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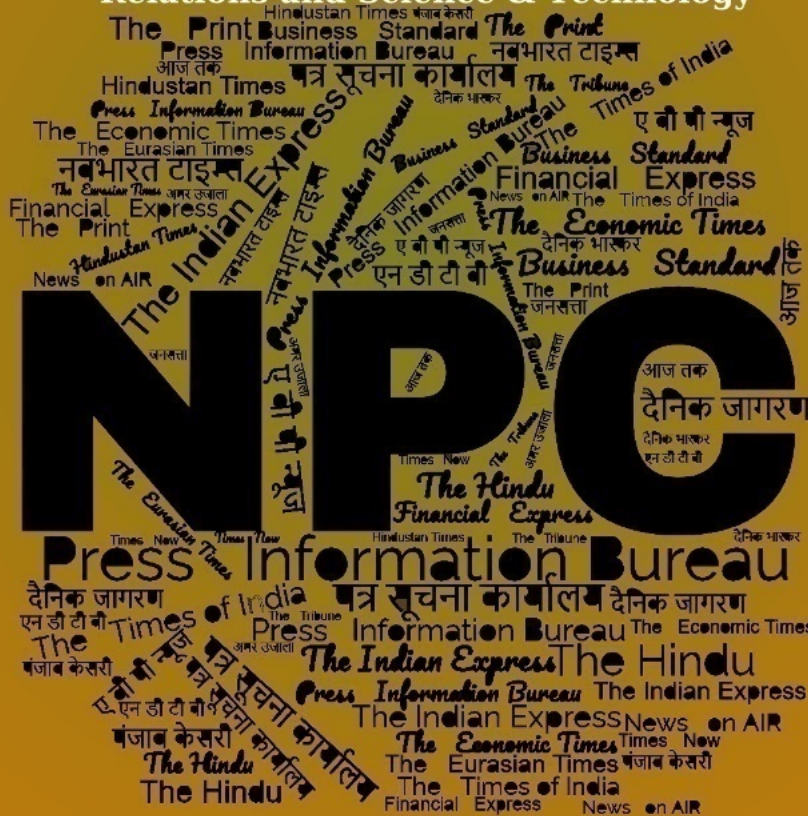
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समाचार पत्रों से चयित अंश Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

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**Press Information Bureau
Government of India**

Ministry of Defence

Fri, 15 Mar, 2024

MoD signs contract worth over Rs. 2,890 cr with HAL for Mid Life Upgrade of 25 Dornier Aircraft of Indian Navy

The Ministry of Defence signed a contract with Hindustan Aeronautics Limited (HAL) on March 15, 2024 for Mid Life Upgrade (MLU) of 25 Dornier Aircraft along with associated equipment for the Indian Navy at a cost of Rs.2,890 cr.

The MLU for Dornier Aircraft includes an upgrade to incorporate state-of-the art Avionics Systems and Primary Role sensors. The upgrade would significantly enhance the operational capability of the Dornier aircraft of the Indian Navy to perform Primary Roles of Maritime Surveillance, Coastal Surveillance, Electronic Intelligence and development of Maritime Domain Awareness.

In addition, this upgrade will also enable Indian Navy Dorniers to carry out Secondary Roles of Search and Rescue, Medical/Casualty Evacuation and Communication Link.

Mid Life Upgrade (MLU) of 25 Dornier Aircraft is likely to generate an employment of 1.8 Lakh Man- days during its execution span of 6.5 years.

The indigenous upgrade entails supply of major systems and equipments from indigenous sources thus significantly contributing towards "Atmanirbharta" in Defence, in consonance with Make-in-India initiative of Government of India.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2015025>



**Press Information Bureau
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Ministry of Defence

Fri, 15 Mar, 2024

Raksha Mantri Shri Rajnath Singh inaugurates the newly-constructed Headquarters of the Indian Navy ‘Nausena Bhawan’ at Delhi Cantt.

Nausena Bhawan, the newly-constructed Headquarters of the Indian Navy, located at Delhi Cantt. was officially inaugurated by Raksha Mantri Shri Rajnath Singh on March 15, 2024. The inauguration marks a significant milestone for the Indian Navy as it establishes its first independent headquarters in Delhi.

Previously, the Navy operated from 13 different locations, necessitating a consolidated and purpose-built facility such as Nausena Bhawan. The architectural design of Nausena Bhawan was selected through a rigorous all-India Competition process, ensuring the building's functionality and aesthetic appeal. Comprising three wings across four stories, the building incorporates innovative construction technologies to optimize efficiency and sustainability.

Efforts toward energy and water conservation are evident throughout the complex, with the integration of solar generation systems and advanced building materials. The Hybrid Reinforced Cement Concrete Construction system enables the construction of large spans with maximum speed, while the building's design emphasises integration with natural elements through landscaped gardens and internal courtyards.

Internally, Nausena Bhawan boasts a comfortable and congenial atmosphere facilitated by a Central Heating, Ventilation & Air Conditioning system utilising Advanced Oxidation Plasma technology. Moreover, the complex is equipped with a state-of-the-art Integrated Building Management System, ensuring efficient coordination and monitoring of security services and utility systems.

The building has achieved a Green Rating IV under the Integrated Habitability Assessment, underscoring its commitment to sustainable practices. Additionally, the complex features a comprehensive three-tier security system, including cutting-edge technologies such as Automatic Underbelly scanning of vehicles, Power fence, Face Recognition Cameras, Bollards, Vehicle Stoppers, Access Control, and Security Cameras.

In line with modern office practices, Nausena Bhawan is equipped with extensive IT infrastructure supported by UPS systems, promoting a paperless work environment and meeting the stringent network requirements of the Navy.

