

Feb
2022

समाचार पत्रों से चयित अंश Newspapers Clippings

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

खंड : 47 अंक : 23 03 फरवरी 2022
Vol. : 47 Issue : 23 03 February 2022



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.
DRDO News		1-5
DRDO Technology News		1-4
1.	Big Boost for Indigenous Development of Defence Systems in Budget 2022	<i>Press Information Bureau</i> 1
2.	BrahMos, Uran Missiles successfully test fired from Andaman Islands, informs Indian Navy	<i>Republicworld.com</i> 2
3.	India tests BrahMos, Uran Anti-Ship Missiles in Andaman and Nicobar Islands	<i>Swarajya</i> 3
4.	Chief of Naval Staff reviews PFR and MILAN preparations	<i>Press Information Bureau</i> 3
DRDO on Twitter		4-5
Defence News		6-15
Defence Strategic: National/International		6-15
5.	How India's BrahMos deal is not just about Philippines but gives a stronger message to the region	<i>Firstpost</i> 6
6.	COAS Gen Naravane discusses bilateral defence cooperation with Australian counterpart	<i>Republicworld.com</i> 8
7.	First Sea sortie of fifth Scorpene Submarine 'VAGIR'	<i>Press Information Bureau</i> 9
8.	पांचवीं स्कॉर्पेन पनडुब्बी 'वगीर' की पहली समुद्री यात्रा	<i>Press Information Bureau</i> 9
9.	India flight tests Rafale-Marine for INS Vikrant	<i>The Hindu</i> 10
10.	Indian Army to get BDL-manufactured Konkurs-M anti-tank guided missiles from Hyderabad company	<i>The Times of India</i> 11
11.	Customized for 'High-Altitude' warfare against China & Pakistan, Indian Air Force receives more Rafale Fighters	<i>The Eurasian Times</i> 12
12.	After Iron Dome, Israel plans 'laser wall' to intercept missiles: What is it?	<i>Hindustan Times</i> 14
13.	Government increases capital budget of BRO by 40%;	<i>Press Information Bureau</i> 15
Science & Technology News		16-17
14.	Using the principle of coherent feedback to cool a quantum system	<i>Phys.org</i> 16



**Press Information Bureau
Government of India**

Ministry of Defence

Wed, 02 Feb 2022 7:25PM

Big Boost for Indigenous Development of Defence Systems in Budget 2022

Budget 2022 has introduced multiple provisions to boost Atmanirbharta in defence sector. The integrated approach of design & development of defence systems with the participation of industry & academia will revitalise the defence ecosystem. Provision for formation of Special Purpose Vehicle (SPV) for design development & production of major defence equipment will enable concurrent engineering and production in faster timelines. The major announcement of 25% of budget earmarked for engagement of industry, startups & academia will provide the much-required boost for defence R&D. These provisions will enable Defence Research & Development Organisation (DRDO) to work vigorously with industry to give a quantum jump to self-reliance in defence. The 5.3% increase in capital budget allocation for DRDO up from 11,375 crore to 11,981.81 crore will accelerate the efforts for indigenous research & development (R&D) projects. The provision of 68% of the capital procurement budget for the domestic defence industry will further enhance the induction of the indigenous system in our armed forces.

DRDO has multiple modes of engagement with industry and academia. Some of them are extramural research, directed research, DcPP and TDF for the development of advanced technologies and systems. DRDO engages industry as Development Cum Production Partner (DcPP), Development Partners (DP), Production Agency (PA) during the execution of projects and programmes. Currently, about 20,000 industries are engaged in the development of various systems, sub-systems and technologies directly and indirectly. DRDO has also identified 108 systems and subsystems for exclusive design and development by the Indian industry. DRDO technically supports the industry for realizing these systems on a requirement basis.

Through its Technology Development Fund (TDF) scheme, DRDO extends financial support to enable Indian Micro, Small & Medium Enterprises (MSMEs) and startups for indigenous design & development of defence products, components and subsystems. The fund is utilized for developing new technologies as required by DRDO, services, and DPSUs.

To further encourage the Indian industry, DRDO's patents and relevant intellectual publications are available for the domestic industry free of cost. Indian industry is utilizing DRDO test facilities and proof & field firing ranges for ensuring quality defence products. The initiative announced in budget 2022 regarding a nodal umbrella body for wide-ranging requirements of testing and certifications of defence systems will greatly accelerate the development of defence systems by industry and will ensure the provisioning of quality products to armed forces.

DRDO is working with more than 250 academic institutes on different defence R&D problems for basic, applied and targeted research. DRDO has established 10 advanced research centres in various academic institutions. DRDO is also proposing to set up chairs for specific areas in various universities for long term engagement with academic institutions.

The current production value of DRDO developed system is approximately Rs 3.2 Lakh crore. With the announcement of Special Purpose Vehicle (SPV) and other important provisions, production value can grow exponentially. This budget has made a strong focus on Atmanirbharta, which will ensure that all major platforms are indigenously developed.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1794857>

R. REPUBLICWORLD.COM

Thu, 03 Feb 2022

BrahMos, Uran Missiles successfully test fired from Andaman Islands, informs Indian Navy

According to the Navy, the land-based BrahMos and ship-launched Uran were successful in hitting their respective targets with devastating impact.

By Harsh Vardhan

India conducted two successful anti-ship missile tests from the Andaman and Nicobar Islands, the Indian Navy informed via Twitter on February 2. Fired by the Andaman and Nicobar Command (ANC), the two missiles were BrahMos and Uran and were launched from the Indian Navy's guided-missile corvette. According to the Navy, the land-based BrahMos and ship-launched Uran were successful in hitting their respective targets with devastating impact.

