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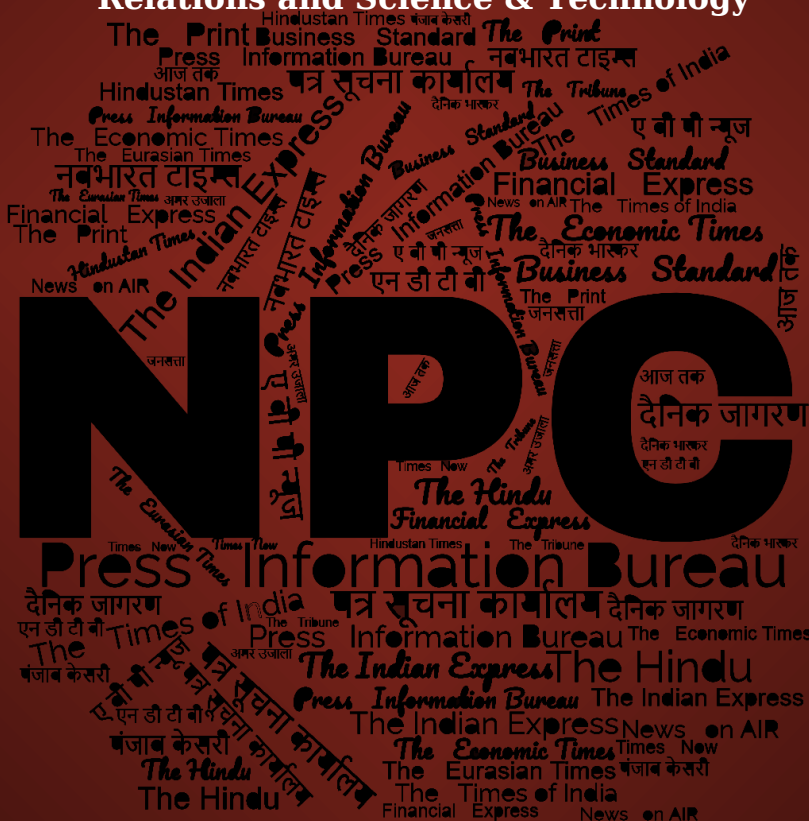
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# समाचार पत्रों से चयित अंश Newspapers Clippings

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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*Wed, 16 Aug 2023*

### **Russia: Armenian Deputy Defence Minister Visits DRDO Stall at Army 2023 Exhibition**

Armenian Deputy Defence Minister Karen Brutyan on Tuesday, visited Defence Research and Development Organisation (DRDO) stall at Army 2023 military exhibition in Russia and held a discussion on the defence system being showcased there, DRDO said in a statement.

Earlier on Monday, Russian Deputy Prime Minister Denis Manturov and Russian Defence Minister Sergei Shoigu also interacted with BrahMos Aerospace officials about the developments in BrahMos missile during the Army 2023 defence exhibition. India's Ambassador to Russia Pavan Kapoor inaugurated the India Pavilion at the International Military Technical Forum on Monday.

The Army 2023 international military-technical forum is being held at the Patriot Congress and Exhibition Center, the Alabino training ground and the Kubinka airfield outside Moscow from August 14-20, TASS reported.

Russian Defense Minister Sergei Shoigu inspected various products made by the domestic defence industry which are exhibited at the Army-2023 International Military-Technical Forum which started in Kubinka outside Moscow on Monday. Shoigu examined the Drok 82 mm self-propelled mortar, Kornet-D1 self-propelled anti-tank missile system, the Lotos 120 mm self-propelled artillery system, the Zavet-D automated control system managing airborne mortar teams and the Aistyonok portable radar reconnaissance station, TASS reported

The exhibition stands also included the Oryol round-the-clock, optical-electronic, multifunctional device, Orlan-30 and Orlan-10 unmanned aerial vehicles (UAVs), the Kub system equipped with guided munitions, the Lancet system equipped with small and medium-sized loitering munitions, the Supercam-S350 drone, the Malva 152 mm self-propelled artillery system, and the Tornado-G 122 mm multiple launch missile system.

The BrahMos missile is a type of supersonic cruise missile that can be launched from various platforms like submarines, ships, aeroplanes, or land. It is currently the fastest supersonic missile in the world and was developed by a partnership between India's Defence Research and Development Organisation (DRDO) and Russia's NPO Mashinostroyeniya, forming BrahMos Aerospace. The missile is named after two rivers, the Brahmaputra in India and the Moskva in Russia. Recently, the Indian Navy successfully test-fired the ship-launched version of the BrahMos missile. The missile test was conducted using an indigenous seeker and booster in the Arabian Sea. Notably, its anti-ship version was jointly test-fired by the Andaman and Nicobar Command and the Navy in April 2022.

<https://www.aninews.in/news/world/europe/russia-armenian-deputy-defence-minister-visits-drdo-stall-at-army-2023-exhibition20230816045246/>



Press Information Bureau  
Government of India

Ministry of Defence

Mon, 14 Aug 2023

## **Government Making All Efforts to Equip the Armed Forces with Latest Weapons & Training to Meet Future Challenges: Raksha Mantri Shri Rajnath Singh in his Radio Message to Soldiers on the Eve of 77th Independence Day**

**"Taking care of soldiers is the Government's big responsibility"**

**"If anyone tries to cast an evil eye on India, our Armed Forces will give a befitting reply"**

The Government is making all efforts to modernise the Armed Forces with state-of-the-art weaponry and the best training, to protect the country from all future challenges. This was stated by Raksha Mantri Shri Rajnath Singh during his message to soldiers through Akashvani on August 14, 2023, the eve of 77th Independence Day.

"The Armed Forces can give their best only when they are provided with the best equipment and training. These steps boost the morale of the soldiers, help them overcome challenges & emerge victorious. Our government, under the leadership of Prime Minister Shri Narendra Modi, is leaving no stone unturned to provide the military with world-class equipment & training, so that the country can overcome all future challenges. New branches and trades are being created according to the new emerging needs," the Raksha Mantri said.

Shri Rajnath Singh added that today the Armed Forces are being trained with simulators & other modern techniques and their capabilities are being enhanced through several exercises with friendly countries across the globe, Training on niche systems, newly developing technologies and changing concepts of warfare is the need of the hour. For this, necessary steps are being taken to train a large number of personnel within the country as well as abroad, wherever the best training is available," he said.

Highlighting various welfare measures taken for the veterans in recent years, the Raksha Mantri said, special attention is being paid to ensure a dignified life for the soldiers not only during service but even after retirement. "Taking care of those who care for us by risking their lives is our responsibility. The government has taken several measures in the last nine years to empower the soldiers after their retirement," he said.

Shri Rajnath Singh pointed out that the long-pending demand of the Armed Forces for the One Rank One Pension scheme was fulfilled by the Government as soon as it came to power in 2014.

“The scheme has been revised this year and an amount of Rs 8,413 crore has been paid to more than 17 lakh pensioners,” he said.

On the growing role of women in the Armed Forces, the Raksha Mantri said, several concrete steps have been taken to make the military an equitable and a better working place for women. “The Indian Army has inducted women officers into the Artillery Regiment for the first time this year. The commissioning of women officers in the Artillery Regiment is a great testimony to the steps being taken by our government towards gender equality in the Army. Our government has taken a historic step to get the talented daughters of the country admitted to Sainik Schools. Today, more than 1,600 girls are obtaining education in various Sainik Schools nationwide. This would further increase the participation of brave daughters in the defence of the nation & they would achieve greater heights in the times to come,” he added.

Highlighting the role of soldiers in maintaining the sovereignty and independence of India, Shri Rajnath Singh said, the nation stands with its gallant soldiers who protect the borders by putting their lives at stake, without bothering for their comforts and facilities. He stated that India has always been a peace-loving nation, but that does not mean that it would spare those who cast an evil eye. “We not only seek peace but also express our commitment to peace through our actions. But at the same time, we are also very clear that if anyone dares to look at us with ill intention or hostility, our forces will give a befitting reply,” he added.

