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समाचार पत्रों से चयनित अंश

Newspapers Clippings

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

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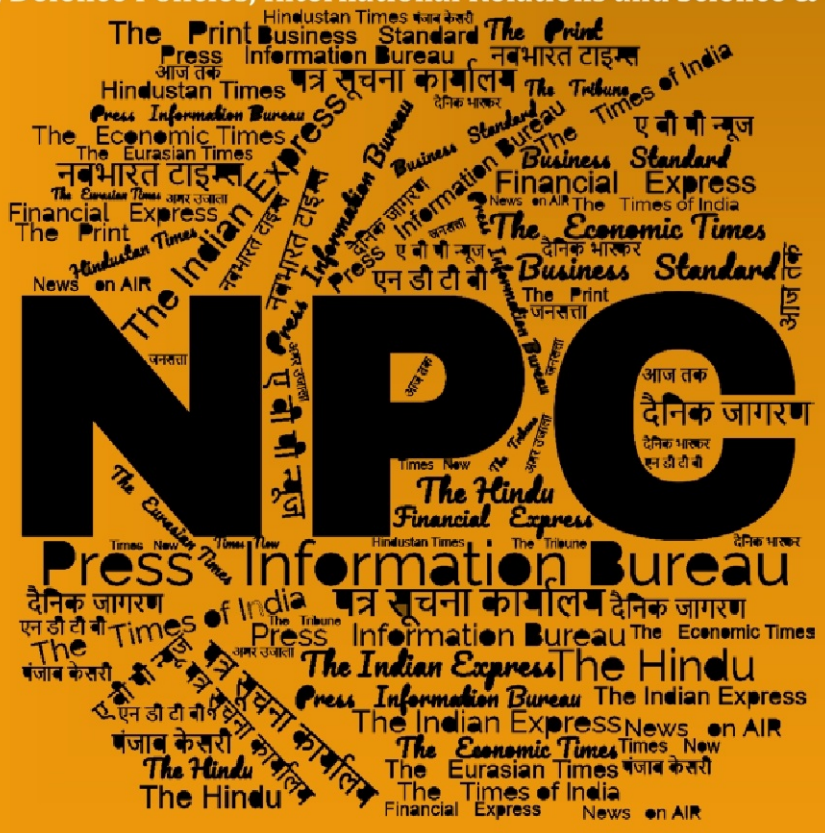

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DRDO News

Defence labs to put their products on display for public

Source: Deccan Chronicle, Dt. 24 Feb 2025,
URL: https://www.deccanchronicle.com/southern-states/telangana/defence-labs-to-put-their-products-on-display-for-public-1863234

From India's first long-range hypersonic missile to technological systems being used in war — all will be put on display for students and general public for the first time at DRDO's National Science Day event for three days, starting on February 28 at the Gachibowli stadium.

The Defence Research and Development Organisation (DRDO) is organising the event in collaboration with the Aeronautical Society of India and the Kalam Institute of Youth Excellence.

The event aims to inspire students and young professionals to explore careers in the defense and aerospace sectors.

"There are about 1,500 scientists working at DRDL Hyderabad, with about 400 of them being women," he told Deccan Chronicle.

Senior government officials, from central and state administrations, are expected to address the gathering. The exhibition will span three days, with the first day dedicated to students, featuring expert talks on career prospects and interactive sessions with industry leaders. The exhibition will be be open to the general public from 9 am to 6 pm on March 1 and 2.

Around 200 allied industries will be participating in the exhibition with institutes like DRDL, RCI, CCMB, IICT, Midhani, BDL, BEL, HAL, ECIL, among others.

"Besides the government sector, private companies like Airbus, Boeing, and Lockheed Martin have strong ties to the city. We want students to interact with the private sector as well and aspire to contribute to the research and development sector in years to come," said U. Raja Babu, director-general, missiles and strategic systems (MSS), DRDO.

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Defence News

Defence Strategic: National/International

Centre For UN Peacekeeping Hosts 'Conference On Women Peacekeepers From Global South' At Manekshaw Centre In New Delhi

Source: Press Information Bureau, Dt. 24 Feb 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2105783

Indian Army, through the Centre for United Nations Peacekeeping (CUNPK), India, is hosting a two-day conference titled 'Conference on Women Peacekeepers from the Global South' at the Manekshaw Centre, New Delhi, on 24-25 February 2025.

This conference, being organised by the Ministry of External Affairs in collaboration with the Ministry of Defence, has brought together women peacekeepers from 35 nations to explore the evolving role of women in peacekeeping operations and discuss strategies to enhance their participation in these crucial missions.

The conference aims to strengthen the role of women in UN peacekeeping by fostering dialogue, sharing experiences, and improving collaboration among the nations of the Global South.

On the inaugural day, the participants had the honour of calling on Smt Draupadi Murmu, the Hon'ble President of India, at Rashtrapati Bhawan. This was followed by a keynote address by Shri S Jaishankar, External Affairs Minister.

In his opening remarks, Lt Gen NS Raja Subramani, Vice Chief of Army Staff (VCOAS), expressed deep appreciation for the women peacekeepers' exceptional service and commitment to global peace and security. He said, "the Women Peacekeepers have broken the stereotypes, shattered barriers, and rose above challenges to become leaders and protectors of their nation and also in the communities, where they have been engaged in for peacekeeping".

He further said that, "As a key partner in Global South, India brings forth a wealth of experience, resources and expertise to the table, contributing to the collective effort of developing nations", adding, "We, as representatives of Global South, stand together in strength, resilience and unwavering commitment to global peace".

In his address, Lt Gen Rakesh Kapoor, Deputy Chief of Army Staff (IS&C), highlighted that International Humanitarian Law is facing a lot of challenges, making task of peacekeepers ever more challenging. He also acknowledged that Women Peacekeepers with their presence, are the

role models of women empowerment and encourage women of host nation to contribute towards upliftment of their society.