The ANC even released a video clip of the launch on Twitter featuring the two anti-ship weapons. Successful launch of Brahmos & Uran antiship missiles by ANC Naval component further validates capabilities for defence of our islands", read the ANC's caption. It further congratulated those who were involved in bidding adieu to the exNaval ship LCU38.



India's second BrahMos test-fire in two weeks

The latest test-fire comes just a week after the BrahMos supersonic cruise missile was fired off the coast of Odisha in Balasore on January 20. Being developed under the collaboration of BrahMos Aerospace and Russia's NPO Mashinostroyeniya, the BrahMos cruise missile system can be launched from air, sea or land and comes with variants for anti-ship and land-attack roles with nuclear warheads. The test from Odisha's Balasore followed the one conducted off the western coast in Vishakhapatnam, from an Indian Navy destroyer. According to the officials, this missile was equipped with new technological developments which were proven successful during the tests.

The BrahMos supersonic cruise missile can cover a range of 290 km, reaching the Mach 2.8 to 3 Mach speed. Meanwhile, the BrahMos - II Hypersonic cruise missile can be deployed to hit the target within a range of 450 – 600 km in a Mach 7 velocity. India's Defence Minister Rajnath Singh has already stated that India needs to develop nuclear deterrence however he clarified that the aim to manufacture missiles is not to attack anyone but ensure the country's safety.

<https://www.republicworld.com/technology-news/science/brahmos-uran-missiles-successfully-test-fired-from-andaman-islands-informs-indian-navy-articleshow.html>

Thu, 03 Feb 2022

India tests BrahMos, Uran Anti-Ship Missiles in Andaman and Nicobar Islands

Snapshot

- **Andaman and Nicobar Command tests BrahMos and Uran anti-ship missiles.**

India has successfully tested two anti-ship missiles, BrahMos and Uran, in the Andaman and Nicobar Islands, the Indian Navy said today (2 February).

The missiles were test-fired by the Andaman and Nicobar Command (ANC), a tri-service theatre command of the Indian Armed Forces.

While the BrahMos supersonic cruise missile was fired from a ground-based launcher on the Andaman and Nicobar Islands, Uran anti-ship missile was launched from a Guided Missile Corvette of the Indian Navy. The ANC said that "exNaval ship LCU 38" served as the target for the test.

"Ship Launched and Land based ASHM [anti-ship missile] fired from Indian Navy's Guided Missile Corvette and ANC hit the target at maximum range with devastating impact," the Navy said on Twitter.

This test of the BrahMos missile comes just days after the Philippines signed a \$375 million deal with BrahMos Aerospace Limited for the purchase of missiles for its land-based anti-ship missile system.

The test was also the second launch of the BrahMos missile in the last two weeks. India test-fired a BrahMos missile from the Integrated Test Range Chandipur off the coast of Odisha on 20 January.

On 8 December, the air-launched version of the BrahMos supersonic cruise missile was successfully test-fired from a Su-30MKI fighter jet, clearing it for serial production. The air-launched version of the BrahMos missile, also called BrahMos-A, is being integrated with Su-30 MKI fighters of the IAF. The IAF had test-fired the air-launched version of the BrahMos missile from a modified Su-30 MKI fighter for the first time in 2017.

<https://swarajyamag.com/news-brief/india-tests-brahmos-uran-anti-ship-missiles-in-andaman-and-nicobar-islands>



BrahMos supersonic cruise missile.



Press Information Bureau

Government of India

Ministry of Defence

Wed, 02 Feb 2022 9:07PM

Chief of Naval Staff reviews PFR and MILAN preparations

Admiral R Hari Kumar, PVSM, AVSM, VSM, ADC, Chief of the Naval Staff (CNS) accompanied by Mrs Kala Hari Kumar, President, Navy Wives Welfare Association(NWWA) arrived Visakhapatnam on a two-day maiden visit to the Eastern Naval Command(ENC) on Tuesday, 01 Feb 22. He was received by Vice Adm Biswajit Dasgupta, AVSM, YSM, VSM, Flag Officer Commanding-in-Chief Eastern Naval Command (ENC) at INS Dega and was accorded a ceremonial Guard of Honour.

Admiral Hari Kumar held discussions with Vice Adm Biswajit Dasgupta, FOC-in-C on ongoing issues of the Eastern Naval Command. He was given an overview of the operational and administrative activities of ENC and was briefed on the COVID mitigation measures undertaken by the Command. The CNS was apprised about the preparatory activities for President's Fleet Review (PFR) and Multinational Naval Exercise, MILAN, which are scheduled at Visakhapatnam later this month. The CNS along with C-in-C embarked ships of the Eastern Fleet and reviewed the operational preparedness of the fleet which included weapon firings and Special Forces operations.

The CNS visited key operational and maintenance facilities including the Naval Dockyard and reviewed the progress of ongoing projects. He addressed the officers and sailors of ENC and interacted with them. He was briefed on the recently activated Portable Containerised Medical Facility onboard INS Gharial, a key HADR enabler of the Indian Navy. The Admiral also visited NSTL to review the Indian Navy's developmental projects being progressed with DRDO during his visit.

Mrs Kala Hari Kumar, President NWWA interacted with Mrs Sarbani Dasgupta President NWWA (Eastern Region) and Group Coordinators of the association. She was briefed on various welfare initiatives and activities undertaken by NWWA during her visit to some of the facilities at Visakhapatnam.



