

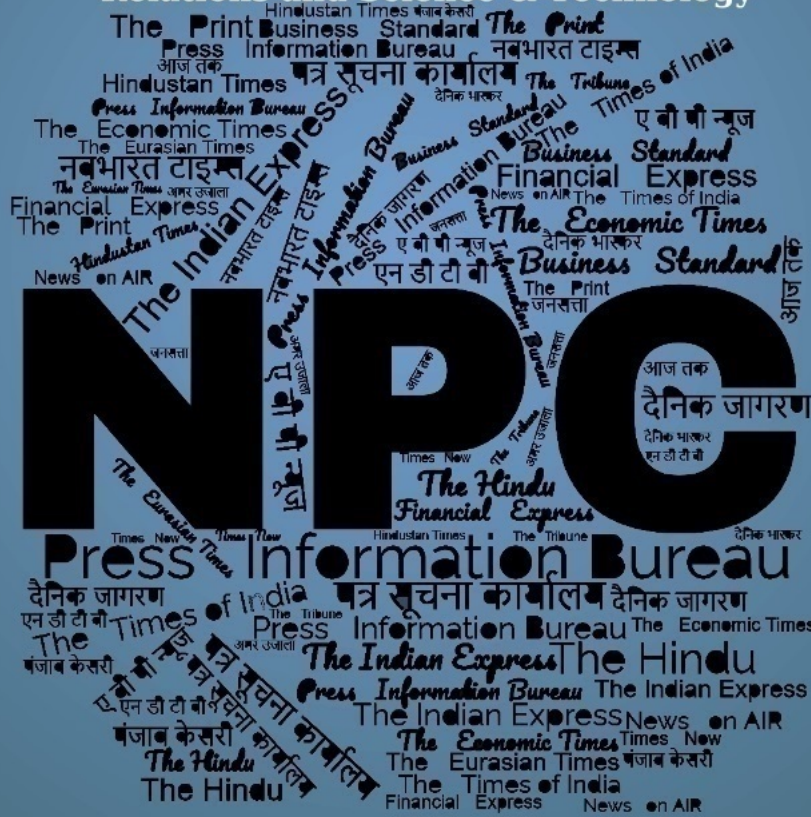
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# समाचार पत्रों से चयनित अंश Newspapers Clippings

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

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



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# अमरउजाला

Mon, 24 Jun 2024

## ADRDE: आरएलवी लेएक्स-3 मिशन पुष्पक के परीक्षण में ब्रेक पैराशूट का सफल परीक्षण, वैज्ञानिकों ने दी बधाई

आगरा में हवाई वितरण अनुसंधान और विकास प्रतिष्ठान (एडीआरडीई) आगरा ने इसरो के आरएलवी लेएक्स-3 मिशन पुष्पक के परीक्षण में ब्रेक पैराशूट का सफलतापूर्वक परीक्षण किया है। इससे चुनौतीपूर्ण परिस्थितियों में उन्नत स्वायत्त क्षमताओं का प्रदर्शन करते हुए सटीक क्षैतिज लैंडिंग माना गया है।

जनसंपर्क अधिकारी प्रदीप पाल ने बताया कि परीक्षण रविवार सुबह डीआरडीओ एटीआर परीक्षण रेंज में किया गया। एडीआरडीई के जरिए विकसित ब्रेक पैराशूट ने आरएलवी को पूर्व-निर्धारित दूरी पर रुकने में सफलतापूर्वक मदद की। इन पैराशूटों को मोटार आधारित तंत्र का उपयोग करके हवा में दागा।

यह तीसरा सफल परीक्षण है। यह उपलब्धि कक्षीय मिशन ओआरवी के लिए आगे का मार्ग प्रशस्त करेगी। एडीआरडीई के निदेशक डॉ. मनोज कुमार ने ब्रेक पैराशूट टीम के सदस्यों विवेक मैरोठिया, डॉ. महेंद्र प्रताप, सुधाकर प्रसाद, प्रदीप पाल, अनिमेष सिंह, मनोज कुमार, डिजाइन टीम, पीईटी टीम को बधाई दी है।

<https://www.amarujala.com/uttar-pradesh/agra/adrde-scientists-developed-brake-parachute-2024-06-24>



**Press Information Bureau**  
**Government of India**

**Ministry of Defence**

*Mon, 24 Jun 2024*

### **Defence Services Staff College, Wellington & Defence Services Command and Staff College, Dhaka collaborate in Strategic and Operational Studies**

Defence Services Staff College (DSSC), Wellington and Defence Services Command and Staff College (DSCSC), Mirpur, Dhaka have inked a Memorandum of Understanding (MoU) for cooperation concerning Military Education in the field of Strategic and Operational Studies.

Both the colleges impart training to officers of tri-services, preparing them for higher staff and command responsibilities. They share common ethos, training curriculum and methodology and face similar challenges. Accordingly, they have decided to sign MoU, for further enhancing bilateral engagements.

The MoU was signed during the official state visit of PM Sheikh Hasina, of Bangladesh to India on 22 Jun 2024.

This MoU will assist in enhancing professional acumen, provide deep insight into strategic affairs, assist in sharing best practices and expertise as well as augment the academic capabilities of student officers and faculty members. It will facilitate conduct of training packages, Joint Seminars, faculty exchanges, reciprocal instructor visit to name a few.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2028314>

## **Robo-dogs that can fire, surveil & carry load — Army set to induct its newest soldiers soon**

The Indian Army is all set to start inducting the first batch of robotic MULES (Multi-Utility Legged Equipment) in the shape of dogs, which will be deployed for surveillance, and to carry light loads through steep and uneven terrain.

Sources in the defence establishment told ThePrint that an order was placed in September last year for 100 robotics dogs for emergency procurement. It is learnt that a pre-dispatch inspection of 25 such MULES has been completed. These are likely to be inducted into the Army soon.

Sources pointed out that since this was an emergency procurement, which allows contracts up to Rs 300 crore, the numbers are small. If the MULES perform well, the Army will go in for a larger procurement order.

Under the fourth tranche of emergency procurement, all orders have to be placed with Indian companies. However, it is not immediately known whether the Delhi-based company with which the order has been placed, is manufacturing the product fully in India or not.

Attempts to reach out to the company did not fructify as the concerned person was unavailable for comment.

The sources said that these robotic dogs are equipped with thermal cameras and other sensors, which enable them to carry out surveillance. They can also be integrated with small arms, and can engage with an enemy without putting a human life at risk, if needed. It can also be used to carry small loads to frontline soldiers, the sources said.

The robot is controlled by a remote device used by soldiers.

“The MULES are basically for surveillance in mountainous terrain or when it is suspected that some terrorists are holding up. Risking a human life or that of a canine soldier does not make sense,” a source said, explaining the rationale behind using such equipment. “These machines can also carry small arms and can engage with the enemy as and when needed,” the source added.

China has already inducted robotic dogs into its military. In May this year, Chinese army unveiled its newest recruit — a gun-toting robot dog, demonstrating the military’s technological foray into replacing humans with machines in combat situations. In a joint military exercise with Cambodia, China unveiled two versions of the equipment— one that can fire at the enemy, and a lighter one that can be used to identify targets.

The robot dog ready for direct combat has an assault rifle attached to its top and weighs 50 kg. The other 15 kg robot is designed to replace human recruits in reconnaissance missions, and can identify the enemy by providing real-time transmission of footage to military posts.

The robot dog archetype was first developed by Boston Dynamics, a former Google subsidiary, and has already been inducted by the US military and the police.

According to the Massachusetts State Police, in March this year, one of the robotic dogs was shot at during a house inspection and may have saved a “real dog” or human officer from harm.

<https://theprint.in/defence/robo-dogs-that-can-fire-surveil-carry-load-army-set-to-induct-its-newest-soldiers-soon/2145039/>

# THE ECONOMIC TIMES

*Mon, 24 Jun 2024*

## **India, US discussing co-production of Javelin antitank missiles**

India and the US held discussions on the co-production of American javelin missiles in India to meet the requirements of the Indian military. The discussions on the joint production of the missiles took place recently during a high-level visit from the US to India, defence sources told ANI.

India and the US have been discussing expanding their cooperation, including joint production of military equipment. Sources said the requirement of the Army for the latest anti-tank guided missiles is quite significant and the force had to acquire a limited number of Israeli Spike ATGMs under emergency procurement to meet its requirements.

The requirement for third-generation ATGMs has been there for a long time and attempts to acquire the weapon systems through a global route have not been successful. The work of acquiring the ATGMs through the Indigenous route is ongoing, as the Defence Research and Development Organisation is also going to carry out trials of its Man-Portable Anti Tank Guided Missile (MP-ATGM) soon to meet the requirements of the Army, the defence officials said.

The Indian MPATGM Weapon System has been field evaluated in different flight configurations several times with the objective of proving the technology's superiority. The system consists of the MPATGM, Launcher, Target Acquisition System, and Fire Control Unit. The Indian forces are looking at shoulder-fired missile systems that are less in weight and can be carried in difficult terrain by troops without engaging too many of them to carry it, the sources said.

The sources said the Indian partner for joint production of the missile system would be identified at a later stage, as discussions have just started. The American side had earlier also showcased the capability of the Javelin missiles to the Indian side but the project did not materialise.

Javelin is developed and produced jointly by American defence majors Raytheon and Lockheed Martin. The missiles have been sold to various partner countries by the US and have seen action in multiple past and ongoing conflicts.