On the inaugural day of the conference, following sessions were conducted:

- Session 1- Addressing Sexual Exploitation and Abuse: This session was moderated by Mr Christian Saunders, UN Special Coordinator, with participation by Maj Radhika Sen, UN Military Gender Advocate of the Year 2023, Maj Hind Jirari (Morocco) and Col Simone PC Antunes (Brazil). The session focused on mechanisms for preventing, reporting, and addressing cases of sexual exploitation and abuse in peacekeeping environments. Participants explored best practices, accountability measures, and the role of leadership in promoting a culture of zero tolerance for misconduct.
- Session 2- Technology in Peacekeeping: Can We Do Better?: The second session was moderated by Ms Debjani Ghosh, Distinguished Fellow, Niti Aayog and Former President NASSCOM. Lt Gen Sadhna Nair, DGMS (Army) and Brig Munesh Tamang, Former Sector Commander, UNMISS were the distinguished participants in the session. As technology continues to transform peacekeeping, this session examined how tools such as surveillance drones, AI-powered data analysis, and real-time communication systems can improve operational effectiveness and enhance mission capabilities. Experts discussed the challenges of integrating technology into peacekeeping and how nations in the Global South can leverage these advancements to strengthen their security efforts.
- Shri Sanjay Seth, Hon'ble Raksha Rajya Mantri, will attend the final day of the conference. The concluding sessions will cover the following topics:
- Session 3 - Role of Women Peacekeepers. The Session will witness participation by Dr Kiran Bedi, IPS (Retd), Former Lt Governor, Puducherry, Lt Col Neha Khajuria, Pol CUPNK, Lt Col Ayishetu Sandow (Ghana) and Lt Col Sulochana Poudel (Nepal).
- Session 4 - Opportunities for Collaboration in Training and Capacity Building in the Global South. The speakers for this session would include, Lt Gen MP Singh, Director General Staff Duties, Col Samar Raghav, Centre for UN Peacekeeping, Col Phoung Thi Minh Nyugen (Vietnam) and Col Dilya Akhmetova (Kazakhstan).
- Session 5 - Promoting Regional Cooperation in Peacekeeping: The Global South Context. The concluding session will witness participation by Mr Jean-Pierre Lacroix, USG DPO, Mr Tshering W Sherpa, JS (UNP), MEA, Brig Joyce C Sitienei (Kenya) and Ms Alesi Dau (Fiji).

This conference reaffirms India's leadership in promoting inclusive and effective peacekeeping operations, underscoring the nation's commitment to gender equality and the vital role women play in global security and peace efforts. Through collaborative discussions and actionable strategies, the conference will enhance the understanding of the role of women peacekeepers and increase their impact on future missions.

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India's technological sector is on rise & is expected to reach $300-350 billion in next five years: Raksha Mantri at 16th Foundation Day of IIT Mandi

"Biggest challenge today is to not only adapt to the rapidly changing technology, but also to create new technologies. Don't just be adapters; become the disruptors who lead innovation"

Source: Press Information Bureau, Dt. 24 Feb 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2105733

"India's technological sector is on the rise and is expected to reach 300-350 US billion dollars in the next five years. With more than 1.25 lakh start-ups and 110 unicorns, our country is emerging as the third-largest start up ecosystem in the world," highlighted Raksha Mantri Shri Rajnath Singh while addressing the 16th Foundation Day of the Indian Institute of Technology (IIT) Mandi, Himachal Pradesh on February 24, 2025. He encouraged the students to leverage this period of growth and opportunity, ensuring that they not only contribute to India's technological advancements but also lead the way globally in key areas of research and development.

Shri Rajnath Singh emphasised the necessity of innovation and knowledge creation in shaping the future of technology. He underscored the importance of fostering a culture of entrepreneurship and innovation that would allow India to lead in emerging fields such as Artificial Intelligence, machine learning, and digital technologies. He lauded the institution's outstanding contributions to shaping India's technological and scientific advancements. He also highlighted IIT Mandi's pivotal role in fostering innovation and research, and laid stress on India's rising prominence as a global leader in technology.

In the context of national security, Shri Rajnath Singh urged IIT Mandi to play a more significant role in defence-related technologies. He commended the existing collaboration with DRDO and called for further contributions in areas such as Artificial Intelligence (AI)-driven warfare, indigenous AI chip development, cybersecurity, and quantum technology.

Raksha Mantri also threw light on India's progress in defence self-reliance, highlighting that "India has achieved 88% self-sufficiency in ammunition production, and defence exports have reached approximately Rs 23,000 crore in 2023-24. Our goal is to reach Rs 50,000 crore in defence exports by 2029."

He bolstered the government's commitment in creating a robust defence industry in India, one that supports both the security of the nation and contributes to the country's economic growth. He called on IIT Mandi's students to contribute to this vision by focusing on technological solutions that can enhance India's defence capabilities and further advance the nation's self-reliance in this critical sector.

In line with India's emerging digital economy, Shri Rajnath Singh shared key highlights on the country's remarkable digital progress. "India's telecom sector is now the second-largest in the

world. With the success of initiatives like UPI, India is setting global standards in digital transactions. We are in the midst of an unparalleled digital revolution," he said. He encouraged the students to actively contribute to the development of India's digital ecosystem, reiterating that technological innovation is central to India's growth story in the coming decades.

Further urging the students to excel in technological innovation in order to make the country developed by 2047, Raksha Mantri advised them to follow the principles of Initiate, Improve, and Transform (IIT). Shri Rajnath Singh also motivated them to be bold in their pursuit of knowledge and to remain persistent in the face of challenges. He also spoke about the need for courage and resilience as the country faced the challenges of the future, and highlighted the importance of working collectively to address national challenges with technology and innovation.

