

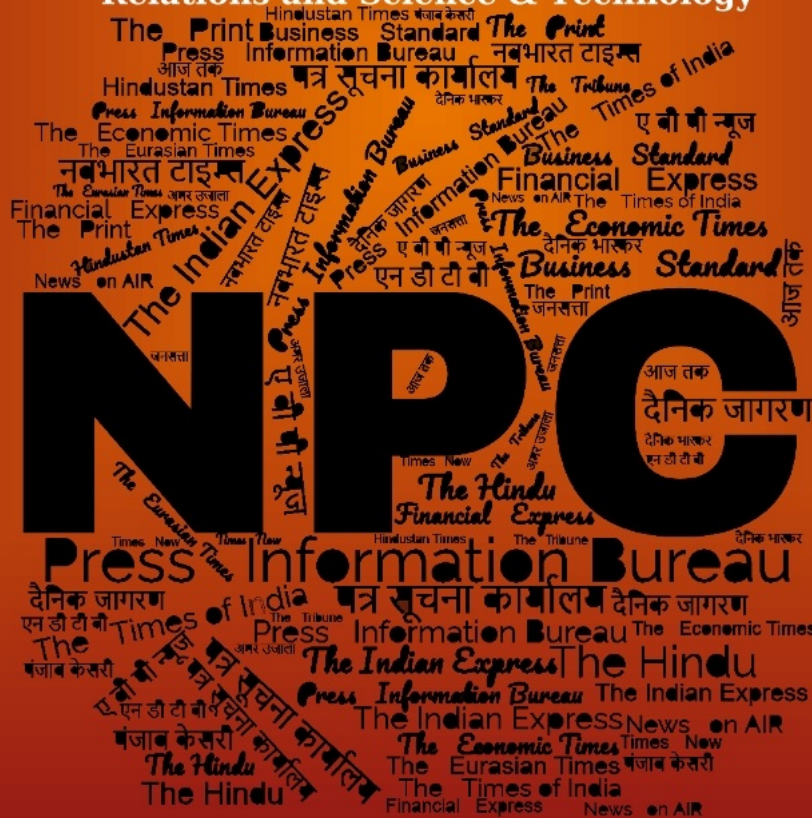
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# समाचार पत्रों से चयनित अंश Newspapers Clippings

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## Defence News

### Defence Strategic: National/International

#### **Defence Secretary visits Indian Navy's premier Naval Air Station 'INS Rajali'**

**Source: Press Information Bureau, Dt. 14 Jan 2025,**

**URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2090017>**

Defence Secretary Shri Rajesh Kumar Singh visited INS Rajali, the Indian Navy's premier Naval Air Station, located near Arakkonam in Tamil Nadu on January 13, 2025. He inspected various operational facilities at the station, where he was apprised of the extensive volume of operations carried out by the station and its capability to meet the evolving security requirements. The event showcased INS Rajali's state-of-the-art infrastructure and its strategic significance in maritime surveillance & combat readiness.

Commanding Officer, INS Rajali Commodore Kapil Mehta, briefed the Defence Secretary on the Air Station's operational preparedness & its role in ensuring maritime security in the Indian Ocean Region (IOR). Shri Rajesh Kumar Singh also interacted with the service personnel at the station, appreciating their dedication and contribution to safeguarding national maritime interests. He highlighted the critical importance of maintaining a high level of combat preparedness and operational vigilance to address the dynamic challenges of the IOR's geopolitical landscape.

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#### **Bhargavastra micro missiles ready to fire**

**Source: The Economic Times, Dt. 15 Jan 2025,**

**URL: <https://economictimes.indiatimes.com/news/defence/bhargavastra-micro-missiles-ready-to-fire/articleshow/117245312.cms>**

India has tested its first indigenous micro-missile system designed to take on the threat of swarm drones. Two firings were carried out successfully at Gopalpur Seaward Firing Ranges this week.

Being developed for the Army, the multi-layered system hit designated virtual targets at over 2.5 km, showcasing a unique low-cost option to take on large-scale drone attacks that have become a persistent threat.

