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## **STAR OF MYSORE**

*Thu, 28 Sep 2023*

### **National Conference on ‘Millets for Military Ration’ in City Tomorrow**

Mysuru-based Defence Food Research Laboratory (DFRL), Defence Research and Development Organisation (DRDO), Ministry of Defence, Govt. of India, has organised a National Conference on ‘Millets for Military Ration and Specific Nutritional Requirements’ at SDM IMD (Shri Dharmasthala Manjunatheshwara Institute for Management Development), Chamundi Hill Road here tomorrow (Sept. 29).

Ajay Bhatt, Minister of State for Defence & Tourism, GoI, will inaugurate the Meet at 9.30 am. Dr. Samir V. Kamat, Secretary, Department of Defence (R&D) and Chairman, DRDO, will be the distinguished guest. Dr. Upendra Kumar Singh, Distinguished Scientist & Director General (Life Sciences), DRDO, New Delhi; Dr. Khadar Valli Dudekula, Padma Shri Awardee & ‘Millet Man of India’ and Maj. Gen. S.S. Ahlawat, Additional Director General-Supplies & Transport (ADG-ST), Seva Medal, Army Headquarters, New Delhi, will be the guests of honour.

<https://starofmysore.com/national-conference-on-millets-for-military-ration-in-city-tomorrow/>



*Thu, 28 Sep 2023*

### **India's New Missile to have Range of over 500 KM, More than BrahMos**

It hasn't been named as yet— Indian missiles are usually called Prithvi or Agni or even BrahMos (Brahmaputra and Moscow), but it promises to be a game changer. The first trial of the tentatively titled LRASM or Long Range Anti Ship Missile is being planned for early next month in the Bay of Bengal, off the coast of Orissa.

A Defence Research and Development Organisation or DRDO project, the missile will have a range of 500km or more, considerably more than the BrahMos, the Indo-Russian cruise missile with a range of initially 290 and now, about 350 km. As it's the first development trial, these are still early days and warships of the Indian Navy will probably get it say, seven years later. It will provide considerable heft to the Navy as a ship-based missile with its range. The missile could be a considerable deterrent considering the number of Chinese warships in the Indian Ocean at any given time is on the rise. A range of 500km or more is necessary in the future. The US Harpoon has a range of 150 km or less and the Tomahawk, though it has a range of 2,500 km is primarily a land attack missile. The US is working on a anti-ship missile with a range of about 900 km.

<https://www.timesnownews.com/india/india-new-missile-lrasm-long-range-anti-ship-missile-to-have-range-of-over-500-km-more-than-brahmos-article-104002242>



**Press Information Bureau**  
Government of India

**Ministry of Defence**

*Wed, 27 Sep 2023*

## **Indo-Pacific Armies Chiefs Conference (IPACC), Indo-Pacific Armies Management Seminar (IPAMS), Senior Enlisted Leaders Form (SELF)- 2023 Culminated**

A three day event, IPACC, IPAMS and SELF-2023, organised by the Indian Army with the US Army as the co-host culminated today in New Delhi. The event witnessed participation from 30 countries. 18 countries were represented by Chiefs of their respective Armies and 12 countries were represented by Heads of Delegations. The event provided an opportunity for the delegates to exchange ideas and views on security and other contemporary issues of mutual interest, with core efforts directed to promote 'Peace and Stability' in the Indo-Pacific region.

The event commenced with a call-on by General Randy George, the Chief of Staff (COS) of the US Army to General Manoj Pande, Chief of the Army Staff (COAS) Indian Army on 25 th September 2023. Both Chiefs discussed issues of mutual interest and shared views on contemporary issues.

On the 26 th September 2023, the Chiefs and the Heads of Delegations laid wreath at the National War Memorial paying homage to our fallen heroes. This was followed by a Joint Press Brief by the COAS Indian Army and COS of the US Army. The COAS Indian Army remarked that the region is not only a cauldron of cultures, histories, resources and opportunities but also a theatre of complexities and challenges. The COS of the US Army highlighted the role of land power and said that, it not only contributes to the shared security of the region but land power is also the decisive force in dealing with crises.

The Joint Press Brief was followed by the Opening Ceremony graced by the presence of Hon'ble Raksha Mantri, Shri Rajnath Singh. General Anil Chauhan, Chief of the Defence Staff was in attendance. During the ceremony, IPACC and IPAMS flags were trooped in followed by National Anthems of the USA and India. COAS Indian Army and COS of US Army welcomed all participants.

Hon'ble Raksha Mantri delivered the Inaugural Address in which he emphasised about the complexities and untapped potential of the Indo-Pacific region and said that the region demands concerted efforts for a prosperous, secure and inclusive future. He also said that, "India stands for a free, open, inclusive and rules-based Indo-Pacific". He reiterated, "Our efforts to build robust military partnerships with friendly countries underscore our commitment to safeguard national interests and address global challenges." Hon'ble Raksha Mantri also released a Commemorative

Journal. As part of 13th IPACC, a Chief's Round Table Conference was held on the theme "Together for Peace: Sustaining Peace and Stability in the Indo-Pacific Region". Lieutenant General Raj Shukla (Retired) moderated the Round Table Conference. Lieutenant General Xavier T. Brunson, from the US Army, delivered a talk on "Enhancing Collaboration and Interoperability". Major General Tan Cheng Kwee from Singapore talked about "Role of Military Diplomacy in Mitigating Crises". Lieutenant General Subrata Saha (Retired) spoke on the topic, "Imperatives of Self Reliance for Modern Armies". All Chiefs echoed the theme and reflected the sentiments of all the nations in the area. The Chiefs and Heads of Delegations had free and frank discussions on the need for an open and inclusive Indo-Pacific region that follows rules based world order. They highlighted that Indo-Pacific has diversity at many levels and all agreed to work towards a collaborative effort to address the challenges faced in the region.

The COAS Indian Army also held bilateral meetings with Chiefs of the armies of the participating countries. He held one to one discussions with General Morishita Yasunori (Japan), Lieutenant General Simon Stuart (Australia), Lieutenant General Mnguyen Doan Anh (Vietnam), Lieutenant General Peter Mbogo Njiru (Kenya), Prasiddha Prabal Janesewashree General Prabhu Ram Sharma (Nepal), General Sheikh Md Shafiuddin Ahmed (Bangladesh), Major General John Boswell (New Zealand), General Sir Patrick Sanders (UK), Lieutenant General Mao Sophan (Cambodia), General Jung Hwan Park, Republic of Korea, General Pierre Schill (France) and General Datuk Muhammad Hafizuddeain Bin Jantan (Malaysia). Lieutenant General MV Suchindra Kumar, Vice Chief of the Army Staff also held bilateral meetings with the heads of delegations of Brazil, Singapore, Mongolia and Thailand.

Sessions of 47 th IPAMS were conducted in the Plenary Sessions on three themes. The first theme was "Partnering for Sustainable Peace and Security in the Indo-Pacific". Second theme was "Cooperation to Enhance Interoperability" and final theme was "Humanitarian Assistance and Disaster Relief (HADR)- Evolving Mechanisms for Crises Response". Senior officers from Mangolia, Nepal, Japan, Australia, Philippines, Tonga, USA and India spoke on the topics and shared their views with all participants. The discussions were moderated by Lieutenant General PS Rajeshwar (Retired), Lieutenant General Sunil Srivastava (Retired) and Lieutenant General Arun Kumar Sahni (Retired). It emerged during the discussions that the nations need to work together to strengthen the collective responses. This collaborative effort is not built overnight and therefore IPAMS provided the platform to build a connect, confidence and commitment for the future.

9th SELF was conducted in three sessions on the themes, "Interoperability Amongst Indo-Pacific Armies", "Grooming Junior Leaders for Modern Battlefield" and "Beyond the Barracks- Addressing Senior Enlisted Leaders' Concerns". It was a unique forum where junior leaders at the functional level exchanged their views and ideas.

A Special Plenary for the spouses was also conducted on the theme "Beyond the Barracks: Roles and Challenges in Fostering Military Communities and Sharing Best Practices". The session commenced with the Opening Address by Mrs Archana Pande, President, Army Wives Welfare Association (AWWA) and Mrs Patty George, spouse of the COS of the US Army. The spouses also visited the National War Memorial and paid their tributes. An AWWA Exhibition was also showcased to the participants highlighting the entrepreneurial success of spouses of Indian Military personnel. This was followed by a tour to 'AAHWAN', which highlighted various initiatives undertaken by the AWWA towards women empowerment.

'Atmanirbhar Bharat' Equipment Display during the event showcased the capability of Indian Industry to produce world class military equipment indigenously. 31 corporates participated in the exhibition which generated lots of interest amongst participants. The main highlights were Drones, Counter-Drone Systems, Modular Firing Ranges, Small Arms, NAVIC based devices, Surveillance Systems, Protective Gear, Self-Propelled Artillery Guns, Military Vehicles etc.



A guided tour of the Gandhi Smriti was conducted for all the participants. In addition, an evening dedicated to the rich culture of India was also organised. This included performances by the Indian Army's Symphony Band and dance forms showcasing India's vibrant traditions and art under the theme 'Colours of India'.

An all-encapsulating event culminated with the Closing Ceremony in Manekshaw Centre, Delhi Cantt on 27 th September 23. Hon'ble Raksha Rajya Mantri Shri Ajay Bhatt delivered the closing address and thanked all participants. The conference came to an end with a Flag Handing Over Ceremony. The IPACC and IPAMS flags were handed over by the Indian Army to the US Army.

