जुलाई
July
2025

खंड/Vol. : 50 अंक/Issue : 125

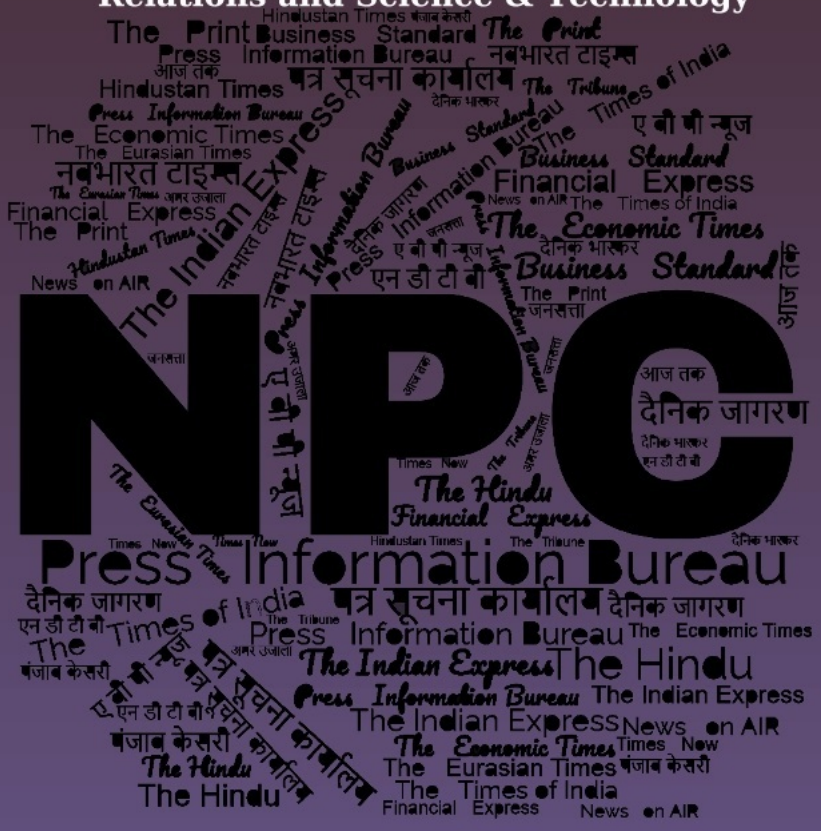
08/07/2025

# समाचार पत्रों से चयनित अंश

# Newspapers Clippings

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

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




रक्षा विज्ञान पुस्तकालय
**Defence Science Library**
रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र
**Defence Scientific Information & Documentation Centre**
मेटकॉफ हाउस, दिल्ली - 110 054
**Metcalfe House, Delhi - 110 054**

# CONTENTS

# DRDO News

## डीआरडीओ निर्मित माउंटेड गन सिस्टम से भारतीय सेना की क्षमता बढ़ेगी

***Source: Dainik Jagran, Dt. 08 Jul 2025***

पुणे, एएनआइ : रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने एक नई और शक्तिशाली हाविट्जर 155 मिमी/52 कैलिबर माउंटेड गन सिस्टम विकसित की है, जो तेजी से गोली चला सकती है। डीआरडीओ की प्रयोगशाला, वाहन अनुसंधान एवं विकास प्रतिष्ठान ने इस गन सिस्टम का विकास किया है।

वाहन अनुसंधान एवं विकास प्रतिष्ठान के निदेशक जी राममोहन राव ने कहा कि यह 155 मिमी/52 कैलिबर की तोप है। ऐसी तोपें पहले से मौजूद हैं, लेकिन उन्हें अलग से खींचा जाता है और तैनात करने में समय लगता है। हमारी गन सिस्टम अलग है। यह तेज है, इसे तैनात करने में सिर्फ 80 सेकेंड और चलाने में 85 सेकेंड लगते हैं। यह पूरी तरह से भारत में बनी है।

*

## Army to test locally made gun that shoots and scoots in 85 seconds

***Source: Hindustan Times, Dt. 08 Jul 2025***

The Indian Army is set to conduct trials to assess the performance of a locally made mounted gun system that can shoot and scoot in 85 seconds -- a capability that allows the 30-tonne weapon to swiftly relocate and evade counter-battery fire, senior Defence Research and Development Organisation (DRDO) officials said on Monday.

The army has written to the DRDO's Ahmednagar-based Vehicles Research and Development Establishment (VRDE), asking it to make the mounted gun system (MGS) available for extensive trials in different terrains and weather conditions, VRDE chief GRM Rao said at a briefing on the weapon's capabilities and how it stacks up against similar systems in service worldwide including French Caesar and Israeli ATMOS 2000 systems.

The MGS is a 155mm/52 calibre truck-mounted howitzer that can fire six rounds in a minute and hit targets more than 45 km away. Here, 155mm denotes the diameter of the shell and calibre relates to barrel length.

*The mounted gun system (MGS) at Ahmednagar-based Vehicles Research and Development Establishment (VRDE).*

The MGS is based on the indigenous advanced towed artillery gun system (ATAGS), already ordered by the defence ministry to boost the army's firepower. In March, the defence ministry signed two contracts worth ₹6,900 crore with Bharat Forge Limited and Tata Advanced Systems Limited for 307 locally made ATAGS along with high mobility towing vehicles.

"The MGS performed well during internal trials by VRDE at Balasore and Pokhran. It meets the qualitative requirements laid down by the army. The Russia-Ukraine war has shown the effectiveness of high mobility artillery," said Rao, referring to truck-mounted Caesar guns deployed by Ukraine in the war. The internal trials saw the MGS fire more than a hundred rounds.

DRDO has developed the MGS and transferred technology to Bharat Forge Limited for production. The army needs 700 to 800 such guns with enhanced mobility and superior firepower. The defence ministry floated a tender two years ago for 300 mounted gun systems and the firms competing for the order include Bharat Forge Limited, Tata Advanced Systems Limited, Adani Defence and Aerospace (in partnership with an Israeli firm) and Advanced Weapons Equipment India Ltd (a defence public sector undertaking), HT learns.

The upcoming evaluation of the DRDO-Bharat Forge gun by the army is not under the competitive bidding process initiated by the ministry in 2023 but a parallel testing of the MGS, said another senior DRDO official, adding it has an indigenous content of up to 85%. It will go in for trials again as part of the competitive bidding process.

