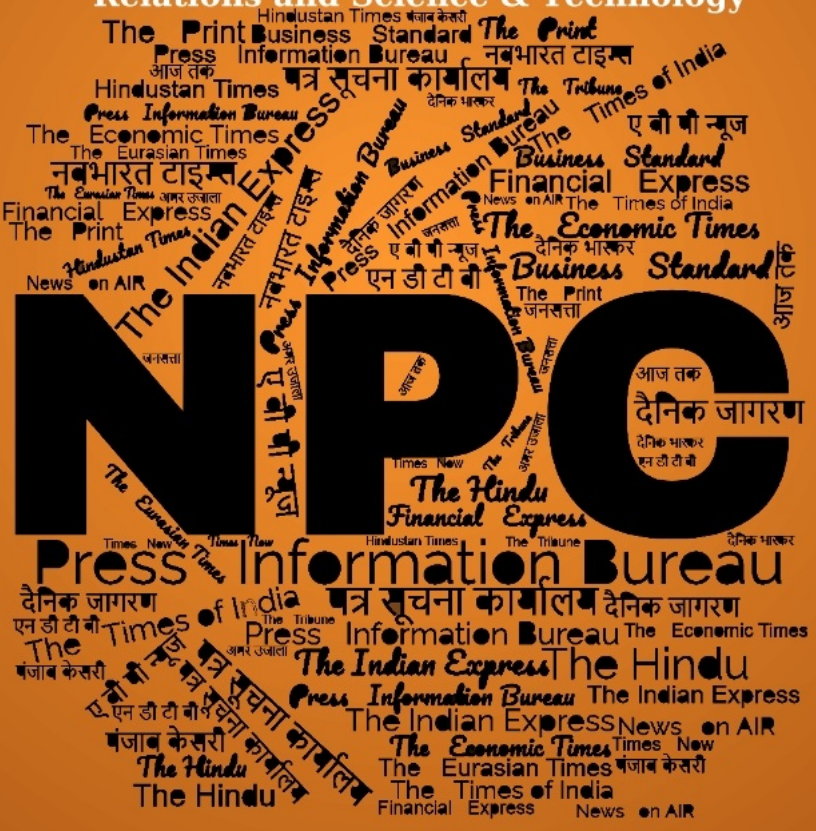
सितम्बर
Sep
2024

खंड/Vol. : 49 अंक/Issue : 176
21-23/09/2024

समाचार पत्रों से चयनित अंश
Newspapers Clippings

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

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



रक्षा विज्ञान पुस्तकालय
Defence Science Library
रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र
Defence Scientific Information & Documentation Centre
मेटकॉफ हाउस, दिल्ली - 110 054
Metcalfe House, Delhi - 110 054

CONTENTS

DRDO News

Press Information Bureau
Government of India

Ministry of Defence

Sat, 21 Sep 2024

DRDO Transfers High-Altitude Sustenance Technologies to Power Grid Corporation of India Ltd

The Defence Institute of Physiology and Allied Sciences (DIPAS), a leading laboratory under the Defence Research and Development Organisation (DRDO) handed over critical high-altitude sustenance technologies to the Power Grid Corporation of India Ltd (PGCIL) during an orientation workshop on September 21, 2024, at PGCIL's regional headquarters in Jammu. This workshop was organised to prepare employees for high-altitude operations as part of the 5000 MW Pang-Kaithal High Voltage Direct Current (HVDC) Project in Ladakh.

The Pang-Kaithal HVDC Project, located at an altitude of 15,760 feet, is a significant step towards energy security in the region of Ladakh and the wider integration of solar power into India's national grid. The technologies transferred by DIPAS will support PGCIL in the high-altitude sustenance of its workforce during the project.

Earlier, DRDO signed a MoU with PGCIL to provide technical knowledge on high-altitude induction and sustenance. DIPAS, known for its pioneering work in high-altitude research, has previously formulated acclimatisation protocols for the Indian Army in the Himalayan region. The laboratory has developed a range of solutions for high-altitude conditions, including nutritional ration scales, protective clothing, non-conventional energy-based shelters, and cold-injury prevention creams.

Director of DIPAS Dr. Rajeev Varshney chaired the induction program, alongside, Chief General Manager Shri Amit Sharma (i/c) of the Pang-Kaithal HVDC Project, PGCIL. Senior scientists from DRDO and officials from PGCIL were present at the workshop.

Secretary of the Department of Defence R&D and Chairman of DRDO, Dr. Samir V Kamat congratulated the DIPAS team for their collaboration with PGCIL on this project of national importance.

https://pib.gov.in/PressReleasePage.aspx?PRID=2057261

THE HINDU

Sat, 21 Sep 2024

DRDO chief says cutting edge projects avoided in India due to aversion to risk and intolerance of failure

Defence Research and Development Organisation (DRDO) Chairman Dr. Samir V Kamat said that there is an aversion to risk and intolerance of failure in India due to which people end up taking less challenging projects.

Dr. Kamat made the comment in Bengaluru on September 21 while delivering the Air Chief Marshal L.M. Katre Memorial Lecture 2024 on Defence R&D The Road Ahead. “If there is a failure, immediately you get a Comptroller and Auditor General (CAG) report saying that you have caused loss to the government. Questions are raised on who is accountable. That makes people take on less challenging projects.”

Need for change

Due to this, many projects keep getting extended instead of them being closed. “This has to change. You learn a lot more from your failures than from your success. If you have to fail, fail fast, so that you learn and move on,” he added.

Dr. Kamat said that this attitude is slowly changing as Defence Minister Rajnath Singh recently gave leeway for high-risk projects. “The Defence Minister has given us this leeway where if you say at the beginning of the project that this is a high-risk project, we will make an attempt, but if it doesn’t happen, we will close the project. This leeway has been given and we hope it will bring a transformation in the ability to develop critical cutting edge technology in the country,” said Dr Kamat, who is also secretary, Department of Defence (R&D).

He also said that India should improve its R&D spending with more investment from the private sector. “If you look at our R&D spend, India is spending only 0.65 % of our GDP on R&D. Whereas USA spends 2.83 %, China spends 2.14 %, Russia spends 0.98 %, France spends 2.19% and South Korea spends 4.8% of their GDP on R&D.

The government is aware of this and there is a clear thinking that in the next four to five years we should move to at least 1% of our GDP on R&D. Hopefully, by 2035, we should rise to 2%,” he said.

AMCA project

On the indigenous fifth generation Advanced Medium Combat Aircraft (AMCA), the DRDO chief said the first prototype will roll out by 2028, and production is expected to begin by 2034. The AMCA project got sanction from the Cabinet Committee on Security in March.

https://www.thehindu.com/news/national/cutting-edge-projects-avoided-in-india-due-to-aversion-to-risk-and-intolerance-of-failure-drdo-chief/article68667169.ece

THE NEW INDIAN EXPRESS

Sun, 22 Sep 2024

India is 10-15 years behind most countries in traditional technologies, says DRDO chief

“Today academia, the Defence Research and Development Organisation (DRDO), and the industry are working in silos with little overlap. We need to look at a model where all three collaborate to meet emerging challenges,” said DRDO Chairman Samir V Kamat.

Speaking at the 15th Air Chief Marshal LM Khatre Memorial Lecture in Bengaluru on Saturday, Kamat added that there is a serious need to focus on capacity-building. “We are one of the highest engineer-producing nations in the world, but a lot of our engineers don’t have the skill to take up R&D work. We have to build real capacity in engineering colleges, where they get hands-on experience in using state-of-the-art equipment and solve research problems, so that when they graduate, they can do cutting-edge work in research. We need to upgrade our infrastructure and pay our professors much higher.”

Kamat also pointed out that India is at least 10-15 years behind most countries in traditional technologies, and with a focus on disruptive technology, the country can leapfrog and be on par with them. Referring to the development of the Advanced Medium Combat Aircraft (AMCA) -- a single-seat, twin-engine combat aircraft for the Indian Air Force and the Indian Navy -- Kamat said it will be delivered by 2028.

Kamat also spoke about India’s growing appetite for risk and highlighted that the Ministry of Defence (MoD) has approved the Technology Development Fund (TDP) to be used for funding

high-risk projects. “TDP will become the equivalent of US’ Defense Advanced Research Projects Agency (DARPA), which funds projects with a failure possibility as high as 80%,” he added.

Stressing the need to improve R&D spending and defence budget, the DRDO chairman stated that India spends a minuscule 0.65% of the GDP in the sector, compared to the US at 2.83% and China at 2.14% of their GDP.