The intense discussions and engagements between the Chiefs, Heads of Delegations, Senior Officers, Junior Leaders and their spouses helped in building bonds between the Armies. The forum provided an opportunity for all participants to hear distinguished speakers and participate in discussions based on wide-ranging themes. The event achieved the envisaged outcomes such as evolving a shared vision for military cooperation, fostering a sense of collective responsibility, sharing best practices, appreciating areas and communities vulnerable to climate change, synergising approach to HADR response, increasing military exchange endeavours, progressing defence diplomacy initiatives and reinforcing the importance of open and sustained dialogue to jointly address issues that impact the Indo-Pacific countries. All participating nations thanked the co-hosts for the invite and the Indian Army for the warm hospitality they were accorded.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1961331>



*Fri, 29 Sep 2023*

## **'Not ATAGS, but another TGS': Army's Rs 6500 Cr Proposal to Acquire 400 Howitzers**

The Indian Army has submitted a proposal worth over 6,500 Crore to the Defence Ministry for the acquisition of 400 howitzers from Indian firms. This move is part of the Army's strategic plan for modernisation, with a particular focus on 'Mediumisation', involving the integration of lighter, technologically advanced artillery. The aim is to enhance the uniformity of the standard of artillery systems used by the army in its arsenal.

The Regiment of Artillery within the Indian Army is spearheading this endeavour, seeking to leverage the expertise of Indian industry to manufacture 155 mm/52 calibre Towed Gun Systems (TGS). This development aims to create a versatile, lighter system that can accommodate future technological advancements. A senior military official shared, "A proposal for buying 400 155mm 52 calibre towed gun systems (TGS) along with towing vehicles from Indian firms under the Buy Indian-IDDMM category has been moved to the Defence Ministry. The government is expected to soon take a decision on the TGS at a high-level meeting."

### **Army's howitzer procurement plans**

According to DRDO, "No new gun systems have been inducted since the introduction of the 155 mm x 39 Caliber Bofors FH-77B howitzers in 1986-87", as the Army's broader procurement strategy emphasises on indigenous production more. The plan envisions complete indigenisation, ensuring that the howitzers are entirely of Indian origin. Additionally, the Army is prioritising weight reduction and ease of deployment, particularly in high-altitude areas, aligning with lessons learned from previous deployments of older Bofors guns. The procurement process is an integral

part of the Army's Mediumisation initiative, with the goal of achieving full integration of indigenous guns by the year 2042.

Over the past decade, the Army has concluded contracts for the acquisition of various 155 mm howitzers, including Dhanush, Sharang, Ultra Light Howitzer (ULH), and K-9 Vajra Self Propelled Guns. These acquisitions are slated to eventually enhance the Army's artillery capabilities

Captain V Mishra from the Regiment of Artillery, in an interaction with ANI, highlighted the capabilities of the Dhanush howitzer, stating that it can engage targets up to 48 kilometres away. This locally-developed system was inducted into service in the Eastern Ladakh sector last year. Additionally, 114 guns produced by the erstwhile Ordnance Factory Board will soon be integrated into the Indian Army's arsenal, as stated in a prior report by ANI.

### **ATAGS: That stirred Indian artillery acquisition plans**

The Army's plan to acquire 307 Advanced Towed Artillery Gun Systems (ATAGS) marks a significant milestone in the modernisation of Indian artillery. This project, as per DRDO, initiated in 2000 as part of the Field Artillery Rationalization Plan (FARP), aimed to modernise and rationalise artillery equipment. Under FARP, a total of 1580 units of 155 mm x 52 Caliber Towed Artillery Gun Systems were previously envisaged, as per DRDO sources.

### **ATAGS: The first artillery with 'all electric drive'**

ATAGS, developed in collaboration with Tata Advanced Systems Limited (TASL) and Bharat Forge Limited (BFL), stands out for its 'all-electric drive', ensuring maintenance-free and reliable field operations. This new-era tech, as per DRDO, facilitates automatic operation of critical functions, enabling a higher rate of fire.

With High Explosive Extended Range Full Bore projectile (ERFB-BB) shells capable of reaching over 45 km, ATAGS are hailed to have exceptional accuracy and consistency. The system is designed for rapid deployment, ensuring readiness in day and night war scenarios. Advanced technologies, including an inertial land navigation-based Automatic Gun Alignment and Positioning System (AGAPS), Muzzle Velocity Radar (MVR), and ballistic computer, empower ATAGS to perform precise computations online, enhancing its effectiveness in engaging targets.

Equipped with an optronics sight for direct firing at targets up to 1.5 km, even in low-light conditions. Its 'robust' communication system allows 'seamless' coordination and control during operations, further enhancing its combat capabilities. The Indian Army's move to acquire 400 indigenous howitzers signifies a significant leap forward in bolstering the nation's artillery capabilities. With a focus on indigenization and technological advancement, this initiative is poised to enhance India's strategic preparedness on the global stage.

<https://www.republicworld.com/india-news/general-news/not-atags-but-another-tgs-armys-rs-6500-cr-proposal-to-acquire-400-howitzers-articleshow.html>

# ThePrint

*Thu, 28 Sep 2023*

## **Not ATAGS, Vajra or Dhanush. A New Gun will be the Mainstay of Indian Artillery**

It's not the indigenous Dhanush or the Advanced Towed Artillery Gun (ATAGS) but the new 155 mm/52 Calibre Towed Gun Systems (TGS) that's earmarked to be the mainstay gun of the artillery in the future, ThePrint has learnt.



Sources in the defence and security establishment told ThePrint that while a Request for Proposal (RFP) for ATAGS had been sent to the Indian firms Kalyani Group and TATA — both of which have developed the weapon — what the Army is actually looking at is the much lighter and more agile TGS, which has more automation than ATAGS.

Talking about the modernisation in the Artillery Regiment, a source said, “In the future, we are also looking at 155 mm/52 Calibre Towed Gun Systems (TGS), which will become the mainstay gun of Artillery.”

ThePrint had first reported in December last year that the Indian Army issued a fresh Request for Information (RFI) to acquire a 155mm/52 calibre TGS that had opened up a new avenue for induction of an Israeli gun that the Army was keen on.

The gun in question was the Autonomous Towed Howitzer Ordnance System (ATHOS), built by Israeli firm Elbit, which was in the reckoning for a mega contract from the Indian Army for over a decade.

The RFI sent out in December had said that the weight of the gun system “be preferably less than 15 tons”. This clause is why the Israeli firm is back in the race for supplying the ATHOS to the Indian Army.

Given that the ATHOS weighs less than 15 tons while the ATAGS is well over 18 tons, industry sources see the new RFI as an opening for the Israeli weapon system.

### **‘Unprecedented transformation’**

Significantly, 28 September is celebrated as Gunners’ Day. It was on this day in 1827 that the first Indian Artillery unit, Royal Indian Artillery, was raised.

Sources told ThePrint that the Army is looking at acquiring 400 TGS which can operate in all terrains — mountainous, plains, high altitude, desert and semi-desert.

They said that the Regiment of Artillery is gearing up to face future challenges and is witnessing an unprecedented transformation from manual to automatic, analog to digital, and conventional to smart, so as to be fully prepared to meet any challenge and contingency.

“Recent conflicts around the world, including the Russia-Ukraine war, have banished the myth about the primacy of firepower as a battle-winning factor. The Regiment of Artillery has learned a number of lessons from the ongoing conflict, and these are being plotted in the capability development plans and Artillery doctrines,” a source said.

The source further said: “The capability development arena, which is based on the principle of ‘Modernisation through Indigenisation’, is progressing well according to timelines. 155mm will be the standard calibre of all artillery guns, (just) as with brands.”

Sources added that the Ultra Light Howitzers, K9 Vajra Gun Systems, Dhanush Gun Systems, Sharang Gun Systems, Pinaka Rockets, and Swathi Weapon Locating Radar have been successfully inducted into the Army.

Requests for Proposal (RFPs) have also been issued for two more gun systems — 155 mm/52 Calibre Mounted Gun System and 155 mm/52 Calibre ATAGS.

In order to augment and strengthen its intelligence, surveillance, and reconnaissance architecture to achieve enhanced battlefield transparency, the Regiment of Artillery is in the process of procuring niche technology including loitering munitions, swarm drones, and tactical remotely piloted aerial systems.

The induction of these potent niche fire power systems will enable delivery of decisive and destructive firepower and will restore the status of artillery as the 'Arm of Decision', the source said, adding that due focus is also being given to ensure networked and automated systems.

"As part of this process, major upgrades are happening shortly in the Artillery Combat Command and Control System (ACCCS). Even the Battlefield Surveillance System (BSS) is being fielded shortly," the source said.