Shri Rajnath Singh further said that countries across the world have faith in the valour of Indian soldiers, which is the reason India is among the top nations which contribute to United Nations Peacekeeping missions by sending its troops. “The soldiers of the Indian Army have worked in the toughest of conditions in challenging areas and have made the supreme sacrifice to protect humanity. It is your exemplary professionalism, humanitarian approach and courage that you are in utmost demand for serving in any peacekeeping mission in UNO”, he told the soldiers.

Mentioning the National War Memorial built by the Government in New Delhi, Shri Rajnath Singh termed it as the nation’s tribute to the bravehearts, who served the nation till their last breath. Expressing gratitude to the nation for the soldiers, he said, “On this occasion of 77th Independence Day, whether you are standing on the snowy peaks of Kargil where there is lack of oxygen to breathe, whether you are in a submarine in the deep sea, whether you are standing in the hot desert of Thar, or whether you are standing in the middle of evergreen forests in the north-east of India, wherever you are, I want to say that you all reside in the hearts of 140 crore Indians.”

<https://pib.gov.in/PressReleasePage.aspx?PRID=1948656>



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

**Ministry of Defence**

*Mon, 14 Aug 2023*

## **President Approves 76 Gallantry Awards, Including Nine Posthumous, to Armed Forces & CAPF Personnel on the Eve of 77th Independence Day**

President Smt Droupadi Murmu has approved 76 Gallantry awards to Armed Forces and Central Armed Police Forces personnel on the eve of Independence Day 2023. These include four Kirti Chakra (posthumous), 11 Shaurya Chakras, including five posthumous, two Bar to Sena Medals

(Gallantry), 52 Sena Medals (Gallantry), three Nao Sena Medal (Gallantry) and four Vayu Sena Medals (Gallantry).

The President has also approved 30 Mention-in-Despatches to the Army, including to Army dog Madhu (Posthumous), and one to Air Force personnel for their significant contributions in different military operations. The operations include Operation Rakshak, Operation Snow Leopard, Operation Casualty Evacuation, Operation Mount Chomo, Operation Pangsau Pass, Operation Meghdoot, Operation Orchid, Operation Kalisham Valley, Rescue Operation and Operation Evacuation.

*More on below link.*

<https://pib.gov.in/PressReleasePage.aspx?PRID=1948651>

## THE ECONOMIC TIMES

*Mon, 14 Aug 2023*

### **Army Signs Contracts for Emergency Procurements; Seeks 'Quantum Jump' in Capabilities**

In line with its vision to be a "technologically superior force" to fight future wars with indigenous solutions, 49 schemes worth Rs 7,600 crore have been contracted by the army under the fourth round of emergency procurement, catering to capabilities ranging from drones to individual protective equipment, sources said. Sources in the military establishment also said the present global scenario "necessitates a flexible and adaptive approach" to tackle defence and national security challenges.

Sixty-eight schemes worth Rs 6,600 crore were signed in the first three tranches of emergency procurements (EPs).

"As part of the fourth tranche, 49 schemes worth Rs 7,600 crore have been contracted catering for capabilities ranging from mobility solutions to communication systems, energy solutions, individual protective equipment, armament and simulators, drones and counter-drones," a source in the defence establishment said.

The army is observing 2023 as the 'Year of Transformation', and is working on several projects to reshape and remodel the functional processes to bring in a "quantum jump in its capabilities".

It is spearheading the realisation of the vision of 'Atmanirbharta' with the intent of boosting manufacturing in India and creating a vibrant defence ecosystem, the sources said.

Besides the 49 schemes being contracted under the fourth round of EP, "34 schemes worth approximately Rs 7,000 crore are under final stages of procurement," they said.

Niche technologies like logistic and nano drones, counter-drones, loiter munitions, unarmed aerial vehicle or UAV-launched precision-guided missiles, and automatic spectrum monitoring systems, are being procured, they added.

Sharing the details about the individual protective equipment, a source said, once developed, this will be worn by a soldier in an integrated manner with a bullet-proof jacket, and it will have sensors through which a soldier, in cases of an emergency like an avalanche, can be tracked even if he lies beneath layers of snow.

Besides, six big-ticket Make I projects (government-funded scheme), including light tanks, tactical communication systems, army future ready combat vehicles (FRCV) and terminal end secrecy devices among others are "under progress at various stages," the sources said.

The light tank is a "game changer" as far as hilly or mountainous areas are concerned. A one-of-a-kind solution for "our emerging challenges", it will have unique characteristics of being lightweight, and able to engage targets at long range in high-altitude areas, they said.

The FRCV with the capability to act as a "multiple weapon platforms along with the infusion of niche technology" will cater to the future capability requirements and enhance the overall operational effectiveness index of the army for "emerging threats in varied terrain", sources familiar with the matter said.

They said, the plan is to procure it in multiple phases and highlighted that the FRCV will seek to provide "next-generation operational capabilities and automation".

Sharing the details on Make II projects -- fully funded by industry which aims to harness the technology threshold of domestic industry and assist in import substitution -- the sources said, a total of 45 projects worth Rs 30,000 crore have been initiated in a short period of time with the first contract signed for Maneuverable Expendable Aerial Target (MEAT) in January 2022.

The second contract for Upgraded Assault Track Way (UATW) was signed in February 2023. These include 19 cases, initiated based on suo motu proposals, they said.

Besides, another innovative solution under this is a "portable helipad". It can be transported easily to difficult and rugged terrain in high-altitude areas "extending the reach of third dimension application, especially in Eastern Ladakh, Central Sector and the Northern Areas", the sources said.

In September 2022, the army said in consonance with its commitment to "fight future wars with indigenous solutions", it had invited the domestic defence industry to offer critical defence equipment for emergency procurement.

In a series of tweets, it also then shared links for getting details on Requests for Proposals (RFPs).

Sources said the army, in line with the larger vision of 'Atmanirbharta', has chosen multi-pronged approach to achieve modernisation with indigenisation through various modes, such as 'Make' projects, iDEX (Innovation for Defence Excellence), Army Technology Board (ATB), Technology Development Fund (TDF), and outreach programme like setting up of 'Army Cells' at leading technology institutions to promote research and development aligned with the army's requirements.

The army is committed to supporting indigenisation, and such initiatives will positively encourage the defence ecosystem in the country. The industry has shown "remarkable resolve in these trying times to deliver the goods and surpass expectations," they said.

The number of products, and technologies inducted or being pursued through multiple approaches are indicators of the collaborative efforts between the user and the developers, "transforming Indian Army to a technologically superior force to fight the future wars with indigenous equipment," the sources said.

"We have taken giant strides towards modernisation and technology infusion. Of the five iDEX projects contracted in the recent past, four projects worth approximately Rs 70 crore have been by the army, and out of the three Make II projects contracted, two worth nearly Rs 180 crore have been contracted by the Army," another source in the defence establishment said.

For achieving "self-sufficiency through indigenisation", a proactive outreach and collaborative campaign is being driven by the Army Design Bureau (ADB) by connecting the capabilities of the defence industries with the user requirements, the source added.



Besides, in design and development cases, Preliminary Services Qualitative Requirements (PSQRs) are formulated with due consideration to the indigenous industry's capability.

Post development of a prototype, "the PSQRs are converted to SQRs drawing a balance between what the industry has been able to achieve and our operational requirements", they said.

<https://economictimes.indiatimes.com/news/defence/army-signs-contracts-for-emergency-procurements-seeks-quantum-jump-in-capabilities/articleshow/102730800.cms>



Wed, 16 Aug 2023

## **Jetpack Suits, Portable Helipads and Precision Munitions: Army to Induct Niche Tech in 2 Years**

From drones and jetpack suits to precision guided munitions, robotic mules to portable helipads, the Army has initiated the process of identifying, procuring, and inducting a range of niche technologies and platforms as it seeks to stay ahead of the curve in tune with the evolving nature of modern warfare, senior officials have said.