DRDO’s plans include highendurance autonomous vehicles -- indigenous conventional submarines, infantry combat vehicles, robotic soldiers and more -- for the Armed Forces. A light tank is currently in the prototype stage and is expected to be delivered to the Indian Army by 2027

‘Kaveri engine a rookie mistake’

Mentioning that aero engineering is one of the most difficult technologies to build, DRDO Chairman Samir V Kamat said, “We developed the fourth-generation Kaveri engine, which was a credible effort by one of DRDO’s labs. Unfortunately, our engine did not deliver the thrust level required for our Light Combat Aircraft (LCA) - Tejas.

The mistake we made was designing a platform and engine together. That’s never done. You design a platform around the available engine and engine development is a continuous process; that was a rookie mistake. Kamat further reiterated that engine development takes 15-20 years. Meanwhile, to reduce the risk of aero engine development, the DRDO is positively looking at collaborating with OEMs on developing the next-generation highthrust engines. The organisation has been in talks with three unions: Safran from France, Rolls-Royce from the UK and General Electric from the US. Safran and Rolls-Royce have assured that their governments have permitted them that during the collaborative development, the entire intellectual property will rest with India, which will help the country build capacity.

https://www.newindianexpress.com/states/karnataka/2024/Sep/22/india-is-10-15-years-behind-most-countries-in-traditional-technologies-says-drdo-chief

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Sat, 21 Sep 2024

Indian Air Force Successfully Completes Exercise Eastern Bridge VII at Rafo Masirah

The Indian Air Force (IAF) has successfully completed Exercise Eastern Bridge VII with the Royal Air Force of Oman (RAFO) at the RAFO airbase in Masirah. The IAF contingent has returned to India after participating in a comprehensive series of training missions, which featured the participation of MiG-29 and Jaguar aircraft from IAF, F-16 and Hawk from RAFO. This exercise significantly enhanced strategic relations with OMAN besides operational coordination and tactical skills between the two air forces.

Exercise Eastern Bridge VII was aimed to strengthen military cooperation and enhance the interoperability of both forces. The exercise included complex air operations, air-to-air combat drills, and mission scenarios designed to improve strategic and tactical capabilities. The IAF contingent gained valuable insights into RAFO tactics and operational philosophies, enriching combat strategies.

Beyond the tactical exercises, Eastern Bridge VII fostered camaraderie and mutual respect between the IAF and RAFO personnel. Joint briefings, debriefings, and cultural exchanges helped build professional bonds, enhancing mutual understanding and cooperation.

The successful completion of Exercise underscores the commitment of India and Oman towards maintaining regional peace and security. Both forces demonstrated their capability to operate jointly in diverse scenarios, enhancing their preparedness to face emerging security challenges.

The IAF and RAFO look forward to continuing this tradition of joint exercises, aiming for more advanced collaborations in the future.

https://pib.gov.in/PressReleasePage.aspx?PRID=2057325

Press Information Bureau
Government of India

Ministry of Defence

Sat, 21 Sep 2024

Vice Chief of the Air Staff Air Marshal Amar Preet Singh appointed as next Chief of the Air Staff

The Government has appointed Air Marshal Amar Preet Singh, PVSM, AVSM, presently serving as Vice Chief of the Air Staff, as the next Chief of the Air Staff, in the rank of Air Chief Marshal, with effect from the afternoon of September 30, 2024. The present Chief of the Air Staff Air Chief Marshal Vivek Ram Chaudhari, PVSM, AVSM, VM, ADC superannuates on September 30, 2024.

Born on October 27, 1964, Air Marshal Amar Preet Singh was commissioned into the fighter pilot stream of the Indian Air Force in December 1984. During his long and distinguished service spanning nearly 40 years, he has served in a variety of Command, Staff, Instructional and Foreign appointments.

An alumnus of the National Defence Academy, Defence Services Staff College and National Defence College, the Air Officer is a Qualified Flying Instructor and an Experimental Test Pilot with more than 5,000 hours of flying experience on a variety of fixed and rotary wing aircraft.

During his career, the officer has commanded an operational fighter squadron and a frontline air base. As a test pilot, he led the MiG-29 Upgrade Project Management Team at Moscow, Russia. He was also the Project Director (Flight Test) at National Flight Test Centre and was tasked with flight testing of the Light Combat Aircraft, Tejas. He has held important staff appointments of Air Defence Commander at South Western Air Command and Senior Air Staff Officer at Eastern Air Command. Prior to assuming the charge of Vice Chief of the Air Staff, he was the Air Officer Commanding-in-Chief of Central Air Command.

https://pib.gov.in/PressReleasePage.aspx?PRID=2057269

Press Information Bureau
Government of India

Ministry of Defence

Sat, 21 Sep 2024

Naval Commanders' Conference - 2024/2

The second edition of the bi-annual Naval Commanders' Conference 2024 was conducted from 17 - 20 Sep 2024 at Nausena Bhawan, New Delhi. The Conference focused on contemporary security paradigms, and critical analysis to further enhance the combat capability of the Navy and synergise

operations with the other Services. It was also meant to delve into the dynamics of the geostrategic situation of the region in the backdrop of international developments and through intense discussions by the senior hierarchy of the Navy, formulate a future roadmap to consolidate as a First Responder and Preferred Security Partner in the Indian Ocean Region and its steadfast commitment and contributions to the national vision of Aatmanirbharta.

The maiden Conference at the new Nausena Bhawan, New Delhi, commenced with the inaugural address by Adm Dinesh K Tripathi, Chief of the Naval Staff, highlighting the Conference as the single most important apex-level forum of the Indian Navy to discuss, ideate, and find solutions towards ensuring that the Navy remains a Combat Ready, Credible, Cohesive & Future Ready Force. CNS highlighted the flux in the contemporary geo-strategic environment together with emerging disruptive technologies and evolving tactics in the maritime domain. Enumerating the key focus areas for the IN in the short, medium, and long term, CNS reiterated the need to ensure combat readiness of all naval platforms, equipment, weapons, and sensors underpinned by the singular focus on Ordnance Delivery on Target. CNS also impressed upon the need to maintain vigil towards ensuring maritime security & coastal defence, through close liaison, synergy, and functional linkages with the Coast Guard and other maritime agencies. CNS urged the Commands and Staff at Naval Headquarters to continue evolving as a well-balanced multi-dimensional seamlessly networked force ready to respond, protect, and promote our national maritime interests – Anytime, Anywhere, Anyhow!

Hon'ble Raksha Mantri Shri Rajnath Singh addressed and interacted with the Naval Commanders on 19 Sep 24. The RM acknowledged Indian Navy's efforts in maintaining maritime security in IOR and appreciated the key role played by the Indian Navy in protecting the critical commodities transiting through the Gulf of Aden. He shared his thoughts on a multitude of operational and strategic issues with the Naval Commanders, exhorting them to maintain high operational preparedness and readiness to tackle emerging maritime challenges. He also impressed upon the need for enhancing jointness with other Services.

RM also attended a Tech Demo, organised as part of the event. Various agencies, including Indian Navy's premier R&D organisation Weapons & Electronics Systems Engineering Establishment (WESEE) showcased indigenous solutions, including Autonomous Systems, domain awareness, software defined radios and other niche tech initiatives. Chief of Defence Staff General Anil Chauhan, Defence Secretary Shri Giridhar Aramane and other senior civil & military officials were present on the occasion.

The CDS, the COAS and the CAS also interacted with the Naval Commanders during the Conference sharing their assessments of the operational environment, and outlining readiness levels to defend national interests. They also highlighted areas of convergence amongst three Services vis-à-vis the prevailing operational environment, to enable further integration of the Armed Forces to collectively meet India's national security challenges and imperatives.

The Conference included a review of major operational, materiel, infrastructure, logistics and human resource related initiatives, and discussions on contemporary and emerging maritime security challenges and mitigating strategies.

https://pib.gov.in/PressReleasePage.aspx?PRID=2057263

Press Information Bureau
Government of India

Ministry of Defence

Sun, 22 Sep 2024

Curtain Raiser Goa Maritime Symposium (GMS) 2024

Indian Navy will be hosting the fifth edition of Goa Maritime Symposium (GMS -24) at Naval War College, Goa from 23 - 24 Sep 24. Conceptualised and instituted by the Indian Navy in 2016, the GMS is a forum for fostering collaborative thinking, cooperation and mutual understanding between India and key maritime nations of the Indian Ocean Region (IOR). The theme for the event is "Common Maritime Security Challenges in the Indian Ocean Region - Progressing Lines of Efforts to Mitigate Dynamic Threats such as Illegal, Unreported and Unregulated Fishing and other Illegal Maritime Activities". The discussions will dwell on collaborative efforts towards enhancing maritime security in the region.