<https://theprint.in/defence/not-atags-vajra-or-dhanush-a-new-gun-will-be-the-mainstay-of-indian-artillery/1781864/>



Wed, 27 Sep 2023

## चीन-पाकिस्तान से निपटने में भारत की सुरक्षा करेगा 'एंटी ड्रोन सिस्टम', जानिए सीमा सुरक्षा के लिए कितना अहम?

भारत अपनी बॉर्डर की सुरक्षा को ध्यान में रखते हुए एक कदम आगे बढ़ता हुआ दिखाई दे रहा है। चीन और पाकिस्तान से निपटने के लिए भारत अपने सीमा पर एंटी ड्रोन सिस्टम को एक्टिव करने जा रहा है। इस तकनीकी ड्रोन से भारतीय सीमा की सुरक्षा में एक नया आयाम आएगा। बीते दिन यानी 26 सितंबर को केंद्रीय गृहमंत्री अमित शाह ने एंटी ड्रोन सिस्टम की घोषणा करते हुए कहा कि, भारत सरकार सीमा पर सुरक्षा व्यवस्था मजबूत करने के लिए प्रतिबद्ध है जिसका ध्यान रखते हुए बॉर्डर पर एंटी ड्रोन सिस्टम तैनात किया जाएगा।

एंटी ड्रोन सिस्टम रेडियो फ्रीक्वेंसी पर काम करता है, जिसके जरिए ये दुश्मन देश के हथियार का पता लगा कर उसे मार गिराने में सक्षम है। हाल ही में दिल्ली में आयोजित हुए जी20 की बैठक में इसका उपयोग किया गया था। विदेशी महेमानों की सुरक्षा को ध्यान में रखते हुए उनके आवास और आने जाने में इस ड्रोन ने काफी अहम भूमिका निभाई थी। अब इसी ड्रोन को लेकर केंद्रीय गृहमंत्री अमित शाह ने बड़ा बयान दिया है और कहा है कि जल्द ही इसका उपयोग भारतीय सीमा सुरक्षा को लेकर किया जाएगा।

### क्या है एंटी ड्रोन सिस्टम?

एंटी ड्रोन सिस्टम एक हाई क्वालिटी टेक्नोलॉजी है, जिसका उपयोग मानवरहित हवाई उपकरणों यानी Unmanned Aerial Devivces को जैम करने के लिए किया जाता है। अलग-अलग ड्रॉन्स की अपनी-अपनी क्षमताएं होती हैं, जिस पर वे काम करते हैं। एंटी ड्रोन सिस्टम टेक्नोलॉजी रेडियो फ्रीक्वेंसी के जरिए दुश्मन ड्रोन की पहचान करती है। अगर इस ड्रोन को हवा में कोई अन्य गतिविधी नजर आती है तो तुरंत इसकी जानकारी सेना को मिल जाती है। भारत, दुश्मन देशों से अपनी सीमा को सुरक्षित रखने के लिए नए-नए तकनीक अपना रहा है ताकि बॉर्डर पर कोई हलचल पैदा न हो।

### भारत में कौन सा है एंटी ड्रोन सिस्टम ?

भारत के पास कई ड्रोन सिस्टम मौजूद हैं। जिसमें प्रमुख ड्रोन डिटेक्ट, डिटर एंड डिस्ट्रॉय सिस्टम यानी D4 ड्रोन है। इस ड्रोन को रक्षा अनुसंधान एवं विकास संगठन यानी डीआरडीओ ने तीन सालों में बनाया है। DRDO के मुताबिक, D4 ड्रोन हवा में 3 किमी. की रेडियस में दुश्मन का पता लगाकर 360 डिग्री की कवरेज करता है। ये ड्रोन दुश्मन का पता लगाने के बाद दो तरीके से काम करता है। सबसे पहले ये हार्ड किल उसके बाद सॉफ्ट किल पर कार्य करता है।

### दो मेथड पर काम करता है D4 ड्रोन

जानकारी के मुताबिक, D4 ड्रोन को हार्ड किल कमांड दी जाती है तो यह अपने लेजर बीम के जरिए दुश्मन ड्रोन को नष्ट कर देता है। जबकि सॉफ्ट किल के तहत D4 ड्रोन दुश्मन ड्रोन को नीचे गिरा सकता है या फिर लेजर बीम के जरिए उसके जीपीएस और इलेक्ट्रॉनिक उपकरणों को नष्ट कर सकता है, जिससे ऑपरेटर से दुश्मन ड्रोन का संपर्क टूट जाता है। इसी साल 26 जनवरी के मौके पर D4 ड्रोन का उपयोग किया था। गणतंत्र दिवस के खास मौके पर इस्तेमाल करने से पहले कई बार इसका सफलतापूर्वक परीक्षण किया गया था। उसके बाद इसे सशस्त्र बलों में शामिल किया गया। D4 ड्रोन सिस्टम की खासियत डीआरडीओ के साइंटिस्ट बीके दास ने बताया था कि, यह दुश्मन के ड्रोन का पता कर उसे तुरंत सॉफ्ट किल के जरिए जैम कर देता है और हार्ड किल के जरिए लेजर का इस्तेमाल कर ड्रोन को नष्ट भी कर सकता है। जिससे दुश्मन देश का मंसूबा कभी नहीं पूरा होता है।

### इन देशों के पास है एंटी ड्रोन सिस्टम

एंटी ड्रोन सिस्टम के मामले में इजरायल सबसे आगे है। इसके पास कई आधुनिक ड्रोन हैं, जो युद्ध को देखते हुए बनाया गया है। इजरायल के पास ड्रोन डोम है, जो 360 कवरेज देता है और इसमें जैमर और सटीक लेजर गन मौजूद हैं। इस ड्रोन की खासियत है कि ये रेडियो फ्रीक्वेंसी के जरिए दुश्मन ड्रोन का पता तुरंत लगा लेता है। इजरायल के अलावा अमेरिका भी खतरनाक ड्रोन का इस्तेमाल करता है। अमेरिका के पास ड्रोन हंटर है, जो नेट गन से ड्रोन को निशाना बनाने के साथ हवा में ही उस पर कब्जा करने में सक्षम है।

<https://www.bhaskarhindi.com/national/anti-drone-system-will-protect-india-in-dealing-with-china-pakistan-know-how-important-it-is-for-border-security-964125?infinitemscroll=1>



Thu, 28 Sep 2023

## Swavlamban 2023: A Glimpse into the Future of Naval Innovation

Swavlamban is the Naval Innovation & Indigenisation Organisation's (NIIO) annual seminar, and the upcoming Swavlamban 2023 is the second edition in the series. This event aims to engage the Indian industry and academia in achieving 'Self-reliance in Defence Sector.'

Scheduled at Bharat Mandapam, Pragati Maidan on October 4-5, 2023, Swavlamban 2023 promises to be a grand affair. It will be attended by high-level dignitaries, senior officials from the government, academia, industry, and the Armed Forces.

The seminar will feature sessions dedicated to innovation and aviation, along with a Plenary Session on the first day. Topics include discussions on the SPRINT initiative, procurement, policies, and certification. The plenary session will also witness the release of the updated Indian Navy indigenisation roadmap, 'Swavlamban 2.0,' and new industry challenges. Expectations are high for various launches and major policy announcements concerning all three Services.

Day 2 will focus on indigenisation and armament, including an interactive session with the industry regarding the 'Swavlamban 2.0' document released the previous day. This outreach aims to strengthen industry partnerships. Additionally, breakout sessions on medical innovations and participation from Defence Attaches/diplomats from over 50 Friendly Foreign Countries will round off the event.

In conclusion, NIIO's innovative journey, coupled with the SPRINT initiative, showcases India's commitment to self-reliance in the defence sector. Swavlamban 2023 is poised to be a significant

milestone, bringing together key stakeholders to shape the future of India's naval defence capabilities.

## **Background**

In August 2020, India embarked on a remarkable journey towards enhancing its naval capabilities by creating the NIIO. Headed by the Vice Chief of Naval Staff, NIIO's mission is to fuse innovation and indigenisation to bring cutting-edge technology to the Indian Navy.

NIIO serves a crucial purpose: to accelerate the integration of disruptive combat technology into the Navy, thereby enhancing its warfighting capabilities. It fosters seamless collaboration across the Navy, the Ministry of Defence (MoD), academia, and industry. Moreover, NIIO encourages naval personnel to contribute their innovative ideas.

## **The SPRINT initiative**

As India celebrated the 75th year of independence during the 'Azadi ka Amrit Mahotsav,' the Indian Navy proposed a bold initiative – to develop and induct at least 75 new indigenous technologies/products. The Defence Innovation Organisation (DIO) and NIIO joined forces for a collaborative project named SPRINT (Supporting Pole-Vaulting in R&D through iDEX, NIIO, and TDAC). The SPRINT initiative was unveiled during the maiden NIIO Seminar 'Swavlamban 2022' held on July 18-19, 2022, in New Delhi. Prime Minister Narendra Modi released 75 problem statements for Indian industries as part of iDEX(SPRINT), marking a significant milestone.

## **Overwhelming response to SPRINT**

At a curtain raiser press interaction in New Delhi, the Vice chief of the Navy, Vice Admiral Sanjay Jasjit Singh, said that SPRINT garnered an overwhelming response from the industry, with 1106 proposals pouring in.

According to Vice Admiral Singh, after evaluation, 113 winners in the DISC 7 SPRINT category (with grants up to 1.5 crore) and 5 winners in the DISC 7 SPRINT-PRIME category (grants up to 10 crore) were announced. Prototypes are now in development, and more than 100 developmental agreements have been forged between iDEX and industry, with active engagement from the Indian Navy, iDEX, start-ups, and MSMEs.

The SPRINT initiative is pushing technological boundaries across various domains. Projects include blue-green lasers for underwater applications, autonomous swarms and underwater swarm drones, multiple firefighting aids, and the integration of Artificial Intelligence (AI) for various purposes. Notably, an ultra-endurance small drone for maritime missions is also in development.

<https://www.financialexpress.com/business/defence-swavlamban-2023-a-glimpse-into-the-future-of-naval-innovation-3257108/>

# **ThePrint**

*Wed, 27 Sep 2023*

## **Not just Sailors, Navy's New Fire Suit could Help Soldiers with Stealth & Save Pilots from Burns**

In what could be of huge benefit to not the Army and the Indian Air Force as well, the Navy through its innovation cell has come out with a fire suit that could boost the safety for pilots and foot soldiers. Hyderabad-based firm Veera Tactical Dynamics has come out with a suit made of carbon nanotubes, which is basically aerogel-based fabric.

Defence sources told ThePrint that the suit, which covers the body from below the face, can withstand temperatures from -200 degree Celsius to over 1,000 degree Celsius.