Established in 2016, the Army Design Bureau (ADB) is spearheading the efforts in collaboration with the industry, academia, Defence Public Sector Undertakings and Defence Research and Development Organisation (DRDO) with an aim to create indigenous solutions for the Army in line with the latest developments in the global scenario. Officials said niche technologies like a range of drones for varying purposes, quantum communications, Electronic Intelligence Systems, Software Defined Radios, improved habitat in high altitude areas including environment-healthy waste disposal, jetpack suits, fast patrol boats, precision guided munitions of different calibres, lightweight armour, unmanned ground vehicles, robotic mules and Augmented Reality-based training aids are going to be inducted in the Army in the next two years.

Other modern technologies — which are being developed under various schemes — include light tanks for engaging targets in mountains, tactical communication systems, future-ready combat vehicle and terminal-end-secrecy device for end-to-end secure transmission of voice, data and text to enable formation commanders to disseminate classified material.

The list of the niche technologies which are in various stages of development also include Maneuverable Expendable Aerial Target (MEAT), Upgraded Assault Track Way, Terminal Guidance Munitions, Multirole Precision Kill System, Directed Energy Weapon System (DEWS), Armoured Fighting Vehicle Protection and Counter Drone systems.

All these projects are either funded by the government or by the industry and in various stages of development.

(Also in works are projects under the defence ministry's iDEX programme which seeks to foster innovations and encourage technological development in defence and aerospace by engaging R&D institutes, academia, industries including MSMEs, start-ups, individual innovators and providing them grants or funding and other support.)

Presently 46 projects of the Army costing Rs 400 crore including grant-in-aid and procurement of prototypes are in process. "Till now, four contracts have been signed worth Rs 70 crore for procurement of equipment in limited quantities," an official said. Officials told The Indian Express that an individual protection system for the troops on ground, portable helipad which can be

transported easily to difficult terrains in high altitude areas, low light imaging sensor, a ramjet technology for the Army's 155mm guns are projects which are at an advanced stage of development or induction.

They added that 68 schemes worth Rs 6,600 crore were signed in the first three tranches of Emergency Procurement and as part of the fourth tranche, 49 schemes worth Rs 7,600 crore, have been contracted which will bring in capabilities ranging from mobility solutions to communication systems, energy solutions, individual protective equipment, drones and counter drones, armament, and simulators. The emergency procurement for a range of defence platforms were initiated by the government in the last three years.

<https://indianexpress.com/article/india/jetpack-suits-portable-helipads-and-precision-munitions-army-to-induct-niche-tech-in-2-years-8892831/>

## THE ECONOMIC TIMES

*Tue, 15 Aug 2023*

### **India's First Long-Range Revolver "Prabal" to be Launched this Week on August 18**

India's debut long-range revolver, "Prabal," is poised for launch on August 18. The revolver is manufactured by the state-owned enterprise Advanced Weapons and Equipment India (AWEIL), based in Kanpur. Distinguished by its .32 bore, the Prabal revolver boasts an impressive firing range of up to 50 meters, more than twice the reach of other revolvers in India.

As per a ToI report, a noteworthy feature of Prabal is its side swing cylinder, marking a significant advancement in revolver design. AWEIL Director AK Maurya emphasized its key attributes, stating, "The Prabal revolver is light in weight and equipped with a side swing cylinder."

Maurya elaborated on the innovation, stating, "Previously, older revolver models required the firearm to be folded for cartridge insertion. Moreover, the prevailing market revolvers have a limited range of only up to 20 meters. In contrast, Prabal excels with a range of 50 meters. Weighing merely 700 grams (excluding cartridges), it boasts a barrel length of 76 mm and an overall length of 177.6 mm. Its user-friendly trigger pull enhances its appeal. Notably, this makes it a convenient option, even for women who can easily carry it in their handbags, thus augmenting personal safety." He further revealed, "Booking for Prabal, akin to the features of the Webley Scott revolver, will commence on August 18. Civilian purchasers possessing a valid license can avail themselves of this opportunity."

AWEIL, stationed in Kanpur's Armapur, stands as a government-owned enterprise specializing in the production of defense equipment. Comprising eight former factories of the Ordnance Factory Board (OFB), the company's primary focus lies in the manufacturing of small arms and artillery for the Indian armed forces, international militaries, and domestic civilian usage. Established in 2021 as part of OFB's restructuring and corporatization, AWEIL operates as one of the seven distinct Public Sector Undertakings (PSUs) born from this transformation.

The company's current year holds significant promise, as AWEIL has secured defense product orders valued at Rs 6,000 crore. Among these are orders for 300 'Sarang' cannons from the Indian Army, along with contracts worth Rs 450 crore originating from European nations.

<https://economictimes.indiatimes.com/news/defence/indias-first-long-tange-revolver-prabal-to-be-launched-this-week-on-august-18/articleshow/102744511.cms>

## Indian Army Connects Last Village in Machhaal Sector with "Bhagat Bridge"

Life for the residents of Danna Village at the Line of Control (LoC) in Machhal Sector changed for good on the eve of Independence Day. The Indian Army linked this Last Village on LoC in Machhal Sector, Kupwara District, of Jammu and Kashmir (J&K) with 115 Feet Long Bridge.

The Indian Army said on Tuesday, "In the run-up to this year's Independence Day, gifted locals of Danna Village, the last village in Machhal Sector by dedicating a bridge across Machhal Nala.

The 115 feet long Bridge has been named as Bhagat Bridge in memory of Late Major Bhagat Singh, Veer Chakra, who laid down his life defending this sector in the 1965 war. Danna Village is also popularly known as Bhagat Village in memory of the brave son of India.

The bridge was dedicated to the villagers by Sepoy Mian Gul Khan, a ninety-year-old 1971 war veteran and a proud resident of the area in the presence of senior army officials and local dignitaries. The dedication event was also attended by children, women and elders of seven nearby villages. Impressing the significance of this bridge an officer said that this will give a new lease of life to the people as "they had no place to hide when the firing used to take place as bunkers could not be built because there was no connection to this place."

There is no primary school and during the rainy season, it was not possible to cross the Nala.

"The bridge will provide succour to locals from the difficulties related to lack of connectivity across Machhal Nala, providing them with a means of sending their children to school and facilitating the move of sick and elders. The bridge will also encourage tourists to visit this pristine area." said the Army. The bridge has been constructed by Indian Army Engineers who persistently toiled for two months in spite of incessant rains and adverse conditions.

The situation was completely different until February 23, 2021, when the Directors General Military Operations of India and Pakistan reiterated their commitment to the 2003 ceasefire agreement and decided to maintain peace at the de facto border.

Things witnessed a change since India and Pakistan decided to cease firing along the LoC and all other sectors, with effect from midnight of February 25, 2021.

Otherwise, the LoC has been active with firing, disturbing the life of the people on both sides. Peace at the LoC has enabled road repair work as large JCB machines are seen moving stones and filling the earth. "The machines would have been absent had the ceasefire agreement not been in place," India shares a 3,323 km border with Pakistan of which the length of the LoC is 740 km and runs from parts of Jammu to parts of Leh. The LoC is a ceasefire line which was delineated in the Simla Agreement (July 1972) whereby both sides agreed not to alter it unilaterally.

On this special occasion of the 77th Independence Day, the Army said, the inauguration of the bridge serves as a poignant reminder of the sacrifices made by the Indian Army to safeguard the sovereignty and integrity of the nation.

<https://www.newindianexpress.com/nation/2023/aug/15/indian-army-connects-last-village-in-machhaal-sector-with-bhagat-bridge-2605546.html>

## **INS Kulish Participates in Celebration of 77th Independence Day in Singapore**

Indian Naval Ship Kulish, a guided missile Corvette which is on a four-day visit to Singapore to take part in a multilateral exercise joined the celebration of the 77th Independence Day here on Tuesday. The officers and crew of the ship participated in the 77th Independence Day celebrations at the High Commission of India in Singapore, the Commanding Officer Ashish Delsaria presented a memento to the Acting High Commissioner Pooja Madan Tulli, to commemorate the ship's visit to the Lion City.

