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DRDO News

DRDO on Twitter



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[#DRDOUpdates](#) | [#DRDO](#) fraternity celebrated [#ConstitutionDay](#) at DRDO Bhawan & labs wherein scientists & staff read the preamble and participated in a quiz. They reaffirmed their pledge to protect the [#Constitutional](#) values among citizens.

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3:47 PM · Nov 26, 2022 · Twitter for iPhone



Press Information Bureau
Government of India

Ministry of Defence

Fri, 25 Nov 2022

Indian Naval Ships Shivalik and Kamorta Complete Visit to South Korea

Indian Naval Ships Shivalik and Kamorta, during their stay at Busan from 21 to 23 Nov 22, participated in multiple activities with the RoK Navy that included official and social interactions, cross-deck visits and sports fixtures. The Commanding Officers of both IN ships also called on Vice Admiral Kang Dong Hun, Commander Republic of Korea Fleet, who welcomed the IN ships and discussed avenues to further strengthen maritime cooperation between Indian Navy and the RoK Navy. Vice Admiral Kang visited INS Shivalik and interacted with the Ambassador of India to RoK Shri Amit Kumar. On departure from Busan, Shivalik and Kamorta undertook a Maritime Partnership Exercise with RoK Navy Ship No Jeok Bong. The exercise signified the close bonds of friendship and further enhanced interoperability between both the navies.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1878867>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

शनिवार, 26 नवंबर 2022

एल एंड टी, कट्टुपल्ली में 26 नवंबर 2022 को सर्वेक्षण पोत (लार्ज) परियोजना के तीसरे जहाज 'इक्षक' का शुभारंभ

भारतीय नौसेना के लिए गार्डन रीच शिपबिल्डर्स एंड इंजीनियर्स (जीआरएसई)/एल एंड टी द्वारा बनाए जा रहे चार सर्वे वेसल्स (लार्ज) (एसवीएल) प्रोजेक्ट में से तीसरा 'इक्षक' दिनांक 26 नवंबर 2022 को कट्टुपल्ली,

चेन्नई में लॉन्च किया गया। दक्षिणी नौसेना कमान के फ्लैग ऑफिसर कमांडिंग इन चीफ वाइस एडमिरल एम.ए. हम्पिहोली की उपस्थिति में लॉन्च समारोह में इस जहाज ने 1040 बजे बंगाल की खाड़ी में जलावतरण किया। नौसेना की समुद्री परंपरा को ध्यान में रखते हुए वाइस एडमिरल एम.ए. हम्पिहोली की पत्नी श्रीमती मधुमती हम्पिहोली ने अथर्ववेद के मंत्रोच्चारण के साथ इस जहाज का शुभारंभ किया। जहाज का नाम 'इक्षक' रखा गया है जिसका अर्थ है 'गाइड'। समुद्र में मेरिनर्स के लिए सुरक्षित मार्ग मुहैया कराने में सर्वेक्षण जहाजों के योगदान को दर्शाने के लिए इस जहाज का नाम रखा गया है।



रक्षा मंत्रालय और गार्डन रीच शिपबिल्डर्स एंड इंजीनियर्स (जीआरएसई), कोलकाता के बीच दिनांक 30 अक्टूबर 2018 को कुल 2435 करोड़ रुपये की लागत से चार एसवीएल जहाजों के निर्माण के लिए अनुबंध पर हस्ताक्षर किए गए थे। जीआरएसई द्वारा अपनाई गई निर्माण रणनीति के अनुसार पहला जहाज जीआरएसई, कोलकाता में बनाया जा रहा है और शेष तीन जहाजों का निर्माण (आउटफिटिंग चरण तक) मैसर्स एलएंडटी शिपबिल्डिंग, कट्टुपल्ली को उप-अनुबंधित किया गया है। प्रथम श्रेणी के जहाज 'संधायक' को दिनांक 05 दिसंबर 2021 को मैसर्स जीआरएसई, कोलकाता में रक्षा राज्य मंत्री श्री अजय भट्ट की पत्नी श्रीमती पुष्पा भट्ट द्वारा लॉन्च किया गया था, जो उस लॉन्चिंग समारोह की मुख्य अतिथि थीं।

एसवीएल जहाज समुद्र संबंधी डेटा एकत्र करने के लिए मौजूदा संधायक क्लास के सर्वेक्षण जहाजों को नई पीढ़ी के हाइड्रोग्राफिक उपकरणों से परिवर्तित कर देंगे। सर्वेक्षण पोत (लार्ज) जहाज 3400 टन की क्षमता के साथ 110 मीटर लंबा, 16 मीटर चौड़ा और 231 कर्मियों की सुविधाओं वाला जहाज है। इस जहाज की प्रणोदन प्रणाली में ट्विन शाफ्ट कॉन्फिगुरेशन में दो मुख्य इंजन होते हैं और इसे 14 समुद्री मील की क्रूज गति और 18 समुद्री मील की अधिकतम गति के साथ डिजाइन किया गया है। उथले जल में कम गति में

बेहतर संचालन के लिए बो एंड स्टर्न थ्रस्टर्स की मदद ली गई है। इन जहाजों का हल स्वदेशी रूप से विकसित डीएमआर 249-ए स्टील से बना है जो स्टील अथॉरिटी ऑफ इंडिया लिमिटेड द्वारा निर्मित है।

चार सर्वे मोटर बोट और एक हेलीकॉप्टर ले जाने की क्षमता के साथ जहाजों की प्राथमिक भूमिका बंदरगाहों और नौवहन चैनलों के पूर्ण पैमाने पर तटीय और गहरे पानी के हाइड्रोग्राफिक सर्वेक्षण करने की होगी। जहाजों को रक्षा के साथ-साथ नागरिक उपयोग के लिए समुद्र विज्ञान और भूभौतिकीय डेटा एकत्र करने के लिए भी काम में लिया जाएगा। आपात स्थिति के दौरान हॉस्पिटल जहाजों के रूप में सेवा देने के अलावा अन्य भूमिका में यह जहाज सीमित रक्षा प्रदान करने में सक्षम हैं।

कोविड-19 महामारी के कारण चुनौतियों के बावजूद, एल एंड टी और गार्डन रीच शिपबिल्डर्स एंड इंजीनियर्स (जीआरएसई) ने पर्याप्त प्रगति की है और अक्टूबर 2023 तक 'इक्षक' देने का लक्ष्य रखा है। तीसरे सर्वेक्षण पोत का शुभारंभ हमारे प्रधानमंत्री के 'मेक इन इंडिया' के दृष्टिकोण के अंतर्गत स्वदेशी जहाज निर्माण के लिए हमारे संकल्प को मजबूत कर 'आत्मनिर्भर भारत' के दृष्टिकोण पर जोर देता है। सर्वेक्षण पोत (लार्ज) में लागत के हिसाब से 80% से अधिक स्वदेशी सामग्री होगी। इससे यह भी सुनिश्चित होगा कि भारतीय विनिर्माण इकाइयों द्वारा बड़े पैमाने पर रक्षा उत्पादन निष्पादित किया जाता है जिससे देश के भीतर रोजगार एवं क्षमता का निर्माण होता है।

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1879191>



Press Information Bureau
Government of India

Ministry of Defence

Sat, 26 Nov 2022

Launch of 'Ikshak' Third Ship of Survey Vessel (Large) Project on 26 Nov 22 at L&T, Kattupalli

'Ikshak', the third of the four Survey Vessels (Large) (SVL) Project, being built by GRSE/L&T for Indian Navy was launched on 26 Nov 22 at Kattupalli, Chennai. She made her first contact with water of Bay of Bengal at 1040 hrs at the Launch Ceremony graced by the VAdm MA Hampiholi, Flag Officer Commanding in Chief, Southern Naval Command. In keeping with the Naval maritime tradition, Smt Madhumati Hampiholi, spouse of VAdm MA Hampiholi, launched the ship to the chanting of invocation from Atharva Veda. The ship has been named 'Ikshak' which means 'Guide'. The ship has been named to signify the contribution of the Survey ships towards facilitating safe passage for Mariners at Sea.

Contract for building four SVL ships was signed between MoD and Garden Reach Shipbuilders & Engineers (GRSE), Kolkata on 30 Oct 18 for a total cost of Rs 2435 Cr. As per build strategy adopted by GRSE, first ship is being built at GRSE, Kolkata and construction of balance three

ships (upto outfitting stage) has been sub-contracted to M/s L&T Shipbuilding, Kattupalli. The first of class ship 'Sandhayak' was launched on 05 Dec 21 at M/s GRSE, Kolkata, by Smt Pushpa Bhatt, wife of Shri Ajay Bhatt, Raksha Rajya Mantri, who was the Chief Guest for Launching Ceremony.

SVL ships will replace the existing Sandhayak Class survey ships with new generation hydrographic equipment to collect oceanographic data. The Survey Vessel (Large) ships are 110 m long, 16 m wide with deep displacement of 3400 tons and a complement of 231 personnel. Propulsion system of the ship consists of two Main Engines in twin shaft configuration and is designed with cruise speed of 14 knots and maximum speed of 18 knots. Bow & Stern Thrusters have been catered for better manoeuvring at low speeds required during shallow water survey operations. The hull of these ships is made from indigenously developed DMR 249-A steel manufactured by Steel Authority of India Limited. With a capability to carry four Survey Motor Boats and an integral helicopter, the primary role of the ships would be to undertake full scale coastal and deep-water hydrographic surveys of Ports and navigational channels. The ships would also be deployed for collecting oceanographic and geophysical data for defence as well as civil applications. In their secondary role, the ships are capable of providing limited defence, besides serving as Hospital ships during emergencies.

Despite challenges due to COVID-19 pandemic, L&T and GRSE have made substantial progress and aim to deliver 'Ikshak' by Oct 2023. Launch of the third Survey Vessel reinforces our resolve for indigenous shipbuilding as part of our Prime Minister's vision of 'Make in India', and thrust to the vision of 'Aatmanirbhar Bharat'. The Survey Vessels Large will have over 80% indigenous content by cost. This will also ensure that large scale defence production are executed by Indian manufacturing units thereby generating employment and capability build up within the country.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1879094>



Press Information Bureau
Government of India

Ministry of Defence

Sun, 27 Nov 2022

Australian Army Contingent for Joint Exercise “Austra Hind – 22” Arrive in India

The bilateral training exercise “AUSTRA HIND 22” between contingents of the Indian Army and the Australian Army is scheduled to take place at Mahajan Field Firing Ranges (Rajasthan) from 28 November to 11 December 2022. This is the first exercise in the series of AUSTRA HIND with participation of all arms and services contingent from both armies. The Australian Army contingent comprising soldiers from the 13th Brigade of the 2nd Division has arrived at the exercise location. The Indian Army is represented by troops from the DOGRA Regiment. Exercise “AUSTRA HIND” will be a yearly event that will be conducted alternatively in India and Australia.

