

December
2022

समाचार पत्रों से चयित अंश Newspapers Clippings

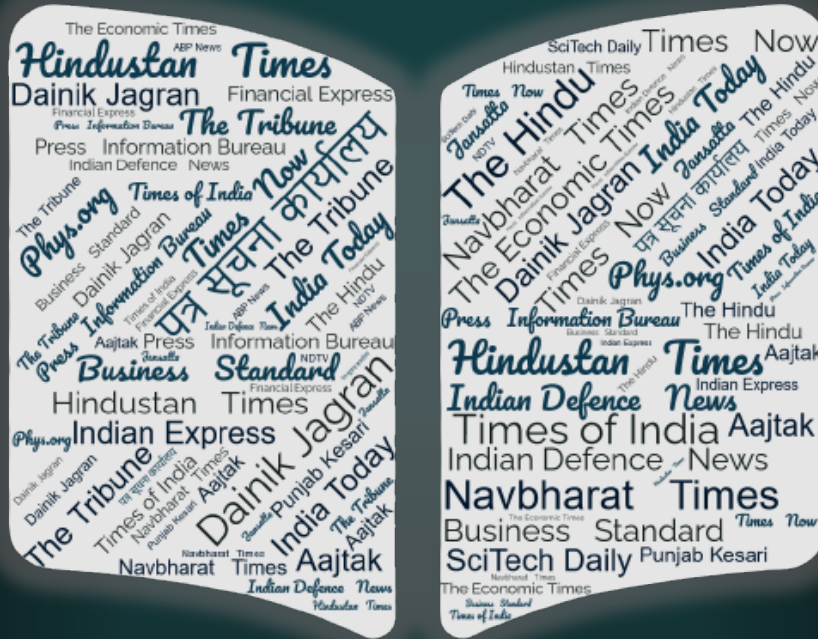
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Technologies, Defence Technologies, Defence Policies,
International Relations and Science & Technology

खंड : 47 अंक : 230

06 दिसंबर 2022

Vol.: 47 Issue: 230

06 December 2022



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सोमवार, 05 दिसम्बर 2022

स्वदेशी मिसाइल आकाश का उन्नत संस्करण बनाने की तैयारी, सेना में जल्द होगी शामिल

डीआरडीओ ने आकाश मिसाइल की अपग्रेड प्रणाली से जुड़ी पूरी जानकारी एक सील बंद लिफाफे में एमएसक्यूए को सौंप दी. जिसके बाद जल्द ही स्वदेशी मिसाइल आकाश का उन्नत संस्करण को सेना में शामिल किया जा सकता है. स्वदेशी मिसाइल आकाश को अपग्रेड करने की तैयारी है. थलसेना जल्द ही इस मिसाइल के अपग्रेड सिस्टम को लांच कर सकती है. दरअसल रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने मिसाइल सिस्टम क्वालिटी एश्योरेंस एजेंसी (एमएसक्यूए) को आकाश मिसाइल की शस्त्र प्रणाली से संबंधित सभी गोपनीय जानकारी सौंप दी है! इसके बाद इस मिसाइल का परीक्षण किया जाएगा. भारत सरकार लगातार स्वदेशी हथियारों के निर्माण और उनके विकास को लेकर आगे बढ़ रही है इसी कड़ी में अब स्वदेशी मिसाइल आकाश को अपग्रेड किया जा रहा है. जिससे इसकी क्षमता बढ़ेगी और इसके बाद देश की सेना की ताकत मजबूत होगी!

हैदराबाद में डिफेंस रिसर्च एंड डेवलपमेंट लेबोरेटरी (डीआरडीएल) में आयोजित किए गए इस कार्यक्रम में डीआरडीओ के अधिकारियों ने आकाश मिसाइल की अपग्रेड प्रणाली से जुड़ी पूरी जानकारी एक सील बंद लिफाफे में एमएसक्यूए को सौंप दी. डीआरडीओ के मुताबिक जो जानकारी एमएसक्यूए को सौंपी गई है, उसमें शस्त्र प्रणाली से जुड़ी पूरी जानकारी मौजूद है जिसमें उसका मॉडल, परीक्षण आदि की रिपोर्ट शामिल है!

रक्षा मंत्री ने दी बधाई

इस जानकारी को लेकर रक्षा मंत्री राजनाथ सिंह ने डीआरडीओ, भारतीय सेना और उद्योग जगत को बधाई दी. उन्होंने विश्वास जताया कि देश सेना में रक्षा सेवाओं को बढ़ाने और जरूरी प्रणाली को मजबूत करने में सफल होगा और सेना की ताकत बढ़ेगी! इसके साथ ही इस मौके पर रक्षा अनुसंधान एवं विकास विभाग के सचिव और डीआरडीओ के अध्यक्ष डॉ समीर वी कामत ने प्रोजेक्ट आकाश टीम को प्रोत्साहित किया. उन्होंने कहा कि आने वाले समय में डीआरडीओ और भी मिसाइलों पर काम करेगा. इसके साथ ही कई मिसाइलों के उत्पादन को लेकर काम किया जाएगा!

क्या है आकाश मिसाइल की खूबियां?

आकाश मिसाइल एक ऐसी अत्याधुनिक स्वदेशी मिसाइल है जो जमीन से हवा में मार करने की क्षमता रखती है। ये मिसाइल पिछले 1 दशक से सशस्त्र बलों के साथ भारत के आसमान की रक्षा कर रही है। अब इसके अपग्रेड सिस्टम पर काम किया जाएगा। इसके सफल परीक्षण के बाद इसका उपयोग थलसेना और वायुसेना के लिए किया जाएगा। जिसके लिए ये दोनों सेनाएं 30 हजार करोड़ रुपये खर्च करेंगी, ये मिसाइले इन सेनाओं में शामिल होंगी। जिसके बाद ये भारतीय सेनाओं के लिए किसी भी स्वदेशी मिसाइल की सबसे बड़ी खरीद भी होगी! बता दें कि भारत लगातार आत्मनिर्भरता की ओर आगे बढ़ रहा है, कई मिसाइलों का उत्पादन कर उनका सफल परीक्षण किया जा रहा है। इस क्षेत्र में भारत ने पिछले कुछ सालों में कई बड़ी सफलताएं हासिल की हैं और ना केवल भारत अपनी सैन्य ताकत को मजबूत करने के लिए मिसाइल समेत अत्याधुनिक प्रणाली को विकसित कर रहा है बल्कि इस क्षेत्र में निर्यातक के तौर पर भी बड़ी भूमिका में उतरा है!

आसमान की रक्षा के लिए प्रमुख मिसाइलें

आकाश मिसाइल जो सतह से आकाश की रक्षा के लिए सक्षम हैं ये एक स्वदेशी मिसाइल है जिसे डीआरडीओ द्वारा विकसित किया गया था। ये मिसाइल 30 किलोमीटर दूर और 18 हजार मीटर ऊंचाई तक टारगेट करने में सक्षम है। इसमें लड़ाकू विमान, क्रूज मिसाइलें, हवा की सतह वाली मिसाइलें आदि आती हैं, जो भारतीय थल सेना और वायु सेना के पास हैं! इसके अलावा सतह से हवा में टारगेट करने वाली मिसाइलों में त्रिशुल, बराक 8 , पृथ्वी एयर डिफेंस , एडवांस एयर डिफेंस मिसाइलें शामिल हैं। त्रिशुल मिसाइल की जमीन से हवा में मारक क्षमता 9 किलोमीटर हैं। वहीं बराक 8 जो कि एक भारतीय-इजरायली लंबी दूरी वाली मिसाइल है जिसमें हेलीकाप्टर, एंटी शिप मिसाइल और यूएवी के साथ साथ क्रूज मिसाइल, जेट विमान शामिल हैं जो किसी भी हवाई हमले के खतरे से बचाव करती है!

इसके अलावा देश में जमीन से जमीन पर हमला करने वाली भी कई प्रमुख स्वदेशी मिसाइलें हैं जिसमें पृथ्वी-1, पृथ्वी-2, पृथ्वी-3 और प्रहार जैसी कम दूरी की बैलिस्टिक मिसाइलें हैं। इसके अलावा मध्यम दूरी की बैलिस्टिक मिसाइलें अग्नि 1, अग्नि 2, इंटरमीडिएट दूरी की बैलिस्टिक मिसाइलें अग्नि 3, अग्नि 4 मिसाइलें शामिल हैं! साथ ही हवा से हवा में मार करने वाली मिसाइल भी भारत के पास है जिसमें अस्त्र मिसाइल है जिसे डीआरडीओ ने विकसित किया है। ये भारत की पहली ऐसी मिसाइल है जो हवा से हवा में मार कर सकती है। इसके अलावा हवा से सतह पर मार करने वाली डीआरडीओ एंटी रेडिएशन मिसाइल भी भारत के पास है जो दुश्मन के रडार और ट्रांसिमिट सिग्नलों को खराब कर देती है!

<https://www.abplive.com/news/the-drdo-to-develop-advance-version-of-akash-missile-abpp-2274782&cd=1&hl=en&ct=clnk&gl=in>

Two-Day DFRL Meet in Mysuru on Futuristic Strategies for Troops

The Mysuru-based Defence Food Research Laboratory (DFRL) is conducting a national conference on “Futuristic strategies for the sustainment of troops in different terrains” at Southern Star here on December 7 and 8. U.K. Singh, Director General (Life Sciences), DRDO, Delhi will inaugurate it. The conference is an effort to bring researchers, tri-service users, industry participants, and academics on a common platform to debate the current challenges faced by all stakeholders and to develop concepts for technical solutions, a release said here. It also creates a common forum where past experiences, difficulties, and future course of action will be imagined and discussed, it said.

The conference will be inaugurated at 4 pm on December 7. Cmde Manoj Sharma, director, PDCV, NHQ, New Delhi and R. Umamaheshwaran, Director, HSFC, ISRO, Bengaluru will be the guests of honour.

<https://www.thehindu.com/news/national/karnataka/two-day-dfml-meet-in-mysuru-on-futuristic-strategies-for-troops/article66226973.ece>

Defence News

Defence Strategic : National/International



Press Information Bureau
Government of India

Ministry of Defence

Mon, 05 Dec 2022

New Design of the President’s Standard and Colour, and the Indian Navy Crest Unveiled

Posted On: 05 DEC 2022 5:12PM by PIB Delhi The Hon’ble President of India has approved introduction of a new design for the President’s Standard and Colour and Indian Navy Crest for the Indian Navy, which were unveiled at Visakhapatnam on Navy Day on 04 Dec 2022. Resonant to the ongoing National endeavour to move away from the colonial past, the Naval Ensign was amended to a new Design that draws inspiration from our history where in the Red Horizontal and Vertical Lines on the White Ensign were replaced with an Blue Octagon with Twin Golden Borders encompassing the National Emblem atop a clear anchor and ‘National Emblem

‘SatyamevJayate’ inscribed on the stock of the Anchor. Further, the National Flag was retained on the upper left canton.

