

नवंबर

Nov

2023

खंड/Vol. : 48 अंक/Issue : 215

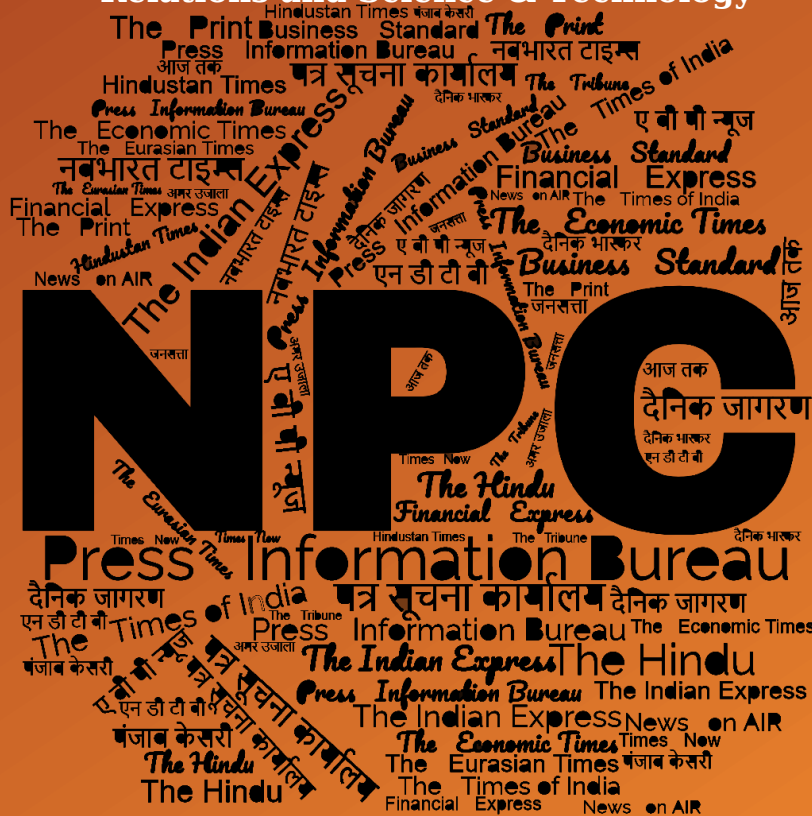
16/11/2023

# 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

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



रक्षा विज्ञान पुस्तकालय

Defence Science Library

रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र

Defence Scientific Information & Documentation Centre

मेटकॉफ हाउस, दिल्ली - 110 054

Metcalf House, Delhi - 110 054

# CONTENTS

S. No.	TITLE	Page No.
<b>DRDO News</b>		<b>1-3</b>
<b>DRDO Technology News</b>		<b>1-3</b>
1.	सेना को मिलेगी निर्भय की ताकत: डीआरडीओ का 1,000 किलोमीटर मारक क्षमता वाला हथियार; कम ऊंचाई पर भी उड़ सकती है	दैनिक भास्कर 1
2.	इस महीने रेडी हो जाएगा भारत का हल्का टैंक, ऊंचाई वाले इलाकों में साबित होगा 'ब्रह्मास्त्र'	नवभारत टाइम्स 1
3.	'Better than China's Type 15 Tanks': India's 1st Indigenous Light Tank for High Altitudes to Counter Chinese Deployments Soon	<i>The Times of India</i> 2
<b>Defence News</b>		<b>3-14</b>
<b>Defence Strategic: National/International</b>		<b>3-14</b>
4.	2023 Edition of the Indo-Pacific Regional Dialogue (IPRD-2023)	<i>Press Information Bureau</i> 3
5.	Navy Chief Flags Fragile Situation in South China Sea	<i>The Indian Express</i> 5
6.	Indian Navy Monitoring Movement of Chinese Warships Participating in Exercise with Pakistan	<i>The Hindu</i> 6
7.	How Cruise Missile Nirbhay Adds Muscle to India's Rocket Force Plan	<i>India Today</i> 6
8.	What is Igla-S, the Portable Air Defence System India is Procuring to Attack Low-flying Aircraft	<i>News 18</i> 7
9.	Bulletproof Innovation: MKU's Breakthrough AK-47 Helmet Redefines Soldier Safety Globally	<i>Financial Express</i> 9
10.	US Accuses China, Russia of Helping North Korea's Military Expansion amid Fears of ' Hamas-style' Attack	<i>The Times of India</i> 10
11.	Biden, Xi Agree to Restore some Military-to-military Communications between US-China	<i>The Economic Times</i> 10
12.	South China Sea: US, Philippine Defence Chiefs Slam Beijing's 'Dangerous' Actions, Seek Intel-sharing Deal	<i>South China Morning Post</i> 13
<b>Science &amp; Technology News</b>		<b>14-16</b>
13.	9th India International Science Festival (IISF) 2023 to be Held at Faridabad, Haryana from January 17th-20th, 2024	<i>Press Information Bureau</i> 14
14.	NASA, ISRO Complete Key Tests ahead of NISAR's Launch Early Next Year	<i>The Hindu</i> 15



Thu, 16 Nov 2023

### सेना को मिलेगी निर्भय की ताकत: डीआरडीओ का 1,000 किलोमीटर मारक क्षमता वाला हथियार; कम ऊंचाई पर भी उड़ सकती है

भारतीय सेना को एक नई ताकत मिलने वाली है। जिसका नाम है निर्भय मिसाइल। ये मिसाइल एक हजार किलोमीटर तक टारगेट को हिट कर सकती है।