Sources said the counter-drone system, named 'Bhargavastra', is capable of detecting even small incoming flying machines at over 6 km and can take them down using micro munitions that can be guided towards the threat.

With the successful test, which was witnessed by senior Army officials, the system is set to be ready for larger, more exhaustive, trials by this year, paving the way for its induction into the armed forces.

The system can simultaneously fire more than 64 micro missiles. Being developed by Economic Explosives Ltd, the system will be mounted on a mobile platform for quick deployment to a threat zone. It is designed to operate in all terrains, including high-altitude areas, to meet specific requirements of the armed forces.

Designed to meet requirements of the Army Air Defence, this is the first counter-drone system that uses micro missiles. The Air Force too has a large requirement of such systems and there are limited examples of similar systems in other countries.

The prevalence of low-cost drones, often used in swarm configurations, has become a major challenge for armed forces that rely on expensive air defence missiles to protect key assets. The key requirement is for a low-cost system that can take down incoming drones, keeping expensive air defence systems for bigger threats.

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## **PM Modi to commission three new warships; says naval combatants will strengthen India's bid to be global leader in defence**

**Source: The Hindu, Dt. 15 Jan 2025,**

**URL: <https://www.thehindu.com/news/national/naval-combatants-to-strengthen-indias-efforts-to-be-global-leader-in-defence-pm-modi/article69099006.ece>**

Prime Minister Narendra Modi on Tuesday (January 14, 2025) said the commissioning of three frontline naval combatants will strengthen India's efforts towards being a global leader in defence and augment its quest towards self-reliance.

Mr. Modi will dedicate the three combatants — Surat, Nilgiri and Vaghsheer — to the nation on their commissioning at the Naval Dockyard in Mumbai on Wednesday (January 15, 2025).

"Tomorrow, 15th January, is going to be a special day as far as our naval capacities are concerned," he said on X.

Surat, the fourth and final ship of the P15B Guided Missile Destroyer Project, ranks among the largest and most sophisticated destroyers in the world, officials said. It has an indigenous content of 75% and is equipped with the state-of-the-art weapon-sensor packages and advanced network-centric capabilities.

Nilgiri, the first ship of the P17A Stealth Frigate Project, has been designed by the Indian Navy's Warship Design Bureau and incorporates advanced features for enhanced survivability, seakeeping, and stealth, reflecting the next generation of indigenous frigates, they said.

Vaghsheer, the sixth and final submarine of the P75 Scorpene Project, represents India's growing expertise in submarine construction and has been constructed in collaboration with the Naval Group of France, they added.

\*

## **Know about INS Surat, Nilgiri and Vaghsheer to be commissioned tomorrow**

**Source: Hindustan Times, Dt. 14 Jan 2025,**

**URL: <https://www.hindustantimes.com/india-news/know-about-ins-surat-nilgiri-and-vaghsheer-to-be-commissioned-tomorrow-indian-navy-narendra-modi-101736860528855.html>**

Prime Minister Narendra Modi on Wednesday will dedicate three frontline naval combatants to the nation on their commissioning.



*(From left to right) INS Nilgiri, INS Vaghsheer and INS Surat*

The naval combatants – INS Surat, INS Nilgiri and INS Vaghsheer --will be commissioned at the Naval Dockyard in Mumbai.

A statement from the prime minister's office said that the commissioning of the three major naval combatants marks a significant leap in realising India's vision of becoming a global leader in defence manufacturing and maritime security.

### **More on the naval combatants:**

- INS Surat, the fourth and final ship of the P15B Guided Missile Destroyer Project, ranks among the largest and most sophisticated destroyers in the world.
- It has an indigenous content of 75% and is equipped with state-of-the-art weapon-sensor packages and advanced network-centric capabilities, the statement from the PMO said.

- INS Nilgiri, the first ship of the P17A Stealth Frigate Project, has been designed by the Indian Navy's Warship Design Bureau.
- According to the Navy, INS Nilgiri is a major advancement over the Shivalik-class frigates, incorporating significant stealth features and reduced radar signature through state-of-the-art technology.
- Both Nilgiri and Surat can operate a range of helicopters, including Chetak, the advanced light helicopter and the newly inducted MH-60R.
- “Both ships were designed by the navy’s Warship Design Bureau and are equipped with advanced sensors and weapon packages developed primarily in India or through strategic collaborations with leading global manufacturers,” according to a statement by the navy.
- INS Vaghsheer, the sixth and final submarine of the P75 Scorpene Project, represents India's growing expertise in submarine construction. It was built in collaboration with the French Naval Group.

