

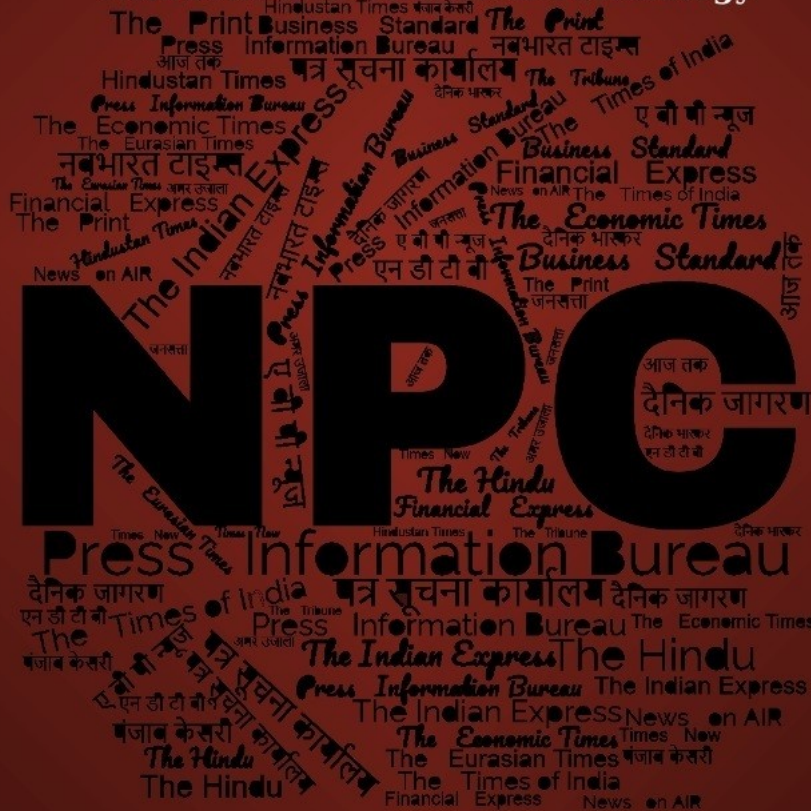
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# समाचार पत्रों से चयनित अंश Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

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*Tue, 20 Aug 2024*

## **Eastern Naval Command chief highlights synergy between NSTL and Indian Navy**

Vice Admiral Rajesh Pendharkar, Flag Officer Commanding-in-Chief of the Eastern Naval Command(ENC), has said that a synergy has been achieved between the Naval Science and Technological Laboratory (NSTL) and the Indian Navy. The timely completion of projects by NSTL has worked out to the mutual benefit of both the organisations, he said.

Extending his greetings to the scientists and staff, at a programme organised on the occasion of the 55th Lab Raising Day celebrations of the NSTL here on Tuesday, Vice Admiral Pendharkar said that future technologies would be based on AI and called upon young scientists to strive for development of new systems based on them.

He expressed the view that the modern technological advancements made by the DRDO and its labs like NSTL have placed the Indian Navy in a formidable position. The Indian Navy was in the forefront of indigenisation, and the world was looking at India. He said that the responsibility of NSTL in this regard.

Director General of Naval Systems & Materials (NS & M) Y. Sreenivas Rao underlined the need for the NSTL to connect with the industry and academia. He said that the responsibility of NSTL does not end with developing and delivering cutting edge and futuristic technologies and handing them over to the industry partners for production.

NSTL has to hand-hold the industry partners so that they could produce world-class products in tune with the existing global scenario. He hoped that with the enrichment of NSTL, Visakhapatnam could become the industry hub for the production of underwater weapons. Abraham Varughese, Outstanding Scientist & Director of NSTL, said that NSTL was putting its best efforts as per the requirements of Indian Navy, with the existing worldclass test facilities.

He briefed about the genesis of NSTL and its evolution to the present stage of being state-of-the-art premier naval research laboratory in the country. Director of Futuristic Technology Management (DFTM), DRDO, N. Ranjana, explained about the measures initiated by the DRDO towards realising Atma Nirbhar Bharat and Vikasit Bharat-2047, in collaboration with academia and industry.

Earlier, G Palakshi, Scientist 'G' & Chairperson, LRDC-2024, gave a brief of the events organised as part of LRDC-2024 and Dr. H.N. Das, Scientist 'G' & Chairman Works Committee, presented the annual report. J.N. Varma, secretary NSTL Civil Employees Union, spoke about the activities of the union.

Captain (Dr.) A.V.S.N. Murty was presented the prestigious Letter of Appreciation by Chief of Integrated Defence Staff to the Chairman, Chiefs of Staff Committee(CISC), for his commendable work on naval infrared stealth.

<https://www.thehindu.com/news/cities/Visakhapatnam/eastern-naval-command-chief-highlights-synergy-between-nstl-and-indian-navy/article68546160.ece>

## THE TIMES OF INDIA

*Wed, 21 Aug 2024*

### **IIT-I, DRDO develop imaging tech to capture fastmoving particles**

The Indian Institute of Technology, Indore (IIT-I), in collaboration with the Defence Research and Development Organisation (DRDO), has developed an innovative high-speed imaging technique to capture high-resolution images of fast-moving particles during an explosion. The technological advancement is seen facilitating a comprehensive understanding of the intricate dynamics of a detonation and the analysis of the impact of high-velocity particles in the aftermath of an explosion.

The new technique, using the principles of Digital Inline Holography, can capture images with exposure times as low as 50 nanoseconds and allows recording up to 700,000 frames per second, giving researchers a real-time look at how particles behave during an explosion, said IIT-I.

IIT-I is working in collaboration with DRDO on multiple projects and recently delivered 10 pairs of real-time location tracking shoes equipped with embedded Radio Frequency Identification (RFID) and Global Positioning System (GPS) trackers for armed forces.

Principal investigator of the team, who developed the method to capture fast-moving particles, Professor Devendra Deshmukh, faculty at IIT Indore, said, “This approach allows for a much sharper and more detailed visualisation of objects even in dust or combustion cloud, overcoming one of the biggest limitations of previous methods. The captured images help to accurately extract information about the objects' velocity, acceleration, and distribution in space. This level of detail is essential for researchers who need to understand not just where the objects are, but how they move and behave in the chaotic aftermath of an explosion”.

He said the core of this innovation is a high-frequency (HF) light source chosen for its ability to penetrate the dense dust clouds. In defence research, the ability to clearly visualise and analyse the behaviour of fragments after an explosion can lead to improvements in both offensive and defensive technologies.

This breakthrough is equally valuable to the aerospace industry, where high-speed imaging is essential for studying everything from fuel spray patterns to the impact of debris on spacecraft, said IIT-I.

IIT-I director Professor Suhas Joshi said, “What makes this method truly stand out is its ability to significantly enhance time resolution. While conventional methods were limited to 1 microsecond exposure times, this new technique can capture images with exposure times as low as 50 nanoseconds. This dramatic increase in time resolution allows for far more detailed tracking of fast-moving objects, even in environments filled with dust, smoke, or other visual obstructions”.



