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समाचार पत्रों से चयित 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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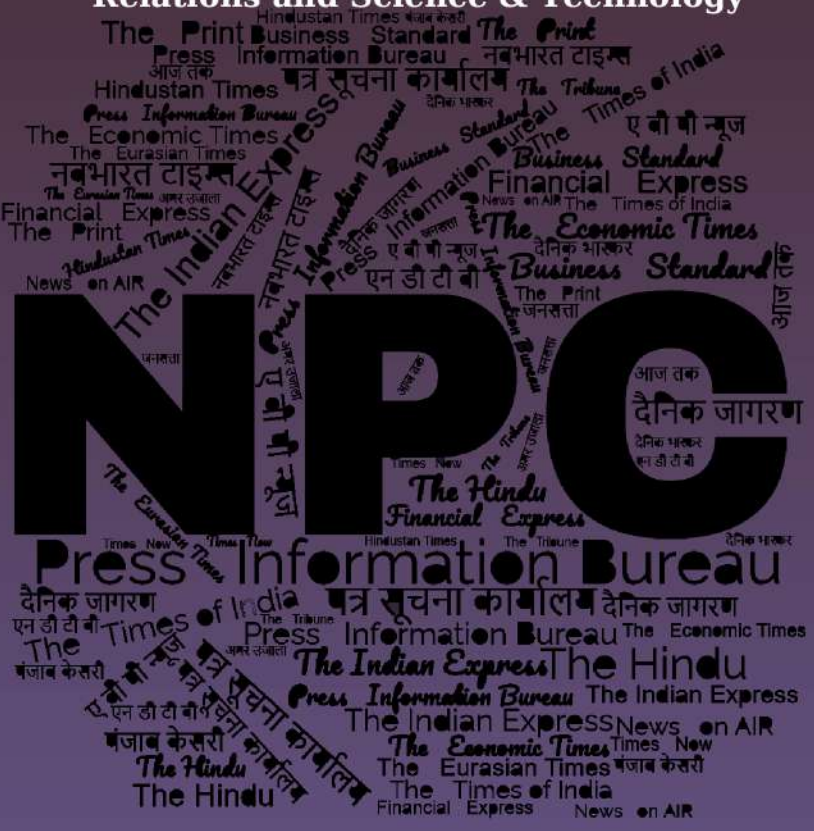

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अमर उजाला

Wed, 12 Jul 2023

इसरो-डीआरडीओ के वैज्ञानिक छात्रों को पढ़ाएंगे अंतरिक्ष विज्ञान

जूनियर से लेकर माध्यमिक व डिग्री कॉलेजों के छात्र अंतरिक्ष विज्ञान की पढ़ाई कर सकेंगे। इसरो और डीआरडीओ के वैज्ञानिक अंतरिक्ष में होने वाली गतिविधियों एवं विज्ञान से रूबरू कराएंगे।

इसके लिए सभी स्कूलों और कॉलेजों में ऑनलाइन कक्षाएं शुरू कराई जाएंगी। अधिक से अधिक स्कूल व कॉलेजों को संबद्ध कराने के लिए भारत अंतरिक्ष सप्ताह की ओर से सभी को पत्र लिखा गया है।

भारतीय अंतरिक्ष अनुसंधान संस्था (इसरो) की ओर से संचालित भारतीय सुदूर संवेदन संस्थान (आईआईआरएस) के भारत अंतरिक्ष सप्ताह कार्यक्रम के तहत बच्चों में अंतरिक्ष विज्ञान के प्रति रुचि बढ़े, इसके लिए ऑनलाइन कोर्स शुरू किए जाने की तैयारी है।

इसमें इसरो व डीआरडीओ (डिफेंस रिसर्च एंड डेवलपमेंट आर्गनाईजेशन) के विशेषज्ञ विभिन्न प्रकार के पाठ्यक्रम शुरू करेंगे जो छह माह से लेकर दो साल की अवधि के लिए होंगे।

संबद्ध होने वाले स्कूल व कॉलेजों में ऑनलाइन कक्षाएं चलेंगी। आवश्यकता के अनुसार विशेषज्ञों की टीम पहुंचेगी और बच्चों को भौतिक जानकारियां देगी। भारत अंतरिक्ष सप्ताह के सचिव डॉ. आदेश कुमार, डॉ. सत्यबिंदु व क्षेत्रीय निदेशक डॉ. प्रभांशु कुमार की देखरेख में डीआईओएस, डायट प्राचार्य व विश्वविद्यालयों के कुलपतियों के जरिए संबद्धीकरण की प्रक्रिया पूरी की जा रही है।

इन पाठ्यक्रमों पर होगी पढ़ाई अंतरिक्ष पाठ्यक्रम के तहत पाइथन विद स्पेस साइंस, ओवरव्यू ऑफ स्पेस साइंस टेक्नाेलॉजी एंड एप्लीकेशंस, रिमोट सेंसिंग टेक्नाेलॉजी, प्लानेट्री विज्ञान समेत छह कोर्स संचालित किए जाएंगे। इसी तरह खगोल विज्ञान पर भी छह प्रकार के कोर्स संचालित होंगेे। कोर्स पूरा होने पर सर्टिफिकेट दिया जाएगा।