The inauguration represents a significant step forward for the Indian Navy, providing a centralised and technologically advanced headquarters that reflects the nation's commitment to maritime excellence and national security.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2015022>



Press Information Bureau
Government of India

Ministry of Defence

Fri, 16 Mar 2024

Anti-Piracy Operations against Pirate Ship MV Ruen by Indian Navy

INS Kolkata, mission-deployed in the Arabian Sea, through the sustained high tempo of operations lasting over 40hrs, has thwarted the designs of the Somali pirates to hijack ships transiting through the region by intercepting the pirate ship MV Ruen, on 16 Mar 24. The merchant vessel had been hijacked in December 2023 and was under the control of the Somalian Pirates till now.

Indian Navy as part of the Maritime Security Operations has been carrying out extensive surveillance in the region including monitoring of traffic in Areas of Interest. Based on the analysis of the surveillance information the Indian Navy was able to track the movement of the Pirate Ship Ruen and directed INS Kolkata to intercept the ship approximately 260 Nm East of Somalia. Kolkata intercepted Ruen in the morning of 15 Mar 24, and confirmed the presence of armed pirates through a ship-launched drone. In a reckless hostile act, the pirates shot down the drone and fired at the Indian Naval warship. In a calibrated response iaw International Laws, Kolkata disabled the ship's steering system and navigational aids, forcing the Pirate Ship to stop.

INS Kolkata undertook precisely measured actions while maintaining her position close to the Pirate Ship and also engaged in forceful negotiations, which resulted in the Pirates surrendering and releasing the pirate ship MV Ruen and its original crew present onboard. The efforts of the Indian Navy in the ongoing anti-piracy operation 1400 nm (2600 km) from mainland India were augmented by the deployment of INS Subhadra in the area AM 16 Mar 24, and also by air-dropping of the Marine Commandos (PRAHARS) by C-17 aircraft in the same afternoon. Additionally, the pirate vessel was kept under surveillance by HALE RPA and P8I maritime reconnaissance aircraft. Due to sustained pressure and calibrated actions by the Indian Navy over the last 40 hours, all 35 Somali pirates surrendered PM 16 Mar 24. All 17 original crew members of MV Ruen were also safely evacuated from the pirate vessel without any injury. The vessel has also been sanitised for the presence of illegal arms, ammunition and contraband.

The seaworthiness of MV Ruen will be assessed in the morning on 17 Mar 2024, and the vessel which is carrying approx. 37800 T of cargo estimated at around one million dollars will be brought safely to India.

The culmination of the ongoing Anti-Piracy operation involving pirate ship Ruen in the Southern IOR highlights the commitment of the Indian Navy towards reinforcing peace and stability, and also to thwart the resurgence of Piracy in the region. The Indian Navy remains steadfast in performing its role as the 'First Responder' in IOR.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2015285>



**Press Information Bureau
Government of India**

Ministry of Defence

Sun, 17 Mar 2024

Indian Army Contingent Departs for Seychelles for Joint Military Exercise “Exercise LAMITIYE – 2024”

Indian Army contingent departed for Seychelles today to participate in the Tenth edition of Joint Military Exercise “LAMITIYE-2024” between the Indian Army and Seychelles Defence Forces (SDF). The Joint Exercise will be conducted at Seychelles from 18-27 March 2024. ‘LAMITIYE’ meaning ‘Friendship’ in the Creole language is a biennial training event and has been conducted in Seychelles since 2001. 45 personnel each from the GORKHA RIFLES of the Indian Army and Seychelles Defence Forces (SDF) will participate in the exercise.

The aim of the Exercise is to enhance interoperability in Sub-conventional Operations in Semi-Urban environment under Chapter VII of the United Nations Charter on Peace Keeping Operations. The Exercise will enhance cooperation and interoperability between both the sides during Peace Keeping Operations. The exercise will also build and promote bilateral military relations in addition to exchanging skills, experiences and good practices between both armies

Both sides will jointly train, plan and execute a series of well-developed tactical drills for neutralization of likely threats that may be encountered in Semi-Urban environment, while exploiting and showcasing new-generation equipment and technology. The 10 days long Joint Exercise will include Field Training Exercise, combat discussions, lectures & demonstrations, which culminates with two days of Validation Exercise.

The exercise will contribute immensely in developing mutual understanding and magnify jointness between the troops of both the Armies. The Exercise will also foster collaborative partnership and help in sharing best practices between the two sides.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2015283>



**Press Information Bureau
Government of India**

Ministry of Defence

Fri, 15 Mar, 2024

First Training Squadron Enhances Bilateral Relations during Visit to Port Louis

The First Training Squadron (1TS), comprising INS Tir and CGS Sarathi, concluded visit to Port Louis, Mauritius, as part of their Long Range Training Deployment. The visit, coinciding with the 57th Mauritius National Day celebrations, highlighted the deep maritime ties between India and Mauritius. A naval contingent and a helicopter participated in the Mauritius National Day city parade which was witnessed by Smt. Droupadi Murmu, the Hon'ble President of India, as the Chief Guest.

The visit was enriching for the Indian Naval trainees who visited Maritime Air Squadron and Police Helicopter Squadron of Mauritius. As part of cross training visit, the National Coast Guard personnel of Mauritius were imparted training on small arms and firefighting onboard 1TS ships.

The visit culminated in PASSEX and VBSS exercise further enhancing interoperability. Joint EEZ surveillance was also undertaken by 1TS along with Mauritius Coast Guard Dornier prior entering Port Louis. The extant visit underscores the shared commitment to regional security and highlights rich cultural and diplomatic ties between India and Mauritius.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2014913>



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Ministry of Defence

Mon, 18 Mar 2024

Raksha Mantri Shri Rajnath Singh holds telephonic conversation with US Secretary of Defence Mr Lloyd Austin

**Discusses range of bilateral, regional security & defence
cooperation issues**

Raksha Mantri Shri Rajnath Singh held a telephonic conversation with US Secretary of Defence Mr Lloyd Austin on March 18, 2024. Both Ministers briefly discussed a range of bilateral, regional security and defence cooperation issues. They reviewed the recent bilateral events such as the IN-

DUS-X Summit held in New Delhi in February 2024, and the bilateral Tri-Service exercise ‘Tiger Triumph’ which has also commenced in India on March 18, 2024.

