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# समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO  
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### **R&D Key to India's 'Atma Nirbharta': NSTL DRDO Chief**

Stating that product design for India's defence sector needs to meet the highest quality standards, renowned scientist and NSTL - DRDO director Dr Y Sreenivas Rao on Thursday said that R&D plays a major role in strengthening India's defence sector in achieving Atma Nirbhar status. Addressing the 'Defence Conclave' organised with the theme 'Atma Nirbharta in Defence Manufacturing - Modernisation through Indigenisation' organised by the Confederation of Indian Industry, Telangana, Dr Rao said: "Our soldiers need to fight with superior quality products which can perform very well in all kinds of environmental conditions."

He said that small and medium-sized companies are investing in R & D from their resources but since they are unable to compete well with large companies with huge capital outlay, they are collaborating with each other. Colonel Jaspreet Singh, Col- ADB (Industries), Army Design Bureau, said that 'Make in India' is also 'Make With the World' and we need to get critical technologies into the country. From one of the major importers, we are now transforming into a military equipment exporter, he pointed out.

The Army Design Bureau actively engages with industry and academic institutions on development of various niche technologies for utilisation by the Indian Army. In recent years, capital outlay for defence equipment is increasing and the defence sector is expected to grow in a much bigger way. PA Praveen, director, Defence and Aerospace, said that Telangana is implementing several skill development initiatives to ensure quality manpower is available locally. He said that the government of Telangana is also exploring the possibility of encouraging the private sector to establish an Aerospace university.

<https://www.newindianexpress.com/states/tehrangana/2022/nov/18/rd-key-to-indias-atma-nirbharta-nstl-drdo-chief-2519360.html>

*Thu, 17 Nov 2022*

## **R&D Plays Major Role in Strengthening our Defence Sector: Dr Y Sreenivas Rao**

Dr Y Sreenivas Rao, Outstanding Scientist & Director NSTL, DRDO has said that Research & Development playing a major role strengthening our Defence sector in reaching Atma Nirbhar status while designing for defence sector the product design need to withstand highest quality standards. Speaking at the Defence Conclave, organized by Confederation of Indian Industry (CII), Telangana with the theme 'Aatmanirbharta in Defence Manufacturing – Modernisation through Indigenisation here on Thursday, Dr Rao said our soldiers need to fight with superior quality products which can perform very well in all kinds of environmental conditions.

Once the product is finalized it needs to function for at least for 20 years. Small and Medium sized companies are investing on R&D from their resources and unable to compete well with large companies with huge capital outlay. Usually development of a sustainable product takes 10 years so these days many companies which were competitors are collaborating with each other, he said. Col. Jaspreet Singh, Col- ADB (Industries), Army Design Bureau, Indian Army, Government of India said that Make in India is also made with the world and we need to get critical technologies into the country. Now there is an institutionalized interface between the Army and the industry.

From one of the major importers, we are now transforming into a military equipment exporter. Army Design Bureau actively engages with Industry & Academic institutions on development of various niche technologies for utilization by Indian Army Soldiers. The products need to be tested in real climate environments and trial and testing need to be thoroughly tested. This year alone 60 trials were conducted by the Army Design Bureau. In the recent years, capital outlay for defence equipment is increasing in many folds and in future defence sector is expected to grow in a much bigger way, he said. While addressing the conclave, PA Praveen, Director, Defence & Aerospace, Government of Telangana said that Defence is a OEM driven sector and technology leader defines the manufacturing and certification process as these are pertaining to national security. There are significant entry barriers however if R&D is strong and a good product is developed then sustainable growth is possible. The Telangana government was implementing several skill development initiatives to ensure quality manpower is available locally. The state government also exploring the possibility of encouraging the private sector to establish Aerospace University. Several CoEs such as Pratt & Whitney have established their engine training facility in Hyderabad.

Dr Subba Rao Pavuluri, Convenor, CII Telangana Defence & Aerospace Panel, Chairman & Managing Director, Ananth Technologies Limited said that many OEMs are setting up their operations in India and the Government is creating a level playing field between PSUs and Private Sector industry. We could create a better market for exports and it is expected to reach USD 1 Billion from India. Space and defence sectors are growing in a big way and industry is expected to grow exponentially.

<http://www.uniindia.com/news/south/telangana-defence/2862797.html>



**Press Information Bureau  
Government of India**

**Ministry of Defence**

*Thu, 17 Nov 2022*

### **Completion of Coastal Defence Exercise Sea Vigil-22**

Exercise Sea Vigil-22, the two-day Coastal Defence exercise was conducted from 15-16 Nov 22. The conceptual and geographical expanse of Sea Vigil included contingencies ranging from Peace to War-time across the entire coastline and EEZ of the country. In addition, mitigation measures, on shore, in case of any breach in Coastal Security mechanism were also validated. The exercise involved participation of more than 17 Government agencies from nine Coastal States and four Union Territories that are involved in the Coastal Defence Mechanism and Coastal Security construct.

This edition of exercise Sea Vigil saw the largest participation from all maritime security agencies. More than 500 surface assets from the Indian Navy (IN), Coast Guard (CG), States Marine/ Coastal Police, Customs, Forest Department, Port Authorities and private operators participated in the exercise. The entire coastline was kept under surveillance by the IN and CG ships and aircraft. Helicopters were also pressed into service to reinforce Special Operations personnel operating onboard offshore platforms.

As ports form the nerve centre of sea borne trade, security mechanism of ports was also validated during the exercise and the crisis management plans of all ports were assessed for their effectiveness to tackle emergencies. The State Police teams, Indian Navy Marine Commandos and Commandos from National Security Guard were exercised to tackle acts of maritime terrorism. In keeping with the Hon'ble Prime Minister's vision of giving impetus to NCC, enthusiastic participation by more than 800 NCC cadets was witnessed all across the Coastal states and UTs. Participation of NCC cadets in an actual nation-wide exercise resulted in enhanced awareness and involvement amongst the cadets.

