

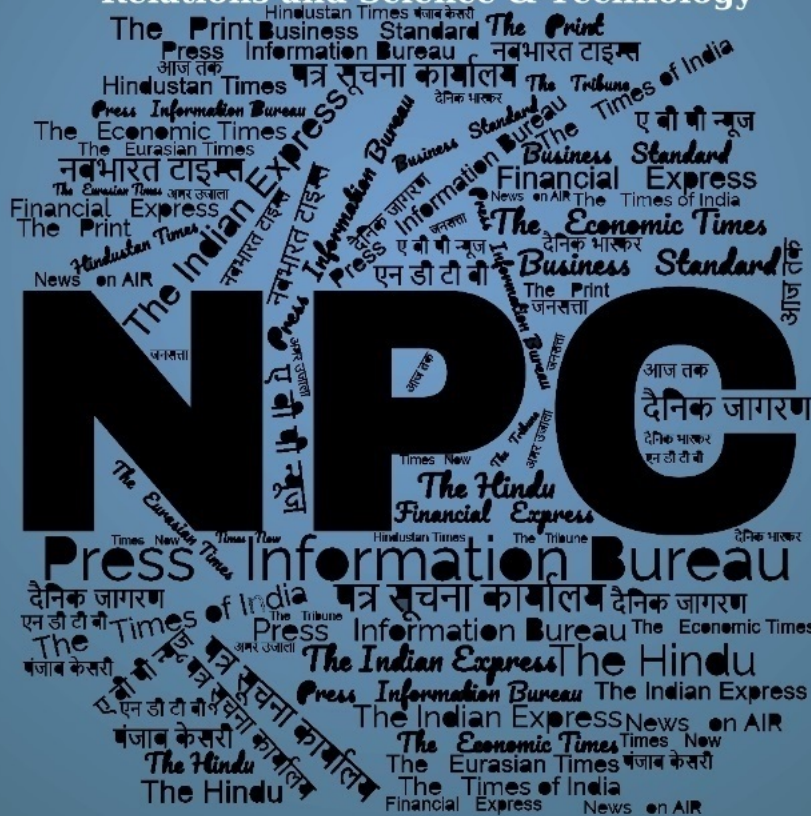
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Press Information Bureau
Government of India

Ministry of Defence

Mon, 10 Jun 2024

Defence Services Technical Staff Course for the tri-services officers commences at Military Institute of Technology, Pune

The flagship Defence Services Technical Staff Course for the tri-services officers commenced on 10 Jun 2024 at Military Institute of Technology, Pune. A total of 166 officers from the tri-services, Indian Coast Guard, and including five officers from friendly foreign countries are participating in the course, which is designed to train mid-career officers, from the Indian Army, Indian Navy, Indian Air Force, Indian Coast Guard and friendly foreign countries, as future techno-warriors and military leaders.

Commandant of MILIT, AVM Vivek Blouria, during his inaugural address to future military leaders underscored the importance of jointness and synergy among services and the criticality of understanding the unique capabilities of each service for war fighting in multi-domain operations. The Commandant also highlighted the need for future techno-warriors to develop a strong understanding of emerging technologies and geopolitical issues impacting India's military and security landscape. This awareness will empower them to make informed decisions and contribute effectively to military strategies including absorption of niche technologies in services.

During the course, officers will be exposed to various emerging technologies, defence strategies, live and simulated drills, seminars, collaborative projects, visits to various forward areas as well as defence R&D and industrial corridors to improve their awareness and understanding on national security strategy, tactical operations and the national efforts at Atmanirbharta in Military Technologies.

In a pioneering initiative towards Jointness by MILIT, Joint Divisions, comprising officers drawn from tri-services who would bring together diverse skill sets and perspectives, have been formed for conduct of Joint Training. This will be the first DSTSC to be trained by the newly formed Tri-Services Joint Training Teams. The initiative is aimed to enhance seamless coordination and integration required for multi-domain operations and creating a Joint Culture.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2023710>

Modi 3.0 must bite the bullet to make military futureready

An aggressive China, along with its expanding military collusiveness with Pakistan in the maritime domain after the land borders, will remain the foremost security threat confronting the Indian defence establishment for the foreseeable future. The new government should bite the bullet on several fronts to ensure India's nuclear deterrence capabilities as well as conventional warfighting machinery can meet this challenge with an integrated futureready military within budgetary constraints in the years ahead, several experts and officials told TOI.

The systemic reforms needed range from a time-bound rollout of the long-pending tri-Service theatre commands and formulation of a hardnosed national security strategy to building a much stronger defenceindustrial base backed by higher investment in R&D, overhaul of DRDO and defence PSUs, and greater private sector collaboration.

or credible deterrence, India requires a more robust nuclear triad – the ability to launch nukes from the land, air and sea. Ballistic missiles, including the over 5,000-km range Agni-5, for instance, need to be inducted in greater numbers. India also needs to bolster its weak underwater leg by inducting more and bigger nuclear-powered submarines armed with long-range nuclear-tipped ballistic missiles (SSBNs in naval parlance). At present, there is only the 6,000-tonne INS Arihant armed with the 750-km range K-15 missiles. Two similar-sized SSBNs, of course, are to be commissioned in the coming months.

Concurrently, the government should also kick off the long-pending projects to build six nuclear-powered attack submarines (SSNs) and a third aircraft carrier since they will take over a decade to roll out. "It cannot be an either-or debate," a top officer said. The political leadership must also "own and push" the three proposed theatre commands, two for the land borders with China and Pakistan, and a maritime one for the Indian Ocean region. "Genuine integration among the Army, Navy and IAF, instead of piecemeal steps, is indispensable," said an official.

A greater thrust, of course, is needed in building military capabilities in space, cyberspace, disruptive technologies and other such arenas. With conflicts like the ongoing Russia-Ukraine one also underscoring the sheer operational utility of long-range precision-strike vectors, the proposed Integrated Rocket Force should also figure high in the plans.

Over the last decade, the NDA govt has rightly pursued the 'Make in India' policy as a strategic imperative. But the country is still far away from manufacturing fifth-generation fighter aircraft, advanced submarines, jet engines and the like. The armed forces continue to grapple with critical operational gaps, ranging from fighters and helicopters to air defence weapons, anti-tank guided missiles and night-fighting capabilities.

Consequently, a concerted push is required to design, develop and manufacture advanced weapon systems and platforms indigenously through a new defence production policy that will eventually help India get rid of its strategically-vulnerable position of being the world's largest arms importer. "The 'strategic partnership (SP)' policy, for one, needs to be scrapped," a senior official said. Not a

single project has till now taken off under the floundering SP policy, which was promulgated in May 2017 to boost indigenous production through tie-ups with foreign armament majors. Connected to all this is also the major structural revamp of DRDO proposed by the Prof K VijayRaghavan-led expert committee. "DRDO should only concentrate on fundamental and applied R&D, leaving systems integration and product management to other agencies and the private sector," he added.

Finally, the tweaking of the short-term recruitment of soldiers under the Agnipath scheme is also necessary, with the retention of Agniveers being increased to around 50% from the present 25% after their four-year service. The new government, of course, is expected to fast-track the \$3.9 billion acquisition of 31 armed MQ-9B Sky Guardian drones from the US and the \$6 billion one for 26 Rafale-M fighters from France, as also the projects to manufacture three additional French Scorpene submarines at Mazagon Docks and the American GE-414 jet engines by Hindustan Aeronautics.

