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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

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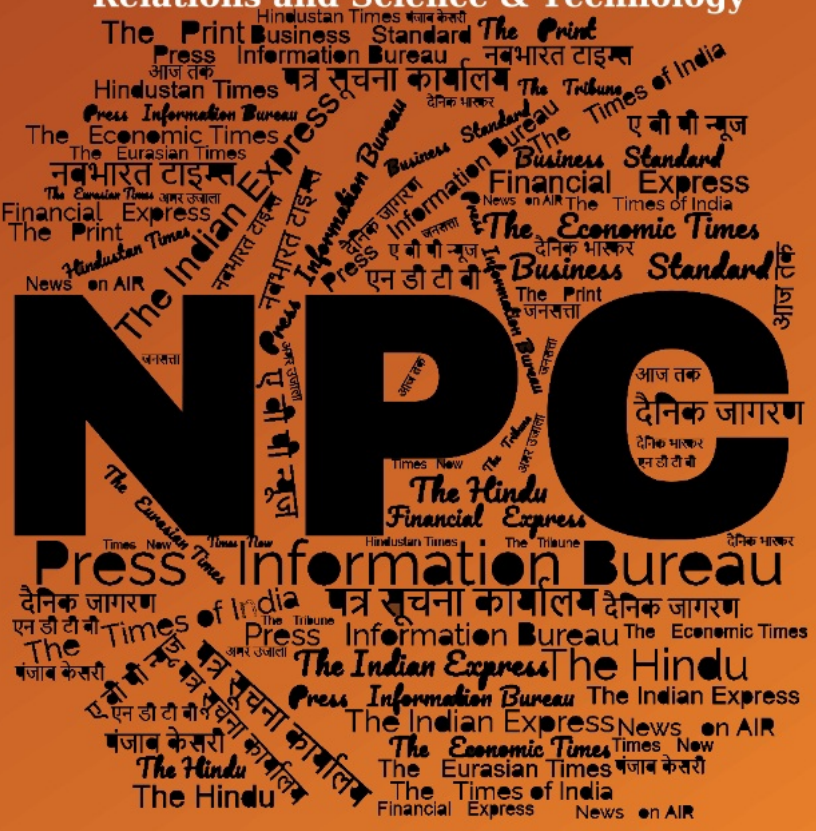

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Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Wed, 13 Nov 2024

CDS Gen Anil Chauhan chairs 35th Tri-services Commanders' Conference at Kochi

Chief of Defence Staff, Gen Anil Chauhan chaired the 35th Triservices Commanders' Conference (TSTCC) at Southern Naval Command, Kochi on 13 November 2024. The Conference was attended by Commanders of all three services, Headquarters Integrated Defence Staff (IDS) and Officers from various formations across the services.

Addressing the conference, the CDS underscored the importance of jointmanship and synergy amongst the three services in the Training domain as a precursor to exert supremacy in the evolving multi domain battlespace. He said that training must evolve to face the unique security challenges and fight future wars in an integrated manner as a theaterised force.

Taking forward the agenda set forth in the 34th TSTCC held in Shimla last year, the 35th edition reviewed the progress and outlined future plans to optimise training facilities across all three services for joint training. The conference also delved into the dynamics of the geo-strategic situation of the region in the backdrop of developments and the need to orient training and formulate doctrines to meet the future challenges. Discussions were held to optimise utilisation of existing training infrastructure and resources and exploit the collective potential of the respective Training establishments. Emphasis was laid on innovative training strategies that incorporate technology and modern warfare tactics.

TSTCC is conducted annually by the Training Commands of all the three Services in rotation with the aim of enhancing collaboration and training effectiveness while exchanging best practices in training. The conference also provides a forum to bring together Staff Officers of the Training Commands of the Services on a common platform based on jointmanship and cohesion while forging collaborative training efforts and strategies to achieve combat effectiveness and enhanced operational capabilities. TSTCC, over successive iterations has paved the way for meeting prospective challenges collectively, reinforcing the importance of training towards jointmanship, synergy and singularity of efforts at conceptual and functional level.

The occasion also marked the maiden visit of CDS to Southern Naval Command. He interacted with Vice Admiral V Srinivas, Flag Officer Commanding – in – Chief and held discussions on various aspects of joint training on Triservices issues. A comprehensive brief outlining the role,

functioning and capabilities of the Command was also presented. The CDS addressed the officers of SNC and shared his vision and expectations.

https://pib.gov.in/PressReleasePage.aspx?PRID=2073130

Press Information Bureau
Government of India

Ministry of Defence

Wed, 13 Nov 2024

Indian Navy To Conduct Fourth Edition Of Coastal Defence Exercise 'Sea Vigil-24'

The Indian Navy is set to conduct the fourth edition of the 'Pan-India' Coastal Defence Exercise 'Sea Vigil-24' on 20 & 21 Nov 24. The fourth edition of Ex Sea Vigil will span an unprecedented scale, both in terms of geographical reach and the magnitude of participation, with involvement of 06 Ministries and 21 Organisations/ agencies. The Coastal Defence & Security Readiness Evaluation (CDSRE) phase of the exercise is being conducted by Naval Officer-in-Charges of all coastal states and UTs (incl Lakshadweep & A&N Island) since end Oct 24, where in thorough audit of complete coastal defence and security infrastructure is being carried out. This year, National Security Council Secretariat officials will also be part of Indian Navy led CDSRE teams for the first time, along with personnel from State Marine Police, Coast Guard, Customs, Fisheries, etc.

The exercise will focus on strengthening the security of coastal assets like ports, oil rigs, Single Point Moorings, Cable Landing Points and critical coastal infrastructure including the coastal population. This year participation by other Services (Indian Army and Air Force) and planned deployment of large number of ships and aircraft have enhanced the tempo of the exercise.

Originally conceptualised in 2018, Sea Vigil was designed to validate and enhance measures adopted to bolster Coastal Defence, post the 26/11 Mumbai terror attacks. Encompassing the entire 11,098 km coastline and vast Exclusive Economic Zone of 2.4 million square kilometres, this comprehensive exercise will engage complete coastal security infrastructure and all maritime stakeholders, including the fishing community and coastal populace, simultaneously. One of the aims of the exercise is to raise awareness amongst coastal communities about maritime security, and thus, involvement of fishing communities, coastal populace, and students from NCC and Bharat Scouts and Guides will add to the fervour of the endeavour.

While coastal security exercises are conducted by individual coastal states and maritime security agencies regularly, Exercise Sea Vigil coordinated by the Indian Navy stands out as a national level initiative that provides a holistic appraisal of India's maritime defence and security capabilities. The exercise offers a significant opportunity to assess current preparedness of all maritime security agencies, identify their strengths and weaknesses and enhance the nation's overall maritime defence framework. Serving as a precursor to the Theatre Level Readiness Operational Exercise (TROPEX), conducted biennially by the Indian Navy, Sea Vigil-24 will serve as an essential measure in reinforcing India's commitment to safeguarding its maritime boundaries and ensuring coordinated efforts among all stakeholders in Coastal defence.

https://pib.gov.in/PressReleasePage.aspx?PRID=2073000

Press Information Bureau
Government of India

Ministry of Defence

Wed, 13 Nov 2024

Defence Space Agency successfully conducts maiden 'Exercise Antariksha Abhyas – 2024' to enhance strategic readiness in space warfare

Defence Space Agency of Headquarters Integrated Defence Staff successfully conducted the Space Table Top Exercise Antariksha Abhyas-2024 from 11 - 13 Nov 2024, a significant milestone aimed at bolstering the strategic readiness of the Indian Armed Forces in the domain of space warfare. This pioneering event marked a crucial step in strengthening India's space based operational capabilities, enhancing tri-services integration for space security.

Key components of the exercise included focused discussions on emerging space technologies, space situational awareness and India's space programmes. The discussions highlighted the importance of monitoring and protecting critical assets and maintaining situational awareness in the increasingly contested space environment.