The symposium will see participation of Naval representatives from 12 Indian Ocean Littoral countries - Bangladesh, Comoros, Indonesia, Madagascar, Malaysia, Maldives, Mauritius, Myanmar, Seychelles, Singapore, Sri Lanka and Thailand. Observers from Kenya and Tanzania will also attend the event.

https://pib.gov.in/PressReleasePage.aspx?PRID=2057578

Press Information Bureau
Government of India

Ministry of Defence

Sun, 22 Sep 2024

First ever Tri-services Future Warfare Course to begin on September 23

First of its kind, a tri services “Future Warfare” course is scheduled to be conducted in New Delhi from 23 - 27 September 2024 under the aegis of Headquarters Integrated Defence Staff. A pioneering initiative by Chief of Defence Staff General Anil Chauhan, this will be a rank agnostic course for Major Generals to Majors and their equivalent level officers from other services. The course intends to acquaint the officers with the operational and technological aspects of modern warfare.

The course will focus on key areas related to future warfare to develop an understanding on the manner in which future wars will manifest in terms of being contact, non-contact, kinetic, non-kinetic, psychological or informational as also the domains where they will be fought, be it cyber,

space or electromagnetic spectrum. It will also throw light on how emerging and disruptive technologies like Artificial Intelligence, Machine Learning, robotics and hypersonics will impact the conduct of warfare.

The need for a Future Warfare Course for Tri Services officers arises from the rapidly evolving nature of modern warfare, driven by technological advancements, changing global dynamics, and emerging threats. Officers must be equipped to navigate this complex landscape, leveraging new technologies, and adapting to innovative tactics. The course will foster jointness, and facilitate the development of a cohesive, futuristic, and tech-savvy force, capable of securing national interests in an increasingly uncertain and competitive environment.

The course has been curated by Headquarters Integrated Defence Staff with the help of veteran and serving subject matter experts. Subsequent courses will build upon the curriculum of this course and be of longer duration with the larger objective of making the Indian Armed Forces "FUTURE READY".

https://pib.gov.in/PressReleasePage.aspx?PRID=2057584

THE ECONOMIC TIMES

Sat, 21 Sep 2024

India-US joint military drills in Rajasthan ends, exercise focused on counterterror operations

The joint military exercise between the armies of India and the US ended after the closing ceremony of the training activity was held at the Mahajan Field Firing Range on Saturday, officials said. The 20th edition of bilateral drills 'Yudh Abhyas-24' was focused on counterterrorism operations in semiurban and semi-desert terrain under the United Nations mandate, they said.

"The exercise emphasised physical fitness, tactical drills, and the exchange of best practices, techniques, and procedures between the two armies, which was clearly demonstrated during the closing ceremony," the defence spokesperson said in a release.

The Indian contingent was represented by Infantry Brigade Headquarters and a battalion group of the Rajput Regiment of the Amogh Division, while the US contingent included the 1-24 Infantry Battalion and elements from the 11th Airborne Division based in Alaska. Over 1,200 personnel participated in this enduring exercise, braving the harsh terrain and climate of the Thar desert, the spokesperson said.

The exercise was conducted in two phases. The first phase involved combat conditioning and tactical training, where both contingents successfully completed joint training to improve their operational synergy. In the second phase, the validation stage, the training was put into practice through a series of joint operations, the spokesperson said.

A command planning exercise was also conducted simultaneously to validate planning, techniques, tactics, and procedures, further enhancing jointmanship and interoperability, the statement said. The validation exercise included a wide array of operations, such as establishing observation posts, road opening drills, cordon and search operations, and house clearing drills, which also involved casualty evacuation via helicopters, it said.

Additionally, airborne and heliborne operations were executed using C-130, ALH and Mi-17 platforms. A live firing exercise was conducted, utilising longrange vectors like PINAKA, HIMARS and M-777 artillery guns to neutralise targets before a final cordon and search operation, demonstrating precision and effectiveness, the spokesperson said.

Major General N S Jakhar, GOC 16 RAPID, Indian Army and Major General Joe Hilbert, Commanding General 11 Airborne Division, US Army addressed the participating troops of both countries at the closing ceremony. The event culminated with a weapon and equipment display, showcasing indigenously manufactured weapon systems under the Government of India's Aatmnirbhar Bharat initiative.

https://economictimes.indiatimes.com/news/defence/india-us-joint-military-drills-in-rajasthan-ends-exercise-focused-on-counterterror-operations/articleshow/113553508.cms

THE ECONOMIC TIMES

Sat, 21 Sep 2024

Future warfare course to delve into impact of AI, disruptive technologies

A rank-agnostic first-ever future warfare course slated to be conducted here from September 23 to 27 will throw light on how emerging and disruptive technologies like AI and hypersonics will impact the conduct of warfare, officials said on Sunday.

A pioneering initiative by Chief of Defence Staff General Anil Chauhan, the course will foster jointness and facilitate development of a "cohesive, futuristic, and tech-savvy force, capable of securing national interests in an increasingly uncertain and competitive environment", the defence ministry said.

It will be for officers, having a rank ranging from a Major to a Major General and their equivalent level officers from other services. The course intends to acquaint officers with the operational and technological aspects of modern warfare.

The first of its kind, tri-Services 'Future Warfare' course is scheduled to be conducted in New Delhi from September 23-27 under the aegis of Headquarters Integrated Defence Staff, the ministry said in a statement.

"The course will focus on key areas related to future warfare to develop an understanding on the manner in which future wars will manifest in terms of being contact, non-contact, kinetic, non-

kinetic, psychological or informational as also the domains where they will be fought, be it cyber, space or electromagnetic spectrum.

"It will also throw light on how emerging and disruptive technologies like Artificial Intelligence, Machine Learning, robotics and hypersonics will impact the conduct of warfare," the statement said. The need for a Future Warfare Course for tri-Services officers arises from the rapidly evolving nature of modern warfare, driven by technological advancements, changing global dynamics, and emerging threats, the ministry said.

"Officers must be equipped to navigate this complex landscape, leveraging The course has been curated by Headquarters Integrated Defence Staff with the help of veteran and serving subject matter experts. Subsequent courses will build upon the curriculum of this course and be of longer duration with the larger objective of making the Indian armed forces 'future-ready', the ministry said. A first-ever future warfare course, which will be attended by the officers of different ranks, is slated to start on September 23, the CDS had said on Thursday. In an interaction session at Bharat Shakti Defence Conclave here, he had also spoken of the broader contours of the planned joint theatre commands envisioned by the government. It's an inaugural course and maybe it will "mature in future", the CDS said.

General Chauhan, however, said, "When we are looking at future warfare, we are not looking at how advance militaries are going to fight in future and then try to copy them." "We are going to say, how we are going to fight in future and how we will lay the roadmap. So, it's a different concept," he said.

https://economictimes.indiatimes.com/news/defence/future-warfare-course-to-delve-into-impact-of-ai-disruptive-technologies/articleshow/113574527.cms

THE ECONOMIC TIMES

Mon, 23 Sep 2024

With eye on China, Defence Minister Rajnath Singh raises financial powers of army commanders

The government has substantially increased the special financial powers of Army commanders tasked with the China border, with defence minister Rajnath Singh approving new annual budgets that will enable them to quickly procure equipment needed for troops deployed in the field.

The Central Command, which oversees the border with China in Uttarakhand that has seen increased PLA activity in recent years, has been given a four-time hike.

The Central Commander can now utilise up to ₹200 crore on urgent items. The Eastern Command, tasked with borders in Sikkim and Arunachal Pradesh, has seen its special financial powers being doubled to ₹400 crore.

The Northern Command, which remains most active and is facing the biggest buildup of Chinese troops across the Ladakh border since 1962, has also got its special financial powers enhanced from ₹400 crore to ₹500 crore, the highest among all commands.

https://economictimes.indiatimes.com/news/defence/with-eye-on-china-defence-minister-rajnath-singh-raises-financial-powers-of-army-commanders/articleshow/113577516.cms

Hindustan Times

Fri, 20 Sep 2024

INS Vikrant back in action after refit, joins Western Fleet

India's first indigenous aircraft carrier, INS Vikrant, is back in action after undergoing a mandatory refit post-commissioning at the Cochin Shipyard Limited and has joined the navy's Western Fleet, officials aware of the matter said on Friday.

It was in refit at the state-owned yard for about six months, the officials said. The development comes at a time when India is negotiating a deal with France for 26 Rafale Marine aircraft for INS Vikrant, which is currently operating the MiG-29K fighters from its deck.

The deal for the twin-engine deck-based French fighters, built for sustained combat operations at sea, is estimated to be worth around ₹50,000 crore.

#INSVikrant, India's indigenous aircraft carrier, joined the @IN_WesternFleet, in a significant enhancement to the maritime power and reach of the #IndianNavy's 'Sword Arm'. The Carrier Battle Group led by @IN_Vikramaditya inducted @IN_R11Vikrant with a multi domain exercise and twin Carrier fighter operations in the Arabian Sea," the Mumbai-based Western Naval Command said in a post on X.