<https://timesofindia.indiatimes.com/india/modi-3-0-must-bite-the-bullet-to-make-military-future-ready/articleshow/110883617.cms>

THE ECONOMIC TIMES

Mon, 10 Jun 2024

Army launches integrated generator monitoring, control system 'Vidyut Rakshak'

A tech-based innovation -- an integrated generator monitoring, protection and control system -- developed by the Indian Army was launched on Monday. 'Vidyut Rakshak', developed by the Army Design Bureau (ADB) was launched here by the Army's Vice Chief Lt Gen Upendra Dwivedi.

Army Chief Gen Manoj Pande, in his message, appreciated the ADB and said, "While the Indian Army is observing the 'Year of Tech Absorption', this milestone success of Vidyut Rakshak from 'innovation to induction' sets precedence and signifies Indian Army's commitment and efforts to leverage technology as a catalyst for transformative change."

Vidyut Rakshak is an Internet of Things-enabled integrated generator monitoring, protection and control system. The Internet of Things (IoT) is a network of interrelated devices that connect and exchange data with other IoT devices and the cloud.

"The innovation is applicable on all existing generators held with the Indian Army, irrespective of their type, make, rating and vintage. Apart from monitoring generator parameters, it enables fault prediction, and prevention and automates manual operation through a user-friendly interface, saving manpower," a senior official said. The launch event on Monday encompassed the roll-out of the first production units of Vidyut Rakshak. Lt Gen Dwivedi remotely switched on generators located in Jammu and Kashmir's Srinagar and viewed the parameters of the generators remotely.

He appreciated the initiatives of ADB in the domain of tech absorption, the official said. During Aero India 2023, an MoU was signed between the Indian Army and Foundation for Innovation and Technology Transfer (FITT), IIT Delhi, for 'Production of Innovations', the Army said.

Through this MoU, Vidyut Rakshak was steered as the first such innovation whose transfer of technology was concluded with a production agency in a formal ceremony held in the presence of Gen Pande during the 'Indian Army Ideas and Innovation Competition' on December 5, 2023, in New Delhi, the official said. Vidyut Rakshak has been developed by Major Rajprasad R S and was displayed recently during the 'Exercise Bharat Shakti' and was witnessed by Prime Minister Narendra Modi, the Army said.

Recently, the Army also secured a patent for another innovation of Major Rajprasad called 'Portable Multi-Target Detonation Device', which has already been inducted in the Indian Army, it said.

<https://economictimes.indiatimes.com/news/defence/army-launches-integrated-generator-monitoring-control-system-vidyut-rakshak/articleshow/110880104.cms>

THE ECONOMIC TIMES

Mon, 10 Jun 2024

US and India strengthen military ties, eye deeper collaboration

Top American and Indian defence officials highlighted the growing significance of the US-India military partnership amidst evolving security challenges in the Indo-Pacific region. The 'Partners in Progress' symposium in Bengaluru featured Assistant Chief of Indian Naval Staff Rear Admiral Nirbhay Bapna, who praised the comprehensive global strategic partnership between the two nations.

According to a TOI report authored by Chethan Kumar, he emphasized their shared commitment to a peaceful and prosperous Indo-Pacific through enhanced information sharing and maritime domain awareness. US Defence Attache to India Rear Admiral Michael Baker also underscored the major defence partnership between the US and India as crucial for global peace and security. The symposium, jointly organized by the Elliott School of International Affairs, George Washington University, and Christ University, Bengaluru, with support from the US Consulate General, Chennai, highlighted the deepening collaboration between the two nations in emerging domains like cybersecurity, space, underwater, and artificial intelligence.

The US and India continue to make substantial progress through joint exercises, defence industrial cooperation, and regular strategic dialogues, reinforcing their commitment to advancing an advanced and comprehensive defence partnership.

US and India Stress on Strong Military Partnership

Top American and Indian defense officials emphasized the growing importance of the US-India military partnership amid evolving security challenges in the Indo-Pacific region. Speaking at the

'Partners in Progress' symposium in Bengaluru, Assistant Chief of Indian Naval Staff Rear Admiral Nirbhay Bapna hailed the comprehensive global strategic partnership between the two democracies.

He highlighted converging interests in ensuring a peaceful and prosperous Indo-Pacific through enhanced information sharing and maritime domain awareness. The symposium, jointly organized by the Elliott School of International Affairs, George Washington University, and Christ University, Bengaluru, with support from the US Consulate General, Chennai, showcased the deepening collaboration between the two nations in emerging domains like cybersecurity, space, underwater, and artificial intelligence.

"At these troubled times when the world is going through struggles and contestations, US and India have emerged as like-minded and trusted partners. The 75 years partnership has today become a comprehensive global strategic partnership," Bapna said.

He added: "...Looking ahead, the partnership is set to deepen further. Both nations are likely to enhance collaboration in emerging domains like cybersecurity, space, underwater, and artificial intelligence.

The evolving security dynamics underscores the importance of a strong Indo-US naval partnership, which is a testimony to the strength of Indo-US strategic relationship." US Defence Attache to India Rear Admiral Michael Baker echoed these sentiments, calling the US-India major defense partnership "a pillar of global peace and security."

He cited substantial progress through joint exercises, defense industrial cooperation, and regular strategic dialogues. "...Our countries are making substantial progress through joint exercises, the reinforcement of defense industrial cooperation, the annual 2+2 ministerial dialogue, and other consultative mechanisms. These efforts contribute to progressing forward an advanced and comprehensive defense partnership, ensuring close coordination between our militaries across all domains. Both countries are vital partners in efforts to ensure that the Indo-Pacific is a region of peace, stability, and growing prosperity and economic inclusion," Baker said.

<https://economictimes.indiatimes.com/news/defence/us-and-india-strengthen-military-ties-eye-deeper-collaboration/articleshow/110877793.cms>



Tue, 11 Jun 2024

Why India needs a third aircraft carrier

Recent media reports indicate that the Indian Navy's long-standing demand for a third aircraft carrier is finally shuffling closer to fruition, with Cochin Shipyard Limited (CSL) set to begin the construction of an add-on Vikrant-class 40,000-odd tonne platform.

Building the Indigenous Aircraft Carrier-2, or IAC-2, albeit with upgrades, modifications and greater local content compared with IAC-1 Vikrant, is also intended to prevent CSL's carrier-building expertise, from lapsing into disuse. The navy remains palpably conscious of not re-

experiencing the 'lost decade' between 1995 and 2005 when Mazagaon Dock Shipbuilder's (MDL) submarine building expertise was allowed to deliberately dissipate.

This costly fumble led to MDL's submarine construction facilities disintegrating, following the unresolved corruption scandal involving the Indian Navy's purchase of four German HDW Type 209/1500 diesel-electric submarines (SSKs). These were thereafter resurrected in 2005 at a high cost, to licence-construct six French Scorpene SSKs, five of which have already been commissioned into Indian Navy service, while the sixth is due for induction by the year-end. Hence, the Navy's keenness on averting such a bloomer with regard to CSL by insisting on a larger carrier of around 65,000 tonne, and settling instead for the 'interim' IAC-2.

Future, concerns

The IAC-2 would supplement INS Vikramaditya, the 46,000 tonne refurbished Russian Kiev-class vessel and the 40,262 tonne short-take off barrier-arrested recovery (STOBAR) Vikrant, fulfilling the navy's enduring requirement for one carrier each for its two seaboard, and another in reserve. The debate over IAC-2 has been plagued by numerous reservations like its astronomical cost of around \$5-6 billion and its operational efficacy in an environment of burgeoning anti-access/area denial (A2/AD) capability honed by China and Pakistan.

The A2/AD is essentially a multi-layered defensive strategy to deter enemy carrier operations. Furthermore, recent advances in cruise missile technology have made it easier and cheaper for countries like China and Pakistan to conduct A2/AD operations. So much so that even the U.S. Navy considered China's evolved A2/AD strategy a serious threat to its fleet, and remained wary of challenging it.