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## **L&T launches second multi-purpose vessel for Indian Navy**

**Source: The Economic Times, Dt. 14 Jan 2025,**

**URL: <https://economictimes.indiatimes.com/news/defence/lt-launches-second-multi-purpose-vessel-for-indian-navy/articleshow/117236334.cms>**

Infrastructure major Larsen & Toubro (L&T) has launched the second multi-purpose vessel for the Indian Navy from its Kattupalli Shipyard near Chennai. The launch of the vessel, christened INS Utkarsh, comes within three months of the launch of the first MPV INS Samarthak.

The first vessel is being readied for undergoing tests and trials prior to its delivery to the Indian Navy, L&T said in a statement on Tuesday.

The multi-purpose vessels (MPVs) are highly specialised and play multiple roles, including serving as trial platforms, for the development of next generation weapons and sensors. They will perform maritime surveillance, humanitarian assistance, combat sea pollution, besides taking up launch and recovery of surface and aerial assets, etc.

The design engineering of the MPVs has been undertaken at L&T's in-house warship design centre at Chennai and the construction is accomplished at the company's Katupalli Shipyard.

L&T is also constructing three Cadet Training Ships and six other defence vessels for the Indian Navy on public-private-partnership model. This apart, the repair of the Indian naval ship INS Tir is underway at the Kattupalli Shipyard.

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## Long-range drone crashes off Porbandar coast during trials

Source: The Economic Times, Dt. 15 Jan 2025,

URL: <https://economictimes.indiatimes.com/news/defence/long-range-drone-crashes-off-porbandar-coast-during-trials/articleshow/117245398.cms>

A new long-range drone acquired by the Navy using special emergency financial powers crashed off the Porbandar coast on Monday after losing communications during a trial flight.

Sources said that Hermes 900 Medium Altitude Long Endurance (MALE) drone, which has been rebranded as Drishti 10, was lost while it was being operated by its manufacturer prior to acceptance of its induction by the Indian Navy.

The Indian Navy ordered two of the long-range drones using emergency powers, with one already in service. Sources said that the second drone had recently been delivered from a manufacturing facility and was being tested as part of pre-acceptance trials. When contacted, manufacturer Adani Defence did not offer comments on the incident.

The drone is valued at around ₹145 crore but the loss will not be borne by the Navy as the system had not yet been accepted for induction. The Army too has two of the drones on order. Emergency procurement powers were given to the armed forces to build capability in the face of border aggression by China. The armed forces need several hundred drones in this category and are looking for an Indian designed and manufactured solution to meet specific requirements.

In a similar incident last September, a high-value MQ9B drone crashed in the Bay of Bengal. Taken on lease from the US, the drone carried out ditching at sea after a technical glitch that resulted in the battery getting depleted after an electrical system failure.

While MQ 9B crash also was reported to be a total loss, the Navy did not have to bear the costs as the drone had been taken on lease and was being operated by its manufacturer, General Atomics, which was asked to submit a report on the accident. A similar process is likely to be followed for Drishti 10 as well.

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## 113 roads along China border okayed

Source: The Economic Times, Dt. 15 Jan 2025,

URL: <https://economictimes.indiatimes.com/news/defence/113-roads-along-china-border-okayed/articleshow/117245299.cms>

A year after the Vibrant Village Programme (VVP) along the India-China border was launched, 113 road projects worth ₹2,420.97 crore in Arunachal Pradesh, Sikkim and Uttarakhand were sanctioned in 2023-24, said the Union home ministry's annual report.

The third phase of the strategic India-China Border Roads (ICBR) project was also started in Ladakh, where the Indian and Chinese forces clashed at Galwan in 2020. China recently announced a 60,000 megawatt dam on the Yarlung Tsangpo river, near Arunachal Pradesh.