Prime Minister Narendra Modi commissioned the aircraft carrier into the navy two years ago. It was built over 13 years at a cost of ₹20,000 crore.

The 45,000-tonne aircraft carrier has an indigenous content of 76%. It is 262 metres long, houses 15 decks, 2,300 compartments, has enough room for 30 aircraft, a crew of 1,600 and has an endurance of 7,500 nautical miles.

India has been operating aircraft carriers for decades. Vikrant is the fourth aircraft carrier to be operated by the navy after the first INS Vikrant (British origin) from 1961 to 1997, INS Viraat (British origin) from 1987 to 2016 and INS Vikramaditya (Russian-origin) 2013 onwards. It is named after India's first aircraft carrier.

https://www.hindustantimes.com/india-news/ins-vikrant-back-in-action-after-refit-joins-western-fleet-101726839532627.html

The Indian EXPRESS

Mon, 23 Sep 2024

India, US ink pact to set up semiconductor fab for national security, next-gen telecom

India and the US have entered into an agreement to set up a semiconductor fabrication plant to make chips for use in "national security, next generation telecommunications and green energy applications", according to the Indo-US joint fact-sheet.

Both US President Joe Biden and Prime Minister Narendra Modi hailed the "watershed arrangement", the first such project where the US Military has agreed to a partnership on highly valued technology with India.

The fab, focused on "advanced sensing, communication and power electronics", will be enabled by support from the India Semiconductor Mission as well as a strategic technology partnership between Bharat Semi, 3rdiTech, and the US Space Force, the statement said. "It will be established with the objective of manufacturing infrared, gallium nitride and silicon carbide semiconductors," it added.

Drawing a parallel with the Indo-US civil nuclear deal, sources said the fab titled "Shakti", or power, would not only be the first technology partnership between Indian businesses and the US Space Force but also a first in the Quad, a 4-member strategic security forum also comprising Japan and Australia.

They said it will focus on three essential pillars for modern war fighting: advanced sensing, advanced communications and high voltage power electronics. These three areas also have huge growing needs for commercial sectors such as railways, telecom infrastructure and data centres and green energy, sources said.

The infrared, gallium nitride and silicon carbide semiconductors fall under the category known as compound semiconductors. According to sources, India's current imports bill for these semiconductors for national security alone is USD 1 billion a year

Describing the new arrangement as "glass-ceiling broken" in tech diplomacy, a source said: "India and US have signed multiple cooperation focused on critical tech with a special focus on semiconductors — from iCET to commerce MoU to the strategic trade dialogue… This became the first true India-US semiconductor fab project. Other projects in the past have included testing and assembly… but this is raising the game and going into true chip fabrication, the holy grail of semiconductors," the source said.

After this technology partnership, India will join a handful of elite nations with the capability and knowhow to manufacture these types of semiconductors on shore, sources said, adding that India will be a stable trusted supply chain in the most critical of national security technology.

https://indianexpress.com/article/india/india-us-ink-pact-to-set-up-semiconductor-fab-for-national-security-next-gen-telecom-9582867/

THE ECONOMIC TIMES

Sat, 21 Sep 2024

Garuda Aerospace to set up dedicated defence drone facility near Chennai

Drone manufacturer Garuda Aerospace has planned to establish a dedicated Defence Drone facility in the city, giving a fillip to the Centre's 'Make in India' campaign. During his interaction with Union Defence Minister Rajnath Singh in New Delhi recently, Garuda Aerospace Agnishwer Jayaprakash discussed a new dedicated defence drone facility in Chennai with a state-of-the-art drone design, manufacturing and testing facilities as advised by HAL and BEML.

The proposed facility would house the manufacturing capabilities for indigenous drone subsystem development and local manufacturing of critical components such as drone motors, batteries and transmitters. Garuda Aerospace is looking to develop drones with ISR capabilities besides swarm drones, tethered drones and underwater drones, a company statement said on Saturday.

Commenting on the interaction with the Defence Minister, company founder CEO Agnishwer Jayaprakash said, "I had the privilege of meeting Defence Minister Rajnath Singh. Garuda Aerospace's plan of Make in India for the world was also greatly appreciated by the Defence Minister, who gave his complete support to expand Garuda's functions to enable Aatmanirbhar Bharat."

Jayaprakash also discussed the recent partnerships forged with Israel headquartered Agrowing, and Greece-based Spirit Aeronautics. "The interaction emphasized the crucial role of defense drone technology and the Prime Minister's vision for the world. Garuda Aerospace will be at the forefront of enabling the Prime Minister's and Defence Ministers' vision for its armed forces," he added.

https://economictimes.indiatimes.com/news/defence/garuda-aerospace-to-set-up-dedicated-defence-drone-facility-near-chennai/articleshow/113548543.cms

The EurAsian Times

Sat, 21 Sep 2024

Omnidirectional ‘Stealth Threat’ For India! China Tests J-35 Fighter From CNS Liaoning, Could Soon Be Flexing Muscles In IOR

China’s next-generation carrier-borne stealth fighter jet, the J-35, has reportedly commenced trial operations on the aircraft carrier CNS Liaoning. An Indian defense expert has warned that its potential deployment would pose an omnidirectional stealth threat to India’s security.

On September 18, Chinese state media announced the successful landing and takeoff of the J-35 from the aircraft carrier Liaoning, making it the first public acknowledgment of the aircraft's operations on the carrier.

Footage released by China Central Television (CCTV) last week reported key tests aboard the CNS Liaoning, although the video did not show the J-35 taking off or landing.

In the footage, Zhang Naigang, a senior noncommissioned officer on the Liaoning, expressed pride and excitement over the new jet's operations. Zhang, who heads the takeoff section of the aircraft operations support department on the Liaoning, compared the event to the first takeoff of the older J-15 fighter from the ship.

While he refrained from providing specific details about the J-35's performance or the trials, his remarks confirmed the jet's initial deployment on the carrier. The J-35, the carrier-based variant of the FC-31 stealth fighter, represents China's bid to modernize its naval air capabilities and shift toward more advanced, fifth-generation aircraft. Rumors of a carrier-based variant of the J-35, also known as the FC-31, have circulated for years. In July 2022, some of the first images of the J-35 carrier prototype appeared online.

Furthermore, in February 2023, a video was released showcasing a young naval pilot preparing for a flight in what appeared to be a new carrier-based jet, further fueling speculation about the J-35's development.

The stealth fighter is expected to replace the current J-15, China's only operational carrier-based fighter, which has been in service for over a decade. The J-15, a fourth-generation aircraft, is known for its heavy weight, which limits its mission capabilities.

In contrast, the J-35 is estimated to be around 22,000 pounds lighter than the J-15, although it is heavier than comparable US naval fighters. The lighter design is expected to enhance the jet's agility, operational range, and payload capacity, potentially boosting China's aircraft carriers' combat effectiveness significantly. The new jet is expected to elevate China's naval power projection and could alter the strategic balance in the Indo-Pacific region.

A Threat For India?

As China progresses with the trial operations of its next-generation carrier-borne fighter jet, the J-35, significant concerns have emerged within Indian defense circles. Indian defense expert and veteran of the Indian Air Force, Vijainder K Thakur, has emphasized the implications of this development, describing it as an "omnidirectional stealth threat" to India's national security.

A critical aspect of Thakur's analysis pertains to the design of the Liaoning itself. Unlike most advanced aircraft carriers, which utilize Electromagnetic Aircraft Launch Systems (EMALS), the Liaoning relies on a ski-jump ramp for launching its aircraft.

He explained, "China's third aircraft carrier, Liaoning, does not feature a catapult or EMALS. This means the FC-31 will undergo trials using ski-jump take-offs, evidence that it has a good power-to-weight ratio, as do the MiG-29K and Rafale-M."

It was initially thought that the next-generation aircraft would operate from the CNS Fujian, China's third aircraft carrier. However, the Fujian has made a significant technological leap by

incorporating an advanced catapult launch system similar to that of the US Navy's new Ford-class carriers. This upgrade allows the Fujian to launch aircraft carrying heavier payloads for its missions.

However, if China can effectively deploy its next-generation carrier-based stealth fighter from the Liaoning and Shandong aircraft carriers, it will greatly strengthen its naval air capabilities in the coming years.

Thakur further highlighted the concerning implications for India, stating, "The bad news for India is not just the fact that within 2-3 years India would likely see the Liaoning sail into the Indian Ocean with scores of stealth fighters, more ominous is the fact that by that time Pakistan would be all set to deploy land-based analogs of this fighter jet, FC-31 Gyrfalcon stealth fighter, customized for use by the PAF."