The erstwhile design of the President’s Standard and Colour for the Indian Navy was instituted on 06 Sep 2017. The design comprised one each horizontal and vertical red bands intersecting at the centre and the National Emblem inserted at their intersection. The National Flag was at the upper left canton adjacent to the staff and a Golden Elephant was at the lower right canton on the fly side. This design was inspired from the erstwhile Naval Ensign. The Indian Navy adopted a new Naval Ensign on 02 Sep 2022, and the new design of the President’s Standard and President’s Colour awarded to the Indian Navy incorporates this change. The new design of the President’s Standard and Colour comprises three main constituents - the National Flag in the upper left canton adjacent to the staff, the State Emblem underscribed with ‘SatyamevJayate’ in Golden Colour on the upper right canton on the fly side, and a Navy Blue - Gold Octagon below the Golden State Emblem. The Octagon has twin golden octagonal borders, encompassing the golden National Emblem (Lion Capital of Ashoka – underscribed with ‘SatyamevJayate’ in blue Devnagri script) resting atop an anchor; and superimposed on a shield. Below the shield, within the octagon, in a golden bordered ribbon, on a Navy Blue background, is inscribed the motto of the Indian Navy ‘Sam No Varunah’ in golden Devnagri script.

The Golden State Emblem signifies ‘Power, Courage, Confidence and Pride’ whilst the Navy Blue – Golden Octagon shape draws inspiration from ShivajiMaharajRajmudra or the Seal of ChhatrapatiShivajiMaharaj, and represents the eight directions (four cardinal and four inter cardinal), symbolising the Indian Navy’s maritime outreach. The new design of President’s Standard and Colour highlights India’s glorious maritime heritage and also symbolises a powerful, courageous, confident and proud Indian Navy. The Indian Navy Crest has been amended to replace the fowl anchor with a Clear Anchor. The clear anchor depicts steadfastness of the Indian Navy to deter any challenge in maritime domain, and represents clarity in vision, mission and aspirations of its sailors. The Clear Anchor also depicts Indian Navy’s commitment towards securing the Coast and Maritime Interest of India. The change would imply removal of the symbolic nautical rope in the Crest Designs. The Modified Indian Navy Crest has been introduced with effect from 04 Dec 22 on the occasion of the Navy Day 2022.

The New Naval Crest has a traditional naval clear anchor below the Ashoka Lion Head with ‘शंवरुणाः’ inscribed below it, which is an invocation from the Vedas meaning ‘May the Ocean God be Auspicious unto us’. The phrase was adopted as the motto of the Indian Navy on the suggestion of ShriChakravarti Rajagopalachari, the first Indian Governor General of Independent India. The National Motto ‘सत्यमेवजयते’ meaning ‘Truth Always Triumphs’ is inscribed on the Stock of the Clear Anchor.

In line with the change in the Indian Navy Crest, minor amendment to the Crest of the Indian Naval Command Headquarters (which has the Indian Navy Crest in the inset) has also been approved by the Hon’ble President of India. The President’s Standard and President’s Colour are awarded to static and mobile formations of the Indian Navy respectively, to acknowledge their distinguished and meritorious service to the Nation. The Indian Navy was the first among the three Services to be awarded the President’s Colour on 27 May 1951 by the then President Dr. Rajendra Prasad. In the Indian Navy, the President’s Colour has been awarded to the Western, Southern, and Eastern Naval Commands, both Western and Eastern Fleets, the Submarine Arm, the Naval Air Arm, INS Shivaji, INS Valsura and the Indian Naval Academy. The 22nd Missile

Vessel Squadron was the first Naval Combatant Squadron to be honoured with the President's Standard.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1880977>

पंजाब केसरी

मंगलवार, 06 दिसंबर 2022

दुश्मन की पनडुब्बियों का विध्वंसक युद्धपोत 16 को होगा लॉन्च

कोलकाता, (पंजाब केसरी): भारतीय नौसेना का पहला एंटी-सबमरीन वारफेयर शैलो वाटर क्राफ्ट (एएसडब्ल्यूएसडब्ल्यूसी) 16 दिसंबर को लॉन्च किया जाएगा। इससे गार्डन रीच शिपबिल्डर्स एंड इंजीनियर्स (जीआरएसई) लिमिटेड के नाम एक और उपलब्धि जुड़ जाएगी। 77.6 मीटर लंबा और 10.5 मीटर चौड़ा यह पोत दुश्मन की पनडुब्बियों का शिकार करने और उन्हें बेअसर करने में सक्षम है।

नौसेना को सौंपे जाने से पहले जहाज को डेक उपकरण, सेंसर और हथियार प्रणालियों से सुसज्जित किया जाएगा। नौसेना ने ऐसे 16 जहाजों का ऑर्डर दिया है। आठ जीआरएसई द्वारा बनाए जा रहे हैं, शेष कोचीन शिपयार्ड लिमिटेड में निर्माणाधीन हैं। अतीत में जीआरएसई ने प्रोजेक्ट-28 के तहत नौसेना को



● 77.6 मीटर लंबा और 10.5 मीटर चौड़ा यह पोत दुश्मन की पनडुब्बियों का शिकार करने में सक्षम है

चार एंटी-सबमरीन वारफेयर कॉवेट का निर्माण और वितरण किया है। कामोर्टा वर्ग के जहाज भारतीय नौसेना में शामिल होने वाले पहले एएसडब्ल्यू कॉवेट थे। 109 मीटर की लंबाई के साथ वे अभी और असरदार बनाए जा रहे हैं।

जीआरएसई में भारतीय नौसेना के लिए युद्धपोत उत्पादन पर्यवेक्षक (डब्ल्यूपीएस)कमोडोर इंद्रजीत दासगुप्ता कहा हम पिछले कई वर्षों से एएसडब्ल्यू जहाजों का संचालन कर रहे हैं (आईएनएस कामोर्टा 2014 में नौसेना में शामिल हुआ था)।

Full Support of Government for Aero India 2023, Says Bommai

Chief Minister Basavaraj Bommai has promised complete support of the State government for hosting the 14th edition of Aero India which is to be held at Air Force Station, Yelahanka, from February 13 to 17. Mr. Bommai who met a Ministry of Defence team along with HAL officials thanked the Prime Minister and the Defence Minister for selecting Bengaluru as the venue for Aero India 2023 and promised complete support of the host State to make this edition the largest ever since its inception. The Ministry of Defence team led by Anurag Bajpai, Joint Secretary (DIP) and Cdr. Achal Malhotra, CEO, Defence Exhibition Organisation along with C.B. Ananthkrishnan, CMD, HAL met the Chief Minister.

The Ministry of Defence team also took an on-site assessment at the Air Force Station and has fast-tracked all planning and execution of the mega event which will showcase India's resolve to achieve self-reliance in Aerospace and Defence. HAL which is the nodal organization for the airshow said that it has constituted its teams and are ready to interact with the nodal teams of the State government and the Air Force to ensure seamless execution of Aero India 2023 which has multiple stakeholders.

<https://www.thehindu.com/news/cities/bangalore/full-support-of-government-for-aero-india-2023-says-bommai/article66226776.ece>

Outlook

Aero India: Defence, HAL Officials Meet K'taka CM, Visit Yelahanka Airbase

Hindustan Aeronautics Limited (HAL) and Ministry of Defence officials met with Karnataka Chief Minister Basavaraj Bommai on Monday to discuss preparations for Aero India 2023. Officials from the Ministry of Defence and Hindustan Aeronautics Limited (HAL) on Monday met Karnataka Chief Minister Basavaraj Bommai regarding the preparations for the 14th edition of Aero India here from February 13-17, 2023. They also visited the Air Force Station at Yelahanka here, which is the venue for the airshow. The Ministry of Defence team led by Anurag Bajpai, Joint Secretary (DIP- Defence Industries Production) and Cdr. Achal Malhotra, CEO, of the Defence Exhibition Organisation along with C B Ananthkrishnan, CMD, HAL met the Chief Minister, Chief Secretary Vandita Sharma, and Additional Chief Secretary Gaurav Gupta, the Defence PRO office here said in a release. The Chief Minister during the meeting thanked Prime Minister Narendra Modi, Defence Minister Rajnath Singh, and the Ministry of Defence for selecting Bengaluru as the venue for Aero India 2023 and assured of complete support of the host State to make this edition the "largest ever" since its inception.

Aero India has carved a niche for itself globally as one of the premier aerospace exhibitions with 13 successful editions organised in Bengaluru since 1996. The officials also met Air Cmde Manoj Kumar Yadav, AoC (Air Officer Commanding), Air Force Station, Yelahanka, and discussed issues related to Aero India 2023. The Ministry of Defence team took an on-site assessment at the Air Force Station Yelahanka and has fast-tracked all planning and execution of the mega event which will showcase India's resolve to achieve 'Atmanirbhar Bharat' in aerospace and defence sectors, the release said. HAL has constituted its teams and is ready to interact with the core panel of the Government of Karnataka and the Indian Air Force to ensure seamless execution of Aero India 2023.

<https://www.outlookindia.com/national/aero-india-defence-hal-officials-meet-k-taka-cm-visit-yelahanka-airbase-news-242648>

नवभारत टाइम्स

मंगलवार, 06 दिसंबर 2022

चीन पर भरोसा नहीं, हर सेक्टर में सेना मूस्तैद

■ औली (उत्तराखंड): सेना के कामकाज के लिहाज से उत्तराखंड का औली सेंट्रल सेक्टर में आता है। इसी इलाके में भारत और अमेरिकी सैनिकों ने 15 दिन का साझा युद्धाभ्यास किया। लाइन ऑफ एक्चुअल कंट्रोल यानी चीन से लगती LAC के सेंट्रल सेक्टर को वैसे तो शांत माना जाता है, लेकिन चीन ने जिस तरह पूर्वी लद्दाख में धोखा दिया, उससे सबक लेते हुए भारतीय सेना हर जगह चौकस है। पूरे नॉर्दन बॉर्डर (चीन बॉर्डर) पर सेना की री-बैलेसिंग के तहत तैनाती बढ़ी है। सीमावर्ती इलाकों में इन्फ्रास्ट्रक्चर का काम भी तेज हुआ है।

सेंट्रल सेक्टर में तीन-चार साल से सेना का इन्फ्रास्ट्रक्चर काफी मजबूत हुआ है। इसी साल अक्टूबर में जब प्रधानमंत्री नरेंद्र मोदी उत्तराखंड गए थे, तब उन्होंने पर्वतमाला रोड का ऐलान किया था। मोदी ने कहा था कि सीमावर्ती क्षेत्रों को बेहतरीन और चौड़े हाइवे से जोड़ा जा रहा है। एलएसी के पास बसा गांव माना भी चौड़े हाइवे से जोड़ा जाएगा। दरअसल सीमावर्ती इलाकों तक जब फोर लेन की सड़क बनेगी, तो इससे सिर्फ स्थानीय लोगों को ही फायदा नहीं होगा,



उत्तराखंड के औली में भारत और अमेरिकी सैनिकों ने 15 दिन का साझा युद्धाभ्यास किया।

बल्कि इसका सामरिक महत्व भी है। यह सेना के काम आएगा। इससे सेना को मूवमेंट में आसानी होगी और सेना की ताकत भी बढ़ेगी।

सेंट्रल सेक्टर में चार अहम वैली हैं हर्षिल, माना, नीति और बाराहोती। इनमें बाराहोती पर चीन के साथ विवाद है। दोनों देश इसे विवादित मानते हैं। पूरी LAC में 8 ऐसे पॉइंट हैं, जिन्हें दोनों देश विवादित मानते हैं। इनमें बाराहोती भी एक है।

