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CONTENTS

DRDO News

DRDO Technology News

Press Information Bureau
Government of India

Ministry of Defence

Wed, 27 Oct 2021 8:25PM

Surface to Surface Ballistic Missile, Agni-5, successfully launched from APJ Abdul Kalam Island

Key Highlights:

- ***Agni-5 capable of striking targets at ranges up to 5,000 kilometres with very high degree of accuracy***
- ***Uses a three-stage solid fuelled engine***
- ***Successful launch in line with India's policy to have 'credible minimum deterrence' that underpins the commitment to 'No First Use'***

A successful launch of the Surface to Surface Ballistic Missile, Agni-5, was carried out on October 27, 2021 at approximately 1950 hrs from APJ Abdul Kalam Island, Odisha. The missile, which uses a three-stage solid fuelled engine, is capable of striking targets at ranges up to 5,000 kilometres with a very high degree of accuracy.

The successful test of Agni-5 is in line with India's stated policy to have 'credible minimum deterrence' that underpins the commitment to 'No First Use'.

https://pib.gov.in/PressReleasePage.aspx?PRID=1767034

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Wed, 27 Oct 2021 8:25PM

एपीजे अब्दुल कलाम द्वीप से सतह से सतह पर मार करने वाली बैलिस्टिक मिसाइल अग्नि-5 सफलतापूर्वक प्रक्षेपित

प्रमुख बातें:

- ***अग्नि-5 उच्च स्तरीय सटीकता के साथ 5,000 किलोमीटर तक लक्ष्य पर प्रहार करने में सक्षम***
- ***मिसाइल एक थ्री स्टेज सॉलिड फ्यूल इंजन का उपयोग करती है***
- ***'विश्वसनीय न्यूनतम प्रतिरोध' करने की भारत की नीति के अनुरूप सफल प्रक्षेपण जो 'नो फर्स्ट यूज़' की प्रतिबद्धता को रेखांकित करता है***

ओडिशा के एपीजे अब्दुल कलाम द्वीप से लगभग 1950 बजे सतह से सतह पर मार करने वाली बैलिस्टिक मिसाइल अग्नि-5 का सफल प्रक्षेपण दिनांक 27 अक्टूबर, 2021 को किया गया। यह मिसाइल जो तीन चरणों वाले ठोस ईंधन वाले इंजन का उपयोग करती है, बहुत उच्च स्तर की सटीकता के साथ 5,000 किलोमीटर तक लक्ष्य पर प्रहार करने में सक्षम है।

अग्नि-5 का सफल परीक्षण भारत की 'विश्वसनीय न्यूनतम प्रतिरोधक क्षमता' के लिए बताई गई नीति के अनुरूप है जो 'नो फर्स्ट यूज' के प्रति प्रतिबद्धता को रेखांकित करता है।

https://pib.gov.in/PressReleasePage.aspx?PRID=1767077

THE TIMES OF INDIA

Thu, 28 Oct 2021

In stern signal to China, India tests 5,000-km range Agni-V

By Rajat Pandit

New Delhi: In a strong strategic signal to China amidst the continuing 17-month military confrontation in eastern Ladakh, India tested its most formidable missile, the over 5,000-km range Agni-V, on Wednesday evening.

The "successful test" of the Agni-V, which brings even the northernmost part of China within its strike envelope, is in line with India's stated policy to have "credible minimum deterrence that underpins the commitment to no first-use (NFU)", said the defence ministry.

"The missile, which uses a three-stage solid fuelled engine, is capable of striking targets at ranges up to 5,000 km with a very high degree of accuracy. It was tested for its entire range. The launch went off very well," said an official.

The 5k-km range Agni-V.

The test was significant on two counts. One, it was the first "user-launch" of the country's first intercontinental ballistic missile (ICBM) by the tri-Services Strategic Forces Command (SFC) after its induction into the armed forces. Two, this is the first time the missile, which has been tested seven times earlier, was launched during night.

TOI was the first to report last month that the over 50-tonne Agni-V would be test-fired in its "full operational configuration" by the SFC in October, in the first such launch since the military stand-off with China erupted in April-May last year.

On Wednesday, the missile with a 1.5-tonne warhead was launched from the APJ Abdul Kalam Island, off the Odisha coast, at about 7.50 pm. Flying at 24 times the speed of sound, the missile's trajectory and flight parameters were constantly monitored by radars, electro-optical tracking systems, telemetry stations and ships before it splashed down in the Bay of Bengal, said the official.

As was earlier reported by TOI, DRDO is also working to develop `multiple independently targetable re-entry vehicles' (MIRVs) for the Agni missiles but it will take at least another two years for the multiple-warhead capability to be tested. An MIRV payload basically involves a single missile carrying four to six nuclear warheads, each programmed to hit a separate target.

The existing single-warhead Agni-V in itself adds teeth to the deterrence posture against China, which has missiles like the Dong Feng-41 (12,000-15,000-km) that can hit any Indian city. China has also recently gone in for a huge expansion in new missile silo fields for launching nuclear-tipped ICBMs.

As per the latest assessment of the Stockholm International Peace Institute (SIPRI), China now possesses 350 nuclear warheads and Pakistan 165, as compared to 156 of India.

But India remains confident of its credible minimum deterrence. The Agni-V is operationally better than the earlier Agni variants because it is a canister-launch missile to ensure lesser maintenance as well as swifter transportation and firing.

The test of the 17-metre tall Agni-V test comes after a new-generation two-stage missile called Agni-Prime, with a strike range of 1,500-km, was tested on June 28. The Agni-Prime, also a canister-launch missile, will eventually replace the Agni-I (700-km) missiles in the arsenal of the SFC, which also has the Prithvi-II (350-km), Agni-II (2,000-km) and Agni-III (3,000-km) missile units.

India has also for long modified some Sukhoi-30MKI, Mirage-2000 and Jaguar fighters to deliver nuclear gravity bombs. The new French-origin Rafale fighters inducted by the IAF are also capable of doing it.

But the third leg of India's nuclear triad is still far away from becoming robust, represented as it is by the solitary nuclear ballistic missile submarine (SSBN) INS Arihant armed with only 750-km range K-15 missiles as of now.

Countries like the US, Russia and China have SSBNs with well over 5,000-km range submarine-launched ballistic missiles (SLBMs). India has three more SSBNs under development, with INS Arighat now slated for commissioning next year after some delay. The K-4 missiles, with a strike range of 3,500-km, in turn, will take at least one more year to be ready for induction.

https://timesofindia.indiatimes.com/india/india-successfully-test-fires-surface-to-surface-ballistic-missile-agni-5/articleshow/87315237.cms

Hindustan Times

Thu, 28 Oct 2021

Latest Agni-V launch successful, boosts deterrence against China

The latest test comes at a time when India and China are locked in a border row in the Ladakh sector, and the People's Liberation Army (PLA) has also scaled up its military activities in the eastern sector, including Arunachal Pradesh

By Rahul Singh

India on Wednesday announced that it carried out the latest test of the 5,000 km range Agni-V missile from the APJ Abdul Kalam Island off the Odisha coast, a significant step towards boosting the nuclear deterrence against China.

The successful test of the Agni-V missile is in line with India's stated policy to have credible minimum deterrence that underpins the commitment to no first use, the defence ministry said in a statement.

The missile, which is being inducted into the Strategic Forces Command (SFC), will put India's credible minimum deterrence on a firm footing as no missile in the Indian arsenal has the range to strike targets deep inside China.

The Agni-V missile, which is being inducted into the Strategic Forces Command (SFC), will put India's credible minimum deterrence on a firm footing as no missile in the Indian arsenal has the range to strike targets deep inside China. (Image used for representation). (REUTERS PHOTO.)

"The missile, which uses a three-stage solid fuelled engine, is capable of striking targets at ranges up to 5,000 km with a very high degree of accuracy," the statement added. The missile has been tested several times after its maiden launch almost a decade ago.

The latest test comes at a time when India and China are locked in a border row in the Ladakh sector, and the People's Liberation Army (PLA) has also scaled up its military activities in the eastern sector, including Arunachal Pradesh.

India completed its nuclear trial in 2018 when the indigenous nuclear-powered ballistic missile submarine, INS Arihant, successfully completed its first deterrence patrol.

India has the capability to carry out nuclear strikes with fighter planes, land-launched missiles and from the sea. The Agni series of ballistic missiles and warplanes such as Rafales, Sukhoi-30s and Mirage-2000s can deliver nuclear warheads. The 6,000-tonne Arihant, which means destroyer

of enemies, is armed with 12 B-05 submarine-launched ballistic missiles (SLBMs) capable of delivering nuclear warheads up to 750 km away.

India is also developing a new class of ultra-modern weapons that can travel six times faster than the speed of sound (Mach 6) and penetrate any missile defence. In September 2021, the Defence Research and Development Organisation (DRDO) carried out a successful flight test of the hypersonic technology demonstrator vehicle (HSTDV) for the first time from the Odisha coast.

Only the United States, Russia and China have developed technologies to field fast-manoeuvring hypersonic missiles that fly at lower altitudes and are extremely hard to track and intercept.

https://www.hindustantimes.com/india-news/latest-agni-v-launch-successful-boosts-deterrence-against-china-101635350318419.html

Hindustan Times

Thu, 28 Oct 2021

Strategic Forces Command conducts Agni V trial, hits target 5000 km away

After successful testing of new generation Agni-Prime missile this June, the Agni V missile test on Wednesday evening was in night operational mode with the weapon taking a perfect flight trajectory and hitting the target in just over 15 minutes.

