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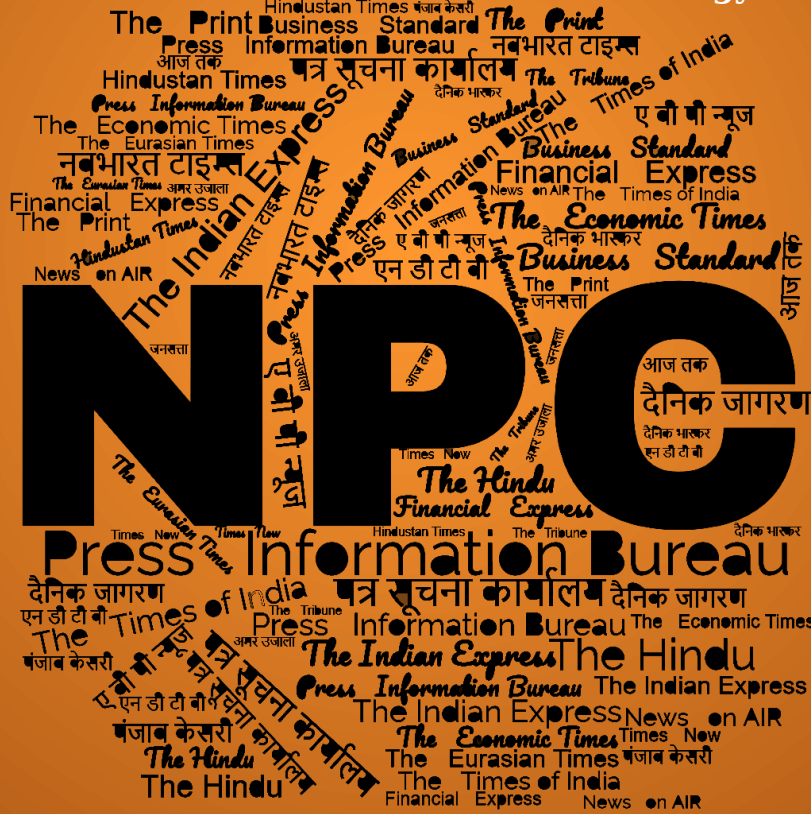
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समाचार पत्रों से चयित अंश Newspapers Clippings

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

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Press Information Bureau
Government of India

Ministry of Defence

Mon, 04 Sep 2023

Naval Commanders' Conference - 2023/02 Inaugural Session – Interaction with Raksha Rajya Mantri

Shri Ajay Bhatt, Hon'ble Raksha Rajya Mantri interacted with the Senior Naval Leadership during the Bi-annual Naval Commanders Conference which commenced at New Delhi on 04 Sep 23. Having shifted the venue of Commanders Conference outside Delhi wef 2023, wherein the first edition was conducted onboard INS Vikrant in March 2023, the second edition that started today is to review the status of decisions taken during the first edition. During his interaction, Hon'ble RRM commended the Navy for maintaining a high Operational tempo in ensuring secure seas for national security and prosperity. He praised the Navy for the efforts invested towards indigenisation and innovation towards becoming a fully Aatmanirbhar Force by 2047, which was exemplified during the recent launch of indigenous stealth frigates Vindhyagiri and Mahendragiri. He also appreciated the Navy for undertaking steady initiatives in line with the Paanch Pran enunciated by the Hon'ble PM .Gen Anil Chauhan, Chief of the Defence Staff, Dr Samir V Kamat, Secy DRDO and senior officials from the MoD were also present during the inaugural session (Extracts of RRM Speech).

Tech Demo - The ongoing and planned indigenous projects of the Indian Navy utilising niche technologies in the fields of Artificial Intelligence, Tactical Communications, Combat Management Systems, Cyber Security, Underwater Domain Awareness and Combat Platform Integration, were showcased at the conference. In addition, the newly designed uniform items being introduced in Service for enhanced comfort, hygiene and functionality, viz. high absorption T-shirts, camouflage cap and jacket, high ankle shoes, and National Civil Dress for Messes/ functions were displayed on the sidelines of the conference.

The Hon'ble RRM also released the Maritime Infrastructure Perspective Plan 2023-37, IRS Rules and Regulations Handbook, Family Logbook, and Electronic Service Document Project during the event.

The MIPP aims to synchronise and enmesh the infrastructure requirements of the Navy, over the next 15 years, through a comprehensive Perspective Plan model. The Plan Document is aligned with the GoI vision on creation of sustainable infrastructure, and encompasses salients for compliance with broader policy directives on PM Gati Shakti Project, Disaster Resilience, Transition to Net Zero, among others.

The IRS Rules and Regulations Handbook for Construction and Classification of Naval Combatants has been revised since previous edition of 2015 to cater for technological advancements and Aatmanirbharta. The new rule book represents the self-reliance in Naval shipbuilding industry.

The Family Logbook for Defence Civilian Personnel of Indian Navy is a personal financial record book for reference of families of naval civilian personnel, which provides important financial information on insurance, loans, investments etc. This will serve as a ready reckoner in times of emergency in the family, mishaps, accidents, etc.

The Electronic Service Document Project will transform the HR record keeping and management of Naval personnel into an efficient, digital, centralised and transparent process in line with the Digital India Vision.

In his Opening Remarks Adm R Hari Kumar, CNS highlighted that “As an instrument of nation's maritime power, we must accomplish every mission and each task that comes our way. Second, we must be ready for the heavy lifting in the Indian Ocean Region and beyond, in pursuance of the vision SAGAR. Third, as the cutting edge of our rising Nation, we must embrace larger societal changes that are happening around us. Fourthly, we are working closely with the CDS and the other two services to progress jointness and integration to meet challenges of the future.”

