

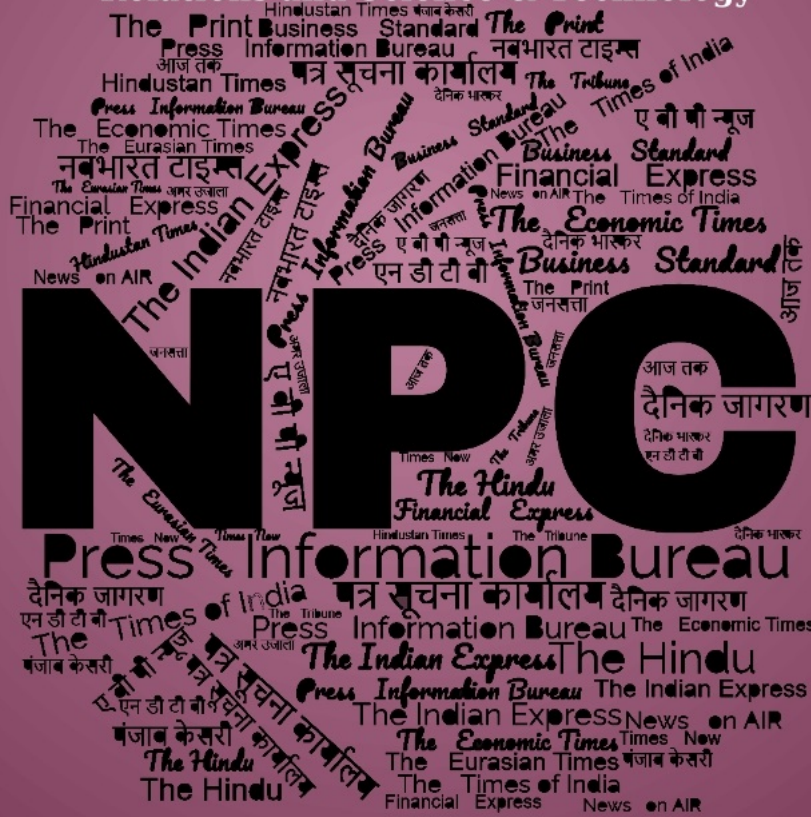
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Mon, 14 Oct 2024

Matching THAAD's Capability, India's Phase 2 Missile Defense Program Gets CCS Nod For New Test Range

The Cabinet Committee on Security (CCS) has approved the establishment of a new missile testing range in Nagayalanka in Krishna district, Andhra Pradesh.

The development of the missile range has not been smooth. The petroleum ministry granted clearance for the project in 2012 after being persuaded that it would not affect plans to prospect for oil and gas in the Krishna River Delta.

The **Defence Research and Development Organization (DRDO)** originally planned to start construction of the facility in 2013. However, the test site happened to be within the limits of the Krishna Wildlife Sanctuary.

The **DRDO** received approval from the federal environment ministry to convert 155 hectares of mangrove forest in Machilipatnam, Andhra Pradesh, into a missile launch testing facility. The approval was challenged in the Supreme Court, but the legal challenge didn't hold.

Phase 2 Ballistic Missile Defence (BMD) Test Site

Official sources say that once the new facility is fully operational, both short—and long-range missiles could be tested there. However, the test range is being primarily developed for testing missiles being developed for India's Phase 2 Ballistic Missile Defence (BMD) program.

India currently has two missile test ranges at Chandipur and Wheeler Island. The existing ranges do not facilitate the testing of Phase 2 BMD interceptors, which requires two ranges placed well apart along the missile trajectory.

DRDO is developing two new missile ranges at Nagayalanka in Krishna district, Andhra Pradesh, and at Rutland Island in the Andamans.

BMD Phase 1 & 2

During BMD Phase 1, **DRDO** developed and deployed a system to defend against missiles with less than 2,000 km range, such as Pakistan's Ghauri and Shaheen missiles and China's solid-fuel Dongfeng-21 (NATO designation: CSS-5).

Under Phase 2, **DRDO** is augmenting missile defense capability to provide a shield against missiles with ranges greater than 2,000 km that can additionally deploy decoys or maneuvers.

The Phase 2 system will require longer-range radars (Detection range of 1,500 km as opposed to 600 km for Phase 1 radars) and new hypersonic interceptor missiles flying at Mach 6-7 (as opposed to Mach 4-5 for Phase 1 missiles) with agility and the capability to discriminate against ballistic missile defense countermeasures.

The system will intercept missiles at very high altitudes and be capable of handling multiple, simultaneous attacks.

Swordfish Radar

BMD Phase 2 uses the indigenously developed Swordfish Long Range Tracking Radar (LRTR) for target tracking. The L-band AESA radar is a derivative of the Israeli EL/M-2080 Green Pine long-range radar used while developing BMD Phase-I. The detection range for the latest variant of the Swordfish is reported to be 1500 km.

Phase 2 Interceptor Missiles

The Phase 2 missile defense system will be based on the AD-1 and AD-2 interceptor missiles that are currently under development.

These interceptors would be capable of shooting down missiles that have ranges greater than 5,000 km, which follow a distinctly different trajectory than a missile with a range of 2,000 km or less. During their final phase, ICBMs hurtle toward their targets at speeds twice those of intermediate-range missiles. (6-9 km/s)

The Phase 2 system will match the capability of the THAAD or Terminal High Altitude Area Defence missiles deployed by the United States as part of its missile shield. THAAD missiles can intercept ballistic missiles over 200 km away and track targets at ranges in excess of 1,000 km.

The AD-1 is a long-range interceptor missile designed for both low exo-atmospheric and endo-atmospheric interception of long-range ballistic missiles as well as aircraft.

It is propelled by a two-stage solid motor and equipped with an indigenously developed advanced control system, navigation, and guidance algorithm to precisely guide the vehicle to the target.