सेंद्रल सेक्टर में सिर्फ बाराहोती में हुआ सामना

बाराहोती 42 वर्ग किलोमीटर का इलाका है, जहां लद्दाख की तरह बहुत ही टफ टेरेन है। यहां 9500 फीट की ऊंचाई है, लेकिन बर्फ बहुत ज्यादा गिरती है। पूरे सेंद्रल सेक्टर में करीब 22 दरें हैं। यहां सिर्फ बाराहोती इलाके में ही भारतीय और चीनी सैनिक आमने-सामने होते रहे हैं। लेकिन यहां भारतीय सेना काफी

मजबूत है। हर तरफ सेना की निगरानी है। अगर चीन के सैनिक आ रहे हैं तो उसकी पूरी खबर रहती है। यहां मजबूत इंप्रगस्ट्रक्चर बन गया है और दरें तक भारतीय सैनिक चीनी सैनिकों से पहले पहुंच सकते हैं। एलएसी से चीनी सेना की जो सबसे नजदीकी पोस्ट है, वह करीब 13-14 किलोमीटर दूर है, लेकिन भारतीय सेना की एलएसी से सबसे नजदीकी पोस्ट 2-3 किलोमीटर की दूरी पर ही है। भारतीय सेना यहां हर दरें तक गाड़ी के साथ पहुंच सकती है।



Mon, 05 Dec 2022

YudhAbhyas: US Draws ‘Critical Lessons’ in Mountain Warfare from Indian Army as the Himalayan War Drills End

ByPrakash Nanda

India and the United States have just concluded their 18th edition joint training exercise, “YudhAbhyas 22,” which evoked strong reactions from China. But more than India, the US was very particular about the location of the exercise, which has rattled Beijing. The exercise took place at a place called Auli in the hilly state of Uttarakhand. Situated over 9500 feet, Auli is about 100 kilometers (62 miles) from the Line of Actual Control, a disputed border that separates India and the Chinese-held territories. India and the US have dismissed the Chinese protests, stating that “it is none of their (China’s business).” The American business through this exercise from November 15-December 2 was to gain practical experience of “mountain warfare “with arguably the world’s largest and most experienced mountain army. Such has been the reputation of India’s high-altitude defense and offense that even the Chinese have accepted grudgingly.

US Military Lacks Mountain Warfare Experience

The United States, the world’s number one military power, does not have a distinguished record when fighting in the mountains if one considers its performance in countries like Vietnam and Afghanistan. All told, Osama bin Laden, then America’s Public Enemy No. 1, hid out in the mountains of Afghanistan after the 9/11 attacks for years. American security forces failed to capture or kill him as long as he was in Afghanistan; he was tracked and killed after he shifted to Pakistan. As the leading English daily, the Washington Post, had exposed in 2019 by revealing confidential government documents, senior US officials had suppressed the truth that the Afghan

War was unwinnable because of the limitations of the US forces in the mountainous country. In recent years, many of America's adversaries who have given Washington a severe headache have been from mountainous regions. Because that is where rogues and militants often go. American drones and special forces have not been able to neutralize Al Qaeda, the Taliban, Islamic State, Boko Haram, and the "bad hombre" of Mexico.

All these adversaries take to the hills when other sanctuaries fail. That also explains why the major drug cartels and jihadists continue to dig into mountain redoubts. No wonder why Judith Matloff, author of the book "No Friends but the Mountains — Dispatches from the World's Violent Highlands," says that "At over 14,000 feet, most of us (Americans) — soldier or civilian — can't function". According to her, most American soldiers have never climbed that high, and gradual acclimatization is needed to adapt to even 10,000 feet. It's not just the human body; besides, that fails in the mountains. Tanks and helicopters often can't operate at rugged and extreme heights. Manned airplanes can't land. "Throughout history, mountain dwellers have resisted better-armed conventional forces not only because they hold the literal high ground but because they knew how to navigate the topography and brutal weather conditions," she adds.

Challenges In High-Altitude Terrain

Going by a US Army manual, the challenges of conducting military operations in a mountainous environment are many. In the mountains, "small mistakes can lead to catastrophic events," while "technological supremacy can be negated by even the crudest and non-technical enemy actions." Therefore, "mountain combat calls for extreme physical fitness, mental toughness, endurance, and the utmost in tactical and technical proficiency on the part of all individuals," the manual says. However, it adds that "the physical characteristics of mountains can support and enhance offensive operations with proper leadership and preparation." Infantry companies conducting offensive, defensive, and stability operations in mountain terrain should be able to adapt and skillfully use the environmental challenges to their advantage. According to the manual, mountain combat is often close as the opposing forces meet in rugged terrain. Even though engaging targets near the limits of direct-fire weapons does occur in mountain engagements, intervening crests, hills, ridges, gullies, depressions, and other terrain features often limit long-range battles with the enemy.

A lack of trafficable roads characterizes the upper levels of mountain terrain. The use of motorized vehicles is often restricted, forcing mission execution to dismounted units. Conflicts in mountain environments are often fought on a platoon and squad level as the terrain commonly does not support the meeting and maneuvering of large units. The compartmentalization of mountain terrain can separate brigades from battalions, battalions from companies, and companies from platoons for long periods. As altitude increases in mountain environments, the landscape generally becomes more rugged and restrictive, which drives the need for the decentralized execution of missions by dismounted platoons and squads. The ruggedness of mountain terrain often restricts mobility to foot movements using file-type formations on roads and trails. A relatively short distance from point to point may be an arduous movement over steep, rocky, uneven terrain, with multiple trail switchbacks that increase the distance traveled and the energy expended to traverse it. This makes sustainment in a mountain environment a challenging and time-consuming process.

Terrain and weather complicate virtually all sustainment operations, including logistics resupply, medical and casualty evacuation, and soldier health and hygiene. The network of restrictive

mountain roads often does not support resupply vehicles with a large turning radius or permit two-way traffic. Movement of supplies usually involves a combination of movement types, including air, vehicle, foot, and animal, with each technique having its challenges in mountain environments. Therefore, every Army has to train for mountain combat operations. Soldiers need to learn the harsh mountain terrain through various conditions while learning the basics of surviving at high altitudes.

US Army Training For Mountain Battles

In 2020, the US Congress approved \$30 million in funding to bolster US military readiness by expanding facilities at the elite Army Mountain Warfare School in northern Vermont to meet this challenge. The school teaches US and foreign service members basic, advanced, and specialty mountain warfare courses. It may be noted that the US Army has one mountain division, which is called the 10th Mountain Division (LI). For practical experience, the LI has begun a partnership with the Chilean Army Mountain Warfare School to enroll American Soldiers in each future four-month course. Mountains in Chile are much higher than those in Europe, where the NATO troops, including those from the US, train otherwise for high-altitude wars. From the combat experience gained in Afghanistan, the US Army has already started introducing new Intelligence, Surveillance, and Reconnaissance (ISR) technologies for application in high-altitude environments.

The US Army's Aerial Intelligence, Surveillance and Reconnaissance (A-ISR) system—an airborne platform, which is also known as the Airborne Reconnaissance and Electronic Warfare System (ARES), is reportedly undergoing trials and technology demonstrations. It is supposed to overcome the natural impediments created by mountain features such as valleys and mountain folds forming natural barriers against Radio Frequency (RF) and communication relays so that soldiers deployed for action in undulating mountain terrain can communicate with senior commanders who are distantly located. The US Army is also testing the “Aerial Tier Network” consisting of a swarm of drones. These drones are designed to relay downward and receive signals and communication upward from the ground permitting the signals to “hop” over obstructions and thus enabling communication between soldiers across a rugged mountainous battlefield, such as between two valleys separated by a mountain ridgeline, using a network of High Aerial Platforms (HAPs). This kind of up-and-over-the-hill communication is done through satellites, but satellites have limits. While many communications networks aim for reliable continuous global coverage, jammers can block the signals. The satellites could be vulnerable in a war if a country uses anti-satellite missiles or other space weaponry to destroy them.

An aerial network, instead, can be brought to where the soldiers are and offer a communication link immediately overhead, with one that can be taken down and transported elsewhere as the fighting shifts. This is designed to enhance the Army's ability to stay in touch and coordinate while spaced apart from friendly forces. This dispersed communication is called NLOS, for “Not Line of Sight.”

India's Supremacy In High Altitudes

But then, all told, technology can only help. It cannot obviate the challenge of fighting in the mountains as it does in the plains. At harsh elevations, troops must know how to rappel and shoot guns on skis, pack an animal, or use a hauling line to evacuate casualties. And it is precisely here that the Indian Army has an edge. According to Huang Guozhi, senior editor of China's “Modern Weaponry” magazine, “At present, the world's largest and most experienced

country with plateau and mountain troops is neither the US, Russia, nor any European powerhouse, but India.”Huang writes, “With more than 200000 troops in 12 divisions, the Indian mountain force is the largest mountain fighting force in the world.” Huang, it seems, is impressed by the way Indians fought the Chinese at Galwan, won in the Kargil War, and controlled the Siachen glacier, all in the range of the mighty Himalayas.He also notes, “The Indian military has spent heavily on advanced heavy equipment from the US including the M777, the world’s lightest 155mm-towed howitzer, and the Chinook heavy transport helicopter that lifts the gun, to boost its fire support and anti-armor capabilities”.

Viewed thus, when the US high-altitude technologies, weapons, and platforms on the one hand and the operational strategy and tactics of India in the domain of mountain warfare on the other work together, it becomes a potent combination in joint drills from which soldiers of both the US and India learn a lot.And that precisely was the motto of “YudhAbhyas 2022” that US Army soldiers of the 2nd Brigade of the 11th Airborne Division and Indian Army soldiers from the ASSAM Regiment participated in.The exercise also strengthened defense ties between India and the United States. It was in tune with US Secretary of Defense Lloyd Austin’s assertion in April that “The US-India military relationship is one of the most consequential partnerships of our time.”

<https://eurasianimes.com/yudh-abhyas-us-draws-critical-lessons-in-mountain-warfare/>



Mon, 05 Dec 2022

OFB out of World’s Top 100 Military Firms’ List, HAL, BEL Retain Spots

While one Indian company exited from the SIPRI’s (Stockholm International Peace Research Institute) 2021 ‘Top 100’ list that was released on Monday, two state-owned Indian manufacturers of weapons and providers of military services retained their place. The two companies are Hindustan Aeronautics Limited (HAL) at rank 42 and Bharat Electronics Limited (BEL) at rank 63 in the list of 100 companies. In SIPRI’s 2020 ‘Top 100’ list, three Indian companies were named—HAL, BEL and the OFB or the Indian Ordnance Factories. That year, HAL was ranked 42nd, BEL was placed at rank 66 and OFB at 60th place.

The latest report said: “The total arms sales of the two Indian companies (HAL and BEL) in the Top 100 were \$5.1 billion in 2021. The arms sales of Hindustan Aeronautics and Bharat Electronics increased by 6.7 per cent and 20 per cent, respectively”. “Both companies (HAL and BEL) have benefited from major orders placed by the Indian armed forces in recent years,” it added. In 2021, the total arms sales of the world’s Top 100 totalled \$592 billion in 2021, marking an increase of 1.9 per cent in their arms sales compared with 2020. While four Chinese companies bagged spots in the top 10, a total of eight Chinese arms companies were included in the Top 100 in 2021, with an aggregated arms sales of \$109 billion—6.3 per cent more than in 2020. Country-wise, in the 2021 list, US companies topped with a share of 51 per cent of the total arms sales, followed by Chinese companies with 18 per cent, UK firms with 6.8 per cent, and French companies with 4.9 per cent share.

