Jan
2022

समाचार पत्रों से चयित अंश
Newspapers Clippings

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खंड : 47 अंक : 05 07 जनवरी 2022

Vol. : 47 Issue : 05 07 January 2022

रक्षा विज्ञान पुस्तकालय
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THE JERUSALEM POST

Fri, 07 Jan 2022

Morocco interested in Israel's Barak 8 missile defense system

The Barak-8 MR-SAM system is able to shoot down enemy aircraft at a range of 50-70 kilometers and is designed to defend naval vessels against a myriad of short-to-long-range airborne threats.

By Anna Ahronheim

Israel Aerospace Industries is reportedly in talks to sell Morocco the Barak 8 medium-range surface-to-air missile system.

Despite reports that IAI marketing director Sharon Biton led the negotiations, IAI refused to comment, and sources involved told The Jerusalem Post that such a deal had not yet been signed.

Morocco's defense budget for the coming year has allocated $12.8 billion to modernize its military.

Barak 8 missile defense system (photo credit: Wikimedia Commons)

Rabat has held negotiations with different suppliers from several countries to buy medium- and long-range air defense systems, including the American Patriot system, China's North Industries Group Corporation Limited (NORINCO)'s Sky Dragon 50 medium-range surface-to-air missiles, France's short-range VL Milka missile defense system, and others.

The Barak-8 MR-SAM system is able to shoot down enemy aircraft at a range of 50-70 kilometers. It is designed to defend naval vessels against a myriad of short-to-long range airborne threats like incoming missiles, planes, and drones at both low or high altitudes.

It is jointly developed by India's Defense Research and Development Organization (DRDO) in close collaboration with Israel's Israel Aircraft Industry (IAI)'s Elta, RAFAEL. Additional companies in both countries are used by Israel's navy as well as by India's naval, air and ground forces.

The system integrates several advanced state-of-the-art systems including a digital radar, a command and control system, tracking radar launchers, interceptors with advanced homing radio frequency (RF) seekers, data link, and system-wide connectivity. It is also able to engage multiple targets simultaneously in severe saturation scenarios and can be operated in all types of weather.

The missiles, which can be fired in single or ripple firing modes from a vertical position, are launched in canister configuration, and the launcher will have eight canisterized missiles in two stacks.

Morocco has had close economic, diplomatic, and military ties with Israel for years, and Defense Minister Benny Gantz in December made his first official visit to the country where he signed defense cooperation deals.

In early November, the French-language Le Desk news site reported that Morocco is interested in purchasing Israel's Iron Dome to defend against aerial threats like mortar shells, rockets, and drones.

In addition, as part of its modernization efforts, Rabat has already received three Israeli Heron reconnaissance drones built by IAI in a deal worth $48 million.

France has been operating the Heron under the name Harfang, and according to reports in 2014, the drones acquired by Morocco were retired by the French Air Force after several years in service in Afghanistan.

The Heron 1 is a medium altitude and long-term endurance (MALE) craft with a maximum mission endurance of over 24 hours.

The drones have reportedly been fitted with a device for carrying three surveillance cameras, a video recording system, an air-ground communication system as well as electro-optical systems for day-night vision.

Equipped with satellite data link and electro-optical infrared sensors, the Heron 1 is able not only to provide reconnaissance to ground forces in combat situations, assist in convoying and patrolling, create movement profiles, and long-term monitoring, but is able to track down explosives from the air.

According to the report in Intelligence Online, the drones will be deployed to counter extremist groups and fight rebel movements in Western Sahara.

https://www.jpost.com/middle-east/article-691698

COVID 19: DRDO's Contribution

जागरण

Fri, 07 Jan 2022

ओमिक्रोन पर भी असरदार होगी डीआरडीओ की 2-डीजी दवा

डीआरडीओ के चीफ साइंटिस्ट डा. सुधीर चांदना बताते हैं कि कोविड की दूसरी लहर में 2-डीजी कई मरीजों की जान बचा चुकी है। अब ओमिक्रोन पर भी यह उसी प्रकार कार्य करेगी। तीसरी लहर में माइल्ड मरीजों पर इसके क्लीनिकल ट्रायल की अनुमति मिल गई है।

By वैभव शर्मा, Edited By Monika Minal

हिसार: रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) द्वारा कोरोना की स्वदेशी दवा 2-डियोक्सी-डी-ग्लूकोज (2-डीजी) ओमिक्रोन वैरिएंट पर भी असरदार साबित होगी। यह दवा शरीर में वायरस के ग्रोथ को रोकने का काम करती है। यही कारण है कि कोरोना के अन्य वैरिएंट पर भी यह जीवन रक्षक बनने का काम करेगी।