AD-1 Tests

On November 2, 2022, the **DRDO** successfully conducted the maiden flight test of the AD-1 interceptor missile with a large kill altitude bracket from Abdul Kalam Island. The test was carried out with the participation of all BMD weapon system elements located at different locations.

The maiden test validated the basic functionality of the system elements (radar, launcher, MCC) deployed in their operational geographical locations.

The **DRDO** carried out follow-up tests of the AD-1 interceptor in July. The tests appear to have focused primarily on validating radar tracking, missile guidance, and the communication layer of BMD Phase-2.

Unlike the interceptor's maiden test in November 2022, the July test also involved the launch of a target missile.

The press release announcing the tests stated that the test “fully met all the trial objectives validating complete network-centric warfare weapon systems consisting of Long-Range Sensors, a low-latency communication system, MCC (Missile Control Centre), and Advanced Interceptor missiles.”

Floating Test Range

In addition to the two ranges being developed in Andhra Pradesh and the Andaman Islands, BMD Phase 2 will reportedly also use a Floating Test Range (FTR).

The Hindu reported on September 7, 2015 that construction is underway of a floating test range (FTR) – a 10,000 ton ship that will be used to launch target missiles for testing BMD interceptors.

A **DRDO** scientist told The Hindu that the FTR “will pave the way for conducting trials for different trajectories, varying altitudes, and also for higher ranges. We can go up to 1,000-1,500 km without any problem. Currently, we have to conduct simulation tests for longer ranges.”

Ocean Surveillance Ships (OSS)

DRDO has ordered two Ocean Surveillance Ships (OSS) for Phase 2 of its BMD program. The Indian Navy will operate the ships.

The first of the ships, INS Dhruv, was commissioned into the Indian Navy on September 10, 2021. The ship, which has a displacement of 10,000 tonnes, was built by the Hindustan Shipyard in collaboration with the **DRDO** and NTRO.

The ship has a state-of-the-art active scanned array radar (AESA) developed by the **DRDO**, which will enable it to scan various spectrums, monitor spy satellites watching over India, and monitor missile tests in the entire region.

A sister ship of INS Dhruv is under construction at Cochin Shipyard.

<https://www.eurasiantimes.com/matching-thaads-capability-indias-phase/>



Tue, 15 Oct 2024

World Students’ Day today; know why it is celebrated on October 15

It was the United Nations that designated October 15 as a day to celebrate Dr Kalam’s birthday as World Students’ Day, symbolising his legacy and encouraging the values he championed.

“To succeed in life and achieve results, you must understand and master three mighty forces — desire, belief, and expectation.”

This famous quote is said by India's 11th President, **Dr APJ Abdul Kalam**. His love and trust in the young generation of India and beyond is not hidden. Every year on October 15, the country and beyond celebrate, 'World Students' Day' in honor of Dr APJ Abdul Kalam, who was a beloved teacher, and a scientist.

It was the United Nations that designated October 15 as a day to celebrate Dr Kalam's birthday as World Students' Day, symbolising his legacy and encouraging the values he championed.

Known as the 'People's President,' Dr Kalam dedicated much of his life to inspiring and guiding young students, and his passion for teaching and learning left a profound impact on India and beyond.

He was known for his humility, his belief in the potential of the younger generation, and his advocacy for science and education as pathways to national development.

Dr Kalam was born on October 15, 1931, in a Tamil Muslim family in Rameswaram on Pamban Island. Pamban Island was then in the Madras Presidency and is now in Tamil Nadu. Although Dr Kalam had average grades in his school years, he was always a bright and hardworking student with a strong desire to learn. He spent hours on his studies, especially mathematics.

Dr Kalam received numerous awards, including the Padma Bhushan in 1981, the Padma Vibhushan in 1990, and the Bharat Ratna for his contributions to research, the field of science, and his work with the Indian Space Research Organisation (ISRO) and the **Defence Research and Development Organisation (DRDO)**.

The renowned scientist and teacher passed away in 2015 after suffering a cardiac arrest while delivering a speech at the Indian Institute of Management (IIM), Shillong.

<https://indianexpress.com/article/education/world-students-day-2024-why-is-october-15-celebrated-as-students-day-apj-abdul-kalam-9619414/>

Defence News

Defence Strategic: National/International



Press Information Bureau
Government of India

Ministry of Defence

Mon, 14 Oct 2024

Launch Of ‘Samarthak’, First Ship Of Multi Purpose Vessel (L&T) Project On 14 Oct 24 At L&T, Chennai

The first ship of the two Multi Purpose Vessel project, being built by L&T, Shipyard for the Indian Navy, was launched on 14 Oct 24 at L&T, Kattupalli. In keeping with the maritime traditions, the ship was launched by Mrs Shashi Tripathi President NWWA.

The ceremony was presided over by Admiral Dinesh K Tripathi, Chief of the Naval Staff. The ship has been named ‘Samarthak’ which means ‘Supporter’ and is synonymous to the multi-dimensional role envisaged from the platform.

The contract for building two Multi Purpose Vessel was signed between the Ministry of Defence and L&T Shipyard on 25 Mar 22.

These Multi Purpose Vessels will be capable of towing ships, launch and recover various targets, operate uncrewed autonomous vehicles and act as a trial platform for various indigenous weapons and sensors under development. The Multi Purpose Vessels can achieve a maximum speed of 15 knots and are 106 m long and 16.8 wide.

The Indian Navy remains steadfast in its efforts towards indigenous shipbuilding. The launch of this vessel by private Indian shipyard showcases Indian Navy’s strides in indigenous shipbuilding, in consonance with Govt of India vision for ‘Aatmanirbhar Bharat’ and ‘Make in India’ initiative.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2064795>



**Press Information Bureau
Government of India**

Ministry of Defence

Mon, 14 Oct 2024

General Upendra Dwivedi, Chief Of Army Staff Embarks On A Visit To Japan

General Upendra Dwivedi, Chief of the Army Staff (COAS), departed on a visit to Japan from 14th to 17th October 2024, marking a significant step in bolstering the defence cooperation between India and Japan.