Moreover, within the Indian Navy, opinion was split between operationally pursuing a 'sea denial' strategy, largely by deploying submarines, or alternately seeking a 'sea control' approach via costly and relatively more vulnerable carrier battle groups comprising multiple surface and underwater escorts. Some also questioned the monetary logic of building a new carrier at the cost of inducting additional 'killerhunters' SSKs whose numbers in the Indian Navy had depleted to 16, of which 11 from Russia and Germany were either beyond, or nearing retirement.

These SSKs were eight boats less than the 24 which the Navy was projected to operate by 2030 in accordance with its Maritime Capability Perspective Plan (MCP). Correspondingly, equally critical surface combatants like corvettes, mine-sweepers, destroyers and frigates too were in short supply, as were naval utility helicopters, unmanned aerial vehicles, and other assorted missiles and ordnance. Financial constraints have forced the Indian Navy to revise its goal of operating 200 assorted warships by 2027 in keeping with the MCP.

These fiscal shortages had also reduced the Navy's demand for 12 mine counter-measures to eight and an additional 10 Boeing P-8I Neptune long range maritime multi-mission aircraft, to just six. Meanwhile, the Indian Air Force (IAF) along with the Indian Army was forever competing for a greater share of depreciating annual defence budgets, as it grappled to make good its fighter, helicopter and transport aircraft shortages, alongside other essential equipment.

IAF veterans reasoned that under the prevailing penurious conditions, an aircraft carrier would not only be a 'costly indulgence' but more pertinently, entail fielding a platform vulnerable to formidable A2/AD threats. Other IAF officers believed that SEPECAT Jaguar IM/IS and multi-role

Russian Sukhoi Su-30MKI fighters, fitted with enhanced maritime strike capability and extended strike ranges, could project power more economically and securely than a carrier.

The IAF's maritime Jaguar IM fleet, for instance, is armed with AGM-84L Block II Harpoon missiles and is also being equipped with Israel Aerospace Industries-Elta EL/M-2052/2060 multi-mode active electronically scanned array radar for sea-borne operations.

Upgrading capabilities

And, in early 2020 the IAF had commissioned its first Su-30MKI squadron, armed with the BrahMos-A(Air) supersonic cruise missile at Thanjavur on India's southeast coast to monitor its seacoasts and the wider Indian Ocean Region. Military planners said Su30MKI would enhance the IAF's capability to engage potential maritime targets with pinpoint accuracy.

Other navalists favoured upgrading the military capabilities of the Andaman and Nicobar archipelago, by creating an A2/AD maritime 'exclusive zone' around it to deter, amongst others, the hegemonic Chinese navy. And while the archipelago was undoubtedly 'immovable' it was likely to be cheaper than an aircraft carrier, besides being unsinkable.

<https://www.thehindu.com/opinion/op-ed/why-india-needs-a-third-aircraft-carrier/article68273426.ece>

THE ECONOMIC TIMES

Mon, 10 Jun 2024

Rajnath Singh retains Defence Minister portfolio with major reforms on the horizon, here are some key issues that are expected to be addressed

Senior BJP leader Rajnath Singh will retain his position as Defence Minister, with significant reforms planned for the coming months. Key areas of focus will include promoting exports and domestic defense manufacturing. During his tenure, there has been a notable push for selfreliance in defense production. Under Singh's leadership, the government has restricted imports of various defense items, emphasizing the manufacturing of critical weapons domestically.

As the defence minister since 2019, Singh initiated several path-breaking measures to strengthen India's combat readiness along the border with China, as well as boost the country's defence manufacturing. Under his leadership, the defence ministry pursued an aggressive policy to enhance infrastructure along the frontier region that significantly helped faster military mobilisation in sensitive sectors.

Agnipath Recruitment Scheme Under Scrutiny

The Agnipath scheme, launched in June 2022, recruits young personnel into the armed forces for short-term service. Both male and female candidates aged 17.5 to 21 are enlisted for four years, with a provision to retain 25% for an additional 15 years. Recruits, known as Agniveers, receive a severance package instead of a pension upon completing their service.

The scheme has faced criticism and protests over concerns about job security and long-term career prospects. Senior leaders from BJP's alliance partners, including the Janata Dal (United) and Lok Janshakti Party (Ram Vilas), have called for a review of the scheme. JD(U) leader K C Tyagi stated, "A section of voters has been upset over the Agnipath scheme. Our party wants those shortcomings, which have been questioned by the public, to be discussed in detail and removed." Chirag Paswan from LJP echoed the need for a review

Advancing Theatre Command Reforms

Another significant reform on the agenda is the unification of theatre commands, aiming to integrate the army, navy, and air force into unified theatre commands for enhanced joint operations and efficiency. The InterServices Organisations (Command, Control and Discipline) Act, effective from May 10, 2024, supports this reform by enabling commanders to control service personnel across different branches.

Former Defence Minister Rajnath Singh noted that while the theaterisation process is advancing, full implementation will take years. Focus on Indigenous Military Production Reducing dependency on imported weapons remains a crucial goal. Despite India's increasing military exports, it is still the world's largest arms importer. The Modi government's Atmanirbhar Bharat initiative has driven significant progress in domestic manufacturing, with projects like the Tejas fighter jet and Scorpene submarines. The government plans to continue government-to-government deals and competitive tenders to boost domestic production, with the procurement of additional Scorpene submarines expected to be finalized by the end of 2024.

Managing China Relations

Tensions with China along the Line of Actual Control (LAC) have been high since April 2020. Despite numerous military talks, the situation has not returned to pre-2020 status, and new agreements are necessary for peace and stability along the LAC. Enhancing border infrastructure and bolstering military preparedness are set to be focus areas under Singh's leadership.

Immediate Leadership Decisions

A critical immediate task for the new Defence Minister is appointing a new Army Chief, as the current chief will retire by the end of June. This decision will influence the direction of military reforms and leadership in the coming years.

Boosting Domestic Defence Production

Singh's tenure saw India ramping up maritime prowess in the Indian Ocean region and strengthening combat readiness along the border with China. The focus is expected to continue on boosting domestic defense manufacturing, further enhancing military preparedness, and improving infrastructure along the borders. India's defense exports crossed the Rs 21,000 crore mark for the first time in 2023-24, with a target of Rs 50,000 crore in the next five to six years.

The government aims to reduce dependence on imported military platforms, supporting domestic defense manufacturing. The defence ministry has set a goal of achieving a turnover of USD 25 billion (Rs 1.75 lakh crore) in defense manufacturing in the next five years.

<https://economictimes.indiatimes.com/news/defence/rajnath-singh-to-retain-defence-ministry-under-modi-3-0-here-are-key-issues-that-are-expected-to-be-addressed/articleshow/110875533.cms>

China Aims At 1000 J-20 Fighters By 2035 When India Gets 5th-Gen AMCA; Can IAF Narrow The Gap With PLAAF

India has an ambitious lineup to achieve self-reliance in building indigenous fighter jets. Apart from the variants of Light Combat Aircraft, the Indian defense industry has been given the government's nod to develop the fifth-generation Advanced Medium Combat Aircraft (AMCA) in 2024. However, the fact remains that by the time the AMCA starts flying, China will have fielded 1000 J-20 'Mighty Dragon' 5th-generation jets.

After being the second country in the world to have an operational 5th-generation fighter jet in its fleet, China is already moving to develop 6th-generation fighter jet technologies.

J-20 is a twinjet all-weather stealth 5th-generation fighter aircraft designed by China's Chengdu Aerospace Corporation of the People's Liberation Army Air Force (PLAAF). It took to the skies for the first time on January 11, 2011, and was officially revealed in 2016.