Aim of the exercise is to build positive military relations, imbibe each other's best practices and promote the ability to operate together while undertaking multi-domain operations in Semi deserts terrain under a UN peace enforcement mandate. This joint exercise will enable the two armies to share best practices in tactics, techniques and procedures for conducting tactical operations at Company and Platoon level for neutralising hostile threats. Training on new generation equipment and specialist weapons including snipers, surveillance & communication equipment to achieve a high degree of situational awareness apart from casualty management, casualty evacuation and planning logistics at Battalion / Company level are also planned. During the exercise, participants will engage in a variety of tasks ranging from joint planning, joint tactical drills, sharing basics of special arms skills and raiding a hostile target. The joint exercise, besides promoting understanding and interoperability between the two armies, will further help in strengthening ties between India and Australia.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1879269>



Sat, 26 Nov 2022

Defence Minister Rajnath Singh to Co-Chair 4th India-France Annual Defence Dialogue with French Minister

Defence Minister Rajnath Singh will co-chair the 4th India-France Annual Defence Dialogue with French Minister for Armed Forces Sebastien Lecornu. The French Minister will also meet External Affairs Minister Dr. S Jaishankar and National Security Advisor Ajit Doval during his three-day visit from November 26 to 28. Sebastien Lecornu is visiting India for the first time as French Minister of Armed Forces. According to a statement released by the French Embassy, he will visit the Southern Naval Command headquarters in Kochi and see India's first indigenous aircraft carrier, INS Vikrant. Minister Lecornu will also visit the National War Memorial in Delhi during his visit to pay tribute to bravehearts who died in the line of duty.

During his visit to India, French Minister Lecornu will meet with his Indian counterpart, Rajnath Singh, to discuss all aspects of our defence cooperation, including operational defence ties, counter-terrorism, Indo-Pacific maritime security, and industrial and technological partnerships in line with India's 'Aatmanirbhar Bharat policy'.

Significance of 4th India-France Annual Defence Dialogue

The visit of France's Armed Forces Minister to India reaffirms France's commitment to the Indo-Pacific and India's centrality in the French strategy for the region. According to the statement, it comes during a year in which the French and Indian armed forces have increased their efforts toward greater interoperability through joint air, navy, and army exercises such as IMEX 22 (March), Varuna (March-April), and the recently concluded Garuda (October-November). India and France share close and friendly bilateral relations. In 1998, the two countries entered into Strategic Partnership, marking the convergence of their views on various international issues apart from a close and growing bilateral relationship.

India and France are also defence and armament partners, with numerous industrial collaborations contributing to India's policy of strategic autonomy in the defence sector.

<https://newsonair.com/2022/11/26/defence-minister-rajnath-singh-to-co-chair-4th-india-france-annual-defence-dialogue-with-french-minister/>



Fri, 25 Nov 2022

Rajnath Reiterates Call for Free, Open Indo-Pacific

Defence minister Rajnath Singh on Friday reiterated that India stands for a “free, open and rules-based Indo-Pacific” not just for the region’s development, but the entire world’s. His comments come at a time of China’s assertive behaviour in the disputed South China sea region. Delivering the keynote address at the Indo-Pacific Regional Dialogue (IPRD), Singh said dialogue was the only civilised mechanism for resolving disputes and disagreements, and creating regional or global order. On Wednesday, speaking at the 9th ASEAN Defence Ministers’ Meeting Plus in Vietnam, he had called for a free, open and inclusive order in the Indo-Pacific, pivoting on respect for sovereignty and territorial integrity of all nations.

On Friday, Singh stressed on the importance of countries working together. “In times when humanity is facing problems like climate change, the Covid-19 pandemic and widespread deprivation, it is essential that we all work together to surmount these mammoth challenges, without being distracted by the destructive seduction of wars and conflicts.” The minister described enhancing trade and connectivity, capacity building and infrastructure-related initiatives as time-tested ways of working together, and said these could act as bridges of friendship and ensure mutual benefit. He said strategic policy should be moral, and India does not believe in a global order where few are considered superior to others.

“Realpolitik cannot be the fig leaf for being immoral. Rather, enlightened self-interest of nations can be promoted within the framework of strategic morality, which is predicated on the understanding and respect for the legitimate strategic imperative of all the civilised nations. It is for this reason that when we partner any nation, it is on the basis of sovereign equality and mutual respect.”

<https://www.hindustantimes.com/india-news/rajnath-reiterates-call-for-free-open-indopacific-101669399686440.html>



Fri, 25 Nov 2022

Aero India 2023 to begin on February 13

Aero India 2023 will be held at the Air Force Station Yelahanka starting February 13 next year. The biennial show, which is traditionally held for over five days, will return to its old avatar

during the 2023 edition. The show was reduced to a three-day affair during the last edition in 2021 due to the COVID pandemic. Normally, the first three days of the air show are reserved for business visitors and the last two days are open to the general public. However, last year the public viewing days were cancelled and the show was promoted as the world-first hybrid air show wherein the business element of the event was both physical as well as virtual.

Aero India 2023 will be organised by defence PSU Hindustan Aeronautics Limited (HAL). “HAL has been the nodal agency since 2018 organising the defence events in the country, we have been organising both the Defence Expo events as well as the Aero India since then,” said HAL sources. A few days ago the air show’s official website went live stating the 2023 edition will be held at the Air Force Station Yelahanka, which has been hosting the show since 1996. A large number of Indian and foreign exhibitors are expected to participate, besides aircraft, both military and civilian, would be on display. In the last edition, delegations from 43 countries along with 530 companies participated.

<https://www.thehindu.com/news/national/karnataka/aero-india-2023-to-begin-from-february-13/article66183625.ece>



Sun, 27 Nov 2022

Indian Coast Guard Looks for New Helicopters, Rotary Unmanned Aerial Vehicles

The Indian Coast Guard (ICG), which has grown three times in size in the last 15 years, is set for further expansion in line with its increasing charter of duties. The force is now looking for a replacement for its ageing Chetak helicopters and a 10-tonne multi-role helicopters as well as procurement of up to 10 rotary Unmanned Aerial Vehicles (UAV) to fly from its ships, six Offshore Patrol Vessels (OPV), and six C-295 transport aircraft, officials said. All these will be procured indigenously through the Make-in-India route, one official stated. “The proposal for six Offshore Patrol Vessels is set to be taken up by the Defence Acquisition Council soon. There is also a proposal for acquiring C-295 transport aircraft,” an ICG official said. The C-295 is set to assembled in India by the Tata Group in collaboration with Airbus as part a 56 aircraft contract for the Indian Air Force.

It has already received approval for 14 Fast Patrol Vessels and two Pollution Control Vessels (PCV) and are approved under execution. “The Coast Guard has seen a major expansion in terms of numbers and capabilities. In 2009, the Coast Guard had 50 ships and 30 aircraft. As of today, it has 159 ships and 77 aircraft,” the official said. The aircraft include Chetak and ALH helicopters and Dornier surveillance aircraft.

Helicopters received

Last week, Director General, ICG, V. S. Pathania received the last of 16 Advanced Light Helicopters (ALH)-MKIII from Hindustan Aeronautics Limited (HAL), contracted under a deal in March 2017 for maritime role. A Letter of Intent for nine more ALH-MKIII was also issued on the occasion. At the same time, Mr. Pathania also evaluated the indigenous Light Utility Helicopter (LUH) as a potential Chetak replacement in a maritime role. The ICG said that a

committee comprising of all stakeholders, including HAL, would be set up, which will define the qualitative requirements of a maritime single engine helicopter for replacing its Chetak fleet.

“The LUH is designed to operate upto an altitude of 6 km as per the high-altitude requirements of the Army and the Indian Air Force. So the helicopter will have lot of reserve power at sea level, which is very helpful in operations,” another ICG official said. The ICG will submit its requirements to HAL shortly, the official said. HAL is already developing a modified variant of the LUH for the Navy. The ICG also has a requirement for a 10-tonne class multi-role helicopter. However, a deal with Airbus for 14 helicopters fell through after coming close to conclusion. HAL is developing the Indian Multi-Role Helicopter (IMRH) in the 12-tonne class for the Armed Forces. Officials said the Coast Guard is in talks with HAL for developing a modified variant of the IMRH to meet its requirements.

Series of inductions

The ICG has seen a series of inductions of new vessels in the last few years. For instance, in February 2022, the Goa Shipyard Limited (GSL) delivered the last of five 2,400-tonne Sankalp-class offshore patrol vessels (OPV) to the Coast Guard under a contract signed in November 2016. In August 2021, it completed inducting seven OPVs built by Larsen & Toubro under a contract signed in 2015. In March, the Defence Ministry signed a Rs. 473 crore contract with GSL for the construction of eight Fast Patrol Vessels, which can operate in shallow waters. Similarly, in September 2020, the ICG inducted the last of five FPVs built by Garden Reach Shipbuilders and Engineers in Kolkata.

Pollution control

In June 2021, the Defence Ministry had signed a Rs, 583 crore contract with GSL for construction of two PCVs and the keel for the vessels was laid on November 21, 2022. They are scheduled to be delivered by February 2025 and August 2025. At present, the Coast Guard has three PCVs in its fleet at Mumbai, Visakhapatnam and Porbandar, respectively, to carry out dedicated pollution surveillance, oil spill monitoring, and response operations in the Indian Exclusive Economic Zone (EEZ) and around islands. Pollution control has emerged as a major function for the ICG, with prevention and control of marine pollution being part of its charter, and with India becoming the first responder for maritime incidents in the Indian Ocean Region.

On November 22, Chief of Defence Staff General Anil Chauhan visited the ICG’s headquarters, during which he was briefed on its charter of duties as well as expanding responsibilities. Further, he was briefed about the ICG’s vast area of responsibility, which extends to 200 nautical miles seaward, encompassing about two million sq. km. of EEZ with 13 coastal States and Union Territories having 1,295 islands.

