pacific, which includes muscle-flexing along the land frontier with India as well as its expanding naval presence in the Indian Ocean Region (IOR), will not see any dilution despite differences on other fronts like trade and tariff barriers.

The military interoperability between India and the US will also continue to deepen with a flurry of combat exercises, be it in bilateral, quadrilateral or multilateral formats, as will the security cooperation in the IOR, including in the new area of underwater domain awareness in the light of Chinese submarines prowling in the region.

"Trump, in fact, may actually push for a stronger, overt military dimension to the 'Quad', which India has resisted so far. The US, Australia and Japan are all keen on this front," a senior defence official told TOI.

India, of course, will need to factor in Trump's mercurial and transactional nature. On the eve of Trump's visit to India as the US President in Feb 2020, incidentally, the Modi-led cabinet committee on security had quickly cleared two mega contracts worth \$3.5 billion for 24 MH-60 'Romeo' multimission naval helicopters and six AH-64E Apache attack choppers.

At the 'Namaste Trump' event in Ahmedabad soon after, an exuberant Trump pointed to the chopper deals and said his country looked forward to providing India with "the best and most feared military equipment" on the planet. While strongly pitching for the US to become India's "premier defence partner", he had also referred to armed unmanned aerial vehicles (UAVs).

That UAV deal finally came to fruition last month, with India inking the \$3.3 billion contract with the US govt for 31 weaponized MQ-9B 'Predator' remotely-piloted aircraft, along with another \$520 million contract with drone-manufacturer General Atomics to set up an MRO facility here. The US has now bagged lucrative Indian defence deals worth well over \$25 billion just since 2007, managing to displace even India's long-standing military supplier Russia for a few years.

India, however, now wants co-production and co-development of cutting-edge defence equipment and technologies instead of direct off-the-shelf purchases. Towards this, the Modi govt wants to conclude within this fiscal the ongoing techno-commercial negotiations for co-production of the American GEF414 aero-engines in India for Tejas Mark-II fighters, with 80% transfer of technology for around \$1 billion.

“The Trump administration will not be an impediment for such projects, but may want to extract a higher price for high-end tech transfer,” another official said.

To be sure, the US will also be deeply interested in the IAF’s long-standing quest for 114 new 4.5-generation multi-role fighter aircraft (MRFA) to be manufactured in India with foreign collaboration, at an initial estimate of Rs 1.25 lakh crore.

Washington has also been hard-selling the co-production of Stryker armoured infantry combat vehicles, with the Javelin anti-tank guided missiles, and demonstrated them to India in Ladakh recently. These projects, however, constitute just a part of the ever-tightening bilateral strategic clinch.

“There is bipartisan consensus in the US on further strengthening defence cooperation with India as a hedge against China in the Indo-Pacific. It suits India as well, especially due to the strengthening Russia-China nexus,” the official said.

<https://timesofindia.indiatimes.com/india/trump-triumph-may-add-more-muscle-to-india-us-def-ties/articleshow/115029403.cms>



Wed, 06 Nov 2024

IAF’s Uber Deal Sparks Outcry: Army Vice Chief Subramani Calls for Caution and Respect

The recent agreement between the Indian Air Force (IAF) and Uber for affordable transport services has stirred significant controversy over potential data security risks, prompting a strong response from the Vice Chief of the Indian Army, Lieutenant General Raja Subramani. Amid public backlash, including online ridicule and pointed criticism from security experts, Lt. Gen. Subramani emphasized the importance of constructive criticism while acknowledging the need for a more cautious approach to data privacy.

Vice Chief’s Response: Balance Criticism with Respect

Speaking at an event in Delhi, Lt Gen Subramani addressed the uproar surrounding the IAF’s partnership with Uber, cautioning against veering into disrespectful criticism. “Criticism is accepted but there should be no disrespect,” he asserted, referencing recent social media debates that mocked the agreement and even used offensive language about military leaders. Subramani acknowledged that the Air Force and Navy could have exercised greater vigilance over data security concerns, but he underscored the need for a respectful discourse, especially when addressing the military’s decisions.

The Uber Agreement: A Security Debate Unfolds

At the heart of the controversy is the IAF's agreement with Uber, designed to provide airmen and their families with cost-effective taxi services. The deal, however, raised alarms about data privacy, as experts warned that travel information and personal data could be at risk. India currently lacks a comprehensive data privacy law, and defence specialists are wary that sensitive information could be exposed to foreign entities without robust legal safeguards.