Officials said the road projects will significantly boost network and improve connectivity along the India-China border. A review is held at regular intervals, they said.

The Union government in 2023 approved VVP as a centrally sponsored scheme for the development of selected villages in 19 border districts in 46 blocks of Arunachal Pradesh, Sikkim, Uttarakhand, Himachal Pradesh and Ladakh. A total of ₹4,800 crore, including ₹2,500 crore exclusively for road connectivity, was allocated for 2022-23 to 2025-26.

According to the ministry's report, around 6,000 activities including fairs, festivals, promotion of local cultural heritage, awareness camps, sports meet, health screening camps and veterinary camps, were organised in the past one year.

India and China share a 3,488-km border along Ladakh, Arunachal, Himachal, Uttarakhand and Sikkim.

In Ladakh, India did 'formation cutting', which involves fresh alignments and earthworks, at a pace of 470 km roads per year from 2017-20, more than double that of the 230 km a year achieved in the decade until 2017, as per official data. Under ICBR phase I and II, 73 roads had been identified as strategic and 61 of those entrusted to BRO. In eastern Ladakh, five new roads have been identified under phase III, to be constructed by BRO and Central Public Works Department, said an official.

In several cases, roads with single or double lanes have been upgraded to four-lane, all-weather roads, said another official.

Along India-Pakistan and India-Bangladesh borders, a total of 3785.30 km of border roads have been constructed, out of the sanctioned length of 4,223.04 km, according to the ministry's report.

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## **China launches new warship with drone warfare capability**

**Source: The Economic Times, Dt. 13 Jan 2025,**

**URL: <https://economictimes.indiatimes.com/news/defence/china-launches-new-warship-with-drone-warfare-capability/articleshow/117210285.cms>**

The Chinese navy has launched an amphibious assault ship which will double up as a drone carrier, integrating the battleship with unmanned aerial vehicles (UAVs), a Chinese naval official said. China's newly launched Type 076 amphibious assault ship will play a key role in boosting uncrewed combat capabilities, a navy commander has said in the first official acknowledgement of the warship's widely speculated role as a drone carrier.

In an interview aired by state broadcaster CCTV on Sunday, People's Liberation Army (PLA) naval commander Chi Jianjun said efforts to integrate uncrewed or UAV systems into military training were already underway across the fleet, the Hong Kong-based South China Morning Post reported on Monday.

Chi is commander of the PLA's large destroyer, the domestically built Type 055 stealth guided-missile destroyer Nanchang.



The warship marked its fifth anniversary in service on Sunday. In comments underscoring the growing role of drones and attack robots on the battlefield, Chi said: "It's not just us destroyers. Aircraft carriers, the newly launched Type 076, the earlier Type 075 [amphibious assault ship], and other vessels are and will all be involved. Uncrewed operations are an undeniable trend in modern warfare."

China currently has two aircraft carriers in operation- the Liaoning, a refit of the Soviet-era ship commissioned in 2012 and Shandong, an indigenously built 2nd aircraft carrier commissioned in 2019.

China's third aircraft carrier Fujian, which is larger than the two carriers with a displacement of 80,000, is currently undergoing trials.

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## **After MoD nod, Rafale-M jet deal goes to CCS**

**Source: The Tribune, Dt. 15 Jan 2025,**

**URL: <https://www.tribuneindia.com/news/india/after-mod-nod-rafale-m-jet-deal-goes-to-ccs/>**

The Cabinet Committee of Security (CCS) chaired by Prime Minister Narendra Modi is expected to give a formal nod to the deal to buy 26 Rafale-M fighter jets for the Navy from French firm Dassault.

The Ministry of Defence has already approved the purchase of fighters.

Sources said the deal was expected to be taken up during the PM's likely visit to Paris on February 10-11 for the Artificial Intelligence Action Summit being hosted by French President Emmanuel Macron.

These naval jets can take off and land on aircraft carriers. India has two such carriers — INS Vikramaditya and INS Vikrant — that use Russia-origin MiG-29K jets for operations. An indigenous twin-engine deck-based fighter jet is under development. However, till it is developed, Rafale-M would be used, said the sources.