रक्षा अनुसंधान और विकास संगठन (DRDO) ने देश में ही लंबी दूरी तक निशाना लगाने वाली मिसाइल तैयार की है। निर्भय एक सब सोनिक मिसाइल है यानी इसकी 400 किलोमीटर प्रति घंटे की रफ्तार ध्वनि की रफ्तार से कम है। डिफेंस सोर्सिस का कहना है कि केंद्र सरकार निर्भय मिसाइल को इंडियन आर्मी, इंडियन एयरफोर्स, इंडियन नेवी में शामिल करने पर विचार कर रही है। अगर ये प्रपोजल पास हो गया तो ये सब सोनिक क्रूज मिसाइल दूश्मनों का ठिकाना तबाह करने के लिए तैनात हो जाएगी।

#### दूश्मनों के रडार से बच सकती है मिसाइल

निर्भय मिसाइल परमाणु हथियार से लैस है। 6 मीटर लंबी और 1500 किलो वजन वाली निर्भय आसानी से टारगेट भेद सकती है। दुश्मन रडार से बचने के लिए ये कम ऊंचाई पर भी उड़ान भर सकती है।

सरकार पहले भी हथियारखाने और दो दूसरे विभागों को इस मिसाइल के लिए मंजूरी दे चुकी है।

रक्षा विशेषज्ञों का मानना है कि सुपरसोनिक ब्राह्मोस के साथ निर्भय क्लास मिसाइल का कॉम्बिनेशन दुश्मनों के लिए घातक होगा।

<https://www.bhaskar.com/national/news/indian-armed-forces-will-get-the-power-of-nirbhay-cruise-missile-indian-army-indian-air-force-indian-navy-sub-sonic-missile-drdo-132147389.html>

## नवभारत टाइम्स

Wed, 15 Nov 2023

### इस महीने रेडी हो जाएगा भारत का हल्का टैंक, ऊंचाई वाले इलाकों में साबित होगा 'ब्रह्मास्त्र'

पूर्वी लद्दाख में आंख दिखा रहे चीन की खैर नहीं! 2020 में उसने हाई ऑल्टिट्यूड वाले दुर्गम इलाकों में हल्के टैंक तैनात किए। भारत को भी हल्के टैंकों की जरूरत महसूस हुई, 25 टन कैटेगरी में। नए टैंक के निर्माण को अप्रैल 2022 में मंजूरी दी गई। डिफेंस रिसर्च एंड डिवेलपमेंट ऑर्गनाइजेशन (DRDO) ने लार्सन एंड टूब्रो (L&T) को साथ लिया और काम शुरू हो गया। इस महीने के आखिर तक यह ट्रायल के लिए तैयार हो जाएगा। सेना ने अभी इसे

'जोरावर' नाम दिया है। 105 मिलीमीटर की गन से लैस यह टैंक चीन के टाइप 15 टैंकों से कई गुना बेहतर हैं जो लद्दाख में तैनात किए गए हैं। चीनी टैंकों के मुकाबले इन लाइट टैंकों की मोबिलिटी और एक्यूरेसी ज्यादा है।

### **K9 वज्र से अलग है 'जोरावर' टैंक का डिजाइन**

सूत्रों के अनुसार, टैंक का डिजाइन एकदम नया है। पहले रिपोर्ट्स थीं कि लाइट टैंक का डिजाइन K9 सेल्फ प्रोपेल्ड गन की चेसिस पर आधारित है। हालांकि, इसे अनूठे चेसिस के साथ बनाया गया है। टैंक का वजन 25 टन से कम रखा गया है ताकि अत्यधिक ऊंचाई वाले क्षेत्रों में ज्यादा मोबिलिटी मिले। इसमें जॉन क्रॉकरिल की बनाई 105mm की गन लगी है।

जोरावर टैंक में हमलों से बचने के लिए एक्टिव प्रोटेक्शन हो सकता है। लड़ाई के मैदान में ज्यादा विजिबिलिटी के लिए इसमें एक अनमैन्ड एरियल वीडकल (UAV) इंटीग्रेट रहेगा। इस टैंक को केवल हाई ऑल्टिट्यूड वाले इलाकों में ही नहीं, सभी तरह की टेरेन में काम करने के लिए बनाया गया है। चूंकि यह बेहद हल्का है, इसे फौरन ही हवा के जरिए ट्रांसपोर्ट किया जा सकता है।

<https://navbharattimes.indiatimes.com/india/zorawar-indian-army-light-tank-to-take-on-china-high-altitude-areas-trials-soon/articleshow/105222474.cms>

## **THE TIMES OF INDIA**

*Wed, 15 Nov 2023*

### **'Better than China's Type 15 Tanks': India's 1st Indigenous Light Tank for High Altitudes to Counter Chinese Deployments Soon**

India is set to conduct trials for a new light tank specially designed to operate at high altitudes, countering Chinese armored deployments. The tank, developed in a remarkably short span of time, is nearing the completion of its prototype and will undergo a series of trials in December. According to an ET report, this is the first indigenously designed and developed light tank that will help India counter China at high altitudes.

The decision to develop a light tank weighing around 25 tonnes was prompted by the tensions that escalated in eastern Ladakh in 2020 and China deployed light armored vehicles at high altitude locations. The Indian tank, tentatively named Zorawar, is expected to outperform the Chinese Type 15 tanks deployed along the Ladakh border in terms of mobility and firepower accuracy, the report said.

The Defence Research and Development Organisation (DRDO) selected Larsen and Toubro (L&T) as its partner for the project, which was approved for development in April 2022. The tank design is completely new and features an indigenous chassis, contrary to earlier reports suggesting it would be based on the K9 Vajra self-propelled gun chassis already in production in India.

The tank, weighing 25 tonnes, has been specifically designed for superior mobility at extreme altitudes. It will be equipped with a 105 mm gun manufactured by John Cockerill, which is expected to be produced in India once the tanks enter serial production.

Additionally, the tank will incorporate active protection measures against incoming attacks and an integrated Unmanned Aerial Vehicle (UAV) to enhance battlefield visibility.