<https://www.thehindu.com/news/national/indian-coast-guard-looks-for-new-helicopters-rotary- unmanned-aerial-vehicles/article66187739.ece>

नए यूएवी और हेलिकॉप्टर लेने की तैयारी में कोस्ट गार्ड, बढ़ेगी क्षमता

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■ नई दिल्ली : भारतीय कोस्टगार्ड अपनी निगरानी और राहत-वचाव काम की क्षमता बढ़ाने के लिए नए शिप वेस्ड यूएवी (ड्रोन) और हेलिकॉप्टर लेने की तैयारी में है। ये सभी स्वदेशी होंगे। कोस्ट गार्ड को 6 ओपीवी यानी ऑफशोर पेट्रोल वेसल चाहिए। ये ऐसे ड्रोन होते हैं जो समंदर में निगरानी का काम कर सकते हैं। इसकी अभी रक्षा अधिग्रहण कमिटी से मंजूरी मिलनी बाकी है। 14 फास्ट पेट्रोलिंग बोट लेने की भी तैयारी है और दो पल्यूशन कंट्रोल शिप जल्दी ही कोस्ट गार्ड को मिल जाएंगे।

एक अधिकारी के मुताबिक कोस्ट गार्ड को जो तेज गश्ती नाव चाहिए, वे सेना को पूर्वी लद्दाख में पैंगोंग झील के लिए मिलीं जश्ती नावों से अलग होंगी। सेना को झील में गश्त करनी है, जबकि कोस्ट गार्ड को समंदर में करनी होती है, इसलिए बोट के आकार और रफ्तार में फर्क होगा। कोस्ट गार्ड इनका इस्तेमाल सर्विलांस के लिए तो करेगा ही, साथ ही राहत और वचाव काम में इनका इस्तेमाल होगा।



2008 के मुकाबले क्षमता

बढ़ी: जब मुंबई पर आतंकी हमला हुआ था, उस वक्त कोस्ट गार्ड के पास 50 जहाज और 30 एयरक्राफ्ट थे। वहीं अब 159 जहाज, 77 एयरक्राफ्ट हो गए हैं। करीब 14 साल में कोस्ट गार्ड की क्षमता तीन गुना बढ़ी है और कोस्ट गार्ड लगातार इसमें इजाफा कर रहा है।

कोस्ट गार्ड को लिए दो पल्यूशन कंट्रोल शिप गोवा शिपयार्ड बना रहा है। एक फरवरी 2025 तक और दूसरा अगस्त 2025 तक कोस्ट गार्ड को मिल जाएगा।

एकसाथ ज्यादा लोगों को मिल सकेगी ट्रेनिंग

भारतीय सेना को अग्निवीरों की ट्रेनिंग के लिए टेक्टिकल इंजेजमेंट सिमुलेटर चाहिए। इससे ट्रेनिंग में कम वक्त लगेगा और एक साथ ज्यादा लोगों को फायरिंग की ट्रेनिंग दी जा सकेगी। सेना में इन दिनों अग्निवीरों की भर्ती प्रक्रिया चल रही है। सेना ने टेक्टिकल इंजेजमेंट सिमुलेटर का एओएन जारी किया है। एक्सेप्टेंस ऑफ नेसेसिटी किसी भी खरीद के लिए पहली सीढ़ी है। जब भी सेना को कुछ खरीदना होता है तो पहले उसका एओएन जारी होता है। जिसके आधार पर अलग अलग कंपनियां बताती हैं कि उनके पास सेना की यह जरूरत पूरी करने के लिए क्या क्या विकल्प हैं। उसके बाद ही आगे की प्रक्रिया होती है। सेना यह सिमुलेटर स्वदेशी कंपनी से ही लेगी। सेना को सिमुलेटर के 36 सेट चाहिए और एक सेट ऐसा होना चाहिए जिसमें 50 अग्निवीरों की ट्रेनिंग हो सके।

Sun, 27 Nov 2022

Will Indian Navy Decide on Rafale Marine for its Aircraft Carriers?

By Huma Siddiqui

India Navy is expected to soon decide which fighter aircraft it is keen to buy for its aircraft carriers. The two aircraft which were in race include US based Boeing Company's Super Hornet or F/A-18 jets and French Dassault Aviation's Rafale Marine. Both India and France are keen to strengthen their strategic and defence cooperation in and during the 4th India-France Defence Dialogue taking place in New Delhi the two sides will review the bilateral military relations as well as discuss the possibility of procuring more fighter jets from Dassault Aviation – Rafale. France, as reported earlier, has offered these fighter jets for the Indian Air Force (IAF) as well as the marine version for the Indian Navy. Financial Express Online has reported earlier that the Air Force is keen to get 114 new combat aircraft for its depleting fleet besides the indigenous Light Combat Aircraft 'Tejas'.

Is France ready to make it in India?

The French side has said that to set a production line in India they would need a committed order of around 100 aircraft. And if India decides to purchase more Rafale for Air Force it will be much cheaper than the previous 36 fighters that are now already in service. Why? "Because the main component of money was paid for research and development, certification and modification for India Specific Enhancements. Since India Specific Enhancements are all ready, in case more orders are placed it will be cheaper," explained a senior officer on condition of anonymity. Also there will be no extra expenditure involved as training and bases are all set here in India. And the two bases where the 36 fighters are based can accommodate more Rafale fighters easily. If India decides to go ahead with French fighters then these will not have any offsets obligation under the new procurement policy.

Financial express Online has reported earlier that earlier this year the French company had offered the marine version for the Indian Navy. The Indian Navy is looking to procure around 27 fighter jets for its aircraft carrier. On Monday this too will be on the table for discussions as the French Minister for Armed forces is also visiting INS Vikrant.

Views of Indian Navy Veterans

According to Cmde. Ranjit Rai (Retd): "With INS Vikrant and Vikramaditya, the decision for a better aircraft than MiG-29k which may not be able to take the full weapon load all the time, in all weather conditions is being looked at. And I think the most proven aircraft in the world from aircraft carriers flown by the marines of America is the F18. It is a fabulous piece of machine although the French Rafale, the Air Force, is flying very well." Adding, "But the Rafale still gives some problems to my knowledge and they have converted, the Swedish Gripen is trying to convert, so depending on the money aspects or international relations with countries and the evaluation is taking place, the Indian navy has always evaluated well."

Says VAdm Vinod Pasricha (Retd), “As it stands, we are looking at both these aircrafts. The Rafale has been bought and we are looking at the other F-18 Hornet at the moment and we have not yet decided. Also at the moment, our aircraft carrier is the new one, we are not sure whether it would be able to operate the aircraft because what has been designed is for the MiG-29 which we are using with Russian technology for the arresting gear.” “The ski jump is good enough to launch it but for the arrester I am not 100 percent sure whether it will work so once we decide which of the two aircraft we want I think we should also ensure that the next aircraft carrier IAC2 which is under design gets the technology so that we can use these aircraft on that either way it is a decision which I think is premature at this time,” he opines.

<https://www.financialexpress.com/defence/will-indian-navy-decide-on-rafale-marine-for-its-aircraft-carriers/2893468/lite>



Sat, 26 Nov 2022

HAL’s Argentina Deal for its LCA Tejas on Hold

Top Argentine officials are in Denmark to evaluate the US aerospace company Lockheed Martin’s F-16s that it plans to acquire second hand. Argentine Air Force commission is carrying out the onsite inspection of F-16 A/B MLU fighter bombers. According to reports in a local news outlet Zona Militar, this could be the culmination of the technical evaluations in the selection process. After China’s JF-17 Thunder and India’s Hindustan Aeronautics Limited (HAL) Light Combat Aircraft (LCA) Tejas, this is the third offering to undergo technical evaluations. However, in a general consensus, the community is skeptical of any Argentine deal to go through.

The Great Argentine Hunt

Argentina has been looking for a fighter jet for their Air Force for a while. Historically, given their arduous relations with the United Kingdom, the South American nation has been unable to build credible defences. During the pandemic, there were reports that the South American nation Argentina had finalized the Chinese JF-17. In fact, sources in the know let on that China had apparently flown a few JF-17 fighters to Argentina where their Air Force evaluated them for about a month. In the wake of preemptive news, rumour mill has it that the United States pressured Argentina into letting go of the deal. If the deal went through, China would have had a foothold in America’s backyard. Thereafter, India proactively pitched the HAL LCA Tejas and the Argentine was receptive. In multiple rounds, the bond and the probability of the deal both increased.

Sources close to the deal shared that various visits by the top defence officials from Argentina often included their top pilots in the entourage to evaluate the LCA Tejas at HAL facilities in India. Rumour has it that Argentina requested another such opportunity to evaluate the indigenous fighter jet but HAL has deferred it to sometime in 2023 for unknown reasons. India’s proactiveness and Argentine keenness has been on the display with a high level delegation from HAL also reaching Argentina earlier this year. It came close on the heels of external affairs

minister Dr S Jaishankar's visit to the South American nation in August. Just last week, Zona Militar reported that Argentine Chief of the Joint Chiefs of Staff, General Juan Martin Paleo met with the Indian Ambassador to Argentina, Dinesh Bhatia, in the follow up to his recent visit to India where he also stopped at HAL facilities. In wake of such bilateral engagement, domestic conditions might deter Argentina from finalising any fighter.

Domestic Deterrence

In the global recessionary trend, things look excessively bleak for the South American nation. The Argentine economy is under great stress due to inflation. Peso, their currency, has been volatile and interest as high as 52 per cent, investors are dumping peso assets. As recent as 2020, Argentina restructured its sovereign bonds in a massive US\$ 110 billion deal. This has proven to be ineffective as the bonds are in distressed territory with just 20-30 cents worth on the dollar. Investors are in flight, not fight. Although Argentina tightly controls the official rate against the dollar, the unofficial rate for dollars is much higher and the gap between the two rates is fast widening. This hints at an increasingly unstable economy. In September, the Argentine government allocated around US\$ 700 million for their fighter jet acquisition. While it hints at better furthering of the deal, with the present economic conditions, it alone cannot alleviate fears of defaults.

In 2023, Argentina is scheduled to undergo national general elections. For the politics of Argentina, the 20th century period of turmoil and democratic reversals remains relevant even today. The armed forces of the country reigned supreme, stifling the voice of the people. In fact, it was Jorge Rafael Videla's dictatorship during which the daring Falklands War took place. This war is the very contentious issue with the UK that has left the nation void of modern defence equipment. This complex history of a nation with its armed forces, along with the UK's pressure internationally, has led to a nation reluctant to invest in defence. It is likely that in lieu of the upcoming elections, the deal for the fighter jets will be embroiled in political controversy and further jeopardise it.

