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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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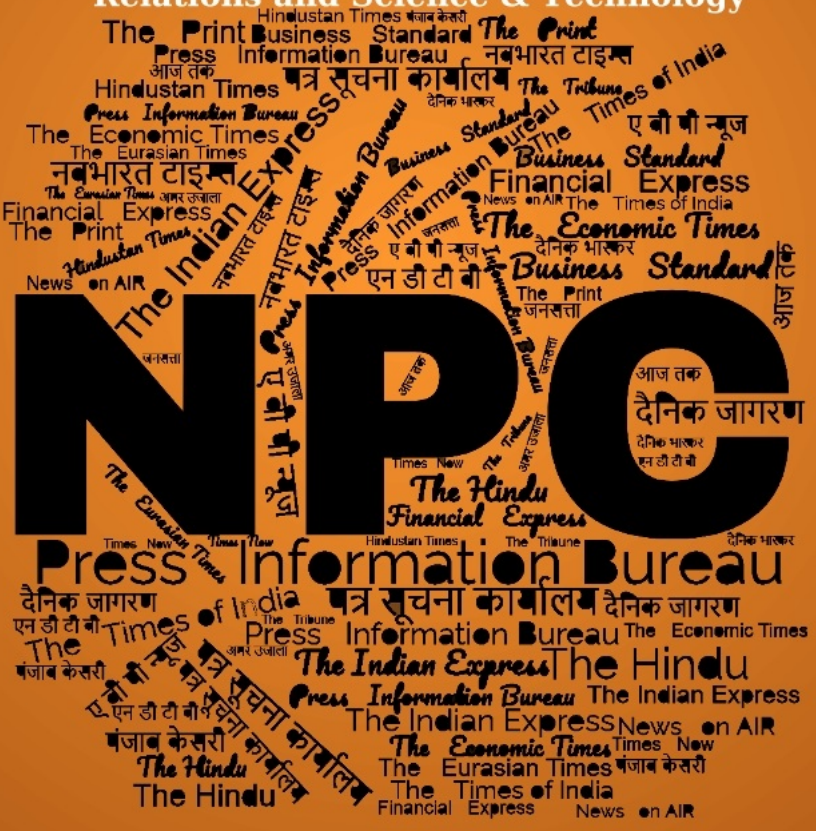

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Ministry of Defence

Mon, 09 Sep 2024

Aatmanirbharta in defence: MoD signs Rs 26,000 crore contract with HAL for 240 AL-31FP Aero Engines for Su-30MKI aircraft

In a major boost to Aatmanirbhar Bharat, Ministry of Defence (MoD) has signed a contract with Hindustan Aeronautics Limited (HAL) for 240 AL-31FP Aero Engines for Su-30MKI aircraft at a cost of over Rs 26,000 crore. The contract was inked by the senior officials of MoD and HAL in the presence of Defence Secretary Shri Giridhar Aramane, Secretary (Defence Production) Shri Sanjeev Kumar and Chief of the Air Staff Air Chief Marshal VR Chaudhari in New Delhi on September 09, 2024.

These aeroengines will be manufactured by the Koraput Division of HAL and are expected to fulfil the need of the Indian Air Force to sustain the operational capability of the Su-30 fleet for the defence preparedness of the country. HAL would supply 30 aero-engines per annum as per the contractual delivery schedule. The supply of all 240 engines would be completed over the period of next eight years.

During the manufacturing, HAL plans to take support from the country's defence manufacturing ecosystem, involving MSMEs and public & private industries. By the end of the delivery programme, HAL would enhance the indigenisation content up to 63% to achieve an average of over 54%. This would also help increase the indigenous content of Repair and Overhaul tasks of the aero-engines.

https://pib.gov.in/PressReleasePage.aspx?PRID=2053088

Press Information Bureau
Government of India

Ministry of Defence

Mon, 09 Sep 2024

CDS Gen Anil Chauhan releases Joint Doctrine for Amphibious Operations

In a landmark event, Chief of Defence Staff General Anil Chauhan released the Joint Doctrine for Amphibious Operations during the Chiefs of Staff Committee (COSC) meeting held on 09 Sep 2024, in New Delhi. The Doctrine is a keystone publication which will provide guidance to the Commanders for conduct of Amphibious Operations in today's complex military environment.

The amphibious capability empowers the Armed Forces to conduct a multitude of operations in the Indian Ocean Region, both during war and peace. These operations are a crucial component of multi-domain operations and serve as the best example of the cohesion and integration amongst the Armed Forces.

Following the release of Joint Doctrine for Cyberspace Operations, the Joint Doctrine for Amphibious Operations is the second Joint Doctrine released this year and it provides due focus on Jointness and Integration of Armed Forces in general and Amphibious Operations in particular.

https://pib.gov.in/PressReleasePage.aspx?PRID=2053135

Press Information Bureau
Government of India

Ministry of Defence

Mon, 09 Sep 2024

Historic Flight by Vice Chiefs of Army, Navy, and Air Force Marks Milestone in Indigenous Defence Capabilities

In a landmark event for India's Defence forces, the Vice Chiefs of Indian Army, Navy and Air Force made history today by flying in the indigenously manufactured Light Combat Aircraft (LCA) Tejas. Vice Chief of Air Staff (VCAS) Air Marshal AP Singh flew the lead fighter and Vice Chief of the Army Staff, Lt Gen NS Raja Subramani as well as Vice Chief of the Naval Staff, Vice Admiral Krishna Swaminathan flew in the Tejas twin seater.

Their joint participation in the exercise demonstrates the growing focus on cross-domain cooperation, with land, sea, and air forces working together to face modern challenges. This unprecedented joint flight, marking the first time when the three services Vice Chiefs have flown in

one occasion is a powerful testament to India's advancing integrated defence capabilities, commitment to self-reliance and showcases not only their leadership but also the seamless integration of India's armed forces.

The flight took place over the skies of Jodhpur wherein Indian Air force has organized the exercise Tarang Shakti 2024, India's first multi-national exercise aimed at enhancing interoperability and operational coordination amongst participating Friendly Foreign Countries (FFCs). With an array of participants, the IAF led exercise aims to foster closer ties that strengthen cooperation with a myriad of capacities. Inclusion of Tejas in this mission underscores the critical role indigenous platforms are playing in modernising India's defence infrastructure.