सभी प्रकार के स्कूलों, कॉलेजों व महाविद्यालयों में अंतरिक्ष विज्ञान की पढ़ाई शुरू करने के लिए संबद्धीकरण की प्रक्रिया शुरू की गई है। इसरो और डीआरडीओ के विशेषज्ञ ऑनलाइन छात्र-छात्राओं को अंतरिक्ष की बारीकियां सिखाएंगे।

https://www.amarujala.com/uttar-pradesh/barabanki/isro-drdo-scientists-will-teach-space-science-to-students-barabanki-news-c-315-1-brp1007-28-2023-07-12

Press Information Bureau
Government of India

Ministry of Defence

Tue, 11 Jul 2023

Raksha Mantri Shri Rajnath Singh Inaugurates HAL's Regional Office in Kuala Lumpur to Facilitate Close Defence Industrial Collaboration between India & Malaysia

Recognising defence exports as a key pillar of sustainable growth of the Indian defence industry, Raksha Mantri Shri Rajnath Singh inaugurated the Regional Office of Hindustan Aeronautics Limited (HAL) in Kuala Lumpur, Malaysia on July 11, 2023. This Regional Office will facilitate close defence industrial collaboration between India and Malaysia. It will also serve as a hub for the HAL's engagement with the wider South-East Asian region and act as a window for other Indian Defense PSUs.

Malaysia is home to the second largest members of the Persons of Indian Origin and has a significant presence of the NRI community. The Raksha Mantri interacted with the Indian diaspora on two different occasions. The first community interaction included Ministers and senior officials of Government of Malaysia and eminent personalities from polity, culture & the industry. The reception was attended by Minister for Human Resources of Malaysia Mr V Siva Kumar and Deputy Minister for Entrepreneurship and Cooperatives Development Ms Saraswathy Kandasami.

During the event, the Raksha Mantri appreciated the rich legacy of Indian classical art tradition in Malaysia as witnessed in the presentations of Odissi dance as well as the Carnatic and Hindustani music performances by renowned Malaysian artistes.

In a separate event, Shri Rajnath Singh interacted with the members of the diverse and vibrant Indian community in Malaysia, including the leaders and members of various Indian community organisations in the country. He appreciated their deep-rooted and close connect with India.

The Raksha Mantri highlighted that the country's prestige and stature on the global stage had increased under the leadership of Prime Minister Shri Narendra Modi. He acknowledged the role of the Indian diaspora in the growth story of India. He encouraged them to work honestly for the shared prosperity of India and Malaysia, underlining the spirit of *'Vasudhaiva Kutumbakam'*.

Shri Rajnath Singh also visited Ramakrishna Mission in Petaling Jaya and offered floral tribute to the statue of Swami Vivekananda which was unveiled by Prime Minister Shri Narendra Modi in November 2015. He also visited the iconic Batu Caves temple premises and offered his prayers.

In addition, the Raksha Mantri paid a visit to the Torana Gate at Brickfields, a symbol of friendship between India and Malaysia, which was also inaugurated by Prime Minister Shri Narendra Modi in November 2015. He also visited Kortumalai Ganesar Temple, Kuala Lumpur and offered prayers to Bhagwan Ganesh.

https://pib.gov.in/PressReleasePage.aspx?PRID=1938757

Press Information Bureau
Government of India

Ministry of Defence

Tue, 11 Jul 2023

Japan India Maritime Exercise 2023 (JIMEX 23) Concludes

The 7th edition of Japan India Maritime Exercise 2023 (JIMEX 23) hosted by the Indian Navy concluded in the Bay of Bengal with the two sides bidding farewell to each other with a customary steampast. Indian Naval ships Delhi, Kamorta and Shakti, under the command of RAdm Gurcharan Singh, Flag Officer Commanding Eastern Fleet and Japan Maritime Self Defence Force (JMSDF) ship Samidare under the command of RAdm Nishiyama Takahiro, Commander Escort Flotilla One, participated in the six day long exercise.

JIMEX 23 witnessed complex exercises, undertaken jointly by the two navies. Both sides engaged in advanced level exercises in all three domains of maritime warfare - surface, sub surface and air. Besides ships and their integral helicopters, the exercise also witnessed the participation of fighter aircraft, maritime patrol aircraft and a submarine.

JIMEX 23 ended on a high note revalidating common procedures and enhancing interoperability between the IN and JMSDF.

https://pib.gov.in/PressReleasePage.aspx?PRID=1938774

INDIA TODAY

Wed, 12 Jul 2023

India, France Discuss Co-Developing Fighter Jet, Helicopter Engines

India and France have been closely collaborating on engines for advanced fighter jets and helicopters as part of India's self-reliance program in defense. According to senior government sources, talks between Indian and French officials have been progressing further in this area.

The two countries are focused on the development of a stronger engine for the Advanced Medium Combat Aircraft project.

The Defense Research and Development Organisation (DRDO) and French firm Safran are engaged in these discussions, with the aim of achieving a 100% transfer of technology.

Private sector participation is also a possibility. Discussions are underway about engines that will be used in the Indian Multirole Helicopters being developed by Hindustan Aeronautics Limited.

These projects are vital as they will ensure that India has access to critical technologies for future aircraft developments. By collaborating with France, India aims to become more self-sufficient and capable of working on such projects independently.

PM MODI'S FRANCE VISIT

India is planning to buy 26 Rafale M naval jets and three more Scorpene submarines from France. Prime Minister Narendra Modi, will likely announce these deals during his visit to France from July 14 to 16. The defense procurement board approved these deals on Monday.