On 14th October 2024, General Upendra Dwivedi will interact with Shri Sibi George, Indian Ambassador to Japan and would thereafter engage in discussion on India-Japan relations at the Embassy of India, Tokyo.

On 15th October 2024, the COAS will engage in dialogues with the senior military leadership of Japan at the MoD in Ichigaya. The meetings are planned with Gen Yoshida Yoshihide, Chief of Staff, Joint Self Defence Force; Gen Morishita Yasunori, Chief of Staff, Japan Ground Self-Defence Force (JGSDF); Mr Ishikawa Takeshi, Commissioner of Acquisition, Technology and Logistic Agency (ATLA).

The discussions will be aimed at fostering stronger military cooperation between India and Japan. General Upendra Dwivedi will also pay homage at the Memorial at MoD, Ichigaya and will be given a Guard of Honour by the JGSDF. The itinerary also includes an interaction with senior hierarchy of JGSDF and a visit to the National Institute of Defence Studies.

On 16th October 2024, General Upendra Dwivedi, the COAS, accompanied by Gen MORISHITA Yasunori, Chief of Staff, Japan Ground Self Defence Force, will visit Fuji School, wherein he will engage in a conversation with Lt Gen Kodama Yasuyuki, Commanding Gen of Fuji School. The COAS will be given a briefing at the School and he will also witness an Equipment and Facility Display.

On 17th October 2024, the COAS will visit Hiroshima, wherein he will lay a wreath at Hiroshima Peace Park and pay floral tributes to Mahatma Gandhi's Statue at the Peace Park.

The visit by General Upendra Dwivedi aims at strengthening military cooperation between militaries of India and Japan besides exploring new avenues of collaboration between the two nations.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2064572>

India and US set to ink Rs 34,500 crore drone deal

India and the US will sign a Rs 34,500 crore deal to acquire MQ9B drones for the armed forces on Tuesday. Being signed under a government-to-government pact, the deal will see Indian armed forces acquiring 31 of the long-range drones, which will be distributed among the army, air force and navy.

Sources said that two separate contracts will be signed on Tuesday one for maintenance, repair and overhaul facilities for the drones and the second for the acquisition. The deal was cleared by the Cabinet Committee on Security earlier this month.

The long-range drones will be armed and will add to the two that are already on lease by the Indian Navy. One of these drones was lost to a recent accident but is likely to be replaced. General Atomics, the manufacturer of MQ9B, has a tie up with Bharat Forge to make UAV components and has also committed to setting up a global maintenance hub for drones in India.

In addition, the US manufacturer will also provide consultancy assistance for an Indian programme to develop combat drones. India had been looking at a technology transfer option as part of the deal to give a boost to a domestic unmanned combat aerial vehicle programme but details could not be worked out.

<https://economictimes.indiatimes.com/news/defence/india-and-us-set-to-ink-rs-34500-crore-drone-deal/articleshow/114226450.cms>

France to expand aerospace collaboration with India, strengthen 'Make in India' initiatives

French business leaders visiting India have reaffirmed their commitment to expanding local investments, employment, and production under the 'Make in India' initiative.

French Ambassador Thierry Mathou emphasized that French companies are deeply integrating Indian firms into global supply chains while strengthening industrial cooperation across key sectors.

In an interview with TOI's Sachin Parashar, Mathou highlighted that aerospace remains a cornerstone of Indo-French cooperation. "France has been a strategic partner for over 25 years, with defence and aerospace ties dating back to India's Independence.

'Make in India' has been a reality for the French defence industry for decades," he said, recalling that the technology for the Cheetah/Chetak helicopter was transferred to India as early as 1962.

Strong Aerospace Ties and Investments

Over 55% of France's exports to India are in aerospace, generating 2.7 billion euros in the first half of 2024. Key milestones include India's Indigo Airlines operating hundreds of Airbus planes, with a 2023 order for 500 more, and the Indian Air Force fielding 36 Rafale jets. Space cooperation has also evolved beyond ISRO-CNES collaborations to include joint satellite projects and military space cooperation.

Mathou noted that French companies contribute over 50,000 indirect jobs in India through partnerships with 227 suppliers and annual investments exceeding a billion euros. Aerospace giants like Airbus and Thales are deepening their footprint through innovation hubs and training centres. Airbus India's engineering centre, active for 16 years, and its joint initiative with Tata STRIVE to open skill centres in Delhi and Bengaluru reflect this focus on talent development.

Future of Indo-French Aerospace Collaboration

The two nations are now working on an Indo-French aeronautics and space training campus and exploring an aeronautics cluster with India's Ministry of Civil Aviation. Mathou also underlined France's commitment to supporting India's goal of decarbonising air transport by 2050.

India's readiness to adopt sustainable aviation fuels by 2027 signals shared ambitions for greener aviation.

"The aerospace sector embodies the best of our win-win cooperation," Mathou said, expressing optimism about leveraging this partnership as a model for future collaborations. The India-France Year of Innovation in 2026 will offer further opportunities to strengthen ties in new areas.

<https://economictimes.indiatimes.com/industry/transportation/airlines/-aviation/france-expands-aerospace-collaboration-with-india-strengthens-make-in-india-initiatives/articleshow/114210632.cms>

THE ECONOMIC TIMES

Sun, 14 Oct 2024

India's nuclear submarine program gains momentum with new VLF facility and nuclear fleet to counter China

As part of its long-term strategy to strengthen its underwater fleet, the Indian Navy is setting up an advanced Very Low Frequency (VLF) transmitting station in Vikarabad, Telangana. This new station will facilitate round-the-clock encrypted communication with submarines patrolling in deep waters across India's vast maritime area of interest.

The facility is scheduled to be inaugurated by Defence Minister Rajnath Singh on October 15.