The Mighty Dragons entered service in 2017, and PLAAF already has over 200 fighter jets in its fleet. The goal is to take the number to 400 by 2027 and 1,000 by 2035. China has deployed at least six J-20s less than 150 kilometers (km) from the de facto border with India in the Sikkim region.

The J-20 is a single-seater, multi-role stealth fighter designed to combine both air superiority and precision strike capabilities. Presently, the IAF has its fleet of 36 French-built Rafale combat jets to counter J-20s. Shigatse, where the PLAAF's J-20s have been reportedly deployed, is located less than 290 km from Hasimara air base in West Bengal, where the IAF has based its second squadron of 18 Rafale jets.

China is still struggling with the engines of its fighter jets. However, as the first country in Asia to field an operational stealth aircraft, it will have a lead of nearly one and a half decades to mature its 5th-generation fighter jet capabilities when the Indian AMCA is planned to enter service.

"India is still evolving technologies for its fifth-generation aircraft, the AMCA. India is also still a 'work-in-progress' in technologies related to aero-engines, AESA radars, EW systems, modern weapons, actionable Artificial Intelligence (AI), and other advanced avionics," Air Marshal Anil Chopra (retired), an Indian Air Force (IAF) has written.

Undoubtedly, there has been a clamor in the military experts in India for India to expedite its timeline.

The Cabinet Committee on Security (CCS) sanctioned Rs. 15,000 crores (\$1.9B) to design and develop AMCA only in March 2024. The Aeronautical Development Agency (ADA) under the Defense Research and Development Organisation (DRDO) will be the nodal agency for the

development of the aircraft. The aircraft will be manufactured by state-owned Hindustan Aeronautics Limited (HAL).

The HAL is already working on augmenting its capability to manufacture more LCA Mk1A to meet the IAF order. After that, the work will be done on LCA MK 2. Then, it will be the turn of AMCA.

The ADA has been assertive that the 25-ton twin-engine AMCA will be at par or even superior to other 5th-generation stealth fighters globally when it materializes.

“At current technology levels, going alone will not be a practical option for India. India must hasten the LCA Mk2 and AMCA and get its MUM-T “Loyal Wingman” technology right. Many countries have collaborative routes. Should India join the GCAP or the French-led FCAS program? These are hard calls to make. Collaboration means sharing costs and risks,” Air Marshal Chopra ruminates.

The Choice Between Self-Reliance & Capability

To add to the IAF’s predicament, a large chunk of its fleet comprises third-generation fighter jets, even as its two major adversaries in Asia have been rapidly inducting and deploying newer fighter jets. India’s *bête-noir* Pakistan could possibly acquire a fifth-generation fighter before AMCA.

Turkey announced in 2023 that it is starting negotiations with Pakistan to make it an official partner in combat aircraft development. The culmination of a series of bungling by the Indian defense establishment and top brass of the IAF over the years has resulted in the force staring at two lost decades of technological advancement.

Delayed acquisition and slow development of indigenous fighter jets have resulted in the IAF with dwindling units of aging fighter jets to defend the Indian airspace. As reported by the EurAsian Times, the IAF now has more surface-to-air missile units than fighter jets.

India’s quest for the next generation of fighter jets began almost 15 years ago when it joined hands with Russia to develop the Fifth Generation Fighter Jet (FGFA).

The DRDO has often been criticized for setting up ambitious timelines only to miss them. The Project Director of AMCA, Dr. AK Ghosh, had stated during DefExpo-2022: “Once the project sanction is received, the prototype can be rolled out in three years and the first flight in one to one and half years after that.” However, the IAF received the claim with a dollop of salt.

In November 2022, the Chief of the Air Staff (CAS), Air Chief Marshal VR Chaudhari, advised “prudence.” He recommended foreign tie-ups as a fallback for developing “alternative systems and sensors” in case Indigenous development slips off the timeline.

Following the remarks from the IAF Chief, DRDO Chairman Samir Kamat announced a redone timeline on February 14, 2023. As per it, the first flight of the AMCA “may take seven years, and the induction can be done in ten years from now.” The first flight timeline had already been pushed back from 2027 to 2030, and the induction was slated for 2035.

“Based on their track records and their proclivity for over-projection, there can be little doubt that DRDO and HAL (Hindustan Aeronautics Limited) leadership will be forced to push back timelines and seek performance concessions due to technology shortfalls during the AMCA project,” IAF veteran Vijendra K Thakur wrote in an [article](#) for the EurAsian Times.

An instance of these over-ambitious timelines is the Turkish KAAN fighter jet, whose development began at the same time as the AMCA project. The core group to develop the Indian stealth fighter was formed in 2009 with five defense scientists—Ashish Kumar Ghosh, Krishna Rajendra Neeli, MB Angadi, AK Vinayagam, and Fairoza Naushad. Turkey's Defense Industry Executive Committee (SSIK) decided to develop a next-generation air-superiority fighter in December 2010.

While the Indian project is still on the drawing board, the Turkish Aerospace Industry's aircraft has already undertaken its maiden flight. Thakur adds: "While giving its go-ahead to the project, it is essential that the CCS be aware of the pitfalls and remain alert to the impact of project delays on the combat capability of the IAF. The nation can afford to wait for the AMCA but cannot afford to let its guard down."

The Modi Government 3.0 must maintain a balance between self-reliance or 'Atma-nirbharata' and the capability of the armed forces. The military's lethality and capability should be commensurate with the security challenges faced by the country.

<https://www.eurasiantimes.com/china-aims-at-1000-j-20-fighters-by-2035/>

THE ECONOMIC TIMES

Mon, 10 Jun 2024

Axiscades Technologies to supply drone systems to Indian Army under Rs 100 crore order

Engineering solutions provider Axiscades Technologies on Monday said it will deliver drone systems to the Indian army as part of a Rs 100 crore order. The Man Portable Counter Drone System (MPCDS) has been developed by Axiscades, a company statement said.

"Axiscades Technologies has begun the delivery of advanced counter-drone systems under an order of Rs 100 crore from the Indian Army," it said. The company aims to deliver all drone units to the Army by 2024-end, it said without divulging any further information. MPCDS has the capability to operate on both battery and main power supply. It can cover multiple frequency spectrums, including command, control and navigation. MPCDS can also detect and jam a wide variety of drones within a range of up to 5 kilometres.

Arun Krishnamurthi, the CEO and Managing Director of Axiscades said, "This is the first Counter Drone System being inducted into the Indian Defence forces in the man portable category, and the system is being deployed at multiple locations across various commands in the Indian Army. We aim to continue to innovate and provide advanced security solutions to meet the evolving needs of our armed forces." Bengaluru-based Axiscades is a leading end-to-end engineering and technology solutions provider catering to sectors like aerospace, defence, heavy engineering, automotive, and energy among others.

<https://economictimes.indiatimes.com/news/defence/axiscades-technologies-to-supply-drone-systems-to-indian-army-under-rs-100-crore-order/articleshow/110867126.cms>

PTC Industries partners with leading defence organizations under the DTIS

PTC Industries announced its partnership with leading entities under DTIS scheme in the Indian Defence and Aerospace sector to advance the 'Make in India' initiative. To overcome the challenge of expensive, state-of-the-art testing infrastructure, a Green Field Defence Testing Facility is being established in the Lucknow Node of the UP Defence Industrial Corridor under the DTIS scheme.

This facility, named Advanced Materials (Defence) Testing Foundation is a collaborative effort among key industry players including Hindustan Aeronautics, Bharat Dynamics, Mishra Dhatu Nigam, Yantra India, PTC Industries and Uttar Pradesh Expressways Industrial Development Authority, with the land being provided by the Uttar Pradesh Expressway Industrial Development Authority. The Government of India will fund 75% of the project cost, with the remaining 25% funded by the SPV members, totalling an approximate cost of Rs. 53 crore.