The exercise also validated the technical surveillance infrastructure called the National Command, Control, Communication and Intelligence (NC3I) Network. The Information Management and Analysis Centre (IMAC) at Gurugram and its various nodes across IN and CG stations were exercised for coordinating the surveillance and information dissemination mechanism. The envisaged objectives of the exercise were met by the whole-hearted participation of all stakeholders.

The cooperation and coordination amongst various agencies involved is a reassuring sign of progress made in the realm of Coastal Defence and the exercise would go a long way in enhancing Coastal Defence and National Security in the maritime domain.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1876738>

# THE ECONOMIC TIMES

*Thu, 17 Nov 2022*

## **Navy Conducts Two-day Coastal Defence Exercise**

The Navy on Thursday said Exercise Sea Vigil-22, a two-day coastal defence exercise, was conducted from November 15-16. The conceptual and geographical expanse of Sea Vigil included contingencies ranging from peace to war-time across the entire coastline and EEZ of the country. In addition, mitigation measures, on shore, in case of any breach in coastal security mechanism were also validated, it said.

The exercise involved participation of more than 17 government agencies from nine coastal states and four Union Territories that are involved in the coastal defence mechanism and coastal security construct. This edition of exercise Sea Vigil saw the largest participation from all maritime security agencies. More than 500 surface assets from the Indian Navy, Coast Guard, states marine, coastal police, customs, forest department, port authorities and private operators participated in the exercise, the Navy said. The entire coastline was kept under surveillance by the Navy and Coast Guard ships and aircraft. Helicopters were also pressed into service to reinforce special operations personnel operating onboard offshore platforms, officials said.

"As ports form the nerve centre of sea-borne trade, security mechanism of ports was also validated during the exercise and the crisis management plans of all ports were assessed for their effectiveness to tackle emergencies," the Navy said. The state police teams, Indian Navy Marine Commandos and commandos from National Security Guard were exercised to tackle acts of maritime terrorism, it added.

In keeping with the Prime Minister's vision of giving impetus to NCC, enthusiastic participation by more than 800 NCC cadets was witnessed all across the coastal states and UTs. Participation of NCC cadets in an actual nationwide exercise resulted in enhanced awareness and involvement amongst the cadets, the Navy said. The exercise also validated the technical surveillance infrastructure called the National Command, Control, Communication and Intelligence (NC3I) Network. The Information Management and Analysis Centre (IMAC) at Gurugram and its various nodes across IN and CG stations were exercised for coordinating the surveillance and information dissemination mechanism, it said.

The envisaged objectives of the exercise were met by the whole-hearted participation of all stakeholders. The cooperation and coordination amongst various agencies involved is a reassuring sign of progress made in the realm of Coastal Defence and the exercise would go a long way in enhancing Coastal Defence and National Security in the maritime domain.

<https://economictimes.indiatimes.com/news/defence/navy-conducts-two-day-coastal-defence-exercise/articleshow/95581583.cms>

*Thu, 17 Nov 2022*

## **Exercise Sea Vigil-22 Concludes, Navy & Coast Guard Drill Validate Surveillance Infrastructure**

The technical surveillance infrastructure called the National Command, Control, Communication and Intelligence (NC3I) Network were all validated during Ex-Sea Vigil-22. During the drill the Information Management and Analysis Centre (IMAC) located at Delhi NCR and its other nodes across Indian Navy and Coast Guard participated in the exercise related to coordinating the surveillance and information dissemination mechanism.

Financial Express Online has reported earlier this week that the two-day Coastal Defence exercise Sea Vigil-22, conducted from Nov 15-16, 2022, which involved participation of more than 17 Government agencies. According to the Indian Navy, nine were from Coastal States and the rest were from Union Territories (UTs) — who are involved in the Coastal Defence Mechanism and Coastal Security construct.

Also, keeping in line with Prime Minister Narendra Modi's vision of giving a push to the NCC, this time there was participation by more than 800 cadets from all coastal states as well as UTs. In an official note from the Indian Navy, the expanse of the Sea Vigil across the entire coastline and EEZ of the country included contingencies. These were ranging from peace to war-time and also mitigation measures, on shore.

### **Who participated in Sea Vigil -22?**

In this edition there was participation from all maritime security agencies, and there were 500 surface assets from different stakeholders including the Indian Navy, Coast Guard, Port Authorities, Customs, and Forest Department, States Marine / Coastal Police and private operators. While helicopters were pressed into service to reinforce Special Operations personnel who were operating onboard offshore platforms, the coastline was being under surveillance by the ships of the navy and coast guard.

During the drill the security mechanism of ports was also validated during the exercise and also the crisis management plans of all ports were also assessed to ensure their effectiveness in times of emergencies. Along with the Indian Navy Marine Commandos and Commandos from National Security Guard, State Police teams, were all exercised to deal with different acts of maritime terrorism.

<https://www.financialexpress.com/defence/exercise-sea-vigil-22-concludes-navy-amp-coast-guard-drill-validate-surveillance-infrastructure/2830099/lite/>

# The Tribune

*Thu, 17 Nov 2022*

## **‘War at Sea’ Marks Malabar Series of Naval Exercises Involving India, Japan, US, Australia**

The Malabar series of naval exercises involving India, Japan, the US and Australia have culminated with the highlight being the conduct of ‘War at Sea exercise’, which enabled all four navies to consolidate interoperability and hone their tactical skills. The theme of the Malabar was based on strengthening cooperation between the four countries and for a ‘free and open Indo-Pacific’. “Free and open Indo-Pacific” is a euphuism for opposing Chinese hegemony and attempts to impede traffic at sea and in air. China in the past has been objecting to warships in open sea of the South China Sea.

