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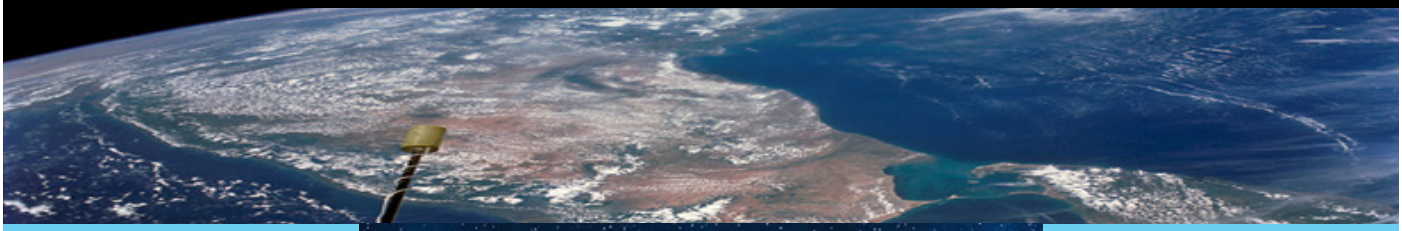

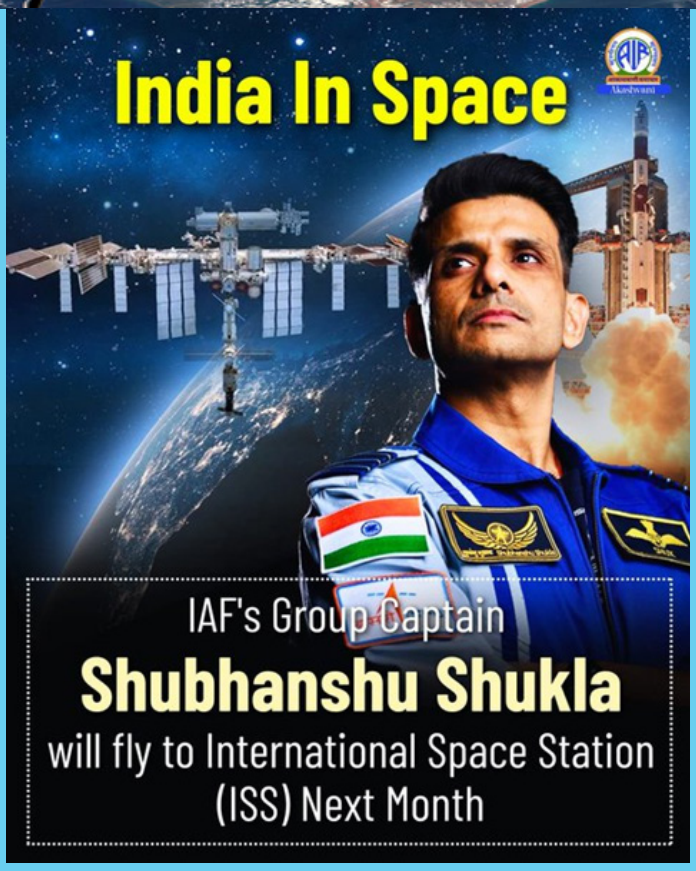

Image Courtesy: AIR

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"There is something more important than any ultimate weapon. That is the ultimate position — the position of total control over Earth that lies somewhere out in space. That is … the distant future, though not so distant as we may have thought. Whoever gains that ultimate position gains control, total control, over the Earth, for the purposes of tyranny or for the service of freedom".

- Lyndon B. Johnson, (Then) Senator, quoted in U.S. News & World Report magazine, 1958

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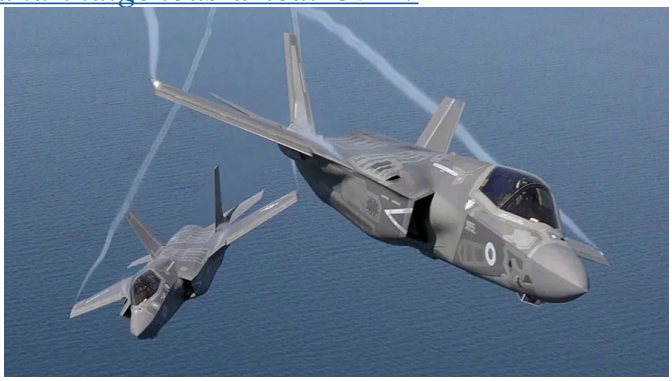
Opinions and Analysis

US F-35 Proposal for India Faces Headwinds as IAF Signals Preference for more Rafale Jets and Indigenous AMCA

Jaydeep Gupta | 14 April 2025

Source: Defence.in | https://defence.in/threads/us-f-35-proposal-for-india-faces-headwinds-as-iaf-signals-preference-for-more-rafale-jets-and-indigenous-amca.13712/



A potential offer from the United States to supply India with the advanced F-35A Lightning II stealth fighter jet, first announced by U.S. President Donald Trump in February, appears to be facing significant challenges.