Shri Rajnath Singh also encouraged the students to be disruptors and not just adapters in the fast-paced world of technology. "The biggest challenge today is to adapt to the rapidly changing technology, but also to create new technologies. Don't just be adapters; become the disruptors who lead innovation," he added.

He spoke about the significant opportunities available to young innovators, stressing the importance of shaping new paradigms rather than simply following existing trends. Raksha Mantri further stated that this is the time of the 'Indian Dream'—a time where the aspirations and achievements can redefine the global landscape. He motivated the students to set ambitious goals and to aim high in their careers, as their work would have a lasting impact on India's trajectory in this landscape.

Shri Rajnath Singh congratulated IIT Mandi on its achievements stating that "In the last 15 years, the institution has secured a distinguished place on the educational map, not only of India but the world. It is a perfect blend of ancient heritage and modern technological education."

He mentioned the region's rich historical significance, emphasising that the existence of IIT Mandi at such a culturally and historically enriched location symbolises the union of antiquity and modernity. He further expressed confidence that the institution, with its strong foundation in academics, research, and innovation, would continue to make significant contributions to both India's growth & global technological advancement.

Raksha Mantri inaugurated two new buildings, the Guidance & Counselling Centre and the Centre for Continuing Education during the event. Both buildings are designed to enhance the academic ecosystem and contribute to the personal and professional growth of the students and faculty.

These additions will provide much-needed infrastructure to support the holistic development of students and ensure their success in the rapidly changing world of technology and innovation. "These new centres will play a crucial role in supporting students, faculty, and researchers, further strengthening IIT Mandi's contribution to Science, Technology, Engineering, Mathematics, and Management," he stated.

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Army, IAF conduct integrated 2-day training exercise in Jammu sector

Source: The Economic Times, Dt. 24 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/army-iaf-conduct-integrated-2-day-training-exercise-in-jammu-sector/articleshow/118536339.cms

In a significant step towards enhancing joint operational readiness, the Army and the Indian Air Force (IAF) successfully conducted a two-day integrated training exercise here, a defence spokesman said on Monday. The training, conducted under the aegis of Tiger Division, Jammu, was aimed at fostering seamless coordination between ground troops and aerial assets, a critical factor in modern day warfare, the spokesman said.

He said the exercise served as a platform to refine swift troop deployment behind enemy lines, aerial maneuvers and precision target engagement, ensuring preparedness for real-time operational challenges.

The specialized training witnessed the IAF helicopters executing the airlift of troops from a mounting base who were then successfully inserted into the designated area, the spokesman said.

Following their insertion, he said that the troops demonstrated a well-coordinated assault in a simulated combat scenario.

"This high-tempo exercise showcased the synergy between the two forces and the strategic importance of air mobility in the modern day combat environment," he said.

The spokesman said integrated training of this nature reinforces joint operational capabilities, fostering a deeper understanding of each service's operational dynamics.

The exercise not only strengthened coordination between the Army and the IAF but also enhanced the tactical proficiency of troops in executing complex missions, he said.

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Semiconductor policy important to improve India's defence manufacturing: Navy chief

Source: The Economic Times, Dt. 24 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/semiconductor-policy-important-to-improve-indias-defence-manufacturing-navy-chief/articleshow/118537562.cms

Navy chief Admiral Dinesh K Tripathi on Monday said India's semiconductor policy is important to improve India's defence manufacturing and asked the private sector to take the lead in order to make the country self-reliant. Speaking at an event here, the admiral also said the policy is essentially "new oil for the economy".

The Ministry of Defence has set aside Rs 450 crore this year for the Innovation for Defence Excellence (iDEX) scheme, which aims to help startups and small and medium enterprises (SMEs)

innovate, he said. "The MoD has earmarked 75 per cent of our modernisation budget for the defence industry, which is almost Rs 1 lakh crore. And out of that, 25 per cent has been earmarked for the private defence industry in this budget.

This year, Rs 450 crore has been successfully allocated for iDEX scheme. Since its inception in 2018, the iDEX has signed almost 400 contracts," he said. "There are positive expectations from the semiconductor policy, especially for the technology-driven Navy. This new policy will certainly benefit both the civilian and the defence sectors. It is, essentially new oil for the economy. The new policies provide grants of up to Rs 1.5 crore for small projects, while the Aditi scheme offers funding of up to Rs 25 crore for niche technologies," Admiral Tripathi said.

He called for collaboration with industry leaders to meet the Navy's future technology needs, adding that the force wanted to "fully involve and work with you". Highlighting the Navy's new approach to working with industry, Tripathi said, "We have shifted from being customers to collaborators, from merchants to partners." He said task forces have been set up to approach industry, understand the technologies on offer, the time frame and imbibe the things that are lacking currently.

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Rajnath to carry out quarterly review of key defence reforms

Source: Hindustan Times, Dt. 25 Feb 2025,
URL: https://www.hindustantimes.com/india-news/rajnath-to-carry-out-quarterly-review-of-key-defence-reforms-101740422533837.html

Defence minister Rajnath Singh will conduct a quarterly review of critical defence reforms being driven by the government to boost the armed forces' combat readiness, with the move putting the spotlight on setting up of integrated theatre commands for the best use of the military's resources to fight future wars, new domains such as cyber and space, and the need to simplify weapons buying procedures, two officials aware of the development said on Monday.

The goal is to measure progress and make course correction if needed to push the reforms that are directly linked to the country's defence preparedness, the officials added, asking not to be named.

"Time-bound goals are a top priority, and all stakeholders must give their best," said one of the officials.