By Shishir Gupta

The Strategic Forces Command (SFC) conducted the first user trial of the Agni V ballistic missile from APJ Abdul Kalam Island in Odisha on Thursday evening to validate the night operations with the missile reaching its target 5000 km away within the stipulated time.

The Agni V missile(File Photo)

The missile, which was tracked by telemetry and radar ships of the Defence Research and Development Organization (DRDO), took perfect flight trajectory as per accorded parameters and hit the target within 15 to 18 minutes. This was the eighth successful trial of the ballistic missile, which is at the core of India's minimum deterrence in the background of Chinese increased intermediate range ballistic missile capability and Pakistan's nuclear ambition.

According to people aware of the development, the Agni V missile, which flew at 7.50 pm, was of standard configuration including the warhead weight. The target was hit within the accepted circular error of probability with both the user and the developer satisfied with the result. The motive behind a night test was to test whether the user, SFC, could handle the weapon in day and night operational mode. It is understood that the missile is fully developed and inducted with the SFC at liberty to undertake further trials in case of requirement. The Agni V missile is a three stage solid fueled surface to surface missile with advanced guidance systems.

The Agni V test comes after the DRDO successfully test-fired the new generation Agni Prime missile from Odisha on June 28, 2021 with range between 1000 to 2000 kilometers. The new generation missile will ultimately replace all the Agni missiles within this range as the Prime series is more efficient, maneuverable, less cumbersome and a highly accurate platform using both composite fiber and canister casing system. The missile can be fired from mobile launchers and trains, which helps in survival of the weapon for second strike as India is committed to no first use policy.

The Agni series of missiles are part of India's nuclear triad with capacity and capability to deliver nuclear weapons from air through fighters like Rafale and even Mirage 2000 H and from sea through ballistic missile submarines like INS Arihant.

While India is expected to commission its second ballistic missile submarine INS Arighat during its 75 year of independence, the developers are also working on a sea launched ballistic missile which has a similar range as the Agni V missile. With a nuclear submarine carrying a missile of 5000 km range, the Indian nuclear triad is expected to cap at this range till such time the government decides to go for longer ranges in case the security scenario deteriorates in Asia. The missile developers on their part are confident that they can deliver far beyond the 5000 km range cap.

https://www.hindustantimes.com/india-news/strategic-forces-command-conducts-agni-v-trial-hits-target-5000-km-away-101635389131043.html

ThePrint

Thu, 28 Oct 2021

India successfully test-fires N-capable Agni-V Ballistic Missile with 5,000 km range

Intercontinental ballistic missile Agni-V is capable of striking targets at ranges up to 5,000 km with high accuracy. Test comes amid India's ongoing LAC stand-off with China

By Snehesh Alex Philip, Edited by Poulomi Banerjee

New Delhi: India Wednesday successfully test-fired the recently inducted Agni-V, the nuclear-capable intercontinental ballistic missile (ICBM), amid rising tensions with China along the Line of Actual Control (LAC).

The successful launch of the surface-to-surface ballistic missile, which has a range of over 5,000 km, was done at approximately 7:50 pm from the APJ Abdul Kalam Island in Odisha.

This is the first user launch of the missile, which was last tested in 2018, before it got inducted into the Strategic Forces Command that looks after India's nuclear arsenal.

In a statement, the Defence Ministry said the successful test of Agni-V "is in line with India's stated policy to have credible minimum deterrence that underpins the commitment to 'No First Use'".

The missile, which uses a three-stage solid-fuelled engine, is capable of striking targets at ranges up to 5,000 kilometres with a very high degree of accuracy, the ministry said.

File photo of the Agni-V during the first test-fire in 2012. | Commons

However, defence sources said the range is much more than the officially stated figure of 5,000 km.

India joins club of countries with ICBMs

Agni-V has the capability to reach almost every part of China, sources had said in 2018, when the missile was tested last by its developer, the Defence Research and Development Organisation (DRDO).

Interestingly, the DRDO is also working on a longer-range version of the Agni series of missiles.

The launch Wednesday comes just months after India also test-fired the Agni Prime, the next generation nuclear-capable ballistic missile in the nuclear arsenal.

While the Agni Prime and the rest of the Agni series is focussed primarily on Pakistan, the Agni-V is a much larger strategic weapon, capable of striking at much longer ranges.

With Agni-V, India has joined an exclusive club of countries, with the others being China, US, Russia, Britain and France, to have ICBMs.

A DRDO official had in 2018 said that Agni-V is programmed in a way that after reaching the peak of its trajectory, it will turn towards Earth to continue its journey towards the intended target with increased speed due to the attraction of the Earth's gravitational pull.

https://theprint.in/defence/india-successfully-test-fires-n-capable-agni-v-ballistic-missile-with-5000-km-range/757807/

INTERESTING ENGINEERING

Thu, 28 Oct 2021

India has successfully tested its first 3,000-Mile Ballistic Missile

But the subcontinental nation is committed to 'no first use'.

By Brad Bergan

U.S. allies are expanding their defense arsenals.

India successfully test-launched its first ballistic missile, the Agni-5, at roughly 10:20 AM EDT, using a three-stage solid-fueled engine that can fire nuclear payloads up to 3,000 miles with an extremely high level of accuracy, according to an initial report from *Republic World*, an India-based news service.

On the world stage, this weapon isn't new, but it represents a major advancement for India, and fundamentally alters the balance of power in the region amid mounting tensions between major worldwide powers.

India's long-range ballistic missile adds a strategic piece amid growing US-China tensions

The test of Agni-5 is part of India's central defense policy to have "credible minimum deterrence" to maintain its commitment to "No First Use", according to the report. The country's first long-range intercontinental ballistic missile was developed by the Defense Research and Development Organization (DRDO), and can target any location in China, and even reach as far as Europe. Major Gaurav Arya of India's military forces said Agni-5 can actively deter China's strategic plans. "This missile has nothing to do with Pakistan, it does not even consider Pakistan as a possible landing target," he said. "This is an aim at China, which is very important."

The Agni-V launching. DRDO / Ministry of Defence / Government of India

Arya also said that once Agni-5 is inducted for real-world service, it will serve as a powerful symbolic piece on the board against China's government, according to the report. "We can hit you whenever we want, wherever we want inside Mainland China," he said. This comes on the heels of another recent success of the DRDO's Indigenous Technology Cruise Missile (ITCM), fired off the Odisha coast. Earlier, in July, India also test-fired its New Generation Akash Missile (Akash-NG), which is a surface-to-air missile system that can reach 37 miles (60 km). Other recently developed weapons from the DRDO include the Man-Portable Anti Tank Guided Missile, and another new missile of the Agni series called the Agni-Prime, with a range of 621 to 1,242 miles (1,000 to 2,000 km).

Ballistic missiles are far easier to shoot down than hypersonic weapons

This comes amid rising tensions between the U.S. and China, the former of which has good relations with India. But while India's expanding ballistic missile capabilities add to the hypothetical chessboard should conflict happen, it's still one step behind its northern rival. Earlier this month, it was revealed that China had tested a hypersonic missile in August that launched atop a Long March rocket, and then circled the Earth in low orbit before descending to its final target, which it only missed by 24 miles. For reference, the Earth is 7,917.5 miles in diameter, which means, as far as public knowledge goes, China is an entire step ahead of India's ally, the United States, in the most advanced missile technology.

Last week, the Pentagon confirmed that a test launch of a hypersonic missile had failed, implying that the United States' hypersonic weapons technologies have yet to reach the level of maturity of its China-built counterparts. While the U.S. has famously closed the technological gap with rival countries at blinding speeds, and India's newest ballistic missile is another strategic asset in the defense against possible conflict with China, India's ballistic technology could be vulnerable to strategic air defense capabilities of its northern neighbor, since ballistic missiles' parabolic trajectory makes them a far easier target than hypersonic weapons.

https://interestingengineering.com/india-has-successfully-tested-its-first-3000-mile-ballistic-missile

Thu, 28 Oct 2021

China firmly in the cross hairs, Agni-V Missile's 5,000-km range bolsters India's offensive power | Explained

The Agni 5 project was aimed at enhancing India's nuclear deterrence against China which has missiles like Dongfeng-41 having ranges between 12,000-15,000 km.

In a major boost to India's military capabilities, the defence ministry on Wednesday announced successful test-firing of surface-to-surface ballistic missile Agni-5 whose range covers the Chinese mainland. The missile, which uses a three-stage solid-fuelled engine, is capable of striking targets at ranges up to 5,000 kilometres with a very high degree of accuracy, according to the defence ministry. The successful test of Agni-5 is in line with India's stated policy to have credible minimum deterrence' that underpins the commitment to No First Use', the statement said.

Agni 5 Missile of 5,000-km range successfully test fired in Odisha.(Representational image from AFP)

Agni-5 is widely regarded as a strategic missile targeted at China as it can reach almost all parts of the Chinese mainland. People familiar with the development told PTI it was the first user trial of the missile which can bring the northernmost part of China under its striking range. India's successful test-firing comes after China tested a nuclear-capable hypersonic missile in August.

Why is the test significant?