The sea phase of ‘Malabar-22’ was conducted over a period of five days near Yokosuka Japan and witnessed live weapon firings, surface, anti-air and anti-submarine warfare drills and tactical procedures. The high-tempo exercise saw the participation of eleven surface ships including a nuclear-powered aircraft carrier with its air elements, along with four long-range maritime patrol aircraft, integral helicopters and two submarines. The exercise also involved exchange of ‘Sea Riders’ between various participating ships, the Indian navy said on Thursday. Apart from operational drills and exercises, the bilateral logistics support agreements between the participating countries were validated during this edition of exercise Malabar.

The exercise helped enhance understanding of each others’ operational methodologies and ability to co-operate to tackle myriad maritime challenges. The Japan Maritime Self Defence Force was the host. Malabar series of maritime exercises commenced in 1992 and have grown in complexity over the years. It includes four prominent navies in the Indo-Pacific region, incidentally all four are partners in the Quadrilateral or the ‘Quad’. Indian Naval Ships INS Shivalik and INS Kamorta and the surveillance plane P8-I participated. Rear Admiral Sanjay Bhalla, Flag Officer Commanding, Eastern Fleet, led the Indian team.

<https://www.tribuneindia.com/news/nation/war-at-sea-marks-malabar-series-of-naval-exercises-involving-india-japan-us-australia-451852>



## एलएसी पर हल्के लड़ाकू हेलिकॉप्टर तैनात अरुणाचल के मीसामारी में शिफ्ट हुईं स्क्वाड्रन, बढ़ेगी सेना की हवाई ताकत

Poonam.Pandey@timesgroup.com

■ नई दिल्ली : भारतीय सेना ने अरुणाचल प्रदेश में वास्तविक नियंत्रण रेखा (एलएसी) के पास हल्के लड़ाकू हेलिकॉप्टर की पहली स्क्वाड्रन तैनात कर दी है। मीसामारी में इस स्क्वाड्रन का बेस बनाया गया है। एलएसी पर चीन के साथ चल रहे गतिरोध के बीच इन हेलिकॉप्टर की तैनाती अहम है। कुछ दिन पहले ही सेना प्रमुख जनरल मनोज पांडे ने कहा था कि एलएसी पर हालात स्थिर हैं, लेकिन अनिश्चितता बनी हुई है। उन्होंने कहा कि चीनी सैनिकों की तैनाती में बहुत कमी नहीं आई है। हालांकि कुछ टुकड़ियों के कम होने के संकेत मिल रहे हैं। भारत और चीन के बीच कोर कमांडर स्तर की 17वें दौर की बातचीत के लिए तारीख तय करने पर चर्चा हो रही है।

जनवरी तक पूरी स्क्वाड्रन: एलएसी के पास शिफ्ट की जा रही इस स्क्वाड्रन को



भारत में ही बनाया गया है हल्का लड़ाकू हेलिकॉप्टर।

इसी साल जून में बेंगलुरु में बनाया गया था। सूत्रों के मुताबिक, दो हल्के लड़ाकू हेलिकॉप्टर इसी महीने की पहली तारीख को मीसामारी शिफ्ट किए गए। तीसरा हेलिकॉप्टर इस महीने के आखिर तक वहां चला जाएगा। चौथा हेलिकॉप्टर अगले महीने मिलेगा और पांचवां हेलिकॉप्टर अगले साल जनवरी में मिल जाएगा। इसके बाद स्क्वाड्रन पूरी तरह से ऑपरेशनल हो जाएगी।

और हेलिकॉप्टर लेने की तैयारी:

भारतीय सेना को अभी 5 ही मिल रहे हैं लेकिन सेना 95 और लाइट कॉम्बैट हेलिकॉप्टर लेने की कोशिश कर रही है। इसी तरह एयरफोर्स के लिए अभी 10 हेलिकॉप्टर का कॉन्ट्रैक्ट हुआ है लेकिन एयरफोर्स को 65 और हेलिकॉप्टर चाहिए। सूत्रों के मुताबिक ये सब करीब 10-15 साल के भीतर मिल पाएंगे। स्वदेशी लाइट कॉम्बैट हेलिकॉप्टर एचएएल ने डिजाइन और डिवेलप किया है। इसका वजन 5.8 टन है। हल्के वजन का फायदा यह है कि

### क्यों हैं खास

हल्के लड़ाकू हेलिकॉप्टर पहले स्वदेशी अटैक हेलिकॉप्टर हैं। ये आर्मी के लिए समर्पित पहले अटैक हेलिकॉप्टर हैं। सेना के इस हल्के लड़ाकू हेलिकॉप्टर में 20 एमएम की गन होगी, 70 एमएम का रॉकेट होगा, ऐंटी टैंक गाइडेड मिसाइल हेलिना होगी। इसमें एयर टु एयर मिसाइल भी होगी लेकिन जो मिसाइल एयरफोर्स को मिले हल्के लड़ाकू हेलिकॉप्टर में होगी, यह उससे अलग रहेगी। एयरफोर्स को मिले हेलिकॉप्टर में फ्रांस की मिस्त्राल-2 मिसाइल लगनी है। एयरफोर्स ने भी पिछले महीने ही हल्के लड़ाकू हेलिकॉप्टर की अपनी पहली स्क्वाड्रन जोधपुर में बनाई थी।

ये ऊंचाई वाले इलाकों में भी अपनी पूरी क्षमता में मिसाइल और दूसरे हथियारों के साथ आराम से ऑपरेट कर सकता है।

## Agni VI, ISRO and Radio Silence on India's 10,000 KM Range ICBM

By Girish Linganna

The world has eagerly awaited Agni V's successor since its first test in 2012. A year hence, the then Chairman of the Defence Research and Development Organisation (DRDO), VK Saraswat, confirmed that the work on a long-range ballistic missile was underway. He also hinted at multiple warheads capability that could hit multiple targets simultaneously. At that time, the designs were finalised, and the project was in the phase of hardware realisation. Nine years since the remarks, there has been an eerie silence on the Agni VI. Why is there radio silence? Can India develop an intercontinental ballistic missile (ICBM) with a range of 10,000 KM?