Expected to cost \$7.2 billion, the deal includes purchase of 22 single-seater Rafale-M jets and four twin-seater Rafale trainers.

The French President's office has already announced that the PM has been invited for the Artificial Intelligence Summit scheduled to be held on February 10 and 11.

Last month, Navy Chief Admiral Dinesh K Tripathi had said the deal was in the final stage and could be completed next month.

Once the CCS okays it, it will be followed by the signing of the contract. As it is a government-to-government deal, it is expected to be implemented quickly.

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## **EAM Jaishankar meets Spanish Defense Minister; discusses regional, global issues**

**Source:** ANI News, **Dt.** 14 Jan 2025,

**URL:** <https://www.aninews.in/news/world/europe/eam-jaishankar-meets-spanish-defense-minister-discusses-regional-global-issues20250114223042/>

External Affairs Minister S Jaishankar met with Spanish Defense Minister Margarita Robles in Madrid on Tuesday and discussed ways to strengthen bilateral cooperation in the defence sector, as well as regional and global issues.

Sharing the pictures of the meeting, Jaishankar said that the meeting was a "productive exchange of views."

"A productive exchange of views with Defense Minister Margarita Robles today in Madrid. Discussed strengthening bilateral cooperation in the defence sector, as also regional and global issues," Jaishankar wrote on X.

Earlier, he interacted with the Indian community and highlighted India's positioning in today's world. While addressing an Indian community event in Spain on Tuesday, Jaishankar said that India has taken its slogan of 'Sabka Saath, Sabka Vikas and Sabka Vishwas' to the world. He said that the world wants to understand India's positioning and ideas.

Jaishankar said, "India's positioning today is very important that all countries in the world today, seeing the situation of the world today, think that having good ties with India is in the interest of many, many countries. So, they want to understand our positioning. The second is our capabilities. They feel that this Bharat is a new Bharat. Our economy is at fifth position."

"Everyone says India will reach the third spot in a few years. You all will remember, that 10 years back, we were in the 10th or 11th position. The world recognises the pace at which progress is happening in India today. So, first is positioning and second is capabilities. And the third is actually our ideas, that India is today seen as contributing to a global conversation," he added.

"Pleased to interact with the vibrant Indian community in Spain yesterday. Spoke to them about the changes underway in India, India's increasing role on the global stage and how Indians worldwide today are part of the Viksit Bharat journey," Jaishankar said on X.

He also held wide-range talks with the Spanish Foreign Minister Jose Manuel Albares. The discussions were held on bilateral partnerships including trade, investment, defence, security, urban development, railways, green hydrogen, climate action and people-to-people ties.

In a post on X, he said, "Delighted to hold wide-ranging talks with FM Jose Manuel Albares of Spain today. Productive conversation on our bilateral partnership including in trade, investment, defence, security, urban development, railways....." Notably, Jaishankar is on a diplomatic visit to Spain on January 13-14.

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## How IAF, Army are moving towards jointness with integration of air defence systems

Source: The Print, Dt. 15 Jan 2025,

URL: <https://theprint.in/defence/how-iaf-army-are-moving-towards-jointness-with-integration-of-air-defence-systems/2445411/>

The Army and Air Force (IAF) are working towards combining air defence operations in a move aimed at achieving jointness—integration of different branches of the armed forces. To this effect, ThePrint has learnt that the Army’s Akashteer air defence system has been integrated with the Integrated Air Command & Control System (IACCS) for one site. For other sites, integration is said to be in progress.

The Chief of the Army Staff Gen Upendra Dwivedi during his annual press conference Monday said, “To carry out a convergence between the Indian Air Force and Army, we are going in for Akashteer and probably by year-end, we will be having due integration between the two—that is the IACCS and Akashteer.”

The Army requires a total of 455 Akashteer systems. Of these, 107 have been delivered, 105 are expected by March 2025, while delivery of the remaining systems by state-run Bharat Electronics Limited (BEL) is expected by March 2027.

As part of the effort to move in the direction of jointness, all Army radars will be integrated through Akashteer at the Joint Air Defence Centre (JADC) level, it is learnt.