"The ATAGs is already on order and the MGS is the same gun system mounted on an 8X8 wheeled vehicle with shock absorbing stabilisers, blast resistant armoured cabin, on board silent electric power system and integrated electronic controller. The testing of MGS by the army before the field trials involving other competitors is expected to give it a head start," the second official said.

The ATAGS order was split between Bharat Forge Limited, which emerged as the lowest bidder for the tender and will manufacture and supply 60% of the guns, while the remaining 40% will be

produced by Tata Advanced Systems Limited. ATAGS will replace the vintage and smaller calibre guns held by the army.

The DRDO began the ATAGS project in 2013 to replace older army guns with a modern 155mm artillery gun system. It partnered with the two private firms to manufacture the gun.

High mobility artillery is a technology gap which needs to be addressed, said a third official. “The MGS is a viable solution. The advantage of this system is that it can be rapidly deployed and matches the mobility of mechanised forces. It can destroy enemy targets and move out before retaliatory fire takes place. Adding mobility to artillery guns enhances their lethality and firepower,” he added.

In December 2024, the defence ministry signed a ₹7,629-crore contract with Larsen & Toubro for 100 more self-propelled K9 Vajra-T guns that are being manufactured locally with technology transfer from South Korean firm Hanwha Techwin. That was a repeat order for the K9 Vajra-T guns --- the army has so far inducted 100 such guns under a 2017 contract.

The army plans to enhance its firepower, with a greater emphasis on mobility, precision attacks, range, quick strikes and survivability as it ramps up efforts to buy an array of weapons, including guns, rocket systems and missiles.

The linchpin of this capability boost, which will cost tens of thousands of crores, is a five-pronged strategy evolved after an assessment of what the artillery regiments need for battlefield supremacy. The strategy hinges on equipping all regiments with advanced 155mm artillery gun systems, inducting missiles and rockets with longer ranges and precision, lethal ammunition, reorganisation of surveillance and target acquisition units, and shortening the sensor-to-shooter loop for swift detection and destruction of targets.

The army has drawn some lessons from the Russia-Ukraine war. These include the need for deployment of more self-propelled and mounted gun systems for improved mobility, missiles and rockets with superior range, ensuring increased survivability against the enemy and optimising the use of drones.

All gun systems bought during the last five to six years (and those in the process of being procured) to enhance the artillery’s lethality, reach and versatility are indigenous except the M777 ultra-light howitzers that were imported from the US.

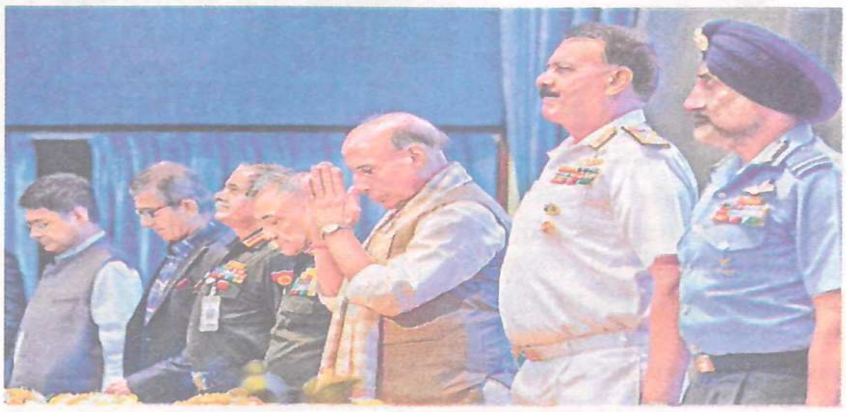
https://www.hindustantimes.com/india-news/army-to-test-locally-made-gun-that-shoots-and-scoots-in-85-seconds-101751889020033.html

*

# Defence News

## ऑपरेशन सिन्दूर से स्वदेशी रक्षा उपकरणों की वैश्विक मांग बड़ी

***Source: Dainik Jagran, Dt. 08 Jul 2025***



नई दिल्ली में आयोजित सम्मेलन में प्रणाम करते रक्षा मंत्री राजनाथ सिंह। सीडीएस जनरल अनिल चौहान व सेना, नौसेना और वायुसेना प्रमुख उपस्थित रहे ● प्रेट्र

- रक्षा मंत्री ने भारत के सैन्य प्रदर्शन को जमकर सराहा
- कहा-दुनिया हमारे रक्षा क्षेत्र को नए सम्मान से देख रही

**नई दिल्ली, एएनआइ :** रक्षा मंत्री राजनाथ सिंह ने आपरेशन सिंदूर के दौरान सशस्त्र बलों द्वारा प्रदर्शित साहस की सराहना करते हुए कहा," सैन्य कार्रवाई के बाद से भारत में बने स्वदेशी उपकरणों और प्लेटफार्मों के प्रदर्शन ने भारत निर्मित सैन्य उत्पादों की वैश्विक मांग को बढ़ा दिया है।' उन्होंने कहा कि भारत को सापेक्ष शांति के समय में भी अनिश्चितता के लिए तैयार रहना चाहिए, क्योंकि शांति काल केवल एक "भ्रम" है।

रक्षा मंत्री राजनाथ सिंह ने रक्षा लेखा विभाग (डीएडी) के नियंत्रकों के सम्मेलन में सोमवार को कहा कि आपरेशन सिंदूर के बाद से दुनिया हमारे रक्षा क्षेत्र को नए सम्मान के साथ देख रही है। अब आप हमारे रक्षा बजट को देखिये तो यह कुछ देशों के जीडीपी से भी अधिक है। सिंह ने कहा कि भारत अब दुनिया के अन्य हिस्सों के साथ एक नए पुनः शस्त्रीकरण के चरण में प्रवेश कर रहा है, जो रक्षा क्षेत्र में पूंजीगत निवेश से अपनी छाप छोड़ चुका है। वित्तीय प्रक्रियाओं में एकल देरी या त्रुटि सीधे परिचालन तत्परता को प्रभावित कर सकती है। ज्यादातर उपकरण जो हम पहले आयात करते थे, अब भारत में बनाए जा रहे हैं। हमारे सुधार सफल हो रहे हैं क्योंकि उच्चतम स्तर पर दृष्टि की स्पष्टता और प्रतिबद्धता है।" राजनाथ ने स्टाकहोम इंटरनेशनल पीस रिसर्च इंस्टीट्यूट द्वारा किए गए एक विश्लेषण का उल्लेख किया, जिसमें कहा गया कि वैश्विक सैन्य व्यय 2024 में 2.7 ट्रिलियन डालर तक पहुंच गया और यह दरवाजे अब भारतीय रक्षा उद्योग के लिए पलक-पावड़े बिछाने लगे हैं।