The flight of the Tejas, a symbol of India's indigenous defence manufacturingprowess, represents a significant moment for the nation's 'Make in India' initiative.Designed by Aeronautical Design Agency (ADA), developed and produced byHindustan Aeronautics Limited (HAL), the Tejas is a state-of-the-art multi-role fighter, designed to meet the needs of India's armed forces while reducing reliance on foreign imports.

This opportunity was also utilised by three Vice Chiefs for interacting with the participating forces both from India and FFCs.

https://pib.gov.in/PressReleasePage.aspx?PRID=2053222

Hindustan Times

Tue, 10 Sep 2024

Army, IAF tie up with Gati Shakti varsity to hone personnel's skills

The army and air force on Monday inked a memorandum of understanding (MoU) with Gati Shakti Vishwavidyalaya — India's first university focused on transportation and logistics — to hone the skills of their personnel in logistics operations, the defence ministry announced.

"The MoU will enable the two services to acquire higher expertise in logistics. It will ensure the development of in-house expertise on various facets of logistics operations and contribute effectively towards the national development plans — PM Gati Shakti National Master Plan 2021 and National Logistics Policy 2022," the ministry said in a statement.

The master plan seeks to provide multimodal connectivity infrastructure to various economic zones and the logistics policy was framed to complement it. The MoU was signed in the presence of defence minister Rajnath Singh and railways minister Ashwini Vaishnaw. The central Gati Shakti University in Vadodara is sponsored by the ministry of railways.

An efficient logistics system plays a key role in quickly mobilising the forces and delivering resources to the right place in less time, the defence minister said.

“Keeping in mind the conditions in which our forces operate, we need a seamless movement of troops, equipment and supplies. The MoU will prove to be very important in terms of how the needs of our forces can be fulfilled through knowledge, innovation and collaboration,” Singh added.

Vaishnaw expressed confidence that the Gati Shakti Vishwavidyalaya will serve as a vital partner in empowering the armed forces with cutting-edge logistics education, research, and innovation.

https://www.hindustantimes.com/india-news/army-iaf-tie-up-with-gati-shakti-varsity-to-hone-personnel-s-skills-101725909583376-amp.html

THE ECONOMIC TIMES

Mon, 09 Sep 2024

Indo-US joint military exercise begins in Rajasthan, focus on counter-terrorism operations

The joint war exercise of the armies of India and the US began on Monday at the Foreign Training Node in Mahajan Field Firing Range in Rajasthan, an official said.

The 20th edition of the Indo-US joint military war exercise will continue till September 22, Defence spokesperson Amitabh Sharma said in a statement.

This war exercise is organised every year since 2004 by the armies of India and the Unites States of America. Sharma said this edition marks a significant increase in the scope and complexity of the joint exercise in terms of military power and equipment.

The Indian military contingent of 600 soldiers is being represented by a battalion of the Rajput Regiment as well as personnel from other armed and military services. The same number of American soldiers are participating in the war exercise.

The aim of this joint exercise is to enhance the joint military capability of both sides to conduct counter-terrorism operations under the seventh chapter of the United Nations (UN) mandate. The exercise will focus on military action in a 'semi-desert' environment.

The tactical exercises to be conducted include joint response to terrorist action, joint planning and joint field training that simulate real-world counter-terrorism missions.

According to the spokesperson, this war exercise will enable both sides to share best practices in tactics, techniques and procedures for conducting joint operations.

https://economictimes.indiatimes.com/news/defence/indo-us-joint-military-exercise-begins-in-rajasthan-focus-on-counter-terrorism-operations/articleshow/113192802.cms

THE ECONOMIC TIMES

Mon, 09 Sep 2024

CSL launches two anti-submarine vessels of Indian Navy

The Cochin Shipyard Limited (CSL) here on Monday launched two antisubmarine warfare shallow water crafts which were manufactured here for the Indian Navy.

The two ships are part of the series of eight antisubmarine warfare shallow water crafts which are under construction in CSL.

After the ceremonial puja, the ships were launched in the presence of the chief guest and Southern Naval Command Chief, Vice Admiral V Srinivas.

The Chairman and Managing Director of CSL, the Directors of CSL, senior officials of the Indian Navy and CSL, among others were present during the occasion.

A contract for building eight vessels was signed between the Ministry of Defence (MoD) and the CSL on April 30, 2019.

"The Mahe Class of Ships will replace the in-service Abhay class ASW Corvettes of the Indian Navy and are designed to undertake anti-submarine operations in coastal waters, Low Intensity Maritime Operations (LIMO) and Mine Laying Operations including subsurface surveillance," the CSL said in a release.

The ships of the series with CSLYard nos BY 526 and BY 527, shall bear the name 'INS MALPE' and 'INS MULKI' upon commissioning into the Indian Navy. The vessels are 78 m long, 11.36 m wide with a draught of about 2.7 m. The displacement is about 900 tons, with a maximum speed of 25 knots and endurance of 1,800 nautical miles.

The ships are designed to fit indigenously developed, state-of-the-art SONARS, for underwater surveillance.

https://economictimes.indiatimes.com/news/defence/csl-launches-two-anti-submarine-vessels-of-indian-navy/articleshow/113198501.cms

THE ECONOMIC TIMES

Mon, 09 Sep 2024

Third INDUS-X summit between US & India to begin on Monday

The third edition of the two-day INDUS-X summit will begin on Monday, during which India and the US will explore ways to strengthen partnerships in defence innovation, according to an official release.

The India-US Defence Acceleration Ecosystem (INDUS-X) Summit, themed: "Harnessing Investment Opportunities to Enhance Cross-Border Defence Innovation Ecosystems," will be held at Stanford University in Palo Alto, California from September 9- 10, said a press release by the US-India Strategic Partnership Forum (USISPF).

It will focus on the critical role of private capital in advancing the defence innovation sector, bringing together leading defence policymakers from Washington and New Delhi.