## **Two Sides of the Same Coin:**

A nation with a successful space programme is often believed to be able to target and use nuclear weapons anywhere in the world. If they can launch even a medium-sized satellite into a higher earth orbit, they can aptly rework their space launch vehicles to destroy any location on the planet. Indian Space Research Organisation (ISRO) has been the pillar of India's successful space programme. New Delhi launched its first satellite in 1980 using the indigenous SLV3 rocket. The rocket, developed by the DRDO, kick-started the development of ballistic missiles under Dr APJ Abdul Kalam.

In under a decade, India conducted the first test flight of its surface-to-surface Agni Technology Demonstration missile, utilising the knowledge and technology from the SLV3 rocket. The first in the series, Agni I, boasted a 700-1200 KM range. After the success of Agni I, ISRO developed the Polar Satellite Launch Vehicle (PSLV) that had four stages using a mix of solid and liquid fuel stages. This development heavily inspired the Agni II missile, especially its second stage. The rocket has two solid fuelled stages. This 2-stage design has been touted for its mobility and adaptability. With a 2000 KM range, India could reach all of Pakistan and most of southeastern China. India's Agni series missiles were upgraded concurrently with the country's advancements in space technology. India also made other Agni missiles, such as the Agni III, which can travel up to 3500 kilometres and the Agni IV, which can travel up to 4000 kilometres.

In 2012, the Agni V ICBM was a game changer with a range of about 5500 kilometres. India successfully demonstrated its counterforce capability thanks to Agni V's increased payload and multiple independently-targetable reentry vehicle (MIRV) capabilities. High accuracy in both further added lethality to the Agni V. This is most definitely a message of a higher degree directed at the possible adversary. With the launch of Agni V, India has signalled to the rest of the world that although it does not engage in preemptive nuclear strikes, it has maintained a counterforce capability. Thus, if anyone employs a nuclear weapon against India, India can now launch a counterforce capability against the nuclear strike forces of its adversary. The successful launch of India's Agni V missile continues to ruffle feathers in China, which has said India has deliberately downplayed its capabilities.

Chinese analysts believe that the missile has the capability of reaching targets up to 8000 kilometres distance. However, Indian officials have said that the missile can cover a distance of over 5000 kilometres.

## **The Curious Case of Agni VI**

The United States believes India could convert its PSLV into an ICBM with a significant range increase within a year. The fact is that most of the components required for an ICBM are already available in India due to India's indigenous space programme. In 2018 the head of the DRDO, Dr Christopher, stated that the organisation is capable of developing an ICBM that could hit targets at a distance greater than 10,000 kilometres. He further divulged that the organisation was working on a ground variant and an underground variant. According to him, when the United States, the United Kingdom and other nations prohibited the import of components for laser technology, India was able to develop its own and has since been self-sufficient in this area.

So if the nation is capable, why hasn't it been developed? One possible explanation is that India doesn't want its western allies to worry. Since the United States and most of Europe are not

within the strike range of the Agni V, there is little cause for concern. This became abundantly clear when India was authorised to join the Missile Technology Control Regime (MTCR).

If India demonstrates an ICBM with a range capable of striking vital cities around the globe, the allies may perceive it differently. The effective range of ballistic missiles is a hotly debated topic. Many Europeans and Americans have voiced that India need not develop an ICBM with a range as high as 10000 KM as its most distant adversary is China, which it can aptly hit given its capabilities at present. If India publically accepts the Agni VI and its 10,000 KM plus range, the US and European nations are bound to be irate. However, many in India argue that if China has been permitted to develop ballistic missiles with ranges beyond 10,000 kilometres, then there is no reason why India should be left behind.

India has been capable of testing its anti-satellite missile since the launch of the Agni V missile in 2012. However, it was tested in 2019. Even in 2019, India's anti-satellite missile surprised the world, with only Russia and the US standing behind the country. The US Pentagon told its Senate Armed Services Committee that India's anti-satellite weapons test was only done because the government worried about space threats. It was the ideal time for India to test the weapon so it would not startle its other allies. Most likely, Agni VI is undergoing the same predicament.

More so than technical, the geopolitical holdup deters immediate testing of India's ICBM without scaring allies in the West. Agni VI is believed to have the code-name Surya, the sun. It was shown at an exhibition at IIT Kanpur, which proves its existence, and DRDO scientists have never denied that this programme exists. It is safe to assume that India has an ICBM with a 10,000+ KM range. However, the big question is when will India test the Agni VI? Will it be in the next three years?

<https://www.financialexpress.com/defence/agni-vi-isro-and-radio-silence-on-indias-10000-km-range-icbm/2828572/>



*Thu, 17 Nov 2022*

## **BEL Signs MoUs with Two Defence PSUs to Address Needs of Domestic and Export Markets**

Navratna Defence PSU Bharat Electronics Ltd (BEL) on November 17 said that it has signed memorandum of understandings (MoUs) with two defence companies, Armoured Vehicles Nigam Limited (AVNL/AVANI) and Advanced Weapons and Equipment India Limited (AWEIL), to address needs of domestic and export markets. In the case of the MoU with AWEIL, BEL aims to address domestic and export opportunities in the areas of Air Defence, Artillery Gun Systems, Medium Caliber Weapons, Small Arms and related systems, whereas, with AVANI, the defence PSU aims to address opportunities in the areas of Air Defence, Artillery Gun Systems, Medium Caliber Weapons, Small Arms and related systems.

Both the agreements were signed in presence of Dinesh Kumar Batra, then CMD, BEL, along with Ravin Kulshrestha, Director (Finance), AWEIL and A N Srivastava, CMD, AVNL/AVANI during the Defexpo 2022 event. Last month, the BEL had signed an MoU with Goa Shipyard

Limited (GSL) for the joint development of products/solutions in the area of autonomous navigation and associated fields.

The MoU aims at leveraging the complementary strengths and capabilities of the two companies, the Bengaluru-headquartered BEL had said in a statement.