In response to the criticism, the IAF removed its original social media post on the deal, but the issue continued to gain traction after a journalist's podcast further amplified the concerns. The podcast featured discussions mocking the military's intelligence on data privacy, with several social media influencers using disparaging remarks about military leaders.

Expert Warnings: Data Privacy in Military Partnerships

Defence experts have voiced concern that the Uber agreement might expose the armed forces to potential data leaks. Maj Gen P K Mallick, VSM (Retd) an expert in Cyber Warfare, SIGINT and Electronic Warfare, noted that without strict data privacy protections, agreements with private companies could inadvertently jeopardize military security. Drawing parallels to India's earlier experiences, Mallick cited the US-India Communications Compatibility and Security Agreement (COMCASA) as an example of an arrangement that raised similar data security concerns.

COMCASA, which facilitates secure military communications between India and the U.S., had sparked a debate over possible access by foreign entities to India's sensitive communication systems.

He wrote a paper on 2+2 Dialogue and Indo US Relations in Oct 2018 published by Vivekananda International Foundation titled: "India's Concerns over the COMCASA".

According to Mallick, "COMCASA could increase India's reliance on US-sourced equipment and potentially compromise operational security." The Uber-IAF agreement, though different in scope, carries similar risks, as data on the movement of air force personnel could potentially be vulnerable, Mallick noted.

Lessons from Global Conflicts: The Importance of Data Security

Defence experts have drawn attention to the role of data security in modern warfare, highlighting how adversaries could exploit unsecured data for strategic gains. In the ongoing Russia-Ukraine conflict, intelligence leaks have played a significant role in shaping battlefield dynamics. Analysts warn that any compromise in the privacy of military personnel's movements could expose them to targeted attacks or surveillance, a risk India can ill afford given its sensitive regional security context.

Lt Gen Subramani acknowledged these concerns, noting that the Navy and Air Force might have underestimated the data privacy implications of the agreement. "If there were more awareness around potential data breaches, such a decision might have been reconsidered," he stated.

The Path Forward: Strengthening Data Protocols

The backlash over the Uber deal underscores a larger issue facing India's armed forces—how to adapt to an environment where data security is a critical component of national defence. As India continues to modernize its forces and engage in agreements with private companies, the need for a

national data privacy framework becomes ever more urgent. Experts suggest that future partnerships should include rigorous data-sharing protocols, especially in the absence of strict domestic data privacy legislation.

With growing public awareness of cyber threats and the risks posed by data breaches, Lt Gen Subramani's call for careful, respectful criticism reflects a shift toward a more transparent approach to military policy. His comments also indicate an acknowledgment within the armed forces of the need to prioritize data privacy in future decisions.

<https://www.financialexpress.com/business/defence-iafs-uber-deal-sparks-outcry-army-vice-chief-subramani-calls-for-caution-and-respect-3657956/>

Science & Technology News

THE  HINDU

Wed, 07 Nov 2024

RNA editing promises to go where DNA editing can't

On October 16, a biotechnology company in Massachusetts in the U.S. named Wave Life Sciences made headlines for becoming the first company to treat a genetic condition by editing RNA at the clinical level. But for all that this is a breakthrough, scientists had anticipated it.

The role of RNA in a function called RNA interference — where small RNA molecules keep a gene from being expressed — has been essential for the success of CRISPR-Cas9 gene-editing. The rapid development of mRNA vaccines during the COVID-19 pandemic exemplified the complex as well as vital role RNAs play beyond gene expression and regulation. Now, at the dawn of a new era in precision medicine, RNA editing has made a pitch to be at the forefront.

What is RNA editing?

Cells synthesise messenger RNA (mRNA) using instructions in DNA and then 'read' instructions from the mRNA to make functional proteins. During this process of transcription, the cell may make mistakes in the mRNA's sequence and based on it produce faulty proteins.

Many of these proteins have been known to cause debilitating disorders. RNA editing allows scientists to fix mistakes in the mRNA after the cell has synthesised it but before the cell reads it to make the proteins. One technique involves a group of enzymes called adenosine deaminase acting on RNA (ADAR). Adenosine is one of the building blocks of RNA.

ADAR works by converting some of the adenosine blocks in mRNA to another molecule called inosine. This is useful because inosine mimics the function of a different RNA building block called guanosine. Because guanosine-like function is found where adenosine is supposed to be, the

cell detects a mistake and proceeds to correct it, in the process restoring the mRNA's original function.