Agni-V is India's first ICBM — normally regarded as having a range of more than 5,000km — and has been under development for more than a decade. After its fifth test firing in January 2018, the Ministry of Defence had said that all the objectives for the test of the "long-range surface-to-

surface ballistic missile… have been successfully met" and it “reaffirms the country’s indigenous missile capabilities and further strengthens our credible deterrence".

However, although reports have said that the missile was to be inducted into the Armed forces after two more tests the same year — in June and December — making it seven successful tests in total, another test was lined up, which got delayed, however, due to the Covid-19 pandemic. The tests scheduled for September-end, was according to reports described as its “first user trials" was reported to assess the ability of the missile to carry multiple warheads, known in defence jargon as multiple independently targetable reentry vehicles (MIRV).

However, a report in Times Of India said that while India is working on MIRVs, the first tests of the technology won’t be held before two years. Reports say that a test on June 28 this year of the Agni P (for Prime), “a new generation advanced variant of Agni class of missiles" also involved a trial of MIRV capabilities, although it’s been suggested that that test had used “decoys" instead.

The successful test firing of the missile paves way for its induction into the Strategic Forces Command that takes care of India’s strategic assets, officials told PTI.

The Agni 5 project was aimed at enhancing India’s nuclear deterrence against China which has missiles like Dongfeng-41 having ranges between 12,000-15,000 km.

What is MIRV?

MIRV capability allows a missile “to deliver multiple nuclear warheads to different targets" and was first developed by the US in the 1960s.

“In contrast to a traditional missile, which carries one warhead, MIRVs can carry multiple warheads," says the US-based Centre for Arms Control and Non-Proliferation (CACNP).

The warheads on such missiles can be released “at different speeds and in different directions" with some known to be capable of hitting targets “as far as 1,500km apart", CACNP says, adding that “although MIRVs were not initially intended to defeat ballistic missile defences, they are much more difficult to defend against than traditional missiles".

CACNP says that “the development of MIRV technology is not easy" as it involves a “combination of large missiles, small warheads, accurate guidance, and a complex mechanism for releasing warheads sequentially during flight".

In the neighbourhood, both China and Pakistan are said to possess MIRV-capable missiles.

What is A Ballistic Missile?

According to the Nuclear Threat Initiative (NTI), India has the “capacity to deploy short-, medium-, and long-range ballistic missiles". It says that the country “views its nuclear weapons and long-range power projection programmes as the key to maintaining strategic stability in the Asia-Pacific region".

Ballistic missiles fly into outer space before returning on steep trajectories at higher speeds. Hypersonic weapons are difficult to defend against because they fly towards targets at lower altitudes but can achieve more than five times the speed of sound - or about 6,200 km per hour (3,850 mph).

It lists the Prithvi-II, Agni-I, Agni-II, Agni-III, and Agni-IV as “India’s fully operational land-based ballistic missiles", noting that the country also has submarine-launched ballistic missiles (SLBMs).

Arms Control Association, another US-based organisation, says that ballistic missiles are “powered by rockets initially but then they follow an unpowered, free-falling trajectory towards their targets". It notes that as of December 2017, there were 31 countries that had such missiles with only nine among them known or suspected to possess nuclear capabilities — China, France, India, Israel, North Korea, Pakistan, Russia, UK, US.

Why is China Fuming?

China habitually uses its position as a permanent member of the UN Security Council (UNSC) to condemn missile tests by India. After reports emerged of plans for another test of the Agni V, Chinese foreign ministry spokesperson Zhao Lijian said at a press briefing that “maintaining peace,

security and stability in South Asia meets the common interests of all, where China hopes that all parities would make constructive efforts".

Touching specifically upon the topic of another missile test, he referred to the UNSC Resolution 1172 of 1998 — passed in the wake of nuclear tests held by India and Pakistan — which asks the two countries "immediately to stop their nuclear-weapon development programmes, to cease development of ballistic missiles capable of delivering nuclear weapons and any further production of fissile material for nuclear weapons".

Zhou said that "as for whether India can develop ballistic missiles capable of delivering nuclear weapons, the UNSCR 1172 already has clear stipulations".

China hitting out against Indian weapons development is nothing new and it would have noted that with a range of 5,000-plus kilometres, Agni V brings most of the Chinese mainland under its range, enhancing its strategic deterrence vis-a-vis Beijing.

The news of the test came after the US and UK announced the formation of a new strategic defence triad with Australia, called AUKUS, in the Indo-Pacific, promising the island nation nuclear submarines to patrol the waters where China has long tried to aggressively push its territorial claims.

Australia, along with Japan, India and the US has also revived the Quad grouping which, though not a military alliance, is seen as being geared towards containing China's influence in the Indo-Pacific region.

India's test-firing of the missile comes months after the Chinese military tested a nuclear-capable hypersonic missile in August. China launched a rocket carrying a hypersonic glide vehicle that flew through low-orbit space, circling the globe before cruising towards its target, which it missed by about two dozen miles.

https://www.news18.com/news/india/china-firmly-in-the-cross-hairs-agni-v-missiles-5000-km-range-bolsters-indias-offensive-power-explained-4372280.html

जागरण

Thu, 28 Oct 2021

भारत ने किया अग्नि-5 मिसाइल का आठवां सफल परीक्षण, पांच हजार किमी तक लक्ष्य भेदने में सक्षम, जानें इसकी खूबियां

भारत ने बुधवार को सतह से सतह पर मार करने वाली बैलिस्टिक मिसाइल अग्नि-5 का ओडिशा के एपीजे अब्दुल कलाम द्वीप से सफलतापूर्वक परीक्षण किया। यह मिसाइल तीन चरणीय ठोस ईंधन का उपयोग करती है। यह उच्च सटीकता के साथ पांच हजार किलोमीटर तक लक्ष्य को भेदने में सक्षम है।

By Krishn Bihari Singh, लावा पांडे

बालेश्वर: बैलेस्टिक व क्रूज रेंज की मिसाइलों के लगातार परीक्षण के बाद बुधवार को देश की सबसे ताकतवर मिसाइल कही जाने वाली अग्नि-5 का सफल परीक्षण किया गया। यह मिसाइल पांच हजार किलोमीटर की दूरी तक लक्ष्य भेदने में सक्षम है। मिसाइल के परीक्षण के साथ ही दुनिया के कई देश इसके लक्ष्य की जद में आ गए हैं। रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने पहली बार ओडिशा के अब्दुल कलाम द्वीप से रात में इस मिसाइल का सफल परीक्षण किया है। अग्नि-5 का यह आठवां सफल परीक्षण है। इसके साथ ही भारत इस तरह की मिसाइल विकसित करने वाला दुनिया का पांचवां देश बन गया है। अभी सिर्फ अमेरिका, रूस, फ्रांस और चीन के पास ही ऐसी मिसाइलें थीं।

मील का पत्थर साबित हुआ यह परीक्षण

इस परीक्षण से भारत अमेरिका रूस चीन और फ्रांस के साथ इंटरकान्टिनेंटल बैलिस्टिक मिसाइल क्लब में शामिल हो गया है। भारत इस तरह की मिसाइल को विकसित करने वाला दुनिया का पांचवा देश बन गया है। अभी सिर्फ

अमेरिका रूस फ्रांस और चीन के पास ही ऐसी मिसाइलें थी। रक्षा सूत्रों की माने तो आज का यह अभियान पूरी तरह सफल रहा तथा इस मिसाइल ने हिंद महासागर में अचूक निशाना लगाया। रात्रि कालीन किया गया यह परीक्षण भारतीय मिसाइल कार्यक्रम में मील का पत्थर साबित हुआ है।

जताई पहले इस्तेमाल नहीं करने की प्रतिबद्धता

रक्षा मंत्रालय ने अपने बयान में कहा है कि अग्नि-5 का सफल परीक्षण भारत की इस प्रामाणिक न्यूनतम प्रतिरोध वाली नीति के अनुरूप है। यह मिसाइल के पहले इस्तेमाल नहीं करने की प्रतिबद्धता को रेखांकित करता है। गौर करने वाली बात यह भी है कि इस मिसाइल का सफल परीक्षण ऐसे समय में किया गया है जब भारत की पूर्वी लद्दाख में चीन के साथ सीमा पर गतिरोध बरकरार है।

स्ट्रेटेजिक फोर्स कमांड में शामिल किए जाने का रास्ता साफ

मालूम हो कि अग्नि-5 मिसाइल परियोजना पर काम एक दशक से अधिक समय पहले शुरू हुआ था। परियोजना की जानकारी रखने वाले लोगों ने कहा कि यह अंतरमहाद्वीपीय बैलिस्टिक मिसाइल का पहला यूजर ट्रायल है। अधिकारियों का कहना है कि मिसाइल के सफल परीक्षण से स्ट्रेटेजिक फोर्स कमांड में इसके शामिल होने का रास्ता साफ हो गया है। स्ट्रेटेजिक फोर्स कमांड भारत की सामरिक परिसंपत्तियों की देखभाल करती है।