<https://pib.gov.in/PressReleasePage.aspx?PRID=1794906>

DRDO on Twitter

The image is a screenshot of a tweet from ANI (@ANI). The tweet text reads: "#WATCH | Andaman & Nicobar Command tweets, 'Successful launch of Brahmos & Uran anti-ship missiles by ANC Naval component further validates capabilities for defence of our islands.'" Below the text is a video thumbnail showing a Brahmos missile launch. The video has a duration of 0:34 and 19.1K views. The text "BRAHMOS LAUNCH" is overlaid on the video in large yellow letters. At the bottom of the tweet, it says "10:05 AM · Feb 2, 2022 · Twitter Web App".



Andaman & Nicobar Command
@AN_Command

Successful launch of Brahmos & Uran antiship missiles by ANC Naval component further validates capabilities for defence of our islands. C-in-C ANC congratulates all who worked hard in bidding precision adieu to exNaval ship LCU38, from a great distance away.
[#ANC](#)
[#SamNoVarunah](#)



11:16 AM · Feb 2, 2022 · Twitter for Android



DRDO @DRDO_India · 9h

Adm R Hari Kumar, [#CNS](#) alongwith senior officials from [@indiannavy](#) visited [#NSTL](#) today. The [#NavyChief](#) was briefed about the ongoing projects. He was apprised of advanced automated test facilities and design capabilities for the development of naval systems. [#ResoluteStrides](#)



6 77 677



DRDO
@DRDO_India

Flag Officer Commanding in Chief of Eastern Naval Command, Vice Admiral Biswajit Dasgupta also accompanied [#CNS](#) during the visit.

11:33 PM · Feb 2, 2022 · Twitter for Android



Thu, 03 Feb 2022

How India's BrahMos deal is not just about Philippines but gives a stronger message to the region

The \$375 billion BrahMos deal will have an impact on the India-China, India-ASEAN as well as the Philippines-China relations

By Premesha Saha

In a major boost to its defence export plans, India has signed a \$375 billion deal to export the BrahMos supersonic cruise missile to the Philippines. According to the Philippines Defence Secretary, Delfin Lorenzana, they had sent a written request to the BrahMos Aerospace Private Limited "to accept a proposal to buy three batteries of the supersonic missile system for \$375 million". Each battery comprises two missile launchers, a radar and a command-and-control centre, and can fire two missiles within 10 seconds. This is the first major military export by India. This supersonic missile is an India-Russia joint venture which can be launched from submarines, ships, aircraft, or from land platforms.

India has been essentially known globally to be among the top five arms importers, according to a March 2021 report by the Stockholm International Peace Research Institute (SIPRI). But recently, the Indian government is looking to reduce its arms imports by boosting domestic production. New Delhi is seeking a boost in defence exports in order to strengthen its defence manufacturing and production. At present, India is the twenty-fourth largest arms exporter in the world, but India's vision is "to expand its defence manufacturing sector and become a bigger arms exporter generating a revenue of \$5 billion by 2025". Defence Minister Rajnath Singh has been talking about "various defence equipment on offer" during bilateral talks and visits to friendly nations. There are changes being made to make such exports easier as well, for instance, sanctioning of funds to Indian missions abroad for promoting indigenous arms.

For the Philippines, the purpose behind the acquisition of the supersonic cruise missile is to improve its coastal defence and will be used by the Coastal Defence Regiment of the Philippine Marines. The deal also included training for operators and logistics support. The main rationale for the Filipino government's acquisition plan is to protect the island nation's claims in the disputed South China Sea or the West Philippine Sea as they refer to it. The plan for this acquisition was started as early as 2017 and was approved by the Office of the President in 2020 as part of the modernisation programme of the armed forces of the Philippines. The ongoing pandemic which has hit the Philippines' economy in a big way stalled the process and hence there was a delay from the end of the Filipino government in placing the order.

The Philippines has been embroiled in a territorial dispute with China in the South China Sea since the early 1990s. From the Chinese occupation of the Mischief Reef in 1992, the clash around the Scarborough Shoal in 2012, the turf has intensified further in recent years with very frequent skirmishes, disagreements, between the Chinese navy, coast guards and their Filipino counterparts. The Chinese maritime militia has been constantly engaging in clashes and harassing the Southeast Asian claimant nations, sometimes even in their Exclusive Economic Zones (EEZ). The legal weapon employed by the Philippines, whereby in 2016 the Permanent Court of Arbitration had

rejected China's nine-dashed line claims, had not stopped China from indulging in artificial island reclamation activities in these disputed islands to unilaterally enforce its maritime claims. China's nationalistic fervour under President Xi Jinping has led to use of military tactics to impose its claims and this has exacerbated tensions with Japan in the East China Sea, Southeast Asia in the South China Sea, India in the Line of Actual Control (LAC), and also with Australia (economic coercion). Countries are now no longer shying away from undertaking strong anti-China policies and joining hands under the purview of 'like-minded partnership' to deal with an expansionist Beijing. Initiatives like the one being discussed, Quad, AUKUS all are indicative of this.

China has rapidly expanded its defence and military capabilities which has made the Southeast Asian claimant countries very vulnerable. This has forced them to reach out to like-minded countries like India for further strengthening the bilateral ties especially in the realm of defence. There is an attempt by the Philippines to also diversify its major arms suppliers and look for other exporters besides the United States and South Korea.