The establishment of this facility, through joint initiatives of these leading defence organizations, will be a significant catalyst for the Indian defence ecosystem, creating state-of-the-art testing capabilities for advanced materials within the country.

This is an important step forward for PTC Industries which is already setting up advanced materials manufacturing capabilities in the country with the building of its Strategic Materials Technology Complex in Lucknow. This Defence Materials testing facility will help to further substantiate the integrity and reliability of advanced materials being manufactured by PTC, ensuring superior quality and compliance with stringent defence standards for Titanium and Super Alloys.

https://www.business-standard.com/markets/capital-market-news/ptc-industries-partners-with-leading-defence-organizations-under-the-dtis-124061000891_1.html



Explosive Truth: India's Ammunition Boom Cuts Dependence On Imports But Focus On Safety 'Top Priority'

In December 2023, a devastating explosion shook the Economic Explosives Limited (EEL) unit, a subsidiary of Solar Industries known for manufacturing military-grade explosives. Located in Bazargaon, Nagpur, the blast on December 17 claimed the lives of nine workers, sending shockwaves through the community and beyond.

This tragic incident served as a grim reminder of the immense power and inherent risks that lurk within the ammunition industry. It underscored the critical importance of stringent regulations and the unwavering commitment to implementing robust safety protocols – a lapse that can have catastrophic consequences.

Ammunition Storage Challenges

Like a ticking time bomb, ammunition's effective lifespan is just two decades. While efforts can extend its lifespan to a maximum of 40 years, the challenges of storage and disposal remain daunting.

“Depending on the type of ammunition, generally, the storage temperature ranges from -40 to +50 degrees Celsius. Maintaining the appropriate ambient temperature and controlling humidity are crucial, as these factors play a significant role.

The environment must adhere to the specified temperature and humidity levels indicated for the ammunition to prevent malfunctions or decay of chemicals due to aging. Even instructions for stacking ammunition boxes are typically clearly mentioned,” explained Dilip Gondnale, currently a Senior Advisor and Chairman of DND Enterprises Private Limited, discussing the reasons for accidents.

Gondnale brings valuable expertise from his extensive tenure in various leadership roles within the Ordnance Factory Board, including CEO positions at Ordnance Factory Ambajhari in Nagpur, Gun & Shell Factory in Cossipore, Kolkata, and Rifle Factory Ishapore in North 24 Parganas, West Bengal.

An ammunition or cartridge box consists of an inner container and an outer package. Typically, two shells packed in laminated paper containers are further packed in wooden or steel boxes with suitable packing fitments to ensure a snug fit.

According to Gondnale, ordnance factories have specialized storage facilities called ‘magazines’ dedicated to housing ammunition. These magazines mandate stringent control over environmental factors like temperature, humidity, pressure man limit, etc.

Crucially, they are situated at a safe remove from the main ammunition production plants. Gondnale cited the example of Pune's Ammunition Factory Khadaki, whose magazine depot is located in the distant town of Dighi, ensuring ample separation between the storage site and the factory itself.

Additional Ammo Storage & Disposal Challenges

Safety hazards: The presence of stores of conventional ammunition and explosives is a hazard to communities that live and work in or near them. Major explosions can and do occur due to factors such as fire, human error, lightning strikes, instability of propellants or explosives, or sabotage.

Risk of loss and diversion: Many of the problems relating to ammunition stocks are essentially the same as for weapons stockpiles. Vast quantities of ammunition are held by armed forces, police, and other state bodies, as well as by authorized/unauthorized private organizations or individuals. Ammunition stocks are vulnerable to loss through capture, theft, corruption, or neglect.

Problems of safe disposal and destruction of ammunition: Destruction and other safe disposal of excessive, surplus, insecure, or unsafe ammunition stocks. Safe and effective disposal and destruction of ammunition is a much more challenging technical task than it is for most weapons due to the presence of explosives, toxic materials, or propellants.

Thus disposal of Small arms and light weapons (SALW) ammunition is a distinctive task area, closer to that of other conventional ammunition and explosives than to disposal of small arms and light weapons themselves.

Ammunition Boom In India

Historically reliant on imports, India has undergone a remarkable transformation in recent years.

Munitions India Limited and Yantra India Limited, which were formed from the former Ordnance Factory Board, along with Defense Public Sector Undertakings (DPSUs) like Bharat Dynamics Limited (BDL) and Bharat Electronics Limited (BEL), possess the oldest and largest industrial setups for ammunition manufacturing.

Since the liberalization of the defense sector in 2001 and subsequent amendments in 2006, significant development has occurred in the private industry over the past decade and the country has witnessed a surge in domestic ammunition production.

In addition to the corporatized Ordnance factories, several private sector players have entered the field in recent years, establishing new ammunition plants across the country. Notable companies include Bharat Forge, Adani, L&T MBDA Missile Systems, Blue Horizons Strategic Engineering (BHSEL), and SMPP. The Indian private industry is eager to support the Armed forces' requirements and the Make in India initiative.

As a result, India has significantly ramped up domestic production of arms and ammunition in recent years and is now aiming to secure a substantial portion of the global arms market.

Reports indicate that India will no longer need to import ammunition from the next financial year, having found domestic suppliers for approximately 150 out of the 175 types it uses. Currently, the Indian army spends between ₹6,000 and 8,000 crore annually (\$750M to \$1B) on ammunition, all of which will now be sourced domestically.

Maj Gen VK Sharma, ADG (Procurement) of the Indian Army, stated last month, "As far as world demand is concerned, a market worth over \$30 billion is available. At present, not even 1% is coming from Indian sources. We have the capacity to reach 5-10% in the next 4-5 years and maybe 25-30% in the future."

According to a report by Skyquest titled 'Global Ammunition Market,' the global ammunition market was valued at USD 55.16 billion in 2022 and is projected to grow from \$58.25 billion in 2023 to \$90.07 billion by 2031 at a CAGR of 5.60% during the forecast period (2024-2031).

As the Indian defense industry continues to develop its defense products, including ammunition, there will be significant export potential. The government has ambitious defense production and export targets, aiming for an annual defense production target of ₹3 lakh crore and defense exports worth ₹50,000 crores (\$6.2B) by 2028-29.

But what about the safety and security aspects of handling and storing ammunition?

Strengthening The Regulatory Framework

The Nagpur blast highlighted the urgent need for robust regulation and oversight. “An inquiry is underway regarding the accident at EEL. Have you heard any updates on the report of the Solar Industries accident? Two committees were formed, one at the state level and one at the center, but no reports have been released yet”, asked a defense expert closely monitoring the incident, who wishes to remain anonymous.

Notably, the Nagpur Solar Industries blast happened in one of the explosives sector’s hubs. Around a dozen explosives makers are located on the Nagpur-Amravati highway.

According to a TOI report published after the accident, the Petroleum and Explosives Safety Organization (PESO) is facing a lack of manpower. The Gondkhairi unit on the Amravati Road (which covers the local units, including SIIL) had only 4 officers who could perform inspections.

PESO is supposed to conduct physical inspections at least once a year for all major establishments. However, inspecting these units is a labor-intensive process that takes at least a month to complete before a report can be prepared. Each individual license counts as one unit, and companies often have multiple licenses for different sections on their premises, covering both the petroleum and explosive industries.

Ordnance factories fall under the Centre for Fire Explosive and Environment Safety (CFEES), a unit of the Defence Research and Development Organisation (DRDO). However, the private sector is regulated by PESO, which is part of the Ministry of Commerce.