The new light tank will be capable of operating in various terrains, from high-altitude areas to island territories, and will be air transportable for rapid deployment.

The upcoming trial phase will provide valuable insights into the tank's performance, paving the way for its future deployment by the Indian Army.

<https://timesofindia.indiatimes.com/business/india-business/better-than-chinas-type-15-tanks-indias-1st-indigenous-light-tank-for-high-altitudes-to-counter-chinese-deployments-soon/articleshow/105231513.cms>

## Defence News

## Defence Strategic: National/International



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

**Ministry of Defence**

*Wed, 15 Nov 2023*

### **2023 Edition of the Indo-Pacific Regional Dialogue (IPRD-2023)**

The “Indo-Pacific Regional Dialogue 2023” (IPRD-2023), the three-day annual apex-level regional strategic dialogue of the Indian Navy, commenced in New Delhi on 15 Nov 23. Shri Jagdeep Dhankhar, the Hon’ble Vice President of India was the Chief Guest for the ‘Commemorative Session’, Smt Nirmala Sitharaman, the Hon’ble Minister of Finance and Corporate Affairs delivered the Special Address.

#### **Keynote Address by the Vice President**

The Hon’ble Vice President began his Keynote Address by acknowledging that the seas were emerging as the new frontier for global contestation due to their vast economic potential. He stressed the need for a regulatory regime and its effective enforcement to contain the possibility of contesting claims of the seas and its assets .

The sea is a source of immense unexploited wealth- marine resources, petroleum reserves, critical Rare Earths elements!

This makes seas the new frontier for contestation among global players.

To contain the possibility of contesting claims of the seas and their assets, we need...  
[pic.twitter.com/xC6BbdCaph](https://pic.twitter.com/xC6BbdCaph)

— Vice President of India (@VPIndia) November 15, 2023

He said that it was not possible to aspire for peace from a position of weakness, and therefore there was a need for one to be strong in all fundamentals. Highlighting India’s philosophical approach of ‘Vasudhaiva Kutumbakam’ (The World is One Family), the Vice President said that collaborative

security and innovative partnerships were the way forward in ensuring a peaceful and prosperous region.

No country can stand alone!

There will have to be action in togetherness and sharing of thought processes.

Collaborative security and innovative partnerships are the only way out!

Greed of a sovereign nation can be contained only when other sovereign nations come together....  
[pic.twitter.com/hq39ozEOpi](https://pic.twitter.com/hq39ozEOpi)

— Vice President of India (@VPIndia) November 15, 2023

### **Special Address by the Minister of Finance**

In her address, the Hon'ble Minister stated that the IPRD had gained considerable traction establishing itself as the maritime version of the Raisina Dialogue. She stressed the importance of maritime connectivity in India's economic development and also highlighted the key aspects of the India - Middle-East – Europe Economic Corridor (IMEC) that was announced at the G20 Summit in New Delhi this year.

Watch: Smt @nsitharaman's full address at the 2023 Indo-Pacific Regional Dialogue in New Delhi.  
[@PIB\\_India](#) [@FinMinIndia](#) [@MIB\\_India](#) [@nmfindia](#)<https://t.co/2Rq5o5n4mf>

— Nirmala Sitharaman Office (@nsitharamanoffc) November 15, 2023

### **Invitational Address by the CDS**

General Anil Chauhan, Chief of the Defence Staff delivered the invitational address during the professional session themed “Maritime Connectivity Initiatives Across the Indo-Pacific” and highlighted the historical as well as contemporary salience of the Indo-Pacific, drawing upon India's vision and perspective for the region. The significance of oceans in connecting India globally and the holistic approach to security through SAGAR (Security and Growth for All in the Region) and Swachh Sagar Surakshit Sagar were also deliberated.

### **Commemorative Address by CNS**

Adm R Hari Kumar, Chief of the Naval Staff emphasised India's growing prowess as a maritime power in his Commemorative Address. The CNS also emphasized the relevance of maritime corridors and its huge impacts on security, the economy and the geopolitical environment, through the example of the Suez Canal obstruction by MV Evergiven in Mar 21, which led to an estimated loss of \$ 54 billion in global trade. At the same time, he emphasized the need to counter non-traditional security threats that impacted maritime security in the region. Citing the example of the recently concluded Goa Maritime Conclave, the CNS explained the Indian Navy's collaborative and cooperative initiatives in the Indo-Pacific.

### **Release of Publications**

The Hon'ble Vice President released a book entitled “Building Partnerships – India and International Cooperation for Maritime Security” and the Hon'ble Finance Minister released an edited volume entitled “Maritime Perspectives: Maritime Security Dynamics in the Indo-Pacific: Strategies and Trends”. Both the books have been published by the National Maritime Foundation.

### **Professional Sessions**

Two professional sessions held during the day focussed on the themes - “Nodes of Maritime Connectivity” and “Maritime Connectivity Initiatives Across the Indo-Pacific”. In the first session - moderated by Shri TK Ramachandran, Secretary, Ministry of Ports, Shipping and Waterways - deliberations centred upon port-led development, with globally renowned participants from Japan,

the UK, Australia and India. The second session included the invitational address by the CDS, followed by a panel discussion with eminent experts from Japan, Kenya, Nepal, the Philippines, Australia and Germany. The day's proceedings concluded with two MoUs of cooperation that were signed between the National Maritime Foundation (NMF) and the Nepal Institute for International Cooperation and Engagement (NIICE), Nepal, and the NMF and The Global Centre for Policy and Strategy (GLOCEPS), Kenya.