<https://www.financialexpress.com/defence/hals-argentina-deal-for-its-lca-tejas-on-hold/2892110/lite/>



Fri, 25 Nov 2022

IAF to Hold Joint Humanitarian Assistance & Disaster Relief Exercise with ASEAN Countries

The Indian Air Force will conduct the annual joint humanitarian assistance and disaster relief (HADR) exercise 'Samanvay 2022' from November 28 to 30 at Air Force Station, Agra to assess the efficacy of institutional disaster management structures and contingency measures. Along with involvement of various stakeholders from the country, the exercise will see participation by representatives from the Association of Southeast Nations (ASEAN) countries as well. Defence Minister Rajnath Singh will be chief guest for the capability demonstration events planned during the exercise on 29 November, IAF officials said here on Thursday. The exercise will

comprise a seminar on disaster management, a 'Multi Agency Exercise' involving static and flying displays of various HADR assets and a 'Table Top Exercise.' 'Samanvay 2022' will promote a synergistic approach towards HADR by various national and regional stakeholders involved in disaster management including the civil administration, the Armed Forces, National Disaster Management Authority (NDM), National Disaster Relief Force(NDRF), Defence Research and Development Organisation(DRDO), Border Roads Organisation(BRO) and Indian Meteorological Department(IMD)besides others.

This multi agency engagement is expected to contribute in the evolution of institutional frameworks for effective communication, interoperability, cooperation and their application for successful conduct of HADR. The exercise also aims to provide a unique platform for exchange of domain knowledge, experience and best practices with the participating ASEAN member countries.

<https://www.dailypioneer.com/2022/india/iaf-to-hold-joint-humanitarian-assistance---disaster-relief-exercise-with-asean-countries.html>



Sun, 27 Nov 2022

China's Indian Ocean Moves Push Navy to Deploy Carrier Force on Eastern Seaboard

India has taken notice of China holding a virtual meeting of Indian Ocean Region countries in Kunming last Monday. The Indian Navy is planning to lease a jetty north of Chennai to berth one of the two aircraft carriers in future for faster response to any military emergency. With India's first aircraft carrier INS Vikramaditya expected to resume sailing and fighter operations after major refit by mid-December, the Indian Navy is actively considering leasing a jetty at a private port north of Chennai to berth an aircraft carrier as it plans to deploy one of the two aircraft carriers on eastern seaboard. Today, French defence minister Sebastien Lecornu will be going on board India's newly commissioned aircraft carrier INS Vikrant off the coast of Kochi as the Modi government moves towards finalising the contract of 26 maritime fighter jets for the indigenous aircraft carrier. Dassault manufactured Rafale-M is one of the contenders for the contract with Boeing manufactured F-18 fighter the other candidate.

In the meantime, China has pushed its Indian Ocean agenda by holding a virtual meeting of 19 countries and three organizations at Kunming on November 21 in Yunnan province albeit the level of participation is not known. It is understood that Beijing has come up with China Industrial Development Cooperation Agency (CIDCO) to rival USAID ostensibly to develop Indian Ocean region littoral states. Chinese Foreign Minister Wang Yi during his last trip to Sri Lanka had talked about building a forum to develop Indian Ocean islands. It is another matter that countries like Sri Lanka, Bangladesh, Pakistan, Maldives and Myanmar already reeling under Chinese high interest debt for Belt Road Initiative infra projects will be interested in taking further loans from the communist regime. Given that China has decided to increase its naval footprint in the Indian Ocean Region, the Indian Navy is also pushing for deployment of major warships on India's eastern seaboard for faster response to any developing situation in Southeast Asia. Even though it will take INS Vikrant at least an year to get battle-ready, the Indian Navy

has plans to deploy on carrier task force at Karwar and other on eastern seaboard. A carrier strike force on the eastern seaboard will not only provide military deterrence but also faster response time to any military emergency around Malacca Straits or South China Sea.

The original plan was to build a jetty outside the Visakhapatnam harbour for berthing an aircraft carrier, but the Rs 2000 crore plan has been hanging fire in the South Block between equally indecisive Naval Headquarters and the Defence Ministry. It is understood that the Indian Navy wants to lease a jetty at Kattupalli port north of Chennai to berth the Indian aircraft carrier till such time green signal is given to the Visakhapatnam jetty. Fact is that till now the Vishakhapatnam project has not been even sanctioned by the Defence Ministry. While the Indian military-civilian bureaucracy debates over much needed strategic projects, the PLA Navy is already mapping the Indian Ocean sea bed using Yuan Wang series of strategic survey and missile tracking ships with Sri Lanka providing logistical support in the past through China leased Hambantota port or even refueling PLA vessels on high seas.

<https://www.hindustantimes.com/india-news/chinas-indian-ocean-moves-push-navy-to-deploy-carrier-force-on-eastern-seaboard-101669526353576.html>

BW BUSINESSWORLD

Fri, 25 Nov 2022

Drones had Limited Impact in Ukraine War as Battle Shifted East: IAF Chief

Chief of the Air Staff, Air Chief Marshal Vivek Ram Chaudhari's analysis of the limitations of drone warfare against a multi-layered air defence is significant at a time when remotely-piloted aircraft are being touted as game changers in new age warfare. While elaborating on capability-building plans with the Aatmanirbharta (self-reliance) agenda as the pivot, the Chief of Air Staff makes a strong case for the evolution of the IAF into an Air and Space Force and for air power to be given its due place in India's unified Theatre Commands of the future.

The full text of the interview:

Q. What's the road ahead for Make in India/ Atmanirbharta with respect to capability building for the IAF?

A. The IAF has always supported the national vision of 'Atmanirbhar Bharat'. Even before the 'Make in India' initiative was launched, IAF was at the forefront of indigenisation efforts. IAF has inducted various aircraft, radars and airborne platforms developed within the country. The induction of LCA (Tejas), ALH, Aslesha Radars, Astra Air-Air Missile, Akash Surface to

Air Missile System and Light Combat Helicopter (LCH) are capability building through indigenous sources. In the coming years, hi-tech platforms and systems produced indigenously will continue to increase as a part of the IAF inventory. This will include the LCA Mk IA, Mk II, AMCA and a number of weapons, AEW&C Mk-II on A-321 platform developed by DRDO and IMRH by HAL.

Q. The IAF's unconditional support to Make in India is well received. What've been the IAF's concerns with respect to Light Combat Aircraft (LCA) Mk-2, and have these been addressed?

A. LCA Mk-2 was initially planned to be rolled out in 2018. CCS approval for the design and development of the aircraft has been granted recently. Readiness for flight testing is envisaged by 2024 followed by induction from 2030-31. This is an aggressive timeline and we hope that ADA and HAL will be able to meet it.

Q. How would the IAF want HAL to evolve and change in the current policy environment?

A. IAF has several decades of association with HAL. HAL is aware of the IAF's requirements and is trying to address issues related to delivery schedules and maintenance of recently inducted platforms. HAL should look at setting up a robust framework for support and sustenance of all its platforms. This would require an increased engagement with MSMEs and other private enterprises to ensure a complete supply chain. We also hope that the LUH and IMRH programmes will progress as per the defined timelines.

Q. India's first full-spectrum private sector aerospace manufacturing complex in coming up in the context of Airbus-Tata facility. Is the military in a position to give a look-ahead for future orders to this facility so that costs can be amortized viably?

A. The IAF hopes the Airbus-Tata collaboration will kick-start a new indigenous defence manufacturing ecosystem in the country. This will lead to greater self-reliance and import substitution. The current order for C-295 is one of the largest such orders. Once the facility is set up, there is a potential for export from this facility too. This is something that Airbus & Tata have to jointly explore. We also expect that long-term sustenance of the aircraft will happen through this venture.

Q. Will the IAF lead and drive the Advanced Medium Combat Aircraft (AMCA) programme or will be lead be with Aeronautical Development Agency(ADA)/ Defence Research and Development Organisation(DRDO)?

A. AMCA programme is being led by DRDO/ ADA. IAF has a dedicated team at ADA Bangalore. Flight test crew at National Flight Test Centre (NFTC) are actively involved in the development activities. IAF is fully committed to the AMCA programme, for which an aggressive timeline has been set by DRDO.

Q. Would the IAF want scope for foreign collaborations in the AMCA programme in areas other than jet engine?

A. Considering the timelines and niche technologies being looked at for AMCA, it would be prudent to have a backup development/ realization plan in place to ensure availability of alternative systems and sensors in case indigenous plans fail to mature as per planned timelines. However, we would prefer key technologies to be indigenous to avoid any foreign dependence during the life cycle of the platform.

Q. Is the IAF in a position to define a business case/ model for foreign OEMs with respect to all its procurements at a time of overwhelming emphasis on Atmanirbharta/ self-reliance?

A. The foreign OEM can tie-up with Indian production agencies (PAs) for responding to the needs of the Armed Forces under Buy & Make (Indian) Category wherein certain quantities in

fully formed state are acquired from the Indian PA followed by indigenous production involving ToT of critical technologies. Option of tying up with Indian vendors through ToT for import substitution can also be gainfully explored under Make-III category. The Defence Acquisition Procedure (DAP) 2020 provides foreign OEMs several options to partner with Indian companies.

Q. Why has the Strategic Partnership Concept failed to take off, and does it have a future?

A. The Strategic Partnership Model was unveiled relatively recently. Two years were lost due to Covid pandemic. It is a work in progress.

Q. Has the IAF been able to make a case for evolution as an Air and Space Force? Why would this evolution be vital for the future of warfare?

A. Definitely yes, there is a close link between both the air and space domains. In fact, space is a continuum of air. It could be seen that all over the world, the military realm of space has been vested with their respective air forces and therefore, modern and space faring air forces are called Aerospace forces. This is because of the very fact that air force has the wherewithal to operate seamlessly from such 'High Ground' be it for defensive or offensive operations. Space Situational Awareness (SSA) is a natural extension of Air Situational Awareness (ASA). IAF is actively involved in developing the concepts, strategies and doctrinal approach to exploit this domain. Formation of Defence Space Agency (DSA) is a step in the right direction for long term space security by integrating available resources and also to enhance as well as develop future offensive & defensive capabilities from the medium of this 'Strategic High Ground'. The experience garnered by IAF in terms of its core competence to set up a comprehensive AD umbrella will help us significantly to plan and develop military space defence capabilities. Such an unified arrangement, wherein there is no distinct separation in conduct of air and space military operations, will eventually transform the IAF into a comprehensive Indian Aerospace force.