The defence agreement that would enable the export of defence equipment to Manila from India was signed in early 2021. The defence relations between India and Philippines have also been on an upward trajectory with India extending a \$100 million defence related Line of Credit to Manila. According to Rear Admiral (retd) Rommel Ong, who served as the Philippines Navy second in command till 2019, "The missiles were designed in part to counter China, which contests the Philippines' claims to land features and fishing grounds in the South China Sea. The anti-ship missiles would be dispersed from north to south in the Philippine archipelago, to cover the west coast, which faces the South China Sea." Furthermore, this will help increase the deterrence capability of the Philippines when facing a much militarily developed and advanced Chinese Navy. Richard Heydarian, associate professor at Polytechnic University of the Philippines, said, "Smaller countries, by calibrated acquisitions of state-of-the-art and asymmetric capabilities can develop this overall minimum deterrence."

This sale enables India to ensure its place as a reliable defence partner to its Southeast Asian neighbours. This will provide India the much needed headway to export the BrahMos cruise missile to countries like Vietnam, Indonesia who have also made repeated appeals for its purchase as well. The Indian government, in order to give a push to its age-old Look East policy, had rechristened it to the Act East policy in 2014, but still there were critical voices pointing that India has a long way to go to establish a strong and meaningful presence in its extended neighbourhood.

India since after the Galwan Valley clash of June 2020 has been deepening its ties with the United States and with the allies of the US as well like Australia and now the Philippines. India is engaging in "proactive defence diplomacy" in response to China's naval incursions in the Indo-Pacific and also China's encroachments in the disputed land border with India. This deal will undoubtedly have an impact on the India-China, India-ASEAN as well as the Philippines-China relations. This provides the perfect leeway for India to develop a strong defence linkage, partnership with countries of the ASEAN and put in some weight behind its constant mantra of 'ASEAN centrality' in its Indo-Pacific vision.

Given that countries like the Philippines in the ASEAN have started to push back against China, it is time for major players of the Indo-Pacific like the US, India, Japan, Australia, UK among others to sweep in and again prove their credibility in the defence and security realm to the like-minded countries in Southeast Asia.

Dr Premesha Saha is an Associate Fellow with the Strategic Studies Programme of the Observer Research Foundation, New Delhi. Views expressed are personal.

<https://www.firstpost.com/india/how-indias-brahmos-deal-is-not-just-about-philippines-but-gives-a-stronger-message-to-the-region-10342941.html>

Thu, 03 Feb 2022

COAS Gen Naravane discusses bilateral defence cooperation with Australian counterpart

Chief of Army Staff General MM Naravane held a telephonic conversation with Chief of Australian Army, Lieutenant General Rick Burr on Wednesday, 2 February.

By Anchal Nigam

Chief of Army Staff (COAS) General MM Naravane held a telephonic conversation with Chief of Australian Army, Lieutenant General Rick Burr on Wednesday. Both the leaders discussed issues of bilateral defence cooperation, stated Additional Directorate General of Public Information for Indian Army on Twitter. The call between General Naravane and his Australian counterpart came after Defence Minister Rajnath Singh, Minister of External Affairs dr. S. Jaishankar in September 2021 welcomed Australian Minister for Foreign Affairs and Minister for Women, Marise Payne and Minister for Defence Peter Dutton to New Delhi.



Image: @adgpi/Twitter

Last year, India and Australia held their first 2+2 Ministerial Dialogue where both nations vowed to further enhance the bilateral relationship. At the time, the Ministry of External Affairs (MEA) had said in a statement that, “Both sides welcomed the elevation of the India-Australia relationship” and “noted with satisfaction the progress made in deepening bilateral cooperation in political, economic, security and defence-related matters.”

With regards to strengthening cooperation in defence, the MEA said that during India-Australia 2+2 Ministerial dialogue, both countries acknowledged “the increased defence cooperation between both countries and discussed initiatives to enhance defence engagements.” Further, Australia invited India to participate in future Talisman Sabre exercises to empower operational compatibility between defence services.

“Both countries endeavour to increase cooperation in various defence technologies and continue the dialogue between the Defence Research & Development Organization of India and Defence Science & Technology Group of Australia,” the MEA added.

General Naravane concludes a 2-day Bhopal visit

General Naravane spoke with Burr on Wednesday, just days after COAS concluded his two-visit to Bhopal. He was accompanied by Lieutenant General JS Nain, Southern Army Commander when he was briefed on the operational preparedness and on the reforms being undertaken towards transforming the formation into a modern warfighting force by Sudarshan Chakra Corps Commander and other commanders. General Naravane also lauded the proactive approach of forces in undertaking flood relief operations at Datia, Shivpuri, Sheopur, Morena, Ashoknagar, and Jalon of Madhya Pradesh.

<https://www.republicworld.com/world-news/rest-of-the-world-news/coas-gen-naravane-discusses-bilateral-defence-cooperation-with-australian-counterpart-articleshow.html>



Press Information Bureau
Government of India

Ministry of Defence

Wed, 02 Feb 2022 5:14PM

First Sea sortie of fifth Scorpene Submarine 'VAGIR'

The fifth submarine of Project 75, Yard 11879, Indian Navy's Kalvari class commenced her sea trials on 01 Feb 22. The submarine was launched in Nov 2020 from the Kanhoji Angre Wet Basin of Mazagon Dock Shipbuilders Limited (MDL). The submarine would be named Vagir, after commissioning.