The ongoing reforms came into sharp focus on January 1 when the defence ministry declared 2025 as the "year of reforms" aimed at transforming the military into a technologically advanced, combat-ready force capable of tackling new challenges. The reforms cited above are among the nine areas identified by the defence ministry for focused intervention.

The armed forces have started working towards the goals.

The army, for instance, has prepared a blueprint for the goals it will pursue in 2025 in line with the government's renewed push for defence reforms. It is focusing on five key areas including jointness and integration, force restructuring, modernisation and technology infusion, systems and processes, and human resource management.

To be sure, the “year of reforms” comes on the back of the army’s “year of transformation” (2023) and “years of technology absorption” (2024 and 2025). Still, acknowledging the long gestation period required for meaningful change, the army has identified 2023 to 2032 as the “decade of transformation”.

The areas identified by the defence ministry for focused intervention include developing a shared understanding of operational requirements and joint operational capabilities through inter-service cooperation and training, facilitating technology transfer and knowledge sharing between the defence sector and the civil industry, and positioning India as a credible exporter of defence products.

“The periodic review at the defence minister’s level signals the government’s commitment to implementing these reforms. It will help identify issues that may have to be addressed to speed up changes in the system,” said strategic affairs expert Air Marshal Anil Chopra (retd).

The reforms seek to build indigenous capabilities to strengthen the armed forces. On February 1, India set aside more than ₹6.81 lakh crore for defence spending in the Union Budget for 2025-26, including ₹1.8 lakh crore for the modernisation of the military at a time it is planning to buy fighter jets, helicopters, warships, submarines, tanks, artillery guns, drones, rockets and missiles.

The country has earmarked 75% of the modernisation outlay for buying weapons and systems from domestic suppliers to achieve the self-reliance goal.

The reforms also seek to simplify acquisition procedures for swifter capability development.

The theaterisation drive, a long-awaited military reform, is expected to gather pace. Jointness among the three services is an essential prerequisite to the creation of theatre commands. The theaterisation model being pursued involves raising the China-centric northern theatre command in Lucknow, the Pakistan-centric western theatre command in Jaipur, and the maritime theatre command in Thiruvananthapuram.

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Defence Ministry committee looking at enhancing private sector role in indigenous fifth gen AMCA

Source: ANI News, Dt. 24 Feb 2025,
URL: https://www.aninews.in/news/national/general-news/defence-ministry-committee-looking-at-enhancing-private-sector-role-in-indigenous-fifth-gen-amca20250224211417/

Amid the push by the US to sell its F-35 fighter jet, India is focusing on boosting the involvement of the private sector in its Indigenous fifth-generation Advanced Medium Combat Aircraft (AMCA) project to ensure its timely completion.

A committee has been formed by the Defence Ministry under Defence Secretary Rajesh Kumar Singh to look at enhancing the role of the private sector in making the indigenous fifth-generation fighter jets, defence officials said here.

The Committee has members from the Air Force and the aerospace public sector unit Hindustan Aeronautics Limited (HAL), they said.

The government is looking at multiple models of enhancing the private sector in which one is to have a joint venture with the HAL and a private sector firm.

Another one is to have the private sector only as a partner for design and development but looking at the experience of the HAL in aerospace manufacturing, it would be difficult to ignore the public sector unit.

Apart from HAL, the only firm that has some experience in aircraft integration is the Tata Group which is working with Airbus for assembling C-295 transport aircraft in the country.

HAL is already outsourcing a significant amount of work to the private sector for jets, which includes orders for L&T, Godrej and Azad Engineering, among others.

Earlier, India's indigenous fifth-generation Advanced Medium Combat Aircraft (AMCA) was displayed at the five-day-long Aero India 2025 show in Bengaluru.

The aircraft was designed by the Aeronautical Development Agency (ADA) for the use of the Indian Air Force (IAF).

Aero India 2025, Asia's top aerospace exhibition took place from February 10 to 14 at the Yelahanka Air Force Station in Bengaluru.

The 25-ton aircraft would have manned and unmanned teaming capabilities.

The AI-powered electronic pilot comprises multi-sensor data fusion to enhance situational awareness, a pilot decision support system, an automatic target identification system, and a combined vision system for navigation in poor visibility conditions.

According to the ADA, the implementation of AI in AMCA aircraft will boost the ADA in progressing the development activities. It will also allow the AMCA aircraft to enhance operational capabilities making AMCA one of the most advanced 5th generation fighter aircraft among the contemporary aircraft.

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Army Chief to visit Marseille for briefing on French army's 3rd division and "Scorpion" modernisation programme

Source: The Tribune, Dt. 25 Feb 2025,
URL: https://www.tribuneindia.com/news/world/army-chief-to-visit-marseille-for-briefing-on-french-armys-3rd-division-and-scorpion-modernisation-programme/

Indian Army Chief General Upendra Dwivedi will visit Marseille on Tuesday to be "briefed' on the French Army's 3rd Division, joint exercise SHAKTI, and modernisation programme "Scorpion," followed by a live demonstration in Carpiagne the next day.

According to an official statement from the Ministry of Defence, "On 25th February 2025, General Dwivedi will travel to Marseille, where he will visit the 3rd Division of the French Army and will

be briefed on the mission and role of the 3rd Division, the bilateral exercise SHAKTI, India-France training cooperation, and the French Army modernisation programme (Scorpion). "

"The following day, General Dwivedi will visit Carpiagne to witness a dynamic demonstration of the Scorpion Division with live firing exercises,"the MoD added.

General Dwivedi is on an official visit to France from February 24 to 27, as part of "efforts to bolster India-France defence cooperation."

On Monday, The Chief of the Army Staff (COAS) met senior French military officials at Les Invalides. The day began with a Guard of Honour, followed by discussions with General Schill. "The aim of the meeting will be to foster stronger military ties between the two nations," the Defence Ministry statement added.