Throughout the three-day event, participants engaged in scenario based exercises, facilitated by subject experts from various Ministries and Departments of the Government of India, besides military, scientific and academia. The experts provided valuable insights into the present and future landscape of military space capabilities and technologies, elucidating specific challenges faced in defence space operations and also the evolving nature of space safety, security, and international space laws.

Antariksha Abhyas 2024 successfully met its objectives of improving interoperability, fostering mutual understanding and enhancing cohesion between the tri-services and Defence Space Agency. Key out-comes included refined strategies for operational preparedness, a robust framework for future collaboration and a clear road map for advancing India's Space doctrine and capabilities in the line with National Security objectives. This exercise marks a pivotal point in India's journey to secure its interests in space, reaffirming the nation's advancement and strategic focus on this critical domain.

https://pib.gov.in/PressReleasePage.aspx?PRID=2073082

THE ECONOMIC TIMES

Wed, 13 Nov 2024

India, Saudi Arabia discuss steps to boost defence industry partnership

India and Saudi Arabia on Wednesday discussed measures to boost defence industry partnership and explored expanding initiatives to combat extremism, terror financing and drug trafficking.

They also discussed the West Asian situation amid further efforts by Saudi Arabia and Iran to improve ties.

The issues were on the top of agenda of the 2nd Meeting of the Committee on Political, Security, Social and Cultural Cooperation (PSSC) under our Strategic Partnership Council (SPC) held here and led by the two foreign ministers.

"Our defence partnership has witnessed several "firsts" over the past few years, including the first-ever Land Forces joint exercise 2024; and two editions of our joint Naval exercises. We had regular exchanges on training and capacity building. And our cooperation has now expanded in the field of defence industry and exports as well," foreign minister S Jaishankar told his Saudi counterpart Prince Faisal bin Farhan Al Saud.

https://economictimes.indiatimes.com/news/defence/india-saudi-arabia-discuss-steps-to-boost-defence-industry-partnership/articleshow/115266486.cms

THE ECONOMIC TIMES

Wed, 13 Nov 2024

Tri-services exercise 'Ex Poorvi Prahar' enhances joint operational readiness in Arunachal Pradesh

The Indian Army is conducting a highintensity tri-services exercise, Ex Poorvi Prahar, from November 10 to 18, 2024 in the forward areas of Arunachal Pradesh, a press release said on Wednesday. This large-scale, joint exercise aims to hone the combat effectiveness of the Indian Army, Navy, and Air Force in executing Integrated Joint Operations in the challenging mountainous terrain of the region, thereby enhancing inter-service coordination and operational readiness. According to the Indian Army, the exercise brings together a wide spectrum of cutting-edge military platforms and systems, showcasing India's advancements in modern warfare technology.

Participating forces from all three services are utilizing advanced fighter aircraft, reconnaissance platforms, helicopters such as the Chinook and Advanced Light Helicopter (Rudra), along with M777 Ultra-Light Howitzers, which are newly inducted into the artillery units.

These state-of-the-art assets provide an unprecedented level of mobility, firepower, and precision in the region's challenging topography.

A key feature of Ex Poorvi Prahar is the integration of innovative technologies that are reshaping the future of military operations. Troops are operating and refining skills with Swarm Drones, First Person View (FPV) Drones, Loitering Munitions, and cutting-edge technologies that dramatically enhance situational awareness, precision strikes, and operational flexibility.

The incorporation of these tools into the exercise reflects the military's commitment to leveraging next-generation technologies to bolster defence capabilitiesm the release said. This exercise serves as a platform for further absorption and integration of advanced technological tools and joint command structures that improve collaboration across services.

One of the core components of the exercise is the development of a Common Operating Picture (COP) through joint control structures that optimize coordination between ground, air, and naval forces. Real-time information is seamlessly shared through systems operating on satellite

communications, powered by AI-driven analytics, enabling more precise decision-making and faster response times.

The use of AI and satellite communication technologies is pivotal in optimizing multi-service operations, ensuring that commanders have access to a comprehensive, real-time view of the battlefield. This technological integration allows forces to act with greater precision, agility, and coordination, making the joint forces more adaptable to the evolving nature of warfare.

The exercise underscores India's determination to maintain a robust and adaptable defence posture along its Eastern frontier, especially in light of evolving regional dynamics. By conducting Ex Poorvi Prahar, the Indian Armed Forces are enhancing their ability to execute seamless, multi-domain operations across land, air, and sea, reinforcing India's strategic deterrence capabilities. The Indian Army, Navy, and Air Force continue to collaborate and innovate to stay at the forefront of military excellence, ensuring the nation's readiness to meet future security challenges.

https://economictimes.indiatimes.com/news/defence/tri-services-exercise-ex-poorvi-prahar-enhances-joint-operational-readiness-in-arunachal-pradesh/articleshow/115260743.cms

THE WEEK

Wed, 13 Nov 2024

IAF commanders to discuss ‘Gagan Shakti’ lessons in apex four-day meet

From Sunday till Wednesday, commanders of the Indian Air Force (IAF) will meet behind closed doors during the biennial IAF commanders’ meet at Vayu Bhavan in the national capital and discuss issues ranging from the strategic, operational, and tactical besides the usual human resources, training and the ‘wherewithal’ logistics facing the force.

An important item of the agenda will be the lessons learnt from ‘Exercise Gagan Shakti’ that took place from April 1 to 10.

Unprecedented in scale and size, ‘Gagan Shakti’ was IAF’s biggest-ever exercise till date to evaluate its war-fighting tactics and techniques in coordination with the Indian Army and Navy with IAF fighter planes and helicopters taking off from different parts of the country to engage ‘pseudo targets’ at Pokhran.

It saw the participation of about 10,000 airmen who were mostly moved to locations by the Army.

The joint exercise with the Army and the Navy was of immense significance in the backdrop of the ‘theaterisation’, ‘integration’, and the ‘jointness’ effort of the Indian military which has been termed a “historic” move by military strategists.

In effect, the effort proposes to do away with the age-old process of the Indian Army, IAF, and the Navy operating in silos. But what is of interest is that ‘Gagan Shakti’ envisaged the Indian military strategy in a two-front war scenario and therefore included logistics involving the western and northern fronts—the former facing Pakistan and the latter facing China.

The IAF is facing a critical shortage of fighter aircraft with the extant 31 squadrons or about 200 aircraft short of the 42 squadron benchmark—a challenge of considerable proportions due to

laggardly production of the indigenous Tejas LCA and long gestation period for new procurement from aboard.

THE WEEK had earlier reported that the IAF may revise the 42 fighter aircraft squadrons benchmark as a basic requirement to fight a two-front war as it was felt to be a number just too short.

The fighter fleet comprises 12 Sukhoi-30 squadrons, six Jaguar squadrons, three squadrons of Mirage 2000s, MiG 29s and MiG 21s each, and two each squadrons of Rafales and LCA Tejas.

The IAF operates less than 1,700 aircraft including fighters, transport aircraft, trainers, special mission platforms, tankers and helicopters, with around 1.5 lakh active personnel and is mandated to operate in an air space spanning more than 40,000,000 cubic km.

There are seven IAF commands—Western Command (Delhi), Central Air Command (Prayagraj), South Western Air Command (Gandhinagar), Southern Command (Thiruvananthapuram), Eastern Command (Shillong), Training Command (Bengaluru), and the Maintenance Command (Nagpur).

https://www.theweek.in/news/defence/2024/11/13/iaf-commanders-to-discuss-gagan-shakti-lessons-in-apex-four-day-meet.html

The Telegraph

Thu, 14 Nov 2024

IAF meet on November 18 to focus on border security challenges from China, Pakistan

Top commanders of the Indian Air Force will deliberate on key security challenges facing India during the three-day commanders' conference starting on November 18.