He expressed hope that, by that time, Hindustan Aeronautics Limited (HAL) would have stabilized production of the LCA Mk-1A, the indigenous Light Combat Aircraft intended to enhance India's air capabilities.

However, as Thakur highlighted, the stealth threat extends beyond China. Earlier this year, Air Chief Marshal Zaheer Ahmed Baber, Chief of Staff of the Pakistan Air Force (PAF), announced the procurement of the Chinese fifth-generation FC-31 Gyrfalcon stealth fighter aircraft.

This development immediately raised considerable apprehension in India, where the domestic initiative to create stealth aircraft has been advancing at a sluggish pace, resulting in doubts regarding its capability to meet deadlines. While India is in negotiations with France to acquire 26 Rafale Marine (Rafale M) fighter jets to replace its aging MiG-29s, the delivery of these jets will take years, as the contract between France and India has yet to be finalized.

The acquisition of the Rafale M jets is seen as a critical step in modernizing India's naval aviation capabilities, enhancing its ability to operate effectively in maritime environments amid increasing regional tensions. However, the delay adds to India's challenges in rapidly modernizing its air fleet, particularly in the face of evolving threats in the region.

To top it all, the Indian Air Force (IAF) is grappling with the challenge of maintaining its fighter squadron strength, especially as its fleet faces the gradual phase-out of older jets, coupled with delays in the ordering and procurement of new aircraft.

On the other hand, China has already mass-produced the J-20 stealth aircraft and deployed it across various operational fronts. The J-20 program has advanced impressively since its inception, with approximately 250 aircraft produced, of which over 200 are currently believed to be in active service.

https://www.eurasiantimes.com/omnidirectional-stealth-threat-for-india/

The Tribune

Sat, 21 Sep 2024

Army holds event to showcase defence technology innovations

Northern Army Commander Lieutenant General MV Suchindra Kumar on Friday inaugurated a symposium in Ladakh to showcase latest technological advancements and innovations in defence and military applications.

Him Tech Symposium 2024, themed 'Harnessing Defence Technology for High Altitude Areas' has been organised by the Army in coordination with the Federation of Indian Chambers of Commerce and Industry (FICCI), a defence official said.

It provides a platform for the Indian Defence Industry to showcase their products, the official said, adding that severe cold conditions, low oxygen levels and low humidity present significant challenges for troops stationed in high altitude areas.

Equipment maintenance and personnel survivability become increasingly difficult in these conditions. Road disruptions caused by avalanches and landslides, along with rugged terrain and adverse weather conditions complicate road and air movement, he said.

The symposium aims to leverage technology to tackle these challenges and enhance combat readiness. This event underscores India's commitment to strengthening its military capabilities with indigenous technology following the principles of 'Atmanirbhar Bharat', the official added.

More than 90 vendors from various parts of India will showcase their products on autonomous systems, green energy, human sustainability, equipment sustenance, waste disposal, communication, sensing and infrastructure development.

The symposium also provided an opportunity to the Indian Defence Industry to interact with the soldiers deployed in high altitude areas, he said.

During the inauguration ceremony, the Him Tech 2024 compendium was unveiled. Senior military officers and dignitaries visited the Expo Stalls set up at Rinchen Auditorium in Leh and interacted with the Indian Defence Manufacturers.

The Army organised a display of ideas and innovations to highlight the advancements and modifications made by its personnel based on the day to day challenges being faced by them and their ingenious solutions. This was a valuable opportunity for Indian defence manufacturers to gain insight into real challenges and requirements, the official said.

The symposium is open to the public from 3 pm Saturday onwards.

HimTech symposium

- Northern Army Commander Lt Gen MV Suchindra Kumar inaugurats symposium in Ladakh to showcase latest technological advancements and innovations in defence and military applications

- Him Tech Symposium 2024, themed ‘Harnessing Defence Technology for High Altitude Areas’ has been organised by the Army in coordination with FICCI

https://www.tribuneindia.com/news/j-k/army-holds-event-to-showcase-defence-technology-innovations/

The Tribune

Mon, 23 Sep 2024

Army using Dhruv helicopters for night operations in Ladakh

Indian Army troops in Ladakh have demonstrated their ability to carry out night operations in high-altitude areas using Indigenous Advanced Light Helicopters (ALH) Dhruv.

These helicopters, manufactured by Hindustan Aeronautics Limited (HAL), are crucial for the Army’s operations in the challenging terrain and extreme weather conditions of Ladakh.

Army personnel Havinder Singh, responsible for maintaining the fleet, said, “My job is to ensure that all the technicians and supervisors under me keep getting continuous training on this helicopter.

Apart from this, many agencies are involved in making this helicopter serviceable. Talking to all of them, and calling their teams here is my job. The most important job here is the flight safety of every technician, and every officer. There is no compromise in flight safety.”

Singh detailed the challenges of preparing helicopters for night operations, particularly during winters when temperatures drop significantly.

“After two months, the temperature will drop to minus 20 to minus 30. In cold weather, when a technician goes to the aircraft, he works on the inspection for 10 minutes and then comes down to warm up before inspecting again.”

Major Ayush Devliyal, a technical supervisor, also highlighted the importance of thorough inspections before a helicopter is cleared for flight.

“When an aircraft has to be prepared, everything is checked very closely. Every team checks their specific systems, and after that, the aircraft is certified by an engineering officer for flying. Once all these checks are successful, it is accepted by a pilot, and then it is taken for operations.”

Pilots also face unique challenges while flying in such difficult conditions. Major Amarendra, a pilot of a Cheetah helicopter, explained the difficulties of night flying in Ladakh.

“At night, your depth perception reduces, so we rely more on our instruments. The winds blow a little strong at night, so we have to take care of those things, especially the turbulent winds.”

https://www.tribuneindia.com/news/army-using-dhruv-helicopters-for-night-operations-in-ladakh/

THE HINDU

Mon, 23 Sep 2024

India needs a ‘National Security Strategy’

- By Tara Kartha, Director, (Research andAnalysis) Centre for LandWarfare Studies (CLAWS), New Delhi

The demand for a national security strategy is again under public discussion as the neighbourhood gets into a flux, old enemies muscle up, and new friends are yet to commit themselves. India’s economic ambitions to be a $4 trillion economy, is also likely to also face strong headwinds as the wars in Ukraine and Gaza continue, dragging down global growth.

The economy is really the key to everything else. After all, everyone wants a slice of the economic pie, from the Ministry of Health to the Ministry of Defence. That means prioritisation within rather scarce resources, and that is the key to national security strategy making.

For such an exercise, one has to first decide what comes under the umbrella term of ‘national security’. The problem is it means different things to different states, at different times.

Interpreting the term

For such an exercise, one has to first decide what comes under the umbrella term of ‘national security’. The problem is it means different things to different states, at different times. For the United States, it once centred around a ‘union of our values and national interests’. That means you can stand up as the most powerful democracy, even while supporting a clutch of dictators for economic gain.

After all, while Joe Biden’s National Security Strategy (NSS) mentions ‘values’ 29 times, it is centred around the need to maintain America’s leadership role. That means money. The U.S. NSS is the starting point for a host of other documents such as the Defence Department’s National Defense Strategy, and, thereafter, the ‘Posture’ document of each service.

Then comes budgeting, where funds are sanctioned by Congress. Here is what else it is. Across administrations, it is part of a power projection exercise, internally and externally. Externally, it is aimed to put the fear of god into such newly rising upstarts as China, and, internally, to project strength and determination to voters. Its public documents, therefore, showcase its capabilities, and sometimes exaggerate it.

The United Kingdom which still sees itself as a global power, used an Integrated Review in 2021 that stressed working together with allies for a global role. It can hardly afford aircraft for its carriers, but it still helps to project oneself as a “European power with global interests”.

For President Emmanuel Macron of France, the 2022 review arose from the break out of the Ukraine war, and a restatement of French nuclear deterrent. It was a political document in a bid for European leadership. It did not quite work, but the point was that it was issued for a specific purpose.

There are no two opinions on the fact that India needs an NSS, that will bring together diverse aspects such as defence, finance, investments and climate change into one coherent whole, and then set a direction for the country. However this exercise needs to be done within the realm of top secrecy for some very good reasons. Consider that it will demand a clear statement of threat.

Now, multi-alignment

Budget speeches make no reference at all to the ‘enemy’ outside or within. Indeed, they hardly even mention defence. While it is accepted that the protection of sovereignty and territorial integrity lies at the heart of national security, every Finance Minister is well aware that a strong economy is also aimed at an ability to retain sovereignty in international relations. Poor nations have to trail after the powerful ones, or form their own groupings.

For India, that was once the Non-Aligned movement. That once ‘core value’ has been jettisoned given the need to defend itself against a belligerent eastern neighbour of highly unequal economic strength, even while not appearing to do so.