The new technique can be used in industries to analyse very high-speed processes like material cutting and spray formation.

<https://timesofindia.indiatimes.com/city/indore/iit-i-drdo-develop-imaging-tech-to-capture-fast-moving-particles/articleshow/112665739.cms>

## Defence News

## Defence Strategic: National/International



Press Information Bureau  
Government of India

Ministry of Defence

*Tue, 20 Aug 2024*

### **Raksha Mantri Shri Rajnath Singh & his Japanese counterpart Mr Kihara Minoru hold delegation-level talks in New Delhi**

**Reaffirm commitment towards strengthening bilateral relations and regional peace**

Raksha Mantri Shri Rajnath Singh and Minister of Defense, Japan Mr Kihara Minoru held a bilateral meeting, on the sidelines of India-Japan 2+2 Ministerial Dialogue, in New Delhi on August 20, 2024. During the meeting, the Defence Ministers reviewed the existing defence cooperation activities and discussed ways to enhance further cooperation.

The two Ministers reviewed the defence and security pillars of the India-Japan Special Strategic and Global Partnership. They reaffirmed their commitment towards strengthening our bilateral relations and contribution towards regional peace.

The Ministers welcomed the growing diversity and frequency of defence exercises and exchanges between the two countries and undertook to enhance the scope & complexity of these engagements. They committed to give fillip to further widen the scope in the field of Defence Equipment and Technological Cooperation along with enhanced cooperation in critical and emerging technology domains.

The two Ministers discussed further opportunities for industrial cooperation between India and Japan with a focus on Make-in-India and further enhancing the partnership in co-production and co-development.

The Raksha Mantri highlighted that India has set a vision of a 'Viksit Bharat' when the nation enters 2047 completing 100 years of independence. Building domestic defence capabilities is an integral part of this vision, he said, adding that partnering in Defence technologies and industry with Japan will be a key to achieve the goal. Both ministers committed to work together to formulate a vision for this partnership to realise the objectives for India at 2047.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2047107>

## THE TIMES OF INDIA

*Tue, 20 Aug 2024*

### **India, Japan to boost defence tech collaboration, including stealth antenna systems for warships**

India and Japan will crank up their defence-industrial collaboration for cutting-edge technologies, which includes the "Unicorn" stealth antenna system for warships, as well as enhance military interoperability through combat exercises and cooperation in space and cyber domains, with an eye firmly on China's aggressive moves in the Indo-Pacific region.

The Japanese Unicorn or 'unified complex radio antenna' system, which houses multiple antennae of a warship into a single horn-shaped structure to reduce radar signature and detection by enemy forces, was specially mentioned by Japanese defence minister Minoru Kihara after the bilateral 2-plus-2 ministerial dialogue here on Tuesday.

After the "successful completion of the cooperation in the areas of unmanned ground vehicles/robotics", the joint statement said the two sides "appreciated the progress made for the transfer of Unicorn and related technologies and early signing of related arrangements". Bilateral talks on the Unicorn system, which can also detect the movement of missiles and drones with its ability to sense radio waves from a wide area, has been underway for a couple of years. "India is keen on inducting at least a limited number of such systems and technology transfer to make its warships more stealthy," an official said.

Defence minister Rajnath Singh, who also held a separate meeting with Kihara, stressed that India wanted to partner with Japan in order to boost domestic defence-industrial capabilities and achieve the goal of making the country a global manufacturing hub.

In the backdrop of China's expansionist muscle-flexing and "grey zone" tactics in the Indo-Pacific, be it in the South and East China Seas or the land borders with India, Singh said the partnership with Japan was "the key to peace and stability" in the region.

"As two significant stakeholders in the Indo-Pacific, India and Japan, in many ways, are the important sentinels for the region. India and Japan have a shared vision of the Indo-Pacific. There is growing convergence and common outlook on issues of peace, security and stability in the Indo-Pacific region," he said.

The two countries also welcomed the growing diversity and frequency of their defence exercises and exchanges, and resolved to enhance the scope and complexity of these engagements. Japan is taking part in India's ongoing multi-nation "Tarang Shakti" air combat exercise.

This follows after IAF deployed four Sukhoi-30MKI fighters, two C-17 Globemaster-III strategic lift aircraft and one IL-78 mid-air refueler for the first-ever air combat exercise with Japan called "Veer Guardian" at the Hyakuri air base last year.

Japan will also take part in the top-tier Malabar naval exercise to be hosted by India in the Bay of Bengal in October. The Malabar, which began as a bilateral exercise between India and the US in 1992, now includes Japan and Australia as regular participants.

<https://timesofindia.indiatimes.com/india/india-japan-to-boost-defence-tech-collaboration-including-stealth-antenna-systems-for-warships/articleshow/112662562.cms>

## THE ECONOMIC TIMES

*Tue, 20 Aug 2024*

### **BEML signs MoU with Indian Navy**

Bengaluru headquartered BEML, India's leading defence and heavy engineering PSU, on Tuesday signed a strategic Memorandum of Understanding with the Directorate of Marine Engineering, Indian Navy.

The agreement was signed at the Naval Headquarters in Delhi, with Ajit Kumar Srivastav, Director of Defence at BEML, and Rear Admiral K Srinivas, ACOM (D&R) of the Indian Navy.

"This landmark agreement is a pivotal step in enhancing bilateral cooperation for the indigenous design, development, manufacture, testing, and product support of critical marine equipment and systems," the BEML said in a statement. It also said the partnership aims to strengthen self-reliance in defence production and minimise reliance on foreign imports.

The collaboration will enhance indigenous marine engineering capabilities, ensuring that both current and future naval projects are equipped with state-of-the-art, domestically produced technology, BEML said. This alliance is focused on meeting immediate operational requirements while also fortifying long-term defence infrastructure, it added.

<https://economictimes.indiatimes.com/news/defence/beml-signs-mou-with-indian-navy/articleshow/112661295.cms>

## THE ECONOMIC TIMES

*Tue, 20 Aug 2024*

### **Pakistan conducts successful training launch of surface-to-surface ballistic missile**

The Pakistani military on Tuesday conducted the successful training launch of its surface-to-surface ballistic missile Shaheen-II, the army said.

"The training launch was aimed at training of troops, validating various technical parameters and performance evaluation of different sub-systems incorporated for improved accuracy and enhanced survivability," the army said in a statement.



The military provided no further technical information. The training launch was witnessed by senior officers from the Strategic Plans Division, Army Strategic Forces Command, scientists and engineers of strategic organisations. The Director General Strategic Plans Division appreciated the technical prowess, dedication and commitment of scientists who contributed towards this achievement.