The US Secretary of Defence appreciated the important role being played by the Indian Navy in conducting anti-piracy operations in the Indian Ocean Region. The two Ministers discussed ways and means to implement the India-US Defence Cooperation Roadmap which was concluded last year. Other defence industrial cooperation issues such as repair of US naval ships in Indian shipyards were also briefly discussed.

Both the Ministers had last met in New Delhi in November 2023 during the India-US Ministerial 2+2 Dialogue.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2015415>



Tue, 19 Mar 2024

US Defence Secy lauds Indian Navy’s role in Anti-Piracy Ops

Defence Minister Rajnath Singh and US Defence Secretary Lloyd Austin on Monday discussed a range of bilateral, regional security and defence cooperation issues, the Defence Ministry said. As per the Defence Ministry, US Secretary of Defence appreciated the role being played by the Indian Navy in carrying out various anti-piracy operations in the Indian Ocean Region (IOR).

Since December, there has been a spike in piracy incidents in the IOR and the Navy has carried out a series of anti-piracy operations in the region and has significantly upped its surveillance. “The two ministers discussed ways and means to implement the India-US Defence Cooperation Roadmap, which was concluded last year,” a statement said, adding that other defence industrial cooperation issues such as repair of US naval ships in Indian shipyards were also briefly discussed. Both reviewed the recent bilateral events such as the INDUS-X Summit held in New Delhi last month and the bilateral Tri-Service exercise ‘Tiger Triumph’ that began in India on Monday.

In a statement, the Pentagon said both sides discussed the growing momentum in the Major Defense Partnership between the US and India in support of a free and open Indo-Pacific region. The two officials lauded progress on bilateral defence initiatives following the fifth annual US-India 2+2 ministerial dialogue in November 2023, including US support for India’s military modernisation, initiatives to drive forward the US-India Roadmap for Defense Industrial Cooperation, strengthening maritime domain awareness in the Indian Ocean Region, and India’s support for the rule of law in the Arabian Sea and adjacent waterways,” it said. It added that cutting-edge defence innovation propelled by the partnership between US Department of Defense’s Defense Innovation Unit and Indian Ministry of Defense’s Innovations for Defense Excellence were also discussed.

<https://indianexpress.com/article/india/us-defence-secy-lauds-indian-navys-role-in-anti-piracy-ops-9221522/>



**Press Information Bureau
Government of India**

Ministry of Defence

Mon, 18 Mar 2024

EX Tiger Triumph – 24

In consonance with the established partnership between India and the US, a bilateral tri-Service Humanitarian Assistance and Disaster Relief (HADR) Exercise between both countries, Tiger Triumph – 24, is scheduled on the Eastern Seaboard from 18 to 31 Mar 24. Indian Navy Ships with integral helicopters and landing crafts embarked, Indian Navy aircraft, Indian Army personnel and vehicles and Indian Air Force aircraft and helicopters along with the Rapid Action Medical Team (RAMT) would be participating in the exercise. The US would be represented by US Navy Ships with embarked troops of the US Marine Corps and US Army. The exercise is aimed at developing interoperability for conducting HADR operations and refine Standard Operating Procedures (SOPs) to enable rapid and smooth coordination between forces of both countries.

The Harbour Phase is scheduled from 18 to 25 Mar 24. Personnel from both navies would participate in Training Visits, Subject Matter Expert Exchanges, Sports Events and Social interactions. On completion of the Harbour Phase, the ships, with the troops embarked, would sail for the Sea Phase and undertake Maritime, Amphibious and HADR operations in accordance with injected situations.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2015397>



Mon, 18 Mar 2024

Army raises Unit to tap New Technologies for Communications

The Indian Army has raised a new technology unit to tap futuristic technologies, including artificial intelligence, 5G, 6G, machine learning and quantum computing, for their military application, officials aware of the matter said on Monday.

It is called the Signals Technology Evaluation and Adaptation Group (STEAG), said one of the officials cited above, asking not to be named.

Steag comes under the army's Signals directorate and is headed by a colonel, said another official. It has been tasked to undertake research and evaluation of futuristic communication technologies.

“Communications are an important component of military operations. In the fast-evolving technologies for the battlefield, the side with better communication technologies and the ability to connect

the various constituents for information sharing will have an edge over its adversary,” said the first official.

Modern warfare necessitates the induction of new equipment to provide seamless communication support to units and formations during operations, he said. “To imbibe such advancements in technology, the Indian Army has raised this technology-oriented unit STEAG, which will bolster its capabilities in digital domain.”

STEAG will be the nursery for nurturing and developing tailored technologies spanning the complete spectrum of wired and wireless systems including electronic exchanges, mobile communications, software defined radios, electronic warfare (EW) systems, 5G and 6G networks, quantum technologies and AI, the officials said.

“It will be a premier organisation, the first of its kind equipped with the capability to harness niche technology, leverage cutting edge solutions and identify suitable use-cases for defence applications by fostering collaboration and partnership with academia and industry,” the first official said.

The hi-tech unit will carry out technical scouting, evaluation, development, management of core information and communication technologies (ICT) solutions and provide user interface support by maintenance and upgradation of contemporary technologies available, he added.

<https://www.hindustantimes.com/india-news/army-raises-unit-to-tap-new-technologies-for-communications-101710771356500.html>



Sat, 16 Mar 2024

पाकिस्तान सीमा पर बढ़ी हलचल, हवा में तैनात होंगे 'टैंक', इंडियन आर्मी ने बॉर्डर पर बढ़ाई क्षमता

भारत लगातार अपनी रक्षा क्षमताओं को बढ़ा रहा है. पश्चिम में पाकिस्तान और उत्तर-पूर्व में चीन की नापाक मंसूबों का दम निकालने के लिए सीमावर्ती इलाकों में डिफेंस सिस्टम को लगातार अपग्रेड किया जा रहा है. हाल में ही अरुणाचल प्रदेश में दो सुरंगों को ऑपरेशनल किया गया, जिसके जरिये चीन सीमा से लगते तवांग समेत अन्य इलाकों में किसी भी मौसम में पहुंचना आसान हो गया है. दूसरी तरफ, पाकिस्तान सीमा पर भी व्यवस्थाएं दुरुस्त की जा रही हैं. देश के पश्चिमी सीमा पर 'हवा में टैंक' तैनात करने की तैयारी चल रही है.