Thus, it is “multialignment’, which means making friends with whoever is capable and willing to provide a possible back up in a crisis, and perhaps defence technology. Hence the Quad (Australia, India, Japan and the U.S.), which discusses security bilaterally even while the grouping backs the freedom of the seas. On the other hand is BRICS, a Chinaled economic grouping together with Brazil and Russia, because you are not quite sure of putting all your eggs in one western basket.

Besides, India’s $85 billion trade deficit with Beijing rather complicates things, given its frequent forays into and claims of Indian territory. Imagine how all of this would be described in a public national security document. No amount of good English can hide the fact that we cannot defend against China on our own, or that we have so little to do it with. Neither can we talk glibly about ‘allies’ like the U.K. does. We do not believe in alliances.

From threat prioritisation, the next level is the allocation of tasks to each service and the equipment that it needs to fulfil its mandate. True, defence budgeting is a relatively transparent exercise. However, a ‘strategy’ will need to decide which equipment or service one has to lean towards, and where it falls short. For instance, if the ‘IndoPacific’ is part of a strategy, then a hard exercise has to be on how to quickly upgrade your submarine- and ship-building capabilities.

India’s submarine strength is about a fourth of China’s, while the picture is even worse in ship-building. Neither is the lag in the commissioning of warships something that you would want to advertise. A clever drafter could get round the details, but then without a clear identification of where our priorities and weaknesses lie, it is hardly a worthwhile exercise. Transparency is for the strong and not for those struggling to catch up. That is also why Pakistan’s defence budget is so opaque.

A secret document on the other hand needs to highlight serious weaknesses, not just project ‘can do’ bravery. That is not strategy. That is hopeful optimism. Now, consider what the central message needed for the voting public should be in an open document. The current trajectory of social media opinion demands a fair bit of chest thumping. Some of this is valid.

After all, India is not prone to ‘adventuring’. But when it went to the defence of another country, it delivered results and withdrew speedily unlike global hegemons who got bogged down in places

such as Afghanistan. These are values to be proud of. But neighbours would hardly appreciate one's to rapacious public wants more. It wants a declaration of might and more. This kind of bravado would have the Opposition on your neck.

So, internally, it has little value for political gain. Externally, a written National Security document would hardly allow the dexterous foreign policy flexibility apparent from our careful balancing on the RussiaUkraine and Gaza wars, for instance. Backing democracy strongly in a written NS document would then be an exercise in hypocrisy. The U.S. can be as hypocritical as it pleases. It is a world power. India is not. A full thread running through the economy

In sum, a national security document is an urgent need. It is not just about defence. Linked closely to it are priorities within the economy that will give a direction to industry, to financial institutions, and all the other tentacles that make up the lifeblood pulsing through the economy.

That exercise is generally done piecemeal through various annual reports and surveys. The trick is to integrate it all together and set a direction for the country to reach where it wants to go, and fast. Therefore, the exercise is one best kept close to one's chest, even as directives are issued separately to ministries and others.

The National Security Council Secretariat is more than up to the task. Similar exercises have been done before, though in a voluminous style so beloved of bureaucracy. Here is some advice: keep it simple, keep it short, and keep it specific. And, above all, keep it well under wraps. Your enemies would be dying to know its contents.

https://www.thehindu.com/opinion/lead/india-needs-a-national-security-strategy/article68671193.ece

Hindustan Times

Sun, 22 Sep 2024

France offers full support in nuclear submarines, jet engines and underwater drones to India

The India-France strategic defence partnership is set to take another big step forward with the Emmanuel Macron government ready to discuss and support the construction of nuclear attack submarines, and offer 100% transfer of technology for 110 kilo-Newton thrust aircraft engines and underwater drones with full capabilities to India.

These are among the issues on the agenda of the India-France strategic dialogue between September 30 and October 1 between National Security Advisor Ajit Doval and Macron's diplomatic advisor Emmanuel Bonne in Paris. This is the first bilateral strategic engagement after Macron's visit to India in January.

Doval is also expected to meet Macron during his visit and brief the French President on India's efforts to end the Ukraine conflict. Macron has been totally supportive of Indian efforts to engage

with the Russians to end the war and work together to mitigate its consequences on the Global South.

Doval travelled to Russia this month and briefed Russian President Vladimir Putin on Prime Minister Narendra Modi's conversations with Ukrainian President Volodymyr Zelensky on August 23 on how to end the war.

France and India are already collaborating in new domains of potential future conflicts such as space with Doval signing a letter of intent on military satellites with French Defence Minister Sebastian Lecornu during Macron's visit to India as the chief guest on Republic Day.

The French offer on submarines comes at a time when the Indian Navy has approaching the highest levels of the Modi government on the need to build two nuclear attack submarines for future operations.France has also offered full spectrum autonomous systems to India in air, surface and underwater domain to enhance India's ISR (intelligence, surveillance, and reconnaissance) capabilities and protection of Indian naval assets such as submarines.

Doval will also seek to make progress on an offer made by the Kolkata born Chairman of Safran Engines Ross McInnes to the Modi government when he visited India last week.

Safran, which helped ISRO develop space rocket engines in the 1970s, has offered to jointly design, develop, certify and produce 110 KN engines for future Advanced Medium Combat Aircraft (AMCA) project with 100% TOT including hot engine sections. It has also offered to train Indians in advanced metallurgy. The jointly developed engine will be sovereign property of India, which it can export to third countries without any restrictions, HT learns. Safran has also offered to help India upgrade this fighter jet engine for newer versions of AMCA in the future.

France has long been a trusted supplier of advanced weaponry to India, and the partnership is central to India's strategic autonomy.

While India and France are negotiating for Indian Navy to acquire 26 Rafale-Maritime fighters for India's two aircraft carriers, the French Naval Group will also jointly build three more latest Kalvari class diesel attack submarines for India under Project 75. The Indian Air Force is also looking towards France for more Rafale fighters to up its depleting fighter squadron strength.

While defence and security will be the key aspect of the September 30 dialogue, HT learns that Doval and Bonne will discuss other issues where there is alignment and common interest.

France and India have decided to deepen cooperation in the Indo-Pacific with focus on the Indian Ocean as both countries are resident powers, and the two advisors will also discuss the Middle-East conflict and the targeting of commercial shipping by Houthis in Red Sea, people familiar with the matter said. France has keen interest in the India-Middle-East Economic Corridor and has already appointed a special envoy to support the ambitious project. The situation in Bangladesh and the elections in Sri Lanka will also be topics of discussion under the strategic dialogue umbrella.

https://www.hindustantimes.com/india-news/with-us-military-support-india-to-get-its-first-national-security-fab-101727004516995.html

Press Information Bureau
Government of India

Ministry of Science & Technology

Sat, 21 Sep 2024

MoU Between ARIES & BEL for Space Situational Awareness (SSA)

Image processing techniques, software for data analytics solutions as well as instruments and laboratories will soon be developed for tracking space objects, especially near-Earth objects and artificial satellites, to ensure the safety of satellites and their users. Such a practice of tracking is called Space Situational Awareness (SSA).

Aryabhatta Research Institute of Observational Sciences (ARIES), Nainital, an autonomous Institute under the Department of Science & Technology (DST) Government of India, has signed an MoU with the Navaratna Defence PSU Bharat Electronics Limited (BEL) to collaborate on space technologies, particularly focusing on SSA.

This is a significant step in advancing India's space situational awareness and technological capabilities, in line with the Government of India's 'Atmanirbhar Bharat' and 'Make-in-India' initiatives. SSA is required for predicting, warning and avoiding any potential collisions between objects in space.

As part of the MoU, ARIES and BEL will utilize observations from ARIES's state-of-the-art telescopes such as the 4m International Liquid Mirror Telescope (ILMT) for this purpose. The two organizations will jointly develop image processing techniques and software for data analytics solutions. They will also collaborate on development of instruments and laboratories. Various training workshops will be conducted for capacity building in SSA. ARIES will also share its expertise in space weather.

The MoU was signed at BEL's Ghaziabad Unit by Prof. Dipankar Banerjee, Director, ARIES and Ms. Rashmi Kathuria, GM (SCCS) & Unit Head in the presence of Dr. Brijesh Kumar, Dr. T. S. Kumar and Dr. S. Krishna Prasad from ARIES and senior officers Shri Bhanu Prakash Srivastava, Director (OU), Mr. Anoop Kumar Rai, CS (CRL-GAD) and Mr. Puneet Jain, AGM (Marketing) from BEL.

https://pib.gov.in/PressReleasePage.aspx?PRID=2057335

THE ECONOMIC TIMES

Mon, 23 Sep 2024

China startup's kerosene-powered rocket fails test flight

China's Deep Blue Aerospace said on Sunday its first-of-its-kind reusable kerosene-fuelled rocket, Nebula-1, failed to complete a high-altitude vertical recovery test flight in the country's northern region of Inner Mongolia, crashing at the final stage.