यह है खूबियां

- अग्नि-5 17.5 मीटर लंबी है जिसका व्यास दो मीटर यानी 6.7 फीट है।
- यह मिसाइल एक सेकेंड में 8.16 किलोमीटर की दूरी तय करती है।
- यह एक साथ डेढ़ टन तक परमाणु हथियार ले जाने में सक्षम है।
- इंटर कॉन्टिनेंटल बैलिस्टिक मिसाइल है
- यह मिसाल महज 20 मिनट में पांच हजार किलोमीटर की दूरी तय करके दुश्मन को तबाह कर सकती है।
- पूरा एशिया और अफ्रीका महाद्वीप तथा यूरोप के अधिकांश हिस्से इसकी जद में होंगे।
- यह मिसाइल एक बार छोड़ दी गई तो रोकी नहीं जा सकती है।
- यह भारत के मिसाइल तरकस का सबसे लंबी दूरी तक मार करने वाला प्रक्षेपास्त्र है।
- इसे सड़क के रास्ते कहीं भी पहुंचाया जा सकता है।
- इस खूबी के कारण इसे दुश्मन की उपग्रह निगाहों से भी बचाया जा सकता है।
- इस मिसाइल के तकनीक का इस्तेमाल भारत दुश्मन के उपग्रहों को नष्ट कर सकेगा।
- इस मिसाइल में तीन स्तरीय ठोस ईंधन वाले इंजन का इस्तेमाल किया जाता है।

कई और मिसाइलों का परीक्षण करेगा भारत

सूत्रों की मानें तो भारत आने वाले दिनों में और कई बैलेस्टिक और क्रूज रेंज की मिसाइलों का परीक्षण करने वाला है। इस मिसाइल के परीक्षण के दौरान डीआरडीओ और आईटीआर से जुड़े वरिष्ठ वैज्ञानिकों और अधिकारियों का दल मौके पर मौजूद था।

परीक्षण से पहले ही चीन को लगी थी मिर्ची

सूत्रों ने बताया कि तीन चरणों में ठोस प्रणोदक से चलने वाली अग्नि-5 मिसाइल को अब्दुल कलाम द्वीप के एकीकृत परीक्षण क्षेत्र के परिसर से सफलतापूर्वक हवा में उड़ाया गया। गौरतलब है कि बीते कुछ दिनों से इस मिसाइल का परीक्षण किए जाने की अटकलें चल रही थीं। इन अटकलों पर चीन भड़क गया था। चीन के विदेश मंत्रालय के प्रवक्ता झाओ लिजान ने बयान दिया था कि दक्षिण एशिया के सभी देशों को क्षेत्र में शांति और स्थिरता बनाए रखने के लिए काम करना चाहिए।

भारत की सैन्य शक्ति को मिलेगी बड़ी ताकत

जानकारों का कहना है कि इस मिसाइल से भारत की सैन्य शक्ति में बड़ी मजबूती आएगी। अग्नि-5 परियोजना का उद्देश्य चीन के खिलाफ देश की प्रतिरोधक क्षमता को बढ़ाना है। सूत्रों की मानें तो अब इसे सेना में शामिल किए जाने की बारी है। इस मिसाइल के सेना में शामिल होने से भारत को अंतर-महाद्वीपीय बैलेस्टिक मिसाइल की ताकत हासिल हो जाएगी जो अब तक अमेरिका, चीन, रूस, फ्रांस और उत्तर कोरिया जैसे कुछ ही देशों के पास है। बता दें कि चीन के पास डोंगफेंग-41 जैसी मिसाइलें हैं। इन मिसाइलों की मारक क्षमता 12 हजार से 15 हजार किलोमीटर तक की है।

इस मिसाइल का यह 8वां टेस्ट

- 19 अप्रैल सन 2012 को अग्नि 5 का पहला परीक्षण मोबाइल लांचर के जरिए से किया गया था।
- जनवरी 2015 में पहला केंस्टर टेस्ट किया गया था तब इसे रोड मिसाइल लॉन्चर से लंच किया गया था।
- 10 दिसंबर 2018 को अग्नि-5 का सातवा सफल परीक्षण किया गया था।

चुनिंदा देशों में शामिल हुआ भारत

इस मिसाइल का सफल परीक्षण होते ही भारत उन आठ चुनिंदा देशों में शामिल हो गया है जिनके पास परमाणु हथियार ले जाने में सक्षम मिसाइले हैं। सनद रहे कि अग्नि-2,3 और 4 मिसाइलें पहले से ही भारतीय सेना में कमीशन हो चुकी हैं। अग्नि-1 से 4 मिसाइलों की मारक क्षमता 700 से लेकर 3,500 किलोमीटर तक की है। भारत की इस शक्तिशाली मिसाइल का निर्माण रक्षा अनुसंधान एवं विकास संगठन (DRDO) और भारत डायनेमिक्स लिमिटेड (BDL) ने मिलकर किया है।

https://www.jagran.com/news/national-india-successfully-launched-agni-five-surface-to-surface-ballistic-missile-22155822.html

नवभारत टाइम्स

Thu, 28 Oct 2021

5000 किमी तक दुश्मन का सफाया करने वाली अग्नि-5 का सफल परीक्षण, भारत की इस कामयाबी के बारे में सब कुछ

भारत (Indian Army) को बड़ी कामयाबी मिली है। अग्नि 5 (Agni-5) का सफल परीक्षण किया गया है। यह मिसाइल सतह से सतह पर 5 हजार किलोमीटर तक मार कर सकती है। इसके साथ ही भारतीय सेना की ताकत और बढ़ गई है।

By हिमांशु तिवारी

हाइलाइट्स

- ***भारत ने अग्नि 5 मिसाइल का किया सफल परीक्षण, 5000 किमी तक मारक क्षमता***
- ***इस घातक मिसाइल को बुधवार को डॉ. एपीजे अब्दुल कलाम द्वीप से किया गया लॉन्च***
- ***भारतीय सेना की ताकत बढ़ाने के लिए उठाया गया बड़ा कदम, अग्नि 5 का सफल परीक्षण***

नई दिल्ली: भारतीय सेना (Indian Army) की ताकत और बढ़ाने को लेकर लगातार कदम उठाए जा रहे हैं। अब सतह से सतह पर हमला करने वाली बैलिस्टिक मिसाइल अग्नि 5 का बुधवार को सफल परीक्षण किया गया है। इस मिसाइल की रेंज तकरीबन 5 हजार किलोमीटर बताई जा रही है। यही नहीं, मिसाइल को डॉ. एपीजे अब्दुल कलाम द्वीप से लॉन्च किया गया।

अग्नि 5 का सफल परीक्षण

इन सबके बीच सरकार ने स्पष्ट किया है कि उनकी नीति वही रहेगी कि किसी भी हथियार का पहले इस्तेमाल नहीं किया जाएगा। मिसाइल को शाम 7 बजकर 50 मिनट पर लॉन्च किया गया। अग्नि-5 का पहला टेस्ट अप्रैल 2012 में हुआ। सितंबर 2013 में दूसरा, जनवरी 2015 में तीसरा और दिसंबर 2016 में चौथा प्रक्षेपण किया गया। दिसंबर 2018 तक इसके सात टेस्ट किए गए। इन परीक्षणों के दौरान मिसाइल को अलग-अलग तरह के लॉन्चिंग पैड से दागा गया। उसे अलग-अलग ट्रैजेक्टरी पर प्रक्षेपित कर परखा गया। सभी तरह के टेस्ट में अग्नि-5 खरी उतरी। इसे चलते ट्रक तक से दागा जा सकता है।

सबमरीन वर्जन पर भी चल रहा काम

इस परीक्षण से पहले ही चीन की बौखलाहट सामने आ रही है। वैसे, डीआरडीओ की तैयारी अग्नि-5 को और घातक बनाने की है। वह इसकी रेंज 10 हजार किलोमीटर तक ले जाने की कोशिशों में जुटा है। अभी इसे केवल जमीन से चलाया जा सकता है। पानी से भी यह मिसाइल चलाई जा सके, इसके लिए अग्नि-5 के सबमरीन वर्जन पर भी काम चल रहा है।

https://navbharattimes.indiatimes.com/india/agni-5-ready-to-annihilate-the-enemy-for-5000-km-and-everything-about-this-success-of-india/articleshow/87315080.cms

THE NEW INDIAN EXPRESS

Thu, 28 Oct 2021

DRDO Chief Dr G Satheesh Reddy's pat for startups in Defence

At Osmania University's 81st graduation ceremony, Dr Satheesh Reddy urges graduates to think innovatively

Hyderabad: Motivating graduates to explore technology and research, DRDO Chairman Dr G Satheesh Reddy, on Wednesday, said they bore the responsibility of adding sheen to the global recognition which India has acquired in this area. Appreciating startups in the area of Defence, he said that 50,000 startups have registered with the Central government and they were working on missiles and spacecraft.

Osmania University Vice-Chancellor Prof D Ravinder gives a memento to Chancellor of Osmania University Dr Tamilisai Soundararajan. Also seen is DRDO Chairman Dr G Satheesh Reddy

Speaking at the 81st graduation ceremony of Osmania University, he said that India has crossed several milestones with successful projects including PSLV, GSLV, Mangalyaan and it was now working on Gaganyaan.The scientists in the Department of Atomic Energy have made the country proud by making missiles including Aakash, Agni, Prudhvi, Brahmos, ballistic and air-to-air missiles. India is now in the sixth position in the world in possessing the most powerful defence systems.

He also pointed out that the nation had developed its own battle tanks, Light Combat Aircraft and the Indian Air Force has placed an order with Hindustan Aeronautical Limited (HAL) for 83 fighter aircraft. The DRDO had completed an anti-satellite mission in just two years which had not been done by any of the developed countries, Dr Satheesh Reddy, who is also the secretary in the Department of Defence R&D said. He pointed out that the country was a master in drone technology. The first anti-drone technology was introduced by India.