<https://pib.gov.in/PressReleasePage.aspx?PRID=1954662>



Mon, 04 Sep 2023

IAF Western Air Command's Annual Exercise Gets Underway

The annual training exercise, Trishul, of the Indian Air Force's (IAF) Western Air Command (WAC) began on September 4. The exercise will see activation of all air assets and force multipliers spread across the Line of Control with Pakistan to the Line of Actual Control (LAC) with China.

“The exercise is scheduled from September 4-14 and will validate the command's operational preparedness and will see the employment of all the frontline assets from fighter jets, transport aircraft, helicopters and other force multipliers in high tempo,” a defence official said. The exercise will be paused for few days coinciding with the G-20 summit when the armed forces will be on high alert, coinciding with the high-profile event and the threat perception.

Since the stand-off with China in eastern Ladakh in May 2020, which is still ongoing, the Indian military has seen a major reorientation from its focus from Pakistan to China and the IAF has maintained a high tempo of operations. As the Army mobilised in a big way, the IAF pressed in its entire transport fleet and airlifted over 68,000 troops, 330 infantry vehicles and over 90 tanks in addition to artillery guns, as reported by The Hindu earlier.

Last Monday, China released the “2023 edition of the standard map of China”, which continues to show the entire State of Arunachal Pradesh and the Aksai Chin region within China's borders to which India had lodged a strong protest.

<https://www.thehindu.com/news/national/iaf-western-air-commands-annual-exercise-gets-underway/article67270319.ece>

नवभारत टाइम्स

Mon, 04 Sep 2023

LAC के लिए 'रिजर्व' सैनिक ले रहे हैं लद्दाख में ट्रेनिंग, आखिर क्या जरूरत आ पड़ी है?

ईस्टर्न लद्दाख में लाइन ऑफ एक्चुअल कंट्रोल (LAC) पर तीन साल से ज्यादा वक्त से चल रहे गतिरोध के बीच LAC के लिए रिजर्व भारतीय सैनिक अपनी ट्रेनिंग में जुटे हैं। लद्दाख में चल रही ट्रेनिंग में सैनिक हाई एल्टीट्यूट में होने वाले युद्ध के हर पहलू को समझ रहे हैं। युद्ध के हर सिनेरियो को ध्यान में रखते हुए उसकी प्रैक्टिस कर रहे हैं।

एलएसी पर जो सैनिक तैनात हैं, उनके अलावा भी बड़ी संख्या में सैनिक यहां के लिए रिजर्व हैं। इसका मतलब है कि ये सैनिक अभी दूसरी जगहों पर हैं। लेकिन जरूरत पड़ने पर इन्हें कभी भी वहां भेजा जा सकता है। ये सैनिक जिस ऑपरेशनल रोल के लिए तय किए गए हैं उसकी प्रैक्टिस कर रहे हैं ताकि जरूरत होने पर सीधे अपने ऑपरेशनल रोल को अंजाम दे सकें।

हाई एल्टीट्यूट की लड़ाई अन्य जगह से अलग होती है क्योंकि यहां का मौसम और भौगोलिक परिस्थितियां भी एक बड़ा चैलेंज होता है। जो सैनिक एलएसी के लिए रिजर्व हैं उन्हें लद्दाख में ट्रेनिंग के दौरान इलाके की चुनौतियों के बारे में बताया जा रहा है और वह अपने ऑपरेशनल रोल की प्रैक्टिस कर रहे हैं।

एक अधिकारी के मुताबिक, किसी भी युद्ध के लिए सबसे पहला कदम होता है मोबलाइजेशन और ट्रेनिंग के लिए यहां पहुंचने के दौरान इसकी प्रैक्टिस हो जा रही है। ट्रेनिंग में सर्विलांस से लेकर डिफेंसिव और ऑफेंसिव रोल की प्रैक्टिस की जा रही है। यह प्रैक्टिस कर रहे हैं कि दुश्मन से अपने इलाके को कैसे बचाएंगे और दुश्मन क्या क्या चाल चल सकता है, उस हिसाब से हमारे सैनिक कैसे रिएक्ट करेंगे और किस तरह से हथियारों की तैनाती होगी, यह सब प्रैक्टिस लद्दाख में की जा रही है।

साथ ही पैदल सैनिकों और तोप से लेकर टैंक तक कैसे कॉर्डिनेशन होगा यह सब ट्रेनिंग युद्ध के अलग अलग सिनेरियो के हिसाब से की जा रही है। लद्दाख हाई एल्टीट्यूट एरिया है और ट्रेनिंग के दौरान यह भी देखा जा रहा है कि हाई एल्टीट्यूट में शरीर पर किस तरह असर पड़ता है और इक्विपमेंट पर कैसा असर पड़ता है। एलएसी के लिए रिजर्व सैनिकों कि इस तरह की ट्रेनिंग जुलाई से लेकर अक्टूबर तक चलती है क्योंकि इसी मौसम में वहां ट्रेनिंग की जा सकती है। सैनिकों की अलग अलग बैच में ट्रेनिंग हो रही है।

<https://navbharattimes.indiatimes.com/india/reserve-soldiers-for-lac-taking-training-in-ladakh-what-is-need/articleshow/103368154.cms>

Business Standard

Mon, 04 Sep 2023

Maritronics India to Manufacture Specialised Equipment for Defence Sector

Marine equipment and spare parts supplier Maritronics India on Monday announced its foray into specialised equipment manufacturing for the defence sector.