<https://www.moneycontrol.com/news/business/announcements/bel-signs-mous-with-two-defence-psus-to-address-needs-of-domestic-and-export-markets-9555171.html>



*Thu, 17 Nov 2022*

## **New Zealand and India to Enhance Defence Cooperation**

The defence cooperation between India and New Zealand is entering into a new phase. New Zealand's High Commissioner to India David Pine called on Defence Secretary Giridhar Aramane in New Delhi on November 17. New Zealand is reviewing its foreign and defence policies. Recently, Prime Minister Jacinda Ardern called for a new review of its defense policy amid the ongoing Russia- Ukraine war. The review also takes account of a recent controversy over China's aggressive postures towards Australia and tactical alliance with the Solomon Islands. The New Zealand Defence Force (NZDF) is gearing up for the modernization drive and building capabilities in the Pacific against such threats.

### **Navy pact**

Building upon the security cooperation, navies of the both countries have signed a pact on White Shipping Information Exchange. Recently, Navy Chief Admiral R Hari also held detailed deliberations with Rear Admiral David Proctor, Chief of Navy, RNZN. The discussions covered a wide spectrum of maritime cooperation opportunities. Both leaders agreed towards expanding the scale and scope of bilateral engagements in the coming years. The CNS conveyed compliments to RNZN leadership for their active participation in MILAN-22 and that the Indian Navy was looking forward to maiden participation of young RNZN officers in the upcoming Admiral's Cup Sailing Regatta, scheduled to be hosted by the Indian Navy in December 2022.

In a milestone development, an Agreement on White Shipping Information Exchange will boost the naval cooperation. Closer collaboration towards enhancing shared Maritime Domain Awareness is in keeping with convergent views of both countries with regard to promoting greater transparency in the maritime domain. New Zealand is working closely with India to consolidate shared commitments of both navies and has set in motion a promising growth trajectory for deeper bilateral maritime engagements.

<https://www.financialexpress.com/defence/new-zealand-and-india-to-enhance-defence-cooperation/2828697/>

## **North Korea Fires Suspected Intercontinental Ballistic Missile, Seoul says**

North Korea fired a suspected intercontinental ballistic missile Friday, Seoul's military said, the second launch in two days as Pyongyang continues a record-breaking blitz that has sent fears of a nuclear test soaring. A South Korean defence official told AFP that they "estimated that North Korea had fired an ICBM", without giving further details. Seoul's Joint Chiefs of Staff earlier said it had detected the "launch of an unidentified ballistic missile in an eastward direction".

Tokyo also confirmed the launch, with Japan's defence ministry saying Pyongyang had fired "a suspected ballistic missile," as the coastguard warned ships not to approach fallen debris in the water. The launch comes a day after North Korea fired a short-range ballistic missile as its minister of foreign affairs, Choe Son Hui, warned Pyongyang would take "fiercer" military action if the United States strengthened its "extended deterrence" commitment to regional allies. Washington has been seeking to boost regional security cooperation and ramp up joint military drills in response to increasing provocations from the nuclear-armed North, which views all such moves as evidence of US aggression. US President Joe Biden discussed North Korea's recent missile tests with Chinese counterpart Xi Jinping earlier this week and also spoke with leaders from Tokyo and Seoul, as fears grow that the reclusive regime will soon carry out its seventh nuclear test.

North Korea was also top of the agenda when leaders of China and Japan held their first face-to-face talks in three years Thursday on the sidelines of the Asia-Pacific Economic Cooperation (APEC) forum in Bangkok. Experts said the launch of one of North Korea's most powerful weapons was a clear sign leader Kim Jong Un was displeased by the recent talks. "Now, it's estimated to be an ICBM, if that's the case, it is a clear message to the US and Japan," said Han Kwon-hee, manager of the Missile Strategy Forum. Earlier this month, North Korea conducted a flurry of launches, including an intercontinental ballistic missile, which Seoul said at the time appeared to have failed. Pyongyang also fired a short-range ballistic missile that crossed the de facto maritime border between the two countries and landed near the South's territorial waters for the first time since the end of the Korean War in 1953.

President Yoon said at the time that it was "effectively a territorial invasion". Both launches were part of a November 2 barrage in which Pyongyang fired 23 missiles -- more than it launched during the whole of 2017, the year of "fire and fury" when Kim traded barbs with then US president Donald Trump on Twitter and in state media. Experts say North Korea is seizing the opportunity to conduct banned missile tests, confident of escaping further UN sanctions due to Ukraine-linked gridlock at the United Nations.

China, Pyongyang's main diplomatic and economic ally, joined Russia in May in vetoing a US-led bid at the UN Security Council to tighten sanctions on North Korea. Washington has responded to North Korea's sanction-busting missile tests by extending exercises with South Korea and deploying a strategic bomber. Pyongyang has also been under a self-imposed

coronavirus blockage since early 2020, which experts say would limit the impact of any additional external sanctions.

<https://economictimes.indiatimes.com/news/defence/north-korea-fires-ballistic-missile-seouls-military-says/articleshow/95590933.cms?from=mdr>

## नवभारत टाइम्स

गुरुवार, 17 नवंबर 2022

### इजरायल ने वेस्ट बैंक में तैनात की रोबोटिक सेना, दूर बैठकर रिमोट से कर सकती है फायर, फिलिस्तीनियों की शामत!

इजरायल और फिलिस्तीन के बीच तनाव क्षेत्र की एक स्थायी समस्या बनता जा रहा है। इस बीच यहूदी देश इजरायल ने वेस्ट बैंक में नए रोबोटिक हथियार तैनात किए हैं। रिमोट कंट्रोल बंदूकों से आंसू गैस, स्टन ग्रेनेड और रबर की गोलियां दागी जा सकती हैं। एसोसिएटेड प्रेस ने बुधवार को जानकारी दी कि इन्हें हेब्रोन शहर और अल-अरब शरणार्थी शिविर में बड़े पैमाने पर तैनात किया गया है। इजरायल ने निगरानी कैमरों से लैस स्पेशल गार्ड टावरों पर ये हथियार तैनात किए हैं।