Q. The Theaterisation concept appeared to be giving a raw deal to the IAF, with talk about it being relegated to a support role. What should be the place and role of the IAF in integrated war fighting?

A. The place and role of IAF emanates from the basic doctrinal tenets, CONOPS of air power and IAF's capabilities that have developed over the years. It has been well established world over that the role of air power assumes utmost importance in any conflict. Technological advancements and inherent characteristics of air power make it the bulwark of our military options. Air power by nature is an offensive arm and plays a pivotal role in overall military strategy. Theaterisation is just a process to find optimal jointness in planning and integration in execution to achieve common goals and objectives. Any new structure should be future ready, reduce the decision making cycle and take into account the doctrinal strengths of each service.

Q. What is the big lesson for India from recent international conflicts particularly the one in Ukraine? Also, what is the position on spares of Russian origin equipment?

A. The Russian-Ukraine war has thrown up plenty of lessons which can be gleaned from operations of both sides. The resilience of air power has been demonstrated in this extended war, where we have seen the Ukrainian air force managing to protect its assets and retain the capability to conduct limited offensive operations. The need for use of air power to shape the battlefield and to enable the conduct of ground operations has clearly become evident. It has also shown that a sustained DEAD (Destruction of Enemy Air Defences) campaign is important to

achieve the desired objectives. Similarly, a full spectrum AD capability is needed which includes weapons ranging from shoulder launched missiles to long ranged surface-to-air-missiles (SAMs).

Inputs about the effectiveness of the Remotely Piloted Aircraft (RPAs) have been mixed. While initial reports were largely positive, as the major action shifted to the East, where a structured Russian AD system was available, most inputs indicate high vulnerability and limited impact. This highlighted the need for a multi-layered and ranged air defence system with both hard and soft kill options for dealing with RPAs. However, definitive conclusions can only be reached once the entire context and conditions become clear. There has been some impact on supply of spares but we have put in place certain mitigation measures. There has also been a concerted effort to indigenise spares of imported fleets to reduce our dependence on foreign sources.

<https://www.businessworld.in/article/Drones-Had-Limited-Impact-In-Ukraine-War-As-Battle-Shifted-East-IAF-Chief/25-11-2022-455586/>

THE ECONOMIC TIMES

Fri, 25 Nov 2022

India must be Cautious in Dealing with US: Ex-Army Chief Bikram Singh

Former Army chief General Bikram Singh has urged the government to exercise caution while dealing with the United States on strategic matters, saying the world's mightiest nation so far has not proved its trustworthiness to its close allies. He said despite India being a member of the Quad grouping, it should move cautiously when it comes to dealing with the US, which has expanded and deepened its ties with New Delhi in recent years. The Quad, or Quadrilateral Security Dialogue, comprises India, the US, Japan and Australia. "While it's good that we are part of the Quad (seen as a counterweight to China in the Indo-Pacific region), it will be in our interest that we move cautiously with the US, because Washington has never made itself trustworthy in its dealings with any of its strategic and defence allies," he told the SBI Banking & Economic conclave here on Thursday evening.

Further explaining his call for a cautious approach in strategic dealings with Washington, General Singh, who was the 24th Army chief and served between May 31, 2012 and July 31, 2014, said, "The US extricated itself first from Vietnam, then twice from Iraq, and recently from Afghanistan. We must be very cautious in dealing with the US." He maintained the US has failed in all its external military interventions and one of the main reasons for the same was that Washington has been outsourcing its work to others. The Quad started as a diplomatic network originally floated by former Japanese prime minister Shinzo Abe in early 2007 and later took shape as a four-nation bloc. It aims to strengthen a free and open international order based on the rule of law in the Indo-Pacific region.

<https://economictimes.indiatimes.com/news/defence/india-must-be-cautious-in-dealing-with-us-ex-army-chief-bikram-singh/articleshow/95766140.cms>

Russia Demonstrates S-350 Naval Variant Surface Attack Capability; Can Indian Navy Similarly Modify its LR-SAM?

By Vijinder K Thakur

On November 23, 2022, the Russian frigate Admiral Gorshkov successfully tested its S-350 Redut air defense (AD) system against sea targets in the Baltic Sea. The crew of Admiral Gorshkov, a Project 22350 M frigate of the Northern Fleet, hit a small ship with two anti-aircraft missiles. According to the Press Service of the Baltic Fleet, “Rocket firing was carried out in a difficult jamming environment with the use of electronic countermeasures by a mock enemy.” Also, to check the guidance systems of air defense systems and radio equipment of the frigate, combat aircraft of the naval aviation of the Baltic Fleet flew around the ship, the press service specified.

S-350 Redut AD System

The S-350 Redut is the naval variant of the Russian S-350 Vityaz Medium Range AD system. Besides Admiral Gorshkov, three other Russian Navy ships currently feature the S-350 Redut, all being corvettes. The S-350 AD system entered service in February 2020 and replaced the S-300 system.

Surface Attack Capability

The medium (120 kilometers) range capability of both the S-350 Vityaz and the S-350 Redut AD systems are built around the 9M96E2 missile, which incidentally is also a component of the S-400 system. The 9M96E2 features active radar homing, a critical capability required in a surface-to-air missile for a surface attack. The 9M96E2 features a speed of 1800 m/s and a 24-kilogram warhead. In the surface attack mode, the high speed of the 9M96E2 gives it good destructive ability despite the modest warhead. This is perhaps why Gorshkov fired a two-missile salvo at the target. It’s interesting to note that the US has modified its RIM-156A semi-active guidance surface-to-air missile of SM-2 system, featured on USN ships, for use against surface targets by fitting the active homing seeker of its AIM-120C air-to-air missile. The modified missile, known as SM-6, has a 64-kilogram warhead and a speed of 1200 m/s.

Pros & Cons of Using AD Systems For Surface Attack

Because of the small warhead fitted, the surface attack capability of AD missiles is limited and effective only against small, non-hardened targets. AD missiles are far less lethal than anti-shiping missiles with heavier warheads and can strike low on a ship’s hull in sea skimming terminal homing mode. In contrast, AD missiles can only hit on the deck. As such, they can superficially damage a ship but not sink it. However, AD missiles are difficult to intercept because of their smaller size (radar signature), higher speed, and near ballistic terminal trajectory.

Russian Navy’s Innovative Approach To Air Defense

The versatility of AD missiles with surface attack capability is undeniable despite their limited destructive ability. They can effectively disrupt the operations of small adversary ships and boats. It's interesting how Russia equips its corvettes and frigates with capable medium-range AD systems while also allowing them to engage small surface crafts. Fitting S-350 Redut systems on small ships allow competent medium-range AD systems to be quickly repositioned at different points along the coastline, depending on threat perceptions.]The AD ships can additionally guard against intrusions by small manned or unmanned surface crafts. The capability is critical for Russia in the context of the threat to Crimea from Ukraine, which has used small sea crafts and drones to attack the island peninsula. Also, the approach is cost-effective in the context of the vast Russian coastline.

Indian Navy Could Benefit From Russia

Like Russia, India has vulnerable island territories to protect and a vast coastline. India has developed its LR-SAM system for Naval Ships with Israeli help. The 70-kilometer range missile features an active radar seeker facilitating modification for a surface attack role. However, LR-SAM systems are only fitted on large Indian Navy (IN) ships. The IN has plans to acquire seven locally built Next Generation Corvettes (NGCs). As per the QRs, the NGC will feature an AD missile system capable of providing 360-degree Anti Missile Defense. The systems must be able to engage sea-skimming missiles flying 3-5 meters above sea level at speeds up to Mach 3. The Indian Navy could make the corvettes much more potent by fitting LR-SAM systems with surface attack capability.

The LR-SAM missile is based on the Israel Aerospace Industries-developed Barak-8 missile. During Aero India 2019, IAI displayed a 150-kilometer plus range variant of the Barak-8 called Barak-8 ER/XRSAM. If fitted with LR-SAMs, the Indian Navy's NGCs would become as potent as Russian corvettes equipped with S-350 Redut systems.

<https://eurasianimes.com/russia-demonstrates-s-350-naval-variant-surface-attack-capability/>



Fri, 25 Nov 2022

All You Need to Know about Israel's Mobile Missile Defence System which has been Coveted by many Countries

Iron Dome is an Israeli mobile missile defence system designed to intercept short-range rockets and artillery. It comprises the lowest tier of Israel's missile defence architecture, intended to counter unguided rocket and drone attacks from the Palestinian Territories and Hezbollah-controlled Lebanon. The system consists of three main elements: the Tamir interceptor and its launcher, the ELM 2084 Multimission Radar (MMR), and a battle management and weapon control system (BMC). The system has its roots in the war Israel fought with Lebanon's militant Hezbollah movement in 2006 when thousands of rockets were launched into Israel - causing huge damage, mass evacuations and dozens of deaths. After that Israel said a new missile defence shield would be developed.

What is Iron Dome? The Iron Dome has been developed by Rafael Advanced Defense Systems and Israel Aerospace Industries. The system has been developed to counter very short-range rockets and 155 mm artillery shell threats with ranges of up to 70 km. It can be operated in all weather conditions including fog, dust storms, low clouds and rain. From 2011 to 2021, the United States contributed a total of \$1.6 billion to the Iron Dome defence system, with another \$1 billion approved by the US Congress in 2022. The all-weather air defence system protects the population and critical assets and can be strategically placed to reduce collateral damage. Iron Dome detects, analyses and intercepts a range of incoming threats, including C-RAM, precise guided missiles, cruise missiles, unmanned aerial vehicles and air-breathing threats. The system has so far intercepted more than 2,500 incoming targets with a success rate of over 90 per cent. It provides defence against short-range missiles and rockets which pose a threat to the civilian population of Israel's northern and southern border.