The company, in a statement, said it is in the process of setting up its own manufacturing facility in Chennai, which is expected to start production in the next one year.

This is a significant step towards reducing dependency on imports in the defence sector, which often get impacted owing to geopolitical uncertainties, it said.

To strengthen its manufacturing capabilities, the company has signed an initial pact with Goa Shipyard Ltd (GSL) to jointly develop and market navigation, communication, and automation equipment for marine vessels for the domestic defence market.

"We are confident that the integrated communication and navigation systems developed by us will become a significant asset for the Indian Navy and the Coast Guard," Maritronics India Pvt Ltd Director Venkatesan N said.

The systems are expected to be manufactured locally in about a year's time, he added.

The company said it will be the first private company in the country to manufacture marine type-approved navigation and communication equipment like fiber optic gyroscope and integrated bridge system, which includes radars, ECDIS (Electronic Chart Displays and Information System) and conning displays for advanced navigation systems.

https://www.business-standard.com/companies/news/maritronics-india-to-manufacture-specialised-equipment-for-defence-sector-123090400944_1.html

ARMY TECHNOLOGY

Mon, 04 Sep 2023

BEL and IAI Sign MoU to Enhance India's Short-range Air Defence Systems

In a move that underscores the commitment to bolster India's defence capabilities and align with the country's 'Atmanirbhar Bharat' and 'Make in India' policies, Bharat Electronics Limited (BEL) and Israel Aerospace Industries (IAI) have signed a memorandum of understanding (MoU).

This MoU paves the way for enhanced co-operation between the two aerospace businesses following a history of joint endeavours. The agreement, signed by Mr K V Suresh Kumar, director (marketing) of BEL, and Mr Avi Elisha, VP and general manager of missile systems division at IAI, aims to address India's requirements in the domain of short-range air defence systems.

The signing ceremony, held in the presence of Mr Bhanu Prakash Srivastava, CMD of BEL, occurred in Bengaluru yesterday. Mr Srivastava expressed BEL's deep regard for IAI as a key strategic partner.

He also highlighted that the MoU signifies a major development. "This MoU is envisaged to boost the cooperation between the two companies in the field of short-range air defence systems. It will empower the Indian industry to make significant contributions towards equipping our forces with state-of-the-art short-range air defence systems."

IAI's President and CEO, Mr Boaz Levy, emphasised the successful partnership between BEL and IAI in the field of Air Defence in India. "BEL and IAI have a successful partnership in the field of Air Defence in India.

Together, we are providing the Indian Armed Forces with high-end Air Defence capabilities that meet their high-end operational requirements on one hand and 'Make in India' requirements on the other. Hence, it is only natural that we expand this cooperation to the short-range air defence domain."

Israel Aerospace Industries (IAI) have tried to have a more significant strategic presence in the Indian defence market this year, as shown by Indian-based Sagar Defence Engineering signing an MoU with Israel Aerospace Industries to develop autonomous weaponised boat swarms for the Indian Navy and IAI acquiring HELA Systems, an Indian radar and electronic warfare systems provider.

Tristan Sauer, aerospace, defence, and security analyst at GlobalData, commented on what contributions Bharat Electronics Limited can make to cooperating short-range air defence system projects. “As one of India’s largest state-owned defence firms, BEL has access to significant industrial capacity, domestic talent and political support within the burgeoning Indian defence sector.

As with all recent international defence procurement agreements, India will be keen to domesticate various elements of the SHORAD supply chain to expand domestic expertise and infrastructure. BEL will thus facilitate IAI’s expansion in-country by facilitating future R&D and procurement decisions due to the inherent mutual benefits of this collaborative arrangement.”

Israel Aerospace Industries (IAI) entered into a strategic partnership agreement with Indian defence firms Elcom Systems Private Limited and Dynamatic Technologies Ltd (DTL) to transfer UAV technology and enable the domestic production of the UAV in India, according to GlobalData’s “India Defense Market 2023-2028” report.

<https://www.army-technology.com/news/bel-and-iai-sign-mou-to-enhance-indias-short-range-air-defence-systems>



Mon, 04 Sep 2023

Russian Su-34 Fighter can now Fire Hypersonic Missiles; The 1st Crew that Made it Possible to be Awarded

The first Su-34 multipurpose bomber aircraft crew to have fired a Kinzhal, air-launched hypersonic missile, on Ukraine in the ongoing war is set to receive the state award for achieving this unique feat.

An informed defense official told Russian state news agency TASS, “The Su-34 fighter jet used the Kinzhal hypersonic missile in the special military operation. The first crew who accomplished such a task will receive state awards.” The official did not, however, disclose the time and location of the attack.

Russia’s aero-ballistic hypersonic missile in question is called Kinzhal, which has seen repeated use in the course of the war. The hypersonic missile, also known as Dagger, is generally carried by the MiG-31K fighter-interceptor aircraft designed to carry the missiles.

This is why firing this missile by the Su-34 bomber is a significant development for the Russian Aerospace Forces (VKS). Although the Kinzhal hypersonic missile has been operational in service with the VKS since 2017, it was first used in combat against Ukraine in March 2022.

The Su-34 Fullback is a twin-engine, twin-seat, all-weather supersonic medium-range fighter-bomber/strike aircraft deployed extensively by the VKS to carry out air-to-ground strikes and bombing runs on Ukrainian forces. In a recent incident, a Su-34 annihilated an entire air defense post of Ukraine’s S-300PS with guided munitions.