### पुण्यतिथि पर पर कैप्टन विक्रम को याद किया

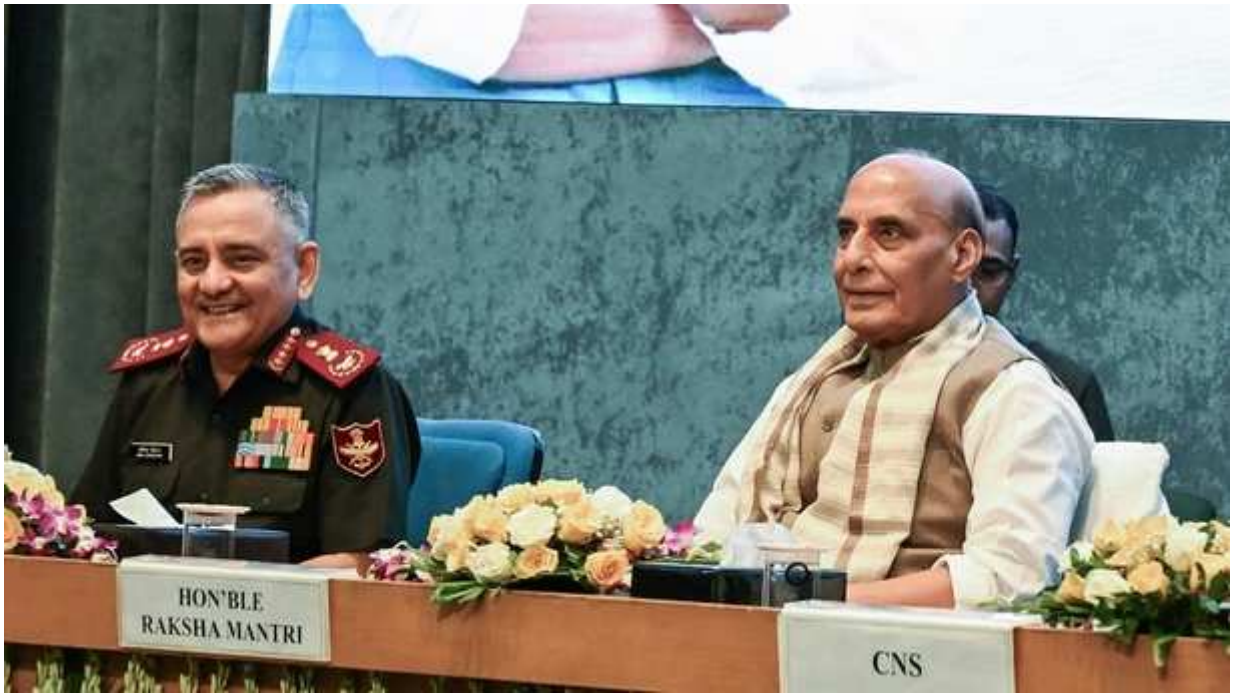
1999 के कारगिल युद्ध के दौरान अदम्य साहस और वीरता का परिचय देते हुए देश के लिए सर्वोच्च बलिदान देने वाले कैप्टन विक्रम बत्रा को सोमवार को श्रद्धांजलि देते हुए युद्ध में उनके पराक्रम को याद किया। रक्षा मंत्री राजनाथ सिंह ने कैप्टन बत्रा को उनकी पुण्यतिथि पर श्रद्धांजलि अर्पित कर कहा कि कारगिल युद्ध के दौरान उनकी बहादुरी राष्ट्र सेवा का शानदार उदाहरण है।

*

# For indigenous defence push, Rajnath Singh stresses swift decision-making

***Source: The Hindu, Dt. 08 Jul 2025***

The valour displayed during Operation Sindoor and the demonstration of domestic equipment during the operation have further increased the global demand for India's defence equipment, said Defence Minister Rajnath Singh in Delhi on Monday.




*Union Defence Minister Rajnath Singh with Chief of Defence Staff General Anil Chauhan during the inauguration of Controllers' Conference 2025 hosted by the Defence Accounts Department, at DRDO Bhawan in New Delhi on July 7, 2025.*

He was addressing the Controllers' Conference of the Defence Accounts Department (DAD) where he emphasised the department's critical role in strengthening the operational readiness and financial agility of the Armed Forces.

"Our effort is to ensure that decisions are taken swiftly so that we can begin manufacturing larger engines right here in India and that this journey begins with the hands of Indians," he added, reaffirming the government's commitment to building advanced indigenous defence manufacturing capabilities.

"The world is looking at our defence sector with new respect. A single delay or error in financial processes can directly affect operational preparedness," he said. He also called on the DAD to evolve from a 'controller' to a 'facilitator' in sync with the increasing participation of the private sector in defence.

"Most of the equipment we once imported is now being made in India. Our reforms are succeeding because of the clarity of vision and commitment at the highest level," he added.

Addressing the larger geopolitical context, Mr. Singh mentioned the rising global military expenditure, reaching $2.7 trillion in 2024 as per Stockholm International Peace Research

Institute, and stated that this opens up tremendous opportunities for India's indigenous defence industries.

"Until recently, defence budgets were not seen as part of the national economy. Today, they are growth drivers," he asserted.

**'New phase of re-armament'**

The Defence Minister mentioned that India, along with the rest of the world, is entering a new phase of re-armament, marked by capital-intensive investments in the defence sector. He urged the department to incorporate Defence Economics in their planning and assessments, including social impact analysis of research and development (R&D) projects and dual-use technologies.

Mr. Singh also referred to the recently launched Research, Development and Innovation (RDI) Scheme with a budget of ₹1 lakh crore, which prioritises defence sector innovation and procurement of high-end technology.

He praised the department's new motto – 'Alert, Agile, Adaptive', and noted that these are not mere words, but a reflection of the work culture required in today's rapidly evolving defence environment.

"Peace time is nothing but an illusion. Even during periods of relative calm, we must prepare for uncertainty. Sudden developments can force a complete shift in our financial and operational posture. Whether it's stepping up equipment production or adapting financial processes, we must be ready with innovative techniques and responsive systems at all times," he stated.