Medical Oxygen Plant

डीआरडीओ के चीफ साइंटिस्ट डा. सुधीर चांदना बताते हैं कि कोविड की दूसरी लहर में 2-डीजी कई मरीजों की जान बचा चुकी है। अब ओमिक्रोन पर भी यह उसी प्रकार कार्य करेगी। तीसरी लहर में माइल्ड मरीजों पर इसके क्लीनिकल ट्रायल की अनुमति मिल गई है। दवा की तकनीक का अधिकार डीआरडीओ के पास है। लांचिग के समय डीआरडीओ ने डा. रेड्डी लैब को यह तकनीक ट्रांसफर की थी। अब 12 और कंपनियों ने इसके लिए आवेदन

किया है, जिनमें से पांच कंपनियों को ड्रग कंट्रोलर ने मार्केटिंग की अनुमति दे दी है। इस दवा को देशभर में मुहैया कराया जा रहा है।

डीआरडीओ डाटा कर रहा तैयार

डा. सुधीर चांदना बताते हैं कि 2-डीजी दवा को लेकर मिले फीडबैक को एकत्र किया जा रहा है ताकि आने वाले समय में डाटा का प्रयोग अन्य शोध कार्यों में किया जा सके।

ऐसे कार्य करती है 2-डीजी

यह दवा एक सैशे में पाउडर के रूप में आती है, जिसे पानी में घोलकर लिया जाता है। यह कोरोना वायरस से संक्रमित कोशिकाओं में जमा होती है और वायरल संश्लेषण और ऊर्जा उत्पादन को रोककर वायरस को शरीर में बढ़ने से रोकती है। वायरस से संक्रमित कोशिकाओं में जाना इस दवा को सबसे बेजोड़ बनाता है। दरअसल, यह दवा ग्लूकोज का एक सब्स्टिट्यूट है। कोरोना वायरस अपनी एनर्जी के लिए मरीज के शरीर से ग्लूकोज लेता है, मगर ग्लूकोज के धोखे में वह इस दवा का इस्तेमाल करने लगता है जिससे वायरस को ऊर्जा मिलना बंद हो जाती है और उनका वायरल सथेसिस बंद होने लगता है। इस तरह नए वायरस का बनना बंद हो जाता है और साथ ही बाकी वायरस भी मरने लगते हैं।

https://www.jagran.com/news/national-medicine-devloped-by-drdo-2dg-will-be-effective-over-coronavirus-variant-omicron-22359587.html

Defence News

Defence Strategic: National/International

Fri, 07 Jan 2022

After CDS Rawat's death, COSC met today over NDA infra rejig, Navy's Indian Ocean region plans

The COSC, in the meeting, also took stock of the integrated capability development plan —a combined capability development plan of three defence services for a period of 10 years.

By Amrita Nayak Dutta

Taking stock of the infrastructural changes in the National Defence Academy (NDA), a status update of the Integrated Capability Development for the tri-services and the Navy's future plans in the Indian Ocean Region were on the agenda of the Chiefs of Staff Committee (COSC) that met on Thursday morning, News18.com has learnt.

This is the first formal COSC meeting after Chief of Defence Staff (CDS) General Bipin Rawat died in a helicopter crash last month, along with his wife and 12 other Army and IAF personnel.

The meeting was held under the chairmanship of Army Chief General MM Naravane who has currently been appointed as the acting chairman of COSC by defence minister Rajnath Singh.

An earlier meeting of COSC was called last month to pay respects to General Rawat after the crash.

According to defence sources, several operational training and administrative aspects were lined up for discussions in the meeting.

One of them was the various infrastructural upgrades being made at NDA as the premier tri-service military institution gears up to welcome the 19 female cadets next year in the premier military institution. As first reported by News18.com, 1,002 women had cleared their first NDA examination held in November last year.

Other infrastructure enhancement, which is currently underway at NDA, includes increasing the number of squadrons to cater to demands for raising the annual intake of all cadets including foreign and ground duty cadets of the Indian Air Force (IAF).

The COSC, in the meeting, also took stock of the integrated capability development plan (ICDP)—a combined capability development plan of the three defence services for a period of 10 years.

The meeting was held under the chairmanship of Army Chief General MM Naravane who has currently been appointed as the acting chairman of COSC by defence minister Rajnath Singh. (PTI/File Photo)

The Armed Forces already had in place a 15-year Long Term Integrated Perspective Plan (LTIPP), a five-year Service-wise Capability Acquisition Plan, a two-year roll-on annual Acquisition Plan and the Defence Acquisition Council chaired by the defence minister for all major procurements.

Last month, Navy Chief Admiral R Hari Kumar had said the Navy is fine-tuning its long-term requirements on the number of surface ships, submarine and aircraft that it seeks to have in line with the ICDP.

General Rawat, as the CDS, was closely involved in prioritising the procurements of the three services and the assessments of their planned procurements, keeping in view the available budgets.