President Asif Ali Zardari, Prime Minister Shehbaz Sharif, Chairman Joint Chiefs of Staff Committee General Sahir Shamshad Mirza and services chiefs congratulated the scientists and engineers on the achievement. In May, Pakistan conducted a successful training launch of the Fateh-II Guided Rocket System having a range of 400 kilometres

<https://economictimes.indiatimes.com/news/defence/pakistan-conducts-successful-training-launch-of-surface-to-surface-ballistic-missile/articleshow/112655444.cms>

## Business Standard

*Tue, 20 Aug 2024*

### **India, Malaysia elevate ties to comprehensive strategic partnership**

India and Malaysia on Tuesday elevated their ties to a comprehensive strategic partnership after Prime Minister Narendra Modi and his Malaysian counterpart Anwar Ibrahim held extensive talks focusing on resetting the relations that came under some strain during the tenure of Mahathir Mohamad.

A pact for promoting the recruitment of Indian workers in Malaysia and protection of their interests was one of the eight agreements inked between the two sides.

The talks largely focused on boosting cooperation in areas of digitalisation, defence and security, semiconductors, artificial intelligence and people-to-people contact.

Ibrahim began a three-day visit to India on Monday night -- his first trip to the country after he became the prime minister in 2022.

"Today, we have decided that our partnership will be elevated to a Comprehensive Strategic Partnership," Modi said in his media statement.

The prime minister said the agreement on the employment of workers will promote the recruitment of Indians as well as the protection of their interests.

Highlighting the importance of India-Malaysia economic engagement, Modi said investments from Malaysia to India were worth USD 5 billion last year and the two sides had begun trade in their national currencies.

"We believe that there is still a lot of potential in economic cooperation. Bilateral trade and investment should be expanded," he said.

Asked whether India raised the issue of extradition of controversial Islamic preacher Zakir Naik, Secretary (East) in the Ministry of External Affairs Jaideep Mazumdar did not give a direct reply but said all relevant issues were discussed.

Naik is wanted by Indian authorities for alleged money laundering and inciting extremism through hate speeches. He left India in 2016.

At a media briefing on Modi-Ibrahim talks, Mazumdar said Malaysia supported India's bid to become a permanent member in a reformed UN Security Council.

Mazumdar said Malaysia also agreed to consider India as a source for procuring various defence platforms and hardware.

The two sides also deliberated on issues relating to food security and in this context New Delhi agreed to supply 200 metric tonnes of non-Basmati rice to Malaysia.

In his media statement, Modi said: "We should increase mutual cooperation in new technological areas, such as semiconductor, Fintech, defence industry, artificial intelligence and quantum."

"We have emphasised on accelerating the review of the Comprehensive Economic Cooperation Agreement between India and Malaysia," he said.

The prime minister said work will also be done to connect India's digital payment system UPI with Malaysia's PayNet.

In the talks, the two prime ministers condemned terrorism and agreed to call upon states to reject terrorism in all its forms and manifestations.

"We are also unanimous in the fight against terrorism and extremism," PM Modi said.

Both the leaders underlined that no country should harbour terrorists and agreed to work together to bring perpetrators of terrorism to justice expeditiously, a joint statement said.

In his remarks, Modi also described Malaysia as an "important partner" of India in the ASEAN (Association of Southeast Asian Nations) and Indo-Pacific region.

"India gives priority to ASEAN centrality. We agree that the review of the FTA (free trade agreement) between India and ASEAN should be completed in a timely manner," he said.

In an apparent reference to the situation in South China Sea that has been witnessing growing Chinese military muscle-flexing, Modi said: "We are committed to freedom of navigation and overflight in accordance with international laws. And, we support the peaceful resolution of all disputes."

The joint statement said the two leaders reiterated their commitment to respecting freedom of navigation and overflight, and unimpeded lawful commerce, based on the principles of international law, as reflected in the UN Convention on the Law of the Sea (UNCLOS) 1982.

The two sides also deliberated upon new possibilities of cooperation in the defence sector as well. Both sides also decided to establish a digital council for cooperation in digital technology, and to form a start-up alliance.

In his remarks, Ibrahim said all issues, sensitive or likewise, were discussed in reflection of the true meaning of friendship between the two countries.

"India is a great nation with a great history and a great culture and civilisation. It is in many ways multi-cultural and multi-religious," he said.

"Therefore we have a lot of commonalities which extend beyond trade and investment," he added.

In the Modi-Ibrahim talks, it was decided to set up an Ayurveda chair in Malaysia's University Tunku Abdul Rahman. Apart from this, a decision has also been taken to establish a Tiruvalluvar Chair in the University of Malaya.

[https://www.business-standard.com/external-affairs-defence-security/news/pm-modi-receives-malaysia-s-pm-in-ceremonial-welcome-at-rashtrapati-bhavan-124082000228\\_1.html](https://www.business-standard.com/external-affairs-defence-security/news/pm-modi-receives-malaysia-s-pm-in-ceremonial-welcome-at-rashtrapati-bhavan-124082000228_1.html)

## **India, Ukraine JV Likely To Produce Gas Turbines For Indian Military; Delhi Tightly Embraces Both Ukraine War Adversaries!**

Indian Prime Minister Narendra Modi is scheduled to visit Ukraine on August 23, 2024, at the invitation of President Volodymyr Zelenskyy. During his visit, Modi and Zelenskyy are expected to discuss various areas of cooperation, including defense, economic ties, and science and technology.

A lot of defense equipment that India acquired from the Soviet Union over the years was manufactured in what is now Ukraine. Still in use and operationally significant defence equipment sourced from Ukraine includes Gas Turbine engines for IN (Indian Navy) Warships and An-32 aircraft operated by the IAF (Indian Air Force).

The imperative for India to maintain close defense ties with Ukraine is strong. According to Bloomberg sources, Ukraine's state-owned Zorya-Mashproekt is in talks with Indian private sector companies to jointly manufacture gas turbines used by warships. The two countries are also discussing manufacturing aircraft and aero-engines in India. Joint manufacture of Ukrainian gas turbines in India would enable India to keep its fleet of An-72 aircraft flying and Indian Navy Project 11356 frigates cruising.

### **IAF An-32 Fleet**

The IAF operates a fleet of 105 An-32 medium tactical military transport aircraft. The aircraft has outstanding takeoff characteristics in hot and high conditions typical of the LAC (up to 55 °C and 4,500 m elevation). The IAF is heavily dependent on the An-32 for air maintenance of army troops deployed along our northern frontier, air cargo drop-off, para drop-off, and medevac.

In June 2009, India signed a \$400 million agreement with Ukraine's SpetsTechnoExport (STE) to upgrade its fleet of 105 AN-32 aircraft, extend their life by 40 years, and improve their avionics.

Under the agreement, 40 An-32s were to be upgraded at designer-certified plants in Ukraine, with 10 aircraft being upgraded annually. Ukraine was to upgrade the remaining 64 An-32s at IAF's No. 1 Base Repair Depot (BRD) at Kanpur using material and ToT.

The upgrade project is woefully behind schedule. As of 2024, IAF has plans to upgrade another 60 An-32s within India by FY2028-29, at the rate of 15 per overhaul cycle, led by 1 Base Repair Depot, Kanpur and 3 Base Repair Depot, Chandigarh.