The total value of these agreements is estimated to be around Rs 90,000 crore. The Indian Navy has been facing a shortage of aircraft and submarines in recent years, emphasizing the urgent need to meet their requirements.

Prime Minister Narendra Modi has been invited as the chief guest at the Bastille Day Parade in Paris, France, on July 14. Alongside him, a contingent of the Indian military will participate in the parade, including troops from the Indian Army's Punjab Regiment, the Indian Navy, and the Indian Air Force.

https://www.indiatoday.in/world/story/india-france-modi-visit-fighter-jets-technologies-submarines-helicopters-2405210-2023-07-12

Hindustan Times

Wed, 12 Jul 2023

Senate Defence Act Draft Opens Door for Deeper American Cooperation with India

As part of the National Defence Authorisation Act (NDAA), the umbrella legislation that determines the United States (US)‘s defence budget and priorities, the Senate Armed Services Committee (SASC) has asked Pentagon to ensure that India is “appropriately considered for security cooperation benefits” consistent with its status as a major defence partner.

In particular, the draft NDAA asks the US defence secretary to deepen cooperation with India in areas such as artificial intelligence (AI), undersea domain awareness, air combat and support, munitions, and mobility. It lists out a set of areas, including counter-terror operations, maritime and border security operations, and military intelligence operations where the Pentagon should consider a reciprocal agreement with India to build capacity.

It asks Pentagon to explore eligibility for Indian companies to bid on contracts for “maintenance, repair and overhaul” of Department of Defence (DOD)’s equipment located outside the US, a significant step which, if realised, will open up doors for India’s mushrooming private defence firms.

To be sure, this version of NDAA, while passed on a bipartisan basis by the Senate Armed Services Committee, is not the final act yet. The House of Representatives is in the process of finalising its own version of the NDAA, and eventually, the two versions, passed by the two chambers, will be reconciled in conference before the text is finalised.

The build-up

But the Senate's version is understood to have the sanction of the chamber's top political leadership. It is based on inputs from DOD and is a result of the intense engagement between the US Congress and India in recent months.

The Senate majority leader, Chuck Schumer, led what was the most high-powered Congressional delegation to India in diplomatic history earlier this year, where he highlighted the centrality of the partnership with India in the competition with China and met Prime Minister Narendra Modi. Jack Reed, the chair of the SASC, was a part of the delegation.

During his state visit to Washington DC last month, Modi addressed a joint meeting of the Senate and the House where his reference to deeper India-US defence ties was greeted with a standing ovation and applause. He met Schumer during an interaction with the Congressional leadership in the Capitol and also interacted with Schumer at the state dinner hosted by President Joe Biden, where the Senate majority leader was seated at the head table with the President and the PM.

The two countries have also unveiled and operationalised the initiative on critical and emerging technologies (ICET), under which a key component is a defence industrial cooperation road map. During defence secretary Lloyd Austin's visit to New Delhi in June, this road map was finalised and during Modi's visit, in a rare gesture, the White House expedited the approval of the co-production of GE's F414 jet engines in India with an unprecedented element of tech transfer.

The NDAA text

The NDAA draft asks the defence secretary, in coordination with the Secretary of State and other relevant heads of agencies, to explore four particular lines of effort to ensure India benefits from its status as a major defence partner.

The first is "eligibility for funding to initiate or facilitate cooperative research, development, testing, or evaluation projects" with the DOD in AI, undersea domain awareness, air combat, and support, munitions, and mobility.

The second is "eligibility to enter into reciprocal agreements with the Department of Defence for the cooperative provision of training on a bilateral or multilateral basis in support of programs for the purpose of building capacity". It specifies eight areas of cooperation in this regard, including counterterrorism operations; counter-weapons of mass destruction operations; counter-illicit drug trafficking operations; counter-transnational organised crime operations; maritime and border security operations; military intelligence operations; air domain awareness operations; and cyberspace security and defensive cyberspace operations.

The third line of effort that the Senate asks the Pentagon to pursue with regard to India is its "eligibility to enter into a memorandum of understanding or other formal agreement with the Department of Defence for the purpose of conducting cooperative research and development projects on defence equipment and munitions".

And finally, it mandates DOD to explore "eligibility for companies from India to bid on contracts for the maintenance, repair, or overhaul" of DOD equipment located outside the US.

The NDAA draft also instructs the defence secretary to provide, by March 1, 2024, a briefing to the relevant committees of the Senate and House on the status of "security cooperation activities with India" in the areas outlined above.

https://www.hindustantimes.com/india-news/us-senate-urges-pentagon-to-deepen-security-cooperation-with-india-in-defence-and-technology-fields-101689135321822.html

INDIA TODAY

Tue, 11 Jul 2023

Why Rafale-M Jets, Scorpene Submarines Figure High on Modi's France Visit

By Pradip R. Sagar

The Narendra Modi government is on an overdrive when it comes to India's defence preparedness. After getting engines for India's homegrown fighter jet project from the United States, the government is all set to acquire deck-based fighter jets for the indigenous aircraft carrier INS *Vikrant*from France.

Announcement of a deal to purchase 26 Rafale Marine fighter jets is expected during Prime Minister Modi's upcoming visit to France. The Rafale-M was up against the US's Boeing F/A-18 Super Hornet for the Indian Navy's Multi-Role Carrier Borne Fighters (MRCBF) programme. Last year, both fighters had displayed their capabilities during trials at the shore-based INS *Hansa* test facility in Goa, which simulated the deck of the INS*Vikramaditya* aircraft carrier.