The private rocket startup's spacecraft completed 10 of its 11 tasks, the company said in a statement, with its three thrusters igniting as usual and launching the Nebula-1 high into the sky.

Two of its engines then disengaged, as planned, and the rocket began its descent. But as the Nebula-1 was re-approaching its launch pad, its landing system failed and it touched down too hard, resulting in the rocket's top portion snapping off as it fell to its side and fire damage to its exterior, pictures of the test showed.

Investors and rocket developers have said alternative fuels such as kerosene, methane and liquid oxygen could help slash costs and enable rockets to be launched in a cleaner and more efficient way.

Several private Chinese rocket startups have tested various spacecraft over the past year, aiming to prepare their products for the increasing demand in China's expanding commercial space industry, amid growing competition to form a constellation of satellites as an alternative to Elon Musk's Starlink.

https://economictimes.indiatimes.com/news/science/china-startups-kerosene-powered-rocket-fails-test-flight/articleshow/113582730.cms

THE ECONOMIC TIMES

Sun, 22 Sep 2024

NASA planning to send an artificial 'star' to space. Here's all about the mission

NASA is planning to send an artificial star into space to help scientists solve some of the universe's biggest mysteries. Led by researchers at George Mason University, this $19.5 million mission will allow scientists to calibrate telescopes and more accurately measure the brightness of stars, from those nearby to distant supernova explosions in far-off galaxies. The mission aims to unravel key astrophysical mysteries, including the speed and acceleration of the universe's expansion.

Named after late astronomer Arlo Landolt, known for his influential stellar brightness catalogs from the 1970s to the 1990s, the mission will launch an artificial light source into space by 2029. With a known photon emission rate, this artificial star will be observed alongside real stars,

allowing researchers to create new stellar brightness catalogs. The satellite, equipped with eight lasers, will shine on ground-based optical telescopes to calibrate them for more precise observations. While invisible to the naked eye, the artificial star can be seen through a home telescope.

“This mission focuses on measuring fundamental properties essential to astronomical observations,” said Eliad Peretz, NASA Goddard mission and instrument scientist, and deputy principal investigator of the mission.

“It may change the way we understand the properties of stars, their surface temperatures, and the habitability of exoplanets.”

Orbiting 22,236 miles above Earth, the artificial star will appear as a fixed point to telescopes, matching Earth's rotational speed and remaining stationary over the U.S. during its first year in space.

The National Institute of Standards and Technology (NIST) is developing the satellite’s payload, which will be about the size of a breadbox. Experts hope this mission will lead to breakthroughs in understanding stellar evolution, identifying habitable zones around exoplanets, and refining measurements of dark energy—laying the groundwork for future scientific discoveries.

https://economictimes.indiatimes.com/news/science/nasa-planning-to-send-an-artificial-star-to-space-heres-all-about-the-mission/articleshow/113571497.cms

THE ECONOMIC TIMES

Fri, 20 Sep 2024

ISRO, IN-SPACe & NSIL sign five tech transfer pact with non-governmental entities

Indian Space Research Organisation (ISRO), Indian National Space Promotion and Authorization Centre (IN-SPACe) and NewSpace India Limited (NSIL) signed five Technology Transfer Agreements (TTA) with nongovernmental Entities on Friday. According to a press statement issued by IN-SPACe, with the five TTAs signed, the total number of agreements signed post space reforms stands at 75.

Pawan Goenka, Chairman, IN-SPACe said, "The milestone of achieving 75 TTAs marks a significant step forward in empowering India's space private sector to harness cutting-edge space technologies for not just commercial applications, but also applications beneficial to society."

He further said ISRO, IN-SPACe and NSIL will continue to focus on enabling greater participation, fostering new ventures, and strengthening India's position in the global space ecosystem. The companies that signed the TTAs today were Anabond Ltd, Salvo Industries Pvt Ltd, Micropack Pvt Ltd, and Astra Microwave Products Ltd, stated the release.

The TTAs aim to give private players the opportunity to access the developed technologies available with ISRO, enabling them to use space-related technology for commercial applications in space as well as other sectors such as agriculture, energy, infrastructure, defence, telecommunications, and cybersecurity, added the statement.

https://economictimes.indiatimes.com/news/science/isro-in-space-nsil-sign-five-tech-transfer-pact-with-non-governmental-entities/articleshow/113529628.cms

ThePrint

Fri, 20 Sep 2024

Elon Musk's implant could help the blind see. All about Blindsight that got FDA 'breakthrough device' tag

Elon Musk's controversial brain-computer interface start-up Neuralink has been granted approval from the US Food and Drug Administration (FDA) for its upcoming product Blindsight. The company claims that with this device, permanent blindness, including congenital loss of vision, can be completely reversed.

The FDA approval came under a "breakthrough device" tag, a category usually assigned to medical devices that necessitate human testing. However, despite the claims, Musk, to temper expectations, included a disclaimer when announcing the product, noting that initial results would be similar to low-resolution graphics.

ThePrint explains what this latest breakthrough device is, its potential, and Neuralink's contentious work over the years.

What is Blindsight & how will it work

Blindsight is a brain-computer interface (BCI) device, or a chip, surgically implanted in the brain, that will enable those who are blind to see. It will only work for those who have suffered damage to their optic nerve, but not the visual cortex of the brain which processes imagery and input from the eyes.

The device will enable transmission of signals by bypassing the optic nerve and directly stimulating the visual cortex of the brain to make imagery visible to those without eyesight.

What Neuralink does

Neuralink is a neurotechnology company that develops implantable BCIs. These devices connect the brain and a computer, as their name suggests, and instructions through the computer can be utilised to send electrical signals to the device, and vice-versa.

The device can decode electrical signals from the brain and translate them externally. This means it can create pixelated visuals from someone's dream, or send instructions to the computer, which result in electrical signals stimulating certain nerves resulting in, for instance, a limb motion in

someone who is paralysed. BCIs can be implantable inside the brain, or also be non-invasive—in the form of electrodes attached to the skull.

Neuralink device is placed inside the brain and is implantable through extremely thin probes inserted into the brain robotically. However, the details of the technology are not available to the public.

In 2017, Neuralink began animal trials in live monkeys, pigs, and other mammals, which was promptly followed by multiple allegations of animal abuse from research and welfare advocacy groups in the scientific community. In May 2023, after previous rejections of approvals for human testing, the US FDA approved human clinical trials. In September, Neuralink began human trials among people who have had spinal cord injury and lost the use of all four of their limbs, or had them amputated.

The first person to receive the chip in March of this year demonstrated the ability to move a cursor on a screen with thought, although it was later revealed that 85 percent of the implant, called Telepathy, had detached and his brain had moved. The second person in the trial received the implant last month.

Why Neuralink was investigated by authorities & other controversies

During its animal testing phase in 2017—which Neuralink conducted in academic partnership with University of California-Davis—its experiments included the use of over 25 monkeys, of which, scientific animal welfare groups alleged at least 15 were mistreated.

Allegations from the Physicians Committee for Responsible Medicine, which acts as a watchdog for medical research, included indiscriminate euthanasia, extreme psychological distress, unnecessary suffering and pain, and chronic infections in the animals due to implant surgeries. The group also alleged UC Davis withheld photographic evidence of animal abuse.

In February of 2022, Neuralink stated that the macaque monkeys in the experiments were euthanised after experiments and denied animal abuse.

In December, Neuralink came under investigation by the United States Department of Agricultures (USDA) for animal welfare violations. The US FDA at this time also rejected a 2022 application for human clinical trials due to safety concerns involving the device’s battery as well as damage to the brain tissue when removing the device.

Meanwhile, journalistic outlets published investigations into the work culture inside the company.

A Reuters report quoted Neuralink employees stating that testing in animals was being rushed leading to mistreatment and suffering among animals due to Musk’s demand for quick results. A Wired report quoted former employees and exposed public record details of animal injuries and infections, including paralysis, loss of fingers, and swelling of the brain after implantation of the device. Another report last year from Wired alleged that Neuralink had actively worked to hide details of animal suffering from the public.

In November 2023, lawmakers in the US requested the Securities and Exchange Commission, which investigates market manipulation, to investigate if Neuralink cheated investors by hiding details of animal deaths.

Apart from issues with animal testing, the company also faced strife internally, with many of its founding, high-profile neuroscientists engineers eventually leaving the company. By 2020, five of the eight founding scientists had quit. STAT News reported that Neuralink went head-to-head with its teams over rushed deadlines. A year later, another co-founder and then-president Max Hodak also left the company.