The Indian Air Force's Antonov An-32 aircraft are each powered by two Ivchenko Progress AI-20DM turboprop engines. The engine produces approximately 3,864 kW of output power. The Ivchenko Progress AI-20DM engines are manufactured at Motor Sich in Zaporizhzhya, Ukraine, and at the Perm Engine Plant (UEC-Perm Engines) in Perm, Russia. The spares for the Ivchenko Progress AI-20DM engines used by the Indian Air Force (IAF) are provided by (STE).

### **Admiral Grigorovich-Class (Project 11356M) Frigates**

India's ongoing construction of two Admiral Grigorovich-class (Project 11356M) frigates at the Goa Shipyard Limited (GSL) may be in jeopardy because Ukraine supplies the gas turbines to power the warships.

In 2018, India and Russia signed a formal contract under which PSZ Yantar would supply India with two Admiral Grigorovich-class (Project 11356M) frigates for use by the IN and help India's Goa Shipyard Ltd. (GSL) build two more. Russia would also provide technical assistance to the Indian shipyard in setting up production facilities for the 11356M frigates.

The ships are designed around gas turbine propulsion units built by Ukrainian firm Ukroboronprom's Gas Turbine Research & Production Complex Zorya-Mashproekt. However, following the Maidan coup of 2014, Ukraine refused to supply the engines to Russia!

The contract envisaged India purchasing two gas turbine propulsion units directly from Ukraine and handing them over to Russia for fitment on the two frigates to be supplied to India. Ukraine's Zorya-Mashproekt enterprise in the Mykolaiv region, which produces the engines for Project 11356M frigates, was reportedly already headed for bankruptcy before the start of Russia's Special Military Operations (SMO) in Ukraine on February 24, 2022.

Following the start of the SMO, on March 13, 2022, Zorya-Mashproekt's construction facility was struck by a Russian missile attack. According to a CSIS analysis, Russia's stand-off strikes damaged significant portions of the plant and caused large fires, likely crippling the plant's ability to produce turbines in the near term.

It's clear that Zorya-Mashproekt will not resume production of gas turbines before the end of the conflict in Ukraine. Both frigates earmarked for India have been launched, fitted with the Ukrainian engines sent to Russia by India. The two ships completed by PSZ Yantar – "Tushil" and "Tamala" – are planned to be transferred to the Indian Navy in 2023 and 2024.

The first ship to be constructed at GSL was to be delivered in 2026, and the second, after 06 months.

### **Construction Progress In India**

The keel for the first ship to be built at GSL was laid on January 29, 2021, and the keel of the second was on June 18, 2021. In September 2021, Goa Shipyard Limited signed a contract with the Ukrainian state-owned enterprise M/s. Zorya-Mashproekt for supply of two sets of M7N Main Gas Turbines.

It's not known if Ukraine has supplied India with any of the two ordered engines. Since 2014, Russia has vigorously pursued import substitution projects to eliminate its dependency on Zorya-Mashproekt turbines. When it struck the enterprise facilities, Russia evidently decided that it could do without the enterprise.

Russia has not destroyed the enterprise facilities completely because Mykolaiv may eventually come under Russian control.

### **Options For India**

Besides Project 11356M frigates, Zorya-Mashproekt turbines power many other Indian warships, including Talwar (Project 11356) class frigates and Kolkata (Project 15) and Visakhapatnam (Project 15B) class destroyers. As such, a prolonged war will adversely impact the Indian Navy's operational capability.

India cannot keep its fingers crossed and wait for the production of gas turbines and spares to resume at Zorya-Mashproekt in Ukraine. A prolonged conflict could result in the languishing of shipbuilding technology that India acquired from Russia for building Project 11356M warships in Goa. The fate of the two Project 11356M warships being built in Goa is uncertain. A lack of marine gas turbine spares would adversely impact the IN's operational capability.

Both Ukraine and India stand to gain from a joint venture manufacturing Zorya-Mashproekt gas turbines for ships and aircraft in India. With a JV in India, Zorya-Mashproekt need not wait for the end of the Russian SMO before resuming production of its gas turbines.

The market in India for the Ukrainian gas turbines is large enough to justify JV manufacturing. In addition, there is export potential. Besides the IAF, the An-32, which entered service in the 1980s, served with the air forces of Ukraine, Russia, Bangladesh, Iraq, Mexico and Sudan.

<https://www.eurasiantimes.com/india-ukraine-jv-to-likely-produce-gas/>

## नवभारत टाइम्स

Tue, 20 Aug 2024

### अब भारत में ही चकाचक होंगे वायुसेना के 'महाबली', वर्षों बाद उड़ान भरेंगे Mi-26 हेलीकॉप्टर

देश की वायुसेना को एमआई-26 हेलीकॉप्टरों की मदद फिर से मिलेगी। वर्षों से जमीन पर खड़े एमआई-26 हेलीकॉप्टरों को फिर से उड़ान भरने लायक बनाया जा रहा है। एमआई-26 हेलीकॉप्टर अपने जमाने का महाबली रहा है। सेना इसका इस्तेमाल मुख्य रूप से सैन्य टुकड़ियों और साजो-सामान को ढोने के लिए किया करती थी। लेकिन पुराना पड़ जाने के कारण ये हेलीकॉप्टर्स वर्षों से ग्राउंडेड हैं।

सरकार और सेना ने फैसला किया है कि अब ग्राउंडेड एमआई-26 हेलीकॉप्टरों की बड़े पैमाने पर रिपेयरिंग की जाएगी। चंडीगढ़ के नंबर 3 बेस रिपेयर डिपो (बीआरडी) में रिपेयरिंग का काम चलेगा और इसमें रूस के इंजीनियर मदद करेंगे। पहले तय हुआ था कि इन हेलीकॉप्टरों को मेटनेस के लिए रूस भेजा जाएगा, लेकिन कागजी प्रक्रिया में इतनी देर हो गई कि हेलिकॉप्टर तकनीक के नजरिए से रिटायर हो गए। इस कारण इन्हें ग्राउंड करना पड़ा।

अब वायुसेना ने रूसी इंजीनियरों को ही भारत बुलाकर हेलीकॉप्टरों को चमकाने का फैसला किया है। हेलीकॉप्टरों में लगे उपकरण रूस की कंपनी के हैं और उसी कंपनी के इंजीनियरों को भारत बुलाया गया है। हेलीकॉप्टरों का पुर्जा-पुर्जा खोला जा रहा है। इंजीनियर उसके एक-एक पुर्जे को परखकर तय करेंगे कि किसे दुबारा लगाना है और किसे बदल देना है। काम पूरा होने पर हेलीकॉप्टर एक दशक तक फिर से काम आ सकेंगे।

उम्मीद की जा रही है कि कायाकल्प के बाद पहला हेलीकॉप्टर का ट्रायल 2025 के मध्य तक संभव हो सकेगा। ट्रायल में सब ठीक रहा तो वायुसेना को 2026 की शुरुआत से हेलिकॉप्टर सौंपे जाने लगेंगे। संचालन में पूरी तरह आ जाने के बाद वायुसेना को दूर-दराज के और बेहद दुरुह इलाकों में भारी से भारी वजन के साजो-सामान या सैनिकों के जत्थे को भेजने में कोई दिक्कत नहीं होगी।