Russian companies garnered only 3 per cent of the global share. India is the world's second-biggest importer of weapons after Saudi Arabia and is also the world's third-biggest spender on defence after the US and China. Originally comprising 41 Ordnance Factories (OFs) under the administrative control of the Ordnance Factory Board (OFB) operated under the defence ministry, the government, on June 16, 2021, announced plans to restructure the OFB into seven government-owned professionally managed corporate entities. The OFB restructuring move was prompted to enhance autonomy, and improve accountability and efficiency besides deepening specialization in the product range, enhance competitiveness and improve quality and cost-efficiency. The 41 OFs were the oldest and largest conglomerate in India's defence industry that employed about a lakh workers.

<https://www.theweek.in/news/india/2022/12/05/ofb-out-of-worlds-top-100-military-firms-list-hal-bel-retain-spots.html>

THE ECONOMIC TIMES

Mon, 05 Dec 2022

BSF Targets Pakistan Smugglers Using Drones for Drugs & Arms Trafficking

The Border Security Force (BSF) has been cracking down hard on Pakistan's aerial conspiracy -- its attempts to send drugs and weapons through drones inside India. Pakistani smugglers have started using old drones assembled in Pakistan instead of new ones made in China to carry out their nefarious plans. According to sources, this is being done to reduce the economic loss due to the continuous actions taken by the security forces and the expensive Chinese drones. Most of the drones that come from Pakistan to the Indian territory are made in China including, the hexacopter and quadcopter drones. The BSF has achieved great success in shooting them down in recent times. According to a security source, a Pakistani drone was shot down by the BSF personnel in Punjab recently. Preliminary investigation revealed that the drone was about 18 kg heavy and had been assembled in Pakistan by adding different parts, mostly Chinese.

The equipments fitted in the drone belonged to different companies and it has been sent for forensic examination to gather more information. A senior official said that Pakistani smugglers have been facing huge economic losses due to the China-made drones being shot down by the forces. The BSF has installed anti-drone systems on the border. According to data, a large Hexacopter drone, which does not have the capacity to lift much weight, costs around Rs 14-16 lakhs in Pakistan. Apart from this, the BSF has been killing the smugglers' hopes by seizing large amounts of drugs and weapons from these drones, causing them financial loss. The old drones assembled in Pakistan are said to be capable of carrying more cargo.

17 drones shot down in 2022, drugs worth crores seized

According to the BSF, the jawans have been achieving great success in shooting Pakistani drones in Punjab and Jammu and Kashmir. Seventeen drones were shot down this year as compared to only one last year. Official data revealed that the BSF seized 26,469.943 kg of drugs till October 31 this year, which includes 518.272 kg from the Western Front and 25,951.671 kg from the Eastern Front. In the last one month, the BSF recovered about 45 kg of heroin and many weapons from the international border of Punjab. The cost of heroin has been estimated around Rs 300

crore. BSF DG Pankaj Kumar Singh said that nowadays big and heavy drones are being used from Pakistan which are easy to shoot down.

Huge increase in cases of drone intrusion in 2022

Data shows that in 2022, cases of drone infiltration by Pakistan have increased more than double as compared to previous years. According to the information, 79 drones were seen in 2020, 109 in 2021, which has increased to more than 266 in 2022. More than 215 cases of drone infiltration have been reported at the Punjab border and about 22 cases have been seen in Jammu so far, the sources said.

A chip in drone could expose Pakistan

The BSF DG said that information about the drones is being collected through better technology. Questions like where the drone comes from, when and where is it planned to land are now ascertained by the BSF's technical team through its own system. He said that secretive information is revealed by the chip in the drone. With the help of which, eight people involved in drug smuggling were caught in Punjab. Six of these had been convicted earlier under the NDPS Act. Border surveillance work is being carried out by the security force with the help of equipment prepared at low cost and indigenous technology.

Border monitoring with anti-drone system and 5,500 cameras

BSF has installed anti-drone systems along the India-Pakistan border to prevent drone infiltration. This helps in jamming and shooting the drones. According to the data, Rs 30 crore is being spent by BSF this year to further strengthen the borders, along with 5,500 additional cameras being installed to monitor border infiltration and drone activities. Singh said that Indian drones are also being used on a large scale to further strengthen day-night patrolling. At the same time, the help of state police is being taken to stop smuggling.

Drug money used in terrorism, youth becoming victims

According to sources, Pakistan has been using drones to help terrorists in Jammu and Kashmir and Punjab, to supply arms and drugs in large quantities across the border, as well as supplying drugs in large quantities. Drugs dropped through these drones are being sold to the youth and the money received in return is used for terrorist activities. Pakistan, in this way is not only promoting terrorism with drugs, but is ruining the coming generation, the sources added.

<https://economictimes.indiatimes.com/news/defence/bsf-targets-pakistan-smugglers-using-drones-for-drugs-arms-trafficking/articleshow/95997562.cms?from=mdr>



Mon, 05 Dec 2022

Tech Transformation of the Army: Staring into a Void?

By Ruchin Sodhani

The good part is that practically everyone – retired army officers, serving ones, analysts and politicians – agrees that the Indian Army needs to become what it presently is not. It needs to

become a fighting machine that is lean, swift and effective against adversaries who have already made substantial progress in that direction. Much of the discussion centres upon development and adoption of artificial intelligence (AI) powered applications like drone swarms, autonomous fighting vehicles and airborne platforms, with some pointers directed at communications and space technologies. And this is where the mirage dissolves to reveal the desert beyond.

Everything on the subject that is in the public domain – and there is nothing to suggest there is much else going on behind the curtains – speaks of a belief that modernising the army is mostly about acquiring and deploying the weapon systems that we see other, more technologically sophisticated armies use in televised conflicts. That is a deadly error for an army that aims to be a first-rate fighting force, not just a face-saving device. An organisation needs to first prepare itself to assimilate advanced technologies. You do not simply mount a jet engine upon a jalopy and expect to get very far. When organizations go for technology adoption, it is on the back of detailed homework. They first seek internal clarity about their goals, analyse their processes and visualise how technology will render many old processes redundant or change them fundamentally. It is not merely about inserting new devices at convenient points to make this faster or that easier, like replacing a typewriter with a word processor. It is called process reengineering, and it involves a radical redesign of core processes. It often entails drastic organisational changes and redefining of treasured values. Such transformations are deep, wide and, in many ways, painful. They also call for endurance, knowledge and intellectual resources.

If the current processes are ponderous and error prone, as manual processes often are, so will be the processing of information and decision-making. What the organisation gains by deploying technologically advanced sensors and shooters will be more than lost through poor direction – powerful senses and limbs thrashing about without a brain that has the capacity to coordinate them. Clearly, it is not a job to be handed off to consultants. The army will need to take the lead. And since not a word has been heard on just how that is going to happen, here are some suggestions on how to begin. Start by putting together a team that possesses the operational and technical knowledge to draw up a skeleton project plan towards building a technology-based battlefield management system, redesigning wartime and peacetime processes and modifying organisational structures. The talent exists within the army. It needs to be selected and gathered, freed from the tyranny of “career management” by the Army Headquarters and – most importantly – empowered. Follow it up by identifying and engaging consultants based on the empowered team’s inputs. Once again, talent exists within the country. The expanded team (soldiers, engineers, and other domain specialists) then produce a full-fledged project plan detailing the modules, their testing and deployment and the timelines. Create strong disincentives for foot-dragging by anyone, at any level and ram it through.

There will be mistakes and glitches, but they will be sorted out. Even smaller organizations, both government and private, working in fields that are far more stable and predictable than the warzone, take several months to get to the other side of tech transformation. Not uncommonly, they still make mistakes that take time to rectify (think GST and income-tax portal implementation). For something as colossal and complex as the army, the project could run into years including some rework from time to time. Meanwhile, continue filling up critical gaps in security through piecemeal deployment of advanced weapon systems. Right now, an effort of this magnitude seems to be an incredibly tall order. The army’s collective mind appears wired to believe that it is fit for any war because of its vast experience in counterinsurgency operations and because of the grit it has undoubtedly shown in savage border conflicts. The confidence bred

by these successes seems to have clouded what everyone in the army understands well – that a full-spectrum war is a different animal altogether.

Which, in turn, suggests that the driving impulse for the transformation project might have to come from outside the army, with an oversight mechanism that demands accountability from stakeholders at the highest levels. This transformation is necessary not just for warfighting in the near future, but for decades to come. Without technology as the backbone of operations, not only will the army be less effective, but it will also never gather the vast amounts of data that are needed to create that magical creature called AI. That can only be built upon the data generated by previous iterations of technology. Without putting those in place, the future is no more than science fiction. Imported data will not do, just as US customers' data will not help anyone sell their wares in India. The army should get basic technologies and processes in place before distracting itself with popular AI tropes. AI needs mammoth amounts of historical data to train (and wars are anyway notorious for their disregard of history), works in extremely narrow domains, optimises for very specific objective functions (say, maximising revenue or minimising cost) and is useless with abstractions. It has some way to go before it learns to deal with the complexity of warfighting, and the path is currently quite obscure. Robot armies are not marching down the Brahmaputra valley anytime soon.

But India's adversaries do seem to have a head start in warfighting technology, even discounting their propaganda. The moment of reckoning cannot be postponed indefinitely. In fact, the longer you procrastinate, the closer that moment draws itself. The army should start working on its transformation project yesterday.

<https://www.financialexpress.com/defence/tech-transformation-of-the-army-staring-into-a-void/2901011/>



Mon, 05 Dec 2022

The Evolving Dynamics of Drones and Counter-Drone Systems in Modern Warfare

Unmanned Aerial Systems (UAVs), or Drones, are radically changing the face of warfare in the 21st century. The use of armed drones like the 'MQ-1 Predator' caught the popular imagination of security professionals, researchers and defence analysts due to their extensive use in counter-terror (CT) and counter-insurgency (CI) operations by the US-led coalition forces in Afghanistan, Iraq and other places. Besides conducting CI and CT operations, drones have extensively been deployed for intelligence and reconnaissance missions by many countries worldwide.

The recent conflicts in Nagorno-Karabakh between Armenia and Azerbaijan, the conflicts between Houthi rebels and the Saudi-led coalition in West Asia, and the ongoing Russia-Ukraine War have seen extensive use of combat drones and drone swarms. Since the onset of the Russia-Ukraine conflict, the debate on drone warfare has further intensified and gained traction as drones have exhibited a credible potential to inflict heavy damage on ground forces, including

armoured columns. The current evolving patterns of conflicts suggest that the age of drone warfare has arrived. However, in contrast to the debates centred on drone warfare, the focus on anti-drone systems appears to be lacking and is comparatively less popular.

Evaluating the Drone Dynamics

It is important to recognize that the drone challenge is in its infancy, at a level of sophistication comparable to where armoured warfare stood a century ago. However, ongoing cutting-edge research coupled with the gradual evolution of deployment tactics will further enhance the lethality of drones on the battlefield. With minor customisations, multiple options are available for any country investing in drone systems to make them more lethal and survivable.