He also visited the Ecole Militaire, a well-known military school in Paris, where he was briefed on Future Combat Command (CCF). Additionally, he was briefed at the Technical Section of the French Army (STAT) and visited the Battle Lab Terre in Versailles.

Meanwhile, on Thursday, the COAS will visit the Neuve Chapelle Indian War Memorial, where he will lay a wreath in honour of Indian soldiers who fought in World War I. Later, he will deliver a talk at the Ecole de Guerre, the French Joint Staff College, focusing on modern warfare and India's strategic vision.

"General Dwivedi's visit aims to strengthen the military collaboration between India and France, exploring new avenues of cooperation and enhancing strategic partnerships between the two nations' armed forces," the MoD statement added.

The visit by the COAS comes days after India and France held a Bilateral Dialogue on Disarmament and Non-Proliferation in Paris on February 14. During the dialogue, both sides discussed developments in disarmament and non-proliferation related to nuclear, chemical, and biological domains, as well as outer space security, conventional weapons, Artificial Intelligence (AI) in the military domain, lethal autonomous weapons systems, and multilateral export control regimes.

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Pakistan’s F-16 Use Under Scrutiny Again as U.S. Sends Contractors, Releases $400 Million Ahead of Balakote Anniversay

Source: Republic World, Dt. 24 Feb 2025,
URL: https://www.republicworld.com/defence/global-defence-news/pakistans-f-16-use-under-scrutiny-again-as-us-sends-contractors-releases-400-million-ahead-of-balakote-anniversay

The Donald Trump administration has approved the release of $400 million USD to fund Pakistan's F-16 Technical Security Team (TST)—a group of U.S. contractors stationed in Pakistan to ensure compliance with end-use monitoring (EUM) rules. These regulations mandate that

Pakistan's F-16 fleet, particularly the F-16C/D Block-52 fighters, be used exclusively for counterinsurgency (COIN) and counterterrorism (CT) operations. However, this decision has sparked renewed controversy, given past allegations of Pakistan's misuse of F-16s against India.

Renewed Debate on Pakistan's F-16 Use Against India

Despite Pakistan's claims that its F-16s have been deployed solely for counterterrorism, recent social media posts have reignited the debate over their alleged use against India during Operation Swift Retort on February 27, 2019. A viral image posted on Twitter features an F-16B from Pakistan's No. 9 Squadron (The Griffins), stationed at PAF Base Mushaf, Sargodha, displaying an Indian kill mark from the 2019 skirmish.

This image has led to renewed scrutiny over whether Pakistan violated its agreement with the United States, which explicitly restricts the use of F-16s for counterterrorism operations.

The 2019 Aerial Skirmish and Pakistan's Cover-up Attempts

Following India's Balakot airstrike on February 26, 2019, tensions between India and Pakistan escalated. The next day saw an intense aerial engagement, during which Wing Commander Abhinandan Varthaman of the Indian Air Force (IAF), piloting a MiG-21 Bison, engaged a Pakistani F-16. While Pakistan has consistently denied losing an F-16, multiple independent reports and intelligence assessments suggest otherwise.

Key Evidence Challenging Pakistan’s Denial

Residents of Pakistan-occupied Kashmir (PoK) reported witnessing two aircraft crashing—one identified as an IAF MiG-21 and the other a PAF aircraft, widely suspected to be an F-16. Not only this, the Indian Air Force (IAF) presented radar signatures and electronic warfare data confirming the presence of PAF F-16s in the engagement and the subsequent downing of one aircraft.

Wreckage of an AIM-120 AMRAAM missile, which is exclusively equipped with Pakistani F-16s, was recovered on the Indian side of the Line of Control (LoC), proving F-16 involvement. Intercepted PAF radio communications revealed frantic discussions about the loss of an aircraft and a missing pilot, indicating the downing of an F-16.

Two distinct parachutes were observed descending in PoK—one was later confirmed to be Wing Commander Abhinandan's, while Pakistan failed to account for the second ejection. Additionally, Pakistani authorities blocked media access to the crash site, preventing independent verification. Satellite data from after the engagement showed unusual disturbances at PAF F-16 bases, hinting at aircraft losses or repositioning.

Balakot Airstrike: Pakistan’s Misinformation Campaign

The Balakot airstrike itself was subject to a misinformation campaign by Pakistan. Pakistan claimed no damage or casualties occurred. However, intelligence reports confirmed that the Jaish-e-Mohammed (JeM) training camp was struck, with significant militant losses. In the aftermath, Pakistan restricted access to Balakot, preventing independent observers from verifying the strike's impact.

The release of $400 million for Pakistan's F-16 program is raising serious concerns about compliance with end-use agreements. The alleged misuse of F-16s against India directly contradicts U.S. conditions that they are used exclusively for counterterrorism operations.

The Trump administration's decision comes despite prior U.S. actions:

- In 2018, the U.S. cut military aid to Pakistan, citing failure to act against terrorist groups.
- In 2019, following the F-16 misuse allegations, U.S. officials raised concerns about the integrity of Pakistan's military agreements.

The Bigger Picture: U.S. Foreign Aid Policies

The Trump administration has selectively released $5.3 billion in previously frozen foreign aid, with most of it allocated to security and counter-narcotics programs. The Pakistan F-16 funding falls under the State Department's Bureau of Political-Military Affairs, which oversees arms sales and military assistance. However, humanitarian aid remains largely frozen.

The approval of $400 million for Pakistan's F-16 program has once again highlighted Pakistan's history of alleged military deception. With new evidence suggesting that Pakistan deployed F-16s against India in 2019, the U.S. government's oversight of Pakistan's military practices is now under scrutiny. If past incidents serve as any indicator, the concerns about misuse are far from baseless, and strict monitoring of Pakistan's F-16 fleet remains a strategic necessity.