The Iron Dome, which became operational in 2011, was expensive to develop but manufacturers say it is cost-effective because of the technology it uses to differentiate between missiles likely to hit built-up areas and those that won't. Static and mobile units only launch interceptor missiles to shoot down anything interpreted as dangerous. A decade since the Iron Dome became operational, Israel now has 10 batteries deployed across the country, each with three to four launchers that can fire 20 interceptor missiles. Features of Iron Dome Iron Dome has several steering fins for high manoeuvrability and is equipped with electro-optic sensors. The missile system has day-and-night and all-weather capability, quick reaction time, and salvo interception capability. It can also adapt to rapidly evolving threats and handle multiple threats at the same time. Other features of the Iron Dome include a vertical launch interceptor, warhead and proximity fuse, mobile launcher, and compatibility with various radar and detection systems. The system's special warhead allows it to detonate any target in the air. After detecting and identifying the rocket, Iron Dome radar monitors its path. Based on the radar's information, the system's BMC analyses the path of the threat and calculates an anticipated point of impact. If the calculated path of the incoming rocket poses a real threat, a command is run to launch an interceptor against the threat.

The incoming rocket is detonated over a neutral area. Its system has been upgraded to be able to deliver the capability to simultaneously shoot down multiple complex threats such as rockets, unmanned aerial vehicles, and missile salvos. The technological upgrade was tested in a series of three tests, of which the latest test was performed in southern Israel in March 2021. The Iron Dome successfully intercepted and destroyed targets that simulated existing and emerging threats.

<https://www.news9live.com/knowledge/iron-dome-know-about-israels-mobile-missile-defence-system-which-has-been-coveted-by-many-countries-210100?infinitescroll=1>

‘Brimming with Hope’, UK Defense Ministry Confirms Delivery of ‘Double Range’ Brimstone-2 Missiles to Ukraine

Earlier this week, EurAsian Times reported that Brimstone laser-guided missiles, which have double the range of the previous model, were sent to Ukraine. The United Kingdom delivered the first Brimstone 1 missiles about six months ago. “As part of its aid package, the UK has provided Brimstone 2 missiles, a precision-guided missile, to the Ukrainian Armed Forces,” the defense ministry tweeted. The text was accompanied by a video showing the transportation of the missiles. The ministry did not specify how many projectiles were delivered. Earlier this month, the defense ministry said it would shortly provide Ukraine with some 1,000 additional surface-to-air missiles, adding that the delivery will include missiles and launchers capable of destroying air targets, such as drones and cruise missiles.

Russia has repeatedly stressed that military aid to Ukraine has made NATO allies and partners part of its conflict with Ukraine. The Kremlin says that the flow of weapons to the country will only delay a negotiated solution.

Brimstone-2 Missiles

The laser-guided Brimstone 2 missile, with a range of 7.5 miles, will be a mighty addition to Kyiv’s arsenal. Even though Brimstone is often fired from the air, Ukrainian soldiers frequently use modified trucks as mobile launchers to hit Russian positions. Brimstone 2 missiles, which cost approximately £175,000 each, can kill targets by tracking a laser fired by infantry, aircraft, or vehicles. The missile can select targets from a pre-programmed list using a high-frequency millimetric wave radar, lessening the probability of civilian losses. On November 15, a video purportedly documenting the launch of several Brimstone 2 missiles appeared online.

Even though the video is of low resolution, experts pointed out a particular glint on the seeker head or dome that may suggest they are a newer model of the missile with a transparent seeker dome as opposed to those observed earlier in Ukraine with a translucent seeker dome. The Brimstone missile family, developed by the UK, consists of fixed-wing, rotary, and surface-launched missiles. In 2016, then-Minister for Defense Procurement Philip Dunne stated that the Brimstone missile had proved itself as a critical tool in coalition operations against ISIS.

Group Captain Rich Davies, Station Commander of RAF Marham, pointed out that Brimstone is the RAF’s preferred close air support weapon. He added that it is simple to use against static and moving targets and enables users to deal with threats in a complicated environment with maximum effect.

Brimstone-2 Missile Development

The Brimstone missile is developed by MBDA, a company that was established in 2001 as a result of the amalgamation of numerous European missile makers, including the British Matra BAe Dynamics. The missile is essentially a derivative of the American Hellfire missile. It is six feet long and closely resembles the latter. While the Brimstone was initially intended to be

nothing more than a better Hellfire, the RAF's requirements also demanded so many alterations that the final weapon ended up having no components shared with the Hellfire. This effectively negated the entire idea of deriving one weapon from another. Between November and December 2015, the British military used Brimstone to strike ISIS in Iraq and Syria.

Brimstone 2 has new features than its predecessor, which boosts its overall effectiveness. For instance, the Brimstone is powered by a two-stage solid-fuel rocket motor. The fuel runs out quickly in this mechanism, leaving the missile to travel primarily by inertia to its target. On the other hand, the Brimstone 2 was the first to use a more robust and longer-burning rocket motor, which resulted in a 200% increase in range. The Brimstone 2 uses sophisticated dual-mode and laser technology to more effectively track low reflectivity objects, such as camouflaged vehicles, in congested surroundings. Its upgraded Vulcan rocket motor, which doubles the range of the baseline variant, broadens the missile's operational range. The motor is resistant to explosions, bullet penetration, and other environmental stressors.

The missile was chosen as the basis for the UK's Selected Precision Effects at Range (SPEAR) Capability 2 missile and went into serial production on July 16, 2014. In February 2016, Brimstone 2 finished its operational evaluation tests on the Tornado G4. With Brimstone 2, which builds upon Brimstone's combat experience, the Ukrainian military will have a cutting-edge weapon created for the modern battlefield.

<https://eurasianimes.com/uk-defense-ministry-confirms-delivery-of-double-range-brimstone/>

THE ECONOMIC TIMES

Sat, 26 Nov 2022

Britain Says Russia Likely Removing Nuclear Warheads from Missiles and Firing at Ukraine

Russia is likely removing nuclear warheads from ageing nuclear cruise missiles and firing unarmed munitions at Ukraine, Britain's military intelligence said on Saturday. The defense ministry said open source imagery shows wreckage of an air launched cruise missile fired at Ukraine which seem to have been designed in the 1980s as a nuclear delivery system, adding that ballast was probably being substituted for the warheads.

Such a system will still produce damage through the missile's kinetic energy and unspent fuel. However, it is unlikely to achieve reliable effects against intended targets, the ministry added in its daily intelligence update posted on Twitter. "Whatever Russia's intent, this improvisation highlights the level of depletion in Russia's stock of long range missiles", the ministry said.

<https://economictimes.indiatimes.com/news/defence/britain-says-russia-likely-removing-nuclear-warheads-from-missiles-and-firing-at-ukraine/articleshow/95782427.cms>

Pak PM Sharif, Turkiye Prez Erdogan Jointly Inaugurate New Warship for Pakistani Navy

Pakistan Prime Minister Shehbaz Sharif and Turkish President Recep Tayyip Erdogan have jointly inaugurated a corvette warship built by Turkiye for the Pakistani Navy under a strategic cooperation project, a media report said on Saturday. Sharif, who along with a delegation of ministers and officials is on a two-day visit to Turkiye at the invitation of the Turkish President, during the inauguration on Friday said that the launch of PNS Khyber represents the deepening of defence cooperation between the two nations, the state-run Associated Press of Pakistan reported. “It was high time that Pakistan and Turkiye transform their ties into a strategic partnership as the world was envious of the relationship between two brotherly countries,” Sharif said during the inauguration of the PNS Khyber at the Istanbul shipyard.

He said that the launch of the ship manifested the deep bilateral engagement between the two countries in defence cooperation. PNS Khyber is third of the four corvette ships that has been built by Turkiye for the Pakistani Navy under a joint cooperation project. Under the project, Turkiye was tasked to build four corvette warships for the Pakistan Navy—two in Istanbul and two in Karachi. The first corvette warship for the Pakistan Navy known as PNS Babar was launched in Istanbul in August 2021 while the foundation stone for the second ship PNS Badr was laid in Karachi in May 2022, another report on the inauguration ceremony by the Dawn newspaper said. The warships have been built by ASFAT inc, a Turkish state-owned defence contractor firm.

Sharif during the inauguration informed that the fourth warship would be delivered in February 2025. Sharif on the occasion called for the need to enhance trade between Pakistan and Turkiye. He also made a pitch to Turkish entrepreneurs to invest in a 10,000-megawatt solar power project for Pakistan, the report said.

<https://www.tribuneindia.com/news/world/pak-pm-sharif-turkiye-prez-erdogan-jointly-inaugurate-new-warship-for-pakistani-navy-454997>



China has Unveiled New Short-Range Air Defence Systems that Target Drones

Developing short-range air-defence systems to detect low-flying aircraft such as drones has become a key focus for China’s rapidly advancing military. Known as SHORAD systems, they are seen as important for defending against unmanned technology in future warfare – an area President Xi Jinping has repeatedly said should be a priority. Chinese arms makers unveiled several new short-range defence systems earlier this month at the Zhuhai air show in southern

Guangdong – the country’s biggest aviation trade expo. One of the most eye-catching was the Type 625E AA Gun Missile Integrated Weapon System, jointly developed by two state-owned arms suppliers: China South Industries Group Corporation and China North Industries Group Corporation. It combines an anti-air gun and missiles on an 8x8 tactical truck – a concept similar to Russia’s Pantsir system and the United States’ Manoeuvre Short-Range Air Defence system.

The 625 refers to its six-barrel 25mm Gatling-style anti-air gun that is fixed in the middle of the vehicle. It fires lightweight shells whose fragments have a “killing radius” of 5 to 6 metres (16 to 19 feet) after they explode, and the barrage could cover up to 2.5km (1.5 miles). There are also missile launchers on either side of the gun. They can accommodate various Chinese-made light air-defence missiles that are expected to be able to cover a range from 15 metres up to 6km.

The vehicle also has radars and optoelectronic detectors, making it a self-contained and highly mobile SHORAD system that could handle incoming air targets including drones, helicopters and cruise missiles. The saturated firepower of the Gatling gun could also be used against a swarm of smaller drones. It is an upgrade to the Type 625 self-propelled air-defence system that has apparently been in use by the People’s Liberation Army since at least 2020, when it started appearing in training videos and photographs released by the PLA. China has become a major manufacturer of both military and civilian drones for the global market, and it appears the Chinese SHORAD systems are also aimed at overseas buyers.