"The event will facilitate interactions between American and Indian leaders in defence innovation, including startups, venture capitalists, academia, accelerators, and industry professionals, to foster co-production and investment opportunities," according to the press release.

It will include sessions with leaders from the private and the public sectors touching on themes of "strengthening defence and advanced technology partnerships, funding defence innovation, and resilient supply chains".

The summit will be co-hosted by the US-India Strategic Partnership Forum (USISPF) and Stanford University. INDUS-X, which stands for enhanced strategic and defence partnership between India and the US, was launched on June 21 last year by the US Department of Defence and the Indian Ministry of Defence during Prime Minister Narendra Modi's state visit to Washington, DC.

The India-US defence and strategic ties have been on an upswing in the last few years. The two countries have inked key defence and security pacts over the past few years, including the Logistics Exchange Memorandum of Agreement (LEMOA) in 2016 that allows their militaries to use each other's bases for repair and replenishment of supplies.

The two sides also signed COMCASA (Communications Compatibility and Security Agreement) in 2018 which provides for interoperability between the two militaries and also provides for the sale of high-end technology from the US to India.

In October 2020, India and the US sealed the BECA (Basic Exchange and Cooperation Agreement) pact to further boost bilateral defence ties. The pact provides for the sharing of high-end military technology, logistics and geospatial maps between the two countries.

https://economictimes.indiatimes.com/news/defence/third-indus-x-summit-between-us-india-to-begin-on-monday/articleshow/113186535.cms

THE ECONOMIC TIMES

Mon, 09 Sep 2024

Dr D K Sunil appointed Chairman and Managing Director of HAL

Hindustan Aeronautics Ltd on Monday announced the appointment of d Dr D K Sunil as the Chairman & Managing Director of the company. The move was based Ministry of Defence, Department of Defence Production, Government ofIndia Letter. Sunil held additional charge of

Chairman & Managing Director from September 1. His term begin from the date of assumption of charge till April 30, 2026, the date of his superannuation or until further orders of Ministry of Defence. Prior to taking over as Chairman & Managing Director, Sunil was holding the post of Director (Engineering and R&D) of the Company from September 29, 2022. Sunil joined Hindustan Aeronautics Limited (HAL) in 1987 as a Management Trainee, and has 37 years of experience in varied roles in the company contributing significantly to design, production, quality enhancement, and customer support issues.

Under his leadership, new technologies were developed like High Power Radar Power Supply, Voice Activated Control System, Combined Interrogator Transponder which has become new growth areas for the Company. Sunil pioneered partnerships with institutions like IIT Kanpur for datalinks and IIIT Hyderabad for voice recognition technologies. His approach strengthened HAL's position in cutting-edge technologies.

During his tenure in Mission Combat Systems R&D Centre in Bengaluru, he led teams focused on ground breaking projects such as Active ESA Radar, Automatic Flight Control System for Light Combat Helicopter (LCH), and Mission Computers for helicopter and fighter platforms. His immense design expertise spans from the equipment level to system-level projects for both aircraft and helicopters, covering the entire spectrum of design activities at HAL's design centers.

Acknowledged for his expertise, he was nominated to be a member of the DGCA External Expert Committee for the certification of the HindustanDornier 228 Aircraft. Under his, as Director (Engineering and R&D), the Company witnessed a series of achievements and advancements. Notably, under guidance, HAL successfully obtained release of military certification to the HTT 40 aircraft program, secured pivotal projects such as the Indigenous Multi-Role Helicopter (IMRH) for the Indian Air Force (IAF) and Army, as well as the Utility Helicopter Maritime (UHM) for the Indian Navy.

Sunil completed his graduation in Electronics & Communication Engineering from Osmania University, Hyderabad and M. Tech in Aircraft Production Engineering from IIT, Madras. He also completed Ph.D in Electronics Science from University of Hyderabad in 2019.

https://economictimes.indiatimes.com/news/defence/dr-d-k-sunil-appointed-chairman-and-managing-director-of-hal/articleshow/113196144.cms

THE ECONOMIC TIMES

Mon, 09 Sep 2024

Australia holds largest warfare exercise-Kakadu, over 30 nations to take part

Defence personnel and artillery of over thirty nations will partake in Australia's biggest warfare exercise Kakadu. This year's exercise incorporates warships, helicopters and maritime patrol aircraft from attending countries.

Constantly growing in size since its introduction in 1993, Exercise Kakadu 2024 will witness more than three thousand personnel in action. Chief of Navy, Vice Admiral Mark Hammond, AO Royal Australian Navy, greeting the participants said camaraderie will be forged via the activity.

"Kakadu is an important exercise hosted by RAN as it deepens relationships and interoperability between participating armed forces. Australia is a maritime nation which like its neighbours, derives prosperity from access to the sea - backed by a strong Navy and ties." Vice Admiral Hammond said.

Kakadu provides an excellent opportunity for army men to exercise their professionalism in a range of tactical maritime activities. This year the focus would be on interoperability with greater integration of Australia's international partners in all aspects of the exercise," he added.

Building on the success of 2022, this year's exercise will feature a multinational Exercise Control element housed at RAAF Base Darwin to coordinate air, sea and subsurface activities across the full spectrum or maritime warfare from mission planning and constabulary operations up to high end anti-submarine warfare and Air Defence exercises.

"There's no economic security without maritime security," Vice Admiral Hammond said.

"Each of the countries participating in Kakadu is united in this perspective and our shared commitment to keeping our nations safe, secure, and strong," he added.

The theme for this year's exercise is 'Regional Cooperation through Trusted and Proven Partnerships'. The at-sea exercise program is complimented by a harbour phase comprising of briefings, a Fleet Commanders and Senior Leaders' conference, ceremonies, and cultural, social and sporting events.

https://economictimes.indiatimes.com/news/defence/australia-holds-largest-warfare-exercise-kakadu-over-30-nations-to-take-part/articleshow/113189169.cms

THE ECONOMIC TIMES

Mon, 09 Sep 2024

China and Russia to hold joint military drills in Sea of Japan and Sea of Okhotsk this month

China said Monday it would hold joint military drills with Russia this month, as the allies deepen ties that have seen NATO dub Beijing an "enabler" of Moscow's war in Ukraine.