The IPRD-2023 is being organised by the Indian Navy in association with the National Maritime Foundation as its knowledge partner. Established in 2005, the NMF is one of India's foremost maritime think-tank that concentrates its research upon issues relevant to India's maritime interests, and has gained significant international traction for conduct of independent, original, and policy-relevant research on all 'matters maritime'. The opening day of the Dialogue witnessed participation by over 1000 participants, including delegates from friendly foreign countries and international organisations.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1977216>



*Thu, 16 Nov 2023*

## **Navy Chief Flags Fragile Situation in South China Sea**

The fragile security situation in the South China Sea, in addition to violations of established Codes of Conduct or Confidence Building Measures, poses a clear and present danger to order at sea, Admiral R Hari Kumar said Wednesday.

At the Indo-Pacific Regional Dialogue (IPRD), he said that since the Indo-Pacific is the most militarised in the world, it further increases the probability of the competition turning into a conflict. The event was hosted jointly by the Navy and National Maritime Foundation.

“Owing to the increased presence of multinational forces, and differing interpretations of international laws, there is this fear that the Region's ‘global commons’ can change to contested seas,” the Navy Chief said. He said that more than 50 warships of extra-regional forces continue to remain deployed in the Indian Ocean Region for different missions, such as for anti-piracy patrol off the Gulf of Aden, adding that the wider Indo-Pacific also has significant naval presence.

Citing two recent incidents, during which trade and connectivity at sea was hampered, he said this contestation at sea can have consequences for security. The incidents he was referring to were the blockage of Suez Canal by MV Ever Green in 2021 and the disruption of Black Sea shipping lanes amid the conflict in Europe.

Sources in the government also said that the Indian Navy has been keeping a close watch on the movement of Chinese warships and a submarine which are participating in a naval exercise with Pakistan. Both the navies had kicked off a mega naval exercise in the Arabian Sea which also included their first joint maritime patrol.

“As part of our comprehensive maritime domain awareness, the Indian Navy maintains a close watch on all the movements in the Indian Ocean Region in line with national security interests,” a source said. At the event, finance minister Nirmala Sitharaman called the India-Middle East-Europe Economic corridor (IMEC) a win-win situation for all involved, but added that it is not without the existing geopolitical challenges, a worrying manifestation of which is the ongoing conflict in Israel and Gaza.



She said the IMEC will enhance transportation efficiency, reduce logistic costs, increase economic unity, generate employment as well as lower greenhouse gas emissions.

“It is a multimodal economic corridor that incorporates multiple networks of shipping, railways, and roadways and will also include electricity cables, high-speed data cables, and a hydrogen pipeline,” she said.

She said the project will connect Indian ports such as the Jawaharlal Nehru Port Authority, Mundra (Gujarat), and Kandla (Gujarat) to Fujairah, Jebel Ali, and Abu Dhabi in the UAE, and Saudi Arabian ports of Dammam, Ras Al Khair, and Ghuwair and a rail segment that will continue the IMEC and connect the Saudi Arabian cities of Haradh and Al Haditha, onward to the port of Haifa in Israel.

<https://indianexpress.com/article/india/navy-chief-flags-fragile-situation-in-south-china-sea-9028366/>



*Wed, 15 Nov 2023*

## **Indian Navy Monitoring Movement of Chinese Warships Participating in Exercise with Pakistan**

The Indian Navy has been keeping a close watch on the movement of a Chinese submarine and warships that are participating in a naval exercise with Pakistan, government sources said on Wednesday. The Navy is monitoring the Chinese platforms from the moment they entered the Indian Ocean region through the Malacca strait, they added.

China's PLA Navy has deployed a number of platforms, including frontline warships and a submarine, for the Sea Guardian exercise with Pakistan. As part of India's comprehensive maritime domain awareness, the Navy maintains a close watch on all the movements in the Indian Ocean region, in line with national security interests, the sources said.

<https://www.thehindu.com/news/international/indian-navy-monitoring-movement-of-chinese-warships-participating-in-exercise-with-pakistan/article67535471.ece>



*Wed, 15 Nov 2023*

## **How Cruise Missile Nirbhay Adds Muscle to India's Rocket Force Plan**

The Indian military has been working towards creating a dedicated rocket force, on the lines of the People's Liberation Army (PLA) Rocket Force that controls China's arsenal of land-based ballistic missiles—both nuclear and conventional. The latest addition to India's existing rocket arsenal will be the Nirbhay cruise missile, capable of hitting targets up to 1,000 km away. It is believed that Nirbhay, once approved by the ministry of defence (MoD), will be part of all three services—the army, navy and air force. Military planners believe China is fielding precision-strike conventional missiles in the India-facing Western Theater Command, including the KD-63 air-launched land-



attack cruise missile and KD-10 anti-tank guided missile. They say the way the PLA is treating the tense standoff on the Line of Actual Control (LAC) as an opportunity to gain rare experience of operating in not just adverse climactic but military conditions, the Indian military too needs to take adequate measures to counter the emerging threats. Deployment of the BrahMos missile near the LAC along with the short-range Pralay ballistic missile and Nirbhay missile would serve as a strong deterrent, the planners say.

Nirbhay is India's first indigenous cruise missile. With its cylindrical fuselage, it is similar in appearance to the US Tomahawk and Russian Club SS-N-27 missiles. Nirbhay equips a land-based mobile launcher but reports suggest potential deployment on submarines as well.

After some initial years of hiccups, developers of the Nirbhay missile appear to have reached a satisfactory stage. Two years ago, the missile was successfully test-fired with an indigenous booster engine after the previous one had to be aborted eight minutes into flight.

The Defence Research and Development Organisation (DRDO) describes Nirbhay as a long-range subsonic cruise missile capable of deep penetration into adversary territory to strike high-value targets with precision. The DRDO's Aeronautical Development Establishment led a consortium of DRDO laboratories for the indigenous design and development of Nirbhay. "Nirbhay is presently launched from a mobile-articulated launcher. The missile is being adopted for launch from sea and air platforms. India is among a select few countries having the capability to design and develop this class of cruise missiles," states the DRDO website.