This means, they said, a person wearing this suit won't suffer from extreme cold or high temperatures. The Navy needs these suits because fire on board a surface vessel or a submarine has to be doused by the personnel on board. In the past, it has lost personnel in such hazardous actions.

The innovation is part of the Navy's SPRINT initiative, which aims to support pole-vaulting in R&D Naval Innovation and Indigenisation Organisation (NIIO) and Technology Development Acceleration Cell.

The Navy, which held a briefing Wednesday for an upcoming seminar to showcase the products, played a small video showcasing a man wearing the suit having molten metal poured on while liquid nitrogen featured in another. The suit is also able to prevent detection by infrared cameras, meaning its wearer will not emit any heat signature and thereby making detection through such devices impossible. What adds to the uniqueness of the suit is that the Navy currently uses imported ones weighing over 18 kg, while this weighs only about 1.8 kg and the cost is also much less. Asked by ThePrint if this technology is part of the 12 projects that were already given Acceptance of Necessity (AON) by the defence ministry which allows the navy to initiate the procurement process, Vice-Admiral Sanjay Jasjit Singh said it is still being tested.

"It is still undergoing trials. We are going through a stringent process... we are waiting for it to be a product," the Navy vice-chief said, adding that this could figure in the next or the third tranche of innovations for which AON will be given.

To a question on whether the Army and the IAF were informed about the innovation, he replied in the affirmative and added that they were "equally waiting for" for the innovation to mature.

The IAF is interested in the suit because this will come handy for the pilots to escape fatal burns in event of a crash.

For the Army, it will come handy since soldiers will be able to avoid detection by infrared cameras and sighting systems which pick up body heat signatures alerting the enemy.

<https://theprint.in/defence/not-just-sailors-navys-new-fire-suit-could-help-soldiers-with-stealth-save-pilots-from-burns/1780512/>



*Thu, 28 Sep 2023*

## **Navy Wants a Third Carrier, Nuclear Subs to Counter China in the Indo-Pacific**

With Chinese Navy expected to increase its footprint in Indian Ocean through logistics support bases from Straits of Malacca to Gulf of Aden, Indian Navy has asked the Modi government for muscling up its strength by building another aircraft carrier, three nuclear powered submarines and six diesel-electric conventional submarines to tackle the PLA challenge. All the constructions will be done under PM Modi's "Atmanirbhar Bharat" vision and in Indian shipyards.

Beijing under the cover of Belt-Road-Initiative (BRI) has turnaround logistics bases in Ream in Cambodia near Straits of Malacca, listening post at Coco Islands in the Bay of Bengal, Hambantota base in Sri Lanka, Gwadar in Balochistan, Jask naval base in Iran and a full-fledged berthing naval facility at Djibouti on the mouth of Red Sea and entry into Mediterranean Sea.

It is understood that the Indian Navy brass has communicated to the Modi government that it plans to move the Defence Acquisition Council (DAC) for acceptance of necessity (AON) of repeat order of 45000 ton Vikrant class of aircraft carrier after shelving plans for larger warship, three nuclear powered conventionally armed submarines (SSN) in collaboration with key allies like France, and high tech diesel-electric submarines under Project 76. Based on the projection that Chinese carrier strike force could be patrolling high seas in Indian Ocean as early as 2025-2026, the Indian Navy does not want gaps in its capabilities and not lose machine tooling capabilities due to lack of orders to shipyards like Kochi and Mazagon. India's first aircraft carrier INS Vikramaditya is currently operational while INS Vikrant is undergoing routine overhaul in Karwar Naval base.

While the Western media tries to play down the Chinese strike force capabilities, the Indian understanding is that Chinese aircraft carriers (Liaoning and Shandong) can conduct round-the-clock fighter operations and the PLA Navy is training naval fighter pilots within nine months. The under construction 80,000 ton Fujian carrier with electro-magnetic catapult capability will be ready for sea trial next year and even challenge the might of the US Navy in the Indo-Pacific.

Even as India is in talks with France to construct additional three Kalveri class submarines in Mazagon dockyards in Mumbai which will be equipped with air-independent propulsion for longer endurance, Paris is ready to provide support and help New Delhi design and construct 5000 tons SSNs, similar to Suffren class, indigenously in India. Besides, the French Naval group is ready to co-design and develop Project 76 submarines if the Modi government decides to shelve the Project 75 I plan as the three additional Kalveri class will have DRDO designed and validated AIP. The Project 75 I envisaged six diesel-electric submarines with AIP.

India has three Arihant class nuclear submarines with nuclear ballistic missiles as part of its credible nuclear deterrent. While one is fully operational, second is undergoing final phases of sea trials and third is also in initial phases of sea trials.

Although the process to design and develop SSNs will take time, this strategic gap will be filled by the Russian Akula class submarine, which India has already paid for being leased to the Indian Navy. The vessel with land attack missiles is expected to join the Indian Navy in 2025.

As PLA rapidly expands its capability on land and sea in line with Chinese President Xi Jinping's ambition to become numero uno power, the QUAD needs to prepare for a military emergency in Taiwan and India for military surprise along its 3488 km line of actual control with Tibet. One must remember that India recognized Tibet as part of China under J L Nehru, Beijing still considers Arunachal Pradesh as part of south Tibet and the India rejected 1959 cartographic line in East Ladakh as its border in occupied Aksai Chin.

<https://www.hindustantimes.com/india-news/navy-wants-a-third-carrier-nuclear-subs-to-counter-china-in-the-indopacific-101695872870359.html>

**R. REPUBLICWORLD.COM**

*Thu, 28 Sep 2023*

## **Indian Dockyard Races Against Time to Secure Advanced Submarine Deal**

In the face of Pakistan's impending acquisition of eight Chinese Yuan-class submarines by 2028, Mazagon Dock Shipbuilders (MDL) is racing against time to secure a deal for constructing three additional diesel-electric Kalvari-class submarines in collaboration with the French Naval Group.



This strategic move aims to ensure that MDL's submarine production capacity, currently at 11, remains fully utilised.

MDL is in the final stages of preparing the sixth Kalvari-class submarine, INS Vagsheer, for sea trials. Simultaneously, discussions have commenced with Naval Group regarding the construction of the additional three submarines. These submarines will be outfitted with operation-specific features, including indigenous torpedoes and air-independent propulsion (AIP) systems for extended underwater endurance. Presently, heavyweight indigenous torpedoes and AIP technologies are undergoing operational validation tests in France.

Pakistan currently possesses an aging French Agosta 70 submarine (PNS Hurmat) and an upgraded Agosta 90 B submarine (PMS Hamza), both equipped with French single-use MESMA AIP systems. Additionally, Pakistan is set to introduce four Yuan-class diesel-electric submarines this year. Of particular significance is the Yuan-class 039 B submarine, which features AIP and possibly submarine-launched cruise missiles. This development heralds a major transformation in Pakistan's submarine capabilities.

### **Advanced Features of the New Submarines**

The three submarines under negotiation are expected to feature significantly more advanced capabilities than the Kalvari class. They may be extended by seven meters to accommodate additional batteries, enabling longer submerged durations. Alternatively, they could be lengthened by 10 meters to house the DRDO-designed AIP unit. These vessels will incorporate advanced optronics, electronic warfare suites, and heavyweight torpedoes with a range of 40 kilometers, coupled with higher explosive content. Furthermore, the submarines will be equipped with advanced/upgraded SM-39 Exocet missiles, with future iterations possibly carrying SCALP 1,000km range submarine-launched cruise missiles.

Naval Group, in collaboration with MDL, recently signed an MoU to construct submarines in Mumbai dockyards for export to countries like Indonesia and Malaysia. A separate MoU with Kolkata-based GRSE is set to facilitate the construction of surface combatants like destroyers and frigates for export to third-party nations. These initiatives will ensure that the machine tooling capacity of the two dockyards remains robust.

### **Strengthening India's submarine force amid regional challenges**

As India's submarine fleet grapples with aging INS Shishumar (HDW) and INS Sindughosh (Kilo) class submarines due to spare parts issues arising from the Russia-Ukraine conflict, there is a growing need for additional sub-surface combatants. These submarines are essential for safeguarding India's extensive 7,500km coastline and serving as a deterrence against potential threats from Pakistan and China. India's indigenous submarine production capacity plays a pivotal role in bolstering its maritime defense capabilities, aligning with Prime Minister Narendra Modi's "Atmanirbhar Bharat" (self-reliant India) vision in the defense and security sector.

As the United States anticipates a military emergency in Taiwan by 2027, the Indian Navy is acutely aware of the looming presence of Chinese patrols and conventionally armed nuclear-powered submarines in the Indian Ocean by 2025-2026. This underscores the critical importance of promoting India's indigenous submarine building capacity, which experts believe is the linchpin of Prime Minister Narendra Modi's "Atmanirbhar Bharat" plan in defense and security.

<https://www.republicworld.com/india-news/general-news/indian-dockyard-races-against-time-to-secure-advanced-submarine-deal-articleshow.html>

## Indian Navy's Indigenous Goals, 90 Percent in a Decade

The Indian Navy is consistently augmenting indigenous components in the construction of its warships and submarines and this could touch up to 90 percent in every sphere. Also, an updated indigenisation roadmap of the force is also planned to be released next week at Swavlamban Seminar.

Vice Admiral Sanjay Jasjit Singh on Wednesday said, "We will reach up to 90 percent indigenous component in the areas of float, move and fight as far as our warships and submarines are concerned."

The Naval warships comprise three components -- "float", "move" and "fight". As per Admiral R Hari Kumar, Indian Navy Chief, the Indian Navy has achieved Atmanirbharta (self-reliance) of 95 per cent in float components, 60 to 65 per cent in move components, and 50 per cent in fight components. The float component is made of indigenous steel, shaft, propelling and control panels of the move component are being made in India. In case of fight, arms and armaments, Radars and sensors, which is about manufacturing aircraft and armaments.