वायुसेना में महाबली की वापसी खासकर चीन के साथ 2020 से जारी गतिरोध के मद्देनजर काफी महत्वपूर्ण होगी। बीते चार वर्षों से पूर्वी लद्दाख में एलएसी पर भारत और चीन की सेनाएं आमने-सामने खड़ी हैं। भारतीय सेना को साजो-सामान और उपकरणों की कोई कमी नहीं हो, इस दिशा में तेजी से प्रयास हो रहे हैं।

थल, जल और वायु, तीनों सेनाओं के लिए न केवल सैन्य साजो-सामान की खरीद हो रही है बल्कि देश में भी एक से बढ़कर एक निर्माण हो रहे हैं। सेना नए उपकरणों के साथ-साथ पुराने सामानों का भी कायाकल्प किया जा रहा है। एमआई-26 हेलीकॉप्टरों की रिपेयरिंग से भारत एयरक्राफ्ट मेटनेस और रिपेयरिंग के क्षेत्र में भी आत्मनिर्भरता की दिशा में महत्वपूर्ण कदम बढ़ा सकेगा।

<https://navbharattimes.indiatimes.com/india/indian-air-force-will-be-able-to-induct-again-mi-26-after-repairing-that-are-grounded-from-years/articleshow/112654582.cms>

## चीन हर साल बना रहा 240 फाइटर जेट... छठीं पीढ़ी का विमान तैयार, जानिए इंडियन एयरफोर्स की कैसे बढ़ेगी मुश्किल?

चीन लगातार अपनी पीपुल्स लिबरेशन आर्मी एयरफोर्स (PLAAF) की फ़्लीट बढ़ा रहा है। उसे और ताकतवर और खूब्रार बना रहा है। चीन हर साल अपने यहां करीब 240 कॉम्बैट एयरक्राफ्ट बना रहा है। यानी अलग-अलग प्रकार के लड़ाकू विमान। इसमें 100 से ज्यादा तो J-16 हिडेन ड्रैगन फाइटर जेट्स हैं। इसके अलावा 100 J-20 माइटी ड्रैगन, 40 J-10C विगोरस ड्रैगन बनाए जा रहे हैं। रूसी फाल्कन फाइटर जेट के चीनी वर्जन J-11 और J-15 के प्रोडक्शन की तो संख्या ही नहीं पता। इन्हें टक्कर देने के लिए भारतीय वायुसेना के पास अभी मिग, मिराज, राफेल, जगुआर, तेजस, सुखोई जैसे फाइटर जेट्स हैं। लेकिन चीन तीन ऐसे विमान बना रहा है, जिनसे इंडियन एयरफोर्स की मुसीबत बढ़ सकती है... आइए जानते हैं इनके बारे में...

चीन का खतरनाक स्टेल्थ बॉम्बर, भारत के किसी भी शहर पर कर सकता है हमला

चीन के एयरफोर्स लेटेस्ट स्टेल्थ बॉम्बर H-20 भारत के किसी भी शहर पर हमला कर सकता है। भारतीय सेनाओं के पास स्टेल्थ टेक्नोलॉजी नहीं है। न ही स्टेल्थ फाइटर जेट्स को मार गिराने वाला कोई एंटी-स्टेल्थ हथियार।

भारत की हवाई सुरक्षा के लिए जरूरी है कि कम से कम ऐसे राडार जो इस विमान को ट्रैक कर सकें। फिर एक ऐसा सरफेस-टू-एयर मिसाइल सिस्टम जो चीन के इस बमवर्षक को मारकर गिरा सके। H-20 स्टेल्थ फाइटर जेट में राडार की किरणों को घुमाने की तकनीक है। इसलिए इसे पकड़ना मुश्किल है।

चीन अगर इस फाइटर जेट को अपने आसमान से उड़ाता है तो वो आसानी से भारतीय इलाके में घुसकर सीमा, एयरबेस, नौसैनिक अड्डों, संचार सेंटर्स या सैन्य अड्डों को निशाना बना सकता है। इसलिए भारत को लंबी दूरी की हवा से हवा और सतह से हवा में मार करने वाली मिसाइलों से लैस एयर डिफेंस सिस्टम बनाने होंगे।

ऐसी मिसाइलें बनानी होंगी जो स्टेल्थ बॉम्बर को इंटरसेप्ट कर सकें। दो साल पहले ही चीन के इस स्टेल्थ बॉम्बर से पर्दा हटा था। H-20 लंबी दूरी का बमवर्षक है, जो अधिकतम 13 हजार km तक हमला कर सकता है। H-20 बॉम्बर का कॉम्बैट रेंज 5 हजार km है, यानी यह भारत के किसी भी हिस्से में हमला कर सकता है।

**J-31 या FC-31 Gyrfalcon** स्टेल्थ फाइटर जेट, इसकी टक्कर का भी विमान भारत में नहीं

चीन की पांचवीं पीढ़ी का यह स्टेल्थ फाइटर जेट के कई नाम हैं। जैसे- J-31, FC-31, शेनयांग एफसी-31 स्टेल्थ फाइटर जेट, फाल्कन हॉक या स्नोवी आउल या J-35। इसे शेनयांग एयरक्राफ्ट कॉर्पोरेशन बनाता है। J-31 को एक ही पायलट उड़ाएगा। जे-31 को 56.9 फीट लंबे इस लड़ाकू विमान की ऊंचाई 15.9 फीट है। टेकऑफ के समय अधिकतम वजन 28 हजार kg है।

यह अधिकतम 1400 km/hr की रफ्तार से उड़ान भर सकता है। जे-31 की कॉम्बैट रेंज यानी हथियारों के साथ यह 1200 km है। अगर बीच में फ्यूल मिले तो ये 1900 km तक आ-जा सकता है। अधिकतम 52 हजार फीट की ऊंचाई तक उड़ान भर सकता है।

J-31 फाइटर जेट में 6 बाहरी और 6 अंदरूनी हार्डप्वाइंट्स हैं। इसमें मीडियम रेंज की हवा से हवा में मार करने वाली 12 मिसाइलें लगा सकते हैं। हवा से जमीन पर हमला करने वाली 8 सुपरसोनिक मिसाइलें, 500 kg वजन के 8 डीप-पेनेट्रेशन बम या 30 छोटे बम लगा सकते हैं। भारत के पास फिलहाल इस पीढ़ी का कोई फाइटर जेट बनाया जा रहा है।

इस फाइटर जेट का पूरा नाम है- एडवांस मीडियम कॉम्बैट एयरक्राफ्ट। एक बार यह फाइटर जेट बन गया तो भारत पाकिस्तान पर ज्यादा भारी पड़ेगा। क्योंकि इसकी गति 2600 km/hr रहेगी। इसकी कॉम्बैट रेंज 1620 km और पूरी रेंज 3240 km होगी। यह अधिकतम 65 हजार फीट की ऊंचाई तक जा सकेगा। छठीं पीढ़ी का फाइटर जेट, भारत तो इस रेस में अभी कहीं है ही नहीं... कैसे देगा इसे टक्कर?