The Nirbhay measures 6 m in length, 0.5 m in diameter and weighs 1,500-1,600 kg at launch. It has a range of 800-1,000 km while carrying a 450 kg payload. It equips a land-based mobile launcher and carries high-explosives or submunitions, although a small nuclear warhead with a 12 KT yield is also possible. Military planners believe the command and control of the Indian rocket force could initially be vested with a single service, say the Indian Army, and subsequently made rotational with the other services.

India's arsenal of homegrown conventional and nuclear-capable missiles, such as the Agni, Prithvi, BrahMos, Nag, Pralay and Pradyumna, could be part of the country's first rocket force in the medium and long-range category. The successful testing of the Pralay missile bolsters India's efforts to develop its integrated rocket force and non-contact war capability. Military planners say the rocket force will be an apt response to the PLA's growing border aggressions. While Pralay is propelled by a solid-propellant rocket motor and has a range of 150-500 km, efforts are now being made to bring Nirbhay into India's rocket arsenal.

<https://www.indiatoday.in/india-today-insight/story/how-cruise-missile-nirbhay-adds-muscle-to-indias-rocket-force-plan-2463295-2023-11-15>



*Wed, 15 Nov 2023*

## **What is Igla-S, the Portable Air Defence System India is Procuring to Attack Low-flying Aircraft**

India is set to procure the Igla-S a powerful hand-held anti-missile system from Russia to boost defence infrastructure along borders with China and Pakistan. According to Russian state news

agency TASS, Russia has signed a contract to supply the Igla-S hand-held anti-aircraft missiles to India and permit the weapon to be produced in India under licence.

The weapon has been designed to attack low-flying aircraft and can engage all sorts of visually detectable aircraft and helicopters.

### **WHAT IS IGLA-S DEFENCE SYSTEM?**

The Igla-S is a man-portable air defence system (MANPADS) that can be fired by an individual or crew to bring down an enemy aircraft. The weapon, an advanced variant of the Igla MANPADS, can engage low-flying aircraft and helicopters and identify air targets such as cruise missiles and drones.

The weapon system comprises the 9M342 missile, the 9P522 launching mechanism, the 9V866-2 mobile test station, and the 9F719-2 test set.

It has a range of 500 metres to 6 kilometres and attack targets up to an altitude of 3.5 kilometres. The speed of the missile is 400 metres per second and the deployment time is 13 seconds.

MANPADS have become popular after being successfully deployed by Ukraine to thwart the Russia's air superiority in the ongoing war.

### **SOME IGLA-S SYSTEMS ALREADY IN USE**

The Army, Navy and the Indian Air Force already have Igla man-portable missiles in their inventories. The Indian Army last year inducted a small number of Igla-S systems under the emergency procurement route to bolster its defence capabilities amid ongoing tensions with China and Pakistan. The contract was signed in December 2020 and the equipment was delivered by December 2021.

India procured 216 missiles, 24 launchers, and additional testing equipment from Russia, which was finally inducted in April last year.

The Defence Ministry was considering a contract to procure Igla-S as a part of the Very Short-Range Air Defense (VSHORAD) deal.

In addition to the Igla-S, the Army variant of the Medium Range Surface to Air Missile (MRSAM) has also been developed by the Defence Research and Development Organisation (DRDO) and Israel Aerospace Industries (IAI).

India is also looking at production of the Russian missile systems in the country under the Make-in-India initiative, according to PTI.

### **INDIA-RUSSIA DEFENCE TIES**

Though India has heavily cut down its defence imports, however, the country is still reliant on Russian weapons along the western and northern fronts.

Russia accounted for 45% of India's arms imports between 2018 and 2022, with France providing 29% and the United States 11%, according to the Stockholm International Peace Research Institute (SIPRI). India has also purchased S-400 anti-aircraft systems from Russia, which can hit targets at 400 km maximum distance and also have the capability to take out targets at shorter ranges too. India signed a USD 5 billion deal with Russia to buy five units of the S-400 air defence missile systems in October 2018, despite sanctions warning by the US.

Russia started delivery of the first regiment of the missile systems in December 2021 and it has been deployed to cover parts of the border with China in the northern sector as well as the frontier with Pakistan. The S-400 is known as Russia's most advanced long-range surface-to-air missile defence system.

The IAF relies on Russian defence companies for spare parts on the Su-30 MKI, tanks, armoured vehicles and shells. Earlier this year, India and Russia also began the joint production of AK-203 Kalashnikov assault rifles.

<https://www.news18.com/explainers/what-is-igla-s-the-portable-air-defence-system-india-is-procuring-to-attack-low-flying-aircraft-8662933.html>



*Thu, 16 Nov 2023*

## **Bulletproof Innovation: MKU's Breakthrough AK-47 Helmet Redefines Soldier Safety Globally**

In a significant stride towards enhancing soldier safety, the Indian Army has intensified its focus on countering the persistent threat posed by AK-47 rifles. Amid rising security challenges, the spotlight is on MKU Limited, an eminent Indian defence equipment manufacturer, which has globally unveiled an innovative AK-47 rifle protection helmet at Milipol Paris. This development marks a notable advancement in military technology, reinforcing India's stature in the international defence arena.

The quest for effective protection against AK-47 bullets has been a long-standing priority for India's armed forces. This was particularly evident in the early 1990s during counterinsurgency operations in Jammu and Kashmir. The troops, equipped with Model 1974 fiberglass helmets, found them inadequate against the AK-47 rounds. This led to the development of the 'bulletproof patka' helmet by Major General V.K. Datta, offering some degree of protection but with limitations.

Over the years, high-profile security incidents, like the 26/11 Mumbai attacks and the 2016 Uri attack, have underscored the urgent need for superior protective gear against AK-47 rounds. These incidents have revealed vulnerabilities in the existing equipment, primarily designed for 9mm threats, thus highlighting the gap in India's defence preparedness.