Defence sources also said the Navy's long-term plans in the Indian Ocean Region also was discussed in the COSC meet. However, they refused to divulge further on this.

https://www.news18.com/news/india/after-cds-rawats-death-cosc-met-today-over-nda-infra-rejig-navys-indian-ocean-region-plans-4628036.html

THE TIMES OF INDIA

Fri, 07 Jan 2022

Indigenous Intermediate Jet Trainer completes six-turn spins

Bengaluru: Defence PSU Hindustan Aeronautics Limited (HAL) on Thursday said that the Intermediate Jet Trainer (IJT), designed and developed by it for stage–II training of Indian Air Force (IAF) pilots has successfully demonstrated the capability to carry out six-turn spins. The aircraft was piloted by Gp Capt (retd) HV Thakur and Gp Capt (retd) A Menon. HAL CMD R Madhavan said: "Given the right resources and backing, HAL is capable of designing products that can meet any requirement of Indian armed forces."

Mr Arup Chatterjee, director (engineering and R&D) added that by demonstrating its capability to have six turn spins on both sides the IJT has achieved a major milestone. "The success can be attributed to the synergy between designers, flight operations and certifying agencies," he said, adding that with the completion of spin certification of HTT-40 and the progress achieved in IJT, HAL will soon have the state-of-the-art trainers for stage I and II training of IAF pilots.

The IJT, which was conceived by HAL as a replacement to the ageing Kirans of IAF fleet, had completed demonstration of its capabilities in terms of altitude and speed envelope, load factor, satisfactory stall characteristics and limited armament capability as required by IAF, earlier.

"...The only pending task was spin testing. During the course of spin testing, in 2016, the aircraft departed from a controlled flight which brought the programme to a temporary halt. However,

HAL decided to proceed further using its internal resources to complete the critical Spin testing," HAL said in a statement.

The PSU added that the capability to enter and recover from spin is a necessity for a trainer aircraft in order to familiarise the trainee pilot to recognise departure from controlled flight and the actions required to recover from such situations.

"Achieving satisfactory characteristics during spin and an assured recovery from spin form a part of very crucial flight tests due to its unpredictability. The spin flight testing is inherently a high-risk maneuver and therefore progresses incrementally turn by turn. Due to the complex interplay of aerodynamic and inertia forces, the motion of the aircraft in spin is unpredictable and flight testing is the only way to assess the acceptability or otherwise of its characteristics," HAL added.

Pointing out that spin flights are carried out in good weather conditions with a team of designers, flight test engineers and safety pilots monitoring various parameters during the flight, HAL said, it was, therefore, time-consuming.

"Several flight tests are required to be carried out before six-turn spin flights are undertaken as well as a number of flights are further required before full spin certification is achieved," it added.

Subsequent to the temporary halting of flight tests in 2016, HAL undertook major modifications like shifting the vertical tail aft on the airframe and increasing the rudder area and flight testing resumed in April 2019.

These modifications entailed the use of a new Anti-Spin Parachute system (ASPS) which is mandated for the safety of the aircraft and test crew during spin flight testing. The new ASPS was integrated into the aircraft in July 2020 and the successful streaming of the parachutes were demonstrated in September 2020. HAL commenced the stall and spin testing of the IJT in its new modified configuration in November 2020.

https://timesofindia.indiatimes.com/india/indigenous-intermediate-jet-trainer-completes-six-turn-spins/articleshow/88734045.cms

Business Standard

Fri, 07 Jan 2022

Indian Army conducts training exercise with IAF's Apache attack helicopters

The Indian Army brigade under the Rising Star Corps conducted an integrated training exercise with Apache attack helicopters of the Indian Air Force (IAF), they informed on Thursday.

The Indian Army brigade under the Rising Star Corps conducted an integrated training exercise with Apache attack helicopters of the Indian Air Force (IAF), they informed on Thursday.

File image IAF's Apache attack helicopter and Tejas fighter aircraft

The Operational parameters of joint manoeuvres were successful, the Indian Army said.

"An Indian Army brigade under Rising Star Corps conducted an integrated training exercise with Apache attack helicopters of IAF. Operational parameters of joint manoeuvres and communication between Apaches, armoured fighting vehicles and infantry were successfully validated," Indian Army said.

https://www.business-standard.com/article/current-affairs/indian-army-conducts-training-exercise-with-iaf-s-apache-attack-helicopters-122010600238_1.html

Hindustan Times

Fri, 07 Jan 2022

India to test marine version of Rafale jet today

The marine version of the Rafale jet has a reinforced under-carriage and nose wheel, a bigger arrester hook, an integrated ladder and other minor differences from the Rafale currently in use in the Indian Air Force.

By Shishir Gupta

India on Friday, will test the Rafale-M (Marine) jet for use on its Vikramaditya aircraft carrier as well as the indigenous aircraft carrier 1 (IAC1), which will be deployed as the INS Vikrant, at the INS Hansa in Goa, a shore-based test facility. The aircraft for the test arrived Thursday.

The marine version of the Rafale jet has a reinforced under-carriage and nose wheel, a bigger arrester hook, an integrated ladder and other minor differences from the Rafale currently in use in the Indian Air Force.