"At the place where you are working, if you make even a small mistake, then the soldiers do not get the necessary resources on time. Due to our negligence, there can be a problem in budget allocation and it directly affects operational readiness," he emphasised.

https://www.thehindu.com/news/national/peace-time-is-nothing-but-illusion-defence-minister-rajnath-singh/article69783441.ece

*

# Post Operation Sindoor, private sector may see big push for defence manufacturing

***Source: The Indian Express, Dt. 08 Jul 2025***

WITH A specific thrust on the need to "leverage the buying power" of the government, authorities are learnt to have reached out to industry bodies and multiple private defence manufacturing companies to elicit active participation in defence manufacturing. There is likely to be a greater push for enhanced indigenous arms manufacturing of items such as artillery guns, missiles, loitering and precision-guided munitions, and military-grade drones in the backdrop of Operation Sindoor.

The government is pivoting towards a leaner equipment procurement model that involves leveraging the private sector to a much greater extent, giving key players visibility in terms of future orders and taking recourse to provisions such as deemed licensing to tide over procedural hurdles.

Specific measures on the anvil include plans to compress procurement schedules to around two years from an average of about six years currently for big orders, as was done for the Rafale Marine aircraft procured by the Navy, a top government official told The Indian Express.

A model involving research and development (R&D) by public sector undertakings (PSUs), sometimes jointly with the private sector players, and the production then being entrusted to the private company, as was done for DRDO-designed 5.56x45mm CQB Carbine that is now being manufactured by Bharat Forge after a tender process, is likely to be replicated for more equipment. In case of drones, the idea is to shortlist up to five manufacturers of civilian drones that have the capacity to expand to military-grade ones, and offer them government support for technology tie-ups and order book guidance.

While the private sector defence manufacturing companies were asked to step up their production during the escalation in hostilities between India and Pakistan in May following the Pahalgam terror attack, with many responding by a three-shift production operation, the renewed push is now being made to boost domestic defence production and fully "harness the power of industry", the official said.

"The government has clearly stated its intent of not being restrictive in its spending powers for defence. We have to harness the power of industry, whether it is PSUs, private sector companies or startups. They have to leverage the buying power of the government. And, this should trigger private investment to ensure a diversified industrial ecosystem, especially for small arms manufacturing. The private sector, including the MSMEs, need to step up to fully make use of the situation, defence manufacturing can't be confined to just the public sector," the official said. The focus would also be on export of items where India has "good capacity", including high-demand items such as 155mm shells due to the ongoing conflict in Europe.

**Defence procurement norms revision**

The government is also working towards revising the Defence Acquisition Procedure (DAP) 2020 to streamline the defence procurement process. A compression of the documentation manual, co-development with the Defence Research and Development Organisation (DRDO), and a competitive bidding procurement procedure through tenders and not nominations are going to be the key focus areas for the proposed DAP 2025 that is likely to be ready in about eight months. Efforts are underway to make DAP 2025 less voluminous and more practical, especially the broader objective of fostering private participation in India's defence sector.

**Area of thrust**

GIVEN THAT the nature of warfare is changing, an area where there is likely to be a greater thrust post-Op Sindoor is standoff weapons, including missiles, drones. The government is also working to update its Defence Acquisition Procedure to streamline the procurement process, elicit greater industry participation, and compress acquisition timelines.

In case of drones, three to five manufacturers have some capacity to expand from civilian drones to military-grade ones. Given that this market is a monopsony — the government as the only buyer — the plan is to use its buying power to give visibility in terms of orders to that manufacturing ecosystem. There is also a renewed focus on a consortium approach, involving PSUs and private companies. A model could involve R&D by PSUs such as DRDO, sometimes in partnership with the private sector players, and the production then being left to the private company. The intent is to encourage these layers through orders and give them some visibility into the future orders so that they start investing in this area, including tying up with the technologies from abroad. "We will try to ensure this by speeding up procurement and by giving them visibility in terms of orders," an official said.

The DRDO-designed 5.56x45mm CQB Carbine, now being manufactured by Bharat Forge, after being selected as the lowest bidder in the Army's procurement tender for over 4.23 lakh carbine units, is a case in point. This carbine, developed by the Armament Research and Development Establishment and Bharat Forge, is a close-quarter battle weapon intended for urban warfare and counter-insurgency operations.

Compressing field evaluation trials is already something that is work-in-progress, the official said. The acquisition of the Rafale Marine aircraft, which was done in about 24 months as against the typical time frame of 5-6 years for a big order, is serving as a key example for reduced procurement timeline. The Inter-Governmental Agreement between India and France of the contract for India's acquisition of 26 Rafale Marine to equip the Indian Navy was signed in April 2025. This contract followed the announcement in July 2023 of the selection of the Rafale Marine, for which the Indian Navy will be the first user outside France, after an international consultation process.

**Defence expenditure push**

While there may not be an immediate need for revision of the record defence budget, officials said there could be a slight increase in spending over and above the allocated amount in the Budget for 2025-26. "We are well on track for defence spending in the first quarter. Larger procurements anyway take time, the contracts are of around 5 years duration, but rest of the spending is on track. Till the end of June, around 17-18 per cent of the defence modernisation budget has been spent. There might be a slight upward revision, we'll see when we reach that stage," the official said.

According to the latest data by the Controller General of Accounts, the Ministry of Defence had spent 14 per cent or Rs 24,730 crore till May-end out of its total budgeted capital expenditure Rs 1.8 lakh crore for FY26. The Ministry had spent just 4 per cent of its budgeted amount in the corresponding period of the previous financial year.

Emergency procurement is also likely to account for about 15 per cent of the overall allocation this year, much of that initiated during Operation Sindoor. That, combined with the stepped up pace of current expenditure, officials expect the allocation to be fully protected at the revised estimate stage and if there are additional requirements, the Ministry of Finance has assured the Ministry of Defence that on capex, there would be no constraint on the Rs 1.8 lakh crore spend.

https://indianexpress.com/article/business/post-operation-sindoor-private-sector-may-see-big-push-for-defence-manufacturing-10112512/

*

# India ramps up efforts to build heavy engines

***Source: The Tribune, Dt. 08 Jul 2025***

In the wake of Operation Sindoor, the Ministry of Defence is ramping up efforts to build indigenous high-powered engines for fighter jets, transport aircraft and naval warships — a key move to cut dependence on imports and boost self-reliance in defence manufacturing.