The present state of BCI research globally

BCI research has been around since at least the 1970s, when defence research at UCLA introduced the term BCI. The first devices were implanted into the human brain in the 1990s and worked towards solving basic challenges. In the 2000s, many breakthroughs were made in animals. Monkeys were used by many research groups in various universities to move cursors and play games with joysticks using robotic arms. Researchers have managed to use BCI to stimulate limb movement in individuals with paralysis, synthesize speech and imagery from the brain signals of someone dreaming, provide auditory output for those with speech impairments, and even create visual experiences directly in the brain of a visually impaired person, among other groundbreaking applications.

Stimulating vision in those who became blind later in life through BCI has been happening since the late 1990s. In 2002, visually impaired patients were able to drive a car slowly, albeit the effect lasted only temporarily. The procedure of invasive BCIs still comes with risks owing to the very delicate location of where it is housed—the brain, whose functioning is vital to life. Surgeries to implant BCIs, which are foreign objects, can potentially result in tissue damage, build-up of scar tissue, immune reaction, and more.

What's next with Blindsight

In March of 2024, Musk announced Blindsight and stated that the company was already working on animal trials with monkeys. He said that the imagery obtained by the visual cortex is blurry and is low resolution, but is expected to improve. Phase 1 of human clinical trials will test for safety first over efficacy. Therefore, just like the Telepathy implant, Blindsight will also be implanted in single individuals who will be monitored closely.

https://theprint.in/science/elon-musks-implant-could-help-the-blind-see-all-about-blindsight-that-got-fda-breakthrough-device-tag/2276860/

Sun, 22 Sep 2024

China demonstrates test stand for crewed Moon lander

The China Aerospace Science and Technology Corporation has revealed that the first test firing has taken place at a newly-built highaltitude simulation test stand at a spacecraft testing centre in the Shaanxi Province in Northwest China.

The test stand is a breakthrough in terms of the technologies necessary to simulate high-altitude or low pressure environments, to test out the main deceleration engine of China's crewed lunar landing spacecraft, that has been named Lanyue, which is Chinese for 'Embracing the Moon'.

Rocket engines perform differently depending on the pressure of the atmosphere, which is why there are different designs for the various stages of a rocket, as well as the hardware for aborts, tuned to the expected altitude. The Moon has a wispy and tenuous atmosphere, which is why to test out new rocket engines and evaluate their performance at the Moon, 'high-latitude' test stands are required.

During the course of the test run, the China National Space Administration (CNSA) was able to determine that the developmental engine was compatible with the stand, which uses steam active ejector technology.

The system was developed by the Chinese Academy of Aerospace Propulsion Technology. This steam ejector pump is the largest in the country, and is capable of simulating the high-vacuum conditions for the entire duration of the window of operation of the engine, which is a thousand seconds.

Embracing the Moon

China initiated the crewed landing mission in 2023, and aims to get boots on the Moon by 2030, using brand new hardware. China is developing the Long March-10 heavy lift launch vehicle specifically for crewed missions to the Moon, and demonstrated the propulsion system of the first stage on the rocket earlier in the year.

Apart from the lunar lander, China is also developing a spaceship named Mengzhou which means 'Dream Boat', that is the equivalent of the Command Module on the NASA Apollo missions.

https://www.news9live.com/science/china-demonstrates-test-stand-for-crewed-moon-lander-2702061

THE HINDU

Sat, 21 Sep 2024

ISRO will take all precautions before manned Gaganyaan mission: Somanath

Indian Space Research Organisation (ISRO) Chairman S. Somanath said on Friday (September 20, 2024) that the space agency will take all precautions by carrying out a sufficient number of tests before the manned Gaganyaan mission is launched.

Speaking to reporters on the final day of the Bengaluru Space Expo, Mr. Somanath said that the ISRO does not want a situation like that of the Boeing Starliner spacecraft, which recently returned to Earth without the astronauts.

First uncrewed mission

He said that the ISRO will conduct the first uncrewed mission by the end of this year, followed by three more missions before the manned space flight.

“If all three missions go well then we will have the manned mission. We have not put a very tight timeline. I don’t want to end up like what happened with Boeing. We should be very, very careful, we should be very pessimistic, we should be working in such a manner that it can go wrong. That type of approach is important for us to make sure that the mission finally becomes successful,” Mr. Somanath said.

He added that the launch of the first uncrewed mission will most likely take place by December and that the rocket has already reached ISRO’s spaceport in Sriharikota where final integration will take place. The Gaganyaan project envisages demonstration of human spaceflight capability by launching a crew of three members to an orbit of 400 km for a three-day mission and bringing them back safely to earth by landing in Indian sea waters.

Other projects

The ISRO Chairman also spoke about Chandrayaan-4, Venus Orbiter Mission (VOM), Next Generation Launch Vehicle (NGLV), and the building of the first unit of the Bharatiya Anatriksh Station, which were approved by the Union Cabinet on September 18.

He said that the four projects have been approved by the Union Cabinet with an overall outlay of about ₹22,000 crore, and are part of the vision of the Government. Prime Minister Narendra Modi had announced almost a year ago that when looking forward to 2047, there must be a “long-term mission in space”, he said.

“This would include not just the regular things we do, in terms of application, communication, and remote sensing, but things that will inspire the next generation and create a technological jump in space activities.”

The ISRO chief said the ultimate vision is building a space station by 2035 and having an Indian land on the moon by 2040.

On the VOM, he said that it is an important mission after successfully landing on Mars and the moon. “Venus is our nearest planet and it is more challenging than the Mars mission which we have accomplished because the atmosphere of Venus is hundred times more than that of the Earth,” he said.

Sister planets

He added that the three planets — Venus, Mars and Earth — are sister planets and similar to each other. “While the Earth is habitable, we do not know why Venus and Mars are not. Tomorrow, Earth may become inhabitable due to some reason, so if you don’t study what is happening on these planets, our future generations will not pardon us,” he added. The mission is expected to be accomplished on the opportunity available during March 2028.

https://www.thehindu.com/sci-tech/science/isro-will-take-all-precautions-before-manned-gaganyaan-mission-somanath/article68663474.ece

The Indian EXPRESS

Sun, 22 Sep 2024

How Starlink satellites are 'blinding' astronomers

Elon Musk's Starlink satellites are impeding the work of astronomers, a study published on Wednesday in the journal Astronomy & Astrophysics found.

Currently, the Starlink "constellation" comprises more than 6,300 working satellites orbiting Earth at an altitude of around 550 km. These satellites deliver high-speed internet to places which otherwise would not have access to it.

At the same time, they also create "radio noise", or unintended electromagnetic radiation (UEMR). This is what impedes the work of radio astronomers observing the sky from Earth.

Why radio astronomy matters

Radio astronomy is a branch of astronomy that studies celestial objects at radio frequencies. Unlike optical telescopes that detect visible light, radio telescopes are designed to detect radio waves (which have higher wavelengths and lower frequencies) emitted by objects in space. But just like bright visible light can blind the observer — like the bright headlights of an approaching car — the same can also happen at radio frequencies. This is essentially why radio noise is a problem.

For radio astronomers, observing while a satellite is in its field of view is like trying to see the faintest star visible to the naked eye next to a full Moon, Cees Bassa of the Netherlands Institute for Radio Astronomy (ASTRON) and the lead author of the recent study, told Science Adviser.

Benjamin Winkel, a scientist at the Max Planck Institute for Radio Astronomy who contributed to the study, said the interference is literally "blinding" scientists. "When we say 'blinded' it means your eye collects too much light for you to see anything, you are getting saturated. This is exactly what happens with our radio telescopes," he told DW.

What Starlink does to space communications

Things might get worse. The recent study found that Starlink's second-generation satellites — which currently account for less than a third of the network — emit UEMR at levels 32 times brighter than its first-generation satellites. This is despite Starlink already running into trouble about the UEMR of its first-gen satellites.

"While the generation 1 satellites indeed got dimmer in the last year — so Starlink actually did something to them [to reduce radio leaks] — the new generation unfortunately seem to be brighter again," said Winkel.

Moreover, as launching satellites becomes cheaper, some estimate that as many as 100,000 satellites could be orbiting Earth by 2030. The number was pegged at 11,330 in June 2023 by the United Nations Office for Outer Space Affairs (UNOOSA).

Experts say that these developments signal the need for regulations for satellite operators, just like there exist regulations for radio pollution from ground-based electronic sources like cellphone

towers. “There is no way to make any electrical or electronic apparatus without this kind of leakage… the question always asked is: how much is leaked?” Winkel said. This is what regulations can help minimise.

Currently, astronomers are largely reliant on forging good faith interactions with companies like Starlink, which put satellites into space.

https://indianexpress.com/article/explained/explained-sci-tech/starlink-satellites-elon-musk-radio-astronomy-radiation-9579634/