The DRDO Chairman emphasised that new graduates should think more innovatively as India has to achieve a lot more in science and technology. India is still the largest importer of defence equipment and needs to become the largest exporter and the graduates can make a difference.

Telangana Governor and Chancellor of Osmania University Dr Tamilisai Soundararajan advised graduates to think creatively and make new discoveries rather than just following tradition. About 80 pass-outs of Osmania University from 2018 to June 2020 were awarded gold medals at the ceremony. The guests congratulated the medalists and other pass-outs. Osmania University Vice-Chancellor Prof D Ravinder also spoke.

https://www.newindianexpress.com/states/telangana/2021/oct/28/drdo-chief-dr-g-satheesh-reddys-pat-for-startups-in-defence-2376745.html

DECCAN Chronicle

Thu, 28 Oct 2021

DRDO Chief pats OU scholars; remembers APJ

The scholars, who were dressed in all white, expressed happiness after receiving certificates, which is the result of their hard work

Hyderabad: A total of 350 scholars received their degrees and 80 scholars received gold medals at the 81st convocation of Osmania University on Wednesday on its campus.

Dr Tamilisai Soundararajan, Governor of Telangana and Chancellor of Osmania University, presided over the convocation along with Vice Chancellor Prof. D. Ravinder. (Twitter)

Addressing the scholars, Dr. G. Satheesh Reddy, Chairman of Defence research and Development Organisation (DRDO), said, "Today marks a great day as you are armed with your academic achievements. I am confident that in the days and years ahead, you will bring laurels to yourself and to this nation. 'Strength respects strength' was the spirit instilled in us by Dr APJ Abdul Kalam, the 'People's President' and former chief of DRDO. He famously stated that the systems developed by the DRDO were capable of delivering flowers, not just warheads. True freedom is possible only in a strong and self-reliant nation."

He said the Centre had embarked on a very important programme 'Aatmanirbhar Abhiyaan, which encouraged design, development and production of state-of-the-art systems within India. This initiative would also boost the country's exports and thereby help the economy grow. This programme requires R&D institutes, academia and industry to work hand-in-hand and provide quality products and services, he added.

"In the last 10 years, private industries have graduated from mere component producers to a challenging role of developing state-of-the-art sub-systems and systems. For instance, more than 70 per cent of the supplies for the Akash missile system are coming from a conglomerate of private industries. Hence, it is evident that private industry is going through transformation to handle greater challenges," he said.

Dr Tamilisai Soundararajan, Governor of Telangana and Chancellor of Osmania University, who presided over the convocation along with Vice Chancellor Prof. D. Ravinder, said, "I congratulate all of you for successful completion of your campus life. It also marks the beginning of your actual career journey in life. The days ahead might challenge you and test you in real life conditions. The strength of the character plays a vital role in your success."

During her speech, the Governor also congratulated the scientists and doctors in India who tirelessly worked hard to bring out Indian vaccination against the Coronavirus.

Dr Soundararajan urged the scholars to dare to Innovate. "Science, technology, research, development, innovation, and human values are vital for the progress of any country. Our educational institutions need to transform into centres of excellence in research, development and innovation," she said.

The scholars, who were dressed in all white, expressed happiness after receiving certificates, which is the result of their hard work.

https://www.deccanchronicle.com/nation/in-other-news/281021/drdo-chief-pats-ou-scholars-remembers-apj.html

THE HINDU

Thu, 28 Oct 2021

Varuna Vidyalaya could be converted into KV, say NPOL employees

Kochi: The NPOL Civilian Employees' Union, affiliated to All India Defence Employees' Federation, has brought up a point that Varuna Vidyalaya, now being operated by a private group of educational institutions on a private-public partnership basis, could be converted into a full-fledged Kendriya Vidyalaya even as there is a search on for a suitable location for a Kendriya Vidyalaya in Kakkanad that has been allotted for the State.

While the Kendriya Vidyalaya authorities, who visited the two sites identified by the Thrikkakara municipal authorities early this week for setting up the new Kendriya Vidyalaya, have not reached a decision, the civilian defence employees at the Naval Physical and Oceanographic Laboratory in Kakkanad are of the opinion that the infrastructure built under the Defence Research and Development Organisation (DRDO) for the Varuna Vidyalaya could be utilised to establish the Kendriya Vidyalaya without any difficulty.

While the DRDO has built the infrastructure, the day-to-day running of the school, including appointment of teachers and other staff, is managed by the private group on the basis of an agreement with the defence organisation. There are 17 such schools under the DRDO across India but only the Kakkanad school is being run on a PPP model, said M.K. Abhilash, general secretary of the NPOL Civilian Employees' Association. At the same time, it is learnt that there is a move to go in for privatisation of these schools.

Leaders of the employees' association have met District Collector Jafar Malik, who is the nodal officer for finding an ideal location for Kendriya Vidyalaya in Kakkanad, to present their suggestions and seek his opinion on the matter, Mr. Abhilash added. He said that the present Varuna Vidyalaya has sufficient infrastructure available and that the transition to a full-fledged Kendriya Vidyalaya could be in a phased manner as the long-term contract is set to end in 2025.

https://www.thehindu.com/news/cities/Kochi/varuna-vidyalaya-could-be-converted-into-kv-say-npol-employees/article37192754.ece

DRDO on Twitter

A. Bharat Bhushan Babu @SpokespersonMoD · 13h

Surface to Surface Ballistic Missile #Agni_5, successfully launched from APJ Abdul Kalam Island Odisha. It is capable of striking targets at ranges up to 5,000 kilometres with a very high degree of accuracy.
More Details..👉pib.gov.in/PressReleseDet...

@DefenceMinIndia @rajnathsingh

ANI
@ANI

Surface to Surface Ballistic Missile, Agni-5, successfully launched from APJ Abdul Kalam Island, Odisha, today. The missile, which uses 3-stage solid-fuelled engine, is capable of striking targets at ranges up to 5,000 kilometres with a very high degree of accuracy: Govt of India

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Defence News

Defence Strategic: National/International

Press Information Bureau
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Ministry of Defence

Wed, 27 Oct 2021 6:43PM

Raksha Mantri addresses the senior leadership of Indian Army during Army Commanders' conference

The Army Commanders' Conference, an apex level biannual event, is being held in New Delhi from 25 to 28 October 2021. During the event, Indian Army's apex leadership is comprehensively deliberating upon all aspects of existing security scenarios, situation along the borders and in the hinterland and challenges for the present security apparatus. In addition, the conference is also focusing on issues pertaining to organisational restructuring, logistics, administration and human resource management. The main highlight of the third day of the conference was the address by the Raksha Mantri, Shri Rajnath Singh, to the senior leadership of the Indian Army preceded by a brief on the present and future plans of the Indian Army.

The Raksha Mantri reaffirmed the faith of the billion-plus citizens on the Indian Army as one of the most trusted and inspiring organisations in the country. He reiterated the stellar role played by the Army in guarding our borders and fighting terrorism apart from providing assistance to the civil administration whenever called for. The Raksha Mantri also appreciated the role played by Indian Armed Forces in the ongoing fight against COVID-19. The Raksha Mantri also remarked "The Army is omnipresent in all domains from Security, HADR, Medical Assistance to maintaining the stable internal situation in the country. The role of Indian Army is very important in Nation building as also in the overall national development".

The Raksha Mantri complimented the forces for the high standard of operational preparedness and capabilities which he experienced firsthand during his visits to forward areas. He also paid tributes to all the bravehearts for making the ultimate sacrifice in the defence of the motherland. He complimented the significant contributions made by the Army in military diplomacy to further our national security interests by creating sustainable cooperative relationships with foreign Armies.

The Hon'ble Raksha Mantri stressed upon the technological advancement taking place in every sphere of our life and applauded the Armed Forces for aptly incorporating them. He appreciated the Army's efforts to develop niche technologies in collaboration with civil industries including premier educational institutions.

Commenting on the current situation along the Northern borders, the Hon'ble Raksha Mantri expressed full confidence that while troops are standing firm, the ongoing talks for peaceful resolution of crisis will continue. Expressing his gratitude, he remarked "It is our national responsibility to ensure availability of best weapons, equipment and clothing to our troops braving extreme weather and hostile forces to defend our territorial integrity". The Raksha Mantri also complimented the efforts of BRO working under difficult conditions to connect far flung areas so that our citizens living in those locations are connected and facilitate faster development.

Referring to the situation along the Western borders, he complimented the Indian Army's response to cross border terrorism. The Hon'ble Raksha Mantri said "I compliment the excellent synergy between the CAPF/ Police forces and the Army in tackling the menace of terrorism in

Jammu and Kashmir. The synergised operations in the Union Territory of Jammu and Kashmir is getting the region to a stable and peaceful environment conducive for overall growth and development".

The Hon'ble Raksha Mantri said that "The Government is focused on enhancing combat capability and ensuring welfare of soldiers". He also remarked that "The Policy of Atmanirbhar Bharat is a big step towards self-reliance in defence which offer a great opportunity to the Indian defence industry to meet the future requirements of the Armed Forces". He applauded the Indian Army for working towards this goal and remarked that in 2020-2021 in keeping with the Atamnirbhar Bharat 74% of contracts by Army were awarded to Indian Vendors which is praise worthy. He reiterated that "There are no budgetary constraints for capability development and meeting other requirements of the Army". The Raksha Mantri remarked that the decision to grant permanent commission to women officers in the Army is another significant decision that will ensure equal opportunities for professional growth to all officers irrespective of their gender.