उम्मीद है कि इस बार गर्मी के मौसम में इसे पूरा कर लिया जाएगा. बॉर्डर पर भारत की बढ़ती रक्षा क्षमता और सेना की स्ट्रैटजिक प्लानिंग से पड़ोसी देश पाकिस्तान में खलबली मचना तय है.

मीडिया रिपोर्ट के अनुसार, पाकिस्तान से लगती सीमा पर जल्द ही हेवी ड्यूटी कॉम्बैट हेलीकॉप्टर अपाचे की तैनाती की जाएगी. इससे पहले इंडियन आर्मी ने पश्चिमी कमान में स्थित महत्वपूर्ण सैन्य पोस्ट जोधपुर में अपनी क्षमताओं का विस्तार किया है.

भारतीय सेना ने हेवी ड्यूटी और अत्याधुनिक क्षमताओं से लैस हेलीकॉप्टर के स्क्वाड्रन को बढ़ाया है। स्क्वाड्रन के अस्तित्व में आने से सेना का पश्चिमी कमान और ज्यादा मजबूत होगा और उसकी युद्धक क्षमता भी बढ़ेगी। बता दें कि आर्मी के वेस्टर्न कमान में अपाचे हेलीकॉप्टर को तैनात करने की तैयारी चल रही है। अमेरिका से इसकी पहली खेप फरवरी 2024 में मिलनी थी, लेकिन उसमें देरी हुई है। अब अपाचे हेलीकॉप्टर की पहली खेप मई में मिलने की संभावना है।

अपाचे हेलीकॉप्टर की तैनाती

भारतीय सेना ने अमेरिकी कंपनी बोइंग के साथ अपाचे हेलीकॉप्टर खरीद को लेकर समझौता किया है। तकरीबन 5,691 करोड़ रुपये की इस डील के तहत बोइंग सेना को 6 हेलीकॉप्टर देगा। फरवरी 2020 में रक्षा खरीद पर सहमति बनी थी।

आर्मी के एविएशन डायरेक्टर जनरल लेफ्टिनेंट जनरल अजय सूरी ने बताया कि अपाचे हेलीकॉप्टर की आपूर्ति फरवरी में ही शुरू होनी थी, लेकिन किन्हीं वजहों से इसमें कुछ देरी हुई है। भारतीय वायुसेना (IAF) को 22 अपाचे हेलीकॉप्टर की आपूर्ति की जा चुकी है। वायुसेना ने सितंबर 2015 में अमेरिकी कंपनी के साथ 13, 952 करोड़ रुपये का करार किया था।

खास है अपाचे हेलीकॉप्टर

अपाचे हेलीकॉप्टर की क्षमता को इसी बात से समझी जा सकती है कि इसे 'टैंक्स इन द एयर' के नाम से भी जाना जाता है। हेवी-ड्यूटी अपाचे हेलीकॉप्टर हवा से हवा में मार करने वाली स्टिंगर मिसाइल से लैस है। इसके अलावा इसमें हवा से सतह पर मार करने में सक्षम हेलफायर लॉन्गबो मिसाइल भी फिट किया जा सकेगा। साथ ही अपाचे हेलीकॉप्टर को अन्य मिसाइल, गन और रॉकेट से भी लैस किया जा सकता है। ऐसे में आर्मी के स्क्वाड्रन में अपाचे हेलीकॉप्टर के शामिल होने से सेना की युद्धक क्षमता काफी बढ़ जाएगी।

<https://hindi.news18.com/news/nation/bustle-along-pakistan-border-indian-army-soon-get-tanks-in-the-air-boeing-manufactured-apache-helicopter-full-detail-8151690.html>

THE ECONOMIC TIMES

Fri, 15 Mar 2024

Indian Army to deploy six Boeing Apache helicopters in Jodhpur along Pakistan border

India is set to bolster its defense capabilities along the Pakistan border in western Rajasthan with the deployment of six Apache fighter helicopters from American aircraft company Boeing. The helicopters, reaching Jodhpur on Friday, will be part of a new squadron in the Army Aviation Corp.

Boeing had previously delivered 22 Apache helicopters of the AH-64E model to the Indian Air Force in 2020, making India one of several nations operating this advanced combat helicopter. Equipped with a high-quality night vision system, the Apache can be armed with missiles capable of striking 138 targets in a minute, making it a formidable asset.

A defence spokesperson said, "The Indian Air Force (IAF) currently operates 22 AH-64Es. The Army Aviation Corps ordered a total of six AH-64Es. Acquiring these means bolstering the capabilities of Indian air power, joining other nations such as the Netherlands, Egypt, Greece, Israel, South Korea, and several others that operate the aircraft."

The new squadron, to be inducted on March 15, will be based in Jodhpur and will play a crucial role in guarding against potential incursions by the Pakistani military.

The Apache AH-64E is recognized as the world's most advanced combat helicopter, featuring an advanced night vision system and the capability to arm missiles that can strike 138 targets in a minute. With a maximum speed of 280 km/h, this helicopter is a formidable force in the sky.

Equipped with AGM 114 Hellfire anti-tank missiles and Stinger missiles, the Apache AH-64E is prepared to handle both ground and aerial threats. The Hellfire missiles are particularly effective against armored vehicles like tanks and BMPs, while the Stinger missiles are designed to neutralize airborne threats. Additionally, the helicopter is armed with Hydra-70 unguided missiles, which can effectively target ground-based threats.