Gondnale explained that if the PESO faces staff shortages, private ammunition manufacturers have the option to obtain certification from an alternative agency – CFEES. He stated that CFEES may carry out the audit and provide the necessary certifications to private players should they approach the organization for it.

A Barcode-Based System

To achieve self-sufficiency in defense, a country needs not only a supply of weapons but also an adequate stockpile of ammunition. Recently, in February 2024, Adani Defence unveiled South Asia’s largest ammunition and missiles complex in Kanpur, Uttar Pradesh, spread over 500 acres. It will produce small, medium, and large caliber ammunition for the armed forces, paramilitary forces, and police.

Clearly, with private player contributions along with OFB, the production in the country is growing. What measures can be taken to ensure safety during ammunition production and storage?

Experts like Gondnale advocate for a comprehensive audit of ammunition production units, storage facilities, procedures, and security protocols.

“First, we require an audit of all types of ammunition and the units involved in their production. The audit should encompass the storage facilities, storage methods, procedures followed, and security protocols. It should identify any shortcomings or weaknesses in the system, which must be addressed by the auditors. The government must take decisive action to rectify these issues. Strict measures are imperative to prevent such occurrences in the future”, said Gondnale.

Additionally, Gondnale pointed out the limitations of India's current ammunition marking system, which merely indicates the production month, year, and manufacturing unit through an alpha-numerical code. He advocated for adopting a barcode-based system that could provide comprehensive data on each ammunition unit, including its origin, production details, and transfer history. While such barcode technology is not presently utilized in India, Gondnale stated that the necessary infrastructure is available to implement it.

Such systems are already operational in Europe, the US, Germany, and various other regions worldwide. This technology would prove invaluable in tracking the ammunition's entire journey from its inception.

As India's ammunition industry continues its upward trajectory, the nation stands at a crossroads. Will it prioritize safety and security, learn from past tragedies, and fortify its defenses against future disasters?

Or will complacency and negligence lead to more heartbreaking incidents? The choice is clear—the path forward lies in unwavering vigilance and a steadfast commitment to protecting the lives of those who power this vital industry.

<https://www.eurasiantimes.com/explosive-truth-indias-ammunition-boom-cuts-dependence-on-imports-but-focus-on-safety-top-priority/>



Mon, 10 Jun 2024

Philippines “Replaces” India As America’s Key Military Partner To Counter China; Can Manila Do What Delhi Couldn’t?

With China as a rising global economic and military power with the potential to challenge US supremacy, the Indo-Pacific, including the Indian Ocean Region (IOR), attained extraordinary importance in the US defense chemistry. If all the Western powers led by the US were obliged to confront China at any point in time, the Indo-Pacific region would become the decisive battlefield.

Before the Indo-Pacific initiative was floated, animated debates on its formation, scope, and objectives had taken place at the Pentagon and elsewhere.

One issue that had given rise to some difference of opinion was whether India should be included in the initiative. Those opting for the exclusion of India from the Indo-Pacific frame argued that India was essentially an ally of Russia and had, for long, basked in the warmth of Russian patronage.

However, the real weight of the argument was that China had already opened the front against India by wilfully disturbing peace along the Himalayan border. Finally, when Prime Minister Modi gave

his consent for India to join what is now called Quad, it was a shot in the arm for the sponsors of the Indo-Pacific initiative.

Now, India's immediate defense priority was to fully modernize, upgrade, and streamline the Indian navy so that it could safeguard its shores and ports. The Quad-4 countries also undertook streamlining of their naval establishments.

Squad Emerges

In April 2024, the navies of three countries—Australia, Japan, and the Philippines—with the US in the lead—held maritime exercises in the South China Sea.

The ships of the four countries conducted the naval exercise in a sensitive region with the tacit aim of strengthening their joint abilities. In their joint statement, they emphatically stated that the exercise was meant to strengthen their joint ability and to “uphold the right to freedom of navigation and overflight and respect for maritime rights under international law.”

Between April 22 and May 8, US and Philippine ships, alongside naval troops from France and Australia, conducted a naval exercise called Balikatan 2024. More than 16,000 troops participated in the Balikatan (meaning shoulder to shoulder), which took place outside the Philippines' territorial waters.

A dispassionate observation is that officially, nowhere do we find any indication that this initiative is designed to contain China in the South China waters. But on the ground, there is sufficient indication that the US means to let its presence be felt along the Chinese maritime border.

A Bizarre Move

In this exercise, one mission was to sink a decommissioned China-made naval vessel, BRP Lake Caliraya of the Philippines, which Col Francel Margareth, the spokesman of the Philippines' armed forces, called “purely coincidental.”

Whether it was or was not co-incident is a different issue. But it was the only made-in-China ship that was targeted. Beijing considered it a subtle message.

The four countries' defense ministers met in Honolulu during the Balikatan exercise. The joint meeting discussed the exercise's political implications off the coast of China.

Reports suggest that it was at the sidelines of these meetings that the concerned officials began floating the term “Squad,” meant to refer to the four countries taking part in the exercise. There was no official announcement of the name Squad, but evidently, a new block in East Asia was in the making. The new name could be considered a de facto announcement.

Quad To Squad

The Quadrilateral Security Dialogue (Quad-4) was an initiative of four countries, namely Australia, India, Japan, and the US, taken in 2007 during Exercise Malabar in the Philippines Sea.

The Philippines was not a member at that time. Washington's overbearing attitude towards China did not suit Australian Prime Minister Kevin Rudd's policy, so Quad-4 could not establish its efficacy. Actually, Rudd was trying to mend fences with China.

In a sense, the Quad-4 remained inactive, if not dormant, for at least one decade from its inception in 2007. In 2017, Quad leaders met in Manila and decided to activate the Quad with a more forthright agenda against China.

The Chinese Road and Belt Initiative was the catalyst for the revival of Quad, and US apprehensions found expression in the phrase “predatory economics,” coined by the then-US Secretary of State Rex Tillerson.

However, by 2017, many changes had taken place in the world and the region. The hawks in Washington began to pressure India to take a proactive stance against China and Russia.

India declined to stop buying discounted oil from Russia. New Delhi was looking at the situation from its standpoint in the forthcoming general elections in the country. Analysts call India’s decision a pragmatic one although India’s oil purchases from Russia have declined now.

India gave more cause for frustration with the revived Quad-4. The media asked Indian External Affairs Minister S Jaishankar if India was considered a member of NATO and what would be her reaction. The minister replied that India does not share NATO’s mentality. This clearly showed that India was reluctant to join a new cold war of sorts against China. India had declined to sign the UN anti-Russia resolution, which NATO resented more than the US.

The cumulative consequences of India’s strict nationalist approach to Quad were that, ultimately, the US sidelined Quad-4 and assembled the Squad with the more pliant government of the Philippines.

In the final analysis, American pressures to force India to adopt a belligerent stance against China will not work because India joined Quad-4 essentially with the objective of boosting trade relations with the Quad countries on the common premise that free movement of ships across the Indian Ocean and South China Sea is guaranteed.

Only time will show what the Squad will or will not achieve in the context of Indo-Pacific security under changed circumstances.

<https://www.eurasiantimes.com/philippines-replaces-india-as-americas-key-military/>

THE ECONOMIC TIMES

Tue, 11 Jun 2024

South Korea, US work on joint strategy over North nuclear threat

Senior South Korean and U.S. defence officials met in Seoul on Monday to work on new guidelines to coordinate their response to any nuclear threat from North Korea, officials said.

The guidelines laid out the principles and procedures for maintaining and enhancing a "credible and effective" nuclear deterrence policy and posture, according to a joint statement from the allies'

third closed-doors talks on the issue. The Nuclear Consultative Group meeting came amid signs North Korea is racing to develop its nuclear arms and delivery systems.