The two fighters went through extensive capability trials, including take-off by ski-jumping off a ramp. This technique, called short take-off but arrested recovery (STOBAR), is deployed on INS *Vikramaditya* and INS *Vikrant* while carriers of the French and US navies favour a flat deck and catapult launch system. Last year, the Indian Navy, in its report to the ministry of defence, is believed to have stated that the Rafale-M was "more suitable in meeting the operational requirements and criteria" than the Super Hornet. However, the navy has officially not committed anything.

On July 14, PM Modi will attend the Bastille Day Parade in Paris as the guest of honour and also hold discussions with French president Emmanuel Macron during the visit.

Both leaders, while going ahead with the defence-industrial roadmap to push India to scale up its manufacturing of hardware platforms through indigenously-developed engines and technologies, may also announce the purchase of 26 Rafale-Ms, which would cost India at least $8 billion (Rs 65,920 crore). Like an earlier deal for 36 Rafale jets for the Indian Air Force (IAF), the navy's deal will also be an inter-governmental agreement between India and France.

Since most of INS *Vikrant*'s aviation facilities are designed to suit Russian fighter jets, the warship will require design changes to sync in the Rafale-M. Defence officials say that since the IAF is already using Rafale jets and the Rafale-M version has over 80 per cent similar components, the navy's deal will bring commonality as well as savings on training and maintenance.

For years, the navy has been waiting for India-made fighter jets for its aircraft carriers. The naval version of the Light Combat Aircraft (LCA) failed to meet expectations and the programme had to be abandoned.

Now, the Aeronautical Development Agency (ADA) of the DRDO (Defence Research and Development Organisation) is developing the Twin Engine Deck Based Fighter (TEDBF) for the navy. But the plane is in research and development stage, with the first test flight expected only by 2026 and induction by 2031. The navy is eyeing at least 26 imported fighter jets for its aircraft carriers as a 'stop-gap arrangement'.

Besides Rafale Marines, an agreement on additional three Scorpene submarines, to be built at the Mazagon Dock Shipbuilders Limited (MDL), is expected to find place in Modi's France visit.

France's Naval Group has already manufactured six Scorpene submarines with MDL in India. The additional submarines will fill the navy's requirement gaps. "Since the Naval Group has shared its critical technology of building submarines in India, and the MDL has learnt a lot during joint-manufacturing, India should utilise those skills and training," said a defence official.

The Indian Navy's Project-75, estimated to cost Rs 43,000 crore, is stuck. The programme was to build in the country six conventional submarines with better sensors and weapons and an air-independent propulsion system.

Ideally, the navy needs at least 24 submarines to meet its 30-year submarine-building plan, which was approved by the Cabinet Committee on Security in 1999 after the Kargil War. The plan was to induct 12 diesel submarines by 2012 and another 12 by 2030, but repeated delays forced the navy to rejig the plan. Now, the plan is to have 18 diesel-powered submarines and six SSNs (nuclear-power subs).

While China operates 65 submarines, the Indian Navy's fleet of attack submarines—all diesel-powered—has come down from 21 in the 1980s to just 16 at present. Only eight are battle-ready at any given time, as half of the fleet undergoes mid-life upgrades and is 30 years old.

https://www.indiatoday.in/india-today-insight/story/why-rafale-m-jets-scorpene-submarines-figure-high-on-modis-france-visit-2405108-2023-07-11

The Tribune

Wed, 12 Jul 2023

Upgrade to High-End Technology for Safeguarding Borders

By Lt Gen Pradeep Bali (Retd)

There has been an accelerated focus, for quite some time now, on the induction of high-end technology for use by the military. The three services have been stressing the importance of adopting niche technologies for various platforms, equipment and weapon systems. There is an endeavour to upgrade defence capabilities by the use of artificial intelligence, robotics and enhanced electronic and cyber applications.

A number of startups in the defence ecosystem are partnering with established technological institutions. However, the time taken for prototypes to move to assembly line production is considerable. Indigenous technological capabilities remain well short of the desired state-of-the-art systems available with the armed forces of the developed countries and alliance groupings. One major reason for this is the lack of adequate budgetary outlays for research and development, whether government-funded or in the private sector. India has consistently sought to nurture and build strategic partnerships with powerful nations to enhance its military capabilities.

The US is the leading powerhouse in military technology. During the recent Modi-Biden meeting, sharing of defence technology and joint production were the major thrust areas. General Electric has signed an agreement with India's Hindustan Aeronautics Limited to jointly manufacture F414 engines, which will power the next-generation fighter jet, Tejas 2, of the Indian Air Force. India will also procure 31 MQ-9B Guardian armed drones for over $4 billion from US defence major General Atomics Aeronautical Systems Inc. These would enhance India's surveillance capabilities along the border with China in the Himalayan heights and in the Indian Ocean.

In a major defence deal with Germany, Indian shipbuilder Mazagon Dock Shipbuilders Ltd signed a memorandum of understanding with ThyssenKrupp Marine Systems to build six advanced conventional submarines for the Indian Navy under Project-75I. The non-nuclear submarines will be built under the 'Make in India' initiative, which aims to reduce costly military imports. The PM's upcoming trip to France is likely to witness the announcement of more deals on key defence platforms. What needs to be ensured is the transfer of technology in real terms and the capacity of our defence industrial ecosystem to absorb these systems and equipment manufacturing capabilities.