<https://economictimes.indiatimes.com/news/defence/indian-army-to-deploy-six-boeing-apache-helicopters-in-jodhpur-along-pakistan-border/articleshow/108517950.cms>

THE ECONOMIC TIMES

Mon, 18 Mar 2024

Rise of China and unsettled borders will be most formidable challenge for India: CDS Gen Anil Chauhan

Chief of Defence Staff General Anil Chauhan on Monday said the unsettled borders with China and the rise of that country will remain the most formidable challenge for India and its armed forces in the foreseeable future.

Speaking at the 3rd Strategic and Security Dialogue on the Rise of China and its implications for the world, General Chauhan emphasised the need for astute handling of the PLA (People's Liberation Army) at all friction points concerning the disputed borders. General Chauhan said India has disputed borders with neighbours and these conflicts have led to the emergence of terms like the Line of Actual Control, Line of Control, and Actual Ground Position Line.

"The unsettled borders with China and the rise of China will remain the most formidable challenge that India and the Indian armed forces will face in the foreseeable future," the Chief of Defence Staff said.

He said the armed forces need to maintain the legitimacy of India's claims during peacetime on these disputed borders, which will require "very astute handling of the PLA at all the friction points, calibrated firmness, and both sides to operate within the ambit of agreed rules of engagement".

The top commander further said that like all disputed borders, there will be a tendency by the adversary to create new facts or markers, toponymy (the study of place names), cartographic aggression, or to create a new narrative. "This again will have to be countered collectively by all of us at all levels, which includes academicians, thinkers, and strategists," the Chief of Defence Staff said.

General Chauhan referred to External Affairs Minister S. Jaishankar's statement wherein he had said that there is more to the Sino-India relations than the border disputes. "Similarly, in an increasingly inter-connected world, Sino-India relations cannot be viewed in a binary kind of perspective. The rise of China affects other nations as well, and we must look at like-minded nations for an equitable balance while remaining cognisant of the fact that one must be prepared to fight its own battle," the Chief of Defence Staff said.

Speaking about the challenges related to technology, General Chauhan said as technology emerges as the new currency of power, there is a tendency of nations to deny competitors. "Technology denial regimes existed in the past, but what we are witnessing now is a race to retain technological edge. India cannot afford the emergence of a major technological gap between us and our immediate adversaries, and that would be fatal for us," the Chief of Defence Staff said.

He said this "battle of increasing technological gap" has to be fought not only by soldiers but also by academics, scientists, and everyone as a nation together. General Chauhan also spoke about the challenge of rising fragility and the outcome of political, social, and economic stability in the immediate neighbourhood. "India seems to be the only island of stability in a sea of turmoil and turbulence. Political, social, and economic instability in countries in our immediate neighbourhood make them vulnerable to foreign influence," he said.

General Chauhan further said adversaries in the past have taken advantage of this situation, thereby increasing India's vulnerability and security problems, which is a major security challenge.

<https://economictimes.indiatimes.com/news/defence/rise-of-china-and-unsettled-borders-will-be-most-formidable-challenge-for-india-cds-gen-anil-chauhan/articleshow/108594801.cms>

THE ECONOMIC TIMES

Mon, 18 Mar 2024

Here's how India is Helping its Soldiers keep Warm along the LAC

India is bolstering its border defenses with the construction of high-tech bunkers along the India-China border. These bunkers are designed to accommodate at least 120 troops each and ensure their readiness even in subzero temperatures, according to defense sources and a company involved in the infrastructure development along the border. In the past, Indian soldiers have faced severe challenges from extreme cold and harsh weather during conflicts with China and Pakistan. To address this, the Ministry of Home Affairs (MHA) has commissioned specialized insulated bunkers to provide better protection and comfort to the troops.

The new bunkers will be equipped with air-conditioning powered by solar and geo-thermal energy, sleeping quarters, and enough space for over 100 soldiers to withstand temperatures as low as minus 30 degrees Celsius.

India shares a 3,488-kilometer-long disputed border with China, with stretches in Eastern Ladakh, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh. The country has already completed a permanent integrated building for a company-level unit, covering approximately 27,000 square feet, at the border outpost of ITBP Lukung in Leh, as a pilot project, according to a Army source in a TOI report.

This building uses green features like solar thermal, solar photovoltaic, and geothermal fresh air technology to maintain an inside temperature of 22°C, despite the extreme outside temperatures of 15,000 feet above sea level. “As there is no electricity in this high-altitude region of 15,000 ft from mean sea level, this building was designed using green features like solar thermal, solar photovoltaic and geothermal fresh air technology to raise the inside temperature to 22°C — almost a difference of 50 degrees from outside,” Rupen Patel, the CMD of Patel Engineering Ltd — the private company that took up this as a special pilot initiative for MHA said.

The project, which was launched by the MHA in 2016 for ITBP jawans, was undertaken by the National Project Construction Corporation Ltd (NPCC) and awarded to Patel Engineering Ltd. The bunkers were completed in 2019.

With the success of this project, the government is planning to construct similar structures along the Line of Actual Control (LAC). The DRDO has designed sophisticated bunkers under "Project Dhruv" to address psychological fatigue, while plans for 3D-printed bunkers are also underway.

The Army has also developed other types of bunkers, including bulletproof, underground survival, and modular bunkers, for specific uses along the border. The government is also improving road and infrastructure along the border to support troop movements in the region.

The Army has also planned 3D-printed bunkers to provide protection to the troops along the LAC. These bunkers, the sources said can be constructed quickly and can accommodate three people. They are used for watching the borders. These bunkers, according to some reports, will be able to withstand a 100-m direct hit from an MBT like T-90. They have undergone extensive trials in the western and eastern sectors.