Currently, a number of IAF radars and civil radars are interconnected through IACCS. For a comprehensive airspace coverage, more radars woven in one network become imperative. Hence, the addition of Army radars would only bolster the defence of India’s sovereign airspace. Post the integration, IAF will be in-charge of the safety of the integrated air defence umbrella, given that longer-range systems are primarily operated by it.

During the press conference Monday, Gen Dwivedi also said the Army is looking at procuring VSHORAD (Very Short Range Air Defence System) in the immediate time frame. He added that the Army is working in conjunction with the IAF and that the Advanced Air Defense (AAD) as a whole must be seen as an integrated system.

Gen Dwivedi also said that moving forward, the forces will have to operate air defences together. The Army should control it at the tactical level and the IAF at the operational/strategic level, he said. “As far as radars are concerned, these will be placed jointly by the two and the information will be jointly shared.”

Common systems the Army and IAF operate currently are Medium Range Surface to Air Missile (MRSAM) and the Akash air defence system. The IAF also operates the S-400 which is a long-range missile system. MRSAM has a range of 70 km and Akash of 25 km. The systems include acquisition and tracking radars—Akash is equipped with the Rohini radar, while MRSAM uses the Multi-Functional Search and Target Acquisition Radar (MFSTAR).

Under the integrated air defence umbrella, missiles as well as radars will be integrated.

On why the need for jointness in air defence was felt, sources in the Indian Air Force told ThePrint that jointness of the armed forces was “essential at strategic, operational and tactical level”. They added that it ensured “optimal and finest” utilisation of available air defence resources. The two services, said sources, are currently working on upgrades and establishment of networks for data sharing. With an eye on jointness, armed forces would also get all future air defence inventories interoperable as it supports enhanced interoperability by enabling networking and joint planning—a prerequisite for theatrisation.

### **Ongoing effort since 2018**

The IAF and Army started the process of combining their air defences in June 2018.

A Joint Service Study Group (JSSG) was constituted to study the employment of Ground Based Air Defence Weapon Systems (GBADWS) of all services with the view to “optimise their employment, achieve inter service synergy and ensure requisite protection of all vital assets against aerial threats”. The JSSG is commissioned at an interval of 8-10 years.

In 2020, then Chief of Defence Staff (CDS) Gen Bipin Rawat had called the integration of air defence “low hanging fruit”. At the time, there was talk of a separate air defence command. But no such development has been confirmed as yet, mainly because the theatre command concept is still in the works.

Sources in the defence establishment informed ThePrint that the combination of air defence assets will have an impact on peacetime and wartime air defence operations. “It provides a comprehensive air defence deployment and a robust employment philosophy to tackle the growing threat both during operations as well as peacetime,” a source said.

On integration during peacetime, the source said live threats such as drones being used to drop arms, ammunition, and drugs have emerged as a matter of concern in recent years. “The air defence threat has therefore spilled over into the peacetime domain as well.”

One recent example is that of Manipur, where a large number of high-tech drones were used to carry out bombing attacks that have aggravated the grey-zone threat. The current environment of an expanding air defence threat underscores the necessity to pool in resources of all services together, said another source.

Combining of air defence assets comes in the backdrop of the Balakot air strikes, where for a few subsequent months following the airstrikes, Army radars plugged into the IAF air defence system radars. It was after this that the two forces began integrating their air defence operations, which would help in wartime or Balakot-like situations arising in the future. This would ensure a gap-free radar system and in turn, missile deployment.

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## As Powerful As Nuclear Blast! China Works On 'HMP Weapon' That Can Generate Electromagnetic Pulses Akin To Nuke Explosion

Source: The EurAsian Times, Dt. 15 Jan 2025,

URL: <https://www.eurasiantimes.com/china-claims-development-of-high-power/>

According to the reports, the system, described as compact yet highly powerful, is still undergoing laboratory testing and is not yet ready for field deployment. Chinese researchers assert that the system can inflict damage or entirely disable the electronic components within enemy weapon systems.

The new Chinese weapon employs advanced phased-array transmission technology to precisely focus energy, which extends its range. This design increases its destructive power and allows it to attack multiple targets simultaneously. However, its development was far from easy, and in fact, the creation of such a weapon was once considered impossible due to the risk of self-destruction from the pulses it generates.