The Hon'ble Raksha Mantri remarked that the recent corporation of the Ordnance Factory Board (OFB) is a historic step and has been accepted by all stake holders which will enhance their efficiency and accountability. He remarked that the government is committed in every manner towards the Veterans and the Next of Kin of all categories of Battle Casualities. He concluded by saying that "I have full confidence in the senior Military leadership. The Nation is proud of its Army and the Government is committed to facilitate the Army in their forward movement, on road to reforms and capability developments".

https://pib.gov.in/PressReleasePage.aspx?PRID=1767006

Press Information Bureau
Government of India

Ministry of Defence

Wed, 27 Oct 2021 1:04PM

Raksha Mantri Shri Rajnath Singh delivers keynote address at Indo-Pacific Regional Dialogue 2021

Calls for cooperative response to deal with maritime challenges

Key Highlights of RM's speech:

- ***India fully determined to protect its maritime interests, while it supports mandates of UN Convention on Law of Seas, 1982***
- ***Seas vital for transport of goods, exchange of ideas, catalysing innovations & bringing the world closer***
- ***Need for efficient & collaborative harnessing of maritime potential of Indo-Pacific for a steady path to prosperity***
- ***Cooperative response needed for challenges such as terrorism, piracy, drug trafficking & climate change***

India is fully determined to protect its maritime interests, while it supports the maintenance of rule-based maritime systems, as mandated under UN Convention on the Law of Seas (UNCLOS), 1982. This was stated by Raksha Mantri Shri Rajnath Singh while delivering the keynote address at Indo-Pacific Regional Dialogue (IPRD) 2021, being held virtually from October 27-29, 2021. "India is committed to respecting the rights of all nations as laid down in the UN Convention on the Law of Seas (UNCLOS), 1982. We are fully determined to protect the legitimate rights and interests of our country in relation to our territorial waters and Exclusive Economic Zone, while supporting the maintenance of rule-based maritime systems, as mandated under UNCLOS, 1982," he said.

Referring to Prime Minister Shri Narendra Modi's description of the Indo-Pacific as a natural region, where destinies of entities are interlinked, Shri Rajnath Singh said, the seas are a vital communication link to facilitate transport of goods, exchange of ideas, catalysing innovations and contributing to bringing the world closer. "Although the Indo-Pacific is characterised by diversity, marked by a multiplicity of cultures, ethnicities, economic models, governance systems and varied aspirations, the oceans remain a common binding link," he said. Shri Rajnath Singh emphasised on the need for an efficient, cooperative and collaborative harnessing of the region's maritime potential for sustaining a steady path to prosperity.

The Raksha Mantri pointed out that while the seas offer abundant opportunities for sustenance and growth of the mankind, they pose challenges such as terrorism, piracy, drug trafficking and climate change. He called for a cooperative response to these challenges which, he said, has considerable trans-national implications. "There is a need to find convergence of interests and commonality of purpose on maritime issues," he added.

Sharing his views on the broad theme of IPRD 2021, 'Evolution in Maritime Strategy during the 21st Century: Imperatives, Challenges and Way Ahead', Shri Rajnath Singh said, it dwells upon the region's past, gauges the present and then arrives at tenets that will form the foundation of maritime strategies for the future. He hoped that the Dialogue will further the country's shared and collective vision for the Indo-Pacific. The Raksha Mantri said, he is looking forward to the recommendations that will result from the deliberations.

First conducted in 2018, the IPRD is the apex international annual conference of the Indian Navy and is the principal manifestation of the Navy's engagement at the strategic-level. The National Maritime Foundation is the Navy's knowledge partner and chief organiser of each edition

of this annual event. The aim of each successive edition is to review both opportunities and challenges that arise within the Indo-Pacific.

Under the broad theme, the IPRD 2021 will focus on eight specific sub-themes. These are:

- Evolving Maritime Strategies within the Indo-Pacific: Convergences, Divergences, Expectations and Apprehensions.
- Adaptive Strategies to Address the Impact of Climate Change upon Maritime Security.
- Port-led Regional Maritime Connectivity and Development Strategies.
- Cooperative Maritime Domain Awareness Strategies.
- Impact of the Increasing Recourse to Lawfare upon a Rules-based Indo-Pacific Maritime Order.
- Strategies to Promote Regional Public-Private Maritime Partnerships.
- Energy-Insecurity and Mitigating Strategies.
- Strategies to Address the Manned-Unmanned Conundrum at Sea.

Panel-discussions on these sub-themes would be spread over eight sessions on three successive days, thereby providing ample scope for varied perspectives to be considered. The aim is to encourage a free flow of ideas and views.

Chief of the Naval Staff Admiral Karambir Singh, former Chief of the Naval Staff and Chairman, National Maritime Foundation Admiral Sunil Lanba (Retd), domain experts and policy makers of different countries were present virtually during the inaugural session.

https://pib.gov.in/PressReleasePage.aspx?PRID=1766855

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Wed, 27 Oct 2021 1:04PM

रक्षा मंत्री श्री राजनाथ सिंह ने 'इंडो-पैसिफिक रीजनल डायलॉग 2021' में मुख्य भाषण दिया

उन्होंने समुद्री चुनौतियों से निपटने के लिए सहयोगात्मक रुख अपनाने का आह्वान किया

रक्षा मंत्री के भाषण की मुख्य विशेषताएं :

- ***भारत अपने समुद्री हितों की रक्षा करने के लिए पूरी तरह प्रतिबद्ध है और यह समुद्र के कानून पर संयुक्त राष्ट्र सम्मेलन, 1982 के शासनादेश का समर्थन करता है***
- ***समुद्र माल की ढुलाई, विचारों के आदान-प्रदान, नवाचारों को उत्प्रेरित करने तथा दुनिया को नजदीक लाने के लिए बहुत महत्वपूर्ण है***
- ***समृद्धि के स्थिर मार्ग पर आगे बढ़ने के लिए इंडो-पैसिफिक की समुद्री क्षमता का कुशल और सहयोगी उपयोग करने की आवश्यकता है***
- ***आतंकवाद, समुद्री डकैती, मादक पदार्थों की तस्करी और जलवायु परिवर्तन जैसी चुनौतियों के लिए सहयोगात्मक प्रतिक्रिया की आवश्यकता है***

भारत अपने समुद्री हितों की रक्षा के लिए पूरी तरह प्रतिबद्ध है। भारत समुद्री प्रणालियों पर आधारित नियमों के रखरखाव का समर्थन करता है, जो समुद्र के कानून पर संयुक्त राष्ट्र सम्मेलन (यूएनसीएलओएस), 1982 के तहत आवश्यक है। रक्षा मंत्री श्री राजनाथ सिंह ने ऐसा 27 से 29 अक्टूबर, 2021 तक वर्चुअली आयोजित हो रहे इंडो-पैसिफिक रीजनल डायलॉग (आईपीआरडी) 2021 के अवसर पर अपना मुख्य भाषण देते हुए कहा। रक्षा मंत्री ने यह भी कहा कि भारत समुद्र के कानून पर संयुक्त राष्ट्र सम्मेलन (यूएनसीएलओएस) 1982 में निर्धारित किए गए सभी देशों के अधिकारों का सम्मान करने के लिए भी प्रतिबद्ध है। हम यूएनसीएलओएस, 1982 के तहत शासनादेश के रूप में

कानून आधारित समुद्री प्रणालियों के रखरखाव का समर्थन करते हुए अपने क्षेत्रीय जल और विशेष आर्थिक क्षेत्र के संबंध में अपने देश के वैध अधिकारों और हितों की रक्षा करने के लिए भी पूरी तरह प्रतिबद्ध हैं।

रक्षा मंत्री ने इंडो-पैसिफिक क्षेत्र के बारे में एक प्राकृतिक क्षेत्र के रूप में प्रधानमंत्री श्री नरेन्द्र मोदी द्वारा किए गए वर्णन का उल्लेख किया जहां संस्थाओं की नीति आपस में जुड़ी हुई है। रक्षा मंत्री ने कहा समुद्र माल की ढुलाई, विचारों के आदान-प्रदान, नवाचारों को उत्प्रेरित करने और दुनिया को नजदीक लाने में अपना योगदान दे रहे हैं। उन्होंने यह भी कहा कि इंडो-पैसिफिक की विविधता इसकी विशेषता है, जिसमें संस्कृतियों, जातियों, आर्थिक मॉडलों, शासन प्रणालियों और विभिन्न आकांक्षाओं की बहुलता है। महासागर सामान्य बंधन की कड़ी बने हुए हैं। श्री राजनाथ सिंह ने समृद्धि के स्थिर मार्ग पर आगे बढ़ने के लिए इंडो-पैसिफिक की समुद्री क्षमता का कुशल और सहयोगी उपयोग करने की आवश्यकता पर जोर दिया।