Addressing this gap, the Indian Army in 2018 placed a significant order for 158,000 ballistic helmets from MKU Limited. While these helmets were primarily intended for 9mm handgun protection, the escalating use of AK-47 rifles by militants revealed their limitations. This led to the development of a modular ceramic plate as an interim solution, but the need for a more robust and sustainable solution was evident.

MKU's breakthrough in AK-47 rifle protection technology is the result of a rigorous five-year research and development endeavor. The unveiling of their AK-47 rifle protection helmet at Milipol Paris, a prominent global exhibition for Defence and Homeland Security, represents a landmark in defence technology. This helmet, capable of withstanding up to five shots from an AK-47, sets a new benchmark in soldier safety and positions India as a key player in the global defence sector.

The defence industry has been abuzz with the unveiling of MKU's Kavro Doma 360, which is expected to soon equip defence and paramilitary units in India and internationally. This development not only enhances the safety of military personnel but also signifies India's growing influence and capabilities in the global defence industry.

<https://www.financialexpress.com/business/defence-bulletproof-innovation-mkus-breakthrough-ak-47-helmet-redefines-soldier-safety-globally-3308146/>

## **US Accuses China, Russia of Helping North Korea's Military Expansion amid Fears of ' Hamas-style' Attack**

The United States has accused China and Russia of helping boost the North Korean military after Seoul warned about a " Hamas-style" attack by Pyongyang. US Defence secretary Lloyd Austin said that the US is troubled by the recent growth in military cooperation between Russia and the DPRK (Democratic People's Republic of Korea).

"We are deeply concerned that the PRC (People's Republic of China) and Russia are helping the DPRK (Democratic People's Republic of Korea) expand its capabilities by enabling it to evade sanctions from the UN Security council," Lloyd Austin said.

"We're also troubled by the recent growth in military cooperation between Russia and the DPRK," he added.

The US claimed that Kim Jong Un's country is helping Russia by supplying military equipment for its war with Ukraine and in return Moscow is providing technical support to Pyongyang.

Earlier, Shin Won-sik, South Korean defence minister had said that North Korea has been warned not to attempt any aggressive acts. "If North Korea ever invades the South again, it will be self-contradictory, where a UN member state would be attacking the UN Command."

"If the countries that backed North Korea during the Korean War ever try to help again, then those countries will also receive grave punishment from the international community along with North Korea," he added.

Earlier on Sunday, Yoon Suk-yeol, South Korean president had asked Mr Austin to stay vigilant against possible attack by North Korea. Suk-yeol had also asserted that there is a need to be prepared for surprise assaults by North Korea.

South Korean politicians have raised concerns over a possible attack by North Korea. Meanwhile, North Korea is making efforts to boost its defence system. According to a report by BBC, Seoul is developing its own missile defence system. Last Month it conducted joint live-fire exercises with US troops to enhance preparedness in responding to potential " Hamas-style surprise artillery attacks" by North Korea.

<https://timesofindia.indiatimes.com/world/us/us-accuses-china-russia-of-helping-north-koreas-military-expansion-amid-fears-of-hamas-style-attack/articleshow/105239615.cms>

## **Biden, Xi Agree to Restore some Military-to-military Communications between US-China**

US President Joe Biden and Chinese President Xi Jinping have agreed to restore some military-to-military communications between their armed forces as the two leaders met for hours on the sidelines of the Asia-Pacific Economic Cooperation summit in San Francisco. Both sides pledged

cooperation that would bring the US and China closer to resuming regular talks under what's known as the Military Maritime Consultative Agreement, which until 2020 had been used to improve safety in the air and on the sea.

A senior US official said after the Biden-Xi meeting ended that the military communication agreements mean that US Defence Secretary Lloyd Austin can meet with his Chinese counterpart once that person is named. The official spoke to reporters on condition of anonymity to discuss a private meeting.

This also opens the door for agreements at less-senior levels, including that the commander of US Pacific forces in Hawaii can engage with counterpart theatre commanders, the official said. The agreement will likely mean operational engagements between ship drivers and others at much lower levels in each country.

Xi said after the meeting that he and Biden agreed to resume high-level military dialogues on the basis of equity and respect, according to a statement released by China Central Television, the state broadcaster.

The agreement comes after US military leaders had expressed repeated concerns about the lack of communication with China, particularly as the number of unsafe or unprofessional incidents between the two nations' ships and aircraft has spiked.

According to the Pentagon's most recent report on China's military power, Beijing has "denied, cancelled or ignored" military-to-military communications and meetings with the Pentagon for much of last year and this year. The report warns that the lack of such talks "raises the risk of an operational incident or miscalculation spiralling into crisis or conflict."

The US views military relations with China as critical to avoiding any missteps and maintaining a peaceful Indo-Pacific region. Here's a look at the often fraught relationship between the US and Chinese militaries.

## **A DECADE OF TALKS AND VISITS**

More than 15 years ago, the Defence Department was making progress in a growing effort to improve relations with Beijing as both sides stepped up military activities in the Indo-Pacific.

The US was concerned about Beijing's dramatic and rapid military growth. And China was suspicious of America's expanding presence in the region.

In an effort to improve transparency and communication, defence leaders from the two countries were meeting regularly. And in a 2008 speech in Singapore, then-Defence Secretary Robert Gates noted that relations with China had improved and that a long-sought direct telephone link between the US and China had finally been established. He said he had used it to speak with the defence minister.

He and other defence chiefs, Joint Chiefs chairmen, and regional high-level US commanders routinely travelled to China over the next decade, and Chinese defence leaders came to the Pentagon. "We don't want miscalculations and misunderstandings and misinterpretations. And the only way you do that is you talk to each other," noted then-Defence Secretary Chuck Hagel in 2013.