Upgrading of aerial and sub-surface platforms, along with sharing of niche technologies, would prepare our armed forces for various security challenges. The requirements that need prioritisation are along our unsettled borders in the north and west, with the continuing activities and actions of our inimical neighbours being a constant concern. Intrusions across the Line of Actual Control (LAC) and a hostile deployment in hazardous terrain compel a mirroring readiness, which puts Army units and formations under year-round strain. The vital issue is to outguess the adversary and not be surprised by sudden buildups and intrusions, especially in sensitive areas. This necessitates being better prepared in terms of enhanced intelligence, surveillance and reconnaissance capabilities that can power a real-time response. The Guardian drones from the US will take time to be operationalised and are no substitute for constant satellite feed, which can well be met with indigenous capabilities. The ideal solution is dedicated satellites for the Army for communication, deep surveillance and instant feed through downlinks at field formation levels.

ISRO is one of the bright spots of the post-1947 India story. Our scientists have made remarkable progress in space research. Surprisingly, this is an asset which remains underutilised for the country's defence and security needs. Currently, India has only two dedicated military satellites — the GSAT-7 (Rukmini) launched in 2013 and GSAT-7A (Angry Bird) launched in 2018 — that are being used by the Navy and Air Force, respectively. At long last, the Army is set to have its own top-end communication satellite, with the Ministry of Defence entering into a Rs 3,000-crore agreement with New Space India Limited.

The Army depends upon commercially available inputs from foreign satellites and dated imagery from dual-use Indian satellites. Major armies across the globe, including those of the US, China and Russia, have dedicated satellites. Considering our pressing requirements for surveillance of the enemy's ground movements across the LAC and the availability of a top-rate organisation like ISRO, it is surprising that we have not yet achieved that. The launch of a solitary, long-overdue communication satellite for the Army is not good enough.

The Line of Control (LoC) remains live, with the main threat being infiltration of terrorists from Pakistan through the rugged terrain. The anti-infiltration obstacle system, which is now over two decades old, needs regular repairs. Such access denial systems are manpower-intensive, necessitating physical deployment for maintaining a constant vigil. Technological enhancement can make this a more effective obstacle and one that needs less manpower.

The best example to emulate is the arrangement at the Demilitarised Zone (DMZ), the 250-km-long border between North and South Korea along the 38th parallel. South Korea has used technology optimally to guard this border with minimum manpower, using an AI-enabled system developed by its tech companies and academia. The SGR-A1 is an autonomous sentry gun that was jointly developed by Samsung Techwin and Korea University to assist South Korean troops in the DMZ. It is widely considered as the first unit of its kind to have an integrated system that includes surveillance, tracking, firing and voice recognition. The primary goal of the project is to transform the guarding and observation mechanism into a robotic system. Many of the SGR-A1's features resemble those of similar automated stationary weapons such as the Super aEgis II and the Israeli Sentry Tech systems. Such systems need to be deployed along the LoC after customisation.

While technology upgrade for national defence and security is an ongoing process, its immediate focus needs to be along the LoC and the LAC for warding off current threats.

https://www.tribuneindia.com/news/comment/upgrade-to-high-end-technology-for-safeguarding-borders-524821

Firstpost.

Wed, 12 Jul 2023

France to Send SCALP Missiles to Ukraine: How will this Long-Range Weapon Help?

As France confirms the deployment of the SCALP cruise missile, Ukraine has acquired another long-range weapon capable of striking targets far beyond the front lines. The announcement was made on the sidelines of a NATO summit in Lithuania. French president Emmanuel Macron said the delivery of the missiles was aimed at enabling Ukrainian forces "to have the capacity to strike deeply." France's declaration on Tuesday came months after Britain began shipping its identical Storm Shadow. But what are these SCALP missiles and how can they help Ukraine. Let's take a closer look.

Ability to strike deeply

Developed jointly by the two NATO allies, Storm Shadow/SCALP is a 1,300-kilogramme (2,870 pounds) missile armed with conventional explosives, usually launched from aircraft such as the Royal Air Force's Eurofighter Typhoon or French Rafale. The first SCALPs were already in Ukraine as President Emmanuel Macron announced their delivery, a French military source told *AFP* Tuesday on the sidelines of the NATO summit in Lithuanian capital Vilnius. "I have decided to increase deliveries of weapons and equipment to enable the Ukrainians to have the capacity to strike deeply," Macron said. Built by missile maker MBDA, the missile's range of over 250 kilometres (155 miles) makes it the longest-range Western weapon supplied to Kyiv so far. It is capable of striking targets far into the country's Russian-occupied east, well behind front lines that have remained relatively fixed for months.

Such capability is "critical for Ukraine's forces to disrupt Russian logistics and command and control," said Ivan Klyszcz, a researcher at the Estonia based International Centre for Defence and Security (ICDS). SCALP strikes could help "with Ukraine's current approach to operations… namely to advance slowly so as to protect its forces and reduce its own casualties as much as possible," he added. French deliveries would "preserve the clarity and coherence of our doctrine, which is to allow Ukraine to defend its territory" from Russian invasion, Macron said.

The subtext is that French-supplied weapons should not be allowed to hit Russian territory, after Moscow's repeated warnings of reprisals. Macron's message matched that of Britain's Defence Secretary Ben Wallace, who said in May that Storm Shadow would "allow Ukraine to push back Russian forces based within Ukrainian sovereign territory".