Speaking at a Defence Accounts Department (DAD) event on Monday, Defence Minister Rajnath Singh said, "Our effort is to ensure that decisions are taken swiftly so that we can begin manufacturing larger engines right here in India."

While Singh did not specify which engines he was referring to, sources confirmed they include propulsion systems for fighter aircraft and large naval vessels, both of which currently rely on imported engines.

At present, India's Tejas Mark-1A fighter jets run on the GE F404 engine, whose delayed supplies have stalled deliveries from Hindustan Aeronautics Limited (HAL) to the Indian Air Force. The larger F414 engine, intended for the Tejas Mark 2, will be produced in India under a joint venture between GE and HAL, involving technology transfer — a project Singh discussed last week with his US counterpart, Pete Hegseth.

India also plans to build a more powerful engine in collaboration with France's Safran to power its upcoming 13-tonne Indian Multi-Role Helicopter (IMRH), expanding on their existing partnership for helicopter engines.

Naval warships, particularly larger vessels, are currently powered by General Electric's CODAG (combined diesel and gas) systems, which India is also looking to replace with domestic alternatives.

https://www.tribuneindia.com/news/india/india-ramps-up-efforts-to-build-heavy-engines/

*

# Japan Coast Guard ship arrives at Chennai Port

***Source: The Pioneer, Dt. 08 Jul 2025***

**PIONEER NEWS SERVICE**
New Delhi

Japan Coast Guard ship 'Itsukushima' will engage in a series of bilateral engagements during its week-long port call at Chennai, starting Monday, officials said.

Following the Chennai visit, 'Itsukushima' will participate in a joint sea exercise named 'Exercise Jaa Mata' (meaning 'see you later') with the Indian Coast Guard (ICG).

This exercise will focus on enhancing coordination and operational synergy at sea, they said.

"Furthermore, four officers from the ICG will embark on board 'Itsukushima' as Sea Riders, during its passage to Singapore, further strengthening camaraderie and professional exchange between the two forces," the ICG said.

The JCG ship arrived at Chennai Port on Monday as part of its Global Ocean Voyage Training.

The visit highlights the deep and enduring bond between the Indian Coast Guard and the Japan Coast Guard, reaffirming their strategic partnership in the vital Indo-Pacific region and enhancing interoperability between the two esteemed maritime forces, a senior official of the ICG said.

On arrival, 'Itsukushima", commanded by Captain Naoki Mizoguchi, was accorded a warm ceremonial welcome in traditional Indian style, the ICG said.

"During its week-long port call in Chennai, the crew of 'Itsukushima' will participate in a series of professional and cultural activities, including official courtesy calls, reciprocal ship visits, and joint training and interactive sessions aimed at fostering mutual cooperation and understanding."

As part of official engagements, the JCG delegation, led by Vice Admiral Hroaki Kaosue, will call on Paramesh Sivamani, the Director General of the Indian Coast Guard, the official said. Bilateral discussions are also scheduled between the JCG representatives and Additional Director General Donny Michael, Commander, Coast Guard, Eastern Seaboard, they said.

Japan Coast Guard (JCG) Ship Itsukushima being welcomed upon its arrival in chennai PTI

A series of professional and cultural exchanges, including a joint yoga session and sports activities, are planned, culminating on July 12, the ICG said.

It also said that the visit underscores the strong and evolving partnership between the ICG and JCG, rooted in the Memorandum of Cooperation (MoC) signed in 2006 and endorsed by both nations.

This collaboration reflects a shared commitment to a free, open, and inclusive Indo-Pacific, aligned with common maritime priorities under India's SAGAR (Security and Growth for All in the Region) vision and the Indo-Pacific Oceans Initiative (IPOI), it said.

*

# Op Sindoor exposes strategic gaps in foreign, defence policies

*Source: The Tribune, Dt. 08 Jul 2025*

**LT GEN HARWANT SINGH (RETD)**
FORMER DEPUTY CHIEF OF ARMY STAFF

THREE days after Operation Sindoor started, India declared ceasefire. The precise extent of damage due to this operation on either side is not known as it is wrapped under the cover of secrecy. There is speculation on the loss of aircraft on the Indian side. What has surfaced is that due to instructions from the top, the Indian Air Force did not neutralise Pakistani radars and anti-aircraft systems before engaging its terrorist centres.

In addition, India's Foreign Minister is believed to have informed Pakistan in advance of the attack on terrorist centres. That must have put the Pakistan forces at the highest state of alert, more so on their anti-aircraft systems. If so, did India's minister not know the implication of his action?

That apart, both sides are claiming outright success. On the Pakistan side, success is highlighted by the promotion of its army chief, General Asim Munir, to the rank of Field Marshal. In India, instead of blood, red-hot Sindoor has started running in some veins and the operation is being used as a tool in the upcoming elections in Bihar.

While nearly half a dozen countries have supported Pakistan against the Indian offensive (Op Sindoor), not even one country, including our immediate neighbours, has stood by India. In no world forum has Pakistan been held as the one supporting terrorism. So much for the successes of our foreign policy. This, notwithstanding more than four dozen and over 150 trips to foreign countries costing millions of dollars by our Foreign Minister and Prime Minister, respectively. Sending seven delegations of MPs to a number of countries has made no change in their perception of 'Op Sindoor' and Pakistan as supporter of terrorism. So unmitigated is the failure of India's foreign policy. Maybe, it is time for the Foreign Minister to call it a day.

Indian Defence Minister Rajnath Singh is talking of taking PoK while Pakistan's Field Marshal Asim Munir has said that that he would cut India into two. Possibly, Rajnath Singh is not fully aware of the fact that any attempt at taking PoK will lead to a full-scale war with Pakistan. Equally, he may not be fully in the picture about the state of his armed forces, particularly that of the IAF.

At the same time, Asim Munir seems unaware of the ground realities when he talks of cutting India into two. Nevertheless, he may attempt this or may try taking Kashmir, as he calls it Pakistan's jugular vein, once the Pak army is fully equipped by China with state-of-the-art weapons and equipment.

China is fully supporting Pakistan and supplying it with high-tech military equipment, including fifth-generation fighter aircraft. Some of these were tested during Operation Sindoor. Chinese weapons will substantially enhance Pakistan's overall operational capability. In addition, Russia, too, has started supplying military equipment to Pakistan. Further, China is enhancing Pakistan's capabilities in such fields as cybertechnology, satellite imagery, missile systems, artificial intelligence (AI) and drone technology by training its personnel. The US is also favourably inclined towards Pakistan.