The float part includes Hull and its related fittings and components, Move includes the engine and whatever makes it move, Complete propulsions systems, associated machinery and auxiliaries. Fight, includes, sensors and weapons.

Going ahead with the ambitious push towards adding a number of niche technologies developed indigenously Vice Admiral Singh added that the Navy resolved to develop 75 technologies at the Swavlamban seminar last year and the aim has been achieved.

"Today, I can say with confidence that the Swavlamban initiative has gained critical mass, and is gathering continuous momentum. And, I am happy to inform you that the promises made last year have been fully met, and even surpassed in some cases," he said.

A source added that an updated "Indian Navy indigenisation roadmap", a document titled 'Swavlamban 2.0' and new challenges for the industry are planned to be released at the seminar.

The 2nd Edition of the Indian Navy's Naval Innovation and Indigenisation (NIIO) Seminar - 'Swavlamban 2023' is scheduled to be conducted on 04 - 05 Oct 2023.

The new technologies that include underwater swarm drones of various categories, as well as applications of robotics and artificial intelligence, autonomous weaponised boat swarms, blue-green lasers for underwater applications, multiple firefighting systems and small drones with ultra-high endurance for maritime missions, will be showcased at the seminar.

"We have already obtained Acceptance of Necessity for 12 such cases, worth close to 1500 Crores, and procurement orders for products worth 200 crore amongst these have already been signed. In the coming weeks, we are looking to conclude many more such contracts," Admiral Singh said.

It was last year that a Memorandum of Understanding was signed between the Defence Innovation Organisation (DIO) and the Naval Innovation and Indigenisation Organisation (NIIO) to work on a collaborative project named SPRINT (Supporting Pole-Vaulting in Research & Development) through Innovations for Defence Excellence (iDEX) and Technology Development Acceleration Cell (TDAC).

The purpose of the Seminar is to engage the Indian Industry and Academia towards achieving 'Self-reliance in Defence Sector'.

The 'SPRINT Challenges', are aimed at giving a boost to the usage of indigenous technology in the Indian Navy, and the Navy is committed to developing at least 75 technologies/ products as part of the 'Azadi ka Amrit Mahotsav'. SPRINT is a collaborative initiative being undertaken in conjunction with the Defence Innovation Organisation (DIO) and stands for Supporting Pole-Vaulting in R&D through Innovations for Defence Excellence (iDEX), NIIO and Technology Development Acceleration Cell (TDAC). This initiative has received an overwhelming response with 1106 proposals.

### **A Stealth Cloak for soldiers and sailors**

The niche products like the fire fighting suits made from carbon nanotubes and aerogel-based fabric and firefighting robots have undergone trials on aircraft carrier INS Vikrant, said Commodore Arun Golaya, who heads the navy's technology development acceleration cell. The firefighting suit developed by Hyderabad-based firm Veera Tactical Dynamics will be useful for the soldiers and sailors.

The suit is said to be suitable to withstand extreme temperatures ranging from -200 degrees Celsius to more than 1000 degrees Celsius. This will be useful for soldiers deployed in high-altitude areas like Drass and Siachen and while handling fires in warships, submarines and Army establishments.

<https://www.newindianexpress.com/nation/2023/sep/27/indian-navys-indigenous-goals-90-percent-in-a-decade-2618761.html>

# The Tribune

*Wed, 27 Sep 2023*

## **MoD Comes out with New Rules on Disability Pension**

The Ministry of Defence (MoD) has issued new rules for the grant of disability benefits to members of the armed forces, which have brought about significant changes in the definition of pension, eligibility criteria and quantum of compensation.

Titled 'Entitlement Rules for Casualty Pension and Disability Compensation Awards to Armed Forces Personnel, 2023', the rules were issued on September 21 and supersede all such previous entitlement rules.

The new rules redefine some terminology, the types of disabilities and diseases that are covered and the methods to assess and fix the percentage of disability. This will have financial implications.

<https://www.tribuneindia.com/news/india/mod-comes-out-with-new-rules-on-disability-pension-548371>



*Fri, 29 Sep 2023*

## **India Moves to Secure Key Flashpoint at LAC**

Racing to reshape the strategic landscape of Ladakh, where China's predatory conduct and military ambitions have led to a lingering border spat, India is on the verge of completing an ambitious

project to provide much-needed alternative connectivity to a remote, strategically important outpost near the contested Line of Actual Control (LAC), top officials aware of the matter said on Thursday.

The new road to Daulat Beg Oldi (DBO), India's northernmost military base, will permit movement of soldiers, weapons and logistics to reinforce the front lines. The new road cannot be sighted from across the LAC, an advantage denied by the only existing road to DBO from Darbuk, said one of the officials requesting anonymity. And the fact that it is farther away from the LAC also means that it is less vulnerable to attacks from across the line.

It will be ready to support critical military movement by November-end and is expected to be fully blacktopped in a year, he added. Around 2,000 people are working on meeting the deadline.

The construction of the 130km road from Sasoma in the Nubra Valley to DBO near the Karakoram Pass has entered its final and most challenging phase that will require the Border Roads Organisation (BRO) to finish a stretch in steep glaciated terrain and build a bridge on the Shyok River, Hindustan Times has learnt.

Work on the Sasoma-Saser La-Saser Brangsa-Gapshan-DBO road gathered momentum three years ago in the backdrop of escalating military tensions between India and China: the two countries have been locked in a standoff since May 2020 and a full resolution of the border crisis through ongoing negotiations still appears elusive.

Depsang, which falls in the DBO sector, is one of the problems areas.

"Latest technologies are being employed to clear construction hurdles in the final lap," said a second official, who also asked not to be named. The road falls under Hardness Index-III, which is BRO's top-most classification for tough projects.

The existing 255km Darbuk-Shyok-Daulat Beg Oldi (DS-DBO) road runs close to the LAC. Sasoma and Darbuk can be reached from Leh via two different road axes.

Several key sections of the Sasoma-Saser La-Saser Brangsa-Gapshan-DBO road have been completed, the officials said, sharing granular details with HT.

Of the 52km stretch between Sasoma and the 17,600-foot Saser La, 46 kilometres have been blacktopped and only 6 kilometres remain, but this glaciated patch is the most difficult to build and BRO is using geocells (three-dimensional, expandable panels made of polymer) to stabilise the road and increase its bearing capacity. This stretch will be fully ready by November.

The connectivity between Saser La and Saser Brangsa has been achieved, and blacktopping of the 27-km stretch will be complete by October 2024. Work on the 42-km Saser Brangsa-Gapshan stretch is in full swing -- a road length of 31km has been built while 11 kilometres remain, and the full stretch will be blacktopped within a year. The 10km stretch between Gapshan and DBO will also be ready next year.

The new road will create another axis as it will branch out from Saser Brangsa to Murgu on the DS-DBO road, and this 18km stretch will be fully usable by the middle of next year. This section is a challenging one as it entails building a 345m bridge on Shyok with seven piers, and micropiles are being used to support it.

'Sub Sector North' is a strategically important area consisting of Karakoram Pass, Depsang plains and the DBO landing ground, said former Northern Army commander Lieutenant General DS Hooda (retd).

"The DS-DBO road leading to this area runs close and parallel to the LAC for much of its length north of Galwan. It could be interdicted during operations, cutting off support to troops in this sector. An alternative route via Nubra Valley and over Saser La provides a safer road that cannot be

easily interfered with. Constructing a road over the glaciated region of Saser La was a huge challenge and BRO should be complimented for overcoming this,” Hooda added.

BRO has planned a 7km tunnel under Saser La to ensure all-weather connectivity. Work on it is likely to start in 2025 and the tunnel could be completed by 2028.

China has an edge over India in border infrastructure but the country is catching up fast with the neighbour on the back of speedy execution of strategic projects to support military operations, increased spending, and focussed adoption of technology and techniques to fill gaps that came into focus after the border standoff began.

The skirmish between the two armies in Galwan Valley in June 2020 was the inflection point that sharpened the country’s focus on building military capabilities and spurred unprecedented infrastructure construction to counter the adversary’s moves.

India’s infrastructure push is a firm response to China’s thrust on developing its border areas, and it has helped the military’s pursuit of robust deterrence against the neighbour. The military’s readiness, among other things, depends on infrastructure in forward areas --- a landscape dotted with towering mountains, valleys and rivers. India is working to ensure that its deployed forces hold an advantageous position.

BRO has completed nearly 300 crucial projects during the last three years at a cost of ₹8,000 crore.

It is pushing ahead with key projects in the Ladakh sector even as India and China are in talks to resolve problems along the LAC. These projects include the Nimu-Padam-Darcha road, the Chushul-Dungti-Fukche-Demchok road and the Likaru-Mig La-Fukche road.

At the 19th round of talks between corps commanders of the two armies on August 13 and 14, the two sides agreed to resolve the remaining issues along the LAC in a speedy manner through continued dialogue.

Indian and Chinese soldiers have thus far disengaged from Galwan Valley, Pangong Tso, Gogra (PP-17A) and Hot Springs (PP-15). However, both armies still have tens of thousands of troops each and advanced weaponry deployed in the Ladakh theatre, and problems at Depsang and Demchok are still on the negotiating table.

<https://www.hindustantimes.com/india-news/india-moves-to-secure-key-flashpoint-at-lac-101695954038706.html>



Wed, 27 Sep 2023

## **Brazil Keen on Buying Indian Artillery, Drones, Air Defence Systems**

Brazil is interested in India-made weapons, particularly artillery, and is sending a team of experts to look at the systems on offer, Brazilian Army Chief, General Fernando Jose’ Sant’ana Soares e Silva, said.