Compared to other battlefield systems, a vast majority of drones are relatively economical. Therefore, countries with modest means can also mount swarm attacks to saturate and overwhelm the conventional defences of their adversary. The use of drone swarm technology has the potential to significantly impact every area of military competition, from enhancing supply chains to delivering warheads. Drone swarms are multiple small unmanned platforms loaded with guns, bombs, and missiles designed to accomplish a shared objective while autonomously altering their behaviour based on communication with one another. Swarming should not be understood as a mere movement of a cluster of drones in a synchronised manner; instead, swarming is possible when drones coordinate, communicate and adjust their behaviour with one another in response to real-time information.

Due to their small size, drones are difficult to track and detect. Using various composite materials and design modifications, drones can acquire stealth features that can place them beyond the range of defensive missiles or below the horizon of defensive radars. Also, the ease with which any user can acquire drone technology from the international market makes it immune to international sanctions. For instance, the Iranian Shahad-136 drones deployed by Russia against Ukraine have Western technology for functions like guidance. In the absence of international regimes and strict international legal provisions to contain the proliferation of small and large combat drones, countries across the region are racing to develop indigenous drones and loitering munitions.

Besides their small size, drones can remotely be controlled and pre-programmed to exhibit unpredictable flight patterns. The erratic flight behaviour can confuse the defenders in finding a suitable point of air engagement to interdict and thwart the incoming attack. The Shahad-136 drone can be an example in this case, as it hardly exceeds the speed of 100 miles per hour. However, with a range of over 1,500 miles, it can hit the intended targets by following circuitous paths that can only be countered using extensive defensive networks.

The recent conflicts have also seen extensive use of Loitering Ammunition. Popularly known as Kamikaze or Suicide Drones, these are one-time-use weapons designed to find a target and crash into it, giving it its “kamikaze” nickname. Once airborne, loitering munitions can hover over a target area for a considerable period to finally hunt down a specific target by a human-driven process from a remote-control station. Coupled with high precision and low cost, the Kamikaze drones are potent weapons to gain a swift tactical advantage on the battlefield. With further improvisations like onboard data fusion and satellite uplinks, these drones will become more versatile and capable of changing battlefield dynamics.

Need for Effective Anti-Drone Options

In contrast to the gradually evolving drone designs, the development of tactical air defence systems and counter-drone systems worldwide is stagnant and lagging. Armies worldwide have air defence systems that either lack the reach to engage distant drones or are too expensive to offer a suitable exchange ratio in defeating drones. Barring a few exceptions like Israel, most countries lack effective anti-drone systems. With drone swarms now frequently being used in conflicts, deployment and stockpiling of layered air defence salvos can prove to be a losing game compared to inexpensive threats emanating from drone swarms. In the near future, all likely efforts to further upgrade the kinetic options for drone defence will cost a multiple of what most drones do. It is precisely for these reasons that non-kinetic anti-drone options need more attention. The term “kinetic” here refers to the weapons that use force accomplished via motion, as in the case of a missile or other munition.

Against this backdrop, all the feasible non-kinetic options that can be explored are electronic jamming, lasers, electromagnetic pulse, GPS spoofing or a mix of all, deployed in a layered manner. The first step in countering any drone attack is to deploy proper monitoring equipment that not only detects and distinguishes rogue drones from other objects like aeroplanes and birds but also identifies the exact model of the approaching drone and employs adequate countermeasures. Radio Frequency (RF) Analysers, Acoustic Sensors (Microphones), Optical Sensors (Cameras) and Radars can enhance situational awareness and help track drones in real-time.

Upon tracking, Jamming is an option that can be employed to disrupt drone signals by overwhelming its receivers with electronic noise and radio frequencies. Drones use command links to operate and communicate with their remote pilots and thus depend on GPS signals to navigate. By sending its electromagnetic signals at the same frequency, drone jammers can overpower the GPS signals used by the drone and thus effectively disable it. The application of microwaves is another option to thwart incoming drone attacks. High-Power Microwaves (HPM) can destroy and disable the guidance system of incoming rogue drones in an indiscriminate manner as compared to lasers and thus can be a potent counter against drone swarms. The Electromagnetic Pulse (EMP) generated by the HPMs interferes with radio links to disrupt and destroy the electronic circuitry of incoming drones (plus any other electronic device within range).

Besides Jammers and Microwaves, Combat Lasers are also powerful probable solutions to counter the drone threat. Combat Lasers operate at the speed of light to achieve a non-kinetic kill by heating the UAV to a point where its systems fail. Lasers can be very effective against individual drones as they have pin-pointed accuracy and thus can avoid any collateral damage. Both high-power electromagnetics and lasers are strong interdiction measures, typically used in a military context. However, they cannot be used as an effective countermeasure in a civil environment, especially in crowded areas, as they risk triggering the deployment of dangerous payloads mounted on an incoming drone or drone swarms.

Drones for asymmetric warfare

The introduction of drones adds a new dimension to warfare in general and aerial combat in particular. They are capable of being a sniper in the sky. They thus can be deployed for precision targeting coupled with Intelligence, Surveillance and Reconnaissance (ISR) missions, and also capable of strategic bombing. Drones, therefore, can tactically change the battlefield scenario to

yield strategic results. Drones can also fight asymmetric warfare and be deployed by terror outfits operating within national boundaries. While it is wise for countries worldwide to focus on acquiring and building a variety of drones and coupling it with disruptive technologies like artificial intelligence (AI) and the Internet of Things (IoT), it would be equally wise to focus on counter-drone technologies to mitigate the threats emanating from small rogue armed drones, that would require continuous and urgent research, development, and up-gradation.

<https://www.financialexpress.com/defence/the-evolving-dynamics-of-drones-and-counter-drone-systems-in-modern-warfare/2901031/lite/>



Mon, 05 Dec 2022

Amid ‘Sukhoi Carnage’ in Ukraine War, Indian Air Force must take a Cue from Russia & Upgrade its Su-30 MKIs to SM2 Standards

By Parth Satam

According to a recent report, Russia has lost eleven Sukhoi Su-30 fighters in Ukraine, leaving a cue for India and even China to upgrade its fleet of jets rapidly. China, too, uses Russian-origin Su-30MKK, but that isn't China's sole frontline fighter as it has a vast fleet of highly advanced Generation 4++ (or 4.5) jets along with one of the world's most diverse air defense systems. A study by open-source intelligence (OSINT), arms and military analysis website Oryx gave a detailed breakup of the range of ground and air platforms Russia lost against Ukraine and the nature and cause of losses. Of the eleven, six have been shot down, and five have been 'destroyed on the ground,' presumably owing to a Ukrainian strike on the Russian Air Force (VVS). Whether the six that were shot down were following surface-to-air missile (SAM) hits or air-to-air combat with Ukrainian Air Force jets has not been specified.

Su-30s Shot Down – When & Where?

The report has photographs, videos, or hyperlinks to social media posts about the jets being shot down against each claim of a Russian jet loss. Of the six Su-30s that were brought down from the air (either through SAMs or aerial engagement), only one was destroyed in September, while the rest of the kills happened between March and April. This implies that no Su-30 was lost for the four months of May, June, July, and August 2022. As for the five mentioned to have been destroyed on the ground, one is shown burning on an air base tarmac on February 25. Whether this was an accident or a result of a Ukrainian strike on a VVS air base has not been mentioned. The other four have been shown in a satellite photograph of Crimea's Saky Air Base on August 9, showing parked planes on the air side burning. This can be concluded to have resulted from the Armed Force of Ukraine (AFU) strike there on the same date (August 9), which the AFU revealed only on September 9. Ukraine's top military commander, General Valery Zaluzhnyi, and the First Deputy Chairman of the Parliamentary Committee on National Defense and Intelligence, Mykhaylo Zabrodskiy, unveiled the details of the strike in an article on

the Ukrinform news agency. The “missile strike” destroyed at least nine military aircraft, including Su-30SM fighters and Su-24M bombers, but the article did not specify the missile used. Other VVS aircraft that were shot down include the Su-25 Frogfoot ground attack/close air support (CAS) jet, which has the highest number of VVS losses at 23.

This is followed by the Su-34 fighter bomber (16 shot down) and one Su-35S, commonly known as the ‘Super Flanker.’ A MiG-31BM was also lost to a ‘non-combat related incident’ where the jet ran off the runway at Crimea’s Belbek Air Base on October 6 and fell off a cliff. India Needs To Upgrade Its Sukhois Fast. In a possible conflict with China, India will rely heavily on its Su-30s and the Dassault Rafale to carry out strikes or air dominance roles. IAF’s 262 Sukhois will remain the Indian Air Force’s (IAF) backbone for decades. In October, the IAF decided to upgrade these with indigenous systems, avionics, electronics, radar, some low-level technical assistance, and a new engine from Russia. This is to avoid irking the US, which has sanctioned Russia over its military intervention in Ukraine. In early October, IAF chief Air Chief Marshal VR Chaudhari announced that the technical parameters of the significant Sukhoi upgrade were being decided. Eighty-four Su-30s would be upgraded in the first tranche, with the modernization kicking off after 4-5 years of design and development. A new Long-Range Dual-Band Infrared Search and Track (IRST) under the Make II category is being developed by the Defense Research Development Organization (DRDO) and Bharat Electronics Limited (BEL).

A new Active Electronically Scanned Array (AESA) radar is being developed by the DRDO, Hindustan Aeronautics Limited (HAL), and a Russian Original Equipment Manufacturer (OEM) to replace its N011M Bars radar. The AL-41F-1S developed by Russia is expected to be fitted onto the Indian Su-30 MKI. Former IAF Jaguar pilot Squadron Leader Vijander K Thakur had recommended India take a cue from Russia’s upgrade of its Su-30SM2 fighters to the SM-2 standard. India’s original Su-30 upgrade plan was stuck for several years, primarily owing to HAL and Rosoboronexport addressing the issue of spares. In the meantime, Russia upgraded its Su-30 fleet to the Su-30SM2 standard. Upgrading its fleet at the same time as Russia would have been cheaper, as Russia would have accrued economies of scale in manufacturing and sourcing the new equipment for a more extensive fleet. A recent EurAsian Times analysis explained how Russia’s Su-30SM2 upgrade program attempted to converge the Su-30 with the Su-35 to the maximum possible extent series “to minimize logistics and maintenance overheads.” This was against the backdrop of a batch of new Su-30SM2 fighters handed over to the VVS by the Irkutsk Aviation Plant.

<https://eurasianimes.com/eleven-su-30s-lost-in-ukraine-chinese-air-defense/>



Mon, 05 Dec 2022

German Foreign Minister kicks-off her first trip to India amidst concerns over Russia-Ukraine war

India and Germany reiterate strong partnership and discuss expanding cooperation in the energy sector as well as in the Indo-Pacific Region. In her inaugural trip, German Foreign Minister Annalena Baerbock is in New Delhi for a two-day visit and this is her first major ministerial level interaction between the two countries since the new government of Olaf Scholz came to power in

Germany and the onset of Russian aggression in Ukraine. She held discussions with her counterpart, Indian External Affairs Minister S Jaishankar with the main agendas revolving around Indo-German cooperation on the transition to renewable energy and India's relationship with Russia and China. At a joint press conference after the meeting, both the ministers reiterated that Indo-German relations have a long tradition and history, and that both countries are strong strategic partners for the past two decades. Both ministers interacted on various international issues including the Indo-German bilateral relationship, the Indo Pacific strategic situation, as well as the conflict in Ukraine, developments pertaining to Afghanistan and Pakistan as well as other countries.