रक्षा मंत्री ने कहा कि जहां समुद्र मानव जाति के पालन-पोषण और विकास के लिए अनेक अवसर प्रदान करते हैं, वहीं वे आतंकवाद, समुद्री डकैती, मादक पदार्थों की तस्करी और जलवायु परिवर्तन जैसी चुनौतियां भी पेश करते हैं। उन्होंने इन चुनौतियों के लिए सहयोगी प्रतिक्रिया का आह्वान किया और कहा कि इसके काफी अंतर्राष्ट्रीय निहितार्थ हैं। उन्होंने कहा कि समुद्री मुद्दों पर हितों और समानता के समावेश का पता लगाने की जरूरत है।

आईपीआरडी 2021 के व्यापक विषय '21वीं सदी के दौरान समुद्री रणनीति का विकास अनिवार्यताएं, चुनौतियां और आगे का मार्ग' के बारे में श्री राजनाथ सिंह ने कहा यह इस क्षेत्र के अतीत पर आधारित है जो वर्तमान का आकलन करते हुए इन सिद्धांतों पर आ जाता है कि यह भविष्य के लिए समुद्री रणनीतियों की नींव स्थापित करेगा। उन्होंने आशा व्यक्त की कि यह वार्ता इंडो-पैसिफिक के लिए देश के साझा और सामूहिक विजन को आगे बढ़ाएगी। उन्होंने कहा कि वह उन सिफारिशों की प्रतीक्षा कर रहे हैं जो इस आयोजन में हुए विचार-विमर्श के परिणामस्वरूप प्राप्त होंगी।

आईपीआरडी का पहली बार 2018 में आयोजन किया गया था। आईपीआरडी भारतीय नौसेना का शीर्ष अंतर्राष्ट्रीय वार्षिक सम्मेलन है जो रणनीतिक स्तर पर नौसेना की भागीदारी की प्रमुख अभिव्यक्ति है। राष्ट्रीय समुद्री फाउंडेशन नौसेना के इस आयोजन के प्रत्येक संस्करण के ज्ञान भागीदार और मुख्य आयोजनकर्ता है। इस आयोजन के प्रत्येक संस्करण का उद्देश्य इंडो-पैसिफिक में पैदा होने वाले अवसरों और चुनौतियों दोनों की ही समीक्षा करना है।

व्यापक विषय के तहत, आईपीआरडी 2021 में आठ विशिष्ट उप-विषयों पर ध्यान केन्द्रित किया जाएगा जो इस प्रकार हैं :-

- इंडो-पैसिफिक समुद्री रणनीतियां : समग्रता, विचलन, अपेक्षाएं और आशंकाएं
- समुद्री सुरक्षा पर जलवायु परिवर्तन के प्रभाव से निपटने के लिए अनुकूल रणनीतियां।
- बंदरगाह के नेतृत्व वाली क्षेत्रीय समुद्री कनेक्टिविटी और विकास रणनीतियां।
- सहकारी समुद्री क्षेत्र जागरूकता रणनीतियां।
- कानून-आधारित इंडो-पैसिफिक समुद्री आदेश के बारे में कानून के बढ़ते हुए दायरे का प्रभाव।
- क्षेत्रीय सार्वजनिक-निजी समुद्री भागीदारी को बढ़ावा देने की रणनीतियां।
- ऊर्जा-असुरक्षा और शमन रणनीतियां।
- समुद्र में मानव रहित मानवरहित समस्या से निपटने की रणनीतियां।

इन उप-विषयों पर तीन दिनों तक लगातार आठ सत्रों में पैनल-चर्चा की जाएगी, जिससे विभिन्न दृष्टिकोणों पर विचार-विमर्श करने की पर्याप्त संभावना रहेगी। इसका उद्देश्य विचारों और दृष्टिकोणों के मुक्त प्रवाह को प्रोत्साहित करना है।

इस उद्घाटन सत्र के दौरान नौसेना प्रमुख एडमिरल करमबीर सिंह, पूर्व नौसेना प्रमुख एवं अध्यक्ष राष्ट्रीय समुद्री फाउंडेशन के अध्यक्ष एडमिरल सुनील लांबा (सेवानिवृत्त), विभिन्न देशों के क्षेत्र विशेषज्ञ और नीति निर्माता वर्चुअल रूप से उपस्थित थे।

https://pib.gov.in/PressReleasePage.aspx?PRID=1766891

Press Information Bureau
Government of India

Ministry of Defence

Wed, 27 Oct 2021 5:50PM

BEL pays Rs 149.52 crore final dividend to the Government, totalling Rs 498.38 crore for FY 2020-21

Defence Public Sector Undertaking (DPSU) Bharat Electronics Limited (BEL) has paid a total dividend of 400 per cent on its paid up capital to the Government for Financial Year 2020-21. Chairman and Managing Director (Additional Charge), BEL Smt Anandi Ramalingam presented the 120 per cent final dividend cheque for Rs 149.52 crore, payable on the shares held by the President of India, to Raksha Mantri Shri Rajnath Singh in New Delhi on October 27, 2021. The total dividend paid to the Government stands at Rs 498.38 crore. There has been a 43 per cent increase from FY 2019-20 despite the COVID-19 pandemic.

Earlier, the Company had paid two interim dividends of Rs 174.43 crore each consisting of 140 per cent on face value of Rupee one per equity share in February and March 2021.

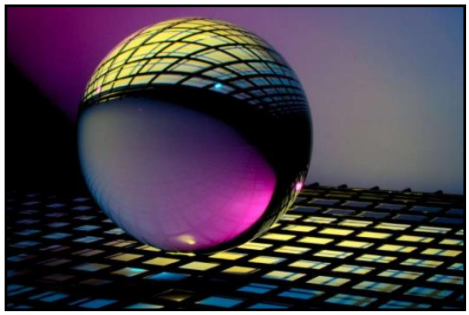
https://pib.gov.in/PressReleasePage.aspx?PRID=1766981

Thu, 28 Oct 2021

Chip-based quantum microcomb creates entanglement between optical fields

Researchers have developed a tiny optical frequency comb, or microcomb, that uses two-mode squeezing to create unconditional entanglement between continuous optical fields. The miniature chip-based device lays the groundwork for mass production of deterministic quantum frequency combs that could be used for quantum computing, quantum metrology and quantum sensing.

Zijiao Yang from the University of Virginia, USA will present the research at the Frontiers in Optics + Laser Science Conference (FiO LS) all-virtual meeting, 01-04 November 2021.



Credit: Unsplash/CC0 Public Domain

The new microcomb is designed for quantum information protocols based on continuous-variable entangled states which generates entangled states, or qumodes, for entire optical fields rather than single photons. There is great interest in this protocol because, unlike qubit-based methods, there is no requirement for single photons or special optical modulation.

"Unlike qubit approaches, continuous-variable approaches enable the number of entangled qumodes in a quantum state to be scaled up through frequency, time or spatial multiplexing without the need of quantum memory or the repeat-until-success strategies," said Yang. "Our new microcomb could provide a scalable physical platform for continuous-variable quantum computing."

The new quantum microcomb is generated in a 3-millimeter-diameter silica wedge microresonator with a 22 GHz free spectral range on a silicon chip with a single mode tapered fiber used as the coupling waveguide. It uses two-mode squeezing to create unconditional entanglement between continuous optical fields.

To test the new device, the researchers measured 20 qumode pairs created by the new microcomb. They found that the qumodes exhibited a maximum raw squeezing of 1.6 dB and maximum anti-squeezing of 6.5 dB. The raw squeezing is primarily limited by the 83% cavity escape efficiency, 1.7 dB optical loss and approximately 89% photodiode quantum efficiency. The researchers report a total efficiency after the tapered fiber of 60%. The squeezing measurements provide convincing evidence for quantum correlations among the qumodes, but the squeezing level needs to be further increased for quantum information processing applications.

The researchers say that the raw squeezing could be improved by reducing system losses, improving photodiode quantum efficiency and achieving higher resonator-waveguide escape efficiency.

More information: Conference: www.frontiersinoptics.com/home/

Yang's presentation is scheduled for Tuesday, 02 November at 08:30 EDT (UTC—04:00).

https://phys.org/news/2021-10-chip-based-quantum-microcomb-entanglement-optical.html

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Thu, 28 Oct 2021

Two Chinese teams claim to have reached primacy with quantum computers

By Bob Yirka

Two teams in China are claiming that they have reached primacy with their individual quantum computers. Both have published the details of their work in the journal *Physical Review Letters*.

In the computer world, quantum primacy is the performance of calculations that are not feasible on conventional computers—others use the term "quantum advantage."

The Pan team's optical quantum computer uses a 144-mode interferometer to solve a Gaussian boson sampling problem with a factor-of-1024 speedup in computational time relative to a classical computer. Credit: Chao-Yang Lu/University of Science and Technology of China, via Physics

Over the past several years, several teams working with quantum computers have claimed to have reached primacy, but thus far have been met with skepticism due to questions about whether the algorithm used was the best choice possible, including the one used by Google. In this new effort, both teams are claiming that their computers leave no room for doubt.

Both of the teams in these new efforts were working at the Hefei National Laboratory for Physical Sciences at the University of Science and Technology of China, and both were led by physicist Jian-Wei Pan, who has become well known for his work with quantum entanglement.

In both efforts, the goal was to build a quantum computer capable of calculating the output probabilities of quantum circuits—a task that is relatively simple for a conventional computer to perform when there are just a few inputs and outputs. It grows increasingly difficult as the numbers rise until it becomes unfeasible.