Despite the COVID pandemic, MDL has 'Delivered' two submarines of the Project – 75 in the year 2021 and the commencement of sea trials of the fifth submarine is a significant milestone.

The submarine will now undergo intense trials of all its systems at sea, including propulsion systems, weapons and sensors. The submarine is scheduled for delivery to the Indian Navy in the year 2022 after completion of these trials.



<https://pib.gov.in/PressReleasePage.aspx?PRID=1794765>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Wed, 02 Feb 2022 5:14PM

पांचवीं स्कॉर्पीन पनडुब्बी 'वगीर' की पहली समुद्री यात्रा

सीमा पर विश्वास और सौहार्दपूर्ण संबंधों की भावना को आगे बढ़ाने के लिए उत्तरी सिक्किम के कोंगरा गई। यह आयोजन दिनांक 1 अगस्त 2021 को पीएलए दिवस के साथ सम्पन्न हुआ।

भारतीय नौसेना की कलवरी श्रेणी में प्रोजेक्ट 75, यार्ड 11879 की पांचवीं पनडुब्बी ने पहली फरवरी, 2022 को अपनी समुद्री परीक्षण यात्रा शुरू की। पनडुब्बी को नवंबर 2020 में मझगांव डॉक शिपबिल्डर्स लिमिटेड (एमडीएल) के कान्होजी आंग्रे वेट बेसिन से लॉन्च किया गया था। कमीशनिंग के बाद इस पनडुब्बी का नाम वगीर रखा जाएगा।

कोविड महामारी के बावजूद एमडीएल ने वर्ष 2021 में प्रोजेक्ट - 75 की दो पनडुब्बियों की 'डिलीवरी' की है और पांचवीं पनडुब्बी का समुद्री यात्रा परीक्षण शुरू करना एक महत्वपूर्ण मील का पत्थर है।

पनडुब्बी अब प्रोपल्शन प्रणाली, हथियार और सेंसर सहित समुद्र में अपनी सभी प्रणालियों के गहन परीक्षणों से गुजरेगी। इन परीक्षणों के पूरा होने के बाद वर्ष 2022 में पनडुब्बी को भारतीय नौसेना को सौंपना निर्धारित किया गया है।



<https://pib.gov.in/PressReleasePage.aspx?PRID=1794873>

THE  HINDU

Thu, 03 Feb 2022

India flight tests Rafale-Marine for INS Vikrant

India's new aircraft carrier has been designed as a ski-jump launch ship, different from many other such carriers, which use a catapult launch for their jets

Kolkata: The marine version of the French-made Rafale fighter jet has been successfully flight-tested at a shore-based facility in Goa where conditions similar to that on the indigenously-developed aircraft carrier *INS Vikrant* were simulated, a top diplomat said.

The Rafale-M is pitted against the U.S.-made Super Hornet — both of which are being evaluated for a possible purchase by the Indian Navy for deployment on the 44,000-tonne *INS Vikrant* that is undergoing trials in the Arabian Sea and the Bay of Bengal for likely commissioning in August.

“Tests were done to check its [Rafale-Marine’s] take-off [capability] from the deck of your [India’s] carrier and it has done very well,” French Ambassador to India Emmanuel Lenain told journalists on February 1 evening in Kolkata in a free-wheeling conversation.

India’s new aircraft carrier has been designed as a ski-jump launch ship, different from many other such carriers, which use a catapult launch for their jets. The aircraft selected by the Indian Navy consequently must be capable of taking off in this fashion, carrying all weapon systems and full fuel load.



A file picture of a Rafale fighter jet. | Photo Credit: K. Murali Kumar

The Rafale-M jet was tested for 12 days last month at Goa’s *INS Hansa* facility using a 283 metre mock ski-jump facility, Mr. Lenain said.

The ski-jump ramp uses what naval experts call short take-off but arrested recovery (STOBAR) technology.

Boeing’s Super Hornet or F/A-18 jet, which is also being offered to India, is expected to undergo similar tests at *INS Hansa* next month.

The suppliers have made modifications to both Rafale-M and Super Hornet to make them suitable for the Indian order, defence sources said.

The Navy was looking for an aircraft that is capable of delivering nuclear loads, air-to-air and air-to-ground missiles, and precision-guided bombs, they said.

The Navy wants to initially purchase 26 jets for its aircraft carrier, though it had issued in 2017 a Request for Information (RFI) for 57 multirole aircraft capable of being launched from carriers.

The RFI was issued as the Navy will be phasing out the MiG-29Ks, currently being used on *INS Vikramaditya* — a modified Kiev class carrier — in 2034.

Ambassador Lenain pointed out that Indian Air Force was already using Rafale fighter jets and “was very satisfied with the aircraft”.

Since the IAF has Rafale jets, a Naval order would build on commonality, he said.

“We have already supplied 35 Rafales in the last order and will complete it by sending the 36th before the deadline in April,” he said.

India had in 2016 placed the order for the jets with Dassault in a fly-away condition.

<https://www.thehindu.com/news/national/india-flight-tests-rafale-marine-for-ins-vikrant/article38364438.ece>

THE TIMES OF INDIA

Thu, 03 Feb 2022

Indian Army to get BDL-manufactured Konkurs-M anti-tank guided missiles from Hyderabad company

By Ch Sushil Rao

Hyderabad: The Indian Army will get Konkurs-M, anti-tank guided missiles, manufactured by Bharat Dynamics Limited (BDL), Hyderabad.