चीन छठी पीढ़ी का फाइटर जेट बना रहा है. इसका नाम J-XD है. यानी XD मतलब शिन दाई. इसके बारे में लोगों को कम जानकारी है. ज्यादातर जानकारी सार्वजनिक नहीं की गई है. इसे और भी डेवलप किया जा रहा है. चीन के छठी पीढ़ी फाइटर जेट प्रोग्राम में लगातार अपग्रेड हो रहा है. इसमें एडवांस सेंसर्स होंगे.

लॉयल विंगमैन ड्रोन होगा. लेजर वेपन्स होंगे. इसमें मैन्ड और अनमैन्ड जेट्स और ड्रॉन्स की टीमिंग होगी. यानी जब तक भारत पांचवी पीढ़ी का AMCA बनाकर सेना में शामिल करेगा, तब तक चीन छठी पीढ़ी का विमान उड़ा रहा होगा.

<https://www.aajtak.in/defence-news/story/chinas-growing-air-power-new-combat-aircraft-in-development-will-be-dangerous-for-india-know-why-2015741-2024-08-20>

## Business Standard

Tue, 20 Aug 2024

### **China deploys new laser weapon on amphibious navy ship. What we know so far**

China appears to have equipped one of its amphibious assault ships with a laser-directed energy weapon, reflecting similar developments by the US and other nations in this area, online defence news publication The War Zone reported on Monday.

A recently surfaced photo on social media shows what seems to be a newly-installed laser weapon on a People's Liberation Army Navy (PLAN) Type 071 amphibious transport dock, reportedly fresh from a refit. The system is reportedly covered by a large dome-like structure when not in use.

While China's prior use of laser weapons has primarily been on land, recent incidents, such as the engagement of Houthi drones in the Red Sea, have heightened interest in arming warships with directed energy weapons.

#### **How is China likely to use laser weapons at sea?**

According to the report, this Type 071 vessel has been selected as a test platform for the laser weapon, which could be potentially deployed on other warships in the future.

This is similar to the US Navy's experiments with a laser-directed energy weapon aboard one of its San Antonio class landing platform docks, which successfully shot down a small drone target in May 2020 using the system.

The laser weapon installed on the US ship, officially known as the Laser Weapon System Demonstrator (LWSD) Mk 2 Mod 0, was developed by Northrop Grumman.

Although the capabilities and specifics of the Chinese system are not yet clear, The War Zone report points out that the 150-kilowatt-class LWSD Mk 2 Mod 0 was primarily designed to provide ships with additional defence against small boat swarms and unmanned aircraft.

Additionally, the US system can be used as a dazzler to blind optical sensors and seekers on an adversary's platforms or weapons. According to The War Zone, a similar set of capabilities might be expected for the Chinese laser weapon system.

The PLAN already employs a number of other lower-power laser dazzler systems, which have reportedly been used in confrontations with maritime patrol aircraft from Australia and the United States.

One such incident involved China's Type 052D Luyang III class destroyer Hohhot, which was allegedly involved in targeting a US Navy patrol aircraft with a laser in the South China Sea in February 2020.

Depending on its power, a laser dazzler can temporarily blind an aircraft crew, cause permanent eye damage, or damage optical sensors. According to The War Zone, it is plausible that the new laser system aboard the Type 071 could be a directed energy weapon designed partially — or even solely — as a dazzler.

Overall, the US Navy's advancements in this field are considered crucial steps toward deploying more powerful laser weapons capable of tackling larger and more complex threats, such as low-flying cruise missiles and aircraft. The recent developments in China indicate that the PLAN has similar ambitions, which could eventually provide its warships with significant new capabilities.

[https://www.business-standard.com/external-affairs-defence-security/news/china-deploys-new-laser-weapon-on-amphibious-navy-ship-what-we-know-so-far-124082000723\\_1.html](https://www.business-standard.com/external-affairs-defence-security/news/china-deploys-new-laser-weapon-on-amphibious-navy-ship-what-we-know-so-far-124082000723_1.html)

## THE ECONOMIC TIMES

*Tue, 20 Aug 2024*

### **China teases New Coast Guard 'mothership' : What it means for naval warfare in the Indo-Pacific**

China has recently unveiled a groundbreaking addition to its naval fleet: the Type 076 drone carrier, the world's first of its kind. This Yulan-class Landing Helicopter Assault (LHA) ship is currently under construction at the Changxing Island Shipbuilding Base. The introduction of the Type 076 underscores China's commitment to enhancing its amphibious warfare capabilities and could have significant implications for regional security, particularly concerning Taiwan and the South China Sea.

#### **Innovative Technology on the Type 076**

The Type 076 is equipped with a cutting-edge catapult system similar to the Electromagnetic Aircraft Launch System (EMALS) used on the US Navy's Ford-class carriers. This technology allows for the efficient deployment of Vertical/Short Takeoff and Landing (V/STOL) aircraft, such as the F-35B. Unlike traditional amphibious assault ships, the integration of EMALS into the Type 076 signifies a new approach to providing air support during amphibious operations, enabling faster and more versatile deployment of aerial assets.

#### **Strategic Implications for Taiwan and the South China Sea**

The development of the Type 076 has substantial strategic implications. The ship's capacity to launch unmanned aerial vehicles (UAVs) for roles including reconnaissance, electronic warfare, and direct strikes could enhance China's operational capabilities in contested areas such as Taiwan. This advancement is expected to improve China's ability to conduct sophisticated military operations and potentially disrupt enemy defenses, which is crucial in scenarios involving large-scale amphibious assaults.

In the South China Sea, where China faces ongoing territorial disputes with the Philippines and other nations, the Type 076 could strengthen its power projection and assert control over contested waters. The presence of this advanced vessel may shift the balance of power, providing China with

a significant tool for maintaining a strategic presence and addressing perceived threats in high-tension areas like the Second Thomas Shoal.

### **Global Comparison of Naval Capabilities**

China's introduction of the Type 076 drone carrier is notable when compared to other nations' naval assets. While the United States has advanced drone technology and carrier capabilities, such as the MQ-25 Stingray, these are focused on traditional aircraft carriers rather than dedicated drone carriers.

Similarly, the UK and France possess sophisticated aircraft carriers, but none have integrated drone-launching capabilities to the extent of the Type 076. Japan and South Korea, significant players in the Indo-Pacific region, have been modernizing their naval forces but have not yet developed platforms specifically designed for drone operations in amphibious contexts.

### **Potential Impact on Regional Military Strategies**

The debut of the Type 076 could prompt a reevaluation of military strategies among Indo-Pacific nations. Countries with competing claims in the South China Sea or strong ties with Taiwan, such as Japan, Australia, and India, might need to accelerate their naval modernization efforts or enhance their strategic partnerships to counterbalance China's expanding capabilities. The Type 076 represents a force multiplier that could alter regional security dynamics.