The Type 625E on display in Zhuhai was painted in pixelated desert camouflage, possibly targeting clients in the Middle East. Another air-defence system, the FK-3000, was also unveiled at the air show. Again featuring anti-air guns and missiles, it is integrated with an anti-unmanned aerial vehicle system that includes active electronically scanned array (AESA) radars, electronic jammers and unmanned ground vehicles. Also on display in Zhuhai was the CS/SA5 Wheeled Self-Propelled Anti-Aircraft Weapon, which combines air-defence missiles with a 30mm machine gun on a truck. Missile maker China Aerospace Science and Industry Corporation has also developed an export version of the PLA’s HQ-17A short-range air-defence missile system. The HQ-17AE – which was unveiled at last year’s air show – has powerful AESA radars and a vertical launcher on a 6x6 truck with a range covering a distance of 20km and 10km altitude.

https://www.scmp.com/news/china/military/article/3201007/china-has-unveiled-new-short-range-air-defence-systems-target-drones?module=perpetual_scroll_0&pgtype=article&campaign=3201007

The Tribune

Sat, 26 Nov 2022

China Holds its First Meeting with 19 Countries in Indian Ocean Region without India

China held a meeting this week with 19 countries from the Indian Ocean region in which India was conspicuously absent. The China International Development Cooperation Agency (CIDCA), an organisation connected with the Chinese Foreign Ministry held a meeting of the China-Indian Ocean Region Forum on Development Cooperation on November 21, in which 19 countries took

part, according to a press release issued by the organisation. The meeting was held in a hybrid manner under the theme of “Shared Development: Theory and Practice from the Perspective of the Blue Economy” in Kunming, Yunnan Province, it said. Representatives of 19 countries, including Indonesia, Pakistan, Myanmar, Sri Lanka, Bangladesh, Maldives, Nepal, Afghanistan, Iran, Oman, South Africa, Kenya, Mozambique, Tanzania, Seychelles, Madagascar, Mauritius, Djibouti, Australia and representatives of 3 international organisations were present, it said.

India was reportedly not invited, according to informed sources here. Last year, China held a meeting with some South Asian countries on COVID-19 vaccine cooperation without the participation of India. CIDCA is headed by Luo Zhaohui, the former Vice Foreign Minister and Ambassador to India. According to the official website of the organisation, he is the Secretary of the CPC (the ruling Communist Party of China) Leadership Group of CIDCA. CIDCA’s official website said the aims of the organisation is to formulate strategic guidelines, plans and policies for foreign aid, coordinate and offer advice on major foreign aid issues, advance the country’s reforms in matters involving foreign aid, and identify major programmes, supervise and evaluate their implementation. During his tour of Sri Lanka in January this year, Chinese Foreign Minister Wang Yi proposed to establish a “forum on the development of Indian Ocean Island Countries”.

When asked whether the CIDCA meeting is the same that is proposed by Wang, the Chinese Foreign Ministry here has clarified to the media that the November 21 meeting was not part of it. At the November 21 meeting, China has proposed to establish a marine disaster prevention and mitigation cooperation mechanism between China and countries in the Indian Ocean region, the CIDCA press release said. China is ready to provide necessary financial, material, and technical support to countries in need, it said. China is vying for influence in the strategic Indian Ocean region with substantial investments in ports and infrastructure investments in several countries, including Pakistan and Sri Lanka. While China has established a full-fledged naval base in Djibouti, its first outside the country, Beijing has acquired the Hambantota port in Sri Lanka on a 99-year lease besides building the port at Pakistan’s Gwadar in the Arabian Sea opposite India’s western coast besides infrastructure investments in the Maldives.

The Chinese forum apparently is aimed at countering India’s strong influence in the Indian Ocean region where India-backed organisations like the Indian Ocean Rim Association, (IORA), which has a membership of 23 countries have taken strong roots. China is a dialogue partner in the IORA formed in 1997. IORA became an observer to the UN General Assembly and the African Union in 2015. Besides the IORA, Prime Minister Narendra Modi has proposed “Security and Growth for All in the Region” (SAGAR) in 2015 for active cooperation among the littoral countries of the Indian Ocean region. The Indian Navy-backed ‘Indian Ocean Naval Symposium’ (IONS) seeks to increase maritime cooperation among navies of the region. Since the June 2020 Galwan Valley clash between Chinese and Indian armies, bilateral ties have been severely hit. India has consistently maintained that peace and tranquillity along the Line of Actual Control (LAC) are important for the overall development of bilateral relations with China.

<https://www.tribuneindia.com/news/nation/china-holds-its-first-meeting-with-19-countries-in-indian-ocean-region-without-india-455015>

Xi Tells Kim China Willing to Work with N. Korea for 'World Peace': KCNA

Chinese President Xi Jinping told North Korean leader Kim Jong Un that Beijing was willing to work with Pyongyang for world peace, North Korean state media said Saturday. The message from Xi came days after North Korea fired an intercontinental ballistic missile in one of its most powerful tests yet, declaring it would meet perceived US nuclear threats with nukes of its own. North Korea has conducted a record-breaking blitz of missile launches in recent weeks and fears have grown that it is building up to a seventh nuclear test, its first since 2017. In his message to Kim, Xi said Beijing was ready to work with the North for "peace, stability, development and prosperity of the region and the world," Pyongyang's official Korean Central News Agency (KCNA) reported. Xi said he was willing to collaborate with Pyongyang as "changes in the world, times, and history are taking place in unprecedented ways," KCNA said, quoting from the message it said was received in response to congratulations from Kim after the Chinese Communist Party Congress last month handed Xi a third term.

Days before North Korea's ICBM launch, Xi met on the sidelines of a Group of 20 summit in Bali with US President Joe Biden, who voiced confidence that Beijing does not want to see a further escalation by Pyongyang. Washington has said it wants China, Pyongyang's most important ally and economic benefactor, to use its influence to help rein in North Korea. The November 18 missile launch appeared to be Pyongyang's newest ICBM with the potential range to hit the US mainland. The UN Security Council convened an open meeting over the launch, with the United States, Britain, France and India among 14 nations to "strongly condemn" Pyongyang's actions. But a Western diplomat told AFP that China and Russia had chosen not to put their names to Monday's statement. Earlier this month, the United States accused Beijing and Moscow of protecting Pyongyang from further punishment. In May, China and Russia vetoed a US-led effort to tighten sanctions on North Korea in response to earlier launches. Pyongyang is already under multiple sets of international sanctions over its nuclear and ballistic missile programmes, and China accounts for more than 90 percent of the impoverished country's bilateral trade.

<https://economictimes.indiatimes.com/news/international/world-news/xi-tells-kim-china-willing-to-work-with-n-korea-for-world-peace-kcna/articleshow/95779071.cms?from=mdr>



NATO Troops Hold Drills in Poland's Suwalki Gap

NATO forces took part in drills in northern Poland on Friday, an area of crucial significance to the security of the alliance's eastern flank. The Suwalki Gap, a sparsely populated area of Polish

territory lying between Belarus and the Russian exclave of Kaliningrad, is of strategic importance because its takeover by Russia would isolate the Baltic states from the rest of NATO. Poland has been beefing up its armed forces in response to Russia's invasion of Ukraine and plans to raise defence spending to 3% of gross domestic product (GDP). "As part of these drills there were exercises that... were formulated based on our experience and observation of the battlefield in Ukraine," said Polish Defence Minister Mariusz Blaszczak. "We know what methods Russia uses and what methods (of defence) are effective." The TUMAK- 22 exercises involve 2,000 soldiers from land and air forces, the Polish Ministry of Defence said. They also involved more than 1,000 pieces of combat and logistical support equipment.

On the snowy day, drills included practicing crossing water and landing. Explosions rang out at Lake Kepno near the village of Klusy as a simulated attack began. "What happened today at Lake Kepno was part of a larger exercise which has been going on for several weeks," said Colonel Tomasz Biedziak. The drill saw dozens of Polish and allied soldiers cross the water with military vehicles on amphibious transporters, while U.S. troops in Abrams tanks simulated chasing the enemy. Low clouds prevented military aircraft from taking part at Lake Kepno.

<https://www.reuters.com/world/europe/nato-troops-hold-drills-polands-suwalki-gap-2022-11-25/>

Science & Technology News

अमर उजाला

शनिवार, 26 नवंबर 2022

PSLV-C54 रॉकेट हुआ लॉन्च, महासागरों के अध्ययन के लिए ओशियन सैट सहित नौ उपग्रहों का प्रक्षेपण

भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) ने अपने विश्वसनीय रॉकेट पोलर सैटेलाइट लॉन्च व्हीकल (पीएसएलवी) की सहायता से शनिवार को ओशियन-सैट 3 सहित नौ उपग्रहों को प्रक्षेपित कर अपनी-अपनी कक्षाओं में सफलता से स्थापित किया। साल 2022 के लिए यह इसरो का पांचवां और आखिरी मिशन था। इसरो के मुताबिक, पीएसएलवी-सी54 ने ओशियन सैट शृंखला के अर्थ ऑब्जर्वेशन सैटेलाइट-06 को पृथ्वी से 742 किमी ऊंचाई पर अपनी कक्षा में प्रक्षेपण के बाद 17 मिनट में पहुंचाया। सभी उपग्रह भी अपनी निर्धारित कक्षाओं में करीब 528 किमी ऊंचाई पर स्थापित किए गए। मिशन के निदेशक एसआर बीजू ने बताया, कुल दो घंटे के उड़ान समय में मिशन सफलता से पूरा हुआ।

पहली बार दो कक्षाओं में प्रक्षेपण

इसरो अध्यक्ष एस सोमनाथ ने बताया, यह मिशन खास था। वैज्ञानिकों ने पहली बार दो कक्षाओं में उपग्रह प्रक्षेपित किए। इसमें ऑर्बिट चेंज थ्रस्टर्स (ओसीटी) उपयोग हुए। ओशियन-सैट को 742 किमी ऊंचाई पर पहुंचाने के बाद रॉकेट नीचे की ओर लाया गया और बाकी 8 उपग्रह 513 से 528 किमी पर स्थापित किए गए। यह पीएसएलवी का 56वां और पीएसएलवी-एक्सएल प्रारूप का 24वां मिशन था।

4 अमेरिकी उपग्रह

एस्ट्रोकास्ट के रूप में तकनीकी के प्रदर्शन के लिए अमेरिका की स्पेसफ्लाइट की ओर से चार उपग्रह भेजे गए। यह इंटरनेट ऑफ थिंग्स तकनीक में उपयोग होंगे। कुल वजन 17.92 किलो था।