<https://economictimes.indiatimes.com/news/defence/india-us-discussing-co-production-of-javelin-anti-tank-missiles/articleshow/111236292.cms>



**Press Information Bureau  
Government of India**

**Ministry of Defence**

*Mon, 24 Jun 2024*

## **INS Sunayna Departs Port Louis**

INS Sunayna concluded her visit to Port Louis, Mauritius on 22 Jun 24. The two day visit witnessed participation of Indian Navy and Mauritius National Coast Guard personnel during Joint Yoga session on the occasion of International Day of Yoga and sports fixtures.

During the ship's visit, Commanding Officer INS Sunayna Cdr Prabhat Ranjan Mishra called on the Indian High Commissioner, Mrs. K. Nandini Singla, and the Commissioner of Police, MPF Mr. Anil Kr. Dip. The interaction highlighted operational engagement and confidence building measures on various aspects of maritime security. The ship took part in a friendly volleyball match with Mauritius Coast Guard. In an outreach programme held at Gayasingh Ashram at Port Louis, medical screening of elderly and distribution of provisions were undertaken extending a helping hand to the community. The ship was open to visitors which saw more than 200 guests onboard. A guided tour of the ship along with ship's capabilities were briefed to the visitors.

Post departure from Port Louis, INS Sunayna proceeded on next phase of joint EEZ surveillance of Mauritius. Sea riders from MNCG embarked onboard ship for training exchanges. The visit of INS Sunayna to Mauritius reaffirms the close bond of friendship and interoperability between the two maritime nations.

<https://pib.gov.in/PressReleasePage.aspx?PRID=2028307>

## **THE ECONOMIC TIMES**

*Mon, 24 Jun 2024*

### **Boeing Starliner astronauts stranded at ISS after NASA overlooks 'minor' issues; Here's what we know**

Before the Starliner rocket launch on June 5, NASA and Boeing officials identified a minor helium leak. However, after reaching orbit, the Starliner developed four more helium leaks, rendering one thruster unusable. This issue has postponed the return trip for astronauts Butch Wilmore and Sunita Williams until at least July 2, pending further analysis and testing, according to CBS.

Postponed Return and Re-Entry Review NASA plans to conduct a formal re-entry readiness review before setting a new landing target date. The delay is likely to extend beyond two planned space station spacewalks on Monday and July 2. Despite this setback,



NASA officials maintain that Wilmore and Williams are not stranded in orbit and can undock and return home if necessary due to a station malfunction or other urgent issues.

Criticism and Safety Concerns Boeing has faced significant criticism over the Starliner's current situation, adding to the company's existing troubles following high-profile malfunctions of its planes over the past year.

At least 20 whistleblowers have come forward, expressing concerns about safety and quality issues at the aerospace giant. NASA's Assurance and Confidence Steve Stich, manager of NASA's Commercial Crew Program, stated, "We are taking our time and following our standard mission management team process."

He emphasized that the decision-making process is driven by data and that an agency-level review, similar to the one conducted before NASA's SpaceX Demo-2 return after two months in orbit, will be completed to document the agency's formal acceptance of proceeding as planned. Stich further asserted that NASA still has confidence in Starliner, claiming that the spacecraft is "performing well in orbit while docked to the space station."

However, the ongoing tests and issues raise doubts about Starliner's ability to complete its six-hour return trip. Financial Implications and Future Plans Boeing has incurred approximately \$1.5 billion in cost overruns beyond the initial \$4.5 billion contract it secured with NASA.

This contract aims to establish Starliner as NASA's second mode of transportation to the ISS, alongside SpaceX's Crew Dragon. Despite the financial and technical challenges, NASA and Boeing continue to work towards ensuring the Starliner meets all safety and performance standards.

<https://economictimes.indiatimes.com/news/science/boeing-starliner-astronauts-stranded-at-iss-after-nasa-overlooks-minor-issues-heres-what-we-know/articleshow/111223496.cms>

## ThePrint

*Mon, 24 Jun 2024*

### **Amid tensions with China, Philippines says BrahMos a 'credible defence'**

Amid ongoing tensions with China, Philippines Ambassador to India Josel Francisco Ignacio said Monday that the BrahMos missiles offers a "credible defence" for the Southeast Asian country and is indicative of India's "rising" capabilities.

"India and the Philippines stand at the cusp of a new phase of its relations, with more engagement. We are prying open new frontiers of cooperation including defence, space, financial technology," he said during an interaction organised by the Observer Research Foundation (ORF).

In January 2022, Manila and New Delhi signed a \$374.96 million deal for export of the shore-based variant of the anti-ship cruise missile, with a range of about 290 km. The delivery of the launch systems and missiles to the Philippines began in April this year, as reported earlier by ThePrint.

BrahMos missiles are manufactured by a Indo-Russian joint-venture BrahMos Aerospace. The deal with the Philippines is the first major international export order for the Indian defence sector.

The Philippines has in recent months been locked into a series of confrontations with China in the South China Sea. Last week, the Chinese coast guard seriously injured a Filipino sailor after attempting to disrupt a mission to resupply troops situated on the Second Thomas Shoal.

Tensions between the countries have been at a high, especially with consistent confrontations between the two in the Second Thomas Shoal, which is a territory part of the Spratly Islands.

An arbitral tribunal at the Permanent Court of Arbitration in the Hague had in 2016 decided that Beijing has no claims to the area which it said falls within the Philippines's Exclusive Economic Zone (EEZ). But China has since refused to acknowledge the jurisdiction of the tribunal to rule on the dispute.

India backs the Philippines claim to the region, with External Affairs Minister S. Jaishankar having stated the same during a visit to Manila in March 2024. According to Francisco Ignacio, India's position of support for Manila on the dispute was first made clear in June 2023.

"We are closely following the military level talks between India and China on the boundary issues. Observing what happens in these talks offers valuable lessons to any country seeking to resolve disputes," the Philippine ambassador to India said on the standoff in eastern Ladakh.

For Francisco Ignacio, the ties between New Delhi and Manila are increasingly "coalescing" around the strategic cooperation seen across varied areas, especially in defence. He added that the two countries are in talks to schedule a high-level delegation meeting, either in Manila or in Delhi, to celebrate 75 years since the two countries established diplomatic ties.

In 2019, the then President of India Ram Nath Kovind visited the Philippines and unveiled a bust of Mahatma Gandhi at a local college.

<https://theprint.in/diplomacy/amid-tensions-with-china-philippines-says-brahmos-a-credible-defence/2145351/>

## IAF: क्या वायुसेना के पास हुई जहाजों के स्पेयर पार्ट्स की भारी कमी? तेजस के आने तक 'जुगाड़' से चलेगा काम

कतर ने भारत को 12 मिराज-2000-5 लड़ाकू विमानों को बेचने का प्रस्ताव दिया है। इनकी कीमतों को लेकर मोलभाव चल रहा है। कतर 12 मिराज के लिए भारत को लगभग 5,000 करोड़ रुपये का ऑफर दे रहा है। इससे पहले ग्रीस भी ग्रीस भारत को अपने रिटायर हो चुके मिराज फाइटर जेट बेचने की पेशकश कर चुका है। इसके अलावा भारतीय वायु सेना ब्रिटेन की वायुसेना से भी नौ जगुआर खरीदने की योजना बना रही है। रक्षा मामलों के जानकारों कहना है कि भारत के पास पुराने पड़ गए एयरक्राफ्ट्स को उड़ाने के लिए स्पेयर पार्ट्स की जबरदस्त कमी है और जब तक एलसीए तेजस मार्क 1 ए पूरी संख्या में भारतीय वायुसेना के बेड़े में शामिल नहीं हो जाता है, तब तक इस समस्या से जूझते रहना होगा।

कतर ने भारत को अपने 12 मिराज-2000-5 लड़ाकू विमानों को बेचने की पेशकश की है। दोनों पक्षों यह चर्चा नई दिल्ली में हुई। भारत और कतर के पास मिराज-2000-5 लड़ाकू विमान हैं, दोनों के विमानों के इंजन एक जैसे हैं। कतर 12 जहाजों के लिए लगभग 5,000 करोड़ रुपये का ऑफर दे रहा है। साथ में, कतर के विमान फ्लाईंग ऑपरेशन के लिए मिसाइलों और अतिरिक्त इंजनों के साथ भारत के सामने पेश किए जा रहे हैं। इससे पहले ग्रीस ने भी 18 मिराज 2000 विमानों को बेचने के लिए भारत से संपर्क किया था। ग्रीस के फ्लीट में राफेल फाइटर जेट आने के बाद उसने इन विमानों को साल 2022 में ही रिटायर कर दिया था। ग्रीस ने 1980 के दशक में फ्रांस से मिराज 2000 विमानों को खरीदा था।

ब्रिटेन जगुआर को 2007 में ही कर चुका है रिटायर

इसके साथ ही, भारत के पास जगुआर विमान भी हैं। भारत यूनाइटेड किंगडम की रॉयल एयर फोर्स से जगुआर के नौ एयरफ्रेम हासिल करने की योजना बना रही है। रॉयल एयर फोर्स 2007 में ही इन विमानों को रिटायर कर चुकी है। भारत वर्तमान में एकमात्र ऐसा देश है जो 1979 में इसकी शुरुआत के बाद से ही इस विमान को उड़ाता रहा है। एंग्लो-फ्रेंच डिजाइन और निर्मित यह विमान भारतीय वायुसेना की स्ट्राइक और टोही क्षमता की रीढ़ रहा है।