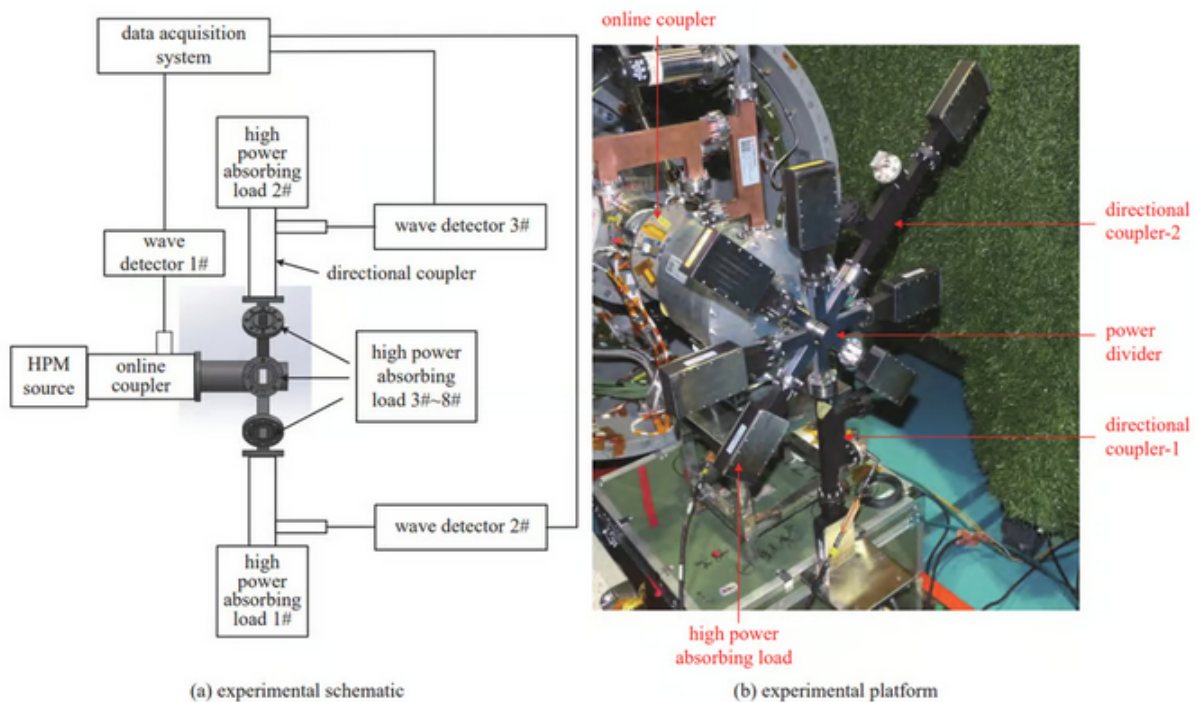


Fig. 7 Power handling capability test

图 7 功率容量考核实验

*In testing, China's gigawatt-power microwave weapon showed it could withstand thousands of nuclear-like blasts. Photo: National University of Defence Technology*

The electromagnetic waves of the Chinese weapon can exceed one gigawatt of power, with rotating waves requiring precise conversion into a stable form and distribution across eight channels for phased-array antennas. In a power divider the size of a pedestal fan, the electric field strength surpasses 80,000 volts per meter, similar to the electromagnetic pulses from nuclear explosions.

The report stressed that such high-intensity radiation is extremely difficult to manage, with no prior public reports of phased-array transmission at gigawatt power levels. However, this technical hurdle was successfully overcome by a joint research team from the National University of Defence Technology and the Northwest Institute of Nuclear Technology.

Chinese scientists claim that the high-performance power divider developed by their team withstood over 5,000 full-power pulse emissions without any signs of “tail erosion” or breakdown and maintained a stable waveform throughout the experiments. Furthermore, its operating efficiency reached 96.6%, and its power capacity threshold is likely to exceed 1GW, meeting the military’s demands for high-power capacity and transmission efficiency in HPM phased-array antennas.