Among the topics on the agenda is the ongoing border standoff between Indian and Chinese troops along the Line of Actual Control in eastern Ladakh.

"During the conference beginning on November 18, all aspects of India's security challenges, including those along the borders with Pakistan and China, will be discussed threadbare. The main focus of the deliberation will be on the ongoing border standoff with China and the challenges ahead for the force," said an Indian Air Force official.

Recently, India and China signed an agreement on patrolling arrangements at the Depsang Plains and Demchok in eastern Ladakh, leading to the disengagement of the two armies from the two sectors. The agreement also allowed Indian troops to patrol these two sectors, nearly four-and-a-half years after access was blocked by the Chinese army following multiple transgressions at border points inside India-claimed lines.

The latest agreement, however, applies only to the Depsang Plains and Demchok in Ladakh and not to the other points of Chinese incursion. In the past, both sides had "partially" disengaged at four other points, including the Galwan Valley, by creating "demilitarised" buffer zones inside India-claimed lines, meaning Indian troops cannot patrol there.

Indian military veterans have flagged that the full restoration of the April 2020 status quo can happen only when the Chinese troops return to their side of the LAC from all incursion points in eastern Ladakh.

Sources said the biannual commanders' conference will focus on reviewing the IAF's operational readiness. Besides, the status of strengthening current combat capabilities and the action plan for making the IAF a future-ready combat force will be examined. The discussions will also include the IAF's plans for upgrading and modernising its equipment to maintain technological superiority amid changing regional security conditions.

The IAF faces a shortage of fighter aircraft amid a delay in the delivery of the indigenous Tejas light combat aircraft, being made by Hindustan Aeronautics Limited (HAL).

Around 65 to 70 per cent of the IAF's fighter aircraft are Russian, and most of them either need urgent upgrades or are on the verge of retirement. Having foreign aircraft also means staying dependent on other countries for parts and components.

The IAF currently has 31 fighter squadrons against an authorised strength of 42. Each squadron has on average 18 aircraft, which means the IAF has 558 fighter aircraft, 198 short of the required 756.

The conference will be attended by the air officers commanding-in-chief of all commands of the IAF, all principal staff officers and all directors-general posted at the air headquarters.

Both Indian and Chinese armies continue to deploy over 60,000 troops, each with weaponry, along the LAC in eastern Ladakh.

Besides surface-to-air-missile squadrons, the IAF has deployed fighter aircraft including Sukhoi, Mirage and Mig-29, as well as Apache attack and Chinook heavy-lift helicopters, in Ladakh to counter massive deployment by the People's Liberation Army.

https://www.telegraphindia.com/india/iaf-meeting-on-november-18-to-focus-on-border-security-challenges-from-china-pakistan/cid/2063059

THE WEEK

Wed, 13 Nov 2024

Why former Indian Air Force pilots are impressed by China's Chengdu J-20 fighter jet

One of the main Chinese military hardware on display at the 15th Airshow of China being held in Zhuhai at South China's Guangdong province is the Chengdu J-20 stealth fighter, developed by Chengdu Aerospace Corporation for the People's Liberation Army Air Force (PLAAF).

Also known as 'Mighty Dragon', this twin-engine aircraft, designed primarily for air superiority and precision strike capabilities and incorporating advanced stealth features and cutting-edge technology, appears to have impressed former Indian Air Force (IAF) pilots and defence analysts in India.

According to a IDRW report, Sameer Joshi, a retired Mirage-2000 pilot, observed that the appearance and build quality of J-20 fighter jet were impressive. A former IAF official has been quoted as saying that the "build quality of J-20 exhibited at the airshow is top-not manufacturing and now at scale."

China's commitment to self-reliance has been cited as the reason for the improved build quality of the fighter jet, which is expected to outperform the F-16 of the US.

According to the former IAF pilots, the strategic investments China made and the improvements made in the past two generations are paying dividends as the fighter jet now has a major role in operations across contested regions such as the South China Sea and the Taiwan Strait. Reports suggest that China is replacing J-11s and Su-27s with J-20s.

Satellite imagery analysis by Janes, an open-source intelligence company specialising in military, national security, aerospace and transport, showed that up until July 2023, PLAAF had at least eight air brigades equipped with this fighter jet.

https://www.theweek.in/news/defence/2024/11/13/why-former-indian-air-force-pilots-are-impressed-by-china-chengdu-j-20-fighter-jet.html

नवभारत टाइम्स

Thu, 14 Nov 2024

नेवी की कलवरी क्लास पनडुब्बियों के टॉरपीडो के लिए इटली की 'ब्लैक शार्क' भी रेस में लौटी, कभी भारत ने किया था ब्लैकलिस्ट

भारतीय नौसेना को अपनी 'कलवरी' सीरीज की पनडुब्बियों के लिए 48 हैवीवेट टॉरपीडो चाहिए हैं। इसके लिए इटली, जर्मनी और फ्रांस की कंपनियां टॉरपीडो बनाने की रेस में हैं। इटली की कंपनी 'लियोनार्डो' का 'ब्लैक शार्क' टॉरपीडो पहले भी इस रेस में शामिल था, लेकिन भ्रष्टाचार के आरोपों के चलते इसे रोक दिया गया था। अब कंपनी को ब्लैकलिस्ट से हटा दिया गया है, जिसके बाद 'ब्लैक शार्क' एक बार फिर इस कॉन्ट्रैक्ट के लिए दौड़ में शामिल हो गया है। यह डील लगभग 3,000 करोड़ रुपये की है।

2009 में हुई थी टॉरपीडो की टेस्टिंग

जर्मनी और फ्रांस के टॉरपीडो की टेस्टिंग दो साल पहले हो चुकी है, लेकिन इतालवी टॉरपीडो का परीक्षण 2009 में यूपीए सरकार के समय हुआ था। हालांकि, यह अभी तक स्पष्ट नहीं है कि नौसेना नए सिरे से परीक्षण करेगी या पुराने आंकड़ों पर ही भरोसा करेगी।

कभी सबसे आगे थी ये डील

'ब्लैक शार्क' 2008-09 में 98 टॉरपीडो की डील में सबसे आगे थी। लेकिन 2013 में इस प्रोजेक्ट को रोक दिया गया और मामले को रक्षा मंत्रालय ने सीबीआई को सौंप दिया था। नौसेना पिछले एक दशक से भी ज्यादा समय से नए HWT हासिल करने की कोशिश कर रही है। आखिरी बार जर्मन और फ्रांसीसी टॉरपीडो के बीच प्रतिस्पर्धा हुई थी। फ्रांसीसी F21 टॉरपीडो तकनीकी रूप से बेहतर और सबसे कम कीमत वाला साबित हुआ था। हालांकि, यह डील अंतिम रूप से तय नहीं हो सकी।

रक्षा मंत्रालय ने बदल दिया था प्लान

इसके बाद रक्षा मंत्रालय ने दोतरफा योजना को मंजूरी दी। पहला, तुरंत जरूरत को पूरा करने के लिए विदेशी विक्रेता से 48 टॉरपीडो खरीदे जाएं। दूसरा, बड़ी संख्या में टॉरपीडो 'मेक इन इंडिया' योजना के तहत देश में ही बनाए जाएं। इसके लिए रक्षा अनुसंधान और विकास संगठन (DRDO) किसी निजी कंपनी के साथ मिलकर काम कर सकता है।

ये टॉरपीडो 'कलवरी' (स्कोर्पीन) सीरीज की पनडुब्बियों में लगाए जाएंगे। ये पनडुब्बियां मुंबई के मझगांव डॉकयार्ड में बनाई जा रही हैं। भारत ने अब तक इस सीरीज की छह पनडुब्बियों का ऑर्डर दिया है और तीन और पनडुब्बियों के लिए बातचीत चल रही है।

https://navbharattimes.indiatimes.com/india/italy-black-shark-joins-the-race-for-torpedoes-for-navy-kalvari-class-submarines/articleshow/115278110.cms

FINANCIAL EXPRESS
Read to Lead

Wed, 13 Nov 2024

India and Russia Cement Defence Partnership with Strategic Air Defence Agreement

India and Russia have taken a significant step forward in their defence collaboration by signing a new agreement focused on air defence technology. During a recent intergovernmental sub-group meeting held in Goa, Bharat Dynamics Limited (BDL) formalised a Memorandum of Understanding (MoU) with Russia's Rosoboronexport. This partnership will facilitate joint work on the Pantsir-variant air defence missile-gun system, reinforcing the strategic ties between the two nations.