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ठीक नहीं विदेशी रक्षा सामग्री पर निर्भरता, आत्मनिर्भर महाशक्ति बनने के लिए उठाने होंगे बड़े कदम

Source: Jagran Dt. 24 Feb 2025,
URL: https://www.jagran.com/editorial/apnibaat-india-will-have-to-take-big-steps-to-become-a-self-reliant-superpower-23890310.html

प्रधानमंत्री नरेन्द्र मोदी की हाल की अमेरिका यात्रा के दौरान अमेरिकी राष्ट्रपति डोनाल्ड ट्रंप ने अपने सबसे उन्नत लड़ाकू विमान एफ-35 की भारत को बिक्री की पेशकश की। इसके बाद से देश में बहस छिड़ी हुई है कि भारत को ये विमान खरीदने चाहिए या नहीं।

इसका एक कारण यह है कि अमेरिका की तरह रूस ने भी भारत को अपने सबसे उन्नत लड़ाकू विमान सुखोई-57 को बेचने का प्रस्ताव दिया है। इस प्रस्ताव में सुखोई-57 का भारत में रूस द्वारा निर्माण और उसके कलपुर्जों के निर्माण का काम भारतीय कंपनियों को दिया जाना भी शामिल है।

रूस इस सौदे में भारत को पांचवीं पीढ़ी के लड़ाकू विमान की तकनीक भी हस्तांतरित करने को तैयार हो सकता है, जिसमें फाइटर जेट इंजन निर्माण से लेकर रडार तकनीकी भी शामिल होगी। विडंबना यह है कि भारत में बहस इस पर केंद्रित रहती है कि किस देश से कौन सा हथियार खरीदा जाए।

जहां हम इस प्रश्न को लेकर उलझे हैं कि पांचवीं पीढ़ी के लड़ाकू विमान अमेरिका से खरीदे जाएं या रूस से, वहीं चीन ने छठी पीढ़ी के स्वनिर्मित लड़ाकू विमान का परीक्षण शुरू कर दिया है। भारत चौथी पीढ़ी के स्वनिर्मित हल्के लड़ाकू विमान तेजस की वायुसेना को अपेक्षित आपूर्ति ही नहीं कर पा रहा है।

इसे लेकर बीते दिनों वायुसेना प्रमुख ने भी असंतुष्टि जाहिर की। अगर हम यूक्रेन युद्ध को लेकर अमेरिकी दबाव मान लेते तो संभव है कि तेजस के लिए जरूरी अमेरिकी कंपनी जीई के इंजन मिल गए होते। वैसे तेजस भी पूरी तरह स्वदेशी नहीं है। इसकी अनदेखी नहीं की जानी चाहिए कि रूस सैकड़ों प्रतिबंधों और दबावों के बावजूद तीन सालों से यूक्रेन युद्ध इसलिए जारी रख पा रहा है, क्योंकि वह हथियारों के निर्माण और ऊर्जा संसाधनों के मामले में आत्मनिर्भर हैं।

यह क्षमता ही किसी देश को सही मायनों में संप्रभु महाशक्ति बनाती हैं। इस क्षमता का ही परिणाम है कि अमेरिका के नए सत्ताधीश यह बखूबी समझते हैं कि रूस जैसी आत्मनिर्भर शक्ति को निर्णायक रूप से हराया नहीं जा सकता और वे अब रूस से समझौते की बात कर रहे हैं।

भारत विभिन्न देशों पर अपनी निर्भरता के चलते आज तक कोई युद्ध इतने समय तक चला ही नहीं पाया और युद्ध के मैदान में जीती बाजी भी हम विदेशी दबाव के चलते वार्ता की मेज पर हारते रहे हैं। 1971 का युद्ध गुलाम कश्मीर पर कोई निर्णायक फैसला लिए बिना जल्दबाजी में इसलिए समाप्त किया गया था, क्योंकि सोवियत नेता अमेरिका से एक सीमा से अधिक रार नहीं बढ़ाना चाहते थे और हम रक्षा और दूसरे मामलों में सोवियत संघ पर निर्भर थे।

यही कारण है कि भारत के पहले सीडीएस रहे स्वर्गीय जनरल बिपिन रावत चाहते थे कि भारत अपने रक्षा उपकरण स्वयं ही बनाए और वे अगर विदेशी रक्षा उपकरणों से गुणवत्ता में थोड़े कमतर भी हों तो भी स्वदेशी उत्पादों को ही वरीयता दी जानी चाहिए। जनरल रावत का कहना था कि यदि कोई स्वदेशी रक्षा उत्पाद गुणवत्ता के 70 प्रतिशत मानक भी पूरे कर दे तो विदेशी साजोसामान के मुकाबले उसे वरीयता मिलनी चाहिए।

अगर ऐसा किया जाए तो देश का धन देश से बाहर नहीं जाता और बिना किसी दूसरे देश की नीतिगत प्राथमिकताओं का दबाव झेले ऐसे रक्षा उपकरणों का अनवरत उत्पादन किया जा सकता है। उच्च गुणवत्ता वाले ऐसे रक्षा उपकरणों का क्या ही लाभ, जिसके निर्माता देश के विभिन्न मामलों में नीतिगत दबाव भारत को झेलने पड़ें?