And then the cell makes normal proteins. Scientists took advantage of ADAR's effects to pair it with a guide RNA (or gRNA): the gRNA guides ADAR to a specific part of the mRNA, where the ADAR works its magic. They expect a variety of serious genetic conditions can be treated using such site-specific RNA editing.

RNA editing in development

Wave Life Sciences used RNA editing to treat α -1 antitrypsin deficiency (AATD), an inherited disorder. In patients suffering from AATD, levels of the protein α -1 antitrypsin build up and affect the liver and the lungs.

People with AATD affecting the lungs currently go through weekly intravenous therapy for relief; among people where AATD has affected the liver, a liver transplant is the sole treatment option. In its therapy, dubbed WVE-006, the company used a gRNA to lead ADAR enzymes to specific single-point mutations in the mRNA sequence of the SERPINA1 gene, which contains the instructions for cells to make α -1 antitrypsin.

A single-point mutation occurs when a single building block of the mRNA is wrong. Once at the target, the ADAR enzymes fix the mRNA and the cells produce α -1 antitrypsin at normal levels.

Wave Life Sciences is planning to extend its RNA editing technology to treat Huntington's disease, Duchenne muscular dystrophy, and obesity. The first two and some forms of obesity are associated with single-point mutations. Some other companies using ADAR enzymes to perform RNA editing are Korro Bio for AATD and Parkinson's disease; ProQr Therapeutics for heart disease and bile acid build-up in the liver; and Shape Therapeutics for neurological conditions.

They use different guides, RNA types, and delivery mechanisms, however. Researchers are also extending RNA editing to make changes in the exon. mRNA is made up of portions called introns and exons: exons eventually code for a protein whereas the introns are non-coding parts and are removed from the RNA before it's used to make a protein. A company called Ascidian Therapeutic is testing its candidate to treat ABCA4 retinopathy.

Several mutations in the ABCA4 gene lead to different levels of protein expression and disease severity. The ABCA4 gene is large, so standard gene replacement therapy is not feasible; instead, RNA editing is expected to be able to offer a way out. The candidate started clinical trials in January 2024 with a fast-track designation granted by the U.S. drug regulator.

The same regulator permitted South Korean company Rznomics to conduct trials in the U.S. for its candidate to treat forms of liver cancer. In South Korea, this candidate has already proceeded to phase I and II trials. It works by regulating the production of human telomerase reverse transcriptase, a protein that affects tumour formation.

RNA v. DNA editing

RNA editing has some advantages over DNA editing, especially on safety and flexibility. DNA editing makes permanent changes to a person's genome and sometimes this can lead to irreversible errors. On the other hand, RNA editing makes temporary changes, allowing the effects of the edits

to fade over time. In a clinic, this means a doctor can stop the therapy if a problem arises and mitigate long-term risk. Second, CRISPR-Cas9 and other DNA editing tools require proteins acquired from certain bacteria to perform the cutting function, but these proteins can elicit undesirable immune reactions in some cases.

RNA editing relies on ADAR enzymes, which already occur in the human body and thus present a lower risk of allergic reactions. This is useful for people who require repeated treatment and/or who have immune sensitivities.

Challenges in RNA editing

A big challenge in RNA editing is its specificity. ADARs can perform adenosine-inosine changes in both targeted and non-targeted parts of mRNA, or skip the targeted parts altogether. When ADARs don't align with the adenosine of interest, potentially serious sideeffects could arise. Scientists are currently trying to improve the accuracy of gRNA by incorporating mechanisms that shield non-targeted parts of the mRNA.

Another challenge is the transient nature of RNA editing: this is also its strength, but individuals will need to be treated repeatedly to sustain the therapy's effects. Third, current methods to deliver the gRNA-ADAR complex use lipid nanoparticles. Researchers used them to great success to make mRNA vaccines to treat COVID-19 and the adeno-associated virus (AAV) vectors used in gene editing. But both these methods have a limited carrying capacity, meaning they can't transport large molecules very well.

Market value and future outlook

RNA editing is in its nascent stage, yet there are already at least 11 biotechnology companies worldwide developing RNA editing methods for a range of diseases. Their efforts have elicited interest from large pharmaceutical firms including Eli Lilly, Roche, and Novo Nordisk. As research and clinical trials advance in the field of RNA editing, it seems like only a matter of time before RNA editing becomes a fixture of the gene-editing toolkit in clinical practice.