Speaking to Times Now, General Soares said that preliminary discussions on both India-made 155mm howitzers have been held, and initially, about 40 may be purchased. Also on the cards is a swap: Brazil giving India its high-performance Embreair aircraft for the Indian surface-to-air Aakash missiles.

The General said he has seen both artillery systems — the Dhanush, which is an advanced version of the Bofors gun and the DRDO-designed and Baba Kalyani-made ATAGS weapon — and is impressed by the quality and also, the cost. "They are good and they are cheaper," he said. After the initial inspection by a team of Brazilian army officers, price negotiations can begin, he said.

The other deal in question is unique: a possible swap. "We are interested in the anti-aircraft Aakash and we would like to offer our Embreair aircraft," he added. India already has Embreair aircraft, usually for VIP movement and they have done well.

General Soares, who has had discussions with General Manoj Pande, the Indian Army chief and Lieutenant General MV Suchindra Kumar, the vice chief, also attended a presentation by former deputy chief Lieutenant General Subrata Saha (Retd.) on the howitzers. Brazil is also looking at other India-made weapons like drones and anti-drone systems. If the deals go ahead, it will be a major breakthrough for the atmanirbharata or self-reliance scheme and also, boost exports.

Besides, the Indian and Brazilian armies will work more closely together in the future. Currently, the Brazilians have one defence attache in their embassy in New Delhi and India has a similar arrangement in Brasilia. It's usually an officer from one of the services. Now, there will be a second officer in the Brazilian embassy in Delhi and the Indian embassy in Brasilia. He/she will be an army officer. Besides, there could be more Brazilian representation in courses in India and vice versa, joint exercises and closer cooperation in other areas.

The Ukraine war also came up during the discussions General Soares had. While the mine laying in depth and the trenches are reminiscent of the First World War, the use of drones and battlefield transparency is unique, he said. Information warfare issues are also important, he added.

Brazil and India, already close friends, have got closer in recent years. Both are members of BRICS, and there have been meetings between Prime Minister Narendra Modi and Brazilian President Luiz Lula da Silva recently in both South Africa during the BRICS meeting and during the G20 in Delhi.

<https://www.timesnownews.com/india/exclusive-brazil-keen-on-buying-indian-artillery-drones-air-defence-systems-article-103982086>



*Thu, 28 Sep 2023*

## **India, US Hold 2+2 Dialogue to Strengthen Logistics Cooperation**

Given the robust ties between the two countries with focus on defence and security, officials of India and US held discussions on opportunities to further strengthen interoperability and logistics cooperation during the India-US 2+2 Intersessional Dialogue.

Underscoring the transformative momentum in the India-US relationship, the officials late Tuesday in Washington also discussed combined maritime engagements in the Indian Ocean Region, as well as expanded cooperation in the space and cyber domains, the Pentagon said.

The Indian delegation was led by Additional Secretary Vani Rao of the Ministry of External Affairs and Joint Secretary Vishwesh Negi of the Ministry of Defence, it said. The American side was led by Assistant Secretary of Defense for Indo-Pacific Security Affairs Ely Ratner and Assistant Secretary of State for South and Central Asian Affairs Donald Lu. "The officials also discussed



regional security developments and strategic priorities across the Indo-Pacific region,” a statement said.

The 2+2 Intersessional Dialogue advanced a wide range of ambitious initiatives across the breadth of the US-India partnership, including defence and security, emerging technologies, people-to-people ties, clean energy, and supply chain resilience, the Pentagon said.

<https://www.dailypioneer.com/2023/india/india--us-hold-2-2-dialogue-to-strengthen-logistics-cooperation.html>



*Thu, 28 Sep 2023*

## **Troops from India, Other Nations Perform Yoga at ASEAN Defence Ministers Plus EWG Exercise in Russia**

Troops from India and all other participating nations engaged in a Yoga session at ASEAN Defence Ministers plus EWG Exercise at Vladivostok, Russia, said the Indian Army on Thursday. Several other countries including China are taking part in this exercise.

On September 23, an Indian Army contingent, comprising 32 soldiers representing the 14 Rajputana Rifles, departed for Russia to participate in the ASEAN Defence Ministers Meeting Plus Expert Working Group on Counter Terrorism, the Ministry of Defence said in a statement.

The Counter Terrorism Field Training Exercise (FTX) 2023 have been scheduled between September 25-30. “Indian Army Contingent consisting of 32 personnel from a Battalion affiliated to the RAJPUTANA RIFLES departed for ASEAN Defence Ministers Meeting (ADMM) Plus Expert Working Group (EWG) on Counter Terrorism Field Training Exercise (FTX) 2023 scheduled to be conducted from 25th to 30th September 2023 in Russia,” the Ministry of Defence stated in a press release.

A multinational joint military exercise being hosted by Russia as a co-chair of the EWG along with Myanmar, the meeting was preceded by the Table Top Exercise of the ADMM Plus EWG on Counter-Terrorism at Nay Pyi Taw, Myanmar from August 2-4.

Since 2017, the ADMM Plus meets annually to allow dialogue and cooperation among the Association of Southeast Asian Nations (ASEAN) and Plus countries. The inaugural ADMM Plus was convened in Ha Noi, Vietnam on October 12, 2010.

This year ASEAN member states, along with the Plus Group, will be participating in the exercise, the Ministry stated.

The exercise will comprise a number of counter-terrorism drills, including the destruction of terrorist groups in a fortified area. The main objective of the exercise is strengthening and promoting regional cooperation in the field of counter-terrorism.

ADMM Plus EWG on Counter-terrorism 2023 will provide the Indian Army with a platform to share their expertise and best practices in counter-terrorism operations besides increasing cooperation between the other 12 participating countries.

The Indian Army is looking forward to an enriching professional experience from the exercise, the Ministry added in the release.

<https://www.aninews.in/news/world/asia/troops-from-india-other-nations-perform-yoga-at-asean-defence-ministers-plus-ewg-exercise-in-russia20230928220015/>

# THE TIMES OF INDIA

Thu, 28 Sep 2023

## Russia to Hike Defence Spending by almost 70% in 2024: Ministry

Russia is set to hike defence spending by almost 70 percent in 2024, a finance ministry document published Thursday showed, as Moscow pours resources into its full-scale offensive in Ukraine.

The document said defence spending was set to jump by over 68 percent year-on-year to almost 10.8 trillion rubles (\$111.15 billion), totalling around 6 percent of GDP -- more than spending allocated for social policy.

<https://timesofindia.indiatimes.com/world/europe/russia-to-hike-defence-spending-by-almost-70-percent-in-2024-ministry/articleshow/104016134.cms>

# THE TIMES OF INDIA

Fri, 29 Sep 2023

## Ukrainian, French Defence Ministers Pledge to Work Together on Arms

France and Ukraine pledged on Thursday to work together to continue securing arms for Kyiv's three-month-old counteroffensive against Russian occupying forces and to jointly develop weapons production.

Ukrainian Defence Minister Rustem Umerov said he and his French counterpart had focused on boosting cooperation in terms of training Kyiv's armed forces and in the technical field.

"Dozens of projects have either been launched or are under discussion, aimed at organising joint production of new weapons or maintenance of weapons already with us," Umerov told a news conference alongside French minister Sebastien Lecornu.

The two sides, he said, were considering the establishment of a fund "to support joint ventures with our partners and companies which want to begin production in Ukraine".

Lecornu said France would "continue to help Ukraine as much as is necessary," but gave no details on arms that might yet be provided.

"This war could keep going on," he told reporters. "Let me restate our confidence in the Ukrainian arms for making this counteroffensive a success."

Ukraine's counteroffensive has focused on retaking areas of eastern Ukraine seized by Russian troops earlier this year and in advancing south to sever a land bridge established by Russia between annexed Crimea and positions held in the east.

France and Ukraine, Lecornu said, would consider "what we can do together in terms of (arms) acquisition or production". And Paris would maintain its current levels of training Ukrainian soldiers -- more than 7,000 this year.

Lecornu earlier discussed possibilities for joint weapons production with Ukrainian President Volodymyr Zelenskiy.

"I discussed with your ministers very specifically how French industry can help you. We, of course, will continue this work," Lecornu said in a video published by Zelenskiy on the Telegram messenger app. Lecornu and Zelenskiy discussed bolstering Ukraine's air defences ahead of winter, the president's office said in a statement. Kyiv fears Russia will conduct a campaign of air strikes on critical energy infrastructure this winter.

Zelenskiy said he was grateful to French President Emmanuel Macron for military assistance, pointing in particular to the supply of anti-aircraft missile systems, Caesar self-propelled artillery units and Scalp cruise missiles.

<https://timesofindia.indiatimes.com/world/europe/ukrainian-french-defence-ministers-pledge-to-work-together-on-arms/articleshow/104026493.cms>

## THE TIMES OF INDIA

*Thu, 28 Sep 2023*

### **Taiwan Reveals First Homegrown Submarine in Defence Milestone**

Taiwan unveiled its first domestically developed submarine on Thursday, a major step in a years-long project aimed at strengthening the island's defence and deterrence against the Chinese navy.

Taiwan, which China claims as its own territory, has made the indigenous submarine program a key part of an ambitious project to modernise its armed forces as Beijing stages almost daily military exercises to assert its sovereignty.

President Tsai Ing-wen, who initiated the plan when she took office in 2016, showed off the first of eight new submarines on Thursday in the southern city of Kaohsiung. "In the past, a domestically developed submarine was considered an impossible task. But, today, a submarine designed and manufactured by our country's people sits before our eyes," Tsai said, adding that it would play an important role in strengthening the navy's "asymmetric warfare" capabilities.