According to people familiar with the matter, the Rafale M is better suited for use on the aircraft carriers than the F18 Hornet fighter from the US for several reasons. They pointed out that it can fit into the lift bay of the Vikramaditya, unlike the F18; and that its dimensions also mean more of them (14) can fit onto the deck of the Vikramaditya as compared to 10 or 11 F18s.

According to people familiar with the matter, the Rafale M is better suited for use on the aircraft carriers than the F18 Hornet fighter from the US for several reasons.

They also added that unlike the F18s, which requires the carriers to be fitted with a new carrier optical landing system, the Rafale M's can work with the existing one on the Vikramaditya.

There's also the benefit of a common platform across the navy and the Air Force, one of the people said. Apart from synergies in logistics and maintenance, this person added, Indian Navy pilots could be trained on IAF's Rafales for "faster induction".

The navy will likely test the F18s at the same facility in March, HT learns.

The Vikrant is likely to be commissioned by August 15, and if the Rafale M is chosen, India may seek to lease four or five of the aircraft for immediate deployment. The Vikramaditya is currently equipped with two squadrons of aging MiG-29.

The Rafale M sent for testing is the latest version of the fighter with India specific enhancements. It is nuclear capable, carries Meteor air to air missiles, SCALP air to ground missile and Hammer precision guided ammunition.

https://www.hindustantimes.com/india-news/india-to-test-marine-version-of-rafale-jet-today-101641497076996.html

Fri, 07 Jan 2022

INS Vikrant के लिए लड़ाकू विमानों की तलाश, गोवा में Rafael दिखाएगा अपनी क्षमताओं का प्रदर्शन

आईएनएस विक्रांत के लिए लड़ाकू विमानों की तलाश में कई विमान प्रतिस्पर्धा में है। जिनमें राफेल (दसॉ, फ्रांस), एफ -18 सुपर हॉर्नेट (बोइंग, अमेरिका), मिग-29 के और ग्रिपेन शामिल है।

Edited By Vaibhav Singh

भारतीय नौसेना के विमान वाहक लड़ाकू विमान सौदे पर नजर गड़ाए फ्रांस ने बृहस्पतिवार को अपनी लड़ाकू क्षमताओं का प्रदर्शन करने के लिए एक राफेल समुद्री लड़ाकू विमान को गोवा में एक नौसैनिक केंद्र पर भेजा है। भारतीय नौसेना स्वदेशी विमानवाहक पोत (IAC) विक्रांत के लिए लड़ाकू विमानों का एक बेड़ा खरीदने की योजना बना रही है, जिसके अगस्त में सेवा में शामिल होने की संभावना है।

इस घटनाक्रम से परिचित लोगों ने कहा कि राफेल विमान के नौसैनिक वर्जन का प्रदर्शन गोवा में तट-आधारित परीक्षण केंद्र (SBTF) में शुरू हो गया है। भारतीय नौसेना ने 2017 में, अपने विमानवाहक पोत के लिए 57 बहु-भूमिका (Multi Purpose) वाले लड़ाकू विमानों की खरीद के लिए सूचना का अनुरोध (RFI) जारी किया था।

राफेल विमान (फाइल फोटो)

कई देशों के विमानों का होना है परिक्षण

सौदे के लिए चार विमान प्रतिस्पर्धा में थे जिनमें राफेल (दसॉ, फ्रांस), एफ -18 सुपर हॉर्नेट (बोइंग, अमेरिका), मिग-29 के (रूस) और ग्रिपेन (साब, स्वीडन) शामिल थे। एफ-18 (F-18), राफेल (Rafael) और मिग-29 के (MIG-29K) जहां दो इंजन वाले विमान हैं, वहीं ग्रिपेन एक इंजन वाला विमान है। अगले कुछ महीनों में, शेष दावेदारों के भी प्रदर्शन के लिए अपने विमान भारत लाने की संभावना है।

क्या है राफेल विमान और उसकी विशेषता

राफेल विमान फ्रांस द्वारा निर्मित एक बहुउद्देशीय विमान है जो अत्याधुनिक हथियारों और मिसाइलों से लैस है। 24,500 किलोग्राम वजन वाला राफेल एयरक्राफ्ट 9500 किलोग्राम भार उठाने में सक्षम है। इसकी अधिकतम रफ्तार 1389 किमी/घंटा है। एक बार उड़ान भरने के बाद 3700 किमी तक का सफर तय कर सकता है।

कई उन्नत मिसाइलों से लैस है राफेल विमान

दुनिया की सबसे घातक समझे जाने वाली हवा से हवा में मार करने वाली मेटयोर (METEOR) मिसाइल किसी भी एशियाई देश के पास नहीं है। वियोंड विज्युल रेंज 'मेटयोर' मिसाइल की रेंज करीब 150 किलोमीटर है। हवा से हवा में मार करने वाली ये मिसाइल दुनिया की सबसे घातक हथियारों में गिनी जाती है। इसके अलावा राफेल फाइटर जेट लंबी दूरी की हवा से सतह में मार करने वाली स्कैल्प क्रूज मिसाइल और हवा से हवा में मार करने वाली माइका मिसाइल से भी लैस है।

https://www.abplive.com/news/india/rafale-sea-fighter-jet-will-show-its-capability-in-goa-2033359

Hindustan Times

Fri, 07 Jan 2022

India joins Quad partners, Japan and South Korea for Sea Dragon exercise

Sea Dragon is a US-led multi-national exercise designed to practice and discuss Anti-submarine warfare tactics to operate together in response to traditional and non-traditional maritime security challenges in the Indo-Pacific region.