The recent inauguration of the Sela Tunnel on March 9 by Prime Minister Narendra Modi and the completion of the country's longest transportation tunnel on the Udhampur-Srinagar-Baramulla Rail Link (USBRL) are part of these efforts. “With China creating an extensive network of roads and highways, including black-top roads, and railway lines along with bunkers and other advanced infrastructure along the border with India, the country too is prepared to meet any eventuality,” a defence official said.

India's proactive approach in enhancing its border infrastructure, including roads, highways, railway lines, and advanced bunkers, reflects its readiness to respond to any potential challenges along the border with China.

<https://economictimes.indiatimes.com/news/defence/heres-how-india-is-helping-its-soldiers-keep-warm-along-the-lac/articleshow/108590526.cms>

IAF carries out Emergency Landing Exercise in Andhra Pradesh

The Indian Air Force on Monday successfully carried out a trial of emergency landing of aircraft on the National Highway-16 near Pichikalagudipadu village here, a police official said. Bapatla superintendent of police (SP) Vakul Jindal said two transport aircraft, AN32 and Dornier, were part of the trial which was conducted as part of bolstering IAF's emergency readiness to face any future exigency, the official said.

"The trial landing exercise has been completed successfully. Two transport aircraft, AN-32 and Dornier, landed," Jindal told PTI. Jindal said that the 4.1 km-long emergency landing facility on the NH-16 will be available as an option to land aircrafts during wartime.

The exercise was executed twice in a span of two hours, starting from 11 am to 1 pm and to enable it, Bapatla district police diverted traffic from 7:30 am to 1 pm on the highway. The SP said that a few fighter jets, which included a Sukhoi Su-30, also flew by without landing on the facility.

<https://economictimes.indiatimes.com/news/defence/iaf-carries-out-emergency-landing-exercise-in-andhra-pradesh/articleshow/108587565.cms>



Tue, 19 Mar 2024

Guyana Secures \$23.27mn Agreement with India for Aircraft Procurement

In a significant move aimed at bolstering the capabilities of the Guyana Defence Force (GDF), the Guyana Government has inked a Line of Credit (LOC) Agreement worth US \$23.27 million with the Export-Import Bank of India (EXIM Bank) for the procurement of two aircraft.

"Government is investing heavily in strengthening the capabilities of the GDF, in particular, in some of its specialised wings, such as the Air Corps and the Coast Guard," asserted a statement released by the Guyana government.

This investment underscores New Delhi's commitment to modernising and equipping the Guyana Defence Force (GDF) for evolving security challenges in the region. The agreement also marks India's continued commitment to bolstering Guyana Defence Force (GDF) capabilities, stemming from President Irfan Ali's 2023 visit to India's Hindustan Aeronautics Limited.

The procurement agreement was signed between Ashni Singh, Senior Minister in the Office of the President of Guyana, and Sanjay Lamba, Deputy General Manager of the Line of Credit Group at Indian EXIM Bank last week.

The ceremony was attended by the High Commissioner of India to Guyana, Dr. Amit Telang, Chief of Staff of the GDF, Brigadier Omar Khan, and Chief Planning Officer, Dr. Tarachand Balgobin.

The acquisition of two aircraft under this agreement marks the largest-ever investment in the capitalisation of the force, signifying a pivotal moment in Guyana's defense modernisation efforts. This strategic move aligns with the broader cooperation between the two nations, as evidenced by the \$100 million line of credit extended to Guyana during the visit of Indian External Affairs Minister Jaishankar.

Furthermore, India's commitment to capacity building is exemplified by its initiative to train Guyanese officials under the Indian Technical and Economic Cooperation program. Meeting the officials, Indian High Commissioner Dr. Amit Telang highlighted the importance of such visits in strengthening the multifaceted partnership between India and Guyana.

A statement from the Indian High Commission said, "Wishing the officials all the very best for their visit and the course, the High Commissioner highlighted that it will be a good opportunity for the officials to also discover Indian culture, cuisine and traditions."

Under the tenure of the then-Indian high commissioner to Guyana, Dr. K. J. Srinivasa as well, bilateral ties between India and Guyana have witnessed significant growth, with increased cooperation in energy projects. Notably, India has undertaken an 800-million-dollar gas-to-energy project in Guyana.

<https://www.wionews.com/world/guyana-secures-2327mn-agreement-with-india-for-aircraft-procurement-701667>



Sun, 17 Mar 2024

With Agni V test, India makes the MIRV leap

On March 11, Prime Minister Narendra Modi announced on social media the successful flight test of an Agni V ballistic missile with multiple independently targetable reentry vehicle (MIRV) technology by the Defence Research and Development Organisation (DRDO) under 'Mission Divyastra'. It placed India in a small group of countries with this technology, by which a single missile can deliver multiple nuclear warheads.

What are MIRVs and why are they significant?

A MIRV is a 'missile bus' whose passengers are nuclear bombs and which facilitates a single booster to deliver them to different targets, Silky Kaur wrote in an article in Air Power Journal in 2022. "In 1970, the U.S. started to deploy the Minuteman III, the first MIRV-ed intercontinental ballistic missile (ICBM) with three warheads on each missile. In 1971, it deployed the Poseidon,

the first MIRV-ed submarine-launched ballistic missile (SLBM) which had the capability of carrying up to 10 warheads on each missile,” the article added.

The Soviet Union followed the U.S. and by the 1970s developed its own MIRV-ed ICBM and SLBM technology. A Russian MIRV-ed missile under development may be able to carry up to 16 warheads, each in a separate re-entry vehicle, according to the Centre for Arms Control and NonProliferation, and some MIRV-ed missiles can hit targets as far as 1,500 km apart. The U.K. and France also possess the technology. China has developed and deployed MIRV technology with multiple warheads placed on its DF5B ICBMs and is fast expanding and modernising its nuclear arsenal.