The ministers also discussed the issue of Indian baby girl Ariha Shah, who was taken by German authorities under their care, alleging the parents sexually harassed their child. The visiting minister assured that the baby's well-being is their priority and that pending the verdict in the case, there will be a formal review. In response to a question regarding the content of their discussion, Jaishankar informed that the issue of Afghanistan and Pakistan were also talked about. He outlined to his counterpart, the challenge of cross border terrorism. In a departure from Baerbock's earlier statement in Pakistan with regards to Kashmir and the UN intervention, India made its position clear and Jaishankar explained that Germany also understands that India engages with Pakistan bilaterally on all outstanding issues.

Migration and Mobility Partnership Agreement

They both signed the agreement which will make it easier for people from the two countries to study, do research and work in each other's countries ensuring greater flow of talent and skills between the two countries. Minister Baerbock said, "In concrete terms, we also want to cut red tape, for example, by reducing waiting times for such visa applications. Because foreign policy not only means that foreign ministers meet, it also means that there are diverse people to people contact and people can live together." She also added that Germany is keen to get highly skilled workers and young people to come to her country and "we want to make it easier for them to study here to work here." Reiterating that India is a natural partner to Germany, Baerbock said that India will be a role model and bridge for many countries in the world as an emerging economic power and a solid democracy, despite internal social challenges. The minister also pointed out that the clearer positioning of the G20 against the Russian war of aggression in Ukraine is ultimately also thanks to India.

Ahead of her visit, Minister Baerbock had stated that she plans to 'discuss containing the climate crisis and maintaining a rules-based international order' with India, which has recently taken over the G20 presidency and is set to 'play its role globally'. The minister congratulated India on the G20 presidency, even as Germany was just concluding its G7 presidency. She said that as industrialised nations in the G20, we are responsible for 80% of global emissions and she is glad that India in its presidency is putting a special focus on containing the climate crisis. She said Germany and India will further expand their cooperation for accelerating the energy transition. In addition to high-level discussions, Baerbock also plans to interact with civil society representatives and non-governmental organizations working for women's rights as well as participate in a trilateral India forum of the transatlantic foundation of the German Marshall Fund, which works to encourage cooperation in the Indo-Pacific region. The forum is a leading platform for transatlantic and European dialogue with India, with members comprising experts from American, European and Indian politics, think tanks and business.

Views of the minister on China & other issues

“As our European friends, we pursue a tripartite approach that is enshrined in our coalition treaty as well. almost to the day we have been in office for a year. And we are pursuing a strategy with three parts. China is seen as a partner in global challenges, a competitor and increasingly as a systemic rival as well. China has changed very much over the last few years and I think the whole region can see this and feel this.”According to her, “the exchange of actors from the region is very important to us, especially India as the direct neighbour. This is very important for us to have a good assessment of the challenges ahead. One of the newer points in our China strategy is the Indo Pacific strategy. We will have more diversification in the Indo Pacific area.”

Potential for Germany and European companies

“There is huge potential for German and European companies. Until now we’ve been focusing very much on China, but there are also ties with India and Japan, but not so much with many other neighbouring countries. And when it comes to India, we have both highlighted that there is huge potential for further cooperation both in terms of economic ties, but also when it comes to the security situation. In Germany, we have seen what it means when you become strongly dependent on one country, a country that does not share your values. With a view to the political and security policy aspects and developments in the region, we will closely cooperate with our partners in the region,” she added.

<https://www.financialexpress.com/defence/german-foreign-minister-kicks-off-her-first-trip-to-india-amidst-concerns-over-russia-ukraine-war/2901519>

ThePrint

Mon, 05 Dec 2022

India’s Missile Test Alert Got Chinese Research Vessel to Change Course. Now it’s back

The Chinese research vessel Yuan Wang 5 re-entered the Indian Ocean region earlier Monday, according to data collected by the Norwegian company Maritime Optima. At the time of filing this report, the Yuan Wang 5 is currently southbound in the Indian Ocean off the coast of the island of Java in Indonesia, Maritime Optima showed. The development comes a week after India had issued a NOTAM (Notice to Airmen/Notice to Air Missions) about a missile test in the Andaman and Nicobar region, and a few days after the Yuan Wang 5 appeared to make a U-turn in response to India’s NOTAM.

Open source geospatial intelligence analyst Damien Symon had tweeted speculatively on 2 December, predicting the return of the Chinese vessel to the Indian Ocean region. The ongoing developments are far from the first time that a Yuan Wang-class ship, owned and operated by the Chinese PLA’s Strategic Support Force, has either changed course in response to an Indian-issued NOTAM or attracted the attention of the Indian Navy. In November this year, the Yuan Wang 6 entered the Indian Ocean region ahead of a missile test slated for 11 November, for which India had issued a NOTAM, marking a significant area of the Bay of Bengal as a no-fly zone. According to Symon, India had cancelled its previous NOTAM on 7 November owing to

the presence of the Chinese vessel, and re-issued a NOTAM for the no-fly zone above the Bay of Bengal, with a launch window of 23-24 November.

“The deployment is also in sync with a Chinese aerospace mission that flies over the Bay of Bengal between 15 and 20 November, which would put the Yuan Wang 6 near the Indian missile test’s splash zone as well,” Symon had contextualised about the vessel’s entry into the Indian Ocean at the time. Earlier in August, the Yuan Wang 5 was slated to arrive on the 11th of that month at the Chinese-owned port of Hambantota in Sri Lanka. Following intervention by India, Colombo had briefly withdrawn berthing permission, delaying the vessel’s arrival at Hambantota. However, the Yuan Wang 5 eventually docked at Hambantota on 16 August and departed Sri Lankan shores on 22 August. The latest developments regarding the Yuan Wang 5’s movement, however, appear to be business as usual in the eyes of India’s Chief of Naval Staff, Admiral Hari Kumar, who said that plenty of Chinese ships operate in the Indian Ocean region and the Navy routinely monitors activity in the region to protect Indian interests in the region. “We have a presence of 4-6 PLA Navy ships, then research vessels and a large number of fishing [vessels]. As resident maritime power [of the Indian Ocean Region], we keep monitoring and we are aware it is a vital region...We track them and make sure they don’t undertake any activities which are inimical to Indian interests,” Kumar told ThePrint.

Yuan Wang 5 was constructed in 2007 by Jiangnan Shipyard and though owned by the Chinese PLA, it is not operated by the PLA Navy. Instead, it is in use with the PLA’s Strategic Support Force, the fifth and newest branch of the Chinese PLA, established in December 2015. The spy research vessel is among four active ships in the Yuan Wang-class responsible for tracking and supporting satellites as well as Intercontinental Ballistic Missiles (ICBMs). The online news arm of Chinese company NetEase, referring to the role of the Yuan Wang-class under the newly formed Strategic Support Force, had reported in March 2016: “Yin Zhuo, a military expert, said in an interview with state media that the tasks of the Strategic Support Force include undertaking daily navigation operations, managing Beidou satellites (satellite navigation system) and space reconnaissance means, and undertaking defence tasks in electromagnetic space and cyberspace.”

<https://theprint.in/india/indias-missile-test-alert-got-chinese-research-vessel-to-change-course-now-its-back/1249362/>

The Tribune

Mon, 05 Dec 2022

China Setting Up Military Base in Indo-Pacific Region

After setting up its first overseas military base at Djibouti (Africa) in 2017, China is looking at a base in Cambodia in the Indo-Pacific and close to the maritime dispute in the South China Sea. A US Department of Defence report titled ‘Military and Security Developments Involving the People’s Republic of China’ released on November 30 said: “The Chinese military facility at Ream Naval Base in Cambodia will be the first overseas base in the Indo-Pacific”. In early 2021, dredgers were spotted off Cambodia’s Ream Naval Base, where the Chinese are funding construction work to have a deep port facility — necessary for the docking of larger military warships. In June 2021, Cambodian Defence Minister accepted that China would help modernise and expand the Ream Naval Base.

The US assessment says China is seeking to expand its overseas logistics and basing infrastructure to allow the People's Liberation Army (PLA) of China to project and sustain military power at greater distances. The PLA base in Djibouti now has an operational 450-metre ship berthing pier which will be able to accommodate the Chinese Navy's aircraft carriers, other large combatants and even submarines. After kicking off work in Cambodia, the likely other places being considered for military bases are in Myanmar, Thailand, Singapore, Indonesia, Pakistan, Sri Lanka, the UAE, Kenya, Equatorial Guinea, Seychelles, Tanzania, Angola, and Tajikistan among other places as locations for PLA military logistics facilities. China has probably already made overtures to Namibia, Vanuatu, and the Solomon Islands which are well known. Not all attempts of China are expected to fructify. Such bases not just help in military conflict but enable diplomatic signalling, political change, bilateral and multilateral cooperation and training. Crucially, all this will enable intelligence gathering.

Beijing may use a mixture of military logistics models. These could include a preferred access to commercial infrastructure abroad, exclusive logistics facilities with prepositioned military supplies and bases with forces stationed. Some of China's Belt and Road Initiative (BRI) projects could create a potential military advantage, with PLA getting access to foreign ports to pre-position the logistics support to sustain naval deployments in the Indian Ocean, Mediterranean Sea and Atlantic Ocean.

<https://www.tribuneindia.com/news/nation/beijing-setting-up-military-base-in-indo-pacific-region-457796>



Sun, 04 Dec 2022

At -20°C, HIMARS to become ‘Sitting Ducks’ for Russian Military Thanks to New Upgrades & Freezing Winters

By Sakshi Tiwari

The United States Army has awarded Lockheed Martin a \$431 million contract to produce M142 High Mobility Artillery Rocket System launchers at full capacity to rapidly replenish the inventories of the United States and its allies. Russia Is Firing 20,000 Artillery Rounds Per Day; Moscow Is Burning Its Ammo Faster Than It Can Produce Them — US However, new Russian claims suggest that the ‘game changer’ HIMARS could soon lose its sheen. The HIMARS started arriving in Ukraine in the summer and have turned the tide of the war in Kyiv's favor ever since, earning the reputation of a ‘game changer’ in the ongoing conflict. The US has reportedly supplied about 20 units of the system to Kyiv, with more in the pipeline. However, the invading Russian forces have found a way around these lethal Ukrainian systems. A Russian air defense unit commander in the Zaporizhzhia region recently informed the local Russian media that the country's air defense forces have received new software that allows them to shoot down HIMARS MLRS missiles “without difficulties.” In addition, the Director of the MGIMO Center for Military-Political Studies, Alexei Podberezkin, explained that to destroy the HIMARS rocket, which is fairly long, an air defense missile has to strike accurately at its warhead. Because HIMARS are fired at extremely long range, it's essential to calculate their course accurately.