According to a source quoted by The Times of India, "The strategically important VLF facility, once it becomes fully operational in two-three years, will provide round-the-clock encrypted communication connectivity to submerged submarines across India's entire area of interest."

VLF radio waves, operating within a frequency range of 3 to 30 kilohertz, can penetrate seawater to a certain depth, making them essential for maintaining constant communication with submarines.

India has been running a VLF station at Tirunelveli in Tamil Nadu since 1990. However, the new facility at Vikarabad will enhance the Navy's ability to communicate with both diesel-electric and nuclear submarines, especially given the increasing presence of Chinese naval forces in the Indian Ocean Region (IOR).

The Navy has acknowledged that this expanded VLF network is crucial for "maintaining 24x7x365 communication" with submarines as part of its long-term defence strategy.

Recent Commissioning of INS Arighaat Marks a Milestone

On August 29, India commissioned its second nuclear-powered submarine, INS Arighaat, which weighs 6,000 tonnes and is capable of carrying K-4 ballistic missiles with a range of 3,500 kilometers.

This new addition follows the commissioning of INS Arihant, India's first nuclear-powered submarine, though Arihant is equipped with shorter-range K-15 missiles that can only cover 750 kilometers. As reported earlier, INS Arighaat's induction is part of India's long-term naval modernization plan.

India is also expected to commission its third nuclear-powered submarine, INS Aridhaman, early next year. With a displacement of 7,000 tonnes, INS Aridhaman will further strengthen India's deterrence capabilities. Another nuclear submarine, part of the classified advanced technology vessel (ATV) project, is also under construction.

The Navy has plans to develop even larger submarines in the future, with 13,500-tonne SSBNs equipped with 190 MW pressurized light-water reactors, which will significantly enhance the country's maritime capabilities.

India Approves Project-77: Building Nuclear Attack Submarines

In a significant move to boost the Navy's sub-surface fleet, the Indian government cleared the Rs 40,000 crore Project-77 on October 9. This project involves the construction of two nuclear-powered attack submarines (SSNs), designed for conventional warfare rather than nuclear deterrence. These submarines, each with a displacement of 9,800 tonnes and powered by 190 MW reactors, will take approximately 10-12 years to complete.

This decision underscores India's strategic shift towards sub-surface deterrence, driven by increasing Chinese naval activities in the Indian Ocean. Since 2023, around ten Chinese warships, including surveillance and ballistic missile tracking vessels, have been regularly patrolling the IOR each month.

India's national security planners have identified nuclear submarines as an effective deterrent, capable of monitoring and countering People's Liberation Army (PLA) naval activity in the region.

Diesel-Electric Submarine Projects Underway

In addition to its nuclear submarine development, the Indian Navy is also bolstering its diesel-electric submarine fleet. Under the Rs 23,000 crore Project-75, the Navy will commission its sixth French-origin Scorpene submarine, Vagsheer, in December. India is in advanced discussions with France to build three additional Scorpene-class submarines at Mazagon Docks, with an estimated cost of over Rs 30,000 crore.

Germany and Spain are also vying for India's Rs 42,000 crore Project-75-India, which aims to construct six advanced diesel-electric submarines equipped with air-independent propulsion (AIP) technology. AIP allows submarines to remain submerged for extended periods, enhancing their operational endurance. These submarines will also be armed with land-attack cruise missiles, further expanding their strategic capabilities.

Shift in Strategic Priorities Amid Chinese Naval Presence

The approval of two nuclear attack submarines (SSNs) under Project-77 signifies a shift in India's naval priorities. With China's growing influence in the Indian Ocean, including the regular presence of its warships and surveillance vessels near India's maritime borders, Indian security planners are focusing on sub-surface deterrence over aircraft carriers.

As part of this approach, nuclear-powered submarines are seen as more resilient to long-range missile threats from China compared to surface vessels. As reported by HT, currently, India operates two nuclear-powered ballistic missile submarines—INS Arihant and INS Arighaat—with a third, INS Aridhaman, set to join the fleet next year.

These submarines are equipped with a combination of K-15 and K-4 missiles, allowing them to patrol large parts of the Indo-Pacific region, serving as a critical element of India's nuclear deterrence strategy. Additionally, the Indian Navy is expected to lease a second Akula-class nuclear attack submarine from Russia by 2028, though the project has been delayed due to the Russia-Ukraine conflict.

India's increasing focus on nuclear submarines and advanced communication infrastructure highlights its strategic priorities in the face of rising Chinese activity in the Indian Ocean. The commissioning of new submarines like INS Arighaat, combined with the construction of additional vessels and the development of a VLF station in Telangana, ensures that the Indian Navy is well-positioned to maintain sub-surface dominance.

As India continues to build its fleet and strengthen its deterrence capabilities, the importance of these projects cannot be overstated in the current geopolitical landscape.

<https://economictimes.indiatimes.com/news/defence/indias-nuclear-submarine-program-gains-momentum-with-new-vlf-facility-and-nuclear-fleet-to-counter-china/articleshow/114218667.cms>

Tata and Tejas: How Ratan Tata saved light combat aircraft Tejas programme from being shut down

India wouldn't have seen light combat fighter aircraft HAL Tejas if not for the timely intervention of late businessman Ratan Tata, said Kota Harinarayana, who is hailed as the brain behind Tejas.

Speaking to noted aerospace and defence journalist Dr. Anantha Krishnan M., Harinarayana was asked to talk about the initial years of LCA Tejas and Tata's involvement in the project that had faced a possible shutdown even before it could take off as it did not have enough backing from the government authorities.

We wouldn't have seen Tejas at all, if not for the timely intervention of Ratan Tata, said Harinarayana. The late businessman is known to have consistently advocated for self-reliance in defense manufacturing.

"There was a time when there was no money in 1990, and in fact, the government itself was going through a difficult phase. We discussed with the Indian Air Force, and we came to an understanding that the development of light combat aircraft would be done in two phases," he said.