जगुआर की छह स्कवाड्रन हैं

भारतीय वायुसेना के सूत्रों का कहना है कि भारत के पास तकरीबन 120 जगुआर विमान हैं। जगुआर की छह स्कवाड्रन हैं, जिनमें से प्रत्येक में तकरीबन 20 लड़ाकू विमान हैं, जो अंबाला, जामनगर और गोरखपुर में तैनात हैं। भारतीय वायुसेना ने ब्रिटेन से पांच एक सीट वाले जगुआर जीआर-1 और चार डबल सीट वाले जगुआर टी-2 विमानों के एयरफ्रेम का अनुरोध किया है, दोनों ही तरह के विमान अब रॉयल एयर फोर्स उपयोग नहीं करती है। उनका कहना है कि भारत को इन विमानों के संचालन के लिए तकरीबन 150 तरह के स्पेयर पार्ट्स की आवश्यकता है। इससे पहले भारतीय वायुसेना ने फ्रांस से अपने जगुआर बेड़े के लिए 31 इस्तेमाल किए गए एयरफ्रेम, इंजन और विभिन्न स्पेयर पार्ट्स लिए थे। भारतीय वायुसेना अपने बेड़े से 2027-28 से इन जगुआर विमानों को हटाना शुरू कर देगी और 2035 तक अपने जगुआर बेड़े को पूरी तरह से रिटायर कर देगी।

सरकार के पास पैसे की कमी

रिटायर्ड एयर वाइस मार्शल मनमोहन बहादुर, वीएम का कहना है कि हमें बड़ी संख्या में स्पेयर पार्ट्स की जरूरत है। पूरी दुनिया में भारत ही अकेला देश है, जो अभी तक जगुआर को उड़ा रहा है। फ्रांस, ब्रिटेन, ओमान, नाइजीरिया और इक्वाडोर जैसे देश इन्हें अपने बेड़े से हटा चुके हैं। लेकिन भारत अकेला देश है जिसने जगुआर को आधुनिक बनाया, उसमें ASRAAM जैसे मिसाइलें लगाई हैं। वह कहते हैं कि सरकार के पास नए एयरक्राफ्ट खरीदने के लिए पैसे की कमी है। लेकिन इसके चलते एयरफोर्स उन्हें उड़ाना बंद नहीं कर सकती। वह अपनी जरूरतों के मुताबिक अरेंजमेंट्स कर रही है। दुनियाभर के देश अपनी फ्लीट को उड़ाने लायक बनाए रखने के लिए पुराने जहाज खरीदते हैं।

मिराज-2000 में "जुगाड़" से बढ़ेगा जीवनकाल

वायुसेना सूत्रों के मुताबिक वर्तमान में भारतीय वायुसेना के पास 31 लड़ाकू स्क्वाड्रन हैं, और अगले डेढ़ दशक में इसके अधिकांश स्क्वाड्रन फेज आउट हो जाएंगे। जबकि भारत को 42 स्क्वाड्रन की जरूरत है। सूत्रों का कहना है कि मिग-21 बाइसन और मिग-29 के स्क्वाड्रन 2025 और 2035 तक चरणबद्ध तरीके से रिटायर हो जाएंगे। 2019 में पाकिस्तान के खिलाफ बालाकोट स्ट्राइक करने वाले फ्रांसीसी लड़ाकू विमानों मिराज 2000 भी 2035 तक रिटायर कर दिए जाएंगे। सूत्रों ने बताया कि भारत के पास करीब 50 मिराज-2000 हैं, जबकि कतर के पास 2000-5 हैं, जो एडवांस वर्जन है। वहीं, कतर ने इन लड़ाकू विमानों का ज्यादा इस्तेमाल नहीं किया है, उनका 30 फीसदी लाइफ अभी बाकी है, यानी लगभग 1,500 घंटे उड़ान भरने के बाद और "जुगाड़" उनके जीवनकाल को और भी बढ़ा सकती है। भारत में मिराज-2000 का रिकॉर्ड अच्छा है, इसका इस्तेमाल कारगिल युद्ध और बाद में पुलवामा के बाद पाकिस्तान के बालाकोट में जैश मोहम्मद के आतंकवादी प्रशिक्षण शिविर पर हमले में किया गया था। सूत्रों ने बताया कि पाकिस्तान भी अपनी मिराज फ्लीट को अपग्रेड करना चाहता है। ऐसे में अगर भारत को कतर से मिराज-2000-5 चाहिए, तो सौदे में तेजी लानी होगी।

वायुसेना के पास चीन, पाकिस्तान से निपटने की पूरी क्षमता

एचएएल को अगले 10 सालों में दो चरणों में 180 तेजस मार्क-1 ए का निर्माण करना है। भारतीय वायुसेना ने एचएएल को 83 तेजस के अलावा 97 अतिरिक्त तेजस मार्क-1 ए जेट के निर्माण के लिए अपनी व्यवसायिक बोली जमा करने के लिए कहा था, जिसके बाद यह संख्या 180 हो गई है। वहीं स्वदेशी एलसीए-तेजस मार्क 1 ए की डिलीवरी में थोड़ी देरी हो सकती है और सरकार की तरफ से 12 सुखोई-30 एमकेआई लड़ाकू विमानों की खरीद पर अभी भी चर्चा चल रही है। सूत्रों के मुताबिक भारतीय वायु सेना को अगले 14 से 15 सालों में 390 लड़ाकू जेट की आवश्यकता होगी। भारतीय वायुसेना के पास पहले से ही 40 तेजस मार्क 1 फाइटर जेट हैं, जो वायुसेना की नंबर 45 स्क्वाड्रन 'द फ्लाइंग डैगर्स' और नंबर 18 स्क्वाड्रन 'द फ्लाइंग बुलेट्स' का हिस्सा हैं। वहीं तेजस मार्क-1 ए इसका एडवांस वर्जन है।

एयर वाइस मार्शल मनमोहन बहादुर कहते हैं कि एक तरफ चीन और दूसरी तरफ पाकिस्तान है, खतरा दोनों तरफ से है। हालांकि हमारी वायुसेना के पास उनसे निपटने की पूरी कैपेबिलिटी है। हमारे पास भी 4.5 जनरेशन वाले 36 राफेल एयरक्राफ्ट के दो स्क्वाड्रन हैं। लेकिन सरकार को चाहिए कि नए एयरक्राफ्ट की खरीद के लिए प्रक्रिया को लेकर तेजी से पॉलिटिकल डिसिजन ले। यह पूछने पर कि अगर हमारे पास 126 राफेल होते तो शायद ये दिक्कत न होती, तो इस पर वे कहते हैं कि 36 राफेल आने में ही इतना वक्त लग गया, अगर बाकी राफेल लेते तो उसमें तो और भी ज्यादा वक्त लगता। वह कहते हैं कि एलसीए-तेजस मार्क 1 ए के आने से ये कमी काफी हद तक दूर हो जाएगी। लेकिन उसके आने में अभी समय थोड़ा समय लग रहा है, तब तक वायुसेना कुछ न कुछ अरेंजमेंट जरूर कर लेगी।

<https://www.amarujala.com/india-news/indian-airforce-fighter-jet-mirage-jaguar-spares-issue-tejas-to-take-their-place-news-and-updates-2024-06-24>

**THE  HINDU**

**Mon, 24 Jun 2024**

## **Philippines envoy hails BrahMos missiles as a 'game changer'**

Terming the BrahMos cruise missiles inducted by the Philippines as a "game changer", which provides credible capabilities, Philippines envoy Josel F. Ignacio said India was a major source for the modernisation of the Philippines armed forces which was under way.

“There is a renaissance in the relationship between India and the Philippines and they are rediscovering each other,” Mr. Ignacio said on Monday. They were keen on concluding the Preferential Trade Agreement (PTA), under negotiation, he said.

“It [the deal] is a great milestone for both countries. BrahMos is a game changer for the Philippines in that it confers credible defence and deterrent capabilities. For India, the significance is it is the first overseas export of the BrahMos and it is an affirmation of India’s rising capabilities and of its own indigenous defence industry. In a way, it expands India’s footprint overseas,” Mr. Ignacio said, speaking at the Observer Research Foundation.

In January 2022, the Philippines concluded a \$375 million deal with India for three batteries of shore-based anti-ship variant of the BrahMos supersonic cruise missiles, becoming the first export customer for the joint venture missile between India and Russia. The first batch of missiles was delivered this April.

Defence is one the most visible areas seeing a renaissance and catching widespread interest on both sides, the envoy noted, giving an overview of the bilateral relationship. Elaborating, he said, the cooperation was underpinned by a MoU on defence cooperation signed in 2006 and this was reinforced in 2017 by a MoU between the defence ministries on defence industry and logistics cooperation.

### **New dimension**

“This opened a new dimension in the cooperation because this opened up equipment transfers and purchases that we are seeing now,” the envoy said. This MoU is further backed by an implementing arrangement concerning defence material and equipment that facilitates government-to-government procurement.

“The Philippines over the past few years has seen India as one of the major sources of modernisation of the armed forces,” Mr. Ignacio said. The Philippines armed forces are currently in phase-3, termed Horizon-3, modernisation and under this, he said, they were looking at ships, aircraft, radars and items that help boost their Maritime Domain Awareness (MDA), defend entitlements and secure their Exclusive Economic Zone.

This year marks the 75th anniversary of the establishment of bilateral relations between the two countries and the two sides are working on some high-profile visits to mark the occasion.

To a question on the India-China stand-off in eastern Ladakh that has been going on for the last four years, Mr. Ignacio said they were closely following the developments there, the recent military-level talks to de-escalate for withdrawal from certain parts.