The MoU was signed by Commodore (Retd) A Madhavrao, Chairman and Managing Director of BDL, and Kovalenko German, Deputy Director General (Naval) of Rosoboronexport. The Pantsir system, known for its effective range of up to 15 kilometres, is a hybrid platform capable of neutralising a variety of aerial threats. While the specific variant to be developed under this agreement remains undisclosed, the collaboration underscores a commitment to enhancing India's defensive capabilities.

The Pantsir system holds a prominent role in Russia's own defence strategy, having been deployed to protect critical locations, including the Kremlin and the Russian Ministry of Defence. It has also been used effectively on the battlefield, such as during the Ukraine conflict, to counter advanced missile threats like the US-supplied HIMARS. Beyond Russia, countries such as Saudi Arabia and the UAE have also integrated Pantsir systems into their defence frameworks, illustrating its global relevance.

Bharat Dynamics Limited and Rosoboronexport(ROE),Russia entered into MoU for cooperation on Pantsir variants,air defence missile-gun system.The MoU was signed by Cmde A.Madhavarao, (Retd),CMD,BDL and Mr Kovalenko German,DDG,Naval Dept,ROE on sidelines of 5th IRIGC Subgroup at Goa pic.twitter.com/IFteTQW9SB

— Bharat Dynamics Limited (@bharat_dynamics) November 8, 2024

This agreement highlights a broader trend of deepening military cooperation between India and Russia. The historical and strategic relationship between the two countries has evolved over decades, marked by extensive collaboration in sectors ranging from defence technology to energy and economic development. The signing of the MoU comes at a time when India seeks to bolster its defence self-reliance while maintaining strong international partnerships.

Amidst this development, Russian President Vladimir Putin has once again expressed his high regard for India and its leadership. Speaking at the Valdai Discussion Club in Sochi, Putin lauded India's rapid economic growth and its position as a major global player. He emphasised that India fully deserves recognition as a global superpower, citing its unmatched economic momentum and rich cultural legacy. According to Putin, the trust and collaboration between India and Russia extend beyond defence and encompass a wide array of sectors.

Putin's praise of Prime Minister Narendra Modi also highlighted the personal rapport that reinforces the bilateral relationship. He noted Modi's resolute leadership and commitment to India's national interests, underscoring the Prime Minister's ability to navigate external pressures without compromise. The Russian President recalled a recent meeting in Kazan where the two

leaders communicated seamlessly, even without a translator, symbolizing their deep mutual understanding.

This agreement and the strengthening ties it represents reflect a continuing trajectory of strategic alignment between India and Russia. As India solidifies its position as an emerging global power, partnerships like this play a crucial role in ensuring its defence readiness and fostering international trust. The MoU on the Pantsir system is a testament to the enduring partnership that promises to yield further advancements in defence and beyond.

https://www.financialexpress.com/business/defence-india-and-russia-cement-defence-partnership-with-strategic-air-defence-agreement-3663778/

Thu, 14 Nov 2024

Indian, Chinese defence ministers likely to meet next week in Laos

Indian Defence Minister Rajnath Singh and Chinese Defence Minister Dong Jun are likely to meet next week in Laos on the sidelines of the ASEAN Defence Minister's Plus meeting (ADMM +). ADMM Plus is an annual meeting that includes ASEAN defence ministers and defence ministers of eight countries – Australia, China, India, Japan, New Zealand, South Korea, Russia and the United States.

A request has been made by the Chinese side for the meeting. This is expected to be the first ministerial meeting between the Indian and Chinese sides since the Kazan meeting between President Xi Jinping and Prime Minister Narendra Modi, which was seen as a breakthrough in the normalisation of ties.

The last meeting between Indian Defence Minister Rajnath Singh and his Chinese counterpart was in April 2023 in India. That time, the then Chinese Defence Minister Li Shangfu had travelled to Delhi for the Shanghai Cooperation Organisation or SCO Defence Minister meeting. While the border issue dominated the meeting, the fact that Rajnath chose to do a namaste, instead of a handshake with his Chinese counterpart, showed that the ties remained frosty.

Prior to the 2023 meet, Defence Minister Rajnath Singh and the then Chinese Defence Minister General Wei Fenghe met on the sidelines of the SCO meet in Russia's Moscow in 2020, just months after the Galwan incident. The deadly clashes in Galwan, Eastern Ladakh in June of that year left 20 Indian and four Chinese soldiers dead.

A ministerial meeting will be seen as a positive element in ties, just a month after the Kazan meeting in October at the leaders' level. The October meeting on the sidelines of the BRICS summit was the first bilateral meeting between Indian and Chinese leaders since the Galwan incident which led to a downfall in the ties of the two Asian giants. Following the clashes, India had banned a number of Chinese apps and increased scrutiny on Chinese investments.

One of the key outcomes of the Kazan meeting was that the Special Representatives on the boundary question – Indian NSA Ajit Doval and China's Wang Yi will meet at an early date. Foreign ministers of the two countries are also expected to meet at a later date. The Kazan thaw coincided with the patrolling agreement between India and China and disengagement in Depsang

and Demchok at the Line of Actual Control or LAC. A revival in India-China ties could have positive ties in trading ties and comes ahead of Beijing's presidency of the SCO summit next year.

https://www.wionews.com/world/indian-chinese-defence-ministers-likely-to-meet-next-week-in-laos-775986

THE ECONOMIC TIMES

Wed, 13 Nov 2024

Cold War bomber enhances China's ability to strike U.S. bases

In a series of war games in the seas and skies around Taiwan last month, China deployed some of its newest strike aircraft, warships and missile forces. However, one of the most menacing weapons used in the drills: an updated version of a bomber that first flew in the early years of the Cold War.

Like America, which still relies on upgraded versions of the B-52, a bomber from the same era, China has successfully modernized its jet-powered H-6 to carry on flying deep into the 21st Century. These bombers were shown on China's state-controlled media taking off for missions designed to intimidate Taiwan as part of the war-game drills. Dubbed Joint-Sword 2024B by China's military, the maneuvers were a "stern warning" to people on Taiwan seeking independence, the Chinese military said.

Taiwan's Ministry of National Defense reported that 153 Chinese military aircraft, 14 naval vessels and 12 other ships were detected around the island over a 25-hour period after the start of the exercise on Oct. 14. The ministry also reported that 111 of the aircraft had crossed the median line of the Taiwan Strait and entered the island's Air Defense Identification Zone (ADIZ).

Taiwan's defense ministry told Reuters that "three groups of three H-6 aircraft" had been detected operating in the island's air space during China's military exercise. Two of the groups "conducted simulated attack drills," the ministry said.

China's defense ministry didn't respond to questions for this story. Some modernized versions of China's H-6 bomber are now capable of launching ballistic missiles armed with nuclear warheads while others can carry multiple long-range anti-ship and land attack missiles, according to defense analysts and Pentagon reports on the Chinese military.

Some versions can be refueled in flight, allowing them to fly from bases on the Chinese mainland and strike at targets deep into the Western Pacific, where the U.S. has large bases on Guam and elsewhere.