Some pro-Russian military bloggers, who took to social media to celebrate it as a win, noted that the Tu-22M3 bomber was the only other carrier for this missile besides the MiG-31K. Some others also noted that the Tu-160 strategic bombers were also in line to be equipped with the Kinzhal hypersonic missile. However, the EurAsian Times could not independently verify that information.

Indian Air Force veteran and military expert Vijainder K. Thakur said, “The MiG-31K are deep modifications. They likely have a lot of life. The most significant advantage of the Su-34 Kinzhal’s launch capability for Russia will be a surprise. Ukraine is alerted as soon as a MiG-31K with Kinzhal takes off!”

Military experts believe integrating these missiles into the Su-34 could lead to an uptick in their use and more trouble brewing for Kyiv’s forces. A local Russian publication said in a report that there had been recurrent instances of a general alarm being sounded whenever Kinzhal-carrier MiG-31K took to the skies.

The publication added that now, with the emergence of Su-34 as a Kinzhal carrier, a general alarm in Ukraine will have to be announced with any appearance of these bombers since it seems each of these aircraft may turn out to be the carrier of the missile.

It is widely known that hypersonic missiles that travel at five or more times the speed of sound and take an unpredictable trajectory are generally immune against conventional missile or air defense systems. Russia unveiled the Kinzhal in 2018 as one of six “next-generation” weapons.

However, the repeated use of the missile and the claims made by Ukrainian forces about intercepting and shooting down Russia’s formidable and invincible missile have questioned the efficiency and potency of this much-hyped missile by military watchers.

Russia’s Use Of Kinzhal In Ukraine

Shortly after the launch of the military offensive last year, the Russian Ministry of Defense (RuMoD) announced in March that the hypersonic ballistic missile destroyed a big underground arms depot in western Ukraine. Russian officials have since maintained that the Kinzhal can hit a target up to 2,000 kilometers away and fly faster than 6,000 kilometers/hour.

Moscow conducted a massive missile attack on Ukraine on March 9, 2023, employing 81 missiles of various types, including six Kinzals. This marked the first instance when many Kinzhal missiles were employed in a single attack.

A few days later, Yuriy Ihnat, the spokesman for the Ukrainian Air Force, claimed that the Russian military possessed about 50 Kinzhal hypersonic missiles meant to strike “decision-making centers.”

At the time, the spokesperson observed that while Ukraine did not have the defense against these weapons, the country hoped it would soon get the first batches of Patriot air defense systems. The Patriots arrived in the country just over a month later.

In May 2023, Ukraine claimed that it had shot down a Russian Kinzhal missile with the help of the Patriot missile defense system transferred to it. In a tweet, the MoD said: “@KpsZSU (Ukraine Air Force) confirms that Ukraine’s air defenders shot down Kinzhal, a hypersonic aero ballistic Russian missile, for the first time since the attacks began. Operators of the Patriot air defense system did this.”

However, Russia has continued to assert that the Patriot couldn’t shoot down a Kinzhal. A senior source in the RuMoD told state media that the US Patriot anti-aircraft missile system could not shoot down the Russian Kinzhal hypersonic missile due to its technical characteristics.

The source explained that the Kinzhal performs an anti-missile maneuver and makes an almost vertical approach to the target during the final stage of the flight, eliminating the chance that anti-

aircraft missile systems will shoot it down. He referred to the claims concerning the shot-down hypersonic missile as a fabrication and wishful thinking.

Ukraine, in contrast, remains steadfast in its claims. “It turned out that the Patriots could shoot down Kinzhals. So goodbye, invincible weapon, I would say so,” a Ukrainian military expert, Oleg Zhdanov, said of the direct clash between the Patriot air defense system and Kinzhal missile.

In July, days after Kyiv’s forces began an unprecedented attack on Crimea using the UK-supplied Storm Shadow long-range missiles, the Russian military reportedly fired Kinzhal hypersonic missiles to strike the Ukrainian Su-24 fighter fighters. West-based military experts have constantly downplayed the significance of using the Kinzhal hypersonic missiles in Ukraine.

However, despite calling its significance in question, military watchers are concerned about another Russian fighter equipped with a hypersonic missile. The Russian service has more Su-34 bombers than MiG-31K interceptors.

<https://www.eurasiantimes.com/russian-su-34-fighter-can-now-fire-hypersonic-missiles-the/>



Mon, 04 Sep 2023

Myanmar Angry with Pakistan over 'Unfit' Fighter Jets Supplied by Islamabad: Report

Multi-role fighter planes, JF-17 Thunder, supplied to Myanmar by Pakistan were declared unfit and the military junta has sent a "stern message" to Islamabad to answer for the mess, Myanmar-based Narinjara News reported citing sources.

Pakistan supplied many JF-17 Thunder combat aircraft to Myanmar between 2019 and 2021 and all have been declared “unfit for operations.”

The delivered planes were part of a deal that the Burmese military junta signed in 2016 to purchase JF-17 produced jointly by Pakistan Aeronautical Complex and Chengdu Aircraft Industries Corporation of China. But soon after the delivery of the aircraft, the Burmese Air Force was forced to ground the planes as malfunctions and structural flaws were detected.

The failure of JF-17 appears to be shimmering tensions between Islamabad and Naypyidaw and somehow compelled China to intervene.

A recent visit by Myanmar’s Chinese envoy to Naypyidaw is said to have carried a message from the CCP’s top leadership to Gen Min Aung Hlaing, as per Narinjara News.

According to sources, Pakistan is trying hard to renegotiate the deal with newer versions of the JF-17s. In all likelihood, these new variants will be developed by the same combination of Pakistan Aeronautical Complex and Chengdu Aircraft Industries Corporation of China.