"Even if there are risks, and no matter how many challenges there are, Taiwan must take this step and allow the self-reliant national defence policy to grow and flourish on our land," Tsai said, standing in front of the ship, named the Narwhal. Taiwan's red flag, featuring a white sun against a blue sky, was wrapped around the submarine's bow.

The programme has drawn on expertise and technology from several countries - a breakthrough for diplomatically isolated Taiwan.

Taiwan hopes to deploy at least two such domestically developed submarines by 2027, and possibly equip later models with missiles, the head of the program said this month.

The first submarine, with a price tag of T\$49.36 billion (\$1.53 billion), will use a combat system by Lockheed Martin Corp and carry U.S.-made Mark 48 heavyweight torpedoes. It will enter sea trials next month before delivery to the navy by the end of 2024.

Admiral Huang Shu-kuang, Tsai's security adviser leading the program, has described the submarines as a "strategic deterrent" that can also help maintain the island's "lifeline" to the Pacific by keeping ports along Taiwan's eastern coast open.

<https://timesofindia.indiatimes.com/world/rest-of-world/taiwan-reveals-first-homegrown-submarine-in-defence-milestone/articleshow/104005197.cms>

*Thu, 28 Sep 2023*

## **Iran Successfully Launches New Military Satellite into Orbit, Says State Media**

Iran's Revolutionary Guards carried out a successful launch of a third military satellite on Wednesday (September 27), country's state media reported citing Minister of Communications Issa Zarepour.

The state media report said that Noor 3 imaging satellite was orbiting at an altitude of 450 kilometres (280 miles) above Earth's surface. It was launched using three-stage Qased or messenger carrier. The satellite's predecessor Noor 2 was launched in 2022 in the same manner.

The US military has said that the long-range ballistic technology used by Iran to launch satellites may also enable it to launch long-range weapons, possibly even nuclear warheads.

Iran denies the US assertion that activities like satellite launch is a cover for development of ballistic missiles and maintains that it has never pursued development of nuclear weapons.

Iran has one of the biggest missile programmes in West Asia. The country has suffered several failed attempts to launch satellites due to technical issues.

US slapped fresh Iran-related sanctions on September 19. The sanctions targeted multiple people and also entities in Iran, Russia, China and Turkey over connections with Iran's drone and military aircraft development.

It had previously imposed sanctions on Iran's civilian space agency and two research organisations in 2019, saying they were being used to advance Tehran's ballistic missile program.

<https://www.wionews.com/world/iran-launched-new-military-satellite-into-orbit-says-state-media-640355>

## **THEWEEK**

*Wed, 27 Sep 2023*

## **Philippines Says it will Remove any Barrier China Installs in Disputed South China**

Filipino forces would dismantle any floating barrier that China's coast guard may install in the disputed South China Sea, a Philippine admiral said Wednesday after Manila infuriated China by removing one such obstruction in a contested shoal.

Philippine officials strongly condemned the installation last week of a 300-metre (980-foot) -long barrier by Chinese coast guard vessels at the entrance to the lagoon of Scarborough Shoal as a violation of international law and the country's sovereignty.

The barrier has prevented a swarm of Filipino boats from entering the rich fishing area, they said. The shoal lies within the Philippines' exclusive economic zone just west of the main Luzon Island, but has been occupied by China since 2012 as part of a push by Beijing to lay claim to virtually the entire South China Sea.

On Monday, the Philippine coast guard said it has complied with an order by President Ferdinand Marcos Jr to launch a covert operation to remove the rope and net barrier held up by small buoys in the mouth of the shoal. China reacted on Tuesday by asking the Philippines “not to make provocations or seek trouble”.

“Huayang Island is China's inherent territory,” Chinese Foreign Ministry spokesperson Wang Wenbin said in a news briefing in Beijing on Wednesday, referring to the Chinese name for Scarborough.

“What the Philippines (has) done is nothing but a farce that entertains itself. China will continue to safeguard territorial sovereignty and maritime rights and interests of Huangyan Island.”

Philippine Vice Adm Alberto Carlos, who heads the military's Western Command in charge of overseeing the South China Sea, told journalists he was concerned that the Chinese coast guard may also install a similar floating barrier at the entrance to Second Thomas Shoal, which is occupied by a small Philippine navy contingent on a long-grounded warship but has been surrounded by Chinese coast guard ships.

“My concern is, if they also put a barrier in Ayungin...we also have to remove the barrier,” Carlos told journalists, using the Philippine name for Second Thomas Shoal. “Whatever they install, we will remove.”

Under Marcos, who took office last year, the Philippines has intensified efforts to fight China's increasingly aggressive actions in one of the world's most hotly contested waters. The Philippine coast guard now often invites journalists to join its territorial patrols in an effort, it says, to expose China's bullying in the busy waterway.

Aside from China and the Philippines, Vietnam, Malaysia, Brunei and Taiwan are also involved in the long-simmering territorial conflicts in the South China Sea. They which have long been regarded as a potential Asian flashpoint and a delicate fault line in the US-China rivalry in the region.

Washington lays no claim to the sea passageway, a major global trade route, but US Navy ships and fighter jets have carried out patrols for decades to challenge China's expansive claims and promote freedom of navigation and overflight. China has told the US to stop meddling in what it says is a purely Asian dispute.

Carlos said the Philippine military would comply with Marcos's order to ensure that the marooned and crumbling navy ship, which Filipino forces use as a territorial outpost at Second Thomas Shoal “should remain there, strong enough to be able to fly the Philippine flag”.

China has asked the Philippines to tow away the ship from the shoal. But Marcos and the Philippine military have insisted the offshore region lies in their country's exclusive economic zone.

Chinese coast guard ships have repeatedly tried to block Philippine resupply vessels, resulting in near-collisions.

Washington has said it's obligated to defend the Philippines, its oldest treaty ally in Asia, if Filipino forces, ships and aircraft come under attack, including in the South China Sea.

<https://www.theweek.in/wire-updates/international/2023/09/27/fgn45-philippines-china-scs.html>

## North Korean Leader Urges Greater Nuclear Weapons Production in Response to a 'New Cold War'

North Korean leader Kim Jong Un called for an exponential increase in production of nuclear weapons and for his country to play a larger role in a coalition of nations confronting the United States in a “new Cold War,” state media said on September 28.

The Korean Central News Agency (KCNA) said Kim made the comments during a two-day session of the country's Parliament which amended the constitution to include his policy of expanding the country's nuclear weapons programme.

The Supreme People's Assembly's session on Tuesday and Wednesday came after Kim travelled to Russia's Far East this month to meet with Russian President Vladimir Putin and visit military and technology sites.

The trip sparked Western concerns about a possible arms alliance in which North Korea would supply Mr. Putin with badly needed munitions to fuel his war on Ukraine in exchange for economic aid and advanced Russian technologies to enhance North Korea's nuclear and missile systems.

As North Korea slowly ends its pandemic lockdown, Kim has been actively boosting his partnerships with Moscow and Beijing as he attempts to break out of diplomatic isolation and join a united front against Washington. He has described the world as entering a “new Cold War” and that North Korea should advance its nuclear capabilities in response.

KCNA's reports on Kim's comments came a day after North Korea confirmed the release of U.S. Army Private Travis King, who is now being flown back to America, two months after he sprinted across the heavily fortified border into the North.

King's relatively swift expulsion defied speculation that North Korea might drag out his detention to squeeze concessions from the United States, and possibly reflected the North's disinterest in diplomacy with Washington.

KCNA said members of the assembly gave unanimous approval to a new clause in the constitution to “ensure the country's right to existence and development, deter war and protect regional and global peace by rapidly developing nuclear weapons to a higher level.”

North Korea's "nuclear force-building policy has been made permanent as the basic law of the state, which no one is allowed to flout with anything,” Kim said in a speech at the assembly. He stressed the need to “push ahead with the work for exponentially boosting the production of nuclear weapons and diversifying the nuclear strike means,” KCNA said.

Kim pointed to what he described as a growing threat posed by a hostile United States and its expanding military cooperation with South Korea and Japan, accusing them of creating the “Asian version of NATO, the root cause of war and aggression.” “This is just the worst actual threat, not threatening rhetoric or an imaginary entity,” he said.

Kim urged his diplomats to “further promote solidarity with the nations standing against the U.S. and the West's strategy for hegemony.”

South Korea's Unification Ministry, which handles relations with North Korea, said the North Korean constitutional amendment confirms Kim's unwillingness to relinquish his nuclear weapons programme and his unwavering commitment to advancing that arsenal. It said in a statement that



South Korea will continue to expand its military cooperation with the U.S. and Japan and work closer with other international partners to increase pressure on North Korea to abandon its nuclear ambitions.

Tensions on the Korean Peninsula are at their highest level in years as North Korea has test-fired more than 100 missiles since the start of 2022 and the U.S. has expanded its military exercises with its Asian allies, in tit-for-tat responses.

Last year, the assembly passed a new nuclear doctrine into law which authorises pre-emptive nuclear strikes if North Korea's leadership is perceived as under threat.

<https://www.thehindu.com/news/international/north-korean-leader-urges-greater-nuclear-weapons-production-in-response-to-a-new-cold-war/article67356257.ece>

## Science & Technology News



**Press Information Bureau**  
**Government of India**

**Ministry of Science & Technology**

*Wed, 27 Sep 2023*

### **PM Visits Science City in Ahmedabad, Gujarat**

The Prime Minister, Shri Narendra Modi visited the Science City in Ahmedabad, Gujarat today. He toured the Robotics Gallery, Nature Park, Aquatic Gallery, and Shark Tunnel and also took a walkthrough of the exhibition showcased on the occasion.