जहां तक गुणवत्ता का प्रश्न है तो तकनीकी विकास एक सतत प्रक्रिया है, जिसमें असफलताओं से भी सीखने को मिलता है और समय के साथ खामियों को गहन अनुसंधान से दूर किया जा सकता है। चंद्रयान-2 की असफलता के बाद चंद्रयान-3 में किए गए सुधारों के चलते वह बेहद सफल रहा।

गुणवत्ता में क्रमिक सुधार का चीन सबसे बड़ा उदाहरण है। चीन भी शुरुआती दिनों में हथियारों के लिए सोवियत संघ पर निर्भर था, परंतु उसने जो लड़ाकू विमान और युद्धक उपकरण एक बार सोवियत संघ से खरीदे, उनकी नकल कर वैसे ही उत्पाद स्वयं बनाने की कोशिश की।

रिवर्स इंजीनियरिंग के माध्यम से बनाए गए ये उत्पाद प्रारंभ में अच्छी गुणवत्ता वाले नहीं थे, परंतु चीन निरंतर अनुसंधान में लगा रहा। चीनी सरकार ने योजनाबद्ध तरीके से अपने छात्रों को पढ़ने विश्व भर के शीर्ष विश्वविद्यालयों में भेजा, जहां उन्होंने उच्च तकनीक से जुड़ा ज्ञान हासिल किया। बाद में विदेशी कंपनियों से भी ऊंचे पैकेज देकर उन्हें वापस चीन बुलाया ताकि वे अपने देश के लिए काम करें।

सोवियत संघ ने भारत और चीन को मिग-21 विमान 1961-62 में लगभग एक ही समय पर बेचे थे। चीनी इंजीनियरों ने मिग-21 और सुखोई-15 के डिजाइन की नकल कर 1980 तक आते-आते अपना लड़ाकू विमान जे-8 बना डाला। 2017 में स्वनिर्मित पांचवीं पीढ़ी के लड़ाकू विमान जे-20 को चीन अपनी वायुसेना में शामिल कर चुका है। इसके विपरीत 1984 में शुरू किए गए भारतीय हल्के लड़ाकू विमान कार्यक्रम के अंतर्गत तेजस विमान आज तक अपेक्षित संख्या में भारतीय वायुसेना को नहीं मिल सके हैं। यह स्थिति बहुत कुछ बताती है।

वायुसेना की आवश्यकताओं और भारत की सुरक्षा चुनौतियों को देखते हुए अब सीमित मात्रा में ही विदेशी लड़ाकू विमानों की खरीद होनी चाहिए। इसके साथ ही यह सुनिश्चित किया जाना चाहिए कि जो भी विदेशी लड़ाकू विमान खरीदा जाए, उसकी अधिकतर तकनीक का भी भारत को हस्तांतरण हो।

अबकी बार विदेशी लड़ाकू विमान खरीदते हुए यह एक राष्ट्रीय संकल्प होना चाहिए कि भारत अंतिम बार ही कोई विदेशी लड़ाकू विमान खरीदा रहा है। इसके बाद स्वयं ही अपनी सेनाओं की आवश्यकताओं के लिए उनका निर्माण किया जाएगा। यह एक राष्ट्रीय मिशन होना चाहिए।

इसके लिए आवश्यक अनुसंधान के लिए जितने भी वित्तीय संसाधनों की आवश्यकता हो, सरकार को खुले मन से उन्हें मुहैया कराना चाहिए। साथ ही विदेशों में काम कर रहे उच्च कोटि के भारतीय इंजीनियरों को किसी भी कीमत पर वापस भारत में लाना चाहिए, जिससे भारत सही मायनों में एक आत्मनिर्भर महाशक्ति बन सके।

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Science & Technology News

US space mining company to target mineral-rich asteroid this week

Source: The Indian Express, Dt. 25 Feb 2025,
URL: https://indianexpress.com/article/technology/science/astroforce-odin-asteroid-platinum-mining-9853120/

A US-based private aerospace company is aiming to commercially mine an asteroid later this week using a microwave-sized robotic spacecraft named Odin, according to a report Sunday.

According to The New York Times, AstroForge in California has already launched a demonstration spacecraft into Earth's orbit, recently raised $55 million in funding, and is now preparing to target football-size near-Earth Asteroid 2022 OB5.

"If this works out, this will probably be the biggest business ever conceived of," Matt Gialich, founder and CEO, AstroForge, the builder and operator of the robotic probe, was quoted as saying by The New York Times Sunday.

Odin is AstroForge's second spacecraft and will be carried into space by the SpaceX Falcon 9 rocket no earlier than February 26, along with a privately built moon lander and a lunar orbiter, from the Kennedy Space Center in Florida.

Odin will separate from the Falcon 9 after 45 minutes of flight time, beginning its solo journey. The spacecraft's mission is to capture images of Asteroid 2022 OB5 using black-and-white cameras from a distance of 0.6 miles. These images will help measure the asteroid's density and metallic content. The asteroid, classified as an M-type, is believed to contain up to 117,000 tons of platinum.

The cost of the Odin spacecraft is estimated at $6.5 million, and AstroForge is already planning its third asteroid mission, possibly by late 2025 or early 2026 with an aim to land on an asteroid for extraction. According to space.com, AstroForge's first mission, Brokkr-1, reached orbit in April 2023 but could not activate the cubesat's prototype refinery technology.

"A single 1-kilometre-diameter asteroid, if it were platinum-bearing, would contain about 117,000 tons of platinum. That's about 680 years of global supply. You're talking about centuries of

platinum demand from a single asteroid," Mitch Hunter-Scullion, founder and CEO, Asteroid Mining Corp in Britain, told The New York Times.

The overall mission is expected to last over 300 days before Odin returns to Earth with images that could finally determine whether the asteroid is indeed metallic.

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Physicists propose tabletop experiment to test gravity's quantumness

Source: The Hindu, Dt. 25 Feb 2025,
URL: https://www.thehindu.com/sci-tech/science/tabletop-experiment-gravity-quantumness-test-nanocrystals/article69226228.ece

General relativity and quantum mechanics are two highly successful theories. The former explains gravity and the latter teams up with special relativity to describe the other three forces of nature: electromagnetic, strong nuclear, and weak nuclear forces.