This is because minor errors in course calculation will cause the air defense missile, fired from very close to the intended target, to miss hitting the warhead. The software update allows the precise calculation, of course, so that the rocket warhead is struck. If the Russian claims are anything to go by, the Russian troops would be encouraged with a better understanding of the HIMARS MLRS and better means to shoot down the incoming projectiles fired from the system. Earlier, there were reports that Russia had captured an intact missile fired from HIMARS and was examining it. These claims are also significant as they come when Russia has gone on a missile-firing rampage on Ukraine's energy targets. Meanwhile, a Russian officer of the 1st army corps of the Donetsk region recently told Russian news agency RIA Novosti, "the intensity of the use of the MLRS HIMARS by the enemy has significantly decreased" following the onset of winter.

End of HIMARS Havoc?

Indian Air Force veteran and military analyst Vijainder K Thakur told the EurAsian Times that the HIMARS Multiple Launch Rocket Systems are unsuitable for combat operations in the autumn and winter seasons in the East European region. The expert, an avid Russia watcher, says that the defending Ukrainian troops were plagued with several issues due to the onset of winter and the sub-zero temperatures. The Ukrainian Army is allegedly struggling with the loss of foliage as cover, the difficulty of building tracks in mud and snow, and the need for special fuel and lubricants, to name just a few. Thakur elaborated that the limitations imposed on the Ukrainian HIMARS by the onset of winter have dented the 'shoot and scoot' capability of the system. HIMARS launch rockets in rapid succession and then quickly hide behind foliage cover, such as in a nearby forest. The issue is that there is no greenery to hide beneath during the winter. This virtually leaves the weapon system exposed to the Russian troops.

Due to this, Russian drones, satellites, and airborne assets such as the Tu-214R can detect HIMARS more readily. The Tu-214R is a Russian reconnaissance aircraft fitted with cutting-edge optical and electronic equipment and radar systems. The Russian Aerospace Forces allegedly deployed the aircraft in Syria in 2016. According to reports, the aircraft has been pressed into service against Ukraine. Not just that, Russia has also accelerated satellite launches for navigation and to further its reconnaissance missions. On November 28, Russia added another piece to its GLONASS satellite navigation network. GLONASS is the Russian equivalent of GPS. Going solely by these indicators, Russia may have focused its eye on defeating the HIMARS.

EurAsian Times reported in November that Russia had deployed its own Tornado-S Multiple Launch Rocket System (MLRS) to combat the HIMARS. Notably, the Tornado-S has a firing range of 120 kilometers as opposed to the 100 kilometers range of the Ukrainian HIMARS. In addition, US M142 HIMARS can fire six GPS-guided 227mm rockets that can reach 80 kilometers and are accurate within five to ten meters. In contrast, the Russian 9A54 Tornado-S systems can fire twelve 300mm GLONASS-guided rockets at 120 kilometers with the same accuracy as HIMARS and have a three-minute reduced launch readiness time. Due to the increased exposure of HIMARS to Russian reconnaissance and missiles, the HIMARS launch points have allegedly reduced now. Russia is believed to have deployed more reconnaissance drones, which can spot & recognize HIMARS tracks in mud and snow leading to the revelation of their current location.

Thakur backed his argument against HIMARS by saying that the US previously operated HIMARS in Afghanistan, Iraq, and Syria. The MLRS is adapted to sand and heat but is yet to

operate in temperatures around -20 degrees Celsius, typical of Russian winters, which are exacerbated by wind chill from the forest-steppe zone. On its part, the US is planning to make the HIMARS more lethal. The Pentagon is reportedly considering a proposal to supply Ukraine with a cheap, small, precision Ground-Launched Small Diameter Bomb (GLSDB) fitted onto abundantly available rockets, allowing Kyiv to strike far behind Russian lines. The GLSDB is launched using a multiple-launch rocket system (MLRS), and the Ukrainian forces can use the bombs without extensive retraining or modification to their existing HIMARS MLRS.

<https://eurasianimes.com/at-20c-himars-to-becomes-sitting-ducks-for-russian-military/>

Outlook

Mon, 05 Dec 2022

Ukraine says it Shot Down Over 60 Russian Missiles

Ukraine's air force said Monday it shot down more than 60 of about 70 missiles that Russia fired on in its latest barrage against Ukraine. It was the latest onslaught as part of Moscow's new, stepped-up campaign that has largely targeted Ukrainian infrastructure and disrupted supplies of power, water and heat in the country as winter looms. Early indications showed Russia fired 38 cruise missiles from ships in the Caspian Sea and the southern Russian region of Rostov. Another 22 Kalibr cruise missiles were fired from its Black Sea fleet, Ukraine's air force said on its Telegram page. The attack also involved Russian long-range bombers, fighter jets, and guided missiles, it said. "In total, more than 60 invaders' missiles were shot down!" the statement said.

<https://www.outlookindia.com/national/ukraine-says-it-shot-down-over-60-russian-missiles-news-242666/amp>

THE ECONOMIC TIMES

Mon, 05 Dec 2022

North Korea Fires Artillery Barrage into Buffer Zone: Seoul

North Korea fired a barrage of artillery shells into a maritime buffer zone on Monday, Seoul's military said, the latest in a series of launches by an increasingly belligerent Pyongyang. About 130 artillery rounds were simultaneously fired at 14:59 pm (0559 GMT) from two separate sites, one on North Korea's east coast and one on the west coasts, the South's Joint Chiefs of Staff said in a statement. Seoul's military said the barrage was a "clear violation" of the 2018 agreement between the North and South that established the buffer zone in a bid to reduce tensions.

It said none of the shells crossed the Northern Limit Line, the de facto maritime border between the two countries. The military said it had issued "several warnings" over the barrage, without giving any further details. "Our military is strengthening its readiness posture in preparation for emergencies while tracking and monitoring related developments under close cooperation between South Korea and the United States," it added. At a summit in Pyongyang in 2018, former South Korean president Moon Jae-in and the North's Kim Jong Un agreed to establish buffer zones along land and sea boundaries in a bid to reduce tensions. But since talks collapsed in 2019, Kim has doubled down on his banned weapons programmes, and experts say he may now be

testing South Korea by violating the buffer zone agreement. Pyongyang has fired artillery into the buffer zone repeatedly in recent months.

It has also conducted a record-breaking blitz of missile launches in recent weeks, including its newest intercontinental ballistic missile (ICBM) last month, the most powerful such test by the nuclear-armed country yet. Pyongyang, which is banned from testing ballistic missiles by repeated UN Security Council resolutions, has repeatedly claimed its weapons tests are a legitimate response to Washington's moves to boost the protection it offers to allies Seoul and Tokyo. Officials and analysts in Seoul and Washington say the launches may build up to a seventh nuclear test.

<https://economictimes.indiatimes.com/news/defence/north-korea-fires-artillery-barrage-into-buffer-zone-seoul/articleshow/95999537.cms>



Mon, 05 Dec 2022

North Korea fires 130 Artillery Shells off its East, West Coasts: Seoul

North Korea fired around 130 artillery shells into the sea off its east and west coasts on Monday, South Korea's military said, in the latest apparent military drill near their shared border. Some of the shells landed in a buffer zone near the sea border in what Seoul said was a violation of a 2018 inter-Korean agreement designed to reduce tensions. The South Korean military sent several warning communications to the North over the firing, the ministry of defence said in a statement. North Korea did not immediately report on the artillery fire, but it has been carrying out an increasing number of military activities, including missile launches and drills by warplanes and artillery units.

South Korea and the United States have also stepped up military drills this year, saying they are necessary to deter the nuclear-armed North. The 2018 Comprehensive Military Agreement (CMA) was the most substantive deal to come from the months of meetings between leader Kim Jong Un and then-South Korean President Moon Jae-in. With those talks long stalled, however, recent drills and shows of force along the fortified border between the Koreas have cast doubts on the future of the measures. South Korea has accused the North of repeatedly violating the agreement with artillery drills this year. This year North Korea resumed testing of its long-range intercontinental ballistic missiles (ICBMs) for the first time since 2017, and South Korea and the United States say it has made preparations to resume nuclear testing as well.

<https://www.hindustantimes.com/world-news/north-korea-fires-130-artillery-shells-off-its-east-west-coasts-seoul-101670227799662.html>

IIT Madras Researchers Develop, Deploy Wave Energy Generator off Tamil Nadu Coast

Researchers at IIT Madras have developed and deployed a system that could generate electricity using energy from seawaves. The system, dubbed Sindhuja-I, was deployed by the researchers about six kilometres from the coast of Tuticorin in Tamil Nadu, where the sea has a depth of about 20 metres. Sindhuja-I can currently produce 100 watts of energy. It will be scaled up to produce one megawatt of energy in the next three years. "Currently, if you want to power a city like Chennai or a small part of it, it would be very expensive to do it with wave power and it would be much cheaper to use conventional energy sources. But for remote applications like on island and offshore locations, the cost of transporting power over the sea could be higher than generating electricity from waves at the location," AbdusSamad, who led the research, told indianexpress.com. Samad is a professor at the Department of Ocean Engineering at IIT Madras.

The Sindhuja-I system consists of a floating buoy, a spar and an electrical module. The buoy moves up and down as the waves oscillate up and down. There is a hole at the centre of this buoy that will allow the spar to pass through it. The spar is fixed to the seafloor to ensure that the waves don't move it. But when the buoy moves and the spar doesn't, the waves produce a relative motion between both. This relative motion is used by an electric generator to produce power. But building such a complex system at an offshore location comes with its own set of challenges. For example, the amount of energy generated from wind energy fluctuates over the course of the day and over the course of the year as the climate changes. "During different seasons, wave height and period change. It is okay if the system does not produce energy when the weather is calm. But what is important is to make sure that the system can endure rough weather because there is no point investing so much in a system if it gets washed away during difficult weather," explained Samad.

This is also why the researchers tested the system in November when IMD (India Meteorological Department) issued a red alert for districts in the state of Tamil Nadu. "We were very happy to find out that our systems worked very well and did not get badly affected by difficult conditions," he said. Right now, there are no devices using the power generated by the system as it is still in its infancy. The research team plans to deploy a remote water desalination system and a surveillance camera at the location by December 2023. It also plans to conduct further testing to help understand how to deal with power generation fluctuations caused by weather events.

This wave energy system comes at a time when there is increased global attention for the potential of using waves to generate electricity. In January this year, the US Department of Energy announced a \$25 million grant to companies demonstrating technologies that can harness waves to generate electricity. The European Union also hopes to generate 10 per cent of the

region's power demand through ocean energy by the year 2025. While the IIT Madras researchers wave energy generation device uses a technology called "point absorber wave energy converter", it is only one of the many such technologies being developed by companies around the world. Islay LIMPET, the first grid-connected wave energy power device in the world deployed in 2000, uses a shoreline device that uses "Oscillating Water Column" technology to generate power. It was later decommissioned in 2018. But Samad believes that such grid-scale technology is still a distant dream for Indian shores.

<https://indianexpress.com/article/technology/science/iit-madras-wave-energy-generator-8307268/lite/>



Mon, 05 Dec 2022

Robotics Team from India Grabs Gold at Germany's World Robot Olympiad 2022

Three Indian students from Mumbai have won the World Robot Olympiad 2022, also known as WRO, in Robomission Junior High Category, which was recently held in Germany's Dortmund. Infact, this is the first ever Gold medal for an Indian team in the 20 years of the history of this global robotics competition in this category. The team called Greenbots, including KeshavMohta, KritarthModi, and IshaanMehra are from RoboFun Lab, India.