The IAF then asked the scientists to demonstrate all the key technologies of an actual flying combat aircraft and promised to give authorisation later.

"By the time all these happened, India went through a difficult phase and there was no money in the country. And so we didn't get any money. We were managing with Rs 500 crore and money was coming to an end. In 1991, Sharad Pawar became the defence minister. He constituted a committee with stalwarts like Ratan Tata, Rahul Bajaj and some of the key IAF officers and others with the view to take a decision whether we should continue the LCA project."

Sharad Pawar and other members of the committee then came to Bengaluru and spent about 8-10 hours, reviewing the LCA project.

According to Harinarayana, Suresh Kalmadi, who was pretty close to Pawar, was vehemently against the project. Harinarayana said Kalmadi gave the impression that he wanted to shut down the project.

"Sharad Pawar felt there should be a review and then a decision should be taken...So after a week, the committee met. Pawar started the meeting requesting Ratan Tata what his recommendation should be. Ratan Tata made a statement...the kind of technology that LCA team developed was extraordinary. He (Tata) used the word extraordinary, and he was mighty impressed with the technology developed by the team. He made a statement, 'it would be a shame if the government of India closes this project.'"

The other members of the committee echoed the sentiments of Ratan Tata, Harinarayana said.

"During the discussion, Ratan Tata also made a statement, 'given a choice, if the government of India, for some reason, wants to close the project, Tatas are ready to take it forward and develop this aircraft for the country'."

After the meeting, Tata went to the room of Dr V.S. Arunachalam, who was then the scientific advisor to the defence minister, and reiterated his commitment to support the "extraordinary" Tejas project and told him that the country needs an aircraft of this size.

Not many people know that when LCA project was on the verge of being shut down, Ratan Tata came forward in support of the project, Harinarayana added.

<https://www.theweek.in/news/defence/2024/10/14/tata-and-tejas-how-ratan-tata-saved-light-combat-aircraft-tejas-programme-from-being-shut-down.html>

THE ECONOMIC TIMES

Mon, 14 Oct 2024

China's 'New Great Wall' casts a shadow on Nepal

The Chinese fence traces a furrow in the Himalayas, its barbed wire and concrete ramparts separating Tibet from Nepal. Here, in one of the more isolated places on Earth, China's security cameras keep watch alongside armed sentries in guard towers.

High on the Tibetan Plateau, the Chinese have carved a 600-foot-long message on a hillside: "Long live the Chinese Communist Party," inscribed in characters that can be read from orbit.

Just across the border, in Nepal's Humla District, residents contend that along several points of this distant frontier, China is encroaching on Nepali territory.

The Nepalis have other complaints, too. Chinese security forces are pressuring ethnic Tibetan Nepalis not to display images of the Dalai Lama, the exiled Tibetan spiritual leader, in Nepali villages near the border, they say. And with the recent proliferation of Chinese barriers and other defenses, a people have also been divided.

The stream of thousands of Tibetans who once escaped Chinese government repression by fleeing to Nepal has almost entirely vanished. Yet Nepal's leaders have refused to acknowledge China's imprints on their country. Ideologically and economically tied to China, successive Nepali governments have ignored a 2021 fact-finding report that detailed various border abuses in Humla.

"This is the new Great Wall of China," said Jeevan Bahadur Shahi, the former provincial chief minister of the area. "But they don't want us to see it." China's fencing along the edge of Nepal's Humla District is just one segment of a fortification network thousands of miles long that Xi Jinping's government has built to reinforce remote reaches, control rebellious populations and, in some cases, push into territory that other nations consider their own.

The fortification building spree, accelerated during COVID-19 and backed by dozens of new border settlements, is imposing Beijing's Panopticon security state on far-flung areas. It is also

placing intense pressure on China's poorer, weaker neighbors. China borders 14 other countries by land. Its vast frontier, on land and at sea, remained largely peaceful as China's economy grew to become the world's second largest. But amid Xi's tenure, Beijing is redefining its territorial limits, leading to small skirmishes and outright conflict.

"Under Xi Jinping, China has doubled down on efforts to assert its territorial claims in disputed areas along its periphery," said Brian Hart, a fellow at the China Power Project of the Center for Strategic and International Studies in Washington.

Viewed individually, each action along China's borders -- fortifying boundaries, contesting territory and pushing into disputed zones -- might seem only incremental. But the aggregated result is startling. Near its eastern maritime reaches, in what are internationally recognized as Philippine waters, China has turned a coral reef into a military base.

On its far western land border, China's People's Liberation Army has pushed into disputed mountain territory shared with South Asian neighbors. Two dozen soldiers from India and China, both nuclear powers, died in highaltitude, hand-to-hand combat in 2020. Another border clash two years later injured more soldiers.

in its 2023 China Military Power Report, declared that China has "adopted more dangerous, coercive, and provocative actions in the Indo-Pacific region."

The shifting security landscape is drawing the attention of global powers and leading to new alliances. Small nations with ties to China, like Nepal, are vulnerable, even as they downplay or deny border disputes for fear of losing Beijing's economic favor.

"Weaker states like Nepal," Hart said, "face immense pressures because of the overwhelming power differential with China."

"If China does not face costs for encroaching on its weakest neighbors, Beijing will be further emboldened to threaten countries in the region," he added.

Nepal's foreign minister, Arzu Rana Deuba, said in an interview with The New York Times that she had not received complaints about problems on the border with Tibet and that the government's focus was more on the southern boundary with India, where more Nepalis live.

"We have not really thought much of looking at the northern border -- at least I haven't," she said.

A Top Secret Report

The distance from Simikot, the capital of Humla District, to the frontier village of Hilsa is 30 miles. But the drive to the border with Tibet takes more than 10 bone-jarring hours through rough, rocky terrain. Humla is unconnected to Nepal's national road network.

Cars and heavy machinery must be flown in. Himalayan passes in Humla reach nearly 16,400 feet. Deadly altitude sickness can set in fast. It was to this district, Nepal's poorest and least developed, that members of a fact-finding mission -- composed of Nepali Home Ministry officials, government surveyors and police personnel -- traveled three years ago.