'High-value targets'

"With these weapons, a few jets operating within the safe space of their own air defences can make a difference," said Dylan Lehrke of UK-based private intelligence firm Janes. "Russian forces can deny Ukrainian aircraft the use of airspace above territory they control, but they have been unable to defend against deep strikes," he added.

Manufacturer MBDA says on its website that the SCALP is "designed to meet the demanding requirements of pre-planned attacks against high-value fixed or stationary targets such as hardened bunkers and key infrastructure". It has been used in previous conflicts including in Iraq, Libya and Syria. The missile uses inertial navigation, GPS and terrain referencing to chart a low-altitude course to its target to avoid detection. It uses an infrared camera to match images of the target to a stored picture "to ensure a precision strike and minimal collateral damage," MBDA says. The warhead can be programmed to detonate above the target (airburst), on impact or following penetration.

West fears Ukraine's counter offensive

Despite some Western partners' concerns that Ukrainian forces could launch attacks into Russia itself, Macron's remarks suggested that Paris had gotten guarantees from Kyiv that the missiles would not be fired into Russia, reports *Al Jazeera.* The delivery of the missiles "would preserve the clarity and coherence of our doctrine to permit Ukraine to defend its own territory," Macron said speaking in Vilnius.

In May, UK defence secretary Ben Wallace also stated that Storm Shadow would "allow Ukraine to push back Russian forces based within Ukrainian sovereign territory." Macron, however, did not say how many of the missiles would be sent to Ukraine. But a French diplomatic source was quoted by *Reuters* saying that the country was talking about sending Ukraine 50 SCALP missiles. According to another French military source, the missiles would come from existing French military stocks, and it would be a "significant number." Trade magazine *Defense et Securite Internationale* has reported that Paris has "fewer than 400" of the missiles. Along with the very closely linked Storm Shadow missiles previously delivered by the United Kingdom, the SCALP-EGs equip Ukraine with additional munitions that outperform anything previously provided by the United States or the country's other international partners in terms of range and punch. SCALP-EGs contain piercing warheads, stealthy features, and low-altitude flight profiles to limit the likelihood of interception.

Russia issues warning

Russia on the other hand is warning of the harmful consequences for the Ukrainian side. Kremlin spokesman Dmitry Peskov declared the France's decision as "a mistake." "Of course, that forces us to take countermeasures," *Al Jazeera* quoted Peskov. He further added that western weapons deliveries to Ukraine will have little effect on the outcome of the conflict. They would only make the fate of the "Kyiv regime" worse, according to Peskov.

A similar reaction from Russia was seen following the UK's announcement that it will provide a batch of Storm Shadow missiles in May. Russia at that time warned that the UK risked being "fully dragged" into the fight. Russian-installed officials said last month that a British-supplied Storm Shadow had hit a bridge at Chongar, which links the annexed Crimean Peninsula to southern Ukraine.

The bridge was "unusable" following the strike and would be closed for around 20 days, Moscow's governor for southern Ukrainian region Kherson, Vladimir Saldo, said at the time. Russia claimed soon after Britain began delivering the missiles in May that it had already shot down a Storm Shadow. But both sides in the conflict regularly claim to have destroyed the other's hyped high-tech weapons. In recent months, Ukraine has claimed kills of Russia's Kinzhal hypersonic missiles and Moscow has highlighted successes against German-made Leopard tanks operated by Kyiv.

https://www.firstpost.com/explainers/france-to-send-scalp-missiles-to-ukraine-how-will-this-long-range-weapon-help-12855822.html

THE ECONOMIC TIMES

Wed, 12 Jul 2023

North Korea Conducts its 1st ICBM Launch in 3 Months after Making Threat over Alleged US Spy Flights

North Korea conducted its first intercontinental ballistic missile test in three months on Wednesday, two days after it threatened "shocking" consequences to protest what it called provocative U.S. reconnaissance activity near its territory.

Some experts say North Korea likely tested its developmental, road-mobile Hwasong-18 ICBM, a type of solid-fuel weapon that is harder to detect and intercept than the North's other liquid-fuel ICBMs. North Korean leader Kim Jong Un previously called the Hwasong-18 his most powerful nuclear weapon.

A long-range North Korean missile fired from its capital region around 10 a.m. flew about 1,000 kilometers (620 miles) at a maximum altitude of 6,000 kilometers (3,730 miles) before landing in waters between the Korean Peninsula and Japan, according to South Korean and Japanese assessments.

They said the missile was launched on a high angle, in an apparent attempt to avoid neighboring countries. South Korea's military called the launch "a grave provocation" and said the South Korean and U.S. authorities agreed to maintain robust, combined defense postures.

Chief Japanese Cabinet Secretary Hirokazu Matsuno also denounced North Korea over its repeated ballistic missile launches as "threats to the peace and safety of Japan, the region and international society." He said that Japan protested to North Korea via embassies in Beijing.

The launch came as South Korean President Yoon Suk Yeol and Japanese Prime Minister Fumio Kishida were visiting Vilnius, Lithuania, to attend this week's NATO summit. In an emergency security council meeting convened in Lithuania, Yoon told officials that North Korea must face consequences over its provocation. Matsuno said Kishida asked him to prepare for a security council meeting over the launch.

North Korea's long-range missile program targets the mainland U.S, though it also has a variety of other shorter-range nuclear-capable missiles designed to hit South Korea and Japan, both key American allies in the region.