However, so far there is little information on whether the renegotiated deal has been accepted by the military junta leadership.

Informed sources said that the military junta is very upset as the non-utility of the aircraft has hampered most of its plans of beefing up its airpower to carry out targeted strikes on Myanmar’s resistance groups which are fighting under the banner of the People’s Defence Force (PDF) an armed wing of the NUG.

Following the news of the crisis arising out of the malfunctioning of the JF-17s, Pakistan's efforts to sell similar aircraft to other countries, especially Latin American countries have hit a roadblock, reported Narinjara News.

After this, the military junta refused to get into any new talks on procuring aircraft from Pakistan, other countries too have been reluctant to engage with Pakistan.

Notably, China itself has not included a single JF-17s in its inventory to date.

<https://www.aninews.in/news/world/asia/myanmar-angry-with-pakistan-over-unfit-fighter-jets-supplied-by-islamabad-report20230904060332/>



Mon, 04 Sep 2023

US Military in Talks to Develop Port in Philippines Facing Taiwan

The U.S. military is in talks to develop a civilian port in the remote northernmost islands of the Philippines, the local governor and two other officials told Reuters, a move that would boost American access to strategically located islands facing Taiwan.

U.S. military involvement in the proposed port in the Batanes islands, less than 200 km (125 miles) from Taiwan, could stoke tensions at a time of growing friction with China and a drive by Washington to intensify its longstanding defence treaty engagement with the Philippines.

The Bashi Channel between those islands and Taiwan is considered a choke point for vessels moving between the western Pacific and the contested South China Sea and a key waterway in the case of a Chinese invasion of Taiwan. The Chinese military regularly sends ships and aircraft through the channel, Taiwan's defence ministry has said.

Marilou Cayco, the provincial governor of the Batanes islands, told Reuters in a message she had sought funding from the U.S. for the building of an "an alternative port" there, which was intended to assist the unloading of cargo from the capital, Manila, during rough seas in the monsoon season.

She said the plans were to build a port on Basco island, where local authorities say high waves often make the existing port inaccessible, and that a decision could be made in October.

The Philippines has in the past year almost doubled the number of its military bases that U.S. forces can access, ostensibly for humanitarian assistance, and also has thousands of U.S. troops in the country at any given time, rotating in and out for joint training exercises. China has said these U.S. moves were "stoking the fire" of regional tensions.

The Chinese Embassy in Manila did not immediately respond to a request for comment on the proposed port in Basco.

Two other Filipino officials, who requested anonymity because they were not authorized to speak to media, said U.S troops had visited Batanes recently to discuss the port.

One, a senior military official, said the Filipino armed forces were interested in radar and improving monitoring capabilities in the area.

Cayco confirmed the visit, saying they came "one time to assess" the proposed alternative port.

The move comes as Washington pursues closer ties with Asian nations to counter China in the Asia-Pacific region, including the Philippines, its former colony and treaty ally.

Kanishka Gangopadhyay, a spokesperson for the U.S embassy in Manila, said U.S. Embassy and U.S. Army Pacific (USARPAC) experts had been engaging the governor and local government, "at their request, to discuss ways USARPAC can support engineering, medical, and agricultural development projects in the province."

He did not mention the port specifically.

MARCOS INCREASES US ACCESS

Previous President Rodrigo Duterte had threatened to scrap the U.S.-Philippines alliance and realign the country with Beijing but relations between China and the Philippines have grown tense under the current president, Ferdinand Marcos Jr.

Marcos, the son and namesake of the disgraced late strongman president, has sought closer ties with Washington, granting it access to four more military bases, including several close to Taiwan, though not in Batanes, and announced joint patrols in the South China Sea.

Marcos has said the bases under the Enhanced Defence Cooperation Agreement (EDCA) could prove useful if China attacked Taiwan.

Security officials in Manila said they believed any military conflict in the Taiwan Strait would inevitably affect the Philippines, given its geographic proximity to Taiwan and the presence of over 150,000 Filipinos on the democratically-governed island.

Batanes also served as one of the training sites during this year's joint military exercises, known as Balikatan, which involved more than 17,000 Filipino and American troops, making it the biggest ever edition of the military drill.

At the time of the exercise, Cayco said she was seeking investment to build seaports and airports in the island province that is home to 18,000 people. The province could harbour Filipinos fleeing Taiwan if conflict breaks out there and residents have been worried about mounting tensions, according to local government officials.

The Philippines and China have also clashed in recent months over disputed waters in the South China Sea, with Chinese vessels firing water cannons on a Filipino vessel trying to send supplies to an outpost.

Cayco said she didn't have any conversation with the U.S. about EDCA or about radar installations.

She also said there had not yet been discussions about what access the U.S would have to the proposed port, but troops could use all ports in the area for regular military exercises like the Balikatan.

Jay Batongbacal, maritime affairs expert at the University of the Philippines, said the proposed port "would certainly be needed for the island's defence in a worst case scenario."

"If I were a Chinese strategist, I would want to take the Batanes at minimum in order to ensure control of the Luzon straits and use the island to prevent the approach of adversary naval forces," he said.

<https://www.wionews.com/world/us-military-in-talks-to-develop-port-in-philippines-facing-taiwan-632344>

Recharge AUVs without a Mothership: US Trials Hydrogen Fuel Cell

The US Department of Defence announced on 1 September that the US Navy has kicked off a hydrogen fuel cell project to allow autonomous underwater vehicles (AUVs) to recharge without returning to a base or a mothership.