Armed with a 1960s map from when Nepal and China formally agreed upon their boundary, they set out to discover whether the official cartography diverged from the reality on the ground. The

mission members trekked to remote border pillars. They chatted with yak herders and Tibetan Buddhist monks. Eventually, they produced their report to Nepal's Cabinet. And then the report disappeared. The public was not allowed to see it. Even high-ranking officials and politicians were refused access, several people involved said.

The veil of secrecy extended to the historical map that the mission brought with it. Survey department employees said they have been cautioned that sharing it could be a security breach -- a strange warning for a map accessible in American archives.

A copy of the report obtained by the Times shows that the government mission documented a series of small border infringements by China. Also coursing through the report are worries about China's grander geopolitical intentions and fears about upsetting Nepal's powerful neighbor.

A nation of 30 million people, Nepal is small, landlocked and underdeveloped. Its government is headed by a Communist, who this year replaced a former Maoist rebel as prime minister. In ideology and in economics, Nepal leans heavily toward China, even as it remains in the orbit of nearby India.

The report says that in several places in and around Hilsa, China constructed fortifications and other infrastructure, including closed-circuit TV cameras, that are either in Nepal or in a buffer zone between the two countries where building is prohibited by bilateral agreement.

Chinese border personnel took over a Nepali irrigation canal fed by the Karnali River, the report said, although the Chinese retreated when the Nepali mission visited. Chinese forces have illegally prevented ethnic Tibetans living in Nepali areas near the border from grazing their livestock and participating in religious activities, the report said. Such constraints bring extraterritorial menace to Xi's campaign of repression in Tibet.

The report advised that Nepal and China urgently needed to address various border disputes, but a bilateral mechanism for resolving border problems, which includes joint inspections, has been stalled since 2006. N.P. Saud, Nepal's foreign minister until March, said in an interview with the Times that bilateral "border meetings are held frequently."

But one of Saud's deputies told the Times that no border inspections had occurred in more than 17 years. Asked about this, Saud amended his statement.

"I can share with you that the joint inspection team will work soon," he said. "I can't tell you the exact time until it is finalized." Saud said that he did not know why the Humla report had not been made public.

"The border of a country," he said, "is not a matter of secrecy." Saud said Nepal could not make any determination on the report's validity until the joint inspections restarted. "Until and unless we confirm the report," he said, "how we can raise the issue internationally with another country?" Deuba, who replaced Saud as foreign minister, said she was not aware of the report or of Chinese fencing on the border.

The Chinese Embassy in Kathmandu declined to comment. The Chinese government says it is a force for peace in the region. In an article in the party-run People's Daily, Pan Yue, the head of the

National Ethnic Affairs Commission, wrote last year that China "never sought to conquer or expand territorially, never colonized neighboring countries."

History collides with such national mythmaking. In 1979, Chinese forces briefly invaded Vietnam, which China had once controlled for a millennium. Since the People's Republic of China was founded in 1949, China and India have fought two border wars. Shahi, the former provincial chief minister from Humla, said that his efforts to publicize Chinese border intrusions have been actively discouraged.

"The Chinese, they say to our government, and then the government says to me, 'If you talk about this border issue, then they will stop trade; they will stop everything,'" he said. "Who the hell can say this to me about our land?"

A Holy Land, Divided

The border fence separating Hilsa from Chinese-controlled Tibet cleaves not only nations but centuries. On the Chinese side, modern buildings feature glass atriums, armored vehicles glide along paved roads, and floodlights blaze in the night sky. Nepal, by contrast, seems stuck in a bygone era. Ramshackle shelters hunch in the cold. There is not an inch of asphalt or any reliable electricity.

The Chinese side used to be nearly as remote, the seclusion broken only by a flow of pilgrims to Mount Kailash, which is holy to four faiths. But as part of a push into lands populated by ethnic minorities, the Chinese government has seeded Tibet and the neighboring Xinjiang region with new infrastructure.

Migrants from China's Han ethnic majority have poured in, including to the Tibetan town of Purang near the border with Hilsa. A new high-altitude airport in Purang, a feat of engineering, serves both civilian and military purposes, part of a transportation network that gives the People's Liberation Army easy access to border areas. Just 20 miles away is the junction of China, Nepal and India. Beijing considers a large swath of Indian-controlled territory along the Tibet-India boundary to be its own, calling it "South Tibet."

On the border with tiny Bhutan, China claims more disputed land and has built settlements there. The Chinese focus on Tibet reflects more than geopolitical ambitions. Xi's government has overseen a brutal effort to pacify ethnic minorities. High-tech surveillance of Tibetans, and the fortification of the border, has all but severed their escape route into Nepal, where ethnic Tibetans also live.

Chinese police and border guards, Hilsa residents say, regularly cross over to Nepal without going through normal immigration procedures. They intimidate ethnic Tibetan Nepalis and have captured some Tibetans who succeeded in fleeing to Nepal, said Lhamu Lama, a Humla District village administrator.

An officer with the Nepali paramilitary police in Hilsa said that last year his commander asked the Chinese to retreat from an area that the 1960s official map indicated was not Chinese land. The Chinese never responded, said the officer, who did not want his name used because he was not authorized to speak to the news media.

"China is big and powerful so it can do what it wants," said Pema Wangmu Lama, who was born in Tibet but now lives in Nepal. "Even if Hilsa is swallowed up one day, who would know or care what's happening here?"

<https://economictimes.indiatimes.com/news/defence/chinas-new-great-wall-casts-a-shadow-on-nepal/articleshow/114219677.cms>



Mon, 14 Oct 2024

What are ‘cope cages’?. Why is China equipping its tanks with them?

China appears to be continuing to update its battlefield strategies as evidenced by the move by the People’s Liberation Army Ground Force (PLAGF) to equip its lightweight main battle tank, Type 15 tank, also known as the ZTQ-15, with anti-drone ‘cope cages’.