<https://www.thehindu.com/sci-tech/science/rna-editing-promises-to-go-where-dna-editing-cant/article68836223.ece>

THE TIMES OF INDIA

Thu, 07 Nov 2024

Scientists stir 'supersolid' matter for first time

Scientists on Wednesday said they have successfully stirred a strange matter called a "supersolid" -- which is both rigid and fluid -- for the first time, providing direct proof of the dual nature of this quantum oddity.

More than half a century ago, physicists predicted the existence of a "supersolid" state. It is matter that has the properties of both a solid and a superfluid. In everyday life, there are four states of matter -- solid, liquid, gas and the rarer plasma.

But physicists have long been investigating what are known as "exotic" states of matter, created at incredibly high energy levels or temperatures so cold they approach absolute zero (-273.15 degrees Celsius or -459.67 degrees Fahrenheit). Under these extreme conditions, matter starts behaving differently. Fluids such as liquid or gas may get more or less resistance to flow, which is measured by viscosity.

Honey, for example, is more viscous than water. Superfluids, an extremely cold exotic matter, have zero viscosity -- there is no resistance so they flow freely. If a superfluid was stirred in a cup, it would flow around indefinitely without ever slowing down. More than half a century ago, physicists predicted the existence of a "supersolid" state.

It is matter that has the properties of both a solid and a superfluid, in which a fraction of the atoms flow friction-free through the lattice -- a regular arrangement of points or objects -- of a rigid crystal structure.

Researchers had previously managed to observe these crystal structures inside supersolids in several ways.

A direct observation of the manner in which this matter flows has remained elusive, said Francesca Ferlino, a physicist at Austria's University of Innsbruck. Until a new study led by Ferlino was published in Nature on Wednesday. The team managed to stir a supersolid to observe the tiny whirlpools -- called quantised vortices -- which are the "smoking gun of superfluidity".

In 2021, the Innsbruck University team created a two-dimensional supersolid by cooling particular atoms and molecules to extremely low temperatures. And used magnetic fields to carefully rotate their supersolid, stirring it up to create the pretty quantised vortices.

<https://timesofindia.indiatimes.com/science/scientists-stir-supersolid-matter-for-first-time/articleshow/115032254.cms>



Wed, 06 Nov 2024

Fusion Energy on the brink of success: Boron could be protect reactor walls

Fusion energy physicists at the Princeton Plasma Physics Laboratory (PPPL) have advanced the use of boron powder as a shield for the inner tungsten walls of tokamaks to withstand the heat and pressure of fusion plasma.

Tungsten is usually applied to coat the plasma-facing parts of fusion reactors as it is resistant to the stress. Due to their high energy, plasma can knock out tungsten atoms and will introduce them into plasma, which will cool down and slow down the fusion reaction. Sodium, particularly in the form of a fine powder, has been successfully used to prevent tungsten walls from sputtering and thereby stabilise the plasma.

Using Boron from a Single Point

The PPPL's team, led by Joseph Snipes, the deputy head for Tokamak Experimental Science, came up with a manner in which boron can be inserted into the tokamak like salt in a shaker. The boron ionises at the edges while within the plasma and forms a thin layer on the walls of the reactor.

It also protects the tungsten atoms from being sputtered into the plasma, which minimises the cooling effect on the fusion process. The boron layer also efficiently traps tritium, a radioactive hydrogen isotope that must be contained within specific levels in ITER for nuclear reasons.

New Computer Models Prove Efficiency

In parallel with the experiments, a PPPL staff research physicist, Florian Effenberg, coordinated the work on the simulation of boron powder behaviour in the DIII-D tokamak. This framework also includes three computer models that are used to predict plasma behaviour, movement of boron powder, and its interaction with the walls of the tokamak.

Interestingly, the simulations show that boron could be spread evenly on the walls of the reactor if it was sprinkled from a single source; the protection layer can be maximised with minimal use of boron.

Towards ITER's Tungsten Walls

These advances help scientists get closer to using boron injection in the ITER tokamak, which will have tungsten walls unlike the DIII-D. The subsequent step of the study will generalise the PPPL's models to the more complex ITER reactor and explore the potential variation in the efficiency of boron with tungsten. This contribution from Oak Ridge National Laboratory as well as ITER and its main idea is to set up an efficient wall conditioning approach that will enable the reactor and foster long-term fusion.

This study is a major step toward improving the durability and performance of a fusion reactor. The reduction of tungsten contamination could be achieved by boron injection, which might enhance the reactor performance and make fusion energy almost clean and practical.

<https://www.news9live.com/science/ancient-crocodile-relatives-could-not-dive-deep-because-of-sinuses-2743247>