One of the key highlights of the event was also the Naval Jazz band, which enthralled more than 1,000 Indian community members in attendance with patriotic numbers.

The corvette of the Andaman and Nicobar Command (ANC) at Port Blair is visiting Singapore from August 14 to August 18 to take part in the Harbour Phase of multinational exercise SEACAT 2023 aimed at enhancing interoperability and collaboration on maritime security challenges with the participating nations, scheduled between August 14 and August 17, followed by the sea phase till August 25.

The ship will also host a reception for officials from Singapore's Ministry of Defence, as well as, the Ministry of Foreign Affairs and distinguished members of the Indian diaspora.

Designed to enhance Maritime Domain Awareness, SEACAT addresses geopolitical crises, illegal activities, and contingencies, and standardizes tactics, techniques, and procedures.

Last year, the SEACAT was led by the US Navy's Seventh Fleet, the Republic of Singapore Navy, and the Information Fusion Centre for two weeks in August, according to media reports.

<https://economictimes.indiatimes.com/news/defence/ins-kulish-participates-in-celebration-of-77th-independence-day-in-singapore/articleshow/102747056.cms>



## **India to Step up Defence Ties with Philippines**

India and the Philippines are looking to step up defence ties after the Southeast Asian nation's high-profile purchase of a BrahMos missile. Negotiations on a defence line of credit have picked up, according to persons aware of the matter.

While the exact quantum of assistance being offered is under negotiation, officials from the Philippines have visited a number of Indian defence firms including Kalyani Strategic Systems to examine their products.

Replies to a query mailed to the company were awaited.

The offer of a line of credit, which was first made by India in 2018, was reiterated during a June meeting between foreign ministers S. Jaishankar and Enrique Manalo.

“On defence cooperation, both ministers expressed keen interest to continue to work together in this sector, including through the regular or upgraded official level interaction among defence agencies, opening of the resident defence attaché office in Manila, consideration of India’s offer for concessional line of credit to meet Philippines’ defence requirements, acquisition of naval assets, and expansion of training and joint exercises on maritime security and disaster response, among others," reads a joint statement released after the two foreign ministers met.

Beyond equipment, India has also offered assistance in hydrography and maritime affairs.

“Acknowledging the growing importance of the maritime sector for both countries, both Ministers welcomed the bilateral Maritime Dialogue and the increased cooperation on hydrography," reads the same joint statement.

“Both Ministers emphasized the utility of maritime domain awareness, and in this context called for early operationalization of the Standard Operating Procedure (SOP) for the White Shipping Agreement between the Indian Navy (IN) and the Philippines Coast Guard (PCG)," it also says.

The Indian Coast Guard and Philippines Coast Guard are also working on an MoU on Enhanced Maritime Cooperation

This comes at a time when the Philippines is facing increasing military pressure from China over disputed islands in the South China Sea. In early August, the Philippines accused Chinese vessels of trespassing into its waters and preventing the resupply of troops stationed in the Spratly islands. This has snowballed into a diplomatic spat with President Marcos of the Philippines publicly stating his concern over Chinese actions.

“They underlined that both countries have a shared interest in a free, open and inclusive Indo-Pacific region. They underlined the need for peaceful settlement of disputes and for adherence to international law, especially the UNCLOS and the 2016 Arbitral Award on the South China Sea in this regard," the two countries said in their joint statement after the June Foreign Ministers meeting. The 2016 Arbitral Award refers to a ruling by the Permanent Court of Arbitration at the Hague in favour of the Philippines which repudiated China’s expansive territorial claims in the South China Sea.

India has helped a number of regional countries like Vietnam build up their defence capacities in an effort to bolster their ability to stand up to China’s growing military power. India provided Vietnam a \$100 million line of credit (LOC) under which the country purchased high-speed patrol boats from India. The two countries are also in talks for a new \$500 million defence LOC.

<https://www.livemint.com/news/world/india-and-the-philippines-boost-defence-ties-amid-rising-pressure-from-china-in-the-south-china-sea-11692113246769.html>



*Tue, 15 Aug 2023*

## **Indian Army Spearheads Future with Next-Gen Combat Vehicles**

*By Huma Siddiqui*

Revamping its combat prowess, the Indian Army is set to overhaul its arsenal, bidding farewell to the aging Russian T-72 main battle tanks that have served for over four decades. The Army is

embarking on a strategic transition to embrace cutting-edge Future Ready Combat Vehicles (FRCVs) by 2030.

This initiative entails the phased procurement of a formidable fleet of 1,770 FRCVs, ingeniously divided into three stages, each bolstering the Army's capabilities. "The initial phase incorporates established technologies, in the second phase it will be integrating advanced innovations. As the grand finale, the third phase introduces futuristic breakthroughs that redefine the boundaries of warfare," sources in the defence and security establishment said on the eve of 77th Independence Day Celebrations.

According to the sources quoted above, "The timeline is diligently structured, with an anticipated 4-5 years for development and an additional 1.5-2 years for full-scale production. Consequently, by 2030, the Army is poised to induct these cutting-edge marvels into its armored ranks, culminating in the final phase's completion within the ensuing 10-12 years."

### **Significance**

This strategic evolution stems from a proactive consideration of the evolving threat landscape and the paramount need for maintaining combat superiority. "The reason to adapt emerged against the backdrop of a shifting combat paradigm and the imperative of securing a 'combat overmatch' against adversaries," explained sources.

Financial Express Online has reported earlier, in June 2021, the Indian government issued a clarion call for 1,770 state-of-the-art, technology-enabled tanks, fortified to navigate diverse terrains and temperature extremities. The envisioned role for these FRCVs is nothing short of a stalwart, persisting as the cornerstone of the Army's tank arsenal for the forthcoming 40-50 years.

The catalyst for this transformation lies in the relentless march of technology, ushering in novel threats from the aerial domain, encompassing UCAVs and Loitering Munitions. Enhanced Intelligence, Surveillance, and Reconnaissance (ISR) capabilities have engendered a more precise targeting landscape, compelling a unified and networked approach across all facets of military operations.

### **FRCV (Future Ready Combat Vehicle)**

The FRCV is designed to replace the old T-72 Tank Fleet, which has been in service since 1979 and has reached the end of its useful life. Even if it's introduced in 2027, it might still be used until 2040. Unfortunately, the MBT Arjun MK II 68 ton tank isn't a suitable replacement due to its limitations in the Indian operational environment. "To ensure combat readiness and superiority over adversaries, it's crucial to introduce the FRCV as soon as possible, with a clear plan for its implementation. This vehicle can also serve as a foundation for developing a range of combat vehicles with a standardized platform, contributing to technological advancement and local manufacturing," explained an expert.

### **The history of FRCV's development**

Originally planned as part of the Make Project since 2008-09, the slow progress of other projects led to a shift in approach. It was proposed as a standalone project outside the DPP (Defence Procurement Procedure) under MoD (Ministry of Defence). This involved selecting a design through competition, shortlisting a developer, and then production through a nominated agency. A request for information (RFI) was issued in June 2015 to invite design proposals, which received good responses. However, changes in leadership led to shifting FRCV back under the MAKE 1 project with the updated DPP in 2016. Subsequently, it was considered under the Strategic Partnership (SP) model, posing challenges and uncertainties.

Under this model, a foreign Original Equipment Manufacturer (OEM) partners with an Indian company selected by MoD. After RFIs from foreign partners and the selection of an Indian partner,

the project moves forward. The project's success hinges on the efficient approval of PSQR (Project Specific Qualitative Requirements) by service headquarters and AoN (Acceptance of Necessity) by MoD. Establishing a solid relationship with the foreign partner based on technology vectors is crucial for progress.

The fast-paced technology landscape and unpredictable operational environment require quick decision-making for defence procurement and capability development. Developing FRCV is challenging and operationally crucial, demanding a responsive and time-sensitive environment. Success in these projects could lead to self-reliance and advanced technology integration, invigorating the Indian Defence ecosystem.