China has been increasing

the presence of troops in eastern Ladakh and building military infrastructure along the LAC on the Tibet border. It wants to use Pakistan as a proxy to keep India tied down locally. China is also building a large air base in collaboration with Bangladesh in close vicinity of the Siliguri Corridor.

On the other hand, China is trying to extend a friendly hand to India, primarily because India is a large market for its goods. Such is China's duplicity.

For a long time, India did not commit adequate resources to upgrade its defence forces and has remained focussed on anti-terrorist operations rather than create viable deterrence capability, not realising that such capability is what would deter Pakistan from continuing with its policy of inflicting a 'thousand cuts'. The defence budgets have remained below 2 per cent of the GDP, while China has been committing 3 per cent of its GDP to defence even as its GDP is five times that of India.

India's efforts at 'Make in India' have been mostly on paper. It continues to be the largest importer of defence weapons and equipment. Though, in some low-technology fields, India is exporting military equipment.

Our Defence Research and Development Organisation (DRDO) and other entities involved in this field have failed to produce worthwhile results. HAL, too, has been struggling with Tejas aircraft for decades and its engine is still being imported. Repeated calls for holding a 'science audit' of these establishments have been ignored. It is time to improve their working and involve private industry in the research and production of some of the high-tech military equipment. In laser technology, India seems to have made good progress. If so, then it needs to be integrated with anti-drone systems, etc.

The state of the defence forces is somewhat dismal. The Indian Air Force is down to 32 squadrons against 42 being the minimum requirement. There is no aircraft with India that can match the fifth-generation aircraft supplied by China to Pakistan.

India needs to increase the defence budget and allocation of funds to the DRDO. It must make up deficiencies in the officer cadre and other ranks. Give a fresh and objective look at the Agniveer scheme and if it is not found to be in the best interest of the army, discard it.

The recent conflicts — one between India and Pakistan (Op Sindoor), the Israel-Iran brief exchange of missiles and bombings and America's bombing of Iran's nuclear sites — have led some defence analysts to conclude that future wars would be non-contact kinetic in form. This a false assumption. In a full-scale war, this non-contact phase would be over in one or two days before the full-scale ground operations commenced. During this phase, missiles, drones, AI, cyberattacks, etc would continue to be employed. The role of the air force would gain greater relevance.

In any future war with Pakistan, China is not expected to join in, but it will give all possible support to Pakistan and make sure that India does not shift forces from the Tibet border for deployment against Pakistan.

However, Bangladesh can be expected to start some operations against India. Consequently, India will not be able to shift resources from the Tibet border and those deployed against Burma and Bangladesh. Therefore, India's military capabilities must be built to meet this emerging situation. The upgradation of the forces' capabilities must be given the highest priority.

*

# Science & Technology News

## शुभांशु ने इसरो को बताया, शोध में कैसी रही रिसर्च

***Source: Navbharat Times, Dt. 08 Jul 2025***

■ पीटीआई, बेंगलुरु: इंटरनैशनल स्पेस स्टेशन (ISS) में मौजूद भारतीय गगनयात्री शुभांशु शुक्ला ने स्पेस एजेंसी ISRO के चेयरमैन वी. नारायणन से फोन पर बात की और उन्हें अपनी सुरक्षित अंतरिक्ष यात्रा के लिए धन्यवाद दिया। ISRO के मुताबिक, यह फोन कॉल 6 जुलाई की दोपहर को हुई। शुक्ला फिलहाल Axiom-4 मिशन के तहत ISS में मौजूद हैं। बातचीत के दौरान ISRO प्रमुख नारायणन ने शुभांशु की स्वास्थ्य की जानकारी ली और पूछा कि स्पेस स्टेशन पर किस तरह के वैज्ञानिक प्रयोग और गतिविधियां चल रही हैं। नारायणन ने शुभांशु से कहा कि जब वह धरती पर लौटें, तो सभी प्रयोगों और अनुभवों को विस्तार से दर्ज करें। इससे भारत के गगनयान मिशन की तैयारी में अहम मदद मिलेगी। शुभांशु ने स्पेस स्टेशन पर चल रहे वैज्ञानिक प्रयोगों और वहां आने वाली चुनौतियों की जानकारी भी ISRO टीम को दी।

*

## Shukla speaks to ISRO chief from space, shares his experience

***Source: Hindustan Times, Dt. 08 Jul 2025***

Group Captain Shubhanshu Shukla spoke to Isro chairman V Narayanan on Sunday — their first conversation since Shukla scripted history as the sole Indian astronaut to reach the International Space Station (ISS).

Shukla's call to Narayanan, also secretary of the department of space, was an acknowledgment of the Indian space agency's team's efforts in ensuring his safe travel to the ISS. According to Isro, Narayanan, during the call, expressed his keen interest in Shukla's well-being and inquired about the various scientific experiments and activities being conducted on the ISS.

*As part of the Axiom-4 mission, Group Captain Shubhanshu Shukla who serves as the mission pilot is more than halfway through the 14 days on ISS where he is conducting seven home-grown experiments and five scientific investigations as part of Isro-Nasa collaboration.*

As part of the Axiom-4 mission, Shukla who serves as the mission pilot is more than halfway through the 14 days on ISS where he is conducting seven home-grown experiments and five scientific investigations as part of Isro-Nasa collaboration. Expressing his gratitude to PM Narendra Modi for the for providing him with this “incredible opportunity to represent India on the ISS”, Shukla also shared updates on the progress of the experiments, activities being carried out on ISS and various challenges being addressed.

“The Chairman emphasised the significance of documenting all experiments and activities meticulously after Shubhanshu’s return to Earth, as this will provide valuable insights and inputs for the development of India’s human spaceflight program, Gaganyaan,” read the press statement. The Gaganyaan programme aims to demonstrate India’s capability to launch a crewed spacecraft into low Earth orbit. “The experiences and knowledge gained from this mission will be crucial for its success. Shubhanshu Shukla’s ISS mission has been executed under the Isro-Axiom Spaceflight agreement,” said Isro.

The discussion was attended by several senior Isro officials who discussed various aspects of the mission and the experiments being conducted. Narayanan reiterated that the entire Isro team continues to work closely to support him throughout the mission. Prior to the mission, Narayanan had regular meetings with Shukla and provided guidance on the scientific objectives and the importance of the mission for India’s space programme. He also interacted with Prasanth Balakrishnan Nair, the standby astronaut, to ensure all necessary preparations were in place for a successful mission.