“In the end, in any part of the world observing what happens provides valuable lessons... The ultimate goal for any country is to resolve any dispute in a peaceful way, in a way that is in accordance with the law,” the envoy said. Both countries were watching each other’s own difficulties in the territorial sphere to draw lessons from them. “This certainly forms part of our own exchange of views with the Indian government to try to learn lessons and see how we can all profit towards a common goal,” he added.

The envoy said that in 2023 bilateral trade crossed the \$3bn mark for the first time while the balance of trade was in India’s favour. India was among the top 15 trade partners for the

Philippines in fiscal 2023. In this regard, he said, through the PTA under negotiation they hope to raise the trade and bring balance and diversification. “We want the PTA with India, we have similar negotiations with Europe,” he noted.

<https://www.thehindu.com/news/national/philippines-envoy-hails-brahmos-missiles-as-a-game-changer/article68328182.ece>



Mon, 24 Jun 2024

## हथेली के साइज का है ये **Helicopter**, भारतीय सेना करती है इसका इस्तेमाल

भारतीय सेना देश को सुरक्षित रखने के लिए दिन रात चौकस और मुस्तैद रहती. आपको बता दें कि भारतीय सेना के पास एक ऐसा हथियार है जो हमला तो नहीं करना करता है लेकिन हमलावरों की जानकारी लाने में अहम भूमिका निभाता है. ये असल में एक ड्रोन हेलीकाप्टर है जो मुट्टी के साइज का है और जोरदार तरीके से दुश्मन के इलाके में घुस जाता है.

ये ड्रोन इतना छोटा है कि इसका साइज और आपकी मुट्टी का साइज तकरीबन एक जैसा ही होता है. आज हम आपको इस खास ड्रोन के बारे में बताने जा रहे हैं, साथ ही हम ये भी आपको बताएंगे कि आखिर ये क्यों अन्य ड्रॉन्स से अलग है. दरअसल हम जिस ड्रोन कैमरे की बात कर रहे हैं वो एक पॉकेट साइज हेलीकाप्टर है जिसका नाम PD-100 Black Hornet है. ये देखने में काफी छोटा होता है लेकिन जब बात आती है अपना काम करने की तो ये इसे बखूबी अंजाम देता है.

इस हेलीकाप्टर की मदद से निगरानी करने का काम किया जाता है, ये उन इलाकों में पहुंच सकता है जहां पर इंसान भी नहीं जा सकते. मुश्किल वेदर कंडीशंस में भी ये बेहतरीन तरीके से काम करता है. इसका काम निगरानी करना है जिसमें ये माहिर है. हालांकि ये ड्रोन हेलीकाप्टर आम लोगों की पहुंच से बाहर है.

क्या है खासियत

PD-100 Black Hornet ड्रोन को बेहद हे संवेदनशील इलाखों की निगरानी करने साथ ही खूफिया मिशनस में किया जाता है. कई देशों की सेनाएं भी इसका इस्तेमाल कर रही हैं. इस ड्रोन का इस्तेमाल रिमोट से किया जाता है, चूंकि रिमोट में एक डिस्प्ले भी होता है ऐसे में इसे कंट्रोल करने वाला व्यक्ति लाइव फुटेज देख सकता है जो ड्रोन के कैमरे से भेजी जाती है. आपदा प्रभावित क्षेत्रों में नागरिकों को बचाने के लिए चलाए जाने वाले खोजी मिशनस में भी इसका इस्तेमाल सम्भव है.

आपको बता दें कि इस हेलीकाप्टर ड्रोन को नॉर्वे में स्थित Prox Dynamics नाम की कंपनी ने तैयार किया है. ये 10 सेमी लम्बा और 2.5 सेमी चौड़ा है और तकरीबन आपकी मुट्टी के साइज का होता है. इसे लगातार 20 मिनट उड़ाया जा सकता है, इसमें तीन कैमरे होते हैं. इस ड्रोन हेलीकाप्टर की टॉप स्पीड 13 मील प्रति घंटे (21 किमी / घंटा) है. इसे खरीदने के लिए आपके पास तकरीबन 1 करोड़ रुपये होने चाहिए. भारत समेत संयुक्त राज्य अमेरिका, ऑस्ट्रेलिया, तुर्की, नॉर्वे, नीदरलैंड, फ्रांस, यूनाइटेड किंगडम, जर्मनी, पोलैंड और न्यूजीलैंड के सशस्त्र बल इस ड्रोन कैमरे का इस्तेमाल कर रहे हैं.

<https://zeenews.india.com/hindi/technology/gadgets/mini-helicopter-used-by-indian-army-uses-to-attack-on-enemies/2306721>

## How 3 more Kalvari submarines will boost Indian Navy's underwater strength

State-owned Mazagon Dock Shipbuilders Limited (MDL) is in advanced talks for a potential Rs 35,000-crore deal, under which the Indian Navy will acquire three additional Kalvari-class submarines that will be larger and more advanced than the six vessels of the same class that India had previously acquired, the Economic Times reported on Monday.

A contract for six French Scorpene (Kalvari-class) conventional submarines was signed in 2005. The first of the Kalvari-class submarines, built at MDL, was inducted in 2017. While the sixth submarine is slated for induction this year, approval was given for three additional conventional vessels in 2023.

An export derivative of the French-origin Scorpene-class submarine, the Kalvari-class vessels are diesel-electric attack submarines operated by the Indian Navy. They have been built by a syndicate of French and Indian shipyards -- the Naval Group and MDL, respectively. The Scorpene-class vessels were originally designed by the Naval Group.

### What's the latest update on India's Kalvari-class subs?

According to the ET report, MDL has submitted a detailed techno-commercial bid for the contract for three additional Kalvari-class submarines to the Ministry of Defence (MoD).

Under its bid, MDL has reportedly promised at least 60 per cent indigenous content in the new submarines, with a large share of the work going to Indian suppliers and micro, small and medium enterprises in the country. For this reason, MDL and its suppliers are reportedly expected to receive significant technology transfer while building these three additional boats. The ET report says that this will pave the way for future submarines of the same class to be fully designed, developed and manufactured within India.

A major part of the contract value of the three vessels will reportedly remain within the Indian ecosystem. The final pricing of the three submarines will be determined after tough negotiations between MDL and the MoD, but the deal is likely to be valued at around Rs 35,000 crore, said the ET report, citing unnamed sources. The report added that this deal value would be in line with international pricing for new submarines of the class.

Under Project 75, MDL has also built the previous tranche of Kalvari class submarines with French assistance. MDL's proposal reportedly says that the three additional submarines can be delivered within six years.

### How will the new subs be different from past Kalvari boats?

The three additional Kalvari-class submarines will be larger than their predecessors and equipped with more modern electronics, the ET report said, while citing sources.

They will also have longer endurance, with the report saying that advances in propulsion technology will also be incorporated into the new vessels.

According to the ET report, the three new submarines will be capable of travelling greater distances than their predecessors, which already possess the ability to reach as far as Australia during operational deployments.

While the ET report did not say that the three new submarines would be equipped with an air-independent propulsion (AIP) system, previous reports had suggested that this was a possibility. However, the ET report's mention of these boats being equipped with advanced propulsion technology could be a reference to an AIP system, which will allow them to stay underwater for longer.

According to a July 2023 report by ThePrint, Naval Group France and the Defence Research and Development Organisation (DRDO) had signed an agreement in January that year to install an indigenous AIP system onboard the Kalvari-class submarines.

The report added that the three new Kalvari-class submarines would have an indigenous AIP system fitted on board.

While all six previous Kalvari-class submarines were reportedly meant to undergo a refit to install AIP systems in the due course of time, that project has been delayed. In fact, according to the original plan, the fifth and sixth Kalvari-class submarines were meant to have an indigenous AIP system on board, but that did not come through.

#### **What is an AIP submarine propulsion system?**

An AIP system refers to any means of marine propulsion that enables a conventional, non-nuclear-powered submarine to operate for extended periods of time without surfacing or using a snorkel, which is needed for access to atmospheric oxygen.

Most diesel-electric submarines are forced to surface to recharge their batteries after a specific period, which makes them vulnerable to enemy sensors. Meanwhile, an AIP-equipped submarine is stealthier in comparison, since it possesses a greater underwater endurance.

#### **Why are the new Kalvari-class submarines important?**

India's Project-75 (I) programme, under which six conventional submarines are to be built within the country with AIP systems, is still under the works. In the meantime, these three new submarines will help the Indian Navy boost its underwater strength.

At present, the Indian Navy operates 16 conventional submarines, including seven Russian Sindhughosh-class, five Indo-French Kalvari-class, and four German Shishumar-class submarines. The Navy also has two nuclear-powered ballistic missile-carrying submarines belonging to the Arihant class. However, its conventional submarine arm is getting long in the tooth and beginning to face competition from Pakistan.

[https://www.business-standard.com/external-affairs-defence-security/news/how-3-more-kalvari-submarines-will-boost-indian-navy-s-underwater-strength-124062400688\\_1.html](https://www.business-standard.com/external-affairs-defence-security/news/how-3-more-kalvari-submarines-will-boost-indian-navy-s-underwater-strength-124062400688_1.html)



## India, US discussing co-production of Javelin antitank missiles

The Indian army on Monday said the force has constructed a foot suspension bridge in less than 48 hours to reconnect the border villages in the northern part of Sikkim, which have been affected by heavy rain and landslides leading to the death of six people earlier this month. A suspension bridge has its roadway suspended from cables usually passing over towers and securely anchored at the ends.