Asked about the military drills, Taiwan's defense ministry said the island was using "joint intelligence surveillance to keep track of the communist military's movements around Taiwan," while also dispatching "air, sea and missile forces to respond as appropriate to ensure national defense and security." Major Pete Nguyen, a Pentagon spokesperson, said the U.S. was "prepared to respond to any threat and protect the homeland."

U.S. Defense Secretary Lloyd Austin "has often said that he does not believe conflict with the PRC is imminent nor inevitable," Nguyen said in response to questions. Beijing says that Taiwan is part of China and has not ruled out the use of force to bring the island under its control. The leaders of

democratically governed Taiwan reject these sovereignty claims. China's military capabilities are in the spotlight as tensions with the U.S. remain high with Donald Trump returning to office. In a display of its growing military prowess, China put its J-35A stealth fighter on display at the Zhuhai air show this week.

Serious Threat

Unlike America, which stopped building the B-52 in 1962, China has continued to make the twin-engine H-6 at a plant in central China. However, H-6 production may have recently slowed or been halted, according to Thomas Shugart, a former U.S. Navy submarine officer and an expert on China's military. He estimates the Chinese air force now has about 230 of these bombers.

The H-6 is derived from the Tupolev Tu-16 bomber, which the Soviet Union introduced into service in the early 1950s and was given the NATO code name Badger. China began building these aircraft under license in the late 1950s, according to experts on the People's Liberation Army, China's military.

The Taiwanese and Japanese militaries have reported that H-6 bombers have been frequently deployed on flights near their airspace in recent years. They are also sent on flights over the South China Sea where Beijing claims sovereignty over extensive areas of disputed territory. In a conflict, these bombers would pose a serious threat to ships and targets on land, according to U.S. and Taiwanese military experts.

Shugart said that Chinese military doctrine for island landing campaigns, such as an invasion of Taiwan, calls for strikes against headquarters, communications facilities, logistics centers and other key targets, along with attacks on airfields, ports and ships at sea.

"I would expect H-6s to be involved in all of these sorts of operations," he said. These attacks would likely be coordinated with missile strikes, possibly without warning, that would soften air defenses and crater runways to trap aircraft on the ground, Shugart added.

He said these aircraft could then be hit with cruise missiles launched from H-6 bombers. China's official media in mid-September provided some insight into the role the H-6 might play in a clash off the Chinese coast.

State broadcaster CCTV showed footage of one of these bombers flying in an exercise with fighters and a long-range WZ-7 surveillance drone. The drone penetrated the air defenses of a potential adversary, identified a target and relayed this information to the H-6, according to the footage. The bomber was shown launching an anti-ship missile. Experts say the U.S. should try to neutralize the H-6 bombers while they are still on the ground.

"Any common sense war plan would target those aircraft before they could take off," said David Deptula, dean of the Washington-based Mitchell Institute for Aerospace Studies and a retired U.S. Air Force Lieutenant General. In March testimony to the U.S.-China Economic and Security Review Commission, Shugart said China's H-6 force has expanded and these aircraft now have improved airframes, technology, engines and long-range weapons.

While regularly sending the H-6 on missions off the Chinese coast, Beijing is now deploying these aircraft in the same way the U.S. Air Force uses longrange patrols of the B-52 and its other bombers to signal America's ability to strike at distant targets.

On July 24, American and Canadian fighter jets scrambled to intercept a joint patrol of two Chinese H-6 and two Russian Tu-95 bombers near Alaska, according to a statement from the North American Aerospace Defense Command (NORAD).

While the Russians conduct regular patrols in this area, it was the first time Chinese bombers had flown close to the U.S. mainland in an operation that revealed the growing power and confidence of China's military, according to former U.S. air force officers. The flights were not seen "as a threat, and NORAD continues to monitor competitor activity near North America and meet presence with presence," Pentagon spokesperson Nguyen said.

The Chinese and Russian defense ministries didn't respond to a request for comment. A spokesman for China's Ministry of National Defense, Senior Colonel Zhang Xiaogang, told a press conference at the time that the joint patrol was to test and improve coordination between the Chinese and Russian air forces. "This operation does not target any third party," Zhang said.

https://economictimes.indiatimes.com/news/defence/cold-war-bomber-enhances-chinas-ability-to-strike-u-s-bases/articleshow/115244462.cms

THE ECONOMIC TIMES

Wed, 13 Nov 2024

US opens missile base in Poland as Donald Trump presidency looms over NATO

The United States will officially open a new air defence base in northern Poland on Wednesday, as Warsaw seeks to reassure citizens that NATO guarantees their security amid jitters after Donald Trump's presidential election victory. Situated in the town of Redzikowo near the Baltic coast, the base has been in the works since the 2000s and Warsaw says it symbolises the fact that its military alliance with Washington remains solid no matter who is in the White House.

"It took a while, but this construction proves the geostrategic resolve of the United States," Polish Foreign Minister Radoslaw Sikorski said in a video posted to X on Tuesday.

The Polish-American alliance is strong, regardless of who governs in Warsaw and Washington." Polish President Andrzej Duda, a conservative who has stressed his warm ties with Trump, is set to attend the base opening ceremony. On Monday, he told reporters that Trump had called him with greetings for Polish independence day.

Trump's past criticism has unnerved some NATO members, as he has vowed that under his leadership the United States would not defend countries which do not spend enough on defence. However, Poland says the fact it is the alliance's biggest spender on defence relative to the size of its economy means it should have nothing to fear.

Missile Shield

Dubbed 'Aegis Ashore', the U.S. base at Redzikowo is part of a broader NATO missile shield which the alliance says is capable of intercepting short- to intermediate-range ballistic missiles. Other key elements of the shield include a second Aegis Ashore site in Romania, along with U.S. navy destroyers based in the Spanish port of Rota and an early-warning radar in the Turkish town of Kurecik. Russian and Belarussian officials said they were watching the NATO base

carefully and would factor it into their military planning. Moscow had already labelled it a threat to Russia as far back as 2007, when the base was still in the planning stages. NATO says the shield is purely defensive.

The Redzikowo base was to some extent a "relic of a previous era", however, Marek Swierczynski, an analyst from think-tank Polityka Insight, told state news agency PAP, as it was designed with a threat from Iran in mind rather than one from Russia. Polish Defence Minister Wladyslaw Kosiniak-Kamysz said on Monday the scope of the shield needed to be expanded and Warsaw would discuss this with NATO and the United States. NATO Secretary General Mark Rutte will meet Duda and Prime Minister Donald Tusk in Warsaw later on Wednesday.

https://economictimes.indiatimes.com/news/defence/us-opens-missile-base-in-poland-as-donald-trump-presidency-looms-over-nato/articleshow/115246412.cms

The EurAsian Times

Thu, 14 Nov 2024

China's Nuclear-Powered Aircraft Carrier On Cards? Satellite Image Shows Prototype Reactor For Warship

China has taken a significant step toward its naval ambitions by developing a land-based prototype nuclear reactor for a large surface warship, suggesting it may be constructing its first nuclear-powered aircraft carrier. This revelation, reported by the Associated Press based on research from the Middlebury Institute of International Studies in California, marks the first confirmation that China is advancing its work on a nuclear power plant for an aircraft carrier. This is a significant step toward China's ambitions in naval nuclear propulsion.

The 'Dragon Might' Project

The project at Leshan is known as 'the Longwei' or 'Dragon Might' Project. Official documents also refer to it as 'the Nuclear Power Development' Project. The project's 'national defense designation,' classified as 'secret,' further reinforces the conclusion that this reactor is a prototype for a next-generation aircraft carrier.

Rumors of China planning a nuclear-powered aircraft carrier have circulated for some time. Still, research by the Middlebury Institute of International Studies in California provides the first confirmation that China is indeed developing a nuclear-powered propulsion system for a carrier-sized warship.

Location Of The Facility

Researchers concluded in a detailed 19-page report that a prototype reactor for naval propulsion was being constructed in the mountains of Mucheng township, located about 70 miles (112 kilometers) southwest of Chengdu, the provincial capital of Sichuan.