Senior officials who were part of the call include Unnikrishnan Nair, director of Vikram Sarabhai Space Centre and chairman of the Program Management Council for Human Space Programme, M Mohan, director of Liquid Propulsion Systems Centre (LPSC), Padmakumar ES, director of ISRO Inertial Systems Unit (IISU), M Ganesh Pillai, scientific secretary of ISRO, and N Vedachalam, former LPSC director.

https://www.hindustantimes.com/india-news/shukla-speaks-to-isro-chief-from-space-shares-his-experience-101751914596097.html

*

# Explained: Its eye on dark mysteries, Rubin will reveal the cosmos like never before

***Source: The Indian Express, Dt. 08 Jul 2025***


*The observatory | It is named after American astronomer Vera C Rubin (seen on right), who provided evidence about dark matter for the first time in the 1970s*

How WAS the Milky Way formed? Does our Solar System have a ninth planet? Is there an asteroid that can pose a threat to Earth? What are dark energy and dark matter?

These are some of the questions that the Vera C Rubin Observatory, which released its first test images last month, is expected to answer. Located 8,684 feet above sea level atop the Cerro Pachón mountain in the Chilean Andes, the observatory will provide comprehensive images of the night sky unlike anything astronomers have seen before.

**A technical marvel**

The centrepiece of the observatory is the Simonyi Survey Telescope. This device is unique for three main reasons.

WIDE FIELD OF VIEW: Astronomers typically use the size of the visible surface of the full Moon to describe a telescope's field of view. The Hubble Space Telescope observes around 1% of the full Moon's disc, and the James Webb Space Telescope around 75% — using such telescopes is like looking into space through a straw.

The Rubin's telescope, however, is so wide-eyed that it effectively observes an area of the sky equivalent to at least 40 full Moons arranged next to one another. This is made possible due to its distinct design comprising three differently curved mirrors: a primary mirror with a diameter of 8.4 metres, a secondary mirror with a diameter of 3.5 m, and a tertiary mirror with a diameter of 5 m.

The primary mirror captures celestial light and reflects it upward to the secondary mirror. The secondary mirror then bounces the light to the tertiary mirror, which is the inner part of the primary mirror. From here, the light is sent up into a camera at the centre of the secondary mirror. This complex light path allows the camera to capture a large slice of the sky in a single image.

**LARGEST DIGITAL CAMERA:** The telescope has the largest digital camera in the world. It is the size of a small car, weighs 2,800 kg, and boasts a staggering resolution of 3,200 megapixels (the latest iPhone 16 Pro Max has a 48-megapixel camera). The camera can produce an image so rich in detail that it would take a wall of 400 ultrahigh-definition TV screens to display it in full.

Also, the telescope is designed in such a way that the camera's image sensors (which convert light into electrical signals that form digital images) will help scientists spot objects 100 million times dimmer than those visible to the naked eye. This makes the camera sensitive enough to capture a candle from thousands of kilometres away.

The camera has six filters designed to capture light from different parts of the electromagnetic spectrum. This will help astronomers gather information about various celestial objects based on the type of light they emit. For instance, young and hot stars emit ultraviolet light, whereas faint and distant red galaxies appear in infrared light.

**RAPID MOVEMENT:** It is not easy to move large telescopes. They usually take around 10 minutes to adjust their position so as to ensure that sensitive components do not wobble around during the movement. Scientists have to plan what they want to observe, and when, in advance.

The Simonyi Survey Telescope is the fastest-slewing telescope in the world, and takes just five seconds to move and settle from one target to another. This speed is due to the telescope's compact structure (owing to the three-mirror design), and its mount which floats on a film of oil.

Such speed will allow the telescope to snap up to 1,000 images a night, meaning it can capture the whole sky in just three days. Unlike other observatories, scientists at Rubin will not have to choose their targets.

"In a traditional observation, you decide on a target in a part of the sky and you take your telescope there. As we [the Rubin Observatory] are going to scan the whole sky, we will not start from a standard point A, and then move sequentially to different positions. We have instead built a script that will decide where to point at what time in the night," Kshitija Kelkar, a senior operations specialist at the Rubin Observatory, told The Indian Express on a video call.

**Revolution in making**

The Vera Rubin Observatory will constantly scan the sky of the southern hemisphere for 10 years, gathering 20 terabytes of astronomical data each night. The observatory's software will automatically compare new images with older ones and generate an estimated 10 million alerts per night for each change detected in the sky.

Scientists hope that this treasure trove of data will help solve some of the biggest mysteries of the universe, and discover numerous celestial objects such as comets and asteroids. On June 23, when the first test images of the observatory were released, astronomers at the Rubin Observatory said that its software had identified 2,104 brand-new asteroids — including seven near-Earth objects — with merely 10 hours of engineering data.

The observatory is expected to catalogue more than five million asteroids, and roughly 100,000 near-Earth objects over the next 10 years, tripling today's inventory. It will become fully operational by the end of the year.

Jake Kurlander, a researcher at the University of Washington, told Earth.com, "It took 225 years of astronomical observations to detect the first 1.5 million asteroids… Rubin will double that number in less than a year."

The observatory will also play a crucial role in expanding our knowledge about the nature of dark matter and dark energy. While galaxies, stars, and planets make up 5% of the universe, dark energy makes up about 68%, and dark matter about 27%.

Scientists have known about these entities for decades — the observatory is named after American astronomer Vera C Rubin, who provided evidence about dark matter for the first time in the 1970s — but not much is understood about dark energy and dark matter.

Kelkar said, “Rubin will be able to produce a very high definition map of the structure of the universe that is the best possible way to understand dark matter and dark energy.”

https://indianexpress.com/article/explained/explained-sci-tech/explained-its-eye-on-dark-mysteries-rubin-will-reveal-the-cosmos-like-never-before-10112490/

*

## Tiny loops in Solar Corona can unveil Sun's hidden explosive secrets

***Source: Press Information Bureau, Dt. 07 Jul 2025***

A new breakthrough from astronomers reveals a dazzling world of miniature plasma loops in the lower layers of the Sun's atmosphere. These are so small and short-lived, that they have stayed hidden until now. However, they hold clues to one of the Sun’s deepest mysteries --how it stores and unleashes magnetic energy.