"The Indian Army engineers of Trishakti Corps have constructed a 150-foot suspension bridge in North Sikkim to re-connect the border villages which got cut off due to continued heavy rains to give respite to the locals," the Indian Army said in a statement. The foot suspension bridge built over a stream in less than 48 hours will restore connectivity to the border villages and facilitate movement of the people and relief materials, it said.

North Sikkim's Mangan district was lashed by torrential rains on June 13 snapping road links and communication infrastructure. As a result, around 1500 tourists had been stranded for almost a week.

<https://economictimes.indiatimes.com/news/defence/indian-army-builds-suspension-bridge-in-48-hours-in-rain-hit-north-sikkim/articleshow/111232053.cms?from=mdr>



## TAPAS Drone: Indian Navy Displays Exemplary Foresight By Boosting DRDO UAV To Operational Heights

The Indian Navy's decision to acquire four Tapas drones despite performance shortcomings displays admirable foresight and a sense of responsibility. The ANI reported on June 22 that the Indian Navy intends to use the DRDO-developed drones for surveillance over the maritime zone. "The Indian Navy is going to order four Tapas drones, and it is going to use them for maritime surveillance operations," defense officials told ANI.

A consortium of Bharat Electronics Limited (BEL) and Hindustan Aeronautics Limited (HAL) will manufacture the drones. "The deliveries would be made faster by the consortium as the first bird would be ready for delivery within 24 months of signing the contract. The existing birds or drones would be used for carrying out trials and improving their capabilities," they added.

### TAPAS: Development History

The TAPAS (Tactical Air-Borne Platform for Surveillance-Beyond Horizon 201 (Tapas-BH 201) ) project was sanctioned as a mission mode project in February 2011 with an initial deadline of August 2016. The deadline was revised several times, initially due to project management issues

typical of a new aeronautics endeavor and later due to critical performance shortfalls. The drone's performance remained short of JQSR (Joint Services Qualitative Requirements) benchmarks in payload, operational ceiling, and endurance.

The weight of the drone is 2,800 kg instead of 1,800 kg, its operational ceiling is 27,000 ft instead of 30,000 ft, and its endurance is 18 hrs instead of 14 hrs. The Times of India reported in January that India had defunded the TAPAS project because it failed to meet JSQR. It was left to the DRDO management to pursue the project or otherwise.

### **Rationale For Revival**

Broadly speaking, the Navy has given DRDO additional funds and time to improve the TAPAS. The additional funds will likely come from the Navy budget. Sources told ANI that the Navy is hopeful that DRDO will improve the drone's performance. There is definitely scope for improving TAPAS performance in the short term. The use of composites, for example, would give the drone a performance boost. The best part is that it is low-hanging fruit.

Adani Aerospace says that the indigenously built Drishti-10, an Elbit Hermes-900 clone, is an all-composite drone. One of the most important reasons for the TAPAS weight spiral, from 1800 kg to 2800 kg, was DRDO's inability to build composite fuel tanks. They were forced to use metal fuel tanks instead, dramatically increasing weight. Assuming that Adani Aerospace has "indigenous" capability to build composite fuel tanks, TAPAS could be back in the game, soaring to 30,000 ft!

There is also scope for improving the performance of the drone through the use of a suitable turboprop powerplant, instead of a diesel powerplant. It's not clear why DRDO, which initially planned to use turboprop engines, switched to diesel engines. Assuming that a diesel engine because a suitable turboprop engine was not available, it is possible that the lifeline to the project given by the Navy would help the DRDO resolve the issue by collaborating with a foreign turboprop manufacturer.

### **TAPAS: Performance Limitations**

Some of the TAPAS's performance shortfalls are due to its design, which is based on a conventional aerial platform. Most successful military UAVs use a single-engine, twin-boom design (SETB) with a turboprop engine featuring a pusher propeller fitted aft of the fuselage. A twin-boom design increases overall aerodynamic efficiency and reduces drag. The wider fuselage facilitates fitting sensors and generates body lift, allowing for a shorter wingspan. The design provides a clean and stable platform with a longer range, higher fuel efficiency, and better maneuverability. The UAV is structurally stronger. In case of an engine failure, the SETB design facilitates a longer-range glide.

### **Other advantages of the SETB design include:**

- It facilitates modular construction, simplifying assembly, maintenance, and potential upgrades.
- Easy engine accessibility makes maintenance and repairs quicker and more cost-effective.
- Avoids weight and fuel efficiency penalties accruing from the use of two engines

- Fewer components compared to twin-engine designs translate to lower weight, simpler systems, and potentially higher reliability.

Due to the design limitations, TAPAS performance shortfalls could remain below GQSR benchmarks. However, that would only limit the TAPAS's usefulness —not make it useless!

### **Safeguarding TAPAS Project Gains**

Performance shortcomings notwithstanding, the DRDO developed many technologies critical for drone operations while developing the TAPAS, including the ATOL (Autonomous take-off and landing) system, satellite communication, indigenous SATNAV INS system, and high-bandwidth datalink. DRDO has additionally developed indigenous payloads (Gymbal Payload Assembly Medium Range Electro Optic GPA Mk-IV, Medium Range Electro Optic MREO).

Finally, DRDO has been actively involved in developing a Synthetic Aperture Radar (SAR) for carriage on a MALE drone. SAR is an important airborne imaging sensor used for surveillance. It is highly likely that the TAPAS drones acquired by the Navy would be fitted with a SAR. The technological gains from the TAPAS project must be preserved for use in future MALE drone projects. The point here is that without funding for an active MALE drone, the effort, cost, and technology developed would be rapidly lost with time.

### **Conclusion**

The Indian Navy has made a smart move by reviving the TAPAS project with what is roughly a LRIP (Low Rate Initial Production) order. By reposing confidence in indigenous technology and the DRDO, the Navy is ensuring that it will stay strong and grow increasingly self-reliant in the days ahead. It is possible that the Indian Army and the Indian Air Force will follow the Indian Navy's example and fund the development of technology that they perceive to be critical to their needs. If you don't appreciate what you have, you will likely never get what you want!

<https://www.eurasiantimes.com/tapas-drone-indian-navy-displays-exemplary/>



*Mon, 24 Jun 2024*

## **US Pushes Boeing F-15EX To Indian Air Force, A Mighty Powerful Fighter Aircraft That IAF Will Ignore: OPED**

India's 114 Multi-Role Fighter Aircraft (MRFA), the likely mother-of-all-deals, continues to blow-hot-blow-cold. The Indian Air Force (IAF) is down to 31 fighter squadrons vis-à-vis authorized 42 and actually requires much more to contend with the two powerful adversaries. The IAF has already ordered nearly 200 LCA Mk1 and Mk1A variants and has committed to 200 LCA Mk2. Nine years after the formation of the first IAF LCA squadrons, the IAF still has only around 40 LCA aircraft.

Even if production is increased to 24 a year, it will take long to fill the numbers. India's Advanced Medium Combat Aircraft (AMCA) is still over a decade away. The last of the MiG 21s are still flying with the IAF. The Jaguars and Mirage 2000 fleets must start retiring by around 2030. Notwithstanding the strong 'Atmanirbharta' (self-reliance) push, India would need to induct the 114 MRFA to fill the gap. The first round of the Medium Multi-Role Combat Aircraft (MMRCA) induction process had to be curtailed to just 36 Rafale for various technical reasons. IAF has clearly stated the operational requirements of these 114 aircraft. The Parliamentary Standing Committee on Defence report, tabled in the Parliament on December 20, 2023, cited delays in the supply of the initial 40 LCA to the IAF and said the option of buying state-of-the-art fifth-generation fighter aircraft over the counter should be explored.

### **Multi-Role Fighter Aircraft (MRFA) Competition**

India issued an RFI in April 2018 for the procurement of 114 MRFA. Responses from all the contenders were received in the latter part of 2018. The Indian Navy was also asked to combine its plan to acquire new fighter jets with this program. The Navy requires a twin-engine fighter. Their requirement was focused on two maritime aircraft: the Boeing F/A-18E/F Super Hornet and the Dassault Rafale-M. The grapevine has it that the Navy will go for 26 Rafale-M.

There are eight aircraft now in the fray for IAF's MRFA. These are the Boeing F/A-18E/F Super Hornet, Boeing F-15EX Eagle II, Dassault Rafale, Eurofighter Typhoon, Lockheed Martin F-21 (A variant of F-16V with 14 customization for Indian requirements, Mikoyan MiG-35, Saab JAS-39 Gripen E/F, and Sukhoi Su-35. The next logical step is the Acceptance of Necessity (AoN) by the Defence Acquisition Council (DAC) and the issue of a Request for Proposal (RFP). Though many aircraft have been analyzed in detail during the MMRCA selection, since all the competing aircraft have gone through upgrades, once the proposal is received, some level of evaluation will be required. Even if the RFP is sent out today, it could take 5-6 years or more for aircraft to be inducted. The countries security establishment must take the call about 114 aircraft import early enough.

### **Big Ticket Assessment**

Russia has pitched in two aircraft. MiG-35 was part of an earlier evaluation. Based on technical evaluation, only the Rafale and Eurofighter qualified for MMRCA selection. Both scored better than MiG-35. Also, the aircraft is a derivative of the MiG 29. IAF's MiG 29s have recently been upgraded and, on a few counts, have reached a similar level. Not many MiG 35s have been built or sold, so it is not a good idea for India to be the main customer.

The Su-35 is a new entrant. It is part of the Su-27/30 family. Currently, nearly 60 percent of the IAF's aircraft fleet is of Russian origin. This dependence has to gradually reduce to a more manageable figure for supply chain dynamics. Also, IAF is in the process of upgrading the Su-30 MKI fleet. Effectively, the aircraft will become closer or even better than the Su-35.