Naval and air forces will take part in the "North-Joint 2024" exercises in the skies and around the Sea of Japan and Sea of Okhotsk, off Russia's coast, China's defence ministry said.

"This exercise aims to deepen the strategic cooperation level between the Chinese and Russian militaries and enhance their ability to jointly deal with security threats," the ministry said.

The two sides will send naval fleets to "relevant sea areas of the Pacific Ocean" for a joint maritime patrol, and China will also participate in Russia's "Ocean2024" strategic exercise, it added. The ministry did not give a specific date when the drills will take place.

In July, the two countries held joint drills in the waters and airspace around Zhanjiang, a city in southern China's Guangdong province.

Those drills came the same week that NATO leaders warned China had "become a decisive enabler" of Russia's invasion of Ukraine, prompting Beijing to warn the US-led military bloc against "provoking confrontation".

Russia and China have ramped up military and economic cooperation in recent years, with both railing against "Western hegemony", particularly what they see as US domination of global affairs. They declared a "no limits" partnership shortly before Moscow launched its offensive in Ukraine in 2022.

Last month, Russian President Vladimir Putin said Russia's economic and trade links with China were "yielding results" as he met Chinese Premier Li Qiang in Moscow.

https://economictimes.indiatimes.com/news/defence/china-and-russia-to-hold-joint-military-drills-in-sea-of-japan-and-sea-of-okhotsk-this-month/articleshow/113183197.cms

Mon, 09 Sep 2024

Pakistan Navy Day: Navigating a China-Driven Naval Arms Race in the Indian Ocean

- By Commander Rahul Verma (Retd)

Pakistan’s Navy Day on September 8 serves as a moment of reflection, not just on the country’s naval achievements, but on the shifting tides of regional power. As Pakistan leans increasingly on China for naval modernisation—symbolised by its acquisition of Hangor-class submarines—the Indian Ocean is becoming a battleground for influence, with India, backed by US defence systems, playing a central role. This escalating arms race raises crucial questions about Pakistan’s long-term strategic choices, as India fortifies its maritime position through cutting-edge technology and strategic alliances.

Pakistan’s Reliance on China: An Asymmetric Partnership

Pakistan’s naval development is intricately tied to China’s strategic ambitions. Over the past decade, China has become Pakistan’s primary defence partner, supplying everything from submarines to surface ships. The recently launched Hangor-class submarines, built as an export variant of the Chinese Type 039B Yuan-class, are designed to boost Pakistan’s anti-submarine and

strike capabilities. These submarines signal Pakistan's intent to counterbalance India's naval superiority, but they also illustrate a deeper reliance on Beijing.

While four of the eight submarines are being constructed in China, the remaining four will be built at Pakistan's Karachi Shipyard & Engineering Works (KS&EW), reflecting some domestic involvement. However, despite this local contribution, the project highlights Pakistan's dependence on Chinese technology and expertise. The Hangor-class submarines may also carry Babur-3 submarine-launched cruise missiles (SLCM), enhancing Pakistan's second-strike capability, though the final configurations of the subsystems remain unclear.

This level of dependency makes Pakistan vulnerable to China's strategic priorities in the region. As Islamabad continues to rely on Chinese technology, it risks sacrificing its strategic autonomy, especially in the face of a rapidly evolving naval landscape in the Indian Ocean.

India's Counterbalance: Advanced Anti-Submarine Warfare

In stark contrast to Pakistan's dependence on China, India is pursuing a dual strategy of indigenous naval development and strengthening ties with the U.S. India's recent test of its supersonic missile-assisted release of torpedo (SMART) system is a case in point. The SMART system is designed to detect and destroy submarines like Pakistan's Hangor-class, delivering torpedoes with precision over vast distances.

India's anti-submarine warfare (ASW) capabilities are further bolstered by its acquisition of advanced systems such as the P-8I Poseidon aircraft, known for its intelligence, surveillance, and reconnaissance (ISR) capabilities, and the MH-60R Seahawk helicopters, which excel in submarine detection. Additionally, India's growing fleet of MQ-9B Reaper drones provides unparalleled ISR coverage in the vast expanse of the Indian Ocean, giving it a significant edge in maritime domain awareness.

These technological advancements, combined with India's robust indigenous defence industry, illustrate a well-rounded approach to maintaining naval superiority. India's ability to develop and acquire these cutting-edge systems showcases its shift from merely reacting to threats, to proactively shaping the strategic environment.

The U.S.-India Strategic Alliance: Expanding Naval Influence

At the heart of India's growing naval strength is its deepening defence relationship with the U.S. India's 2023 inclusion in the Combined Maritime Forces (CMF) has opened the door to greater interoperability with the U.S. Navy and other major maritime powers. As a full member of the CMF, India now plays a leadership role in Combined Task Forces (CTFs), enabling joint missions that address challenges like piracy, illegal fishing, and maritime chokepoint security.

Foundational defence agreements such as the Logistics Exchange Memorandum of Agreement (LEMOA) and Basic Exchange and Cooperation Agreement (BECA) have further strengthened India's strategic position. These agreements allow India access to U.S. intelligence, secure communications, and logistical support, enabling both nations to coordinate naval operations in the Indian Ocean and beyond seamlessly. India's growing leadership within the CMF represents not only a military advantage but also a geopolitical statement, positioning India as a critical counterbalance to China's increasing presence in the region.

Pakistan's Strategy: Asymmetry and the Limits of Deterrence

Faced with India's growing conventional superiority, Pakistan has focused heavily on asymmetric warfare strategies, including sea-based nuclear deterrence. The Babur-3 SLCM, capable of carrying nuclear warheads, is central to Pakistan's "full spectrum deterrence" strategy. This doctrine, which combines tactical nuclear weapons with long-range strike capabilities, is designed to offset India's conventional military advantages.