While the Sun may appear calm to our eyes, beyond the glowing surface of the Sun lies a much less dense yet highly dynamic atmosphere made of plasma and shaped by magnetic fields. Among the most intriguing features of the Sun’s outer layer are coronal loops, arc-like beautiful structures of hot plasma that glow at a temperature over a million degrees. While these large loops in the solar corona, or outer atmosphere, have long been studied, scientists are now also paying attention to miniature counterparts of these loops.

These miniature loops are about 3,000–4,000 kilometers long (roughly the distance from Kashmir to Kanyakumari). However, they have a width of less than 100 kilometers. This makes them challenging to study, as they stay hidden in the lower layers of the Sun's atmosphere and are mostly unresolved by earlier telescopes. Astronomers at the Indian Institute of Astrophysics (IIA), an autonomous institution of the Department of Science and Technology (DST) and their collaborators used high-resolution imaging and spectroscopy to catch these elusive structures in action.

“These tiny loops live fast - and die young, lasting only a few minutes, making it extremely difficult to observe them and interpret their physical origins. Although they are small, these loops punch above their weight when it comes to understanding the Sun. They offer a new window into how magnetic energy is stored and released in the solar atmosphere on small scales”, said Annu Bura, a Ph.D. student at IIA and the first author of the paper published on this result.

The team used a combination of cutting-edge telescopes to investigate these small-scale coronal loops. They combined data from the Goode Solar Telescope at BBSO, NASA's Interface Region Imaging Spectrograph (IRIS) and the Solar Dynamics Observatory (SDO) to explore these loops across multiple wavelengths. Annu Bura added, "Our multi-instrument observation allowed us to analyze the loops not only in visible light but also in ultraviolet and extreme-ultraviolet wavelength,

revealing their behavior across the chromosphere, transition region and corona, the different layers of the Sun's atmosphere."

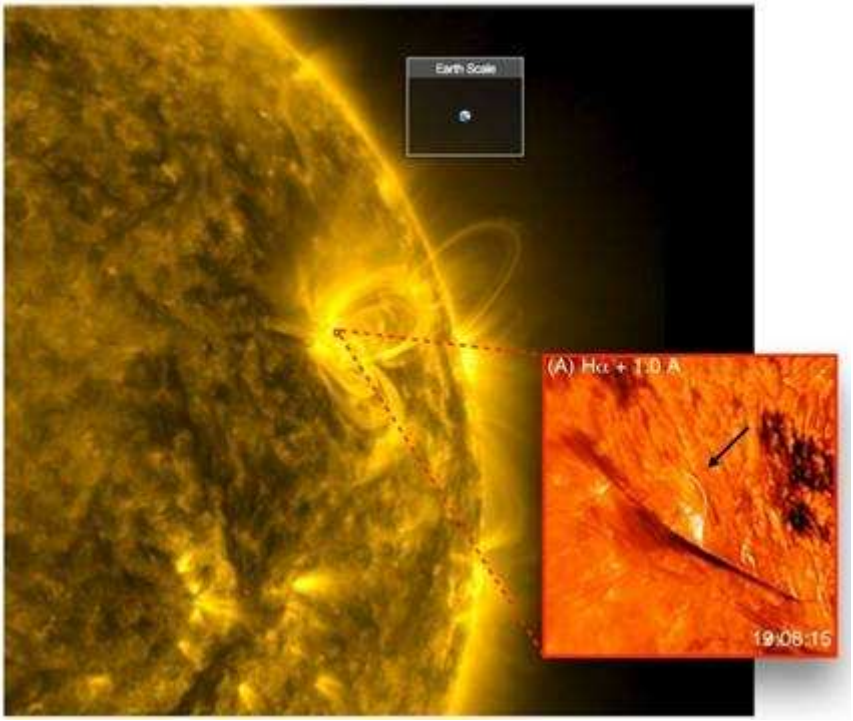



*Fig: Hα blue wing image showing a tiny loop (the elongated bright feature pointed by a black arrow). The background image is taken in extreme-UV with the NASA's SDO satellite, showing large solar coronal loops. Data courtesy: SDO/AIA and BBSO/GST.*

The H-alpha spectral line from Hydrogen atoms is a key line for probing the solar chromosphere which is just above the visible surface of the Sun. The team found that in the redder or longer wavelength part of this line, these loops appear as bright, delicate arcs similar to coronal loops and these were seen very clearly for the first time.

"We detected enormous broadening of the width of the spectral line and intensified signals in spectral lines using IRIS spectroscopic data, indicating highly non-thermal processes due to magnetic fields associated with their origin. This observation can be interpreted as a complex plasma process called magnetic reconnection, in which tangled magnetic field lines snap and realign, unleashing bursts of energy, said Tanmoy Samanta, a faculty member at IIA and a co-author of the study.

"We observed plasma jets erupting upward from the tops of these loops. These jets seem to share the same origin as the loops, suggesting they are both triggered by the same explosive reconnection event", said Tanmoy Samanta. In fact, their formation echoes that of bigger jets in the solar corona, possibly driven by the eruption of tiny, nearly invisible solar filaments.

To understand the plasma temperature inside these loops, the team used an advanced technique called Differential Emission Measure analysis. The results showed plasma temperatures soaring above several million degrees —hot enough to shine in the extreme ultraviolet, visible in SDO's Atmospheric Imaging Assembly. "This behavior is puzzling as the loops have a height of around 1 million metres and lie within the chromosphere, where plasma densities are much higher than the corona. It is quite difficult to heat the plasma to such a hot temperature", said Jayant Joshi, a faculty member at IIA. He added, "future spectroscopic observation can help us to understand this puzzling behavior."

Looking ahead, future telescopes with even sharper chromospheric imagers and more sensitive magnetic field measurements—such as India's proposed 2-meter aperture National Large Solar Telescope (NLST), planned near Pangong Lake in Ladakh—could help unlock even more secrets hidden within these small-scale solar features. The study is published in The Astrophysical Journal.

The study on this fundamental astrophysical topic of magnetized plasma loops was carried out by an international team led by Annu Bura, Tanmoy Samanta, Jayant Joshi from IIA and collaborators from NASA, the Max Planck Institute for Solar System Research (MPS) in Germany and the Big Bear Solar Observatory (BBSO) in USA.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2142911

*

The Tribune
The Statesman
पंजाब केसरी जनसत्ता
The Hindu
The Economic Times
Press Information Bureau
The Indian Express
The Times of India
Hindustan Times
नवभारत टाइम्स
दैनिक जागरण
The Asian Age
The Pioneer