New Delhi: India and its partners in the Quadrilateral Security Dialogue or Quad along with Canada and South Korea are participating in the multinational exercise Sea Dragon at Guam in the Western Pacific.

he exercise, primarily focused on anti-submarine warfare (ASW) training, will involve more than 270 hours of in-flight training and activities ranging from tracking simulated targets to tracking a US Navy submarine. Each event will be graded and the country scoring the highest points will receive the Dragon Belt award.

A Royal Canadian Air Force CP-140 Aurora Long Range Patrol aircraft taxis after landing at Andersen Air Force Base, Guam, forthe start of exercise Sea Dragon 2022. (Photo courtesy: 407 Long Range Patrol Squadron, US 7th Fleet)

The wargame, being held at Andersen Air Force Base in Guam, includes contingents from the Indian Navy, the US Navy, Royal Australian Air Force, Royal Canadian Air Force, Japan's Maritime Self-Defense Force and the South Korean Navy.

Two P-8A Poseidon maritime patrol aircraft of the US Navy are participating in the drill. During classroom training sessions, pilots and flight officers from all the countries will build plans and discuss tactics incorporating the capabilities and equipment of their nations, the US Pacific Fleet said in a statement.

"As [officer-in-charge], I am eager for the opportunity to further develop our partnerships with Australia, Canada, India, Japan, and Korea while at Sea Dragon 2022," said Lt Cmdr Braz Kennedy, officer-in-charge of the US detachment from Patrol Squadron 47.

The Royal Canadian Air Force won the Dragon Belt at last year's exercise and is defending the title at Sea Dragon 2022.

"This exercise is an annual, multi-national high-end ASW training exercise," said Cmdr Tomoyuki Michiyama, commanding officer of Flight Division 31 of Air Patrol Squadron 3 of Japan's Maritime Self-Defense Force.

"I believe that by conducting a wide range of training, from classroom training on the ground to actual training targeting a submarine, we will be able to improve our tactical skills. In addition, through training, exchange of opinions, and various types of exchanges, we expect to strengthen cooperation and deepen mutual understanding among the participating navies and air forces."

The P-8A Poseidon maritime patrol aircraft will conduct maritime patrols and reconnaissance and theatre outreach operations within the US Pacific Fleet area of operations.

https://www.hindustantimes.com/world-news/india-joins-quad-partners-japan-and-south-korea-for-sea-dragon-exercise-101641496355667.html

Hindustan Times

Fri, 07 Jan 2022

Why AUKUS is good to keep China at bay in Indo-Pacific

While France may have legitimate reasons for being upset with Australia for reneging on the submarine deal, the emerging picture in Indo-Pacific clearly shows that AIP submarines would have been a half-measure in containing a belligerent China under President Xi Jinping.

By Shishir Gupta

New Delhi: New Delhi Paris is aggrieved over Australia nullifying a $59 billion air independent propulsion (AIP) submarine deal and opting for nuclear-powered conventional weapon attack (SSN) submarines under the AUKUS pact with the US and the UK signed in September last year.

While France may have legitimate reasons for being upset with Australia for reneging on the submarine deal, the emerging picture in Indo-Pacific clearly shows that AIP submarines would have been a half-measure in containing a belligerent China under President Xi Jinping. Given the strategic environment in the Indo-Pacific region and the South China Sea in particular, the Australian choice of an SSN is the better option in tackling a rapidly growing PLA Navy and the Chinese intermediate range ballistic missile arsenal.

The state of strategic play is such that India also has no choice but to go for long-range nuclear-powered submarines and delivery platforms as it is only a matter of time that the Chinese carrier force will be patrolling the Indian Ocean. With two nuclear submarines already operational and the third one a work in progress, India is building leverage in case the PLA decides to deploy strong-arm tactics on the 3,488-km Line of Actual Control (LAC), as it did in May 2020.

If one overlooks the noise over Australia scuttling the French submarine deal, it is not very difficult to understand why Canberra decided the nuclear option, as it is a deterrent to China's Taiwan ambitions. The signing of a security pact between Japan and Australia, once World War II adversaries, with the bottom line on convergence in the Indo-Pacific is also a step in the direction to ask China to mend its aggression. Australian Prime Minister Scott Morrison said the agreement "will underpin greater and more complex practical engagement between the Australian Defence Force and the Japanese Self-Defence Forces". Juxtapose the new security pact with AUKUS and Quad and the larger picture emerges on the Indo-Pacific with India having a logistics agreement with all the Quad partners.