BDL and the Indian Army signed a contract worth Rs 3,131.82 crore for manufacture and supply of the missiles. Konkurs-M is a second generation, mechanized infantry anti-tank guided missile, to destroy armored vehicles equipped with explosive reactive armour. The missile can be launched either from BMP-II tank or from ground launcher. It has a range between 75 to 4,000 metre with a flight time of 19 seconds.

The contract, which was signed in New Delhi today on Wednesday, will be executed in three years.

“The order book position of BDL stands at Rs 11,400 crore net including the Konkurs-M contract signed today,” BDL said in a statement.

CMD, BDL Commodore Siddharth Mishra (Retd) said Konkurs -M were being manufactured by BDL under license agreement with a Russian OEM (Original Equipment Manufacturer). “The missile has been indigenized up to maximum extent. BDL is also offering Konkurs- M missiles for export to friendly foreign countries,” he said.



The Indian Army will get Konkurs-M, anti-tank guided missiles manufactured by Bharat Dynamics Limited (BDL), Hyderabad.

BDL has augmented its manufacturing capacity to meet the domestic as well as overseas demand for Konkurs M. As a part of its global outreach, BDL is also offering Man Portable Anti-Tank Guided Missiles, Nag, Milan-2T and Amogha, in addition to Konkurs –M, for exports.

“BDL is laying a lot of thrust on indigenization of its products manufactured under Transfer of Technology with foreign OEMs. The Atmanirbharat mission initiated by the Government of India has given momentum to the indigenization efforts of the Company. The Company is also strengthening its in-house R & D capabilities to take up product innovation in order to mitigate Indian armed forces’ product dependency on foreign countries,” BDL said.

<https://timesofindia.indiatimes.com/city/hyderabad/indian-army-to-get-bdl-manufactured-konkurs-m-anti-tank-guided-missiles-from-hyderabad-company/articleshow/89302527.cms>

Customized for ‘High-Altitude’ warfare against China & Pakistan, Indian Air Force receives more Rafale Fighters

By Sakshi Tiwarai

The Indian Air Force (IAF) has received another batch of Rafale fighter jets after a gap of about nine months. The delivery comes at a time when Pakistan is said to be procuring J-10C fighter jets from China to counterbalance India’s Rafales.

The latest delivery includes three of the remaining four Dassault Rafales. France handed over the fighter planes at the Istres-Le Tube air station, northwest of Marseille on February 1.

The IAF is expected to fly the fighter jets back to India sometime between February 15 and February 20. The planes will be thoroughly inspected before they are brought home.

On their way home, these fighter jets will be refueled mid-air by the UAE Air Force’s Airbus multi-role transport tankers.

These Rafale fighter jets are fully equipped with India-specific upgrades, giving them extra fangs to battle any regional foe. The last fighter plane is virtually finished with new paint and improvements, but it will not arrive until April.

When the three fighter jets arrive in India, the IAF will test the precise modifications to their satisfaction under Indian conditions, in addition to verifying the original equipment manufacturer’s claims in accordance with the agreement.

Following the inspections, work will commence on adding India-specific enhancements to the existing 32 aircraft, which operate from Ambala and Hashimara airbases. The upgrade will take place at Ambala air station, which has a maintenance and repair facility for Rafale jets in India.

French Ambassador Emmanuel Lenain had earlier stated that “despite all the hardship” suffered in the past two years due to the COVID-19 epidemic, Paris would be able to deliver all Rafales on time. “To meet the commitment, teams in France have worked extra shifts.”

Previous reports had indicated that every month, three to four Indian Rafales will be outfitted with these kits, which will be transported to India. India will receive 36 Rafale fighter jets with RB and BS tail numbers.

Further, the Rafales have been handed over to India at a time when the carrier-variant of this fighter, Rafale-M is competing against the Boeing F/A-18E/F Super Hornet Block III for India’s carrier operations aboard IAC-1 Vikrant. If Rafale M is able to make the cut, India will soon receive more Rafales, over and above the 36 previously ordered.

Even though India has already inducted over 30 Rafale fighter jets in two squadrons, what makes this new batch special is that they are equipped with India-specific enhancements even as IAF remains tightlipped about these features.

Upgraded Rafales for India

It is believed that the India-specific enhancements include long-range Meteor air-to-air missiles, low-band frequency jammers, and advanced communication systems.

The new jets may also feature more capable radio altimeters, radar warning receivers, high altitude engine start-up, synthetic aperture radar, ground moving target indicator and tracking, missile approach warning systems, and very high-frequency range decoys.



Pilots may be able to fire weapons with lightning speed thanks to helmet-mounted sights and a targeting mechanism.

As India remains sandwiched between two hostile neighbors — China and Pakistan — and parts of their borders fall in extreme-cold regions, the Indian Rafales have cold engine start capability to fly from high-altitude bases such as Leh, according to a previous report of the EurAsian Times.

Furthermore, IAF Rafales are being outfitted with the X-Guard fiber-optic towed decoy system, which enables the aircraft to avoid both air-to-air and surface-to-air missiles.

The weaponry package exceeds all other military systems in the area, allowing India to attack Pakistani jets from a safe distance. Furthermore, the SCALP air-to-ground missile will be capable of destroying virtually any target on Pakistani territory.

The Meteor, an air-to-air beyond-visual-range missile thought to be the best in its class, is installed on the fighter plane. It has a range of approximately 100 km and can shoot down hostile aircraft

The Scalp air-launched missile for Rafale jets is intended to hit high-value targets such as radars, airbases, ports, and communication centers. The missile's long-range and low-altitude flight characteristics allow it to operate at any time of day or night.