The project will allow unmanned underwater vehicles to operate independently and at a great distance from the support mechanisms that are currently a necessity for deep ocean operations. The US Naval Facilities Engineering Command Engineering initiated the program in early August, spurred by the increase in the use of AUVs, and it is using an Operation Energy Capability Fund to sponsor testing beginning early 2024, to be conducted by the Expeditionary Warfare Centre.

The Sabertooth AUV, provided by Hibbard Inshore as a hybrid version of the Sabertooth AUV manufactured by Saab, is being equipped with the Subsea Supercharger (SSC) from Teledyne Energy Systems. The Teledyne fuel cell uses technology developed for space applications to extend the AUV's mission duration, and by reducing the requirement to reconnect with a surface vessel it also reduces the risk and the cost of operations.

The Hibbard Inshore Saab Sabertooth, operating without a hydrogen fuel cell, has a 12 hour battery life when untethered from a mothership or other source of power, giving it an excursion range of around 20km at a depth of 1,200m. The principle task of the Sabertooth is to perform survey functions and the inspection of complex structures – missions closely associated with a defensive role in seabed warfare.

'The Global Undersea Warfare Systems Market 2018–2028' report from GlobalData identified the potential for hydrogen fuel cells to usher in a 'new era of power generation in underwater naval systems' following the 2016 partnership between General Motors, the Office of Naval Research, and the US Naval Research Laboratory, to equip AUVs with hydrogen fuel cells: 'This partnership is expected to lead to widespread adoption if found feasible.'

Research published in the International Journal of Hydrogen Energy in 2020 outlines some of the challenges that the project faces, including those related to the storage of hydrogen and oxygen, issues with buoyancy and trim, and the introduction of hydrogen fuel cell technology to a deep-sea environment. Operation of a fuel cell in a sealed container is also a concern, as condensation developing during the process can corrode the inside of the tank or cause electronics to malfunction. Similarly, inert gases that are produced during the run have to be carefully dealt with to avoid a build up of internal pressure. Shifting the operations of a hydrogen fuel cell to a sealed container requires other adjustments as well to account for the accumulation of hydrogen and oxygen in the container. Most common during the start-up and shut down of the fuel cell, trouble can arise when a fuel cell needs to purge these gases from the anode or cathode loops.

Above ground this would be a trivial operation, but releasing these gases into the container atmosphere could cause an 'explosive atmosphere', according to research by Helge Wedahl, conducted following trials of hydrogen fuel cells for UAVs with the Norwegian Defence Research Establishment.

<https://www.naval-technology.com/features/recharge-auvs-without-a-mothership-us-trials-hydrogen-fuel-cell/?cf-view&cf-closed>

Aditya-L1 Successfully Undergoes Second Earth-bound Manoeuvre: ISRO

The second Earth-bound manoeuvre of the Aditya L-1 mission to study the Sun has been performed successfully from ISTRAC, Bengaluru.

“ISTRAC/ISRO’s ground stations at Mauritius, Bengaluru and Port Blair tracked the satellite during this operation,” ISRO said.

The manoeuvre was performed in the early hours of September 5 and the new orbit attained is 282 k.m. x 40,225 k.m.

Three more manoeuvres are scheduled to take place. The next manoeuvre is scheduled for September 10, 2023, around 02:30 Hrs. IST.

After the final manoeuvre on September 18, Aditya-L1 undergoes a Trans-Lagrangian1 insertion manoeuvre, marking the beginning of its 110-day trajectory to the destination around the L1 Lagrange point. Upon arrival at the L1 point, another manoeuvre binds Aditya-L1 to an orbit around L1, a balanced gravitational location between the Earth and the Sun.

The satellite spends its whole mission life orbiting around L1 in an irregularly shaped orbit in a plane roughly perpendicular to the line joining the Earth and the Sun.

Aditya-L1 is the first Indian space based observatory to study the Sun from a halo orbit around first sun-earth Lagrangian point (L1), which is located roughly 1.5 million km from earth.

The first earth-bound manoeuvre was successfully performed on September 3.

ISRO's Polar Satellite Launch Vehicle (PSLV-C57) on September 2 had successfully launched the Aditya-L1 spacecraft, from the Second Launch Pad of Satish Dhawan Space Centre (SDSC), Sriharikota.

After a flight duration of 63 minutes and 20 seconds, Aditya-L1 spacecraft was successfully injected into an elliptical orbit of 235 x 19,500 k.m. around the earth.

According to ISRO, a satellite placed in the halo orbit around the L1 point has the major advantage of continuously viewing the Sun without any occultation /eclipses. This will provide a greater advantage of observing the solar activities and its effect on space weather in real time.

Aditya-L1 carries seven scientific payloads indigenously developed by ISRO and national research laboratories including Indian Institute of Astrophysics (IIA), Bengaluru, and Inter University Centre for Astronomy and Astrophysics (IUCAA), Pune.

The payloads are to observe the photosphere, chromosphere and the outermost layers of the Sun (the corona) using electromagnetic and particle and magnetic field detectors.

<https://www.thehindu.com/sci-tech/science/aditya-l1-successfully-undergoes-the-second-earth-bound-manoevre-isro/article67272178.ece>

Chandrayaan-3 Lander Vikram Comes up with a Surprise, Makes a ‘Jump’ on the Moon

The Indian Space Research Organisation (ISRO) had reserved the best for the last. Just before it was put in hibernation mode on Monday to survive the approaching lunar night, the lander module of Chandrayaan-3 spacecraft was made to perform a small jump on the Moon.

As ISRO said, it soft-landed on the Moon “again”.