Documents suggest the reactor will soon be operational. It is housed in a newly built facility at the site known as Base 909. According to the analysis, this site also contains six other reactors, some of which are operational, decommissioned, or still under construction. Base 909 is managed by the Nuclear Power Institute of China, a subsidiary of the China National Nuclear Corporation responsible for reactor engineering research and testing.

Uncovering China's Reactor Prototype

Middlebury researchers initially investigated the mountainous region near Leshan in southwestern Sichuan province because they suspected that China might be building a reactor for producing

weapons-grade plutonium or tritium. However, a detailed analysis of satellite imagery, project tenders, personnel records, and environmental impact data led to the conclusion that China is, in fact, constructing a prototype reactor for a large warship.

Even a citizen's complaint about noisy construction and excessive dust contributed to this finding. Satellite images from 2020 to 2023 reveal the demolition of homes and the construction of water intake infrastructure linked to the reactor site. According to researchers, contracts for steam generators and turbine pumps suggest the project involves a pressurized water reactor with a secondary circuit—features commonly associated with naval propulsion reactors.

The AP report notes that documents indicate China's 701 Institute – officially known as China Ship Research and Design Center, responsible for aircraft carrier development, procured reactor equipment specifically intended 'for installation on a large surface warship.'

"The reactor prototype at Leshan provides the first concrete evidence that China is indeed developing a nuclear-powered aircraft carrier," said Jeffrey Lewis, a professor at Middlebury and one of the researchers on the project.

Nuclear-Powered Carriers Around The World

If successful, this move would place China among the elite naval powers operating nuclear-powered aircraft carriers, currently held only by the United States and France. The US Navy, with its 11 nuclear-powered carriers, has unmatched global reach, enabling it to maintain multiple strike groups deployed globally, including in the Indo-Pacific.

In 2017, the US Navy operated 81 nuclear-powered vessels, including 11 aircraft carriers and 70 submarines (18 SSBN/SSGN and 52 SSN), all powered by 92 reactors.

From Liaoning To Fujian: China's Expanding Naval Capabilities

China's naval ambitions are steadily progressing. The nation's first aircraft carrier, the Liaoning, was commissioned in 2012 after being repurposed from a Soviet vessel. Its second carrier, the Shandong, was built domestically but followed Soviet designs. Both carriers use a 'ski-jump' launch system featuring a ramp at the end of a short runway to assist planes in taking off.

The Fujian, launched in 2022, is China's first indigenously designed carrier. Unlike its predecessors, it employs an advanced electromagnetic launch system similar to that of U.S. carriers. All three of these carriers are conventionally powered. Even before sea trials began for the Fujian in March, Yuan Huazhi, political commissar for China's People's Liberation Army Navy (PLAN), confirmed that construction had begun on a fourth carrier. While he suggested that it would soon be announced whether this carrier would be nuclear-powered, no official announcement has been made yet.

Despite the advancements in conventional carrier technology, the potential introduction of a nuclear-powered carrier would mark a major leap in China's naval capabilities.

The Nuclear Submarine Dimension

Furthermore, According to a Center for Strategic & International Studies (CSIS) report, China now operates the world's largest maritime fighting force, with 234 warships compared to the US Navy's 219. However, the U.S. retains unquestioned dominance in nuclear submarine capabilities. The United States Navy operates around 66 nuclear-powered submarines, while China currently has a fleet of 48 conventional submarines and 12 nuclear-capable submarines.

A 2023 Department of Defense report predicts China will expand its submarine force to 80 by 2035, although most of these will not be nuclear-powered. This rapid buildup of China's naval

capabilities has positioned the People's Liberation Army Navy (PLAN) to potentially surpass the U.S. Navy in key areas of maritime power sooner than expected.

Challenging US Dominance

While the U.S. Navy remains the leader in nuclear-powered vessels, China's push to develop a nuclear-powered aircraft carrier and expand its nuclear submarine fleet underscores its determination to establish maritime dominance, particularly in the Indo-Pacific. With these advancements, the People's Liberation Army Navy (PLAN) is positioned to challenge the U.S. Navy and potentially surpass it in key areas in the near future.

https://www.eurasiantimes.com/edited-chinas-nuclear-ambition-makes-us/

Science & Technology News

Wed, 13 Nov 2024

Indian crewed mission to Moon to cost 1.5 lakh crores: ISRO Chairman S Somanath

Responding to a question from a student at an event organised by the Karnataka Residential Educational Institutions Society (KREIS), ISRO chairman S Somanath incidentally revealed the cost of an ISRO human mission to the Moon.

Somanath said, "Going to Moon and coming back is very costly. When Americans did it in 1960s, it took away almost 30 percent of their GDP to do that. Today, people hesitate to go to Moon because it is a very costly affair. Even for us to send a man to the Moon, it will cost you 1.5 lakh crores. It is not a small cost. But today, India can even think about it because we are not a poor country today. We can spend 1.5 lakh crores in 20 years, no issue. Some 20,000 crores per year is not a huge thing for us to spend, but still there will be question in this country, how can you spend so much of money, when there are other needs? So, we must create a business out of it."

Somanath was highlighting the fact that India needs to think about operating on the surface of the Moon in a sustainable manner, which involves that there is an economic return on investment to develop the technologies and capabilities required to reach the lunar surface.

At a discussion during the International Astronautical Congress 2024 in Milan, Italy in October last year, all the active explorers of the Moon identified the opportunity in providing specialised services at the Moon, such as ESA's Moonlight constellation of navigation and communication relay satellites, as well as Astrobotic's planned plug-n-play lunar power distribution grid, which will allow any hardware that reaches the lunar surface to benefit from the underlying infrastructure already set up there. The paradigm for lunar exploration is rapidly shifting from merely dispatching a series of landers, to campaigns and programmess with multiple synergistic elements.

ISRO's lunar ambitions ISRO is planning a series of follow-up missions that were enabled by the incredible success of the Chandrayaan 3 mission. The Chandrayaan 4 mission will be an attempt to

return samples from the lunar surface, and will in-principle, demonstrate all the technologies necessary for a crewed mission to the lunar surface.

The Chandrayaan 5 mission, a collaboration with JAXA will demonstrate precision landing, paving the way for lunar operations where multiple missions can work together. The Chandrayaan 7 and 8 missions will demonstrate the use of local resources and 3D printing. ISRO is aiming to land a human on the Moon by 2035, and set up a Moon base by 2047.

https://www.news9live.com/science/indian-crewed-mission-to-moon-to-cost-1-5-lakh-crores-isro-chairman-s-somanath-2749389

THE ECONOMIC TIMES

Wed, 13 Nov 2024

ISRO proposes to build Earth Observation satellite for Mexico

The Indian Space Research Organisation (ISRO), confident in its plans to launch the NASA-ISRO Synthetic Aperture Radar (NISAR) Earth Observation Satellite early next year from the Satish Dhawan Space Centre (SDSC), has shown interest in building an Earth Observation (EO) satellite for Mexico to further deepen the 75-year-old diplomatic relationship between the two nations in 2025.

Mexico's Ambassador to India, Federico Salas met ISRO Chairman S Somanath at Antriksh Bhavan in Bengaluru on Wednesday. The two highlighted the successful cooperation between the two space agencies. Ambassador Salas emphasized the need to broaden cooperation with the Mexican space agency—Agencia Espacial Mexicana (AEM)—and expand collaboration with the Latin American and Caribbean Space Agency (ALCE), which comprises several countries, for the peaceful use and exploration of outer space.

According to a statement from ISRO, Ambassador Salas expressed gratitude for India’s support in space technology applications, particularly in areas such as forest fire monitoring and agricultural drought management. The Indian space agency had previously developed a mobile application for forest fire monitoring using satellite data and, in August 2024, organized a four-day workshop on the use of space systems for Mexican officials, Somanath said during their conversation.