Military observer Jesus Roman recently took to X to share images of Type 15 tanks armoured with anti-FPV drone cope cages, covering the turrets.

These were seen in the Western Theater Command of the PLA. It is to be noted that the Area of Responsibility (AOR) of Western Theater Command includes India, South Asia, Central Asia, Pakistan, and Afghanistan. This is reportedly the first time that Type 15 tanks of the PLA, designed to maneuver challenging terrains, were seen fitted with anti-drone metal caging.

The caging is intended to protect these tanks against first-person view (FPV) drone attacks. These makeshift frames, mounted on turrets of the tanks, limit the impact of missiles on tanks. The move PLAGF by suggests that China is constantly evolving its defence strategies in the wake of increased use of drone technologies on battlefields.

It has been suggested that the Chinese People’s Liberation Army Ground Force (PLAGF) is learning from the issues faced by Russia in Ukraine, where Russia's armoured vehicles were frequently damaged due to drone attacks.

<https://www.theweek.in/news/defence/2024/10/14/what-are-cope-cages-why-is-china-equipping-its-tanks-with-them.html>

Science & Technology News



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Anusandhan National Research Foundation Launches First Two Initiatives: Prime Minister Early Career Research Grant (PMECRG) and Mission for Advancement in High-Impact Areas -Electric Vehicle (MAHA-EV) Mission

The newly operationalised Anusandhan National Research Foundation (ANRF) today announced the launch of first two of its initiatives-- the Prime Minister Early Career Research Grant (PMECRG) and the Mission for Advancement in High-Impact Areas -Electric Vehicle (MAHA- EV) Mission.

While the PMECRG invites early career researchers to join the country's transformative journey and contribute to the advancement of India's scientific excellence and innovation, the MAHA- EV Mission is designed to build a robust research and development ecosystem for Electric Vehicle (EV) components particularly Battery Cells, Power Electronics, Machines, and Drives (PEMD) and Charging Infrastructure.

“As ANRF kickstarts its activities with the launch of two crucial initiative, both of them can play a transformative role in bridging the gap between academic research and industrial application, one of the key goals of ANRF. While PMECRG can boost the creativity, innovation, and excellence of early career researchers and accelerate India's research-driven aspirations, the MAHA- EV Mission will support industry-aligned translational research in Electric Vehicles, an area of national priority,” said ANRF CEO, Professor Abhay Karandikar.

The operationalisation of the ANRF was initiated with the First Meeting of the Governing Board (GB) on September 10, 2024, which was chaired by the Hon'ble Prime Minister as the President of the Governing Board (GB).

The meeting discussed strategic interventions of ANRF which include global positioning of India in key sectors, aligning R&D with national priorities, promoting inclusive growth, capacity building, driving scientific advances and innovation ecosystem, as well as bridging the gap between academic research and industrial applications through industry-aligned translational research. The PMECRG and the MAHA-EV are the two first initiatives announced aligned with the discussions.

Prime Minister Early Career Research Grant (PMECRG)

The Grant is designed with a flexible budget and incorporates progressive initiatives to facilitate ease of research. It will foster high quality innovative research, enable researchers to expand knowledge boundaries, drive technological progress and contribute to positioning India as Global leader in S&T.

PMECRG reflects ANRF's commitment to nurturing young researchers and by investing in early career researchers, it will help seed, grow, and foster a robust culture of research and innovation across India.

ANRF recognizes the pivotal role that early career researchers play in positioning India as a global leader in science and technology. By empowering these researchers, ANRF is committed to creating a vibrant research ecosystem that supports excellence and fosters groundbreaking discoveries.

Mission Electric Vehicle (EV) under Mission for Advancement in High-Impact Areas (MAHA) Scheme

The MAHA-EV mission focuses on the development of key EV technologies to reduce dependency on imports, promote domestic innovation, and position India as a global leader in the EV sector.

The MAHA- EV Mission is part of ANRF's Advancement in High-Impact Areas (MAHA) program designed to catalyze multi-institutional, multi-disciplinary, and multi-investigator collaboration to tackle critical scientific challenges. It aligns with the government's Atmanirbhar Bharat (self-reliant India) vision and aims to accelerate technological advancement in key sectors that have a high impact on the nation's future growth to create a global standing in the area.

Concentrating on three critical technology verticals-- Tropical EV Batteries and Battery Cells, Power Electronics, Machines, and Drives (PEMD) and Electric Vehicle Charging Infrastructure, the mission will enhance domestic capabilities in the design and development of essential EV components.

It will strengthen competitiveness and position India as a hub for EV component development, driving global competitiveness and innovation. By accelerating the shift towards electric mobility, it will contribute to a greener and sustainable future.

The MAHA- EV Mission underscores ANRF's commitment to fostering cutting-edge research and development that aligns with the nation's priority areas and emerging technological frontiers.

By spearheading the EV-Mission, ANRF aims to build a vibrant R&D ecosystem that promotes innovation and collaboration across academic, research, and industrial sectors. This mission is expected to accelerate India's progress towards a sustainable and technologically advanced future, contributing significantly to the government's goal of achieving a Viksit Bharat by 2047.

Under the guidance of the Hon'ble Prime Minister, the foundation is set to implement numerous programs to bolster the country's research ecosystem and accelerate scientific and technological advancements and the first two will serve as the initial steps for transformation of India's R&D ecosystem.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2064660>

ISRO Chief S Somnath receives prestigious IAF World Space Award for Chandrayaan-3

In a momentous recognition of India's achievements in space exploration, Dr. S. Somanath, Secretary of the Department of Space and Chairman of the Indian Space Research Organisation (ISRO), has been awarded the prestigious International Astronautical Federation (IAF) World Space Award for the remarkable success of the Chandrayaan-3 mission. The award ceremony, held in Milan, Italy, celebrates India's significant contributions to lunar exploration and its growing prominence in the global space community.