न्यूज एजेंसी की रिपोर्ट के अनुसार, बंदूकों पर भी कैमरे लगे हैं जिन्हें टावरों के भीतर से इजरायल डिफेंस फोर्स (IDF) के सैनिक संचालित कर सकते हैं। ये बंदूकें अपने टारगेट को ट्रैक करने के लिए आर्टिफिशियल इंटेलिजेंस का भी इस्तेमाल करती हैं। रोबोटिक हथियारों को दो ऐसी जगहों पर तैनात किया गया है जो फिलिस्तीनी प्रदर्शनकारियों और इजरायली सैनिकों के बीच हाल में हुई झड़प के केंद्र बन चुके हैं।

#### सिर्फ भीड़ को काबू करने के लिए होगा इस्तेमाल

सूत्रों के हवाले से न्यूज एजेंसी ने कहा कि अब अगर प्रदर्शनकारियों की भीड़ सड़कों पर उतरती है और इजरायली सैनिकों पर पथराव या बम फेंकती है तो टावर में तैनात हथियारों से आंसू गैस के गोले और रबर की गोलियां दागी जाएंगी। इजरायल का कहना है कि नया सिस्टम इजरायली और फिलिस्तीनियों की जान बचाने में मददगार साबित होगा। कहा जा रहा है कि इस स्तर पर सिस्टम का टेस्ट किया जा रहा है और भीड़ को काबू में करने के लिए सिर्फ 'नॉन-लीथल' गोला-बारूद का इस्तेमाल किया जाएगा।

#### फिलिस्तीनियों के लिए 'घातक' होगा यह साल

रिपोर्ट के अनुसार, फिलिस्तीनियों को डर सता रहा है कि इन हथियारों का दुरुपयोग या हैक किया जा सकता है। स्थानीय लोगों ने भी चेतावनी दी है कि इनके इस्तेमाल से संभावित घातक स्थिति पैदा हो

सकती है। अक्टूबर में संयुक्त राष्ट्र ने चेतावनी दी थी कि वेस्ट बैंक में फिलिस्तीनियों के लिए यह साल 'सबसे घातक' हो सकता है। रूसी न्यूज वेबसाइट आरटी के अनुसार साल की शुरुआत से अब तक छह बच्चों सहित कुछ 32 फिलिस्तीनी इजरायली सुरक्षा बलों के हाथों मारे जा चुके हैं।

<https://navbharattimes.indiatimes.com/world/uae/israel-deploys-new-robotic-weapons-on-west-bank-to-counter-attacks-from-palestinians/articleshow/95585071.cms>



Thu, 17 Nov 2022

## Changing Aerial Warfare: Drone Swarms Overwhelm Missile Defences in Ukraine

*By Huma Siddiqui*

Ukraine has been subjected to kamikaze drone assaults from Russia for several weeks running. Iron suicide birds' devastating capacity kills military targets and civilians and devastates the homes and infrastructure of Ukrainian cities. Russia also attacks Ukraine with missiles.

Both are categories of aircraft that fly toward a target and detonate there, but they present various dangers. Missile costs hundreds or millions of dollars, flies quickly, is challenging to shoot down, and is loaded with a significant amount of explosives. However, for the time being, drones—small, sluggish, inexpensive, and simple to shoot down but so common that they arrive in swarms—might pose the greater threat.

### Missiles

On October 10, Russian President Vladimir Putin signaled his new policy with the largest airstrikes since the beginning of the war. Russia fired more than 80 cruise missiles at targets throughout Ukraine, and it may have utilized ammunition worth hundreds of millions of dollars in a single day. Based on the information available in the public, Russian Kalibr missiles have a range of up to 2,000 km, can travel at speeds up to several times the speed of sound, and can carry warheads weighing more than 400 kg, including perhaps nuclear bombs.

The Russian missiles Kh-22, Kha-31, Iskander, Onyx, and others move quickly and are far more difficult to strike. They are meant to be used against well-defended, expensive military targets, like enemy warships or command centers. They need to be shot down using sophisticated air defences, which are better adapted to covering a small region than specific, crucial targets.

According to Kyiv, more than half of the missiles fired by Russia in recent weeks have been intercepted. However, during the massive opening salvo on October 10, power was cut off to large portions of Ukraine, and reports indicate that lives were lost. Moscow's stockpile of missiles is finite, making sustained attacks on this scale unsustainable, even though Western analysts are unsure of the precise number Moscow still possesses. Additional cutting-edge missile defence systems, including the US NASAMS system, which is scheduled to be deployed in the upcoming months and is reportedly being expedited by Washington, have been promised

by Western nations. Recently, Germany delivered to Ukraine the first of its four IRIS-T air defence systems.

### **What are Kamikaze drones?**

This low-cost, straightforward weapon must fly to a predetermined location, locate a target, dive towards it, and explode a warhead upon contact with the target or as it approaches. These drones are under the umbrella of a group of weapons known as loitering munitions. They are made for lingering over the battlefield for extended periods of time while searching for radar-type targets. When they locate a target, they dash to it. Some radars do not detect these lingering weapons, while others misidentify them as “birds” due to their small size, low speed, and low altitude. Several drones can fly together. This seems to be a single mark on the radar, making it impossible to comprehend that there are actually five of them. Unfortunately, because the targets are intricate and small, it is hard to fire down every single one of them.

### **Iranian Shahed-136 drones**

Two drones which have hit the Ukrainian targets are the Russian Lancet 3 drones and the alleged Iranian Shahed-136 drones, which are called the Geran-2 in Russia. Despite the nickname “flying moped”, Shahed-136 drones pose a serious danger to Ukrainians. Radars that can detect low-flying drones do exist. But there are few of them in the Ukrainian army. It is rather problematic to quickly establish the production of air defence systems in a war. Therefore, the way out is to purchase suitable equipment from Germany, France and the USA.