“Vikram Lander exceeded its mission objectives. It successfully underwent a hop experiment. On command, it fired the engines, elevated itself by about 40 cm as expected and landed safely at a distance of 30-40 cm away,” ISRO said in a statement.

The ‘hop experiment’ came as a surprise. ISRO had never mentioned this plan earlier. Although it was a very small jump, it represented a significant and exciting step forward. It demonstrated ISRO’s capability to get the lander to fire its engines and produce the thrust to lift it off the ground.

This capability is key to future lunar missions when ISRO would want the spacecraft to return with samples from the Moon, or when it plans to land human beings on the Moon. In those instances, the lander would have to make a lift-off from the lunar surface and return to Earth. Of course, the thrust required in those situations would be much higher. But as a technology demonstration, the ‘hop experiment’ would remain one of the highlights of the Chandrayaan-3 mission.

“This ‘kick-start’ enthuses future sample return and human missions,” ISRO said.

The second soft-landing, as ISRO described it, was very different from the first one. The nearly 1,750-kg lander was slightly lighter than the previous time, with the 26-kg rover having come out. That would also have changed the distribution of weight inside the lander.

Though ISRO is yet to announce follow-up missions to the Moon, scientists have told The Indian Express that a sample return mission was the next logical step to Chandrayaan-3. In fact, if Chandrayaan-2 had been successful in 2019, Chandrayaan-3 would have been a sample return mission. The human lander mission would also come at a later point.

The Chinese Chang’e lunar programme has also progressed on similar lines. China sent an orbiter, its first lunar mission, in 2007, and then followed it up with a lander and sample return mission, the last one in 2020.

ISRO said the spacecraft and the instruments onboard were all working fine after the ‘hop’. “All systems performed nominally and are healthy. Deployed ramp, ChaSTE and ILSA (instruments) were folded back and redeployed successfully after the experiment,” it said.

The ramp was used by the rover, which was initially held inside the lander module, to slide down on the lunar surface, while ChaSTE and ILSA instruments had their components poking out of the lander and touching the lunar surface to carry out their experiments. These instruments folded themselves up and then re-deployed themselves after the ‘hop’.

Shortly thereafter, the payloads onboard the lander were put to sleep in preparation for the incoming night time, but not before they carried out observations at the new location.

Trying to extend the life of the Chandrayaan-3 instruments to the second lunar day is also a plan that was not disclosed by ISRO earlier. The mission life of both the lander and rover was supposed to be only one lunar day, equivalent to 14 days on Earth. The solar-powered instruments were not

designed to survive the extreme low temperatures of lunar night, which drops well below -120 degree Celsius.

But soon after the launch of Aditya-L1 mission on Saturday, ISRO Chairman S Somanath announced plans to try and extend their life. As a result, the instruments onboard the rover were put in sleep mode on Saturday, a few days earlier than the beginning of the night-time. The remaining battery would try to keep the instruments warm during the night-time, which too extends for 14 Earth days. If the battery does not completely drain during this time, the instruments can become active once again when sunshine becomes available.

The instruments onboard the lander were put to sleep on Monday. “Vikram Lander is set into sleep mode around 08:00 Hrs. IST today. Prior to that, in-situ experiments by ChaSTE, RAMBHA-LP and ILSA payloads are performed at the new location. The data collected is received at the Earth. Payloads are now switched off. Lander receivers are kept ON. Vikram will fall asleep next to Pragyan once the solar power is depleted and the battery is drained. Hoping for their awakening, around September 22, 2023,” ISRO said.

After the Moon landing on August 23, ISRO has begun calling the lander module by its name ‘Vikram’, and rover by the name ‘Pragyan’ on social media. It used to refer to it as just ‘lander module’, or LM, and rover earlier. Vikram and Pragyan were names given to the lander and rover on Chandrayaan-2 that failed to make a soft landing in 2019. ISRO had not named the lander and rover on Chandrayaan-3. In all official documents on the ISRO website, these are still referred to as lander module (LM) and rover.

<https://indianexpress.com/article/technology/science/chandrayaan-3-lander-vikram-hops-on-moons-surface-says-isro-8923440/>



Mon, 04 Sep 2023

Chandrayaan 3: After Pragyan Rover, ISRO Sets Vikram Lander into ‘Sleep Mode’

The Indian Space Research Organisation (ISRO) shared an update regarding Chandrayaan-3's Vikram Lander on Monday and said it had been set into sleep mode around 08:00 am in the morning.

“Vikram Lander is set into sleep mode around 08:00 Hrs. IST today. Prior to that, in-situ experiments by ChaSTE, RAMBHA-LP and ILSA payloads are performed at the new location. The data collected is received at the Earth,” it said.

The space agency further informed that the lander's payloads have been deactivated, while its receivers remain operational. “Vikram will fall asleep next to Pragyan once the solar power is depleted and the battery is drained. Hoping for their awakening, around September 22, 2023,” it said, sharing images from before and after the hop.

The Vikram Lander had earlier successfully attempted a soft landing for the second time today.

ISRO has already activated the sleep mode of Pragyan Rover. The battery is fully charged, the receiver is kept on and the solar panel is oriented to receive the light at the next sunrise expected on September 22.