Some South Korean politicians, including senior members of President Yoon Suk Yeol's party, have called for Seoul to develop its own nuclear weapons rather than just rely on the U.S. nuclear umbrella, a step Washington opposes. Monday's meeting followed up on last year's summit, when the United States promised to give South Korea more insight into its nuclear planning for any conflict with the North.

Vipin Narang, acting U.S. assistant secretary of defence for space policy who co-chaired the talks, said the guidelines set up an architecture for how the allies integrate conventional and nuclear capabilities which will be ultimately provided to each country's leadership in a crisis.

"The guidelines cover the principles and procedures for consultations, particularly in a DPRK nuclear crisis and inform alliance operational concepts and exercises," Narang told a news conference, using the acronym of North Korea's official name, the Democratic People's Republic of Korea.

Cho Chang-rae, South Korea's deputy defence minister for policy, said highlevel officials from both countries will hold a simulated tabletop exercise before regular summertime drills, with a focus on the possibility of North Korea using a nuclear weapon.

The two Koreas are still technically at war after their 1950-53 conflict ended in an armistice, not a peace treaty. In late May, North Korea's attempt to launch a military reconnaissance satellite failed after a newly developed rocket engine exploded in flight. Seoul and Washington condemned the launch as a violation of U.N. Security Council sanctions banning Pyongyang's use of ballistic technology.

After their second meeting in December, both sides warned that any nuclear attack by North Korea against the United States or its allies will be met with a "swift, overwhelming and decisive response" and result in the end of Kim Jong Un's regime. Their next meeting will be held in Washington near the end of the year, the joint statement said.

<https://economictimes.indiatimes.com/news/defence/south-korea-us-work-on-joint-strategy-over-north-nuclear-threat/articleshow/110883582.cms>



Mon, 10 Jun 2024

US Navy Amplifies China Monitoring; After 8 MQ-9 Reapers, 2nd MQ-4C Triton Drone Deployed To Okinawa

The US Navy has deployed a second MQ-4C Triton maritime surveillance aircraft to Japan's Kadena Air Base, besides scores of MQ-9 Reapers, marking a significant step in enhancing intelligence gathering and surveillance capabilities in the region.

As confirmed by an official from Japan's Ministry of Defense to Okinawa Times, the aircraft arrived at the base at approximately 3:40 p.m. on June 9.

The US military has finalized its arrangements to relocate two MQ-4C Triton drones temporarily from Guam to Okinawa. The first aircraft touched down at Kadena Air Base on May 20. According to the image published by Japanese media, both MQ-4C Tritons are stationed in the Navy tarmac hangar at the base shortly after the second aircraft's arrival.

The Ministry of Defense and the US military have stated that the Tritons' deployment to Kadena is planned to last from May to October. In addition to the aircraft, approximately 50 personnel are being relocated to Kadena Air Base to support the mission. Kadena Air Base, the largest US Air Force base in the Asia-Pacific region, is strategically located. It is three hours of flight time from Beijing, Seoul, and Taipei, making it crucial for Japan's defense.

The base frequently appears in the news due to the advanced fighter jets stationed there by the US Air Force. Currently, the US is rotating, replacing its older F-15C/D fighter jets at Kadena with newer and more advanced fighter jets.

Since announcing this rotational plan in October, the 18th Wing at Kadena has hosted various aircraft, including F-35 Lightning IIs, F-22 Raptors, US F-16s, and F-15E Strike Eagles. Additionally, the US military is boosting the presence of unmanned aerial vehicles at the base.

In addition to the MQ-4C Tritons, eight US Air Force MQ-9 drones have been stationed there since October, enhancing the base's reconnaissance and surveillance capabilities. Meanwhile, the Okinawa Times, citing a report from the Federal Aviation Administration (FAA), suggested that the second MQ4C Triton was scheduled to conduct a flight around Okinawa's main island between 6 p.m. and 10:45 p.m. on June 9.

However, the plan was withdrawn from the Notice to Airmen (NOTAM) by around 4:45 p.m. on the same day, shortly after the aircraft's arrival. The latest deployment has not been without controversy. Okinawa Prefecture and local governments strongly oppose the indefinite presence of MQ9 drones and the temporary deployment of the MQ4C Tritons.

The Kadena Town Council has expressed worries about the potential for aircraft accidents, citing overcrowding due to the rising number of US military assets stationed at the base.

US Drones To Monitor Chinese Naval Activities

The MQ-4C Triton maritime surveillance aircraft, a creation of US-based Northrop Grumman, has had prior deployments to Misawa Air Base in northeastern Japan.

Although it resembles the well-known RQ-4 Global Hawk, celebrated for its operational history in Iraq and Afghanistan, the similarities end at the surface level.

Distinctive features of the Triton include reinforced leading edges along its wings, engineered specifically to endure impacts from bird strikes. Further, its electronic systems are meticulously crafted to withstand the abrupt surges of power induced by lightning strikes.

Leveraging their rigid wing design, these maritime drones are capable of descending rapidly to lower altitudes, facilitating close-range observation of floating targets.

Equipped with a sophisticated array of sensors and surveillance technology, the MQ-4C has showcased remarkable proficiency in delivering precise targeting information to naval assets.

This capability substantially enhances the fleet's capacity to engage targets beyond the horizon, effectively extending its operational reach while maintaining a safe distance.

With these two advanced reconnaissance aircraft now operational at Kadena, the US military is poised to intensify its surveillance and intelligence operations in a region where China is active.

Officials have disclosed plans for drones to undertake intelligence missions in the Nansei region and its surrounding areas. The Nansei islands span from Kyushu, the southernmost of Japan's main islands, to Taiwan, covering crucial maritime territory.

In recent years, China has escalated its challenges to neighboring countries' maritime claims in the East and South China seas. Its coast guard frequently intrudes into waters claimed by Japan around the Senkaku Islands.

Japan perceives China's recurrent incursions as a strategy to undermine Tokyo's ability to assert effective control over the uninhabited islands, thereby casting doubts on its sovereignty.

Concerns have been raised that continued Chinese vessel operations near the islands without repercussions could compromise Japan's claim. Tokyo has witnessed a significant uptick in the number of Chinese ships approaching the islands, with prolonged duration of stays.

Drones dramatically enhance surveillance capabilities for extended periods. Additionally, their non-provocative nature and sole purpose of monitoring other vessels make them a valuable asset for deployment.

<https://www.eurasiantimes.com/us-navy-amplifies-china-monitoring-after-8-mq/>



Mon, 10 Jun 2024

‘Deadliest’ Stealth Fighter – Su-57 Felon, That Competes With F-35 & J-20, Lacks ‘Lightning’s Lethality’?

Ukraine's military claimed on June 10 that it had successfully destroyed one of Russia's latest and most advanced fighter jets, the Sukhoi Su-57, a warplane that Russia often compares with US F-35 jets.

The strike reportedly carried out on a military base in the Astrakhan region, is notable in the ongoing conflict because it occurred nearly 600 kilometers (372 miles) behind the front lines. The Sukhoi Su-57, known as the "Felon" by NATO, was targeted while on the tarmac at the airbase. Ukraine's defense intelligence agency (GUR) released satellite images on its Telegram channel to substantiate their claim.

The Su-57 appeared undamaged on June 7, but by June 8, evidence of a strike was visible, with craters and fire damage surrounding the aircraft. Further reports suggest that a second Su-57 might also have been damaged in the raid. Since the Su-57's first flight in 2010, the Russian Air Force has acquired around two dozen of these jets.

The Su-57 is a supersonic, twin-engine, fifth-generation stealth fighter jet designed to challenge US air superiority. Despite its advanced design, the Felon has failed to match the success of the US's F-35 Lightning II, which boasts superior stealth, computing, and sensor capabilities.