### **Emerging Concepts and Speculations**

In addition to the Type 076, China's 708th Shipbuilding Research Institute has introduced a concept for a large "mothership" designed to support the coast guard. Announced on August 8, this vessel is speculated to be either an aircraft carrier or a drone platform.

The "mothership" is intended to enhance coast guard operations in distant seas, although its exact role and capabilities remain unclear. In a Business Insider report, a former US Navy intelligence officer, John Michael Dahm said, "A vessel's size and displacement often translate directly into capabilities. A bigger ship means more people, more weapons, more fuel, more endurance, more range."

Dahm further commented on the potential of the new "mothership," noting that while it could represent a significant development, "I think the Chinese are trying to create more options." This vessel could align with China's Belt and Road Initiative strategy, expanding its presence in the South Pacific and Southeast Asia. However, the operational feasibility of such a vessel will depend on China's ability to support high-seas operations with a network of ports and resupply points.

<https://economictimes.indiatimes.com/news/defence/china-teases-new-coast-guard-mothership-what-it-means-for-naval-warfare-in-the-indo-pacific/articleshow/112648165.cms>



*Wed, 21 Aug 2024*

## **AH-64 Apache Stuck Near China Border, High Altitude Makes Chopper Recovery Difficult For Indian Air Force**

It has been four months since a US-made AH-64 Apache heavy attack helicopter, known as "Tank in the Air," got stranded in high altitude Ladakh region along the Line of Actual Control (LAC)

with China following a ‘technical malfunction.’ The Indian Air Force (IAF) is said to be in touch with the Original Equipment Manufacturer (OEM) Boeing to repair or recover the rotary craft, a task proving to be arduous due to its high altitude.

The incident on April 4 is said to have occurred during an operational training sortie. Due to undulating terrain and high altitude, the helicopter reportedly experienced a ‘loss of power.’ The aircraft sustained damage during the mishap.

It was the fifth incident in 2 months days involving an Apache helicopter worldwide. For a helicopter that has been operational for over four decades, it did spark air safety concerns. The helicopter’s emergency landing spot is situated at about 12,000 feet near Khardung La, one of the highest passes in the area at 18,380 feet. Helicopters traveling towards Siachen Glacier, touted as the highest battleground in the world, have to traverse the Khardung La Pass.

The Russian Mi-26 super heavy-lift helicopter, which can carry more cargo than any Western helicopter, has been grounded. The American Chinook heavy-lift helicopter can ‘under-slung’ the Apache and fly it back to the base. However, the rarefied atmosphere and high altitude complicate the operation.

“Engine performance and hence load carrying capacity (of helicopters or aircraft) reduces drastically,” an IAF officer, who has experience operating in high altitude regions, told the EurAsian Times. “You need a very large area to underslung the item as controls become sluggish due to rarer air. The helicopter’s inertia sets longer, and to stop aircraft, you need a large area. Our helipad dimensions progressively increase with the increase in altitude to cater for less power available and control response,” he said while explaining the things the helicopter pilots have to keep in mind while operating the region.

The other option is to dismantle the stranded helicopter and then fly it back to the base. Flying at the limits of the aircraft requires meticulous calculation of the ‘All-up weight’ of the aircraft. A few extra kilograms of the cargo could have lethal consequences.

The OEM would be keen to extend help as the US Army had lost 4 Apaches in a matter of 44 days preceding the IAF’s mishap. The incidents took place on February 12, February 23 (when both pilots were killed), on March 24, and then on March 26. The March 24 incident happened at Joint Base Lewis-McChord, Washington State, where two pilots suffered injuries, while the March 26 incident occurred at Fort Carson, Colorado, where the helicopter went down during training, injuring its pilots.

### **US Military Operates About 700 Apache Helos**

The IAF operates 22 Apaches helicopters. The Indian Army had ordered six more in 2020. The IAF inducted the first batch of US-made Apache AH-64E at the Pathankot Air Force Station and the second one in Jorhat, Assam. It was the second US-built helicopter to join the IAF’s fleet after Chinook.

Apaches are considered to be among the most advanced multi-role combat helicopters. According to Boeing, the AH-64 is capable of classifying and threat-prioritizing up to 128 stationary targets in less than a minute and engaging 16.

### **India’s Apache Deployment**

India purchased the Apaches in 2015 under a government-to-government contract. Following the confrontation with China, the Indian Army placed an order for six more helicopters in 2020. The helicopter has since become a critical part of operations in the region. The Apaches have also been operating in the Siachen Glacier region, as revealed by a video released by the IAF to

commemorate the 40 years of 'Operation Meghdoot' by the Indian forces to secure the treacherous heights.

India has stationed Apache squadrons along the borders with its main adversaries, China and Pakistan. In addition to the helicopter, the IAF also gets 812 AGM-114L-3 Hellfire Longbow missiles, 542 AGM-114R-3 Hellfire-II missiles, 245 Stinger Block I-92H missiles, and 12 AN/APG-78 fire-control radars.

Apache 64-A is a four-blade, twin-turboshaft helicopter with a nose-mounted sensor suite that simplifies target acquisition. The laser, infrared, and other systems enable the helicopter to locate, track, and attack targets. It also has a combination of laser-guided precision Hellfire missiles, 70mm rockets, and a 30mm automatic cannon with up to 1,200 high-explosive, dual-purpose ammunition rounds.

The helicopter is designed to operate in mountainous terrain. It can conduct precision attacks at standoff ranges and operate in hostile airspace with threats from the ground.

The Indian Ministry of Defence (MoD) stated in a press release that these helicopters can transmit and receive battlefield pictures through data networking.

The AH-64E Apache Guardian can remotely control drones. This allows the Apache's crew to extend its operational scope and enhance reconnaissance, giving it the capability to direct drones like the MQ-1C Gray Eagle for observation, surveillance, and attack missions. This expands the helicopter's operational range and intelligence-gathering capacity without exposing the crew to unnecessary danger.