Chandrayaan 3 mission's achievements so far

Throughout its operational phase, Vikram Lander and Pragyan rover executed numerous lunar experiments:

1. **Rover Exploration:** Prior to activating the Pragyan rover's sleep mode, ISRO reported that it covered a distance of over 100 meters. Notably, the rover's communication range is limited to 500 meters from the Vikram lander.
2. **Historic Sulphur Discovery:** The Laser-Induced Breakdown Spectroscopy (LIBS) instrument onboard the rover unequivocally confirmed the presence of Sulphur (S) in the lunar surface near the south pole, representing a groundbreaking in-situ measurement. Additionally, LIBS detected Al, Ca, Fe, Cr, Ti, Mn, Si, and O.
3. **Pioneering Plasma Measurements:** The Radio Anatomy of Moon Bound Hypersensitive Ionosphere and Atmosphere - Langmuir Probe (RAMBHA-LP) payload onboard Chandrayaan-3 Lander conducted groundbreaking measurements of the near-surface lunar plasma environment over the south polar region. Preliminary assessments suggest relatively sparse plasma near the lunar surface. These quantitative measurements hold promise for mitigating interference in radio wave communication and enhancing future lunar mission designs.
4. **Seismic Activity Recording:** The Instrument for the Lunar Seismic Activity (ILSA) payload on Chandrayaan 3 Lander, the first Micro Electro Mechanical Systems (MEMS) technology-based instrument on the moon, recorded the movements of the rover and other payloads. Additionally, it captured an event on August 26, deemed to be of natural origin, which is currently under investigation.
5. **Thermal Behaviour Exploration:** The ChaSTE (Chandra's Surface Thermophysical Experiment) instrument measured the temperature profile of the lunar topsoil around the pole to better understand the thermal characteristics of the moon's surface. Equipped with a controlled penetration mechanism capable of reaching a depth of 10 cm beneath the surface and featuring 10 individual temperature sensors, the probe generated a temperature variation graph for the lunar surface/near-surface at various depths during its penetration. This marked the first such profile for the lunar south pole, with ongoing detailed observations.
6. **Alternate Sulphur Confirmation:** Another instrument onboard the rover corroborated the presence of Sulphur (S) in the region using a distinct technique. The Alpha Particle X-ray Spectroscopy (APXS) detected S alongside other minor elements. This finding has prompted scientists to explore new theories regarding the source of Sulphur (S) in the area, including intrinsic, volcanic, meteoritic, and other possibilities.

<https://www.hindustantimes.com/india-news/chandrayaan-3-after-pragyan-rover-isro-sets-vikram-lander-into-sleep-mode-101693818506912.html>

THE TIMES OF INDIA

Tue, 05 Sep 2023

G20 Summit in Delhi: This Tool will Identify Suspects in a Crowd with 90% Accuracy

The security establishment in the capital has augmented its facial recognition system, both for accuracy and strength of database, in the run-up to the G20 Summit.

New parameters have been added to the software, which is likely now to provide an impressive 90% accuracy, according to sources.

The system is likely to use the database of an intelligence agency and Delhi Police's dossier database which has the faces and details of over three lakh suspects - including criminals and terrorists - besides video feeds from CCTV cameras. An alert will sound whenever a face in the database is detected. Coupled with AI-based cameras, the tech is expected to give the intelligence establishment an edge in filtering out suspicious elements.

In the runup to the G20 summit, the agencies are keeping a special watch on pro-Khalistan elements besides the PoK-based jihadi operatives who have threatened to disrupt the global conference. Recently, Sikhs for Justice (SFJ) chief Gurpatwant Singh Pannun threatened to storm Indira Gandhi International Airport and important places with Khalistan flags when protesting against its operatives being arrested for vandalising Delhi's metro stations with pro-Khalistan graffiti.

The cops are also learnt to be diverting the feeds of all CCTV cameras in central Delhi (at ITPO, along the delegates' routes and at Rajghat, etc) to Delhi Police's central C4i command room from where the videos will be analysed on the facial recognition system, sources added. An officer of the rank of joint commissioner has been deployed to oversee this diversion of feeds. Another officer of the same rank has been assigned to oversee the management at ITPO, Pragati Maidan.

Sources said that Delhi Police is also likely to employ 1,000 facial recognition cameras that were used during the Independence Day event recently. "The facial recognition system maps, analyses and helps establish the identity of a face from a pool of pictures or videos. The software turns the image content into numerical figures that can be assessed for match," a senior police officer explained.

According to officials, the software ideally examines and compares the distance between the eyes or the distance between chin and forehead. Last known through an RTI reply last year, Delhi Police considered face similarity check of around 80% as sufficient to start investigations against a suspect. "For G20, new tech is being used with advanced parameters which would give us an accuracy of 90% or more," said an intelligence officer overseeing the security preparedness. Delhi Police had acquired Facial Recognition System (AFRS) software in 2018 as a tool to identify missing children following a Delhi High Court order.

Meanwhile, the Delhi Police brass held a meeting on Monday to take stock of the security preparedness. The police chief appealed to officers to stay calm to manage the event successfully. An officer suggested that the police personnel on the ground be briefed about the new trend of graffiti being drawn by mischief mongers in public spaces. Another special commissioner was hopeful of "landing the aircraft on the moon in a few days", a metaphor for the successful completion of the G20 event.

On Monday, Delhi Police also conducted flag marches in sensitive areas of northeast Delhi, marketplaces and other areas of prominence as part of a security drill before the summit. In northeast Delhi, cops patrolled areas like Jafraabad, Seelampur, Brahmmapuri, and Chand Bagh.

"Comprehensive security measures have been meticulously implemented in many areas. These measures encompass thorough picket checks, organised group patrolling via flag marches, and the augmentation of Central Armed Police Forces deployment in critical areas," a police officer said, adding that a multi-layered security apparatus, supported by both ground-based and aerial surveillance, has been meticulously established to thwart any untoward incidents during the event.

<https://timesofindia.indiatimes.com/city/delhi/look-what-can-nail-miscreants-lies/articleshow/103371543.cms>