### **Regulating drones**

The Missile Technology Control Regime ((MTCR) governs missiles with a range of more than 300 km and warheads weighing 500 kg. Although the suicide drones behave similarly to cruise missiles, Iran is not bound by the treaty because it has not ratified it. The EU has sanctioned Iranian individuals and a company for supplying drones to Russia instead of the nation itself. The United States has tried to get the United Nations to probe the issue.

### **Advantages of drones and cruise missiles**

To reach their targets, drones and cruise missiles can fly close to the ground while hugging the terrain. As a result, drones and cruise missiles can essentially “hide” in the topography, making it challenging for adversarial ground-based radars to find them. A flight at a low altitude can conceal an attacker’s approach. Due to their reduced radar cross-section, these weapons systems, which are frequently smaller in size than bigger conventional aircraft or ballistic missiles, are more difficult to detect by radar systems. You can’t fire something down if you can’t see it.

The threat can come from any direction because cruise missiles and armed drones are frequently movable. “In fact, cruise missiles can be fired from the air, ships, submerged submarines, and ground. You will only detect the attack coming if the radar is positioned in the right spot at the appropriate time,” explained an expert who wished to remain anonymous.

However, there are drawbacks to both cruise missiles and armed drones. Both are not unbeatable; and due to their shorter range and slower speeds, armed drones and cruise missiles may be less effective and more vulnerable.

<https://www.financialexpress.com/defence/changing-aerial-warfare-drone-swarms-overwhelm-missile-defences-in-ukraine/2829510>



*Fri, 18 Nov 2022*

## **Locally (Turkish) made AESA Radar to Extend Life of Turkish F-16 Jets**

A program to develop and produce Turkey's first active electronically scanned array radar will extend the flight time for some of the country's F-16 aircraft by half, to 12,000 hours, according to a senior development engineer with the manufacturer. Military electronics specialist Aselsan, Turkey's largest defense firm, recently adopted the radar effort as part of a program dubbed Ozgur, which translates to "Free" in English. The program involves modernization of the aircraft's structure and avionics, more specifically a new mission computer, new cockpit color displays, a new indigenous identification friend or foe system, new radar warning receivers, and an inertial navigation system.

The AESA radar will first be retrofitted onto the Akinci, a drone built by Turkish Aerospace Industries; then on a batch of 36 F-16 Block 30 aircraft; and, in the longer term, the TF-X, Turkey's first indigenous fighter jet in the making, according to a TAI official, who spoke on the condition of anonymity because he was not authorized to talk to the press. Block 30 is the only F-16 model whose source codes are available to Turkey. Aselsan and TAI officials cited commercial secrecy and national security as reasons for not revealing contract values or delivery timelines associated with the radar. But on Aug. 25, TAI and Aselsan announced they signed a contract worth a total of about \$71 million. The Turkish Air Force declined to comment for this story, citing national security.

<https://www.defensenews.com/industry/techwatch/2022/11/17/locally-made-aesa-radar-to-extend-life-of-turkish-f-16-jets/>

## Science & Technology News

*Thu, 17 Nov 2022*

## **Bengaluru Science and Technology Cluster Launched at Tech Summit**

Karnataka's capital became the sixth centre in India to house a science and technology cluster when the Bengaluru Science and Technology (BeST) cluster was launched in the city. The Indian Institute of Science said Thursday that the cluster was launched at the Bengaluru Tech Summit 2022 by the central government's principal scientific advisor, Ajay Sood, in the presence of former IISc director G Padmanaban and Infosys co-founder Kris Gopalakrishnan.

Supported by the IISc, the BeST cluster aims to provide solutions for industries and the government. Delhi, Hyderabad, Bhubaneswar, Jodhpur and Pune host the other clusters in the country. “The conceptualisation of the BeST cluster is a collaborative effort of more than 50 organisations including major academic institutions, industry partners, startups, civil society organisations and government bodies. The seed funding approval for BeST was approved by the office of the principal scientific adviser to the government of India on September 6,” the IISc said in a statement.

During the launch, Sood said, “Bengaluru has enormous technological potential and Karnataka is among the leaders in science and technology advancements. The BeST cluster will pave the path for the future success of such initiatives.” “A science and technology cluster is a collaborative ecosystem in a city or a region in which scientists, engineers, social scientists and entrepreneurs working in academia, government labs and industry identify and collaborate to solve socially relevant problems,” the IISc statement said, adding that such clusters would allow science and technology organisations to work together more effectively while retaining their autonomy.

The cluster has identified sectors such as health and wellness, urban life and futuristic technologies to work on. Dr Taslimarif Saiyed, CEO and director of the Centre for Cellular and Molecular Platforms, said at the launch, “Bangalore is a city of science, innovation and opportunity. The BeST cluster launch could be a landmark moment for science and technology in India and possibly the world. We aim to bring together stakeholders with shared ecosystems and identify and address problems first with locally relevant solutions, but then scale up nationally and internationally by building competitiveness globally.”

Ambarish Ghosh, of the IISc’s Centre for Nano Science and Engineering, said, “The Bengaluru Tech Summit is the ideal launchpad for the BeST cluster... In addition to the immediate social and economic impact at a city scale, we must also consider the impact on sustainability and being globally competitive.”