In embracing these innovative FRCVs, the Indian Army's commitment to staying ahead of the curve remains unwavering, symbolizing its preparedness to tackle the dynamic challenges of the modern battlefield.

<https://www.financialexpress.com/business/defence-indian-army-spearheads-future-with-next-gen-combat-vehicles-3210824/>



*Tue, 15 Aug 2023*

## **Indian Navy Showcases Evolution and Modern Capabilities on 77th Independence Day**

On August 15, the Indian Navy showcased its evolution since breaking away from colonial shackles and transitioning into the navy of free India through an exhilarating video on India's 77th Independence day.

The video demonstrates the navy's evolution. It begins with glimpses of its early years, showing how the navy expanded bit by bit every year. Interestingly, this marks the first year of independence after the navy adopted its new insignia last year, featuring the 'Nishaan'. The Nishaan displayed in the shared video was seen on the sail of Indian Navy Ship (INS) Kalvari, the Indian Navy's newest conventional attack submarine.

Indian Prime Minister Modi unveiled it last year in Kochi during the commissioning of the Indian Navy's indigenous aircraft carrier, INS Vikrant, which also features in the video. The previous emblem of the navy featured a George Cross and a fouled anchor. The new one lets go of these elements, replacing them with an octagonal border and a clear anchor inspired by Shivaji Maharaj's Rajmudra, the Seal of Chhatrapati Shivaji Maharaj. The fouled anchor and George Cross symbolised the navy's colonial legacy, which the new insignia sheds in favour of identifying as the navy of the Indian republic.

The video also features the new warships and platforms that are part of the Indian Navy's modern 21st-century fleet. The ships and weapons featured include:

- INS Kalvari, a Scorpene-class submarine that the Indian Navy inducted back in 2017. It features anti-ship missiles along with torpedoes and mines.
- INS Vikrant, India's homegrown 45,000-tonne aircraft carrier commissioned last year. It's capable of operating an air wing consisting of 30 aircraft, including MIG-29K fighter jets, Kamov-31, MH-60R multi-role helicopters, in addition to indigenously manufactured Advanced Light Helicopters (ALH) and Light Combat Aircraft (LCA) Naval Tejas. This

aircraft carrier grants India entry into an elite group of countries with the specialised capacity to design and construct an aircraft carrier domestically.

- INS Vikramaditya, the biggest warship in India's arsenal, weighing over 45,000 tonnes and capable of carrying more than 36 aircraft, including its native MiG-29K fighters, Kamov-31 anti-electronic warfare helicopters, Sea King, ALH-Dhruv, and other helicopters. It has been referred to as a "floating city".
- MiG-29K, the Indian Navy's sole carrier-based fighter aircraft, is a fourth-generation air superiority fighter providing a significant maritime strike capability with a range of over 700 nautical miles and an array of weapons.
- BrahMos, a supersonic missile that was initially a joint venture between India and Russia but is now completely indigenous. It features advanced stealth technology and guidance systems, and the current anti-ship variant has a range of 290 kilometres operating on a 'fire and forget' principle. Another variant the BrahMos NG, a smaller next generation version is being developed by the Defense Research and Development Organisation, capable of being carried by aircraft like the MiG-29K and Naval variant of the LCA Tejas.
- Naval Tejas also makes a brief appearance in the Navy's video, demonstrating its capabilities to land on aircraft carriers. The LCA has successfully landed on both carriers in Indian service.
- The INS Kamorta class, India's stealth corvette, was also showcased in the video, illustrating its top features and its role in India's Anti-Ship Submarine Warfare assets.
- INS Tarangini, the first sail training ship of the Indian Navy, completing its 25th anniversary, also made a brief appearance in the Indian Navy's video.

This year, in a remarkable first, the Indian Navy also displayed its might by showcasing both of its 'sovereign airfields' and an entire carrier battle group together on Jun 10. This was part of a specialised naval exercise conducted in the Arabian Sea. According to defence officials, these capabilities serve to safeguard not only national interests but also bolster regional stability by ensuring collective security. Such actions underline the enduring importance of aircraft carriers in India's defence strategy as it strengthens its security apparatus.

<https://www.republicworld.com/india-news/general-news/indian-navy-showcases-evolution-and-modern-capabilities-on-77th-independence-day-articleshow.html>



*Tue, 15 Aug 2023*

## **19th Round of Military Talks: India Presses for Access to All Old Patrolling Points along the LAC**

India and China on Monday held the 19th round of military talks with a focus on building greater confidence with each other and avoiding clashes between the troops of both sides through strict adherence to border protocols and sharing of patrol information.

Defence sources told The Indian Express that India pressed for access to all old patrolling points along the Line of Actual Control (LAC) early disengagement at the remaining friction points including legacy ones such as Depsang Plains and Demchok in the meeting. An overall de-escalation of troops in the Ladakh region was also part of the agenda.



As per sources, it was discussed that various confidence building measures would be continued to reduce trust deficit between both sides. “Till a decision on providing complete access to old patrolling points along the LAC is arrived at, the sanctity of buffer zones would be maintained and the finer details on limit of patrolling in these areas would be worked out,” a defence source said.

Continuing regular interaction at battalion levels and avoiding any violation by drones were the other aspects up for discussion at the meeting, the sources added.

The meeting began at 9.30 am Monday morning and went on for eight hours to end at 5.30pm in the evening. The meeting took place at the Indian side of the Chushul-Moldo border meeting point. The Indian delegation was led by 14 Corps Commander Lt Gen Rashim Bali.

The last round of talks was held on April 23 ahead of the Shanghai Cooperation Organisation (SCO) Defence Ministers’ meeting.

The meeting comes just about a week before the BRICS leaders’ summit which Prime Minister Narendra Modi and Chinese President Xi Jinping in South Africa will be attending. Chinese President Xi is also scheduled to visit India for the G20 summit on September 9 and 10 this year.

There has been no definitive forward movement in the last few rounds of military talks on resolution of legacy issues or an overall de-escalation of troops in eastern Ladakh.

In September last year, both sides pulled back troops to disengage from Patrolling Point-15 in the Gogra-Hot Springs area of Eastern Ladakh, marking a step forward in the military standoff between the two sides which began in May 2020.

Friction points such as Galwan Valley, north and south banks of Pangong Tso and the Gogra-Hot Springs area have seen some resolution in the last three years with the creation of buffer zones.

However, 50,000-60,000 troops remain deployed on both sides of the India-China border.

<https://indianexpress.com/article/india/19th-round-of-military-talks-india-presses-for-access-to-all-old-patrolling-points-along-the-lac-8892864/>



*Tue, 15 Aug 2023*

## **Further Delay in Delivery of Stealth Frigates from Russia; now Expected in May and October 2024**

The war in Ukraine has caused further delays to the delivery of two Krivak or Talwar-class stealth frigates under construction for the Indian Navy in Russia. They are now expected to be delivered by May and October 2024 respectively, according to Alexey Rakhmanov, Director-General of the United Shipbuilding Corporation of Russia.

“The ship is in the final stages of development; in two months time, it will go for sea trials,” Mr. Rakhmanov said, in response to a question from The Hindu at Russia’s ongoing Army 2023 military expo. The supply of some equipment has seen delays, he said, adding that some equipment has “made sort of a round-the-globe trip” to reach Russia due to the Western sanctions. Payment delays has also played a part, he said. These two frigates were originally supposed to have arrived in mid-2022, but COVID-19 disruptions caused the initial pushback of delivery dates.

On wider cooperation with India, Mr. Rakhmanov said that his State-owned company was in talks with the Indian Navy to construct at least five or six different vessels, but declined to go into the specifics.

## **Frigate deal**

In October 2016, India and Russia signed an Inter-Governmental Agreement for four stealth frigates, after which a \$1-billion deal was signed for direct purchase. The basic structures of the first two frigates were lying at the Yantar shipyard in Russia, and are now being finished. In November 2018, the Goa Shipyard Limited (GSL) signed a \$500 mn deal with Russia's Rosoboronexport for material, design and specialist assistance to locally manufacture the other two frigates, and in January 2019, the contract was signed between the Indian Defence Ministry and GSL.