<https://www.eurasiantimes.com/iaf-talks-to-oem-to-recover-apache-stranded/>

## Science & Technology News



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*Tue, 20 Aug 2024*

### **New study on quantum nonlocality expands scope of its use**

Scientists have demonstrated that a universal standard for measuring and quantifying non-local quantum correlations is not possible. Quantum nonlocality describes a strange connection between distant physical objects, one that doesn't allow for faster-than-light communication. This new research broadens the potential applications of quantum non-local correlations, which are already used in secure communication, random number generation, and cryptographic key creation. From its inception, quantum nonlocality has garnered significant attention due to its universal appeal in natural science, continuing to influence recent advancements in device-independent technologies. The story began in 1964 when physicist John Stewart Bell from Northern Ireland introduced a theorem that changed our view of the quantum world. Bell showed that while 'local realism' -- the idea that objects have definite properties independent of observation and are only influenced by their immediate surroundings -- holds true in classical physics, it doesn't apply at the quantum

level. In quantum systems with multiple, distant parts, correlations appear that cannot be explained through local realism. Bell's theorem was subsequently confirmed through experiments, establishing the nonlocal nature of the quantum world and was recognized with the 2022 Physics Nobel Prize. Quantum nonlocality has since become a key resource for secure communication, random number certification, and cryptographic key generation, making it important to understand how to measure and compare these quantum correlations. Scientists have been searching for a complete framework to compare the strength of such nonlocal resources. In a recent study published in Physical Review Letters, Dr. Manik Banik from the S. N. Bose National Centre for Basic Sciences, an autonomous institute of the Department of Science and Technology, along with collaborators from the Indian Statistical Institute Kolkata, A B N Seal College Cooch Behar, and the University of Hong Kong, demonstrated that a universal standard for measuring quantum nonlocality is impossible. Their research shows that the nature of nonlocality varies depending on the type of correlation, with infinite unique points on the correlation boundary. This means there is no single, universal resource in the world of non-locality. Instead, each non-local resource is distinct, capable of performing specific tasks that others cannot. This discovery adds a new layer to our understanding of quantum mechanics, highlighting the complexity and uniqueness of quantum nonlocality as a valuable and diverse resource.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2046853>



*Tue, 20 Aug 2024*

## **Chandrayaan 4-5 design complete; 70 satellites likely to be launched in five years: ISRO chief**

New Delhi, ISRO chairman S Somanath on Tuesday said the space agency has completed the design for the next round of moon missions – Chandrayaan 4 and 5 – and is in the process of seeking government approval for the same.

The Chandrayaan-4 mission includes bringing back moon rocks and soil to earth after a soft landing on the lunar surface, launching a spacecraft from the moon, demonstrating a space docking experiment in lunar orbit and getting the samples back to earth.

"We have a series of missions to go to the moon. Chandrayaan-3 is over. Now, design for Chandrayaan 4 and 5 has been completed and we are seeking approval of the government," Somanath told reporters here on the sidelines of an event organized by the All India Council for Technical Education and Indian Space Association.

Earlier, the ISRO officials had said that the targeted launch for Chandrayaan-4 mission was 2028.

Somanath also said that the space agency was planning to launch 70 satellites over the next five years, including a constellation of low earth orbit satellites to meet the requirements of different ministries and departments of the government.

These 70 satellites include four for the NAVIC regional navigation system to provide positioning, navigation and time service, INSAT 4D weather satellites, the Resourcesat series of satellites, Cartosat satellites for remote sensing and high resolution imaging, he said.



Somanath said the space agency was also planning to develop the Oceansat series of satellites and technology demonstration satellites 01 and 02 to demonstrate electric propulsion systems, and quantum key distribution technologies.

The ISRO was also developing data relay satellites for the Gaganyaan mission, high throughput satellites for providing internet connectivity and GSAT satellite which was getting ready for shipping to the US for launch on a Falcon rocket of SpaceX, he said.

Somanath said the space agency was also planning to launch a series of earth observation satellites over the next five years.

The ISRO chief said the mission to Venus, earlier being planned by the agency, has been put on the backburner.

"We are re-evaluating the mission," he said.

Somanath said the first unmanned mission of the Gaganyaan project was scheduled for launch in December this year.

All the stages of the rocket have already reached the Satish Dhawan Space Centre at Sriharikota, he said.

The Crew Module is getting ready at the Vikram Sarabhai Space Centre at Thiruvananthapuram and the service module was under integration at the U R Rao Satellite Centre in Bengaluru, Somanath said.

The Crew Escape system has already reached Sriharikota.

"All systems are reaching Sriharikota in the next one to one-and-a-half month where final testing and integration will happen," he said.

<https://www.hindustantimes.com/science/chandrayaan-4-5-design-complete-70-satellites-likely-to-be-launched-in-five-years-isro-chief-101724160450254.html>



Wed, 21 Aug 2024

## **Meet Black Hole Finder, an app that lets you help scientists explore the universe's darkest secrets**

The Dutch Black Hole Consortium, a group of scientists working on finding new black holes, recently unveiled a new app called Black Hole Finder that lets you aid astronomers identify new black holes.

The app is free-to-use and is available on Android and iOS and can also be accessed from a web browser. According to the Black Hole Finder's Google Play Store listing, the app lets you "explore the universe and learn more about these mysterious and fascinating objects" by using real data from telescopes and other astronomical sources to help scientists identify potential black holes.

Black Hole Finder shows you images captured by the Chilean telescope array BlackGEM that is tasked with searching the skies for cosmic events called 'kilonovas'. The developers recently added support for languages like Spanish, German, Chinese, Italian, Polish and Bengali, making it accessible to more users worldwide.

After a quick tutorial, Black Hole Finder will teach you how to distinguish between real, bogus and unknown transients. Once you get past the tutorial, the app will show you images taken by the telescopes just 15 minutes after they were captured.

When users determine if the photo they are shown is an actual kilonova or a false positive, the data is passed on to a machine learning system that aims to identify the birth of black holes.

In a statement to Space.com, Steven Bloemen, the project manager of the telescopes said that “people are much better at identifying patterns than our algorithms” and that user input is helping them make their algorithms better “distinguish between real and false sources.”

The app description also states that users who identify 1000 transients will be granted the “Super User” status, which will allow them to request follow-up for transients that are less than 16 hours old.

<https://indianexpress.com/article/technology/science/black-hole-finder-app-how-to-use-android-ios-9523872/>



*Wed, 21 Aug 2024*

## **ISRO intends to publicly release archive of 30+ years of remote sensing data**

IN-SPACE, the single window clearing agency for all space operations from India, and ISRO are working on a constellation of Earth observation satellites, with the support of the government, to set up the underlying infrastructure necessary for enabling satellite based businesses and providing satellite based services.

Once a satellite has observed the Earth, careful examination of captured data can provide a staggeringly wide range of insights, including the status of the environment, how land is being used, mineral or water deposits, and ongoing events. With high quality data, it is possible to set up entire industries that provide critical and valuable services based on the satellite data. To encourage such enterprises, ISRO has plans to release over 30 years of archival remote sensing data to the general public, along with such data captured by its operational and future satellites.

This commitment can not only drive the commercialisation of space, but can also allow scientists to better understand the planet, providing the basis for research for years, or even decades into the future.

### **ISRO also intends to make current data available publicly**

Speaking at an event in New Delhi cohosted by the All India Council for Technical Education (AICTE) and ISpA, Chairman of the Indian Space Research Organisation (ISRO), S Somanath said, “We are also looking and bringing the data, which is available for the last so many years. 30+ years of data is available, archived with us.

We would like to make this data available to the public. You can download and use this data free, at a resolution of up to five metres, all the remote sensing data, and then, make value out of it. The

new data that is going to come out, also will be available. Value added products and services can come out of this remote sensing data.”

<https://www.news9live.com/science/isro-intends-to-publicly-release-archive-of-30-years-of-remote-sensing-data-2664365>