Since 2017, North Korea has performed a slew of intercontinental ballistic missile launches as part of its efforts to acquire nuclear-tipped weapons capable of striking major U.S. cities. Some experts say North Korea still has some technologies to master to possess functioning nuclear-armed ICBMs.

Before Wednesday's launch, the North's most recent long-range missile test happened in April, when it launched the Hwasong-18 ICBM for the first time. After that launch, Kim said the missile would enhance the North's counterattack capabilities in the face of U.S. military threats and ordered the expansion of his country's nuclear arsenal to "constantly strike extreme uneasiness and horror" in its rivals, according to state media.

Missiles with built-in solid propellants would be easier to move and hide, making it difficult for opponents to detect their launches in advance.

All of North Korea's previous ICBM tests used liquid fuel. Wednesday's launch, the North's first weapons firing in about a month, came after North Korea earlier this week released a series of

statements accusing the United States of flying a military plane close to North Korea to spy on the North. The U.S. and South Korea dismissed the North's accusations and urged it to refrain from any acts or rhetoric that raised animosities.

In a statement Monday night, Kim Yo Jong, the influential sister of North Korean sister Kim Jong Un, warned the United States of "a shocking incident" as she claimed that the U.S. spy plane flew over the North's eastern exclusive economic zone eight times earlier in the day. She claimed the North scrambled warplanes to chase away the U.S. plane.

In another fiery statement Tuesday, Kim Yo Jong said the U.S. military would experience "a very critical flight" if it continues its illicit, aerial spying activities. The North's military separately threatened to shoot down U.S. spy planes.

North Korea has made numerous similar threats over alleged U.S. reconnaissance activities, but its latest statements came amid heightened animosities over North Korea's barrage of missile tests earlier this year. Since the start of 2022, North Korea has test-fired about 100 missiles, many of them in response to military drills between the United States and South Korea. Some experts say Kim wants to use an expanded weapons arsenal to wrest greater concessions in eventual diplomacy with the U.S.

"Kim Yo Jong's bellicose statement against U.S. surveillance aircraft is part of a North Korean pattern of inflating external threats to rally domestic support and justify weapons tests," said Leif-Eric Easley, a professor at Ewha University in Seoul.

"Pyongyang also times its shows of force to disrupt what it perceives as diplomatic coordination against it, in this case, South Korea and Japan's leaders meeting during the NATO summit." Before his departure to Lithuania, Yoon said in written responses to questions by The Associated Press that he would discuss North Korean nuclear threats with NATO leaders.

Kim Dong-yub, a professor at the University of North Korean Studies in Seoul, said Wednesday's launch appeared to be the North's second flight-test of the Hwasong-18 ICBM. He said the launch was likely made under the North's previously scheduled plans to hone Hwasong-18 technologies, rather than a direct response to the NATO gathering or the alleged U.S. spy plane flight.

The Hwasong-18 is among an array of high-tech weapons that Kim Jong Un has vowed to introduce to deal with what he called escalating U.S. military threats. Other weapons on his wish-list are an ICBM with multi-warheads, a hypersonic missile, a spy satellite and a nuclear-powered submarine. In late May, North Korea's launch of its first spy satellite ended in failure, with a rocket carrying it plunging to the ocean.

U.N. Security Council resolutions ban North Korea from engaging in any launches using ballistic technologies. But the U.S. and others have failed to toughen U.N. sanctions on North Korea over its numerous, recent ballistic missile tests because China and Russia, both permanent members of the U.N. Security Council, blocked such attempts.

https://economictimes.indiatimes.com/news/defence/north-korea-conducts-its-1st-icbm-launch-in-3-months-after-making-threat-over-alleged-us-spy-flights/articleshow/101686123.cms

Hindustan Times

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ISRO Completes Chandrayaan-3 Rehearsal; Launch Set for Friday

The Indian Space Research Organisation (Isro) has completed the launch rehearsal lasting 24 hours for Chandrayaan-3, the country's third lunar mission, the space agency said on Tuesday.

Chandrayaan-3 will be launched on July 14 at 2.35pm on Launch Vehicle Mark-3 rocket from the Satish Dhawan Space Centre in Sriharikota. The propulsion module will carry the lander and rover till 100km lunar orbit.

Chandrayaan-3 consists of an indigenous lander module, a propulsion module and a rover. Its objectives include developing and demonstrating new technologies required for interplanetary missions. The lander will have the capability to land at a specified lunar site and deploy the rover, which will carry out chemical analysis of the lunar surface during the course of its mobility.

The lander and rover will have scientific payloads to carry out experiments on the moon's surface.

The Chandrayaan programme, also known as the Indian lunar exploration programme, is an ongoing series of outer space mission by Isro. The first moon rocket, Chandrayaan-1, was launched in 2008, and was successfully inserted into lunar orbit.

Chandrayaan-2 was successfully launched and inserted into lunar orbit in 2019, but its lander crash-landed on the moon's surface when it deviated from its trajectory while attempting to land on September 6, 2019, due to a software glitch.

https://www.hindustantimes.com/india-news/isro-completes-launch-rehearsal-for-chandrayaan-3-india-s-third-lunar-mission-set-to-launch-on-july-14-101689102805961.html

ThePrint

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IISc Scientists Develop Super Flexible Composite Semiconductors for Next-Gen Printed Displays

Scientists at the Indian Institute of Science (IISc) have developed a super flexible, composite semiconductor material that can have possible applications in next-generation flexible or curved displays, foldable phones and wearable electronics.