The following year Hagel made a historic visit to Yuchi Naval Base and became the first foreign visitor to go aboard China's first aircraft carrier as it was docked at the base.

The Defence Department's 2014 report on China's military power referred to "sustained positive momentum" in US ties with Beijing, and noted there was a growing number of agreements, conferences, calls, and military exercises.

It said the two militaries established new channels for dialogue and signed two agreements to improve transparency and reduce the risks of unintended miscalculations by ships and aircraft in the Pacific.

### **BUT TENSIONS PERSISTED**

Even as military leaders were meeting, the Obama administration's widely touted "pivot to the Pacific," which added troops, ships, and other US military activity in the region, triggered vehement criticism from Beijing. And China's aggressive campaign to militarise a number of manmade islands in the South China Sea alarmed the US and other allies in the Pacific.

Allies worried that China would seek to limit international transit through the region and that the islands could be used as bases for military action. In 2018, the Trump administration abruptly withdrew an invitation for Beijing to participate in the military exercise known as Rim of the Pacific, citing what it called strong evidence that China had deployed weapons systems on the islands.

China has argued that it is within its rights to build up defences in the South China Sea on what it believes is its sovereign territory.

The Pentagon routinely complained that there was little tangible progress in the press for greater transparency in China's military ambitions and its burgeoning defence budget. And China bristled at America's continued support for Taiwan, the self-governing island that Beijing views as its own.

More broadly, the US issued sharp condemnations of China's escalating cyberattacks targeting government agencies and breaches and cyberespionage into sensitive defence programmes.

### **THEN CAME THE PANDEMIC AND PELOSI**

Direct military contacts with Beijing dropped off during the Covid pandemic, due both to travel restrictions and tensions over China's potential responsibility for the deadly virus that began within its borders. And in August 2022, Beijing suspended all military contacts with the US, in the wake of former House Speaker Nancy Pelosi's visit to Taiwan.

Pelosi was the highest-ranking American lawmaker to visit Taiwan since 1997 when then-Speaker Newt Gingrich travelled there. And her visit sparked a surge in military manoeuvres by China.

Beijing dispatched warships and aircraft across the median line in the Taiwan Strait, claiming the de facto boundary did not exist, fired missiles over Taiwan itself, and challenged established norms by firing missiles into Japan's exclusive economic zone.

US officials suggested China was simply using Pelosi's visit as a convenient excuse to cut off ties, which were strained by other points of contention, including economic sanctions.

But the lack of communications heightened worries about an increase in what the Pentagon calls risky Chinese aircraft and warship incidents in the past two years. Officials noted that even as tensions with Russia have spiked over the war in Ukraine, military commanders have continued to use a telephone line to deconflict operations in Syria.

The Defence Department last month released video footage of some of the more than 180 intercepts of US warplanes by Chinese aircraft that have occurred in the past two years - more than the total number over the previous decade.

Defence officials said the Chinese flights were risky and aggressive, but stopped short of calling most of them unsafe - a term used in egregious cases. They said this was part of a larger trend of regional intimidation by China that could accidentally lead to conflict.



Carolyn Bartholomew, chairwoman of the congressionally mandated US-China Economic and Security Review Commission, said a key goal for the administration should be to get a commitment from the Chinese government to scale back on such dangerous incidents.

### **THE MARITIME AGREEMENT**

Bonnie Lin, director of the China Power project at the Center for Strategic and International Security, a Washington-based think tank, said it was important to restart the talks under the maritime agreement.

Resumption "would be a signal that the two sides can work together more," Lin said at a CSIS forum Tuesday.

<https://economictimes.indiatimes.com/news/defence/biden-xi-agree-to-restore-some-military-to-military-communications-between-us-china/articleshow/105246523.cms>



*Thu, 16 Nov 2023*

## **South China Sea: US, Philippine Defence Chiefs Slam Beijing's 'Dangerous' Actions, Seek Intel-sharing Deal**

The US and the Philippines' defence chiefs slammed Beijing's recent moves in the South China Sea and pushed to bolster their long-standing alliance, even as Washington seeks to warm ties with China.

US Defence Secretary Lloyd Austin and his Philippine counterpart Gilberto Teodoro Jr met on the sidelines of Asean Defence Ministers' Meeting-Plus in Jakarta, according to a joint readout released on Wednesday.

The secretaries "denounced the recent harassment" by Chinese vessels towards Philippine coastguard and resupply vessels "conducting lawful resupply operations" around Second Thomas Shoal, which is part of Beijing's sweeping claims over the South China Sea.

The top defence officials also decried China's "dangerous" operational manoeuvres against US aircraft and ships in the South China Sea. China has maintained that its actions in contested waters were lawful.

The readout was released amid Washington's efforts to improve relations with China, including a Wednesday meeting between US President Joe Biden and Chinese President Xi Jinping on the sidelines of the Asia-Pacific Economic Cooperation (Apec) conference in San Francisco.

The US and the Philippines' defence ministers also "committed to explore further opportunities to strengthen bilateral operations and planning," including military drills next year and an agreement on information-sharing. They also sought "to expand multilateral activities with like-minded partners," the statement said.

Both officials reaffirmed that the mutual defence treaty, which obliges Washington to come to Manila's defence in case of an armed attack. The treaty "extends to both countries' armed forces, public vessels, and aircraft – including those of its coastguard – anywhere in the Pacific, to include the South China Sea," according to the statement.

"Secretary Austin reiterated President Biden's message that the US defence commitment to the Philippines is ironclad, and emphasised that the United States stands shoulder to shoulder with the

Philippines in defending its sovereign rights and jurisdiction in its exclusive economic zone,” the readout said.

The US military early this year won access to four more Philippine sites, on top of the initially agreed five bases under the Enhanced Defence Cooperation Agreement (EDCA).