These two stealth frigates are currently under construction at the GSL and deliveries will be fixed according to the payment schedule, Mr, Rakhmanov said. According to the original schedule, GSL was scheduled to deliver the first ship in 2026, and the second one six months later.

The Indian Navy already operates six of these frigates weighing around 4,000 tonnes each. All the ships are powered by engines from Ukraine's Zorya Nashproekt.INS Kulish participates in celebration of 77th Independence Day in Singapore

## **Payment difficulties**

As The Hindu has earlier reported, with Russia being shut out of the global SWIFT system for money transfers, India and Russia are now trying to settle payments through a Rupee-Rouble arrangement. However, given the trade imbalance, rupees are accumulating, causing issues. With several big-ticket deals under implementation, including the S-400, there is a large volume of payments to be made.

The Central banks of the two countries had extensively discussed this issue, and while small payments have been resumed, larger payments are still stuck. Officials stated that modalities to undertake larger payments are being worked out.

<https://www.thehindu.com/news/national/further-delay-in-delivery-of-stealth-frigates-from-russia-now-expected-in-may-and-october-2024/article67198172.ece>

# THE ECONOMIC TIMES

*Mon, 14 Aug 2023*

## **Obtaining Congressional Approval for Jet Engine Project will be High Priority: Congressman Ro Khanna**

Leading US lawmaker Ro Khanna on Monday said obtaining Congressional approval for the export authorisation for GE Aerospace's F-414 jet engines for co-production in India will be a "high priority" for him. In an exclusive interview to PTI, Khanna also talked about a plan for a legislation to facilitate treating India on par with Washington's close allies like Israel, Japan and South Korea, for expediting approvals to such critical projects.

In June, American defence major GE Aerospace inked an agreement with Hindustan Aeronautics Limited (HAL) to co-produce F-414 fighter jet engine engines in India, during Prime Minister Narendra Modi's state visit to the US.

The Biden administration has already notified the US Congress about the deal. The Congress will have to accord export authorisation for the manufacture of the engines in India under the framework of transfer of technology (ToT).

"I am (hopeful)," Khanna, the co-chair of the Congressional India Caucus, said when asked whether he was expecting an early approval to the jet engine project by the Congress.

Khanna and Congressman Michael Waltz, the two co-chairs of the bipartisan Congressional Caucus on India and Indian Americans, are leading a Congressional delegation to India.

"This (Congressional export authorisation) is going to be a high priority for me and my counterpart, the Republican co-chair on the India Caucus. We will be pushing that this needs to be authorised," he said.

"We will also introduce a legislation to say that India should be treated like Israel, like Japan, like South Korea with expedited approval," he said.

Under the jet engine deal, GE Aerospace's F414 engines will be co-produced in India to power Tejas light combat aircraft Mk2.

The agreement was seen as a transformational move in further expanding the India-US global strategic partnership.

Khanna said the jet engine project for sharing of critical technologies with India is a major move to bolster the overall bilateral defence ties.

"This was a good foundation," he said, adding the two countries should focus on more defence cooperation, especially in critical technologies.

"It is going to be a defining relationship for the US," he said.

"We have steps that we need to take to continue to improve the technology relationship so that India can have sensitive shared technologies in improving scientific research, academic cooperation," he said.

A joint statement issued on June 22 following talks between Modi and President Joe Biden described the jet engine deal as an "unprecedented co-production and technology transfer proposal".

"This trailblazing initiative to manufacture F-414 engines in India will enable greater transfer of US jet engine technology than ever before," it said.

"The leaders committed their governments to working collaboratively and expeditiously to support the advancement of this unprecedented co-production and technology transfer proposal," it added.

India's plan to procure 31 MQ-9B High Altitude Long Endurance (HALE) drones from the US was also finalised when the prime minister was in the US.

The Indo-US defence ties have been on an upswing in the last few years.

In June 2016, the US designated India a "Major Defence Partner" paving the way for sharing of critical military equipment and technology.

The two countries have also inked key defence and security pacts over the past few years, including the Logistics Exchange Memorandum of Agreement (LEMOA) in 2016 that allows their militaries to use each other's bases for repair and replenishment of supplies.

The two sides also signed COMCASA (Communications Compatibility and Security Agreement) in 2018 which provides for interoperability between the two militaries and provides for the sale of high-end technology from the US to India.

In October 2020, India and the US sealed the BECA (Basic Exchange and Cooperation Agreement) agreement to further boost bilateral defence ties.

The pact provides for sharing of high-end military technology, logistics and geospatial maps between the two countries.

<https://economictimes.indiatimes.com/news/defence/obtaining-congressional-approval-for-jet-engine-project-will-be-high-priority-congressman-ro-khanna/articleshow/102730203.cms>

# THE ECONOMIC TIMES

Mon, 14 Aug 2023

## US India Defence Cooperation – Deepening Strategic Engagement

*By Dr. Vivek Lall*

The 21st century will see India with a secure place at the top table. The question now is: how best to use it?

“We were strangers in defence cooperation at the turn of the century. Now, the United States has become one of our most important defence partners,” Prime Minister Narendra Modi said in his address to the joint session of the US Congress.” Today India and the US are working together, in space and in the seas, in science and in semi-conductors, in start-ups and sustainability, in tech and in trade, in farming and finance, in art and artificial intelligence, in energy and education, in healthcare and humanitarian efforts.”

Following the historic visit by Mr. Modi to Washington and a series of new commitments on defence and other cooperation, New Delhi is looking ahead to the coming decades from an unprecedented position of influence and access.

For all the opportunity that appears in store, it’s critical that India not lose sight of the importance of partnerships – relationships such as strategic defence alliances throughout the Indo-Pacific and the wider world.

Mr. Modi’s agreement with Washington will enable India to contribute more than it ever has, thanks to the huge expansion in intelligence gathering and operational flexibility that will be possible with the new MQ-9B SeaGuardian remotely piloted aircraft system.

India has already taken a major step with its lease-hire program involving two of these aircraft. Building that fleet over time in partnership with our firm, General Atomics Aeronautical Systems, Inc., will take military and intelligence capacities to new heights.

SeaGuardian can fly for 30 hours or more, depending on configurations -- different mission specific payloads -- and operate over any territory – open ocean, coastal areas, land – and provide intelligence of a breadth but also detail that isn’t available with any other system hitherto.

Besides performing exceedingly well in a ‘stand-alone’ mode, the aircraft when deployed with other units, teams up well and augments other units naturally, from ships at sea to human-piloted aircraft to forces on the ground or all of the above. Seamless integration with various platforms at any given point of time is a hallmark of this platform.

The intelligence, surveillance, reconnaissance and operational flexibility these aircraft provide are, firstly, essential to India’s sovereignty and will only strengthen its ability to reserve decisions and actions for itself, if necessary, as is the right of any nation. The better the intelligence about what is

taking place in the seas and borderlands around South Asia, the better will be the military's ability to act first – well in time -- and act correctly.

The opportunities within the context of strategic defense alliances – bilateral or multilateral (multipolar) -- also are virtually limitless.

One example is Japan. The economic relationship between India and Japan is important and only deepening. Mr. Modi hosted the Japanese Prime Minister, Mr. Fumio Kishida, in the spring.

Japan also is another operator of the MQ-9B, in service with the Japan Coast Guard and Japan Maritime Self-Defence Force (JMSDF), conducting patrols and other operations in the Western Pacific. Japan also may be on track to grow its fleet of these aircraft. Greater commonality between Indian and Japanese military and security officials will pay dividends for the partnership and regional security. The bilateral exercises between the two countries, including, JIMEX (Navy), DHARMA GUARDIAN (Army) and VEER GUARDIAN (Air Force) are gradually increasing both in terms of frequency and complexity.