Winner among 80 other teams

The event was held for three days and was competed by 80 national champion teams from 70 countries. Some of the best robotics teams from the USA, Taiwan, Hongkong, Germany, Korea, Switzerland, etc. were competing for the coveted title. Day 1 was the practice day, Day 2 comprised a challenge that the teams had been preparing for the last six months and on Day 3, an entirely new challenge was given to the teams, which was to be decoded on the spot by the teams, without any help from their mentors. While on Day 1, Team Greenbots finished third, securing full in just 52 seconds, the team scored full points for a completely fresh challenge, which was completed in just 72 seconds, thus, bagging the first spot. The Indian students proved their mettle and their temperament, maturity and problem-solving skills stood out among the others.

A little about RoboFun Lab, India

RoboFun Lab, also known as RFL, offers K-12 students develop necessary 21st-century tech and life skills through robotics, IoT, drones, coding, and several other tech tools in a fun and hands-on way. The institute is the leader in the market for training students for various national and international robotics and coding competitions. Since its inception, RFL has a proven track record of winning WRO at the national chapter and representing India internationally.

<https://www.indiatoday.in/amp/cryptocurrency/story/indian-robotics-team-grabs-gold-at-germanys-world-robot-olympiad-2305413-2022-12-05>

Elon Musk का न्यूरालिंक ब्रेन चिप दिव्यांगों के लिए वरदान, 6 महीनों में शुरू होगा ह्यूमन ट्रायल

अमेरिकी अरबपति एलन मस्क एक ऐसा ब्रेन चिप बना रहे हैं, जिसकी मदद से दिव्यांग व्यक्ति हलचल और बातचीत कर सकेंगे। इस चिप के जरिये नेत्रहीन लोगों को दृष्टि वापस लौटायी जा सकती है। इस चिप की मदद से इंसान अपने दिमाग में सोचने भर से डिवाइसेज को कमांड दे सकेगा। मस्क ने न्यूरालिंक शो में वायरलेस ब्रेन चिप को लेकर एलान करते हुए कहा कि उनकी कंपनी न्यूरालिंक अगले छह महीनों में ब्रेन चिप का इंसानों पर ट्रायल शुरू कर देगी। कंपनी पिछले काफी समय से जानवरों पर इसका ट्रायल कर रही है। उसने इंसानी ट्रायल के लिए अमेरिका की नियामक संस्था से मंजूरी मांगी है। मस्क ने बताया कि इंसान में चिप लगाने से पहले वे बहुत सावधानी और निश्चितता के साथ आगे बढ़ना चाहते हैं। ऐसे में शुरुआत बहुत धीमी लग सकती है। लेकिन, हम इसके समांतर चीजों को बड़े स्तर पर लाने की कोशिश कर रहे हैं।

न्यूरालिंक की तरफ से दावा किया गया है कि इस चिप को लगाने के बाद कई तरह के रोगियों को बड़ी सुविधा मिलेगी। दिमाग में चिप लगाने के साथ ही एक चिप रीढ़ में भी लगाया जा सकता है। मस्क कहते हैं कि इंसान को बात करने के लिए बोलना नहीं पड़ेगा। इंसान सोच कर भी अपनी बात कह पायेगा। द स्ट्रीट की एक रिपोर्ट के अनुसार, मस्क ने कहा कि कंपनी का प्रारंभिक लक्ष्य दृष्टि और पैरालिसिस को ठीक करना है। जन्म से ही अंधे लोगों की आंखों में न्यूरालिंक वायरलेस ब्रेन चिप की सहायता से रोशनी लायी जा सकती है। रीढ़ की हड्डी टूटने से पूरी तरह अपंग हो गये लोगों को फिर हस्त-पुष्ट बनाने में भी न्यूरालिंक की तकनीक मददगार साबित होगी।

मस्क ने कहा कि मनुष्य के लिए आज आर्टिफिशिएल इंटेलिजेंस का मुकाबला करना बहुत जरूरी हो गया है और इसके जोखिमों को कम करने के लिए हमें कदम उठाने होंगे। उन्होंने कहा कि लैपटॉप और फोन के साथ इंटरैक्ट करने की मनुष्य की क्षमता काफी सीमित है। पैरालिसिस का शिकार हुआ कोई व्यक्ति अपनी उंगलियों की मदद से फोन इस्तेमाल कर रहे किसी व्यक्ति के मुकाबले अपने दिमाग की मदद से ज्यादा तेजी से स्मार्टफोन इस्तेमाल कर सकेगा। इस टेक्नोलॉजी के अगले वर्जन में ब्रेन सिग्नल्स की मदद से दूसरे डिवाइसेज को कंट्रोल करने जैसे काम किये जा सकेंगे, जिसका फायदा गंभीर बीमारियों से जुड़े लोगों को मिलेगा।

<https://www.prabhatkhabar.com/tech-and-auto/elon-musk-neuralink-brain-chip-human-trials-to-begin-in-six-months-know-how-it-will-help-humanity-sbh>

इलॉन मस्क की दिमागी चिप खतरा या वरदान?

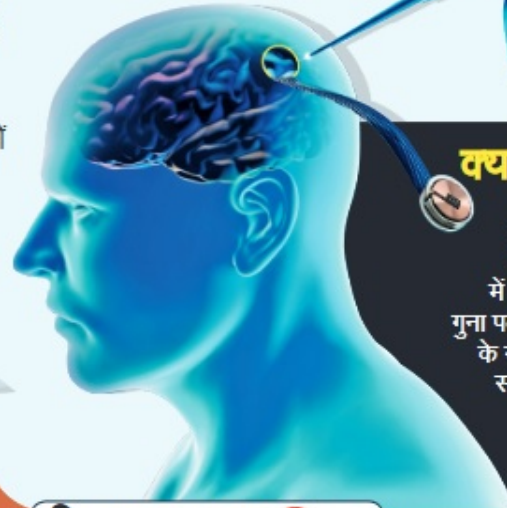
अभी तक वैज्ञानिक शरीर के खराब अंगों के लिए अलग-अलग तरह के यंत्र बनाते थे। इलॉन मस्क ने दिमाग के लिए एक चिप बनाकर दावा किया है कि इससे इंसान बहुत कुछ कंट्रोल कर सकेगा। कोई यंत्र दिमाग की मदद के नाम पर देह और दिमाग, दोनों को कंट्रोल करे, इस बात से वैज्ञानिक और दार्शनिक, दोनों चिंतित हैं। आइए समझते हैं कि क्यों...

आशा

- पैरालिसिस के मरीजों को फायदा।
- कई सारे न्यूरोलॉजिकल डिसऑर्डर में फायदा।
- अंधे भी देख सकेगे।
- चार्ज की जरूरत नहीं।
- सोचने से ही चलेगा कंप्यूटर या मोबाइल।
- इप्लांट हुआ है- यह पता भी नहीं चलेगा।
- टिनटिस पांच साल में होगा टीक।

डर

- डॉक्टरों के बस की बात नहीं यह ऑपरेशन।
- सिर्फ अमीरों के लिए है यह चिप।
- सिर की हड्डी में होगा छेद, खून रोकने पर काम नहीं।
- दिमाग का डेटा इकट्ठा करेगी चिप।
- ऑपरेशन के लिए जनरल एनेस्थीसिया की सिस्चर्व पूरी नहीं।
- ब्यूट्रथ से जुड़ेगी चिप, हैकिंग का खतरा।
- ताकतवर लोग कर सकते हैं गलत इस्तेमाल।
- इसानी दिमाग को मशीन करेगी कंट्रोल।



क्या है इस चिप में

इस तकनीक को ब्रेन कंप्यूटर इंटरफेस कहते हैं। चिप के जरिए दिमाग में रखे गए बाल से भी तीन गुना पतले इलेक्ट्रोड्स न्यूरॉन्स के संकेतों को पढ़ते हैं। फिर साॉफ्टवेयर इन संकेतों को कमांड यानी आदेश में बदलता है।

और भी हैं खिलाड़ी

दिमाग के लिए डिवाइस बनाने में न्यूरोलॉजिक ही अकेली नहीं है...

- ब्लैकरोक न्यूरोटेक अगले साल तक लॉन्च करेगी अपनी डिवाइस-
- सिंग्रॉन ने 2021 से अब तक 6 मरीजों पर टेस्ट किया।
- पैराडिगमिक्स अगले साल से ह्यूमन टेस्ट शुरू करेगी।
- न्यूरो रोबोटिक्स की ब्रेन डिवाइस को सर्जरी की जरूरत नहीं।

चिप टाइमलाइन

2016 NEURALINK
चिप के बारे में मस्क ने बताया, न्यूरोलॉजिक स्टार्टअप शुरू

2020 सुअर में चिप लगी

- 23 मिमी की चिप
- वायरलेस तरीके से कंप्यूटर से कनेक्टेड

1024 इलेक्ट्रोड लगे थे

2021 बंदर में भी यही चिप लगाई

- विडियो गेम खेलता दिखा बंदर
- अधिकतर की ब्रेन हैमरेज से मौत



23 बंदरों पर किया टेस्ट
15 बंदरों की हुई मौत

2022 बंदर को टाइप करते दिखाया

- एफडीए से मागी मानव परीक्षण की इजाजत
- नेक्स्ट जेन मॉडल में हैं 16000 इलेक्ट्रोड्स
- छह महीने में ह्यूमन ट्रायल का एलान
- बंदरों पर ट्रायल करने पर बैटी जांच



कॉन्टैक्ट: राहुल पाण्डेय, ग्राफिक्स: अर्जुन सिंह

मस्क की प्रेजेंटेशन बेहद हैरान करने वाली है। इसानी देह दिवटर का स्पेस नहीं है। मेडिकल क्षेत्र में ऐसी चीजों पर बहुत कुछ दांव पर लगा होता है। -डॉ. अन्ना योगेश्वर, असिस्टेंट प्रोफेसर, मेडिकल एथिक्स, यूनिवर्सिटी ऑफ पेंसिल्वेनिया



इस ब्रेन चिप को मैं खुद में लगवाने के लिए तैयार हू। जरूरत होगी तो अपने बच्चे में भी इसे लगवाऊंगा। -इलॉन मस्क, न्यूरोलॉजिक के मालिक



हालांकि ऑपरेशन रोबोट करेगा, पर मॉनिटरिंग न्यूरोसर्जन करेगे। दुनिया में दस लाख लोगों पर ऐसा एक ही न्यूरोसर्जन है। हम देख रहे हैं कि कैसे वह कई ऑपरेशन एक साथ मॉनिटर कर सके। -क्रिस्टीन अजाबैशियन, हेड, न्यूरोलॉजिक सर्जरी इंजीनियरिंग टीम



मस्क इसानी दिमाग और AI मिकस करना चाहते हैं। यह AI का मानवीकरण होगा तो इंसान का भी कृत्रिमिकरण होगा। क्या इससे हमें सॉपियंस (मानव) की परिभाषा नहीं बदलेगी? -एरिक फोरनेटिस, असिस्टेंट प्रोफेसर फिलॉसफी, लिले यूनिवर्सिटी, फ्रांस



दिमाग की चिप से क्या मस्क जैसे लोग ही बदलेंगे दुनिया को? इस पर लेख पढ़ने के लिए यहाँ स्कैन करें और navbharatgold.com पर जाएं