Following the recent completion of a US\$24 million runway upgrade at one of the Philippine military bases, the defence chiefs “pledged to further accelerate EDCA implementation,” the readout said.

Meanwhile, Manila’s Department of Foreign Affairs on Thursday called on China to remove illegal structures, cease reclamations and be accountable for environmental damage in the disputed waterway.

The ministry said that resupply missions to the Second Thomas Shoal located within the Philippines’ exclusive economic zone (EEZ) are legitimate activities, and it will not give prior notification to China.

The Philippines was responding to a statement by the Chinese foreign ministry spokesperson regarding the Philippines’ recent resupply mission.

“We are being asked to give prior notification each time we conduct a resupply mission to Ayungin Shoal. We will not do so. The resupply missions are legitimate activities within our EEZ, in accordance with international law,” said Philippine foreign ministry spokesperson Teresita Daza.

The regular resupply missions support the Philippines’ troops stationed in an intentionally grounded, dilapidated warship on Second Thomas Shoal, a hotly disputed atoll in the South China Sea that Manila calls Ayungin and is known as Renai Reef in China.

<https://www.scmp.com/news/asia/southeast-asia/article/3241714/south-china-sea-us-philippine-defence-chiefs-slam-beijings-dangerous-actions-seek-intel-sharing-deal>

## Science & Technology News



**Press Information Bureau**  
Government of India

**Ministry of Science & Technology**

*Wed, 15 Nov 2023*

### **9th India International Science Festival (IISF) 2023 to be Held at Faridabad, Haryana from January 17th-20th, 2024**

**The theme of the present edition is 'Science and Technology Public Outreach in Amrit Kaal'**

The 9th edition of the India International Science Festival (IISF) 2023 will be held at Faridabad, Haryana from January 17th-20th, 2024. India’s mega Science Fair will be held at the Campus of Translational Health Science and Technology Institute (THSTI) and Regional Centre for Biotechnology (RCB) of Department of Biotechnology in Faridabad.

The theme of the present edition is 'Science and Technology Public Outreach in Amrit Kaal'. IISF 2023 aims to provide a platform for inspiring public at large and individuals with diverse levels of interests like students, educators, scientists, researchers, industry professionals, entrepreneurs and science communicators.

IISF 2023 will have a total of 17 themes to showcase scientific achievements offering diverse benefits to participants and the general public.

The event holds interface among all stakeholders through various activities such as seminars by national and international experts, interactions with speakers, exhibitions, competitions, workshops, knowledge-sharing activities, technology shows, etc.

The IISF is dedicated towards fostering creativity in Science, Technology and Innovation for the advancement of prosperous India. This event was initiated under the visionary leadership of Prime Minister Shri Narendra Modi through collaborative efforts of the Ministry of Science and Technology and the Ministry of Earth Sciences in association with Vijnana Bharati.

Since 2015, the IISF has hosted eight editions in different geographical regions of India and expanded as a mega science festival. In 2021, the Department of Space and the Department of Atomic Energy became an integral part of IISF.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1977017>



*Wed, 15 Nov 2023*

## **NASA, ISRO Complete Key Tests ahead of NISAR's Launch Early Next Year**

Scientists and engineers involved in the NASA-ISRO Synthetic Aperture Radar (NISAR) mission have completed key tests including the thermal vacuum testing ahead of its launch which is scheduled to take place in the first quarter of 2024.

Phil Barela, NASA NISAR project manager, Jet Propulsion Laboratory (JPL), said that crucial thermal vacuum testing was completed in Bengaluru.

"I am very pleased to say that the thermal vacuum test which is a very important test we do at the system level to make sure that we have worked out all the bugs and the temperature etc has been completed which is a key milestone for the team," Mr Barela said.

He also added that the Electromagnetic interference (EMI) and Electromagnetic compatibility (EMC) testing has been completed and the next up would be the crucial vibration tests.

"We got to simulate the harshest environment the spacecraft ever sees and there is nothing scarier than putting a whole satellite on a shaker cable and watching it shake while simulating in the launch environment. That's the big test," Mr Barela added.

NISAR is a Low Earth Orbit observatory jointly developed by NASA and ISRO which is expected to be launched from the Satish Dhawan Space Centre in Sriharikota onboard ISRO's GSLV Mark-II launch vehicle.

According to NASA, NISAR data will help researchers monitor a wide range of changes in unprecedented detail which includes spotting warning signs of imminent volcanic eruptions, helping monitor the effects of groundwater use such as land subsidence, tracking the melt rate of

ice sheets tied to sea level rise and observing shifts in the distribution of vegetation around the earth.

The \$1.5-billion NISAR's mission life is for three years and the satellite will survey all of earth's land and ice-covered surfaces every 12 days and this starts after a 90 day satellite commissioning period.

NISAR carries L and S dual-band Synthetic Aperture Radar (SAR), which operates with the Sweep SAR technique to achieve large swaths with high-resolution data. The SAR payloads mounted on Integrated Radar Instrument Structure (IRIS) and the spacecraft bus are together called an observatory.

NASA's JPL is providing the mission's L-band SAR. NASA is also providing the radar reflector antenna, the deployable boom, a high-rate communication subsystem for science data, GPS receivers, a solid-state recorder, and payload data subsystem. ISRO's U R Rao Satellite Centre in Bengaluru is providing the spacecraft bus, the S-band SAR electronics, the launch vehicle, and associated launch services and satellite mission operations.

Dr Laurie Leshin, director, Jet Propulsion Laboratory, NASA said that over the last nine months over 160 JPL team members have travelled to India and at any given time there are about 30 to 40 members based in Bengaluru working shoulder to shoulder with their ISRO colleagues.

She added that NISAR is better than anything NASA has flown so far.

<https://www.thehindu.com/sci-tech/science/nasa-isro-gearing-up-to-launch-joint-space-mission-to-map-globe-every-12-days/article67534624.ece>