The ISRO Chairman also mentioned the G20 Satellite mission for environmental and climate observation and potential industry-level collaborations between India and Mexico, as per the statement from the space agency. In 2023, the Somanath had proposed building a satellite for G20 nations, inviting contributions in the form of payloads and instruments that could be developed in India and launched within two years.

Recognizing India’s expanding role in the global space domain, the Mexican Ambassador congratulated India on its recent achievements, particularly the Chandrayaan-3 mission, which successfully landed near the lunar south pole and received international acclaim.

https://economictimes.indiatimes.com/tech/technology/isro-proposes-to-build-earth-observation-satellite-for-mexico/articleshow/115260682.cms?from=mdr

Wed, 13 Nov 2024

New discovery could slash energy use in memory storage by a billion times—Here's how

A discovery in material science may significantly transform the memory storage technology through the reduction of energy consumption. Scientists from IISc, the University of Pennsylvania, and MIT have found a method that can turn a crystalline material, indium selenide, into a glassy state using a small amount of energy. This process is a great advancement from the traditional memory storage systems that use high temperatures and energy to write data that would not even be stored as solid memory. This discovery could revolutionise data storage in computers and even smart phones and the like.

Low Power Shock-Induced Amorphization

The team's discovery was achieved by applying a steady electric current through indium selenide, a 2D ferroelectric, where it changed from a crystalline structure to a glassy state. The process was very unconventional, as such changes require electrical pulses. When the current passed through the material, layers of atoms started moving with respect to each other and formed microscopic regions with fixed electric dipoles. The above domains were separated by defects that, if localised in a small volume element, would cause the crystal structure to fail and form glass. This process does not require melting, which makes it an energy-saving process compared to the conventional methods used.

Tectonic shifts drive the formation of glass

The researchers recorded the process under a transmission electron microscope and found out that boundaries between domains behave like tectonic plates and move in the direction of the applied electric field. When these boundaries were reached, mechanical and electrical shocks occurred and travelled through the material. Since the "earthquake" effect started the avalanche of changes, the glassy phase extended through the material very quickly. The continuous energy-efficient transformation took place in such a manner that has never been witnessed before in materials science, thereby providing a potential path for future use of data storage.

Opportunity for Large-Scale Effects in Electronics

Of the materials, indium selenide is particularly suitable for this process due to its layered structure and ferroelectric and piezoelectric characteristics. Scholars state that this could open up the path for incorporating these highefficiency memory devices into conventional electronics like mobile phones and computers. This innovation has the capability of opening up new possibilities to develop high-performance, low-energy memory storage systems in the near future by reducing the energy required to write data.

https://www.news9live.com/science/new-discovery-could-slash-energy-use-in-memory-storage-by-a-billion-times-heres-how-2749007

Wed, 13 Nov 2024

China starts releasing far side lunar samples to researchers

The China National Space Agency (CNSA) has started allowing researchers to borrow the first batch of samples returned by the Chang'e 6 mission. Researchers in China can access the samples by applying through the official data and sample release system, by providing their research proposals.

The samples are being curated and released by the Lunar Exploration and Space Engineering Center operated by the CNSA. The Chang'e 6 mission returned just a shade under two kilograms of samples, and was the first mission to bring home material from the far side of the Moon. The Returner capsule with the samples landed in a remote region of Mongolia on 25 June. China has also opened up the eighth batch of samples returned by the Chang'e 5 mission for scientific research as well.

22 November is the last date for applying for the samples, for both the Chang'e 6 and Chang'e 5 missions. In 2021, China had introduced new regulations for lunar sample management, with the goal of encouraging joint international research. The seventh batch of Chang'e 5 samples were made available to both domestic and international researchers. Deputy director of the Lunar Exploration and Space Engineering Center, Ge Ping has welcomed applications from all countries, and has indicated that China has a positive and open attitude for sharing the samples.

China's lunar ambitions

China is working closely with international partners including Russia to set up the International Lunar Research Station (ILRS) close to the south pole of the Moon. At the International Astronautical Conference in Milan, Italy in October, Chinese officials reiterated their commitment towards fostering a global spacefaring community.

China is returning to the Moon with the Chang'e 7 and Chang'e 8 missions, both of which are carrying payloads of international partners. China is also inviting international participation in the Chang'e 8 mission, with available slots for payloads. China has also intensified its crewed lunar exploration programme, and intends to land humans on the Moon by 2030.

https://www.news9live.com/science/china-starts-releasing-far-side-lunar-samples-to-researchers-2749314

Thu, 14 Nov 2024

IIT Kharagpur-led study says tropical rainforests could survive global warming

Tropical rainforests like the Amazon and Western Ghats, considered lungs of the planet, is likely to survive future global warming, according to a study led by Indian Institute of Technology, Kharagpur. A release from the institution said that a team consisting of its scientists and also those

from Calcutta University and University of Western Ontario studied detailed records of rainforests in sediments from Vastan coal mines of Gujarat deposited in coastal lagoons around 56 million years ago.

Coal layers in Vastan

The coal layers in Vastan are nothing but a spectacularly fossilised tropical rainforest containing a huge amount of plant and pollen remains as well as variety of mammals and insects that lived in these forests. India was a tropical island then, surrounded by oceans and Himalayas were yet to form. The period is known as Palaeocene-Eocene Thermal Maximum (PETM), when global carbon dioxide rose to an abnormally high level that the future global warming might reach.

“The study took several years of field and laboratory investigation. We had to date the sediments to confirm its PETM age and collected samples at centimetre intervals, analysed the pollens to understand how the tropical rainforest community evolved in response to such extreme global warming... The climate was also monitored by analysing oxygen isotopes in fossil teeth of small horse-like ungulate mammals that once roamed in these forests,” Prof. Anindya Sarkar, lead researcher of IIT Kharagpur, was quoted as saying in the release. The study has just been published online in the Elsevierjournal, Global and Planetary Change.

“We found a large anomaly in carbon isotopes exactly at 56 million years. This was such a characteristic signal for a super greenhouse globe with very high atmospheric carbon dioxide... The rainforest not only survived but also diversified during and after this global warming phase,” lead author of the paper, Arpita Samanta, a former PhD student at IIT Kharagpur and currently assistant professor at Kolkata’s Asutosh College, was quoted as saying.

How did the rainforest survive

Melinda K. Bera, a co-author and an isotope expert who developed the novel clay-based thermometer, said, “What helped the rainforest’s survival? We critically looked at the rainfall pattern and found that the warming intensified the rainfall and that possibly brought down the temperature. We call it rainfall-buffered temperature. The increased rainfall and lowered temperature sustained these ancient rainforests of western India.”

While scientists are divided on the issue, a 2023 report by the Intergovernmental Panel on Climate Change had warned that if the carbon dioxide emission and global warming continued unabated, the tropical rainforest community may altogether collapse much before the end of this century and would drive a global catastrophe affecting nearly 800 million people worldwide.

https://www.thehindu.com/sci-tech/science/iit-kharagpur-led-study-says-tropical-rainforests-could-survive-global-warming/article68863730.ece

THE ECONOMIC TIMES

Wed, 13 Nov 2024

Scientist treats her own breast cancer with viruses she grew in the lab. All you need to know about the treatment

A 50-year-old Croatian virologist Beata Halassy has successfully treated her own breast cancer by injecting the tumour with lab-grown viruses. According to an article published in Nature journal, in 2020 Beata Halassy discovered she had a second recurrence of breast cancer at the site of a

previous mastectomy. To avoid another bout of chemotherapy, she self-administered experimental oncolytic virotherapy. Halassy has now been cancer-free for four years. Her decision to treat herself, and subsequently publish a report detailing the process, has sparked discussion about the ethics of self-experimentation and the risk it might encourage others to try unproven treatments.