However, Pakistan's heavy reliance on nuclear deterrence as the backbone of its naval strategy comes with inherent risks. By tying its operational flexibility to its nuclear arsenal, Pakistan risks escalating conflicts at the slightest provocation. Moreover, its dependence on Chinese technology for advanced platforms like the Hangor-class submarines limits its ability to independently project naval power.

The Strategic Implications: Regional Power Dynamics

As Pakistan continues to depend on China, its strategic options become narrower. In contrast, India's self-reliance and its expanding ties with the U.S. provide it with multiple avenues to exert influence in the Indian Ocean. India's access to advanced technology, combined with its growing indigenous production, allows it to maintain a flexible and adaptive naval strategy.

China's deepening involvement with Pakistan, from the Hangor-class submarines to potential joint submarine operations, poses significant challenges to India's dominance in the Indian Ocean. However, India's leadership in regional security forums like the CMF, coupled with its technological edge, makes it a formidable counterbalance to China's ambitions.

A Call for Strategic Realignment

For Pakistan, the long-term risks of dependence on China are clear. As it celebrates Navy Day, Pakistan must reflect on the importance of developing its indigenous naval industry. While China's support provides short-term gains, it binds Pakistan's strategic choices to Beijing's interests, particularly in the Indian Ocean.

To secure its maritime future, Pakistan must invest in building a self-sufficient navy, capable of defending its interests without relying on external suppliers. India's model of combining domestic production with strategic alliances offers a blueprint for success. If Pakistan does not realign its strategy toward greater independence, it risks falling further behind in the regional naval arms race.

The author is an Emerging Technology and Prioritisation Scout for a leading Indian Multi-National Corporation, focusing on advancing force modernisation through innovative technological applications and operational concepts. With 21 years as a Naval Aviator, including a distinguished role in the Indian Navy's Technology Development Acceleration Cell, he brings diverse aviation experiences, from Seaking Pilot to RPAS Mission Commander and Flying Instructor.

https://www.financialexpress.com/business/defence-pakistan-navy-day-navigating-a-china-driven-naval-arms-race-in-the-indian-ocean-3605711/

FINANCIAL EXPRESS
Read to Lead

Mon, 09 Sep 2024

Lockheed Martin's Power Move: Boosting India's Defence with Global Partnerships Ahead of Modi's US Visit!

Lockheed Martin is set to host the 10th edition of its India Suppliers Conference in Bengaluru on September 11-12, 2024. This conference comes just ahead of Prime Minister Narendra Modi's visit to the United States later in the month, marking a key moment in India-US defence relations. Priyank Mallikarjun Kharge, Karnataka's Minister for Information Technology and Biotechnology, will inaugurate the two-day event, along with Christopher W. Hodges, the US Consul General in Chennai, adding diplomatic weight to the proceedings.

The conference aims to enhance India's indigenous defence manufacturing capabilities, with a strong focus on integrating MSMEs (Micro, Small, and Medium Enterprises) into the global supply chain. It aligns with India's "Make in India" and "Make for the World" initiatives, seeking to accelerate defence exports by leveraging innovative solutions for both domestic and international markets.

"We are excited to host the Suppliers Conference for the tenth year running," said Michael Fernandez, Lockheed Martin's India Country Head. Fernandez stressed the company's ongoing commitment to creating a robust defence ecosystem in India by fostering collaborations with both established firms and MSMEs. He also highlighted the opportunity the conference provides for Indian suppliers to engage directly with global partners, thereby strengthening India's defence manufacturing sector.

The event will feature presentations from Lockheed Martin's key business units—Aeronautics, Missiles and Fire Control, Rotary and Mission Systems, and Space. Additionally, Indian suppliers will be recognized for their contributions, and MSMEs will showcase their portfolios, opening up new business opportunities. Representatives from Lockheed Martin's global Tier-1 suppliers and senior leaders from across the company's business areas are expected to attend, facilitating direct interactions with Lockheed's supply chain and business development teams.

Reflecting on Lockheed Martin's long-standing relationship with India, Fernandez reiterated the company's dedication to expanding local collaborations to bolster India's defence manufacturing capabilities. He cited the event as being in perfect alignment with Prime Minister Modi's vision of making India a key player in the global defence market.

The previous edition of the Suppliers Conference, held in 2022, attracted more than 60 Indian companies and hosted over 250 delegates. Numerous business-to-business meetings were conducted during the event, offering Indian companies the chance to engage with global defence giants like GE Aviation, Honeywell, and Raytheon Technologies.

https://www.financialexpress.com/business/defence-lockheed-martins-power-move-boosting-indias-defence-with-global-partnerships-ahead-of-modis-us-visit-3605576/

The EurAsian Times

Tue, 10 Sep 2024

China Targets 2049 To Emerge No.1 Military Power; PLAAF Leaping Ahead To Become World's Largest Air Force

In March this year, in testimony on Capitol Hill, the head of U.S. Indo-Pacific Command (USINDOPACOM), Navy Adm. John C. Aquilino, said that China would "soon have the world's largest air force."

For some years now, the People's Liberation Army Navy (PLAN) has had more warships than the US, although only in numbers and not tonnage, where they have a long way to go. He further added, "The magnitude, scope, and scale of this security challenge cannot be understated."

In its 2023 report on Chinese military power, the Pentagon noted that the PLA Air Force (PLAAF) and PLA Navy (PLAN) combined have over 3,150 operational aircraft other than trainers and uncrewed aircraft systems (UAS). Interestingly, the U.S. Air Force (USAF) has around 4,000, and the US Navy, Marine Corps, and Army also have several thousand.

China is producing combat platforms at an amazing rate. Currently, it makes around 60 J-20 5th Generation fighters a year, and the figure will soon go up to 100. All these are domestic requirements. Comparatively, the US makes around 135 F-35 a year, of which nearly half are foreign partners.

Many American and Indian analysts feel that the J-20 is roughly a 4.5-generation aircraft because the parameters to consider for the 5th generation are not common between the West and China. Notwithstanding, at the current rate of growth, Chinese air power could overtake the USA in the near future, the Admiral has said. It is thus time to look at China's rising air power.