Traditional semiconductor devices – such as transistors, the building blocks of most electronic circuits – used in display industries are either made of amorphous silicon or amorphous oxides, both of which are not flexible and strain tolerant at all. Adding polymers to the oxide semiconductors may increase their flexibility, but there is a limit to how much can be added without compromising the semiconductor's performance, IISc noted.

In the current study, published in journal 'Advanced Materials Technologies', the researchers of the premier institute's Department of Materials Engineering have found a way to fabricate a composite containing a significant amount of polymer – up to 40 per cent of the material weight – using a solution-process technique, specifically inkjet printing.

In contrast, previous studies have reported only up to one to two per cent polymer addition.

Interestingly, the approach enabled the semiconducting properties of the oxide semiconductor to remain unaltered with the polymer addition. The added large quantity of polymer also made the composite semiconductor highly flexible and foldable without deteriorating its performance, Bengaluru-based IISc said in a statement on Tuesday.

The composite semiconductor is made up of two materials – a water-insoluble polymer such as ethyl cellulose that provides flexibility, and indium oxide, a semiconductor which brings in excellent electronic transport properties.

To design the material, the researchers mixed the polymer with the oxide precursor in such a way that interconnected oxide nanoparticle channels are formed (around phase-separated polymer islands) through which electrons can move from one end of a transistor (source) to the other (drain), ensuring a steady current flow.

The key to form these connected pathways, the researchers found, was the choice of the right kind of water-insoluble polymer that does not mix with the oxide lattice when the oxide semiconductor is being fabricated.

"This 'phase separation' and the formation of polymer-rich islands helps in crack arrest, making it super flexible," says Subho Dasgupta, Associate Professor in the Department of Materials Engineering, and corresponding author of the study.

Semiconductor materials are usually fabricated using deposition techniques such as sputtering. Instead, Dasgupta's team uses inkjet printing to deposit their material onto various flexible substrates ranging from plastics to paper.

In the present study, a polymer material called Kapton has been used. Just like words and images printed on paper, electronic components can be printed on any surface using special functional inks containing either electrically conducting, semiconducting or insulating materials. However, there are challenges.

"Sometimes it is very difficult to get a continuous and homogeneous film. Therefore, we had to optimise certain protocols, for example, preheating the printed semiconductor layer on the Kapton substrate prior to high temperature annealing," explains first author Mitta Divya, former PhD student at the Department of Materials Engineering and currently a postdoc at King Abdullah University of Science and Technology (KAUST), Saudi Arabia.

Another challenge is ensuring the right environmental conditions under which the ink can be printed. "If the humidity is too low, you can't print, because the ink dries up within the nozzle," says Dasgupta. He adds that in the future, such printed semiconductors can be used to fabricate fully printed and flexible television screens, wearables, and large electronic billboards alongside printed organic light emitting diode (OLED) display front-ends. These printed semiconductors will be low-cost and easy to manufacture, which could potentially revolutionise the display industry.

His team has obtained a patent for their material and plans to test its shelf life and quality control from device to device before it can be scaled up for mass production. They also plan to look for other polymers that can help design such flexible semiconductors, according to the statement.

https://theprint.in/india/iisc-scientists-develop-super-flexible-composite-semiconductors-for-next-gen-printed-displays/1664621/

THE ECONOMIC TIMES

Tue, 11 Jul 2023

NASA's James Webb Telescope Discovers Distant and Active Supermassive Black Hole

ASA's technological marvel, the James Webb Space Telescope, made a mammoth discovery this past week, identifying an active supermassive black hole, the farthest known to date. Announced by the agency on July 6, the newly discovered black hole is located in the galaxy CEERS 1019, is less massive than previously observed black holes in the early universe.

Formed 570 million years since the Big Bang, the CEERS 1019 galaxy has been providing valuable insights into the origins of our own Milky Way galaxy. Scientists estimate that the black hole also formed approximately around the same time. Reports say that early universe was home to around 11 galaxies, aging from 470 to 675 million years. NASA, in the announcement, highlighted similarities between the black hole in CEERS 1019 and the one at the center of the Milky Way. The black hole in CEERS 1019 has a mass approximately 4.6 million times that of the Sun but is not as bright as its counterpart in the Milky Way.

NASA notes that numerous smaller black holes have the potential to engulf galaxies, with this being the first massive black hole discovered by the agency. Till now, they were only theorised about. The James Webb Telescope not only aids in the discovery of black holes and distant galaxies but also enables precise measurements to validate and refine scientific calculations.

By studying the amount of gas consumed by the black hole, researchers can determine the origin of stars within its galaxy. Astronomer Austin Steven Finkelstein from the University of Texas emphasizes that previous research has primarily been theoretical. However, with the James Webb Telescope, scientists can observe black holes and galaxies at vast distances and accurately measure their sizes.

When observing CEERS 1019 from a distance, it appears as three distinct bright groups of light rather than a single source. This phenomenon is commonly observed when studying distant objects, as explained by Jeyhan Kartaltepe, a member of the CEERS team. Kartaltepe further explains that the collision of two or more galaxies increases the likelihood of black hole formation, subsequently triggering the creation of more stars. Seiji Fujimoto from the University of Texas suggests that these findings imply that our understanding of star and galaxy formation and evolution throughout time and space may require revision as new discoveries continue to be made.

https://economictimes.indiatimes.com/news/new-updates/nasas-james-webb-telescope-discovers-distant-and-active-supermassive-black-hole/articleshow/101660033.cms?from=mdr