Rather than viewing AUKUS from a French commercial perspective, the Australian nuclear-powered conventional attack submarines will be an answer to the massive deployment of DF-21 and DF-26 series of ballistic missiles by the PLA on the Chinese east coast to prevent US aircraft carriers from entering the South China Sea in the worst case scenario over Taiwan. Given the range of these ballistic missiles, the US aircraft carrier force will have to operate outside the first chain of islands after China, or else be in the cross-hairs of these PLA delivery platforms. While the US and Russia were bound by the Intermediate Range Nuclear Forces Treaty since 1987, before its suspension in 2019, the PLA has built a massive intermediate range ballistic missile arsenal with its propaganda media nick-naming the DF-21 and DF-26 as carrier killer and Guam killer weapons.

With the advent of Australian nuclear submarines, the Chinese missile sites on the east coast will be threatened by the sub-surface attack platforms which can stay under water for months together in the South China Sea or the Indo-Pacific. The fact is that the AUKUS is a game-changer for the Indo-Pacific as even the latest AIP diesel submarines must surface, in effect betraying their positions, in weeks for charging their batteries. Thus, from a strategic perspective, the Australian nuclear attack submarines with conventional ballistic missiles as deterrents will allow US aircraft carriers to operate between the Chinese coast and the first island chain and also enforce laws of the seas and freedom of navigation in the South China Sea. As China is threatening Taiwan on a daily

basis by breaching its air defence identification zone, it is for the US to speed up the SSN production for Australia as time is running out for Taipei and the security of the Indo-Pacific.

https://www.hindustantimes.com/india-news/why-aukus-is-good-to-keep-china-at-bay-in-indopacific-101641518614279.html

THE WEEK

Fri, 07 Jan 2022

Pakistan's J-10 has good tech, but isn't comparable to Rafale: Senior test pilot

Harsh Vardhan Thakur shares his views on Islamabad's latest arms deal with China

By Justin Paul George

Hyderabad: Council of Scientific and Industrial Research (CSIR) director general Dr Shekhar C how and when it will strike.

The Pakistani military confirmed on Wednesday that it was acquiring a new fighter from China, the J-10, in response to India's arms purchases.

Last week, Pakistan's Interior Minister Sheikh Rasheed Ahmed said 25 of the new jets would perform at a flypast for the country's republic day on March 23.

Rasheed had said the new jets would counter the Indian Air Force's acquisition of 36 Dassault Rafale fighters. At a press conference on Wednesday, Major General Babar Iftikhar, the Pakistan's Army spokesperson, gave a similar rationale for the J-10 acquisition. "This is a step to upgrade our air force fleet and get the best possible technology available because we know what kind of technology is being acquired on the other [Indian] side," Iftikhar was quoted as saying by *Voice of America*.

A J-10C fighter | China's Ministry of National Defense

The J-10, a single-engine aircraft, is similar to the US-built F-16 and was revealed to the world by China in 2006. China is believed to have inducted over 460 J-10 fighters. Over the past two decades, the J-10 design has been incrementally improved, with newer versions having more advanced active electronically scanned array (AESA) radars and 'diverter-less' air intakes for its engine that reduce the possibility of being detected by enemy radars and sensors. An AESA radar has multiple 'transmit receive modules' and typically has longer range and capability to detect smaller targets, such as stealth aircraft or cruise missiles, than older-generation radars.

Media reports have claimed China could provide Pakistan the PL-15 very-long-range air-to-air missile, which could shoot down targets at a range of over 200km. China is believed to have offered Pakistan a variant of the J-10 dubbed the J-10CE.

The J-10 purchase also highlights Pakistan's increasing reliance on China as a major arms supplier. China is now the main source of cutting-edge weapons for all three Pakistani services as US and European-origin equipment are retired.

While Pakistani officials have referred to India's recent arms purchases as the reason for buying the Chinese fighter, reports say Islamabad has been mulling acquisition of 36 J-10s for over a decade, long before the Indian Air Force selected the Rafale. Thus, the question arises: Why did Pakistan purchase the J-10 now? and what does the acquisition mean for India?

THE WEEK put these questions to retired group captain Harsh Vardhan Thakur. A veteran fighter pilot in the Indian Air Force, Thakur is a senior test pilot with Hindustan Aeronautics Limited. Thakur has been involved in development and testing of unmanned systems and other futuristic equipment.

1. Talk of Pakistani interest in the J-10 dates back to as early as 2006. What explains the timing of this deal?

Unlike the Indian procurement system, which is ostensibly process-based, Pakistan's imports seem to rely heavily on when they can convince an ally to extend credit in the face of imminent threat to their sovereignty. Induction of Rafales in IAF may have been projected as a serious threat to the so-called balance and now, Pakistan would have been able to convince China to loan some of their J-10s.