In the first effort, the researchers used a photonic approach in building their computer. To tackle the problem of estimating output probabilities, the team used Gaussian boson sampling as a way to analyze the output. In this case, output from a 144-mode interferometer. Under this scenario, there could be 10^{43} possible outcomes. The researchers claim their machine was capable of sampling the output 10^{23} times as fast as a supercomputer, which, they further claim, shows quantum primacy.

The second effort involved creating a superconductor-based computer that was capable of calculating using 66 qubits—only 56 of them were used, however. Still, the researchers found the machine capable of estimating sample calculations up to 1000 times as fast as the best supercomputers, which, they claim, shows that they achieved primacy.

More information: Han-Sen Zhong et al, Phase-Programmable Gaussian Boson Sampling Using Stimulated Squeezed Light, *Physical Review Letters* (2021). DOI: 10.1103/PhysRevLett.127.180502

Yulin Wu et al, Strong Quantum Computational Advantage Using a Superconducting Quantum Processor, *Physical Review Letters* (2021). DOI: 10.1103/PhysRevLett.127.180501

Journal information: Physical Review Letters

https://phys.org/news/2021-10-chinese-teams-primacy-quantum.html

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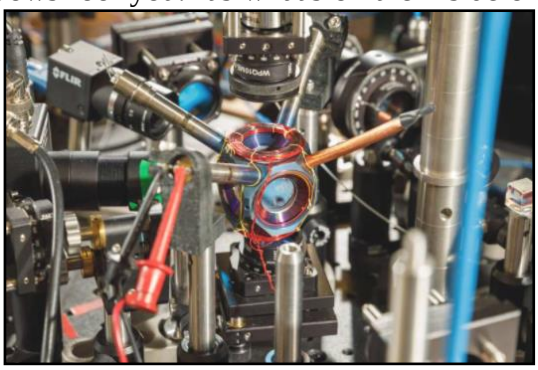
Thu, 28 Oct 2021

This device could usher in GPS-free navigation

Don't let the titanium metal walls or the sapphire windows fool you. It's what's on the inside of this small, curious device that could someday kick off a new era of navigation.

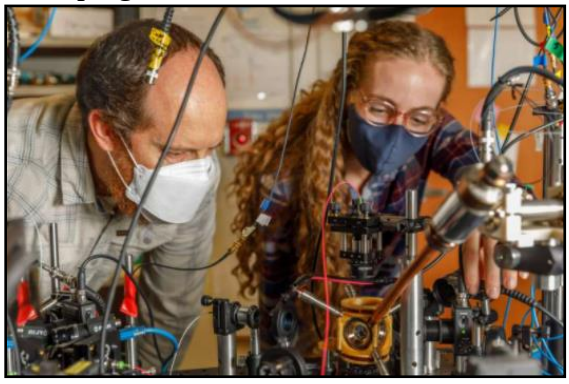


A compact device designed and built at Sandia National Laboratories could become a pivotal component of next-generation navigation systems. Credit: Bret Latter

For over a year, the avocado-sized vacuum chamber has contained a cloud of atoms at the right conditions for precise navigational measurements. It is the first device that is small, energy-efficient and reliable enough to potentially move quantum sensors—sensors that use quantum mechanics to outperform conventional technologies—from the lab into commercial use, said Sandia National Laboratories scientist Peter Schwindt.

Sandia developed the chamber as a core technology for future navigation systems that don't rely on GPS satellites, he said. It was described earlier this year in the journal *AVS Quantum Science*.

Countless devices around the world use GPS for wayfinding. It's possible because atomic clocks, which are known for extremely accurate timekeeping, hold the network of satellites perfectly in sync.



Sandia National Laboratories scientist Peter Schwindt, left, and postdoctoral scientist Bethany Little examine the vacuum package held in a yellow, 3D-printed mount. Credit: Bret Latter

But GPS signals can be jammed or spoofed, potentially disabling navigation systems on commercial and military vehicles alike, Schwindt said.

So instead of relying on satellites, Schwindt said future vehicles might keep track of their own position. They could do that with on-board devices as accurate as atomic clocks, but that measure acceleration and rotation by shining lasers into small clouds of rubidium gas like the one Sandia has contained.

Compactness key to real-world applications

Atomic accelerometers and gyroscopes already exist, but they're too bulky and power-hungry to use in an airplane's navigation system. That's because they need a large vacuum system to work, one that needs thousands of volts of electricity.

"Quantum sensors are a growing field, and there are lots of applications you can demonstrate in the lab," said Sandia postdoctoral scientist Bethany Little, who is contributing to the research. "But when you move it into the real world there are lots of problems you have to solve. Two are making the sensor compact and rugged. The physics takes place all in a cubic centimeter (0.06 cubic inches) of volume, so anything larger than that is wasted space."

Little said her team has shown that quantum sensing can work without a high-powered vacuum system. This shrinks the package to a practical size without sacrificing reliability.

Instead of a powered vacuum pump, which whisks away molecules that leak in and wreck measurements, a pair of devices called getters use chemical reactions to bind intruders. The getters are each about the size of a pencil eraser so they can be tucked inside two narrow tubes sticking out of the titanium package. They also work without a power source.

To further keep out contaminants, Schwindt partnered with Sandia materials scientists to build the chamber out of titanium and sapphire. These materials are especially good at blocking out gasses like helium, which can squeeze through stainless steel and Pyrex glass. Funding was provided by Sandia's Laboratory Directed Research and Development program.

Construction took sophisticated fabrication techniques that Sandia has honed to bond advanced materials for nuclear weapons components. And like a nuclear weapon, the titanium chamber must work reliably for years.

The Sandia team is continuing to monitor the device. Their goal is to keep it sealed and operational for five years, an important milestone toward showing the technology is ready to be fielded. In the meantime, they're exploring ways to streamline manufacturing.

More information: Bethany J. Little et al, A passively pumped vacuum package sustaining cold atoms for more than 200 days, *AVS Quantum Science* (2021). DOI: 10.1116/5.0053885

https://phys.org/news/2021-10-device-usher-gps-free.html

The Indian EXPRESS

Thu, 28 Oct 2021

Covid-19 virus test results may vary based on time of day: Study

The finding supports the hypothesis that Covid-19 acts differently in the body based on our natural circadian rhythm, which has also been implied by studies of other viral and bacterial infections, the researchers said.

Washington: The test sensitivity of SARS-CoV-2, the virus that causes COVID-19, may vary based on the time of the day and the our body's biological clock, according to a study.

The research, published in the *Journal of Biological Rhythms* on Tuesday, found that people were up to two times as likely to have an accurate positive test result if they tested in the middle of the day compared to at night.

The finding supports the hypothesis that COVID-19 acts differently in the body based on our natural circadian rhythm, which has also been implied by studies of other viral and bacterial infections, the researchers said.

Circadian rhythm is our body's natural, internal process that regulates the sleep-wake cycle and repeats roughly every 24 hours. COVID-19 virus shedding — when infected cells release virus particles into the blood and mucus — appears to be more active in the middle of the day due to modulation of the immune system by our biological clock, the researchers said.

"Taking a COVID-19 test at the optimal time of day improves test sensitivity and will help us to be accurate in diagnosing people who may be infected but asymptomatic," said Carl Johnson, a professor at Vanderbilt University in the US.

The results indicate that viral load is lower after 8 p.m, according to the researchers.

If people choose to get tested at that time, there could be a higher chance of a false-negative result, they said.

A difference in COVID-19 viral shedding throughout the day is important information that may inform how we test for and treat the virus, the researchers said.

The peak shedding in the afternoon, when patients are more likely to interact with others or seek medical care, could play a role in increasing the spread of the virus in hospitals and the wider community, they said.

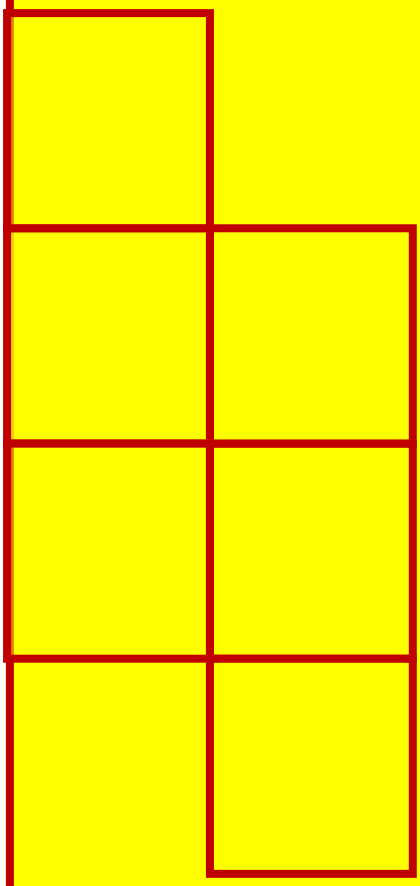
The researchers noted that further research is needed to confirm the diurnal — meaning active during the day — nature of SARS-CoV-2.

Experimentally testing patients who are infected with COVID-19 to see if individuals shed the virus differently throughout the day would have important public health implications, Johnson said.

The research can be used to optimise COVID-19 testing and improve test accuracy, he added.

The researchers believe temporal considerations may be leveraged to maximise the effectiveness of intervention strategies and even vaccine strategies.

https://indianexpress.com/article/lifestyle/health/covid-19-virus-test-results-may-vary-based-on-time-of-day-study-7593792/



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