The India-Japan relationship also is one facet of the larger, less formal grouping that has become known as “the Quad,” which also includes Australia and the United States.

As Mr. Modi, Mr. Kishida and the other leaders of the Quad nations have expressed, the goal of this group is not to oppose or “keep down” any nation. Instead, the Quad partners are focused on sustaining the “open and peaceful status quo” in the Indo-Pacific today. The objective is nothing more, but nothing less – still an important commitment with far-reaching implications for the wider world.

India has always been a key plank in the Quad and its expanding capabilities will only grow its importance in this regional bloc. And much as Indo-Japanese air and military interoperability is a critical part of that relationship, so too is India's ability to integrate its intelligence, operations and other instruments of power with those of the other nations.

Here again, MQ-9 aircraft provide a bridge, in the form of commonality. India's commitment means that 75 percent of the Quad nations are operating different variants of the aircraft. As those fleets grow and evolve, so will the opportunities for information sharing, collaborative operations, interoperability, and other types of international seamless integration.

This doesn't only depend on same-model aircraft. As India's operators already have learned with their current operations involving the MQ-9B, practices called “manned-unmanned teaming” mean that remotely piloted aircraft don't only contribute to their own but also as additional members of a broader team.

One of the biggest advantages of the MQ-9B in the Indian Navy is that it extends the eyes and ears, and operational envelope of India's manned assets at much lower costs. MQ-9B also meshes easily, or handshakes, with other units of every kind, including those of partner nations, delivering benefits both for Indian operators and their allies.

Last winter, for example, Indian, Japanese, Australian and American forces collaborated on defensive exercises in the Philippine Sea – warships, aircraft, troops and other units from all the nations took part. As the powers' fleets of unmanned aircraft grow, they will only improve and extend what is possible in these kinds of joint operations – an Indian aircraft, for example, could identify a vessel of interest and relay information about it to an Australian surface warship, which could sail closer to investigate and while a third nation's Naval platform, such as ship, aircraft or a submarine, stands ready to take action as decided after assessing the situation in totality.

Technical and operational upgrades like those provided by MQ-9B make this kind of improved collaboration possible with other advanced powers in the Indo-Pacific. What they ultimately support is Indian diplomats' ability to play more and stronger cards around the region, and beyond,

in service of New Delhi's interests as well as the stability and peace from which the whole world profits.

<https://economictimes.indiatimes.com/news/company/corporate-trends/us-india-defence-cooperation-deepening-strategic-engagement/articleshow/102715739.cms>

# THE ECONOMIC TIMES

*Mon, 14 Aug 2023*

## **China's Defence Minister to Visit Russia, Belarus this Week: Ministry**

Chinese Defence Minister Li Shangfu will visit Russia and Belarus this week, his ministry said on Monday, as relations between Beijing and Moscow flourish with high-level visits and phone calls.

Ties have remained warm in recent years, with China refusing to speak out against Russia's widely condemned invasion of neighbouring Ukraine.

Li has refused to hold meetings with US counterparts until Washington lifts sanctions on him, imposed for his procurement of Russian military technology.

An aide to Vladimir Putin said last month the Russian president was planning to visit China in October, and in March President Xi Jinping made a state visit to Moscow and declared relations between the two countries were entering a new era.

China and Russia also held joint naval exercises in July as Li called for closer bilateral cooperation between the two navies.

Speaking from Beijing with Nikolai Yevmenov, head of the Russian navy, Li said he hoped both countries could "strengthen communication at all levels", according to a readout from the Chinese defence ministry.

China and Russia are strategic allies, with both sides frequently touting their "no limits" partnership and economic and military cooperation.

Their ties became even closer after Russia began its military campaign in Ukraine in February last year and the Western economic sanctions that ensued.

- Security conference - "At the invitation of Russian Defence Minister (Sergei) Shoigu and Belarusian Defence Minister (Viktor) Khrenin, from August 14 to 19, State Councillor and Defence Minister Li Shangfu will go to Russia to attend the 11th Moscow Conference on International Security and visit Belarus," a Chinese defence ministry spokesperson said.

Li's visit to Russia will include a speech at the international security forum, as well as meetings with leaders of defence departments from Russia and other countries, the spokesperson said.

China's top diplomat Wang Yi spoke by phone with Russian Foreign Minister Sergei Lavrov last week, hailing "practical cooperation" between the two countries.

Wang told Lavrov that Beijing and Moscow "should continue to maintain close strategic coordination, promote world multipolarisation and the democratisation of international relations", according to a Chinese foreign ministry statement.

China has sought to position itself as a neutral party in the Ukraine conflict while maintaining close ties with strategic ally Russia.

Beijing has offered Putin diplomatic and financial support since Russian tanks rolled over the border into Ukraine but has refrained from overt military involvement or sending lethal arms.

<https://economictimes.indiatimes.com/news/defence/chinas-defence-minister-to-visit-russia-belarus-this-week-ministry/articleshow/102717939.cms>

## THE TIMES OF INDIA

*Tue, 15 Aug 2023*

### **N.Korea Urges Deeper Defence Cooperation with Moscow: Russian Agencies**

North Korea's leader Kim Jong Un has called for his country to deepen cooperation with Russia in the security sector, his defence minister said Tuesday during a security conference near Moscow, according to Russian news agencies.

Kim Jong Un "stressed the need to further develop the tactical and strategic cooperation and interaction between the two countries in the fields of defence and security," North Korea's defence minister said in a statement carried by the state-run RIA Novosti agency.

<https://timesofindia.indiatimes.com/world/europe/n-korea-urges-deeper-defence-cooperation-with-moscow-russian-agencies/articleshow/102751065.cms>



*Wed, 16 Aug 2023*

### **Chinese Scientists “Discover” Game-Changing Tech to Detect Stealthiest Submarines Bursting US Navy’s Bubble**

*By Parth Satam*

Researchers with the Chinese Academy of Sciences (CAS) Fujian Institute of Research on the Structure of Matter have found an ultra-sensitive magnetic detector that can pick up the faintest traces of the most advanced submarine from long distances away.

The findings by the team led by Zhou Shengnan, published in the peer-reviewed Journal of Ship Research (JSR), did note that the discovery is still in its nascent stage, and a lot of work remains to be undertaken. Nevertheless, it can challenge US dominance of the oceans by “(providing) a new solution for the detection and tracking of submarines.”

The paper is based on a computer scenario modeling to determine whether it “can be possible to detect the almost imperceptible bubbles produced by a nuclear-powered submarine cruising at high speed,” a South China Morning Post (SCMP) report said. “The development (threatens) US dominance of the oceans,” it said. Conventional submarine detection is conducted by studying two peculiar phenomena from the behavior of metallic objects underwater: ‘cavitation’ and ‘Magnetic Anomaly Detection (MAD).’

#### **Cavitation**

A submarine's propellers and the hull form bubbles around them as blades rotate and the vessel moves through the water—cavitation resulting from a low-pressure area created around the trailing edges of the body and the blades.

The bubbles are left behind in the wake of the submarine and stranded in the high-pressure area of the deep ocean, where they 'pop.' Adversary navies try to 'hear' these 'pops' and gather the submarine's location.

"The bubbles are an inevitable consequence of...the water flowing around the hull to move faster as its kinetic energy increases and its potential energy – expressed as pressure – decreases. This is because the total energy of a given system must remain constant.

In the case of a fluid in motion, the sum of the kinetic energy – caused by the motion of the fluid – and the potential energy will not alter, but the balance of the two forces will shift," the SCMP report said. Cavitation usually occurs in areas with a sharp curvature or rough surface, which can create regions of low pressure. This is one way of detecting submarines.

### **Magnetic Anomaly Detection (MAD)**

Another conventional technique is identifying 'magnetic anomalies' caused by a subsequent phenomenon of the bubbles themselves. Submarines are made mainly from 'ferromagnetic materials' like steel, so their presence in the Earth's magnetic field will distort the field around them.