The F-35 remains the benchmark for modern fighter jets, with capabilities that outshine not only the Su-57 but also China's Chengdu J-20 Mighty Dragon and US F-22 Raptors.

The J-20, developed by the Chengdu Aerospace Corporation for the People's Liberation Army Air Force (PLAAF), is another fifth-generation stealth fighter jet. Experts often highlight that Russian and Chinese stealth fighters are not at par with US-made F-35s. These nations, they point out, have a history of overstating their military capabilities, which casts doubt on the effectiveness of their stealth technology.

Adam Daymude, a former US Naval Aviator, noting significant design and performance shortcomings in the Su-57 and J-20, pointed out that while both aircraft feature advanced design elements such as twin engines and blended fuselages, their stealth capabilities were questionable.

According to Daymude, the Su-57 and J-20 have some competent design features, but when evaluated against true fifth-generation standards like the F-35, they fall short. He further added that the canards on the J-20, for instance, are a major drawback for its radar cross-section (RCS). The Su-57 also shows similar issues. Daymude firmly concluded that the aircraft should be classified as generation 4.5 or 5 rather than true fifth-generation fighters due to unresolved doubts about their stealth and overall performance capabilities.

F-35 Surpasses J-20 & Su-57

The F-35 is considered superior to the Su-57 not only for its stealth capabilities but also for its widespread production and popularity as a tactical airframe.

In contrast to the limited numbers of the Su-57, the F-35 has been produced in large quantities and is highly sought after globally. Over 1,000 F-35s have been built for the US Air Force, Navy, Marine Corps, and international customers, with several European and Asian countries already acquiring the jet. Similarly, the Chengdu J-20 Mighty Dragon has been produced in significant numbers, with over 200 units reportedly built by early 2023. However, these numbers still fall short compared to the F-35.

The F-35 also stands out for its advanced computing, weapons range, mission systems, and long-range, high-resolution sensors, which are even better than those of the F-22 Raptors.

Often referred to as a "flying computer," the F-35's advanced performance is largely due to its central computer system, which controls all aspects of the aircraft. This aspect of the F-35 is crucial but often overlooked compared to its other visible features.

General David Goldfein, former US Air Force Chief of Staff, once described the F-35 not as a traditional fighter but as "a computer that happens to fly."

This advanced computing technology enables many of the F-35's missions and operations, particularly for precision targeting. For instance, software upgrades have significantly improved the performance of air-to-air and air-to-ground weapons like the AIM-120 and AIM-9X through enhanced flight path and guidance technology.

The F-35 is continually improving with ongoing software upgrades and modernization efforts facilitated by its "open architecture" and interoperable IP Protocol standards. This design enables rapid integration of new technologies without requiring an overhaul of the jet's computing infrastructure.

Only 5th-Gen Nuclear Fighter

Further, the F-35 stands out as the world's only fifth-generation fighter jet capable of carrying nuclear bombs, beating other warplanes like F-22, J-20, and Su-57.

This milestone was achieved after over a decade of rigorous development, leading to the certification of the F-35A Lightning II stealth fighters in October 2023. This certification enables them to deliver B61-12 nuclear gravity bombs.

In May 2024, the Netherlands became the first country to declare its F-35 stealth fighters capable of the nuclear strike role.

This capability provides the US Air Force with a significantly more survivable method to deliver its tactical nuclear gravity bombs. The F-35's advanced stealth capabilities allow it to penetrate enemy airspace with a lower risk of detection and effective engagement by ground-based air defense missiles, enhancing its status as the most lethal fighter jet in the world.

<https://www.eurasiantimes.com/deadliest-stealth-fighter-su-57-felon-that-competes-with-f-35-j-20-lacks-lightnings-lethality/>

Science & Technology News

The Indian EXPRESS

Tue, 11 Jun 2024

IIT Madras, NASA researchers study multi-drug resistant pathogens on international space station

Indian Institute of Technology Madras and NASA's Jet Propulsion Laboratory (JPL) researchers are studying multi-drug resistant pathogens on the International Space Station (ISS), which could have key applications on earth as well for the health of astronauts.

The researchers conducted a comprehensive study to understand the genomic, functional, and metabolic enhancements observed in multidrug-resistant pathogens with a particular focus on

Enterobacter bugandensis, a prevalent nosocomial (hospital acquired infection) pathogen found on surfaces within the ISS, an IIT-M press release said.

One of the findings is the accelerated mutations and “the findings hold promise for applications in controlled settings on Earth, including hospital intensive care units and surgical theatres, where multidrug-resistant pathogens pose significant challenges to patient care.” Understanding the genomic adaptations of multidrug-resistant *E. bugandensis* can aid in developing targeted antimicrobial treatments. Insights into the persistence and succession patterns of *E.*

Bugandensis in space can inform strategies for managing microbial contamination in closed environments like spacecraft and hospitals. Astronauts operating in altered immune conditions with limited access to traditional medical facilities face unique health challenges during space missions. Understanding the microbial landscape aboard the ISS is paramount for assessing the impact of these microorganisms on astronaut well-being. “The current study emphasises the critical need to investigate the pathogenic potential of microorganisms in space environments to safeguard astronaut health and mitigate the risks associated with opportunistic pathogens,” the release added.

<https://indianexpress.com/article/technology/science/iit-madras-nasa-study-multi-drug-resistant-pathogens-on-international-space-station-9384637/>



Mon, 10 Jun 2024

IAU honours research of India solar physicist

The International Astronomical Union (IAU) has recognised exemplary research contributions of heliophysicist Devojoyoti Kansabanik. He had recently completed a PhD from Pune-based National Centre for Radio Astrophysics (NCRA). Since December last year, Kansabanik has been a NASA Jack Eddy Postdoctoral fellow at the Applied Physics Laboratory at Johns Hopkins University, USA.

The honour comes from IAU’s Sun and Heliosphere group for the work titled ‘Deciphering Radio Emission from Solar Coronal Mass Ejections Using High-fidelity Spectropolarimetric Radio Imaging’. He shares this honorary mention from the group with China’s Xingyu Zhu.

Last month, the IAU had announced eight PhD prizes and honorary mentions, each. The IUA will meet for its XXXII General Assembly scheduled to be held in Cape Town, South Africa, in August this year.

Founded in 1919, IAU is the world’s largest and the highest body dedicated to astronomy. Through IAU, over 12,000 professional astronomers and astrophysicists from over 100 countries meet and discuss education and development, research and communication for this fields of sciences. It is the authority to assign designations to celestial bodies.

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ISRO's Aditya-L1 spacecraft's two onboard instruments capture solar fury

ISRO's Aditya-L1 spacecraft's two onboard remote sensing instruments have captured the recent solar fury, the space agency said on Monday.

India's maiden solar mission Aditya-L1 reached the Lagrangian point (L1) on January six this year, 127 days after it was launched on September two, 2023. L1 is located roughly 1.5 million km from Earth and enables the spacecraft to view the Sun continuously.

The Solar Ultra Violet Imaging Telescope (SUIT) and the Visible Emission Line Coronagraph (VELC) have captured the dynamic activities of the Sun during May 2024, ISRO said in a statement.

“Several X-class and M-class flares, associated with Coronal Mass Ejections (CMEs), leading to significant geomagnetic storms, were recorded,” it said.

The Active region AR13664 on the Sun, during its passage during the week of May 8-15, erupted several X-class and M-class flares, which were associated with CMEs during May 8 and 9. These produced a major geomagnetic storm on May 11, it was stated.

ISRO released the Sun images acquired by the SUIT payload on May 17, and also shared details of the observations made by VELC.

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