However, scientists don't know how gravity fits into quantum mechanics. In fact, they have been proposing experiments that can test the quantumness of gravity. On October 29, 2024, one such proposal appeared in the journalPhysical Review Letters.

With concepts like superposition, illustrated by the Schrödinger's cat thought experiment, and entanglement, quantum mechanics defies classical intuition. Quantum mechanics also allows seemingly absurd phenomena, e.g. the measurement of a quantum system (like a particle) can cause the system to instantaneously 'collapse' into one possible state that described the system before the measurement.

In fact, if a system undergoes measurement-induced collapse, it's said to live by the rules of quantum mechanics. Classical systems like planets orbiting stars, cricket balls flying in the air, and cars on the road don't do this.

Ruling out alternatives

Multiple experiments have found that both quantum mechanics and general relativity are legitimate theories of nature — yet they remain incompatible with each other. This has encouraged physicists to try and come up with a larger theory that can accommodate both. One strong contender is string theory, another is loop quantum gravity. Both of them predict deviations from quantum mechanics and general relativity either at the beginning of the universe or inside black holes, meaning they're nearly impossible to test.

"So far, experimental tests are extremely difficult — the situation looks very bleak — it is not clear if it can be done at all," Dipankar Home of Bose Institute, Kolkata, and one of the authors of the new paper, said.To check whether gravity is quantum mechanical, scientists need precise tests that rule out alternative possibilities.

Unlike the classical Newtonian mechanics, where measuring a system doesn't alter it, quantum mechanics dictates that observing a system forces it into a definite state. This isn't a matter of how

carefully a physicist is making the measurement. The measurement will always collapse the state. So measuring the state versus not measuring it creates a way to test whether the system is behaving according to the laws of Newtonian mechanics or quantum mechanics.

As a first step, physicists said they needed an experiment where gravity helps an inherently quantum mechanical process happen. If gravity causes the state to collapse, it will be a sign that gravity behaves quantum mechanically.

The new study suggested the following design: a test mass is in a superposition of two possible paths it can take. A probe mass will interact with it gravitationally to force it to choose one of the paths. Here, both masses are in a superposition of which paths they take. These two paths come close, resulting in different distances between the two pairs of paths. That is, for each path of the test mass, there are two possible paths the probe mass can take.“Such simple, yet novel proposals … are very interesting to the community,” said Sreenath K. Manikandan, a theoretical physicist at the Nordic Institute for Theoretical Physics, Sweden, who wasn’t involved in the study.

Testing weak gravity

The idea is also interesting because it proposes to test weak gravity. Say you’re performing an experiment where you’re looking for light. If the light is bright, you can find it just by looking at it. But if it is very dim, you need sophisticated light-detecting cameras. Similarly, ideas to look for quantum gravity have so far involved strong gravity, like that near black holes, whereas the new test proposes looking for weak gravity, like the force near a small object.

“Our contention is that fundamental quantum gravity features can persist in this limit,” Home said.

Igor Pikovski, a quantum gravity researcher at the Stevens Institute of Technology and Stockholm University, commended this: “The important lesson is that quantum gravity signatures might show themselves even … in tabletop set-ups and not just in science-fiction scenarios.”But independent experts said the experiment is still challenging because the masses need to behave quantum mechanically.

Quantum properties usually show up in a measurable way in systems that exist at a smaller than microscopic scale, like inside atoms, whereas gravity is easier to measure around larger objects, like a building.

This is why Vivishek Sudhir of the Massachusetts Institute of Technology said, “Preparing a spatial quantum superposition of an object massive enough such that its gravitational force is also measurable is an enormous experimental challenge.”

Creating a superpositionBose et al. have proposed the use of masses weighing about one-trillionth of a gram while maintaining a separation of around one-tenth of a millimetre. Nanocrystals meet these criteria.

Yet the team still estimates a decade for their experiment to be conducted. Thus far, “the largest objects that have been placed in two places at once are macromolecules. We will have to place a nanocrystal, which is a billion times larger, in two places at once,” Sougato Bose, one of the coauthors of the study, said.

“Creating this superposition is by far the main challenge,” Debarshi Das, another coauthor, added.To do so, the authors have proposed using a quantum property of the nanocrystals called spin. Simply speaking, the spin affects the nanocrystals’ motion (and can be manipulated by an external magnetic field). The spin of each nanocrystal exists in a superposition of two states until it is measured. Since the state affects the nanocrystal’s path, it also exists in a superposition of two paths until a measurement.

“Once prepared in such a state, the gravitational field produced by this configuration will need to be measured very rapidly,” according to Sudhir. “This is because any spatial quantum superposition will be extremely fragile and will die quickly, [so] measurements have to be made before this happens.”

Bose also said the nanocrystals can collide with gas atoms and other objects and forces in their environment, which could destroy the superposition. “This could include things like the gravitational forces from seismic activity in the earth or perhaps even those due to clouds moving in the sky,” Sudhir said.

For these reasons, the experimental set-up will have to happen in a near-perfect vacuum and the masses’ properties will have to be measured with extreme efficiency.

An open mindDespite all these challenges, physicists are hopeful. The proposed test has a much shorter timeline than the centuries required for humankind to develop the technologies to test quantum gravity near black holes.

Pikovski agreed the future is bright: “Just a few years ago, it was considered impossible to experimentally test quantum gravity even in principle.”

The experts also said that the test may reveal gravity isn’t a classical force, and that overall they will have to keep an open mind: it may not necessarily mean gravity is quantum but that it could be a non-classical and non-quantum entity, something different altogether.

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