Scientisttreats her own cancer using viruses she grew in lab

At the age of 49, Halassy discovered she had breast cancer at the site of a previous mastectomy, which is a surgical procedure to remove all or part of one or both breasts. It was the second recurrence there since her left breast had been removed, and she couldn't face another bout of chemotherapy.

Halassy, who is a virologist at the University of Zagreb, decided to take matters into her own hands with an unproven treatment. A case report published in Vaccines in August 1 outlines how Halassy self-administered a treatment called oncolytic virotherapy (OVT) to help treat her own stage 3 cancer. She has now been cancer-free for four years. In choosing to self-experiment, Halassy joins a long line of scientists who have participated in this under-the-radar, stigmatized and ethically fraught practice. "It took a brave editor to publish the report," says Halassy.

Up-and-coming therapy

Oncolytic virotherapy aka OVT is an emerging field of cancer treatment that uses viruses to both attack cancerous cells and provoke the immune system into fighting them. Most OVT clinicaltrials so far have been in late-stage, metastatic cancer, but in the past few years they have been directed towards earlier-stage disease. One OVT, called T-VEC, has been in approved in the United States to treat metastatic melanoma, but there are as yet no OVT agents approved to treat breast cancer of any stage, anywhere in the world.

Halassy stresses that she isn't a specialist in OVT, but her expertise in cultivating and purifying viruses in the laboratory gave her the confidence to try the treatment. She chose to target her tumour with two different viruses consecutively — a measles virus followed by a vesicular stomatitis virus (VSV). Both pathogens are known to infect the type of cell from which her tumour originated, and have already been used in OVT clinical trials.

A measles virus has been trialled against metastatic breast cancer. Halassy had previous experience working with both viruses, and both have a good safety record. The strain of measles she chose is used extensively in childhood vaccines, and the strain of VSV induces, at worst, mild influenzalike symptoms. Over a two-month period, a colleague administered a regime of treatments with research-grade material freshly prepared by Halassy, injected directly into her tumour.

Her oncologists agreed to monitor her during the selftreatment, so that she would be able to switch to conventional chemotherapy if things went wrong. The approach seemed to be effective: over the course of the treatment, and with no serious side effects, the tumour shrank substantially and became softer. It also detached from the pectoral muscle and skin that it had been invading, making it easy to remove surgically.

Analysis of the tumour after removal showed that it was thoroughly infiltrated with immune cells called lymphocytes, suggesting that the OVT had worked as expected and provoked Halassy's immune system to attack both the viruses and the tumour cells. "An immune response was, for sure, elicited," says Halassy. After the surgery, she received a year's treatment with the anticancer drug trastuzumab.

Ethical dilemma

After the treatment worked in her favour and she has been cancer free for four years, Halassy felt a responsibility to publish her findings. But the virologist reveals that she received more than a dozen rejections from journals.

Halassy says, “The major concern was always ethical issues.” She was particularly determined to persevere after she came across a review highlighting the value of self-experimentation. That journals had concerns doesn’t surprise Jacob Sherkow, a law and medicine researcher at the University of Illinois Urbana-Champaign who has examined the ethics of researcher self-experimentation in relation to COVID19 vaccines. The problem is not that Halassy used self-experimentation as such, but that publishing her results could encourage others to reject conventional treatment and try something similar, says Sherkow.

People with cancer can be particularly susceptible to trying unproven treatments. Yet, he notes, it’s also important to ensure that the knowledge that comes from selfexperimentation isn’t lost. The paper emphasizes that self-medicating with cancer-fighting viruses “should not be the first approach” in the case of a cancer diagnosis.

“I think it ultimately does fall within the line of being ethical, but it isn’t a slam-dunk case,” says Sherkow, adding that he would have liked to see a commentary fleshing out the ethics perspective, published alongside the case report.

Stephen Russell, an OVT specialist who runs virotherapy biotech company Vyriad in Rochester, Minnesota, agrees that Halassy’s case suggests the viral injections worked to shrink her tumour and cause its invasive edges to recede. But he doesn’t think her experience really breaks any new ground, because researchers are already trying to use OVT to help treat earlier-stage cancer. He isn’t aware of anyone trying two viruses sequentially, but says it isn’t possible to deduce whether this mattered in an ‘n of 1’ study.

“Really, the novelty here is, she did it to herself with a virus that she grew in her own lab,” he says.

https://economictimes.indiatimes.com/news/science/scientist-beata-halassy-treats-her-own-breast-cancer-with-viruses-she-grew-in-the-lab-all-you-need-to-know-about-the-treatment-oncolytic-virotherapy/articleshow/115255138.cms

DECCAN HERALD

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India becomes full member of SKA, aims to build world’s most sensitive radio telescope

India has found a place in the inner circle of a global effort which is aiming to build the world’s most sensitive radio-telescope to explore the farthest corners of the Universe, going back to an era close to the Big Bang.Credit: Special arrangement New Delhi: India has found a place in the inner circle of a global effort which is aiming to build the world’s most sensitive radio-telescope to explore the farthest corners of the Universe, going back to an era close to the Big Bang.

New Delhi’s entry as a council member of the Square Kilometre Array Organisation – announced at Pune on Wednesday - comes after more than a decade of Indian astronomers’ involvement in building the massive radio telescope that will straddle over two ...

New Delhi’s entry as a council member of the Square Kilometre Array Organisation – announced at Pune on Wednesday - comes after more than a decade of Indian astronomers’ involvement in building the massive radio telescope that will straddle over two continents.When ready, the SKA will be the world’s most sensitive radio telescope – 50 times more sensitive than the current generation instruments – and will be able to survey the sky 10,000 times faster.

Consisting of 197 dishes in South Africa’s Karoo region, and over 130,000 low frequency antennas in Western Australia’s Murchison Shire, the telescope will monitor the sky in unprecedented detail, in a complementary range of radio frequencies.Taken together the two sites will act as a single telescope with a signal collection area of one square kilometre.

“This mega science international collaboration puts India ahead in the global scientific forum,” Ajit Kumar Mohanty, secretary, Department of Atomic Energy said.

SKA is an international organisation with 12 full members at the moment though several others are associated with the mega project and the membership number is expected to rise.Last December, the Union Cabinet approved Rs 1,250 crore for India’s participation as the council member of the SKA to support India’s activities at SKA till 2031. The paper work for inclusion as the council member was completed in July, sources said.

“We are enthusiastic to contribute both in-kind through different work packages and via cash payments towards establishing the facility,” said Department of Science and Technology secretary Abhay Karandikar.

The project is funded jointly by the DAE and the DST.The two sites are chosen for co-hosting the SKA based on the characteristics of the atmosphere above the sites and their radio quietness, which comes from being some of the most remote yet accessible locations on the Earth.

The unprecedented sensitivity of the SKA’s receivers will allow insights into the formation and evolution of the first stars and galaxies after the Big Bang, the role of cosmic magnetism, the nature of gravity, and possibly even life beyond Earth.Indian astronomers and engineers were deeply involved in design and development work since the project’s inception in 2012 onward, and made significant contributions to the critical software elements that sit at the heart of the telescopes.

India will continue its work to supervise the development of the observatory monitor and control system.

“Akin to the brain and nervous system of the observatory, the monitor and control system will issue the commands required to carry out astronomical observations for our global community,” the DAE said in a statement.

“SKAO membership will bring many benefits to Indian industry as we plan to make in-kind contributions in areas like radio frequency electronics, digital hardware and signal processing systems, data processing software and also monitoring and control software,” said Yashwant Gupta, director, National Centre for Radio Astronomy that operates the country’s biggest radio telescope GMRT.

“India’s membership enhances the diversity of SKAO members, connecting five continents through scientific excellence to create one of the world’s most ambitious research infrastructures," noted Phil Diamond, director general of SKAO.

https://www.deccanherald.com/india/india-becomes-full-member-of-ska-aims-to-build-worlds-most-sensitive-radio-telescope-3275320