<https://indianexpress.com/article/cities/bangalore/bengaluru-science-technology-cluster-launched-tech-summit-8274477/>

## अमर उजाला

शुक्रवार, 18 नवंबर 2022

### **Skyroot Rocket: देश का पहला निजी रॉकेट आज होगा लॉन्च, नवोन्मेष के लिए इसरो ने 100 स्टार्टअप से किया समझौता**

देश के पहले निजी रॉकेट विक्रम-एस की लॉन्चिंग 18 नवंबर को आंध्रप्रदेश के श्रीहरिकोटा से की जाएगी। भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) शुक्रवार सुबह 11.30 बजे अंतरिक्ष स्टार्टअप स्काईरूट एयरोस्पेस की ओर से विकसित रॉकेट को लॉन्च करने के लिए तैयार है। स्काईरूट ने कहा, खराब मौसम के कारण रॉकेट का पहला उपकक्षीय लॉन्च 15 से बदलकर 18 नवंबर पुनर्निर्धारित किया गया था।

इससे पहले स्काईरूट एयरोस्पेस के प्रवक्ता ने कहा था कि खराब मौसम के पूर्वानुमान के कारण हमें श्रीहरिकोटा से हमारे विक्रम-एस रॉकेट लॉन्च के लिए 15-19 नवंबर तक एक नई लॉन्च विंडो दी गई है, जिसकी सबसे संभावित तारीख 18 नवंबर सुबह 11:30 बजे है। स्काईरूट एयरोस्पेस के इस पहले मिशन को 'प्रारंभ' नाम दिया गया है, जिसमें तीन उपभोक्ता पेलोड होंगे। इसे श्रीहरिकोटा में भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) के लॉन्च पैड से प्रक्षेपित किया जाएगा। इस मिशन को स्काईरूट के लिए एक महत्वपूर्ण मील का पत्थर माना जाता है, क्योंकि यह उन 80 प्रतिशत तकनीकों को मान्यता दिलाने में मदद करेगा, जिनका उपयोग विक्रम-1 कक्षीय वाहन में किया जाएगा, जिसे अगले साल प्रक्षेपित करने की योजना है।

### कई कंपनियां बना रहीं सैटेलाइट और रॉकेट

भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) के अध्यक्ष एस सोमनाथ ने बताया कि अंतरिक्ष तकनीक और नवोन्मेष के क्षेत्र में इसरो के साथ काम करने के लिए 100 स्टार्ट-अप समझौता कर चुके हैं। सोमनाथ बृहस्पतिवार को बंगलुरु टेक समिट-2022 में आर एंड डी - इनोवेशन फॉर ग्लोबल इंपेक्ट विषय पर बोल रहे थे।

इस दौरान उन्होंने बताया कि 100 में से करीब 10 ऐसी कंपनियां हैं, जो सैटेलाइट और रॉकेट विकसित करने में जुटी हैं। इस दौरान उन्होंने चंद्रयान तृतीय की जानकारी देते हुए बताया कि यह जल्द ही लॉन्च किया जाएगा। उन्होंने एक सवाल के जवाब में बताया कि कई अभियान ऐसे हैं, जिनपर इसरो और अमेरिकी अंतरिक्ष एजेंसी नासा साथ मिलकर काम कर रहे हैं।

अंतरिक्ष तकनीक के जीवन के तमाम क्षेत्रों में उपयोग पर चर्चा करते हुए उन्होंने कहा, अंतरिक्ष अभियानों के लिए जो तकनीक और नवोन्मेष किए जाते हैं, उनका रोजमर्रा की जिंदगी में भी कई तरह से इस्तेमाल होता है। बहुत से स्टार्ट-अप खासतौर पर इसी पहलु पर काम कर रहे हैं। इसके साथ ही उन्होंने बताया कि इसरो भारत सरकार के स्मार्ट सिटी परियोजनाओं और स्मार्ट विनिर्माण प्रक्रियाओं का अहम भागीदार है।

<https://www.amarujala.com/india-news/skyroot-maiden-rocket-vikram-s-launch-news-in-hindi-indias-first-private-rocket-isro-100-startups-innovation>



Fri, 18 Nov 2022

## Vikram-S, India's First Privately Built Rocket, Set for Launch Today

The private sector in India will mark its first foray into the space launch market on Friday at 11.30 am when the Vikram-S rocket is scheduled to lift off from the Indian Space Research

Organisation's (ISRO) launchpad in Sriharikota. Developed over two years by Skyroot Aerospace, a company started in 2018 when India's space sector was not yet open to private players, Vikram-S is a single-stage solid fuel rocket meant to test nearly 80 per cent of all systems and processes before the launch of Vikram-1 scheduled for next year. The launch on Friday will be sub-orbital, with the vehicle travelling slower than orbital velocity. This means that while the vehicle will reach outer space, it will not remain in orbit around the Earth. The flight will take less than five minutes.

On the other hand, Vikram-1 will be a much larger vehicle that will undertake orbital flights. The Vikram series of rockets developed by Skyroot is named after Vikram Sarabhai, the founder of the Indian space programme. These rockets are among the few launch vehicles in the world which have their core structure built using carbon composites. The thrusters used for spin stability in the vehicle have been 3D printed. The engine used in the launch vehicle was named after former president Dr APJ Abdul Kalam. The performance of the 'Kalam-80' will be one of the key areas that the company monitors during the flight of Vikram-S.

"Skyroot has been developing cutting-edge technologies for our space launch vehicles like carbon composites and 3D printing. And (we) have attempted to realise them within the Indian industry. Manufacturing to the required quality standards, within timelines hampered by Covid-19 and other factors, has been quite challenging in this journey," Skyroot said in an email.

"This project gives us a lot of pride in becoming the first private rocket builder to launch in the Indian space sector..." the company said. Regarding the entry of private players in the space sector in India, ISRO chairperson S Somanath said on Thursday that around 100 start-ups have registered with the space agency and are working closely with it in "various domains of the space sector". Speaking at the Bengaluru Tech Summit 2022, he said that a significant number of companies have the potential to become big players in the space sector and that ISRO is playing the role of facilitator for them and helping them in building technologies.

He also said that preparations were underway for the launch of Vikram-S from the Satish Dhawan Space Centre. Vikram-S will carry three satellites, including one by SpaceKidz India called FunSat, parts of which were developed by school students. "Rockets are very complex vehicles, and like every complex technology, it can also go wrong, based on various reasons. But we have backed our build with the best of technology and skills, and so we believe that the launch will be a success and that Vikram-S will chart new history for the Indian private space sector," Skyroot said.

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