The Prime Minister posted a thread on X:

“Spent a part of the morning exploring the fascinating attractions at Gujarat Science City. Began with the Robotics Gallery, where the immense potential of robotics is brilliantly showcased. Delighted to witness how these technologies igniting curiosity among the youth.”

“The Robotics Gallery Showcases DRDO Robots, Microbots, an Agriculture Robot, Medical Robots, Space Robot and more. Through these engaging exhibits, the transformative power of robotics in healthcare, manufacturing and everyday life is clearly visible.”

“Also enjoyed a cup of tea served by Robots at the cafe in the Robotics Gallery.”

Spent a part of the morning exploring the fascinating attractions at Gujarat Science City.

Began with the Robotics Gallery, where the immense potential of robotics is brilliantly showcased.

Delighted to witness how these technologies igniting curiosity among the youth.  
[pic.twitter.com/ZA9XY1qWMN](https://pic.twitter.com/ZA9XY1qWMN)

— Narendra Modi (@narendramodi) September 27, 2023

“The Nature Park is a serene and breathtaking space within the bustling Gujarat Science City. It is a must visit for nature enthusiasts and botanists alike. The park not only promotes biodiversity but also serves as an educational platform for people.”

“The meticulous walking trails offer diverse experiences on the way. It imparts valuable lessons on environmental conservation and sustainability. Do also visit other attractions like the Cactus Garden, Block Plantation, Oxygen Park and more.”

The Nature Park is a serene and breathtaking space within the bustling Gujarat Science City. It is a must visit for nature enthusiasts and botanists alike. The park not only promotes biodiversity but also serves as an educational platform for people. [pic.twitter.com/UBy0yuOEUI](https://pic.twitter.com/UBy0yuOEUI)

— Narendra Modi (@narendramodi) September 27, 2023

“Aquatic Gallery at Science City is a celebration of aquatic biodiversity and marine marvels. It highlights the delicate yet dynamic balance of our aquatic ecosystems. It is not only an educative experience, but also a call for conservation and deep respect for the world beneath the waves.”

“The Shark Tunnel is an exhilarating experience showcasing a diverse array of shark species. As you walk through the tunnel, you will greatly marvel at the diversity of marine life. It is truly captivating.”

“This is beautiful”

Aquatic Gallery at Science City is a celebration of aquatic biodiversity and marine marvels.

It highlights the delicate yet dynamic balance of our aquatic ecosystems.

It is not only an educative experience, but also a call for conservation and deep respect for the world... [pic.twitter.com/A84AKK1ZHQ](https://pic.twitter.com/A84AKK1ZHQ)

— Narendra Modi (@narendramodi) September 27, 2023

The Prime Minister was accompanied by the Governor of Gujarat, Shri Acharya Devvrat and the Chief Minister of Gujarat, Shri Bhupendra Patel.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1961199>



*Thu, 28 Sep 2023*

## **Pragyan Rover has Done what it was Expected to do: ISRO Chief**

Chairman of the Indian Space Research Organisation (ISRO) S. Somanath on Thursday said the Pragyan rover of its moon mission Chandrayaan-3 has done what it was expected to do, and it would not be a problem even if it fails to 'wake up' from the current sleep mode.

The national space agency is now gearing up for XPoSats or X-ray Polarimeter Satellite launch which may take place in November or December, he said at a press conference here after visiting the famous Somnath temple in Gir Somnath district of Gujarat.

On the status of Pragyan, currently in sleep mode on the moon, the ISRO chief said it will wake up if its electronic circuits have not been damaged due to the extreme weather on the moon as the temperature dipped nearly 200 degrees Celsius below zero.

"It is OK if it does not wake up because the rover has done what it was expected to do," he added.

ISRO had said last week that with dawn breaking on moon, it made efforts to establish communication with lunar mission Chandrayaan-3's lander Vikram and rover Pragyan to ascertain

their 'wake-up condition' after they had been put into sleep mode early this month, but no signals were being received.

Both the lander and rover were put into sleep mode on September 4 and 2, ahead of the lunar night setting in.

Talking about upcoming missions, Mr. Somanath said ISRO is now gearing up for XPoSat or X-ray Polarimeter Satellite.

"This XpoSat is ready and it will be launched through our PSLV rocket. Though we have not announced any dates yet, it may be launched in November or December. It is a mission to study black holes, nebulae and pulsars," he said.

Another mission in the pipeline is INSAT-3DS, a climate satellite which will be launched in December, said Mr. Somanath.

"Then we will launch SSLV D3. As you know it is our Small Satellite Launch Vehicle. This is the third launch. It will be done in November or December. Then it will be the turn of the NASA-ISRO Synthetic Aperture Radar or NISAR. It will be launched in February next year," he added.

The Gaganyaan mission's test vehicle 'D1' will be launched in October, he said.

<https://www.thehindu.com/sci-tech/science/pragyan-rover-has-done-what-it-was-expected-to-do-isro-chief/article67357079.ece>



*Fri, 29 Sep 2023*

## **CSIR Lab Producing Affordable Green Innovative Technology**

From converting pathogenic biomedical waste into eco-friendly soil additives to manufacturing vegan leather from agricultural waste like mango peel and banana stem, the CSIR's lab National Institute for Interdisciplinary Science and Technology (NIIST), is busy churning out affordable green innovative technology.

These among others were displayed at the foundation day of the CSIR at Pragati Maidan here recently.

NIIST Director Dr C Anandharamakrishnan said that vegan leather has the potential to replace around 30-50 per cent of synthetic chemicals from the existing leather available in the market.

"Also, the developed leather sheet costs 50 per cent less than synthetic and animal leather and has a smaller carbon footprint as various agricultural residues such as mango peel, banana stem, pineapple waste, cactus, water hyacinth, corn husk, and rice-related waste are being used.

"Vegan leather has a shelf life of more than three years. It has also shown strong tensile strength, sleek finish, good water retention properties, temperature resistance, and stability compared to other existing synthetic and animal leather," he emphasised.

Though still held out by the fashion industry as a luxury material, leather is a co-product of the meat industry, and it comes with many environmental downsides.

A leather jacket has a climate cost of 176 kilograms of CO<sub>2</sub>, for instance, and manufacturers also dump toxic chemical compounds like lead, arsenic, cadmium and chromium into the water as the

leather is processed, on top of the millions of goats and other animals slaughtered each year in India for leather.

About the dual disinfection-solidification system for spontaneous and instantaneous disinfection of both liquid and solid biomedical waste, including urine, saliva and blood, bacterial broths, cotton, tissues, swabs, needles, and syringes, the NIIST Director said the innovative system converts degradable waste into soil additives while lab disposables are prepared for direct recycling.

Segregation, transportation and disposal of such disinfected medical waste are easier and safer with significant reduction in cost for a healthcare facility and less expensive than red-bagging, a method currently in practice for containing medical waste, explained Anandharamakrishnan.

<https://www.dailypioneer.com/2023/india/csir-lab-producing-affordable--green-innovative-technology.html>

## THE TIMES OF INDIA

*Thu, 28 Sep 2023*

### **International Scientists Make Refined Map of World's '8th Continent' Zealandia Submerged in Pacific Ocean**

An international team of geologists and seismologists has created a newly refined map of Zealandia—considered to be the ‘eighth continent of the world’ that is beneath the Pacific Ocean—using data obtained from dredged rock samples recovered from the ocean floor.

Their study on Zealandia, which is a vast continent of 1.89 million sq miles (4.9 million sq km) that is around six times the size of Madagascar, has recently been published in the journal *Tectonics*.

Prior research suggested that approximately 83 million years ago, the supercontinent Gondwana was pulled apart by geological forces, resulting in the beginnings of the continents—Asia, Africa, Europe, North and South America, Australia/Oceania and Antarctica—that exist today. It also resulted in the creation of Zealandia, which is believed to be 94% under the sea—the remaining 6% make up New Zealand and surrounding islands.

In this new effort, the research team sought to refine existing maps of Zealandia by studying collections of rocks and sediment samples brought up from the ocean bed. The team then studied the samples as part of a secondary study that involved analysing seismic data for the region. They then created a more refined map of the whole Zealandia continent.

Study of the rock samples showed geologic patterns in West Antarctica that hinted at the possibility of a subduction zone near the Campbell Plateau off the west coast of New Zealand. The newly refined map shows not only the location of the magmatic arc axis of the Zealandia continent but other major geological features as well.

A 2021 study done earlier suggested that Zealandia is 1 billion years old, about twice as old as geologists previously thought. By approximately 23 million years ago, the landmass may have been completely submerged.

With a total area of approximately 4,900,000 km<sup>2</sup> (1,900,000 sq miles), Zealandia is substantially larger than any features termed microcontinents and continental fragments. If classified as a microcontinent, Zealandia would be the world's largest microcontinent. Its area is six times the area of Madagascar, the next-largest microcontinent in the world, and more than half the area of the Australian continent.

Zealandia is also substantially larger than the Arabian Peninsula (3,237,500 km<sup>2</sup> or 1,250,000 sq mi), the world's largest peninsula, and the Indian subcontinent (4,300,000 km<sup>2</sup> or 1,700,000 sq mi). Due to these geological considerations, such as crustal thickness and density, some geologists from New Zealand and Australia have concluded that Zealandia fulfils all the requirements to be considered a continent rather than a microcontinent.

<https://timesofindia.indiatimes.com/home/science/international-scientists-make-refined-map-of-worlds-8th-continent-zealandia-submerged-in-pacific-ocean/articleshow/103999019.cms>