Only China has bought 24 aircraft. The total numbers built are still very small. The Russia-Ukraine war also has its dynamics. There are Dollar payment limitations. Russian industry is busy making good the Russian Air Force requirements. Russians feel that there is still a window open for India to be part of the Su-57 fifth-generation fighter. If the Indian Navy goes for the Rafale-M, then interest in the FA-18 Super Hornet will be almost over. The IAF already has two airbases with full

infrastructure to take on one additional squadron each of Rafale. India has already paid a huge amount for one-time India-specific modifications. The price discovery has already taken place. Most analysts feel that the IAF should acquire more Rafale and a total of 140 (114+26) should be made in India.

Both the Saab JAS-39 Gripen E/F and Eurofighter Typhoon are good aircraft. The Gripen will have the GE 414 engine, which will be made in India unless the US puts some restrictions on it. It could also be powered by Eurojet EJ200. Both aircraft are being aggressively marketed. Their total global numbers would remain relatively smaller, with around 600 Eurofighters built to date and only around 300 Gripen. Finally, the level of Transfer of Technology (ToT), cost, and geopolitical factors play their part.

### **US Comes Big In Indian Aircraft Eco System**

Beginning in 2008, India bought the Boeing P8I, the Lockheed C-130J, the Boeing C-17 Globe Master III, the Boeing CH-47 Chinook, the Boeing AH-64 Apache, and the Lockheed MH-60R Seahawk from the USA. India is already using the GE-404 on the LCA Mk1 variant and will make GE-414 in India under license production for LCA Mk2 and initial AMCA.

India will soon buy the General Atomics MQ-9B Predator Drones. Americans are keen to sell India a fighter aircraft, which will allow them to access India's full military aviation ecosystem. Thus, there is a need to evaluate the two main contenders in the fray: one single-engine and one twin-engine.

### **Boeing F-15 EX Eagle II**

Boeing advertises its F-15EX Eagle II by saying, "With a payload capacity of 29,500 lbs. (13,300 kg) – including outsized weapons – the F-15EX delivers affordable mass to address rapidly evolving threats. When this payload is combined with range, contemporary sensors, and an advanced electronic warfare suite, the F-15EX presents peer adversaries with multiple challenges both inside and outside of threat rings".

They claim that the F-15EX can shoot from a significantly increased range—farther than any other fighter in the U.S. Air Force arsenal—and provides the unique capability of holding 12 AMRAAMs or other large ordinance. It prides itself on its electronic warfare suit, which does not require pods that take away weapon stations. At 36,741 kg max take-off weight, this twin-cockpit aircraft is considered large and is interestingly quite close to Su-30MKI with a max take-off weight of 38,800 kg. It can carry 13,300 kg ordinance vis-à-vis 8,130 kg load on Su-30MKI.

The multirole strike fighter has been derived from the McDonnell Douglas F-15E Strike Eagle. The program got the impetus when the US government saw delays in the F-35 program, and as a part of cost management vis-à-vis capability management meant cutting down Lockheed F-22 numbers. The F-15EX is a member of the F-15 Advanced Eagle family of aircraft, a further development of the F-15E, upgrades of which began in 2011 for Saudi Arabia and Qatar. The first F-15EX was delivered in 2021 and fully operational service is expected in July 2024. USA has received 7 out of 104 planned. The Israeli Air Force ordered 25 F-15IA fighters based on the F-15EX and plans to upgrade 25 F-15Is to the F-15IA standard. Saudi Arabia is looking to upgrade its fleet of F-15SAs to the same standard as the EX. Egypt, Thailand, Indonesia, and Poland are considered prospective customers.

The question being asked is, with nearly 260 Su-30 MKI, which make up over 40 percent of the IAF's fighter fleet, of similar size class, and with their planned upgrade, does IAF require more aircraft of that weight and size class? India already has the know-how and ability to modify the aircraft and is integrating Indian weapons into Su-30 MKI. Also, the F-15EX would mean adding another type to India's multiple fighter fleets. At over \$90 million apiece, the F-15EX is not going to be cheap. In fact, it is nearly \$10 million costlier than the F-35. Also, it will not be possible to open an assembly line for the F-15 in India.

### **Lockheed F-21**

The Lockheed F-21 is an India-specific F-16 Block 70-plus aircraft with a remarkable ten missiles (eight AMRAAM class and two AIM-9X). It can carry a Lockheed Martin Sniper electro-optical thermal imaging targeting pod. The F-21 will feature aerial refueling with a probe drogue system. If chosen, the aircraft will be made in India. Lockheed is already making the F-16 wings with the Tata group in India for its global sales. Over 4,600 F-16s have been built to date, and nearly 2,150 are still flying.

The largest number of fighters by any single type. Five more countries are likely to acquire F-16s, including Ukraine. Lockheed Martin, who is the world's largest defense contractor has offered to start an F-21 factory in India, and India could eventually build planes for future non-American F-21 customers. The F-21 is essentially an advanced variant of the F-16. Pakistan has been operating F-16s since the early 1980s. Their variant is still at the Block 52+ level. Pakistan is unlikely to get more F-16s as it has chosen the Chinese way with J-10CE.

The Indian public associates the aircraft with an adversary country and has its sentiments accordingly. That was perhaps the reason for the company to give it a new nomenclature, calling it the F-21. The F-16 and F-15 aircraft made their first flights in 1974 and 1972, respectively. Of course, the F-21 will have state-of-the-art radar, avionics, an electronic warfare suite, and weapons. With 19,187 kg max take-off weight, it is a similar class as Mirage 2000 (17,000 kg) and MiG 29 (18,000 kg). India is already planning to buy a few additional pre-operated Mirage-2000 and MiG-29s, though that has nothing to do with new aircraft induction.

### **Conclusion**

I do believe that India would have to make a one-time purchase of the 114 aircraft. Ideally, the IAF and Indian Navy must choose the same type. It should be made in India. It must get us more ToT, ideally for the aero engine. The US is very keen to enter India's fighter aircraft ecosystem. Indo-US close relations in the Indo-Pacific, the signing of various logistics and communications interoperability agreements, and a large number of military exercises are all indicative of the geopolitical closeness between the two countries.

Ideally, they must offer the F-35 and find a technical way out of the S-400 linkage muddle. Will India be putting too many eggs in the US military aviation basket is being asked. Currently, the Indian military aircraft mix is roughly 60 percent Russian, 15 percent European, 15 percent US, and 10 percent Indian. An American fighter induction would mean a US basket of around 30 percent. I personally feel that in around 10 years, India must target increasing the Indian basket to around 25 percent and in 20 years to over 45 percent. This would mean accelerating the LCA and

AMCA programs. In the same period, the Russian and Western baskets must be reduced to 30 percent and 25 percent, respectively.

<https://www.eurasiantimes.com/big-push-for-boeing-f-15ex-and-lockheed/>

# THE ECONOMIC TIMES

*Mon, 24 Jun 2024*

## **Indian Army builds suspension bridge in 48 hours in rain-hit north Sikkim**

The Indian army on Monday said the force has constructed a foot suspension bridge in less than 48 hours to reconnect the border villages in the northern part of Sikkim, which have been affected by heavy rain and landslides leading to the death of six people earlier this month.

A suspension bridge has its roadway suspended from cables usually passing over towers and securely anchored at the ends. "The Indian Army engineers of Trishakti Corps have constructed a 150-foot suspension bridge in North Sikkim to re-connect the border villages which got cut off due to continued heavy rains to give respite to the locals," the Indian Army said in a statement.

The foot suspension bridge built over a stream in less than 48 hours will restore connectivity to the border villages and facilitate movement of the people and relief materials, it said.

North Sikkim's Mangan district was lashed by torrential rains on June 13 snapping road links and communication infrastructure. As a result, around 1500 tourists had been stranded for almost a week.

<https://economictimes.indiatimes.com/news/defence/indian-army-builds-suspension-bridge-in-48-hours-in-rain-hit-north-sikkim/articleshow/111232053.cms?from=mdr>



*Mon, 24 Jun 2024*

## **ATACMS ‘Defeats’ Russia’s S-500; Breaches Airspace For 1st Time Defended By ‘BEST’ SAMs – Media**

The attack, which occurred on June 23, resulted in the deaths of four people, including two children, and left around 150 more injured as missile debris rained down on a nearby beach. The Russian defense ministry asserted that the missiles used in the strike were ATACMS provided by

the US, a system capable of hitting targets up to 300km (186 miles) away. Footage emerged on the internet showing chaotic scenes on the beach in the Uchkuyevka area, with people fleeing from falling debris and injured individuals being carried away on sun loungers.

Kremlin spokesperson Dmitry Peskov condemned the strike as “barbaric” and accused the US of “killing Russian children.” He referenced recent comments by President Vladimir Putin, who had vowed to target countries supplying weapons to Ukraine. “The involvement of the United States in the attack on Sevastopol is beyond doubt,” Peskov stated, adding that Washington and its allies were encouraging Kyiv to commit acts of international terrorism and kill Russian civilians.

Russia’s defense ministry further claimed that all ATACMS missiles are programmed by US specialists and guided by American satellites, emphasizing the alleged involvement of the United States in the attack. “Washington and its satellites are encouraging Kyiv to commit acts of international terrorism and kill Russian civilians,” the ministry stated.

The Russian defense ministry reported that its air defenses intercepted five missiles loaded with cluster warheads launched by Ukrainian forces. However, the intercepted missiles still caused significant casualties and damage due to falling debris. The ministry also noted the presence of an American unmanned aerial vehicle ( UAV), the Global Hawk, in the airspace over the Black Sea southeast of Crimea at the time of the attack.