According to Yearbook 2023 of the Swedish think tank Stockholm International Peace Research Institute (SIPRI), China could potentially have at least as many ICBMs as either the U.S. or Russia by the turn of the decade. In a 1997 Congressional Research Service report for the U.S. Congress, Jonathan Medalia wrote MIRVs are a “force multiplier” because one MIRV-ed missile can strike several targets. “This is especially important for SLBMs; if each missile carries, say, four warheads instead of one, then one submarine can do the work of four, saving a fleet the cost of many missiles and submarines. MIRVs are also useful for saturating and penetrating ballistic missile defences.”

What was the Mission Divyastra test?

The DRDO said in a statement it conducted the test from Dr A.P.J. Abdul Kalam Island in Odisha, with various telemetry and radar stations monitoring multiple re-entry vehicles. “The mission accomplished the designed parameters.” Sources said the MIRV system is equipped with indigenous avionics systems and high accuracy sensor packages that ensure the re-entry vehicles reach the target points with the desired accuracy. “The capability is an enunciator of India’s growing technological prowess,” sources said.

“The project director is a woman and it [the project] has significant contribution by women.” The ‘Agni’ series of missiles constitute the backbone of India’s nuclear weapons delivery, and Agni V is the longest range missile in the arsenal, with a reach of over 5,000 km. This means it can reach most of China, especially with a smaller warhead, which would increase the range further. MIRV technology gives better leverage in this regard.

Mission Divyastra is significant for several reasons. In 1998, India conducted nuclear tests under Pokhran II. In 2003, it declared its nuclear doctrine based on a ‘no first use’ (NFU) policy and reserved the right to massive retaliation in case it was attacked first. Based on this, India announced its decision to maintain a minimum credible deterrence and a nuclear triad – comprising aircraft, missiles, and submarines – to deliver these nuclear weapons which has since been completed with ballistic missile submarines of the Arihant class conducting deterrence patrols. Specific technical characteristics of the MIRV technology tested are not yet known.

A MIRV-ed missile enhances the redundancy as a single missile can perform the role of several. It can help defeat ballistic missile defences, which is important since India’s adversaries are deploying sophisticated air defences.

What lies ahead?

The technology development is without doubt significant given its sophistication and applications. However, Mission Divyastra was the maiden test of the MIRV technology; there will be a few more tests to validate the various associated components and processes before MIRV-ed Agni V can be declared fit for serial production. The important aspect to look out for now is the reactions from China and Pakistan. There has been a triangular contest between India, China, and Pakistan for long, with China trying to counter the U.S., and India trying to balance the asymmetry with China, and Pakistan, in turn, trying to even the scales with India.

<https://www.thehindu.com/news/national/with-agni-v-test-india-makes-the-mirv-leap/article67958035.ece>

Science & Technology News



Press Information Bureau
Government of India

Ministry of Science & Technology

Fri, 15 Mar 2024

New Material Design capable of Controlling Temperature at which Material Converts from Insulator to Conductor Paves Way for Novel Superconductors

Scientists have developed a synthetic material design that can control the temperature at which a material can overcome electronic ‘traffic jams’ an transition from an electrical insulator to a conductor, setting the ground for an electronic switch that is more efficient than a transistor. Generally, most commonly encountered materials are either electrical conductors (such as copper or aluminium) or electrical insulators (such as plastic and paper). Correlated electron materials are such a class of materials which undergo an electronic transition from an insulator to a metal.

However, these transitions work as a function of temperature making them less useful in devices such as an electronic switch that usually operate at a constant temperature (usually room temperature). Further, these transitions occur at a temperature that might not be relevant for room temperature operation. Scientists at IISc, in collaboration with scientists from Japan, Denmark and the United States have proposed a synthetic material design that enables them to control the temperature at which the transition occurs.

The teams of scientists, including Prof. Naga Phani and his colleagues at the solid state and structural chemistry unit, at IISc Bangalore, proposed and demonstrated a three-layer structure that comprises of an ‘active’ channel layer that undergoes the metal to insulator transition, a charge res-

ervoir layer that can ‘drip’ electrons into the active layer and control the temperature at which the transition occurs, a charge-regulating spacer layer between the active layer and the reservoir layer which regulates the flow (or ‘drip’) of electrons from the reservoir layer to the active layer.

Preparing nanometer-thick atomically smooth layers of these materials is critical for the success of this work. Such thin layers are prepared by a technique called pulsed laser deposition which allows atomic layer control on the preparation of these layers – in effect this is similar to spray-painting with atoms. The researchers used an atomic force microscope (AFM), funded by the DST-FIST program, for qualifying the quality of their layers. The authors performed extensive AFM studies to arrive at the right conditions (such as temperature, pressure, growth rate) for developing this synthetic stack of materials.

For this research published in the journal Nature Communications, the scientists used an oxide of the element of Vanadium (VO₂) to show that greater than a billion-trillion electrons per a cubic centimeter of VO₂ (>10²¹ electrons/cm³) can be ‘dripped’ into the VO₂ layer. Usually, the addition of as many electrons to any material is achieved by a process called ‘doping’ where an ‘impurity’ (called a dopant) is added to a high purity material. However, such a process also alters the regular periodic arrangement of atoms in a high purity crystal and affects its utility. The novel synthetic materials layer that the researchers proposed in this work eliminates the necessity to add an ‘impurity’ to modify the materials’ properties. Further, the authors developed an easy to synthesize and replicate amorphous-layer design for the reservoir and the spacer layers.

This work enables the study and control of properties of these exotic materials that can be both insulators and conductors. Further this work shows that electronic ‘traffic-jams’ that lead to insulating behavior in these materials are quite stubborn and challenge our understanding of correlated electron materials. Scientists are looking forward to extending this research to study and develop other exotic materials such as superconductors. They are also interested in exploring the possibility of developing new devices that harness ‘phase’ transitions in these synthetic structures. The purely electronic control of phase transitions proposed by researchers in this work can also enable the study of quantum critical points and phase transitions at interfaces with possible applications in classical and quantum computing.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2015008>



Mon, 18 Mar 2024

SAKHI to be a friend in need for Gaganyaan Crew

The Vikram Sarabhai Space Centre (VSSC), the Indian Space Research Organisation (ISRO) facility at Thumba in Thiruvananthapuram, has developed a multi-purpose app that will help astronauts on the Gaganyaan space flight mission carry out a range of tasks such as looking up vital technical information or communicating with one another.