This is in addition to their inherent magnetic properties. Magnetic Anomaly Detection (MAD) was developed to detect submarines from overhead Anti-Submarine Warfare (ASW) aircraft that drop 'sono buoys' into the water to locate submarines.

### **New Technique**

But the Chinese researchers discovered that the cavitation bubbles produce Extremely Low Frequency (ELF) signals in an artificial "electric field."

"The researchers calculated that the extremely low frequency (ELF) signal could be stronger than the sensitivities of advanced magnetic anomaly detectors by three to six orders of magnitude," SCMP said.

The paper added, "The magnitudes of the induced electric field and magnetic field are...well within the detection range of some top-notch sensors."

As the water continues to flow around the hull, the bubbles grow bigger and move away from the surface, where the higher pressure – such as near the trailing edge of the hull – causes them to collapse violently.

This process causes turbulence and can produce an electromagnetic signature in a 'magnetohydrodynamic (MHD)' effect. The faster the turbulence, the stronger the MHD voltage. "Significant induced electric field signals can be observed around the bow, stern, and rear of the hull," the paper said.

The ELF electromagnetic emissions produced by the cavitation bubbles generate a distinct signal from 49.94 Hertz (Hz) to 34.19 Hz. Though faint, ELF signals can travel great distances, penetrate water, and reach the ionosphere, reflecting back to the Earth's surface.

Navies already exploit this characteristic to communicate with their submarines. China, for instance, has built the world's giant antenna to transmit ELF signals to its submarines in deep waters. Thus, analyzing the strength and direction of the electromagnetic field helps determine the submarine's location and movement.

### **'Needs Work, Physics Too Complicated To Understand'**



But the report added how traditional submarine tracking by identifying cavitation and magnetic anomalies has also been countered by building the submarine's hull with low-magnetic or non-metallic materials or reducing the electromagnetic characteristics of the vessels.

Former DRDO scientist Dr. S. Guruprasad, who had headed the body's Research and Development Establishment (R&DE) laboratory in Pune, too pointed out that cavitation due to propellers has been dramatically reduced.

"Submarines have become stealthier with effective noise reduction technologies. They are shaped for 'laminar flow,' and whatever sounds are created due to the flow being too weak to travel long distances. Flow-induced cavitation has long been addressed by submarine designers with effective experimental hydrodynamics and computer simulations," Guruprasad said, speaking to EurAsian Times.

The report, too, "highly turbulent and unsteady" flow of water around the submarine, which can affect the formation of cavitation bubbles and the resulting electromagnetic signals.

The signals produced by cavitation may also be affected by or even disappear if the submarine slows down or stops or if there is interference from other sources like naturally occurring electromagnetic noise or human-made signals.

Therefore, the researchers suggested further research to understand the complex physics behind the hydrodynamics-electromagnetic coupling.

"Oceans are very vast, too large for any one set of sensors to detect even what is on the sea surface and much more difficult to detect beneath," Guruprasad said, pointing to the crashed MH370 tragedy. Its floating debris was detected only after several months and multiple agencies working on the search and rescue.

<https://www.eurasiantimes.com/china-claims-discovering-game-changing-tech-to-detect/>

## Science & Technology News

THE  HINDU

Mon, 14 Aug 2023

### **Chandrayaan-3 Gets Closer to Moon After Fourth Orbit Reduction Manoeuvre**

The Indian Space Research Organisation (ISRO) on August 14 successfully carried out another orbit reduction manoeuvre of India's third moon mission Chandrayaan-3.

The manoeuvre was performed from ISRO Telemetry, Tracking and Command Network (ISTRAC) in Bengaluru. The spacecraft is now just 177 km away from the moon.

"Orbit circularisation phase commences. Precise manoeuvre performed today has achieved a near-circular orbit of 150 km x 177 km. The next operation is planned for August 16, 2023, around 0830 Hrs. IST," ISRO said after the manoeuvre. The fifth and final orbit reduction manoeuvre will be carried out on August 16.

The Chandrayaan-3 launched on July 14 consists of a lander module (LM), a propulsion module (PM) and a rover.

“As the mission progresses, a series of manoeuvres have been planned to gradually reduce Chandrayaan-3’s orbit and position it over the lunar poles. After some manoeuvres, the propulsion module will separate from the lander while in orbit. Following that, a series of complex braking maneuvers will be executed to facilitate a soft landing in the South Polar region of the Moon on August 23, 2023,” ISRO said after the Lunar Orbit Insertion on August 5.

The PM and LM separation would happen on August 17. A series of deboost manoeuvres is also scheduled to take place before the power descent phase for soft-landing on the moon. The lander is expected to touch down on the moon surface on August 23 at 5.47 p.m.

<https://www.thehindu.com/sci-tech/science/chandrayaan-3-gets-closer-to-moon-after-fourth-orbit-reduction-manoevre/article67193251.ece>



Wed, 16 Aug 2023

## After Moon, ISRO Turns to Sun: India’s 1st Solar Mission Looks at Sept Launch Date

After two successful mission launches in July, including the Chandrayaan-3, the Indian space research organisation (ISRO) is getting ready for its next big mission – to the sun.

According to sources, Aditya-L1 — India’s first mission to the sun — is expected to be launched in early September this year.

“Aditya-L1, the first space-based Indian observatory to study the sun, is getting ready for the launch. The satellite realised at the U R Rao Satellite Centre (URSC), Bengaluru, has arrived at SDSC-SHAR, Sriharikota,” ISRO tweeted on Monday.

Just like the ongoing Chandrayaan-3 mission, the satellite will go around the earth gathering speed and then slingshot towards the sun. It will then cruise the 1.5 million kilometres in around four months. And, then it will be inserted into a halo-shaped orbit around the L1 point.

The solar mission will not see the spacecraft actually go to the sun, it will instead create a space observatory at a point from which the sun can be observed even during an eclipse.

To get this unobstructed, continuous view of sun, the satellite will travel to L1 or Lagrange point between the sun and the earth. Lagrange points — there are five between any two celestial objects — are referred to as parking spots in space because gravitational pull of celestial objects equals force required to keep it in orbit.

“Even after travelling the 1.5 million kilometres, we would have covered only 10% of the distance to the sun. This will allow the main payload VLEC to look directly into the source of coronal mass ejection. Once at L1, it will be the best instrument observing the solar corona. Although there are observatories studying the solar corona even on ground, but the weather conditions and atmospheric interference does not allow it to see this as clearly,” said Prof Dipankar Banerjee, director of Aryabhata Research Institute of Observational Sciences (ARIES), which will host the support cell for the Aditya-L1 mission.

He said, the closest a man-made object has gone to the sun is the Parker probe from NASA, however, the objectives of the mission were very different. “Since it is closer to the sun, it cannot

directly look at the sun. Parker is actually turned away from the sun and observes the particles in the solar wave in that position.”

Aditya-L1 aims to study the solar corona, solar emissions, solar winds and flares, Coronal Mass Ejections (CMEs), besides carrying out imaging of the sun, round-the-clock, ISRO said.

After Astrosat, this is ISRO’s second astronomy mission/ observatory done in collaboration with scientific and research institutes. The main collaborators in the solar mission with seven payloads are Physical Research Laboratory, Ahmedabad; Indian Institute of Astrophysics (IIA), Bengaluru; Inter University Centre for Astronomy and Astrophysics (IUCAA), Pune; and the Indian Institute of Science, Education and Research (IISER), Kolkata.

In January, IIA handed over Visible Line Emission Coronagraph (VELC) to ISRO, which will track CMEs, trace links between CME plasma and the magnetic field that drive solar eruptions and solar winds.

In June, IUCAA completed and handed over the Solar Ultraviolet Imaging Telescope (SUIT), which will provide full disk images of the sun in the 2000-4000 Å wavelength range, observe the solar atmosphere slicing via different layers — these will help put together processes inside the solar surface.

Both VELC and SUIT are unique instruments built for the mission to the sun.

<https://indianexpress.com/article/technology/science/indias-maiden-solar-mission-aditya-l1-early-september-launch-8892154/>