China may have seen this as an opportunity to finally project successful exports of J-10s. But whether they are getting any money in return, one seriously doubts. Which portion of Pakistan is mortgaged to China for obtaining J-10s will emerge shortly.

2. What specific capabilities does the J-10 offer that the Pakistan Air Force would want against India?

Unless J-10CEs are equipped with PL-15 beyond-visual-range missiles, they do not offer any significant deterrence in the interest of PAF. The projected ranges of PL-15s make for a good brochure. This enhanced perception can be employed successfully by PAF as an information warfare tool to deter IAF's present supremacy. The PL-15 missiles are yet to prove themselves. Time will tell.

3. What do you make of the technologies on board the J-10 such as diverter-less intakes and AESA radars?

Diverter-less intakes employed on Chinese aircraft are a good technology. Such an intake gives lower drag and better supersonic acceleration compared with older J-10s. Obviously, that cannot be compared with its twin-engine cousin, the Su-30MKI of the Indian Air Force, which is powered by two of the same engines. The J-10CE's AESA radar may provide jamming resistance during combat, depending on its bandwidth. The radar is like Su-30 MKI's passive electronically scanned array (PESA) radar, but may provide the user with a better mean time between failure (MTBF) also.

4. Will the J-10 be integrated with the PAF's fleet of Chinese and Swedish-origin airborne early warning (AEW) aircraft?

J-10s are not comparable with Rafale. But the timing is right, so adequate political noise can be created about having neutralised India's advantage. Surely, pilots in PAF know better. Integrating J-10s with AEWs/AWACS would be a challenge and will be years before that materialises.

5. Over the past decade or so, Pakistan's military has become predominantly reliant on China. What do you think are the implications of this transformation?

China has expanded at a rapid pace and Pakistan has been a loyal stooge. Pakistan has certainly got their act right, on whom to hang on to. Chinese success with consumer goods may have rubbed off into their military products as well. I think IAF takes them seriously enough. Hence, any operator of Chinese products is also taken seriously.

6. How do you think India should respond to the J-10 in PAF colours?

I think the Indian military aerospace industry must respond in equal measure and provide IAF with a one-on-one match against J-10CE like the Tejas Mk-2. Decision making should be quick, and an analogous platform should be rolled out soonest. There is no other way.

https://www.theweek.in/news/world/2022/01/06/pakistan-j-10-has-good-tech-but-isnt-comparable-to-rafale-senior-test-pilot.html

THE HINDU

Fri, 07 Jan 2022

North Korea claims second successful test of hypersonic missile

Wednesday's hypersonic missile launch indicates North Korea will press ahead with plans to modernise its nuclear and missile arsenals rather than return to disarmament talks anytime soon

Seol: North Korea claimed on January 6 to have conducted the second successful test flight of a hypersonic missile, days after leader Kim Jong-un vowed to bolster his military forces despite pandemic-related difficulties.

Wednesday's launch, the North's first known weapons test in about two months, indicates the country will press ahead with plans to modernise its nuclear and missile arsenals rather than return to disarmament talks anytime soon.

The official *Korean Central News Agency* said the Central Committee of the ruling Workers' Party expressed "great satisfaction" at the results of the missile test, which was observed by leading weapons officials.

This photo provided by the North Korean Government, shows what it says a test launch of a hypersonic missile in North Korea on January 5, 2022. | Photo Credit: AP

Hypersonic weapons, which fly at speeds in excess of Mach 5, or five times the speed of sound, could pose crucial challenges to missile defence systems because of their speed and manoeuvrability.

It's unclear whether and how soon North Korea could manufacture such a high-tech missile, but it was among a wish-list of sophisticated military assets that Mr. Kim disclosed early last year, along with a multi-warhead missile, spy satellites, solid-fuelled long-range missiles and underwater-launched nuclear missiles.

Wednesday's test was the second of its kind since North Korea first launched a hypersonic missile last September.

"The successive successes in the test launches in the hypersonic missile sector have strategic significance in that they hasten a task for modernizing strategic armed force of the state," a *KCNA* dispatch said.

The word "strategic" implies the missile is being developed to deliver nuclear weapons.

KCNA said the missile made a 120-kilometre-long (75 mile) lateral movement before hitting a target 700 kilometres (435 miles) away.

It said the test reconfirmed the flight control and stability of the missile and verified its fuel capsule under the winter weather conditions.

While North Korea appears to have made progress in the development of a hypersonic missile, it still needs more test flights to determine whether it meets its tactical objectives or how advanced a hypersonic weapon it could develop, said Lee Choon Geun, an expert and honorary research fellow at South Korea's Science and Technology Policy Institute.

A photo of the launch shows that the upper parts of the missiles launched in September and this week are slightly different.

Mr. Lee said this suggests that North Korea is testing two versions of warheads for a missile still under development or it is actually developing two different types of hypersonic missiles.

He said the missile's reported lateral movement would provide the weapon with a greater manoeuvrability to evade enemy missile defence systems.