That's not all. The Space-borne Assistant and Knowledge Hub for Crew Interaction (SAKHI) will, among other things, monitor the health of the astronauts, help them stay connected with Earth and even alert them about their dietary schedules.

The space facility has successfully tested an engineering model of the custom-built, hand-held smart device featuring SAKHI. The development of a flight model is in progress. An indispensable assistant to the crew is how the VSSC describes the application. "During the mission, for instance, the astronauts may need to look up technical documents and training manuals at short notice. Given the limited space in the crew module, taking along thick tomes will be out of the question.

SAKHI will ensure that they have all the required data at their fingertips," VSSC director S. Unnikrishnan Nair told The Hindu. Kept strapped to their space suits, the digital platform can be quickly accessed at all times. Further, the astronauts can use the app to maintain a log on the mission in multiple formats including voice records, texts and images.

SAKHI will also keep a close watch on their health. "This comprehensive system provides information on key parameters like blood pressure, heart rate and oxygen saturation, providing invaluable insights into the crew's physical condition throughout their mission," according to the VSSC. SAKHI will keep the crew connected with the onboard computer and ground-based stations, guaranteeing a seamless communication link. The app will also remind them about their hydration and dietary schedules and sleep patterns.

ISRO is hoping to launch the Gaganyaan human spaceflight mission in 2025. The identities of the four astronaut-designates, all IAF test pilots, were revealed at a high-profile event attended by Prime Minister Narendra Modi at the VSSC on February 27. The final crew for the mission will be picked from among the four.

<https://www.thehindu.com/news/national/kerala/sakhi-to-be-a-friend-in-need-for-gaganyaan-crew/article67965278.ece>



Mon, 18 Mar 2024

IISc Scientists develop Design capable of Controlling Temperature for Transition of Material from Electricity Insulator to Conductor

Scientists at Indian Institute of Science (IISc.), in collaboration with scientists from Japan, Denmark and the United States, have developed a synthetic material design that enables them to control the temperature at which a material can overcome electronic 'traffic jams', a transition from an electricity insulator to a conductor, setting the ground for an electronic switch that is more efficient than a transistor.

According to the Department of Science and Technology: “Generally, most commonly encountered materials are either electrical conductors (such as copper or aluminium) or electrical insulators (such as plastic and paper). Correlated electron materials are a class of materials that undergo an electronic transition from an insulator to a metal.

However, these transitions work as a function of temperature, making them less useful in devices such as an electronic switch that usually operate at a constant temperature (usually room temperature). Further, these transitions occur at a temperature that might not be relevant for room temperature operations”.

The teams of scientists, including Prof. Naga Phani and his colleagues at the solid state and structural chemistry unit at IISc. Bengaluru, proposed and demonstrated a three-layer structure that comprises of an ‘active’ channel layer that undergoes the metal to insulator transition, a charge reservoir layer that can ‘drip’ electrons into the active layer and control the temperature at which the transition occurs, a charge-regulating spacer layer between the active layer and the reservoir layer which regulates the flow (or ‘drip’) of electrons from the reservoir layer to the active layer. This research was published in the journal Nature Communications.

The novel synthetic materials layer that the researchers proposed eliminates the necessity to add an ‘impurity’ to modify the materials’ properties. Further, the authors developed an easy-to-synthesise and replicate amorphous-layer design for the reservoir and the spacer layers. This work enables the study and control of properties of these exotic materials that can be both insulators and conductors.

Further, this work shows that electronic ‘traffic-jams’ that lead to insulating behaviour in these materials are quite stubborn, and challenge our understanding of correlated electron materials.

<https://www.thehindu.com/sci-tech/science/iisc-scientists-develop-design-capable-of-controlling-temperature-for-transition-of-material-from-electrical-insulator-to-conductor/article67961383.ece>

THE TIMES OF INDIA

Sat, 16 Mar 2024

For 1st Time, number of Patents Granted by Indian Patent Office in a year Cross 1 Lakh Mark

The number of patents granted by the Indian Patent Office has crossed the one lakh mark for the first time this year, with 1,01,311 patents being granted between March 15, 2023, to March 14, 2024. This works out to the Indian Patent Office granting over 250 patents every day in the past one year. Of the 1,01,311 patents granted, the highest number were for electrical & related field of invention (FOI) at 47,993, followed by mechanical & related FOI at 37714, chemical sciences & related FOI at 12,028 and biotech & related field at 3,576, as per data provided by the office of the controller general of patents, designs & trademarks.

The IP office also said it received the highest number of patent applicants in 2023 at 90,300. “Every six minutes on technology wants IP protection in India. This shows the confidence of scientific research-based products to get commercial appreciation in the Indian economy,” it said.

The financial year 2023-24 has also seen the highest ever copyright registrations and design registrations at 36,378 and 27,819, respectively, the IP Office said. It also pointed to a three-fold growth in geographical indications registration in 2023-24 as compared to 2022- 23. Of the 573 GIs registered in India, 98 have been registered in 2023-24 so far and another 62 will be registered by March 31, 2024, the IP office said.

Terming 2023 as the best year for IPR, Subhajit Saha, head-legal & IPR, Resolute Group, and registered patent & trademarks agent, said the Indian IP office has the potential to grant five lakh patents by 2027 and compete with the top five patent offices in the world thanks to the IP friendly ecosystem that includes plans to add more patent examiners. He pointed out that with the new Patents (Amendment) Rules, 2024, being notified, the entire procedural aspects of filing and granting patents are expected to become simpler, easier and faster.

<https://timesofindia.indiatimes.com/business/india-business/for-1st-time-no-of-patents-granted-by-indian-patent-office-in-a-year-cross-1-lakh-mark/articleshow/108551974.cms>