यह उपग्रह भेजे

अर्थ ऑब्जर्वेशन सैटेलाइट 6 : ओशियन-सैट श्रृंखला की तीसरी पीढ़ी का यह उपग्रह 1117 किलो वजनी है। इसरो की स्पेसक्राफ्ट डायरेक्टर थेनमोझी सेल्वी ने बताया कि यह उपग्रह मछली पकड़ने के क्षेत्रों की पहचान, सामुद्रिक सुरक्षा, मौसम के पूर्वानुमान व कई अन्य कामों में भी इसका उपयोग किया जा सकेगा। इसका लक्ष्य महासागर का अध्ययन व डाटा संग्रह, मौसम के बदलावों व चक्रवातों पर नजर रखना और हवा के बहाव का डाटा जुटाना है।

भूटान का उपग्रह : मिशन में भूटान का नैनो सैटेलाइट आईएनएस-2बी शामिल है, यह 18.28 किलो वजनी है। इसमें दो उपकरण नैनोएमएक्स और एपीआरएस-डिजिपीटर हैं। इन्हें भूटान और बंगलूरु के यूआर राव उपग्रह केंद्र ने तैयार किया।

आनंद और थायबोल्ड भारतीय उपग्रह : 16.51 किलो का आनंद पिक्सल कंपनी का उपग्रह है, जो व्यावसायिक उपग्रह क्षमता व तकनीक के प्रदर्शन के लिए भेजा गया। स्टार्टअप ध्रुव स्पेस के दो उपग्रह थायबोल्ड 1 और 2 भी मिशन में शामिल थे, कुल वजन 1.45 किलो था।

इसरो के अध्यक्ष ने कही यह बात

इसरो के पीएसएलवी ने ओशनसैट को सफलतापूर्वक ध्रुवीय कक्षा (सन-सिंक्रोनस ऑर्बिट) में स्थापित कर दिया। इसरो के अध्यक्ष एस. सोमनाथ ने बताया कि पीएसएलवी-सी54 ने पृथ्वी अवलोकन उपग्रह को सफलतापूर्वक उसकी लक्षित कक्षा में स्थापित कर दिया है। इसे पूर्वाह्न 11 बजकर 56 मिनट के पूर्व निर्धारित समय पर लॉन्च किया गया। पीएसएलवी-सी54 के प्रक्षेपण के 17 मिनट बाद इच्छित कक्षा में पहुंचने पर पृथ्वी अवलोकन उपग्रह या ओशनसैट सफलतापूर्वक रॉकेट से अलग हो गया। इसके बाद इसे कक्षा में स्थापित कर दिया गया। मिशन को इस साल के लिए इसरो का आखिरी मिशन बताया जा रहा है।

भारत और भूटान रिश्तों में ऐतिहासिक पड़ाव : जयशंकर

मिशन में शामिल भूटान के उपग्रह आईएनएस-2बी को लेकर भारत के विदेश मंत्री एस जयशंकर ने कहा कि भूटान व भारत ने मिशन से एक ऐतिहासिक पड़ाव पार किया है। इसरो के मिशन कंट्रोल सेंटर में

वैज्ञानिकों को भेजे संदेश में उन्होंने कहा कि अंतरिक्ष व तकनीक में हासिल उपलब्धियों के जरिए दोनों देशों का सहयोग 21वीं सदी में प्रवेश कर चुका है। आईएनएस-2बी के उपकरणों के जरिये भूटान में प्राकृतिक संसाधनों का बेहतर प्रबंधन होगा और शौकिया तौर पर रेडियो उपयोग करने वालों को भी सेवाएं मिलेंगी।

<https://www.amarujala.com/india-news/isro-pslv-c54-mission-launched-earth-observation-satellite-oceansat-and-eight-other-customer-satellites-update>



Sat, 26 Nov 2022

ISRO's Reliable PSLV Successfully Places Oceansat, 8 Co-Passenger Satellites in Orbit

ISRO's ever reliable PSLV rocket once again proved its mettle on Saturday when the polar satellite launch vehicle placed an earth observation satellite and eight other co-passenger satellites in multiple orbits, in one of the longest missions. PSLV-C54 successfully injected the earth observation satellite (Oceansat) and eight other customer satellites into sun-synchronous orbits, ISRO said. "PSLV-C54/EOs-06 Mission is accomplished. The remaining satellites have all been injected into their intended orbits," it said in a tweet. This was PSLV's 56th flight. The mission is said to be the fifth and last for the Bengaluru-headquartered space agency in 2022.

As the 25.30 hour countdown which began on Friday concluded the rocket lifted off at a pre-fixed time at 11.56 am today. The 44.4 metre tall PSLV soared majestically into a bright forenoon sky, emanating bright orange fumes from its tail from the first launch pad at the Satish Dhawan Space Centre here, about 115 kms from Chennai. After a flight of about 17 minutes, the rocket successfully placed the primary payload Earth Observation Satellite (Oceansat) at an altitude of about 742 km while the passenger satellites were placed sequentially after lowering the altitude of the rocket to about 528 km in the sun-synchronous orbits by the scientists. Mission Director S R Biju said, "PSLV-C54 mission is successfully accomplished after a 2-hour flight duration."

The Earth Observation Satellite-6 is the third-generation satellite in the Oceansat series. This is to provide continuity services of Oceansat-2 spacecraft with enhanced payload specifications as well as application areas. The mission objective is to ensure data continuity of ocean color and wind vector data to sustain the operational applications. The customer payloads include ISRO Nano Satellite-2 for Bhutan (INS-2B) which would have two payloads namely NanoMx and APRS-Digipeater. NanoMx is a multispectral optical imaging payload developed by Space Applications Centre while APRS-Digipeater payload is jointly developed by Department of Information Technology and Telecom, Bhutan and U R Rao Satellite Centre, Bengaluru.

Another payload in the rocket is the 'Anand' satellite developed by Bengaluru headquartered space start-up, Pixxel which is a technology demonstrator to demonstrate the capabilities and commercial applications of miniaturized earth-observation camera for camera observation using

a micro-satellite in Low Earth Orbit. The 'Thybolt' (two satellites) is from another space start-up Dhruva Space while Astrocast is a technology demonstrator satellite for the internet of things as the payload from Spaceflight, the United States of America.

<https://www.indiatvnews.com/science/pslv-c54-successfully-places-earth-observation-satellite-into-orbit-isro-latest-updates-2022-11-26-826644>



Sat, 26 Nov 2022

PM Congratulates ISRO and NSIL on Successful Launch of PSLV C54 Mission

Prime Minister Narendra Modi has congratulated ISRO and NSIL on the successful launch of the PSLV C54 mission. Modi has also congratulated all those companies involved in this launch. In a series of tweets, the Prime Minister said, "Congratulations to @ISRO and NSIL on the successful launch of PSLV C54 mission. The EOS-06 satellite will help in optimizing utilization of our maritime resources. "The launch of 3 satellites from Indian companies @PixxelSpace and @DhruvaSpace heralds the beginning of a new era, where Indian talent in space technology can be fully realized. Congratulations to all the companies and everyone involved in this launch."

ISRO on Saturday successfully placed all 9 satellites, including an earth observation satellite EOS-06 in multiple orbits. The mission was completed with the help of the space agency's PSLV-C55 launch vehicle. Union Minister Jitendra Singh in a message from Jammu congratulated and thanked ISRO and MoES teams for successful launch. The Minister said, while ISRO will continue to maintain the orbit of the satellite and its standard procedures for data reception, archive etc the major operational user of this satellite would be MoES institutions viz Indian National Centre for Ocean Information Services (INCOIS), Hyderabad and National Centre for Medium Range Weather Forecasting (NCMRWF), Noida that provide a bouquet of services every day for lakhs of stakeholders across the nation.

Dr Jitendra Singh noted that for this purpose, INCOIS has also established a state-of-the-art satellite data reception ground station within its campus with the technical support of National Remote Sensing Centre (ISRO-NRSC), Hyderabad. He also asserted that ocean observations such as this will serve as strong foundation for the India's blue economy and polar region policies.

<https://www.livemint.com/news/india/pm-congratulates-isro-and-nsil-on-successful-launch-of-pslv-c54-mission-11669468260740.html>

Sun, 27 Nov 2022

US Scientists Develop mRNA-Based Vaccine against All Types of Influenza

Scientists from the Perelman School of Medicine at the University of Pennsylvania in the US have developed an mRNA-based vaccine against all 20 known subtypes of influenza virus, which provided broad protection from otherwise lethal flu strains in initial tests. This may serve as a general preventative measure against future flu pandemics in the near future, according to the researchers. The "multivalent" vaccine, described in a paper published in *Science*, uses the same messenger ribonucleic acid (mRNA) technology employed in the Pfizer and Moderna SARS-CoV-2 vaccines. This mRNA technology that enabled those Covid-19 vaccines was pioneered at Penn. Tests in animal models showed that the vaccine dramatically reduced signs of illness and protected from death, even when the animals were exposed to flu strains different from those used in making the vaccine.

"The idea here is to have a vaccine that will give people a baseline level of immune memory to diverse flu strains so that there will be far less disease and death when the next flu pandemic occurs," said study senior author Scott Hensley, a professor of Microbiology at in the Perelman School of Medicine. Influenza viruses periodically cause pandemics with enormous death tolls. The best known of these was the 1918-19 "Spanish flu" pandemic, which killed at least tens of millions of people worldwide. Flu viruses can circulate in birds, pigs, and other animals, and pandemics can start when one of these strains jumps to humans and acquires mutations that adapt it better for spreading among humans.

Current flu vaccines are merely "seasonal" vaccines that protect against recently circulating strains, but would not be expected to protect against new, pandemic strains, said researchers. "It would be comparable to first-generation SARS-CoV-2 mRNA vaccines, which were targeted to the original Wuhan strain of the coronavirus," Hensley said. "Against later variants such as Omicron, these original vaccines did not fully block viral infections, but they continue to provide durable protection against severe disease and death," he added. The experimental vaccine, when injected and taken up by the cells of recipients, starts producing copies of a key flu virus protein for all 20 influenza subtypes. "For a conventional vaccine, immunizing against all these subtypes would be a major challenge, but with mRNA technology, it's relatively easy," said Hensley, who along with his colleagues are currently designing human clinical trials.

<https://www.dailypioneer.com/2022/india/us-scientists-develop-mrna-based-vaccine-against-all-types-of-influenza.html>