In addition, France will equip Indian Rafale aircraft with air-to-surface Hammer all-weather smart weapons. The Hammer is a fire-and-forget weapon with a range of 70 kilometers that is highly resistant to jamming and target location errors. Without the use of GPS, it can be launched from a short-range to a longer range of 70 km.

The India-specific enhancements are all estimates and no official information has been provided by the Indian Air Force. However, the upgrades could be expected to power the Rafale with equipment that allows it to operate efficiently at its northern and western borders.

Given the protracted border dispute with China, the new Rafales are expected to provide a big boost to the IAF's capabilities. Further, it will enhance the deterrence against Pakistan which has already been unnerved ever since India received its first batch of French-made fighter jets.

Will Pakistan Buy J-10C?

Pakistan has been signaling its intention to buy the J-10C fighter jets from China with the objective of creating a balance of power with the IAF. Earlier this year, it had announced that a flypast of the Chinese fighter would be conducted during the Pakistan Day parade on March 23, as previously reported by the EurAsian Times.

Even though there has been no official confirmation by the Pakistan Air Force (PAF) on the matter, observers say that a potential deal could not be ruled out.

The J-10 is a small multi-role fighter that can fly in all weather. The single-engine aircraft was built for China's People's Liberation Army Air Force to carry out strike and air-to-air combat operations.

While Pakistan currently operates the JF-17 fighters developed jointly with China, the concerns regarding its engine could be a reason behind PAF's interest in the Chengdu J-10.

<https://eurasianimes.com/customized-for-high-altitude-warfare-against-china-pakistan-indian-air-force-receives-more-rafale-fighters/>

After Iron Dome, Israel plans 'laser wall' to intercept missiles: What is it?

The Iron Dome system was made operational in Jerusalem in 2011. It uses a radar-based technology which detects an incoming missile and takes counter action. But, Israel PM Naftali Bennett said it is proving costly. The 'laser wall' seeks to reduce the cost along with enhancing the defence system.

By Amit Chaturvedi

New Delhi: Israel's Prime Minister Naftali Bennett announced a major technological shift in its security when he said that the country's will surround itself with a "laser wall", a new way to intercept missiles.

Bennett was addressing a security conference on Tuesday where he said that Israel is speeding the rollout of laser technology to help protect it from rocket attacks. The "laser wall" will be unveiled within a year in southern Israel, he added.

The Israeli PM also acknowledged that its Iron Dome defence system is too expensive.

What is the 'laser wall' technology?

Little is known about the system's effectiveness, but it is expected to be deployed on land, in the air and at sea and send a deterrent message to archenemy Iran and its proxies.

The lasers are designed to complement Israel's multilayered defenses - which include the Iron Dome and other systems capable of intercepting long and medium-range missiles and drones.

"If it is possible to intercept a missile or rocket with just an electric pulse that costs a few dollars, we will have nullified the ring of fire that Iran has set up on our borders," Bennett said. "This new generation of air defense can also serve our friends in the region," he added.

The test of the new system

Israel's defence forces have been testing the 'laser wall' technology since June last year. It installed the powerful laser on an aircraft and it downed several unmanned aerial vehicles (UAVs) within a range of one kilometre. The ministry said that the system had a success rate of 100 per cent.

The Israeli government now wants to install a laser with a power of 100 kilowatts and a range of 20 kilometres.

What is the Iron Dome system?

It was unveiled by Israel a decade ago. The mobile missile interceptor system is designed to intercept and destroy short-range rockets and artillery shells.

The Iron Dome system has been constructed by top Israeli defense contractors Elisra Group, Israel Aerospace Industries and Rafael Advanced Defense Systems.

It uses some components made by US defense contractor Raytheon Co.

How does the Iron Dome system work?

Rafael Advanced Defense Systems said that Iron Dome uses radar to identify and destroy incoming threats before they can cause damage.

The all-weather Iron Dome system consists of three parts - a radar, a control system and a launcher - all working in tandem. As soon as a rocket is fired, the radar system detects it and tracks



The Iron Dome air defense system launches a missile to intercept a rocket from the Gaza Strip, in Ashkelon, southern Israel.(AP File Photo)

the trajectory. The control system estimates the impact point and an integrated launcher fires missile to intercept it.

The Iron Dome system has an accuracy of 90 per cent, and since becoming operational in 2011, has shot down thousands of rockets fired from Gaza.

Though it is one of the most advanced defence systems in the world, the Iron Dome is proving to be costly, said Bennett.

‘Illogical equation’

The Israeli PM said that someone in Gaza can fire a rocket toward Israel for a few hundred dollars, but it costs tens of thousands of dollars to intercept it. He spoke from Israel's recent experience: In May, Hamas fired more than 4,000 rockets toward Israel.

“That is an illogical equation,” Bennett said. “We decided to break this equation.”

The new laser system has been described as having the ability to address longer-range threats at high altitudes regardless of weather conditions.

<https://www.hindustantimes.com/world-news/after-iron-dome-israel-plans-laser-wall-to-intercept-missiles-what-is-it-101643785980572.html>



**Press Information Bureau
Government of India**

Ministry of Defence

Wed, 02 Feb 2022 6:55PM

Government increases capital budget of BRO by 40%;

Focus on border areas development

In the 75th Year of India's Independence, with sustained focus on infrastructure development the Government of India in its Union Budget for FY 2022-23 has increased the capital outlay for the Border Roads Organisation (BRO), by a record 40 percent, to Rs 3,500 crore as compared to Rs 2,500 crore in FY 2021-22.