According to reports, the drone, identified by its tail number 11-2046 and call sign FORTE10, had taken off from the NATO Sigonella airbase in Italy and traversed the airspace of Greece and Bulgaria before heading towards the Black Sea. Moscow has alleged that this drone played a role in facilitating the Ukrainian attack on Crimea. The Russian government has vowed to retaliate, with officials warning of “consequences” for the US and any countries involved in supplying arms to Ukraine.

### **The Destructive Impact Of ATACMS**

ATACMS are ground-launched ballistic missiles fired from either the HIMARS or M270 multiple-launch rocket systems. Unlike more conventional cruise missiles, which travel at 600 mph, ATACMS can reach speeds of up to 2,300 mph, making them difficult for air defense systems to intercept. Once launched, Russia’s radar and missile detection systems activate almost instantly, but the missile’s speed allows only about three minutes to respond.

This brief engagement window, roughly 30 seconds, makes it challenging to intercept, significantly straining Russia’s air defense units. Experts note that upon launch, it takes time to determine the missile’s trajectory and impact point, leaving limited options other than warning everyone to take cover. In October, the United States approved sending Ukraine its first batch of ATACMS tactical missile systems with a range of 165 km. According to The New York Times, about 20 missiles were sent. Ukraine had been requesting these missiles for several months.

In March, the US discreetly sent a long-range version of these missiles to Ukraine as part of a military support package. This version can hit targets up to 300 km away, nearly double the range of the mid-range ATACMS.

Washington has not publicly disclosed the exact number of ballistic missiles supplied to Ukraine, though US National Security Advisor Jake Sullivan described it as a “significant” amount. These



missiles were first used in the early hours of April 17 against a Russian airfield in Crimea. Since then, the long-range ATACMS have significantly impacted Russian airfields, air-defense batteries, and docked warships across Crimea.

In mid-May, the Ukrainian army launched a massive ATACMS attack at a Russian base in Belbek outside Sevastopol in Crimea. Images confirmed that the ATACMS destroyed a radar and two launchers from an S-400 air-defense battery. As noted by analysts at Oryx, Russian forces had lost two S-400 command posts, four radars, and 16 launchers. Russian experts have acknowledged the effectiveness of this missile, suggesting that Ukrainian missiles should be destroyed before they can be launched. Military expert Vasily Dandykin told Izvestia that Sevastopol was attacked by ATACMS ballistic missiles for the first time.

“These missiles fly very fast,” he said. “They fired almost at the maximum range, which for ATACMS is 300 km. From Odessa to Sevastopol is about 270-280 km. We need to improve our air defense system to avoid wasting resources on drones. The massive attack on Crimea, especially Sevastopol, indicates that these missiles will soon target our territories.” Dandykin called the incident a “pure terrorist act” and emphasized the need to strike the locations of these missiles and respond more forcefully.

He stated that the Russian armed forces are actively working to enhance air and missile defenses in real-time and noted the necessity of destroying enemy missile systems before launch despite the difficulty of the task. “It is not easy to do this, but it is realistic,” he added. Meanwhile, Kyiv Post wrote that ATACMS had defeated Russia’s S-500 AD system for the first time.

The report claimed Sevastopol is a key element of Russia’s military infra and central to the air defense of Crimea. According to Ukrainian intelligence, at the heart of that air defense network is a recently deployed S-500, Russia’s cutting-edge air defense system. The report claims this could be the first time ATACMS could have entered air space defended by a Russian S-500.

<https://www.eurasiantimes.com/atacms-defeats-russias-s-500-breaches-airspace/>



*Mon, 24 Jun 2024*

## **After South China Sea, US, China Set To Wrestle At ‘Roof Of The World’; Washington Begins Himalayan Push**

A geopolitical drama is unfolding in the shadow of the world’s highest mountains. The United States, long on the back foot in the Indo-Pacific, is now making a bold move on the Tibetan plateau. But this isn’t just about America and China—India finds itself at the center of this high-altitude power play.

The United States, which was for quite some time in a defensive stance in the Indo-Pacific region, is now shifting to an offensive approach against China on the issue of Tibet. This strategic shift is playing out on Indian soil, adding a new dimension to the already tense U.S.-China-India

relationship. With ongoing trade disputes and Taiwan issues, Tibet's emergence as a flashpoint further complicates this global rivalry.

The US Congress recently passed the "Resolve Tibet Act," which advocates dialogue between China and the Dalai Lama. This act is a sharp jab at Beijing's "One China Policy" and a clear sign that Washington is changing its tune.

### **History Of US-Tibet Relations**

Imagine a century-long story filled with covert operations, spiritual leaders, and mountain warriors. That's the tale of Tibet, and it's heating up once again. The history of U.S.-Tibet relations is complex and often divided. Aaron Bekemeyer, in his paper for 'History 363' titled 'The Nuances of the US-Tibet Relationship,' argues that 'US-Tibet relations allowed Washington flexibility to avoid total rapprochement with China and maintain Tibet as a potential political tool in Sino-US and other international relations.'

Rewind to the 1950s... After the Communist Chinese takeover of Tibet in 1949 and 1950, the United States covertly supported various forms of Tibetan anti-Chinese resistance as part of its opposition to the Communist regime. However, following the Sino-U.S. rapprochement in 1972, Tibet's utility as an American foreign policy tool quickly diminished. For the past century or so, Tibet's history has been marked by confusion and conflict over its international political status. In the first half of the twentieth century, Tibet enjoyed de facto independence. Despite Chinese claims to sovereignty, Tibet secured British recognition of its autonomy in 1914 and maintained a military and diplomatic defense against Chinese encroachments. These factors allowed Tibet to conduct its own affairs until 1949.

According to Bekemeyer, the US, involved in the region only from the 1940s, recognized Tibetan autonomy but stopped short of full diplomatic recognition of Tibet as an independent nation. However, in 1950, after Mao Zedong's Communists took power in China, the People's Liberation Army invaded Tibet, and Tibetan representatives were coerced into signing the Seventeen-Point Agreement, which absorbed Tibet into China.

Beginning in the 1950s, the U.S. provided covert support for a Tibetan 'Guerrilla force' and non-military support for the Dalai Lama. This support continued until the normalization of Sino-American relations in 1972. By 1974, the U.S. had ceased its support, including cutting off the subsidy to the Dalai Lama and his government. Consequently, Tibet became a lesser issue in U.S. foreign policy, and Washington never again matched the level of commitment it had displayed in the 1950s and 1960s.

### **The US Tibet Policy Bill**

This month, the US Congress passed the Resolve Tibet Act, a legislation advocating for a peaceful resolution of the dispute over Tibet's status and governance. The Act calls on Beijing to resume dialogue with the Tibetan spiritual and political leader, the Dalai Lama. This significant expansion bolsters the Dalai Lama's authority in choosing his successor and mandates decisive US action against Chinese interference, effectively rejecting China's long-held 'One China Policy' and its authoritative grip over Tibet. The legislation marks a notable shift in Washington's approach under President Joe Biden, signaling a more assertive stance against Beijing.

Conversely, China has issued warnings to the US regarding the Tibet policy bill. Officially referring to Tibet as Xizang, China stated in April 2024 that it would only engage in dialogue with representatives of the Dalai Lama, not with officials of the Tibetan government in exile based in India. Additionally, China has ruled out discussions on the Dalai Lama's long-standing demand for autonomy for his remote Himalayan homeland.

Interestingly, Former U.S. Presidents Bill Clinton, George W. Bush, and Barack Obama all met the Dalai Lama. However, Donald Trump, who had a different stance on Tibet, did not meet him. Current US President Joe Biden has also yet to meet the Dalai Lama. However, the Dalai Lama has reached the US for medical treatment and has been received very warmly by his supporters. It is unclear whether the Dalai Lama will meet any U.S. officials during his trip. Earlier, the Dalai Lama stated that he does not seek independence from China but rather autonomy. While China continues to regard Tibet as its territory, Tibet does not consider itself subject to Chinese rule and continues to advocate for its independence.

### **Role Of India In U.S.-China Dispute Over Tibet**

Recently, India's role in the U.S.-China dispute over Tibet gained attention when a group of seven U.S. lawmakers visited Dharamshala, Himachal Pradesh, to meet the 88-year-old Dalai Lama, Tenzin Gyatso. Nancy Pelosi, after the meeting, stated, "The passage of this bill is a message to the Chinese government that we have clarity in our thinking and our understanding of this issue of the freedom of Tibet."

Tibet's significance in U.S. foreign policy extends beyond Sino-U.S. relations. At the very least, Washington's position on Tibet has implications for its relations with India. Understanding India's role requires knowing about the Special Frontier Force (SFF).

### **The Special Frontier Force (SFF)**

The Special Frontier Force (SFF), also known as the Vikas Battalion, has played a crucial role in preventing Chinese occupation along the Line of Actual Control (LAC) in Ladakh. The SFF was established on November 14, 1962, in the aftermath of the Sino-India war. Following the war, the Central Intelligence Agency (CIA) and India's Intelligence Bureau (IB) collaborated to train a 5,000-strong Tibetan force for potential missions against China. According to Tibetologist Claude Arpi, in an interview with 'India Today,' the force was the brainchild of former IB director B.N. Mullick and the CIA.