### **Race For Directed Energy Weapons**

The rapid proliferation of drones and other aerial threats has spurred a military race to develop and deploy countermeasures, particularly those with a lower cost-per-shot kill. Directed energy systems, including high-energy lasers and high-power microwaves (HPM), have emerged as promising solutions, with militaries worldwide now seeing years of research and development come to fruition.

One of the key advantages of directed energy weapons over traditional kinetic weapons is their virtually limitless “magazine depth.” Unlike kinetic weapons, which rely on finite ammunition that must be manually reloaded, HPM systems can theoretically fire indefinitely. Furthermore, HPM weapons can operate non-lethally, potentially disabling manned vehicles without harming their occupants, a capability that could redefine rules of engagement.

Unlike lasers, which can only fire a concentrated beam for short durations, HPM weapons can emit wide-area, cone-shaped beams that allow them to target and neutralize multiple threats simultaneously. This technology could allow naval ships to neutralize small, manned craft while sparing human lives. These systems utilize traditional dish-shaped antennas that require constant rotation to engage different targets.

Both China and the United States are advancing HPM technologies, with the US military planning to deploy such systems in the Indo-Pacific region to counter Beijing. Last year, the US deployed a warship, the Arleigh Burke-class guided-missile destroyer USS Preble, equipped with the advanced Helios laser weapon to Japan’s Yokosuka naval base.

Meanwhile, China is developing similar weapons with an eye on countering SpaceX’s Starlink network, which has proven crucial in the ongoing Russia-Ukraine conflict, aiding Ukraine’s ability to conduct strikes on Russian positions. The tests of China’s latest HPM weapon have shown its ability to emit Ku-band electromagnetic pulses, a frequency used by communication satellites like Starlink.

Starlink satellites, which feature large antennas to capture weak ground signals and rely on commercial-grade components to reduce costs, may be vulnerable to attack. Some Chinese space experts suggest that these components may lack the military-grade reinforcement needed to withstand high-energy strikes. As a result, Beijing is accelerating the development of anti-satellite weapons tailored to disrupt systems like Starlink.

According to Chinese scientists, gigawatt-level energy weapons could not only target drones but also satellites in low-Earth orbit. Moreover, a recent computer simulation by Chinese scientists demonstrated that 99 Chinese satellites could successfully approach 1,400 Starlink satellites in about 12 hours. These satellites, equipped with lasers, microwaves, and other tools, could conduct tracking, reconnaissance, and other operations, challenging Starlink's perceived invulnerability.

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## Science & Technology News

### Google-backed Pixxel successfully launches India's first private satellite constellation

Source: The Indian Express, Dt. 15 Jan 2025,

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India's space tech startup Pixxel launched three of its six hyperspectral imaging satellites aboard a SpaceX rocket from California on Tuesday.

The satellites were launched at 1915 GMT, just after midnight in India, from the Vandenberg Space Force Base, a live telecast from SpaceX showed. The launch marks a milestone for the country's growing private space sector and for Google-backed Pixxel, a five-year-old startup.



*SpaceX rocket carrying Pixxel satellites.*

The satellites aim to use hyperspectral imaging, a technology that captures highly detailed data across hundreds of light bands to serve industries such as agriculture, mining, environmental monitoring and defence.

Such technology can help deliver insights into improving crop yields in India's agrarian economy, track resources, monitor oil spills and geographic boundaries in much better details than current technology allows.

The remaining three satellites are expected to be deployed in the second quarter of the year.

The SpaceX rocket is also carrying a satellite from another Indian space company, Diganatara.

"By 2029, the (satellite imagery) market is projected to reach \$19 billion. Hyperspectral imaging, which is new, could realistically capture \$500 million to \$1 billion of this," Pixxel's founder and Chief Executive Awais Ahmed told Reuters earlier on Monday.

The startup plans to add 18 more spacecraft to the six it has already developed, Ahmed said, adding that Pixxel has signed up around 65 clients, including Rio Tinto, British Petroleum, and India's Ministry of Agriculture, with some already paying for data from its demo satellites.

The U.S. is a major leader in satellite launches, due to private companies such as SpaceX and government contracts, while India, despite its established spacefaring capabilities, holds only a 2% share of the global commercial space market.

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