In 2021, BRO executed a record number of infrastructure projects, at very high altitudes and in extreme weather conditions, amidst the raging pandemic. 102 roads and bridges at various places in the North-Western and Eastern States of the country were dedicated to the nation by Raksha Mantri Shri Rajnath Singh in the year 2021, this includes the World's highest motorable road at Umling La, 19,024 feet.

The enhanced budgetary allocation is a reaffirmation of the Government's resolve to focus on border area development. The BRO with its persistent commitment to enhancing connectivity to far-flung remote areas, irrespective of the terrain and weather conditions, is not just contributing to enhanced operational preparedness but making a very significant contribution towards socio-economic integration and development of the regions. This budgetary impetus will further facilitate BRO to construct bridges, roads and tunnels to assist in speedy mobilisation of the Armed Forces to strategically important sectors, further bolstering the security environment. It will also contribute significantly towards the overall economic growth of remote border areas specially in UT of Ladakh, J&K and the states of Uttarakhand, Arunachal Pradesh and Sikkim.

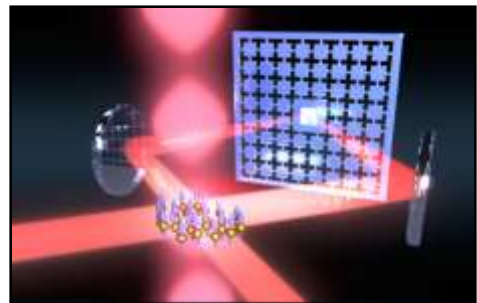
<https://pib.gov.in/PressReleasePage.aspx?PRID=1794833>

Using the principle of coherent feedback to cool a quantum system

We've all experienced the principle of feedback—for example, when we use a thermostat in conjunction with a heating system to regulate indoor temperature. The thermostat measures the current temperature, compares it with the target value and regulates the flow of heat accordingly. Control loops of this kind appear in many areas of everyday life and technology.

They are also useful in the quantum world when it comes to bringing a system into a desired state. For example, it's often necessary to work at very low temperatures—close to absolute zero—in order to observe the sensitive effects of the quantum world and to apply these effects to new technological applications. Classical feedback requires a measurement to be taken within a control loop and only works to a limited extent in the world of quanta, which differs from the macroscopic world we're familiar with in many respects.

The reason for these limitations is that in quantum systems, the very act of taking a measurement causes a change in the system and therefore leads to uncontrolled backaction. With this in mind, researchers led by Professor Philipp Treutlein from the Department of Physics and the Swiss Nanoscience Institute of the University of Basel have used the principle of coherent feedback to cool a quantum system for the first time—and they have published their results in the journal *Physical Review X*.



Light is used to couple a vibrating membrane to a cloud of atoms in order to form a control loop. The two different quantum systems — consisting of the membrane and the spins — therefore regulate one another's temperature with no need for external measurement. Credit: Department of Physics, University of Basel

Control without measurement

Coherent feedback describes a situation in which two quantum systems interact with one another. As one of the systems acts as a control unit for the other, no measurement is needed. Instead, the control system is configured to bring the target system into a desired state by means of coherent quantum mechanical interaction.

Specifically, the researchers used atoms as a quantum mechanical control system to control the temperature of a macroscopic but very thin vibrating membrane. This process first involves aligning the intrinsic angular momentum (spin) of the atoms in a well-defined direction, which corresponds to a very cold state close to absolute zero. In contrast, the high temperature of the membrane causes it to vibrate strongly. Quantum mechanical interaction allows the atoms and membrane to swap states, causing the membrane to become cold as its energy is transferred to the atoms. Subsequently, however, the atoms can quickly be returned to their initial state using laser light in preparation for another energy transfer from the membrane.

The researchers successfully used this coherent feedback mechanism to reduce the temperature of the oscillating membrane from room temperature to 200 millikelvins (-272.95°C)—that is, a temperature close to absolute zero—within a fraction of a millisecond.

"We use the interaction between the two systems to transfer the membrane into the cold state," explains doctoral student Gian-Luca Schmid, who is first author of the study alongside Chun Tat Ngai, another of Treutlein's doctoral students. "The fascinating thing about these analyses is that

we're able to couple a macroscopic system to an atomic quantum system—and control it—over quite a large distance," says Philipp Treutlein.

Delays despite light speed

The relatively large distance between the two quantum systems is an important prerequisite for potential applications in quantum technology, but it also results in tiny delays. Although light travels at light speed, these delays have a clear effect on feedback and make the system more unstable. This results in slightly less cooling of the oscillating membrane than would theoretically be possible in the absence of a delay.

The researchers in Basel are studying phenomena like these at quantum interfaces between atoms and solid-state systems, because hybrid systems of this kind will play an important role in the quantum technology of the future. Potential applications include new types of sensors and quantum networks.

"We're confident that our study will give rise to further practical investigations of coherent feedback in quantum systems," says Treutlein.

More information: Gian-Luca Schmid et al, Coherent Feedback Cooling of a Nanomechanical Membrane with Atomic Spins, *Physical Review X* (2022). DOI: [10.1103/PhysRevX.12.011020](https://doi.org/10.1103/PhysRevX.12.011020)

Journal information: [*Physical Review X*](#)

<https://phys.org/news/2022-02-principle-coherent-feedback-cool-quantum.html>