PLAAF Initial Transformation

The PLAAF currently has 400,000 active personnel and nearly 2,700 aircraft. It has come a long way since using the MiG-15s in the Korean War. In the initial decades, it imported or domestically produced Soviet aircraft under license.

Later, when there was a rift between the communist parties of the two giants, China began reverse-engineering the Soviet/Russian aircraft designs. In the 1970s-80s, as part of the USA's Ping-Pong diplomacy, China did manage access to some American military technologies. But things changed after the 1989 Tiananmen Square protests and massacre. The US withdrew. Also, with the end of the Cold War in 1991, the USA had little use of China to combat Russia.

In the late 1990s, the PLAAF began making substantial progress in transitioning to more modern airpower with the acquisition and development of advanced aircraft like the Sukhoi Su-27, Su-30 MKK, Su-35, and their reverse-engineered variants, Shenyang J-11, J-15, and J-16.

In 2004, the PLAAF released the force reform concept “Strategic Air Force,” which aimed to reconstruct the PLAAF into an integrated fighting force capable of both offensive and defensive operations in air and space.

The 2004 reform included changes in doctrine, equipment, training, education, organizational structure, and strategic thinking. Their own designs included the Chengdu J-10 (albeit with initial inputs from the Israel-supported Lavi program) and the Chengdu J-20 and Shenyang J-31 5th Generation fighters. They also locally designed the JF-17 for export.

More Recent Approach & Strategy

By the mid-2000s, PLAAF had grown familiar with precision-guided munitions, aerial refueling, AEW&C aircraft, and networked command & control systems. Some uncertainties remained, including the inability to develop modern aero engines. However, the PLAAF’s strategic orientation continued to evolve, with a focus on expanding its operational capabilities, including the development of new advanced fighters, long-range bombers, large transports, AEW&C, FRA, a variety of helicopters, and UAS.

Today, the PLAAF is recognized as one of the world’s most capable air forces, reflecting modern training programs and a strategic shift towards developing a formidable aerospace force capable of projecting power regionally and even globally. Most importantly, the country has gained the capability to counter US intervention in the Taiwan Strait by positioning quality and quantity fighter assets in Eastern and Southern Theatre Commands.

PLAAF intensified its joint operation effort with the PLAN, building up power projection and expeditionary strike capabilities and carrying out joint patrol missions in the East and South China Seas. PLAAF has developed sophisticated integrated air defense systems capable of providing coverage beyond the coastline and borders. China is the second country in the world and the first in Asia to field an operational stealth aircraft, while the second stealth jet is under advanced development.

Around the same time, the PLAAF introduced PL-10 and PL-15 missiles to improve its air combat capability. Due to improved domestic production, the PLAAF has successfully closed the gap with the West, introducing indigenously developed airframes, composite materials, turbofan engines, advanced avionics, and weapon systems. PLAAF combat pilots fly an average of 100-150 flying hours annually.

Current Holdings Of PLAAF

The PLAAF operates a fleet of nearly 2,700 aircraft, of which around 1,800 are combat aircraft (fighters, attack aircraft, and bombers). China has the second-largest active combat aircraft fleet and the third-largest total aircraft fleet in the world. PLAAF has nearly 1,200 4th and 5th-gen aircraft in more than 25 frontline combat brigades.

The J-10C, J-16, and J-20 are all equipped with AESA radar systems, domestic WS-10 engines, standoff weapons, and long-range air-to-air missiles. PLAAF also made substantial progress with large aircraft design and production, including Xian Y-20 and WS-20 engines. All the old Chengdu J-7 and Shenyang J-8 platforms have been retired.

The main active combat aircraft currently include 580 J-10 (multirole) variants, 245 J-11 (air superiority), 280 J-16 (multirole strike), 300 J-20 (5th generation air superiority), 32 Su-27 (air superiority), 97 Su-30 MKK (multirole), and 24 Su-35. China is accelerating its production of the J-16, J-10, and its sea variants as well.

They have nearly 180 H-6 aircraft (Soviet Tupolev Tu-16), of which around 60 are the H-6K cruise missile-carrying bombers. The H-6K is known in Mainland China as the "God of War."

They have around 320 transport aircraft, including 50 Y-20 (66-ton), 28 AEW&C, and 21 FRA. There are nearly 25 EW aircraft, and the PLA Ground Forces have nearly 300 attack helicopters. China's SAM inventory includes nearly 500 S-300 and its Chinese variant, HQ-9. 130 HQ-22 medium-to-long-range semi-active radar homing/radio-command guidance air defense systems were developed and manufactured in China. They have six S-400 complexes.

The J-16 evolved from the Su-27 and is not in the class of India's Su-30 MKI or the USAF's F-15EX. But its numbers have been going up. Once the J-10C and J-20 get the new Chinese WS-10 and WS-15 series engines, supply chain issues will be sorted out, and dependence on Russia will be reduced.

PLAAF does not have urgency for large tankers until they start going beyond the 1st Island chain. The new Y-20s have allowed for the repurposing of aging Y-7 and Y-8 light and medium transport aircraft to training or other secondary roles. The YY-20A tanker variant will soon be inducted in large numbers. Y-20 AEW, the airborne early warning and control variant, is based on Y-20B and is designated as KJ-3000.

There are nearly 180 Wing Loong class MALE/HALE UAVs and a huge inventory of smaller drones, including drone swarm operational capability. China's recently introduced Xianglong jet-powered UAS, the supersonic WZ-8, and the redesigned GJ-11 stealth Unmanned Combat Air Vehicle (UCAV) will make a huge difference.

Chinese Aerial Missiles

The AAMs (Air-To-Air Missiles) are pushing the performance and payload envelope. China is developing very long-range air-to-air missiles (VLRAAM) that can strike targets from far distances. The latest 5th-generation AAMs would have a greater range and be able to identify smaller, low-flying targets such as UAVs. They will also keep the adversary's large platforms at farther distances.

The PL-10 is an advanced short-range, infrared-homing AAM with a thrust-vectoring solid-propellant rocket with an operational range of 20 km. China claims that the PL-10 provides comparable performance to European ASRAAM and IRIS-T missiles while offering superior kinematic performances than AIM-9X. The PL-12 (60-100 km range) is an active radar-guided beyond-visual-range (BVR) AAM claimed to be comparable to the US AIM-120 AMRAAM and the Russian R-77.