In the 1950s, the CIA and IB set up Mustang Base in Nepal's Mustang region to train Tibetans in guerrilla warfare. The Mustang rebels facilitated the Dalai Lama's escape to India during the 1959 Tibetan Uprising. The CIA, a civilian foreign intelligence service of the U.S. government, had been involved in a covert program to train Tibetan guerrillas to combat Chinese forces in Tibet since the 1950s. The SFF is currently based in Chakrata, Uttarakhand, and its insignia features a snow lion. The exact current strength of the force remains unknown.

The SFF gained attention following the Ladakh clash, particularly after the death of Tenzin Nyima, a Tibetan trooper, in a landmine blast at Pangong Tso. Images of his body wrapped in Indian and Tibetan flags brought focus to this secretive security force of trained mountain warriors. The SFF operates under the operational control of the Indian Army but remains a separate entity due to its

inclusion of Tibetan refugees and international implications. Military experts note that the SFF comprises both men and women who receive training equivalent to that of elite commandos.

The SFF has been instrumental in several major military operations, including Operation Eagle (1971 war with Pakistan), Operation Bluestar (1984 clearing of Amritsar's Golden Temple), Operation Meghdoot (1984 securing of the Siachen glacier), and Operation Vijay (1999 Kargil war with Pakistan), as well as numerous counter-insurgency operations. Despite its significant contributions, the SFF has largely operated in the shadows.

### **Shifts In India's Tibet Policy**

The Tibetan movement is currently facing significant survival challenges. On June 5, 2024, The Diplomat, an international online news magazine based in Washington, DC, reported that India plans to rename more than two dozen places in China's Tibet Autonomous Region in a tit-for-tat move against China renaming places in Arunachal Pradesh.

According to the report, the Army's Information Warfare Division has finalized the list of renamed places and will soon release it. Like the US, India's stance on Tibet has not remained consistent historically. Amid escalating tensions with China, there has been a shift in India's Tibet policy. In 1959, the Dalai Lama fled Tibet and sought refuge in India, arriving on March 31 of that year. Upon reaching India, he established a government-in-exile. In June 2003, India officially acknowledged Tibet as part of China following a meeting between then Prime Minister Atal Bihari Vajpayee and Chinese President Jiang Zemin. However, Indian officials clarified that this recognition was indirect, focusing on the autonomous Tibetan region rather than the entirety of Tibet, which is a significant portion of China.

This policy shift marked increased public engagement by the Indian government with the Dalai Lama. For instance, in 2014, Prime Minister Narendra Modi invited Lobsang Sangay, head of the Tibetan government in exile in India, to his swearing-in ceremony. However, Modi did not extend an invitation in 2019 for his second term, prioritizing a smooth summit with Chinese President Xi Jinping.

Currently, India's approach to Tibetans in India is guided by executive policy rather than law. While this policy has improved welfare measures for Tibetans in India, it lacks legal backing on core Tibetan issues. Therefore, there is a growing call for India to adopt a more assertive stance on Tibet in its dealings with China. As the Dalai Lama ages and questions of succession loom, the stakes are higher than ever. Will India forge its own Tibet policy? Can the US successfully challenge China's grip on the region?

<https://www.eurasiantimes.com/americas-new-offensive-in-th/>



*Mon, 24 Jun 2024*

### **How ISRO's Pushpak landed at a faster speed than commercial aircraft**

After several delays owing to weather, the Indian Space Research Organisation (Isro) landed its under-development Reusable Launch Vehicle (RLV), dubbed Pushpak, for the third time.

The test, known as RLV LEX-03, was conducted at 07:10 IST at the Aeronautical Test Range (ATR) in Chitradurga, Karnataka.

This mission marks Isro's third consecutive success in the series of RLV landing experiments, following the achievements of RLV LEX-01 and LEX-02.

#### **What Did Pushpak Do?**

Pushpak, the winged vehicle, was released from an Indian Air Force Chinook Helicopter at an altitude of 4.5 km. From a release point 4.5 km away from the runway, Pushpak autonomously executed cross-range correction manoeuvres, approached the runway, and performed a precise horizontal landing at the runway centerline. The vehicle's low lift-to-drag ratio aerodynamic configuration resulted in a landing velocity exceeding 320 kmph, compared to 260 kmph for a commercial aircraft and 280 kmph for a typical fighter aircraft.

After touchdown, the vehicle's velocity was reduced to nearly 100 kmph using its brake parachute, followed by the employment of landing gear brakes for deceleration and stop on the runway. During the ground roll phase, Pushpak utilized its rudder and nose wheel steering system to autonomously maintain a stable and precise ground roll along the runway.

#### **What Did Isro Achieve?**

The RLV LEX-03 mission re-demonstrated the autonomous landing capability of the RLV under more challenging release conditions, including a cross range of 500 meters against 150 meters for LEX-02 and more severe wind conditions.

This mission simulated the approach and landing interface and high-speed landing conditions for a vehicle returning from space, reaffirming ISRO's expertise in acquiring the most critical technologies required for the development of a Reusable Launch Vehicle (RLV).

Through this mission, the advanced guidance algorithm catering to longitudinal and lateral plane error corrections, essential for future Orbital Re-entry Missions, has been validated. The RLV-LEX uses multisensor fusion, including sensors like the Inertial sensor, Radar altimeter, Flush air data system, Pseudolite system, and NavIC.

The mission reused the winged body and flight systems from the LEX-02 mission without any modification, demonstrating the robustness of ISRO's capability to design reusable flight systems for multiple missions. The mission, led by the Vikram Sarabhai Space Centre (VSSC), was a collaborative effort involving multiple ISRO centres, the Indian Air Force, and various other research and development establishments and industrial partners.

<https://www.indiatoday.in/science/story/how-isros-pushpak-landed-at-a-faster-speed-than-commercial-aircraft-2557175-2024-06-24>



Mon, 24 Jun 2024

## **Scientists explore if warp drives can help detect extraterrestrial life through gravitational waves**

Not many are convinced of extraterrestrial life, but a paper published by Cornell University said warp drives—spacecraft capable of distorting the shape of the space-time continuum and thereby beating the speed of light—might help scientists identify extraterrestrial life. Yes, the search for alien life could find an unexpected ally in comic books and sci-fi movies like Star Wars and Star Trek, which have repeatedly explored the idea of warp drives.

Despite their seemingly fictional nature, warp drives adhere to Einstein's general relativity principles. Famous physicist Miguel Alcubierre published a ground-breaking paper in 1994 titled "The warp drive: hyper-fast travel within general relativity," linking warp drives with general relativity. Alcubierre proposed that a spacecraft could surpass the speed of light by creating a "warp bubble," which contracts space ahead of it while expanding space behind it.

Rather than propelling the spacecraft to light speed, warp drives manipulate the space surrounding them, enabling faster-than-light travel by warping the fabric of space itself. These devices, also called warp machines, remain theoretical with current human technology. Achieving "warping" speed requires negative energy, which is currently speculative and can only be found in sci-fi movies and TV shows.

A failed/broken warp drive might be the solution to finding alien life.

Current technology is not capable enough to build a spacecraft that can surpass light speed. However, we have supercomputers that can simulate one to help understand its behaviour. A group of scientists—Katy Clough from Queen Mary University of London, Tim Dietrich from the Max Planck Institute for Gravitational Physics and Sebastian Khan from Cardiff University—are now interested in understanding what would happen if a warp drive fails.

The Laser Interferometer Gravitational-Wave Observatory (LIGO) is used to observe the ripples in spacetime caused by cosmic events, which is also said to be capable of detecting a change in gravitational waves.

When a warp drive collapses, it will result in the release of powerful gravitational waves, which will impact spacetime, as these waves can disturb the matter in space and redistribute the energy, which could be similar to the waves created in a stagnant pond due to an external object like a stone.

Using numerical relativity, scientists can simulate the effects of strong gravitational forces generated by warp drives. This simulation can help them understand how these forces affect their surroundings and potentially identify natural occurrences that mimic these signatures, aiding in the search for extraterrestrial life.

Scientists say a spacecraft travelling at just 10 per cent of the speed of light can generate a 300 kHz signal, which can be detected from 3.26 million light years away.

For now, this is all theory and is far away from being real, and for most, it definitely sounds more fictitious than fact.

<https://indianexpress.com/article/technology/science/warp-drives-can-help-detect-extraterrestrial-life-9409876/>



*Tue, 25 Jun 2024*

## **Rare gigantic jets witnessed over Himalayas**

A rare lightning event shared by NASA's Astronomy of the Day last week showed gigantic jets shooting up from a thunderstorm towards the Himalayas in China Bhutan.

The four long jets that occurred within a span of minutes depicted an unusual type of lightning that is different from regular cloud-to-cloud and cloud-to-ground lightning. This lightning discharge, only recorded in the 21st century, occurs between some thunderstorms and the Earth's ionosphere.

Further, gargantuan gigantic jets pack 50 times the power of a regular lightning strike, according to weather.com, and can travel as high as 80 kilometres above the Earth's surface.

The bottom of a gigantic jet appears similar to a cloud-to-above strike called blue jets, while the top resembles upper-atmosphere red sprites. According to NASA, these jets reduce charge imbalance between different parts of Earth's atmosphere.

Back in August last year, Puerto Rico-based photographer Frankie Lucena spotted this rare phenomenon emerging from a storm system that would evolve into Hurricane Franklin. Gigantic jets were also seen over Odisha's Bhadrak from an airborne plane in 2018.

The nature of gigantic jets and their possible association with other types of Transient Luminous Events (TLEs), such as blue jets and red sprites, remains an active topic of research.

<https://indianexpress.com/article/technology/science/rare-gigantic-jets-himalayas-9412401/>

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