Chandrayaan-3's historic landing near the Moon's South Pole on August 23, 2023, marked India as the first nation to achieve this feat, placing it in an elite group of countries capable of lunar landings. Dr. Somanath's leadership was instrumental in guiding the mission to success, overcoming the challenges faced by its predecessor, Chandrayaan-2.

The mission not only demonstrated India's technological prowess but also provided valuable scientific data, including the detection of sulfur and other elements in the lunar soil¹. The IAF World Space Award recognises outstanding contributions to space science, technology, and exploration. This honour for Chandrayaan-3 shows the mission's significance in advancing our understanding of the Moon and paving the way for future lunar exploration endeavours.

The success of Chandrayaan-3 has inspired a new generation of scientists and engineers in India, boosting interest in space exploration and STEM fields across the country. It has also opened doors for international collaborations, positioning India as a key player in shaping the future of space exploration.

<https://www.indiatoday.in/science/chandrayaan-3/story/isro-chief-s-somnath-receives-prestigious-iaf-world-space-award-for-chandrayaan-3-2616855-2024-10-14>

NASA's Europa Clipper spacecraft will scour Jupiter moon for the ingredients for life

A NASA spacecraft has set sail for Jupiter and its moon Europa, one of the best bets for finding life beyond Earth.

Europa Clipper will peer beneath the moon's icy crust where an ocean is thought to be sloshing fairly close to the surface. It won't search for life, but rather determine whether conditions there could support it. Another mission would be needed to flush out any microorganisms lurking there.

"It's a chance for us to explore not a world that might have been habitable billions of years ago, but a world that might be habitable today — right now," said program scientist Curt Niebur.

Its massive solar panels make Clipper the biggest craft built by NASA to investigate another planet. It will take 5 1/2 years to reach Jupiter and will sneak within 16 miles of Europa's surface — considerably closer than any other spacecraft.

Clipper lifted off Monday aboard SpaceX's Falcon Heavy rocket from NASA's Kennedy Space Center. Mission cost: \$5.2 billion.

One of Jupiter's 95 known moons, Europa is almost the size of our own moon. It's encased in an ice sheet estimated to be 10 miles to 15 miles or more thick. Scientists believe this frozen crust hides an ocean that could be 80 miles or more deep. The Hubble Space Telescope has spotted what appear to be geysers erupting from the surface. Discovered by Galileo in 1610, Europa is one of the four so-called Galilean moons of Jupiter, along with Ganymede, Io and Callisto.

What type of life might Europa harbor? Besides water, organic compounds are needed for life as we know it, plus an energy source. In Europa's case that could be thermal vents on the ocean floor. Deputy project scientist Bonnie Buratti imagines any life would be primitive like the bacterial life that originated in Earth's deep ocean vents. "We will not know from this mission because we can't see that deep," she said. Unlike missions to Mars where habitability is one of many questions, Clipper's sole job is to establish whether the moon could support life in its ocean or possibly in any pockets of water in the ice.

When its solar wings and antennas are unfurled, Clipper is about the size of a basketball court — more than 100 feet end to end — and weighs nearly 13,000 pounds . The supersized solar panels are needed because of Jupiter's distance from the sun. The main body — about the size of a camper — is packed with nine science instruments, including radar that will penetrate the ice, cameras that will map virtually the entire moon and tools to tease out the contents of Europa's surface and tenuous atmosphere. The name hearkens to the swift sailing ships of centuries past.

The roundabout trip to Jupiter will span 1.8 billion miles . For extra oomph, the spacecraft will swing past Mars early next year and then Earth in late 2026. It arrives at Jupiter in 2030 and begins science work the next year. While orbiting Jupiter, it will cross paths with Europa 49 times. The mission ends in 2034 with a planned crash into Ganymede — Jupiter's biggest moon and the solar system's too.

There's more radiation around Jupiter than anywhere else in our solar system, besides the sun. Europa passes through Jupiter's bands of radiation as it orbits the gas giant, making it especially menacing for spacecraft. That's why Clipper's electronics are inside a vault with dense aluminum and zinc walls. All this radiation would nix any life on Europa's surface. But it could break down water molecules and, perhaps, release oxygen all the way down into the ocean that could possibly fuel sea life.

Earlier this year, NASA was in a panic that the spacecraft's many transistors might not withstand the intense radiation. But after months of analysis, engineers concluded the mission could proceed as planned.

NASA's twin Pioneer spacecraft and then two Voyagers swept past Jupiter in the 1970s. The Voyagers provided the first detailed photos of Europa but from quite a distance. NASA's Galileo spacecraft had repeated flybys of the moon during the 1990s, passing as close as 124 miles . Still in action around Jupiter, NASA's Juno spacecraft has added to Europa's photo album. Arriving at Jupiter a year after Clipper will be the European Space Agency's Juice spacecraft, launched last year.

Like Europa, Jupiter's jumbo moon Ganymede is thought to host an underground ocean. But its frozen shell is much thicker — possibly 100 miles thick — making it tougher to probe the environment below. Callisto's ice sheet may be even thicker, possibly hiding an ocean. Saturn's moon Enceladus has geysers shooting up, but it's much farther than Jupiter. Ditto for Saturn's moon Titan, also suspected of having a subterranean sea. While no ocean worlds have been confirmed beyond our solar system, scientists believe they're out there — and may even be relatively common.

Like many robotic explorers before it, Clipper bears messages from Earth. Attached to the electronics vault is a triangular metal plate. On one side is a design labeled "water words" with representations of the word for water in 104 languages. On the opposite side: a poem about the moon by U.S. poet laureate Ada Limon and a silicon chip containing the names of 2.6 million people who signed up to vicariously ride along.

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<https://www.hindustantimes.com/science/nasas-europa-clipper-spacecraft-will-scour-jupiter-moon-for-the-ingredients-for-life-101728923084078.html>