The PL-15 missile with AESA radar and claimed operational range of 200–300 km is considered better than the American AIM-120 AMRAAM. China already has the PL-17 VLRAAM (400 km) appears comparable to Russia's R-37M.

China is developing a more advanced long-range missile, PL-XX or PL-21. It has been exploring dual-mode guidance capabilities, which use both active radar and infrared homing seekers. These capabilities improve target selection and make the missiles more resistant to countermeasures.

The PL-21 uses an active AESA radar and is considered comparable to the American AIM-260 JATM and the Russian R-37M. It seems to be an advanced but smaller variant of PL-17.

PLAAF & The Theatre Commands

PLAAF HQ controls and supports the five Theater Command Air Forces (TCAF). Each TCAF has seven to ten brigades. Each brigade has three to six fighter groups totaling 30-50 aircraft. There are Bases that exercised command and control over units (brigades) in their AOR and conducted joint exercises. Brigades could contain several subordinate flight groups; a flight group has one type of aircraft.

The bomber, transport, and specialized divisions are still to be reorganized into brigades and remain under the control of PLAAF HQ and TCAF headquarters. The PLAAF has over 150 military airfields (air bases) distributed across the theater commands.

China's Aviation Industrial Base

China continues to expand its formidable military-industrial base. China's Aviation Industry Corporation of China (AVIC) has nearly 420,000 employees, compared to India's Hindustan Aeronautics Ltd. (HAL), which has 28,000.

AVIC has 100 subsidiaries and 27 listed companies. Two Chinese defense Companies are in the global top 10, and four are in the top 25. China's centralized control allows for leveraging resources across industry, academia, finance, and research organizations with the end goal of strengthening the PLA and increasing China's "comprehensive national power."

China also uses diaspora and cyber means to acquire technologies. It often buys critical technology industries abroad or enrolls its own scholars there.

Global Implications

China has a well-laid-out and openly articulated game plan. By 2025, China wants to master most leading-edge defense technologies. By 2027, if they decide to take that geopolitical risk, they want the capability to invade Taiwan. By 2035, they want to have a world-class PLA competing with the US Armed Forces as a peer. By 2049, they want to surpass the USA as the No.1 global power.

PLAAF, PLAN, and Space capability are central to this ambition. Key technologies include stealth, counter-stealth, counter-space, hypersonic, autonomous systems, anti-drone, and directed energy. The CCP will leverage its Military-Civil Fusion. The PLA still enjoys good year-on-year budget growth, with a 7.2% increase in 2024 alone. The rising Chinese air power has already shifted the balance. Unlike Russia in the past, China is in direct competition with the US and desires to surpass it one day.

The combined USAF inventory of F-22 and F-35 low-observable aircraft will remain substantially larger for now, but Beijing plans to have 1,000 J-20s by 2035. China is likely to unveil the new, low-observable bomber, the H-20, in 2025, with a "flying wing" design like the B-2.

PLAAF already has 50 Y-20s and 20 Il-76s in service, with more of the former in construction. They have six Airborne Brigades capable of launching aerial assaults with nearly 11,000 troops. The significant additional number of YY-20s would improve existing air-to-air refueling assets and global reach.

Greater investment and better WS series high-performance jet engines will actually free them from Russian dependence. The next logical step would be to make large transport and airliner engines. The PL-17 armed fighters can force US FRA to operate at least 1,200 kilometers away from China's coast, which could result in its fighter escorts not having enough fuel to stay on station.

The Chinese plan to use the KJ-2000 AEW&C and ground-based, over-the-horizon radar data to detect and later target adversary platforms using VLRAAM missiles. It is much more important for China to have long-range missiles to thwart the US from coming closer to its mainland from the Pacific bases.

Chinese AAMs are meant to be "AWACS killers." Loss of an FRA or AEW&C could have serious implications for all other aircraft in the mission. Air power remains the most potent means of prosecuting war. It provides long-range precision and flexibility. Modern fighters are omni-role and can thus perform multiple missions in a single sortie.

Aerial refueling has extended the ranges. The AEW&C provides cover deep in enemy territory. For a long time, it has been clear that dominance in the air is necessary for winning ground or sea wars.

Fighter aircraft remain the most potent platform for both offensive and defensive operations. While many are predicting the future to be unmanned, practically all the fifth—and sixth-generation fighters that will see the world through this century are evolving as manned fighters. The recently released National Defence Strategy suggests that abundant with cash, China's conventional power is growing more rapidly than that of Russia. Weakened Russia means greater access to its military technology for China.

US Secretary of the Air Force Frank Kendall said aptly, "We are in a race for military technological superiority with a capable pacing challenge (from China). Our cushion is gone. We are out of time." But it must be remembered that China's combat exposure and that of international exercises is very low. India is one of the most threatened nations in the world. It has two nuclear weapon-possessing neighbors.

For India, both the numbers and capability gap with China are continuing to build. IAF continues to be at a near-all-time low in the number of fighter squadrons. Considering its continental size and threat in IOR, India needs many for AEW&C and FRA. The militaries are facing eyeball to eyeball. The J-20s are now sitting across the Himalayas at Hotan and Shigatse. India must accelerate the LCA Mk2 and AMCA programs, even if it means pumping more money.

If necessary, buy some interim fighters, including a 5th-generation one. India's weapon inventories have to go up. Supply chains have to be secured through indigenous production. The two-front threat is real. India must act immediately, lest it become too late, even if it means substantially increasing the defense budget.

https://www.eurasiantimes.com/china-targets-2049-to-emerge-no-1-military/

THE ECONOMIC TIMES

Mon, 09 Sep 2024

Chandrayaan-3's Vikram lander detects strange tremors on moon: A first in lunar discovery

India's Chandrayaan-3 mission has detected over 250 seismic signals in the Moon's south polar region, including at least 50 distinct ones that are not linked to the rover's movement or the operation of other instruments, suggesting the potential existence of Moonquakes.