Kim Dong-yub, a professor at the University of North Korean Studies in Seoul, said North Korea will likely go ahead with its arms build-up plans without being affected by external factors

like the Beijing Olympics in February, the South Korean presidential election in March and a possible change in the Biden administration's North Korea policy.

"Given the U.S. has decided on a diplomatic boycott of the Beijing Olympics, North Korea doesn't have to worry about what China would think when it conducts" weapons tests, Mr. Kim said.

China is North Korea's last major ally and aid benefactor.

Some experts earlier predicted that North Korea would not launch any provocations until the Beijing Olympics ended.

The North's latest launch was first detected by its neighbours.

The U.S. military called it a ballistic missile launch that "highlights the destabilising impact of (North Korea's) illicit weapons programme," while South Korea and Japan expressed concerns or regrets over the launch.

China, for its part, called for dialogue and said that "all parties concerned should keep in mind the big picture (and) be cautious with their words and actions". U.S.-led diplomacy on North Korea's nuclear programme remains stalled since 2019 due to disputes over international sanctions on the North.

The Biden administration has repeatedly called for resuming the nuclear diplomacy "anywhere and at any time" without preconditions, but North Korea has argued the U.S. must first withdraw its hostility against it before any talks can restart.

During last week's plenary meeting of the Central Committee of the ruling Workers' Party, Mr. Kim Jong-un repeated his vow to expand his country's military capabilities without publicly presenting any new positions on Washington and Seoul.

The North's advancing nuclear arsenal is the core of Mr. Kim's rule, and he's called it "a powerful treasured sword" that thwarts potential U.S. aggressions. During his 10-year rule, he's conducted an unusually large number of weapons tests to acquire an ability to launch nuclear strikes on the American mainland.

But his country's economy has faltered severely in the past two years due to the COVID-19 pandemic, the sanctions and his Government's own mismanagement.

https://www.thehindu.com/news/international/north-korea-claims-second-successful-test-of-hypersonic-missile/article38142918.ece

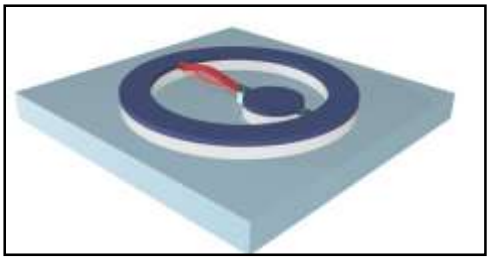
Fri, 07 Jan 2022

How to test the limits of quantum mechanics

Researchers from Imperial College London and Lancaster University have suggested a new approach to test the limits of applicability of quantum mechanics.

Quantum physics has long provided humanity with an elegant framework for understanding the microscopic world. However, quantum phenomena do not exist in our everyday lives.

Many factors contribute to the transition between the quantum and classical regimes, but is there a fundamental mechanism that results in this transition? And how exactly does a wavefunction consisting of multiple possibilities collapse into one definite outcome?



The displacemon device consists of a mechanical resonator (red) which is coupled to a superconducting qubit (dark blue). As the resonator sweeps up and down it modifies the state of the superconducting qubit. Credit: Edward Laird

Numerous models, collectively referred to as objective-collapse theories, have been suggested in the hope of addressing these outstanding fundamental questions. But testing these theories remains experimentally challenging.

Now a group of researchers have published a paper about a new way to investigate these objective-collapse theories in the lab.

The proposal is published in *AVS Quantum Science*.

The researchers' method takes advantage of the "displacemon," an electro-mechanical device consisting of a mechanical resonator connected to superconducting qubit. By manipulating the qubit, they propose a technique to probe for deviations from standard quantum theory in a way that could be explained by objective collapse.

Dr Edward Laird who leads a research group in quantum electronic devices at Lancaster University says that "the displacemon is not only a tool for testing fundamental quantum mechanics but may also be the basis of new sensing technologies. It will be tremendously exciting to do the first experiments with this device."

While there has been much progress in constraining the strength of these models, further experiments are needed to illuminate the quantum-to-classical boundary.

"Indeed, these future experiments offer exciting promise to probe quantum mechanics at bigger and bigger scales," says Michael Vanner, Principal Investigator of the Quantum Measurement Lab at Imperial College London.

The displacemon provides a new route to testing collapse models by leveraging experimental advances made in cryogenics and superconducting technologies. Central to the displacemon device is a mechanical resonator which oscillates up and down like a miniature guitar string and is incorporated into a superconducting qubit. This sweeping motion interacts with a magnetic field in a way that links the properties of the qubit device and the resonator, with the action of one affecting the other. The architecture of the device lends itself well to creating a quantum superposition of the string vibrations.

More information: Lydia A. Kanari-Naish et al, Can the displacemon device test objective collapse models?, *AVS Quantum Science* (2021). DOI: 10.1116/5.0073626

https://phys.org/news/2022-01-limits-quantum-mechanics.html