This marks the first time seismic data has been collected from the Moon's southern polar region, and the first such data recorded anywhere on the lunar surface since the Apollo era.

The Instrument for Lunar Seismic Activity (ILSA) aboard the Vikram lander conducted this experiment at the landing site of 69.37° South and 32.32° East, operating for 190 hours between August 24 and September 4, 2023. ILSA is the first instrument to record ground accelerations from the Moon's south polar region and the first on the lunar surface to employ sensors created using silicon micromachining technology.

The findings from this data have been analyzed and published by a group of researchers from ISRO in the scientific journal ICARUS. The paper written by J John, V Thamarai, Teena Choudhary, MN Srinivasa, Ashwini Jambhalikar, MS Giridhar, Madan Mohan Mehra, Mayank Garg, KV Shila, Krishna Kummari, SP Karantha, Kalpana Arvind, and KV Sriram, all hailing from ISRO's Laboratory for Electro-Optics Systems (LEOS) in Peenya, Bengaluru, captures these findings.

"Of the more than 250 seismic events recorded, approximately 200 signals correlate to known activities involving Pragyan's movements or the operation of scientific instruments, the 50 others do not have any explanation. There needs to be further studies to understand what may have caused these activities," said Sriram, the director of LEOS, in an interview with TOI.

The most extended and relatively significant amplitude records from ILSA correspond to the navigation of the Pragyan rover. The longest continuous signal recorded lasted for 14 minutes. Approximately 60 signals cataloged are linked to Pragyan's movement controlled by ground commands.

The rover, which weighed about 25kg, was driven with motors and moved at a typical speed of 1 cm per second. The dynamics of the rover and the wheel-soil interaction introduced complex ground vibration signals to ILSA.

"As the distance of the rover from ILSA was increased, there had been a systematic reduction in the amplitude of the signal under normal roving conditions. For example, when the rover was away from the lander by around 7m, the average peak to peak amplitude was around 200 µg

(microgravity). This amplitude was halved when the distance became 12m and was one order less when the separation was 40m," the paper reads.

Researchers noted that events categorized as deep or shallow quakes were beyond the targeted objectives and design specifications of ILSA, and they were aware of the low probability of such occurrences during the one lunar day operation.

Still, the data revealed approximately 50 instances where the output amplitude from the instrument was distinctly different from its normal background level.

"From the mission command history, it was confirmed that any activity that can cause ground vibration was not performed during this timeframe," the paper reads.

Researchers classified these as 'uncorrelated events.' Among the 50 uncorrelated events, the maximum peak-to-peak amplitude reached as high as 700 µg in some instances.

"The frequency content in the signals is spread over a wide range up to 50 Hz. The signals discussed here lasted only for a few seconds. Although several distinct signals lasting less than a couple of seconds are also observed, they are not included in the count reported in this paper," the researchers noted.

These findings from Chandrayaan-3's mission represent significant advancements in lunar science, offering new insights into the Moon's seismic activity, particularly in its southern polar region. Further studies are essential to understand the origins of the unexplained seismic events detected.

https://economictimes.indiatimes.com/news/science/chandrayaan-3s-vikram-lander-detects-strange-tremors-on-moon-a-first-in-lunar-discovery/articleshow/113184081.cms

DECCAN HERALD

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Pune's MIT World Peace University sets up Ground Station for satellite reception, radio astronomy

In a big initiative, the MIT World Peace University (MIT-WPU) has established a state-ofthe-art Ground Station at its Pune campus as part of the institution's nano-satellite initiative.

The Ground Station consists of six different antennas designed to receive signals from satellites in Low Earth Orbit (LEO), Medium Earth Orbit (MEO), High Elliptical Orbit (HEO) and Geostationary Earth Orbit (GEO). Specialised dish and horn antennas enable the reception of high-frequency signals, transforming it into a powerful radio astronomy tool and enabling the study of the universe's most minute signals, galaxy mapping, dark matter, and radio imagery of the cosmos.

The Ground Station can receive signals from open-source satellites to collect weather data, as well as telemetry from CubeSats, Nanosats, and Microsats. Students of MIT-WPU's Cosmos Club,

dedicated to nurturing the curiosity and passion of amateur experience, following their acquisition of a HAM (amateur radio) license.

A team of 35 MIT-WPU students is working on the project along with 4 faculty members including Dr Anup Kale, Associate Dean, School of Science & Environmental Studies, and Prof Anagha Karne, Dr Deobrat Singh and Dr Sachin Kulkarni from the Department of Physics under the varsity's School of Science & Environmental Studies.

"This cutting-edge Ground Station embodies a new approach to satellite communication and radio astronomy, offering dual capabilities that set it apart globally. The ability to communicate with satellites on one hand and study emissions from cosmic bodies on the other is a great way to leverage technology and research for multiple purposes," said Prof Dr Milind Pande, Pro Vice Chancellor, MIT-WPU.

According to him, working on this project would serve as a valuable learning experience for MITWPU students and prepare them for careers in astronomy, aerospace and related fields. It is also meant to be a practical stepping stone for them to design and launch a nanosatellite in near future.

"The primary purpose of the Ground Station is to bridge the gap between theoretical knowledge and practical application by providing our students hands-on experience with satellite communication and radio astronomy. The facility will be used for a variety of critical functions, including receiving and analysing data from open-source satellites to support research in fields such as climate science, disaster management, and space exploration. It will also enable study of cosmic emissions, contributing valuable insights into the behaviour of celestial bodies," added Dr Anup Kale, Associate Dean, School of Science & Environmental Studies, MIT-WPU.

Said Ojas Dhumal, a third-year Mechanical Engineering student at MIT-WPU and member of the Cosmos Club, "The facility's control room can simultaneously handle complex tasks of satellite communication (downlink) and cosmic observation. This unique combination is rare. The Ground Station is currently in contact with NOAA and Meteor satellites, receiving data that helps us understand and respond to weather patterns and track environmental changes. It has successfully done reception from the International Space Station several times."

https://www.deccanherald.com/science/punes-mit-world-peace-university-sets-up-ground-station-for-satellite-reception-radio-astronomy-3183802