Nearly three months after the high-profile suggestion aimed at strengthening U.S.-India defence ties, no formal proposal has been submitted. Meanwhile, indications suggest the Indian Air Force (IAF) is prioritising the acquisition of additional French-made Dassault Rafale jets and focusing on its indigenous Advanced Medium Combat Aircraft (AMCA) program.

During a meeting with Indian Prime Minister Narendra Modi in Washington D.C. on February 13, President Trump indicated a substantial increase in military sales to India, specifically mentioning "paving the way" for the F-35A.

This fifth-generation fighter, known for its stealth capabilities, advanced sensors, and multi-role functions, is operated by key U.S. allies. Its acquisition could significantly enhance the IAF's capabilities, especially considering regional air power developments.

However, the discussion remains informal. Indian Foreign Secretary Vikram Misri previously stated that no official procurement process is underway, which would typically require a formal Request for Proposals (RFP) and detailed evaluations.

The lack of a concrete government-to-government framework or timeline raises questions about the offer's feasibility.

Further complicating matters are the F-35A's significant costs - estimated at around $82.5 million per aircraft plus substantial operational expenses - and the stringent end-user conditions typically imposed by the U.S. on its advanced defence technology.

While the F-35 discussion remains uncertain, the IAF seems to be moving forward with plans to expand its fleet of Rafale fighters. India currently operates 36 Rafales, acquired in a deal finalised in 2016, and the air force has reportedly expressed satisfaction with their performance.

Recent developments suggest the IAF

is keen on acquiring 114 additional Rafales under the ongoing Multi-Role Fighter Aircraft (MRFA) procurement program.

The preference for the Rafale stems from several factors. It is a proven 4.5-generation aircraft already integrated into the IAF, featuring India-specific enhancements and compatibility with existing infrastructure, unlike the F-35 which would require major logistical and training adjustments.

Furthermore, the Rafale is seen as having lower lifecycle costs compared to the F-35. France's established track record of technology transfer and willingness to support local manufacturing aligns well with India's 'Make in India' defence production goals, a contrast to potential U.S. restrictions on sensitive F-35 technology.

The IAF also faces pressure to address its declining number of fighter squadrons, currently standing at 31 against a required strength of 42, as older aircraft like the MiG-21 are phased out. Procuring additional Rafales offers a faster way to bolster squadron strength compared to the lengthy process and integration hurdles anticipated with the F-35.

Beyond immediate needs, the focus on Rafale aligns with India's long-term strategic goal of self-reliance in defence, embodied by the indigenous AMCA program. This fifth-generation stealth fighter project, managed by the Aeronautical Development Agency (ADA) and Hindustan Aeronautics Limited (HAL), aims for a first flight around 2028 and induction by 2034.

Having received significant government backing, including 15,000 crore in initial funding, the AMCA represents India's ambition to develop its own advanced combat aircraft tailored to its specific requirements.

Defence analysts and officials suggest that pursuing the F-35 could potentially divert critical resources and focus away from the strategically vital AMCA project. A senior official previously noted that opting for a U.S. fighter could represent a setback for India's indigenous defence efforts.

In this context, acquiring more Rafales is viewed as a practical interim measure to maintain capability while the AMCA program matures, fitting better with the national vision of 'Atmanirbhar Bharat' (Self-Reliant India).

Ultimately, several significant hurdles hinder a potential F-35 deal for India. These include the aircraft's high acquisition and operational costs, major challenges in integrating it with India's existing Russian-origin platforms (like the S-400 defence system and Su-30MKI fighters), potential geopolitical friction with traditional defence partners like Russia, strict U.S. end-user restrictions, and the overriding national priority placed on indigenous programs like the AMCA and the Tejas Mk2 fighter.

Given these factors, the IAF's apparent lean towards procuring more Rafales under the MRFA initiative - potentially becoming the last major foreign fighter acquisition - seems increasingly likely. This approach allows India to meet its medium-term defence needs while

concentrating resources on the indigenous AMCA to anchor its future air combat capabilities, reducing long-term dependence on foreign suppliers.

The F-35A, despite its technological prowess, appears misaligned with India's current strategic trajectory and commitment to defence indigenisation.

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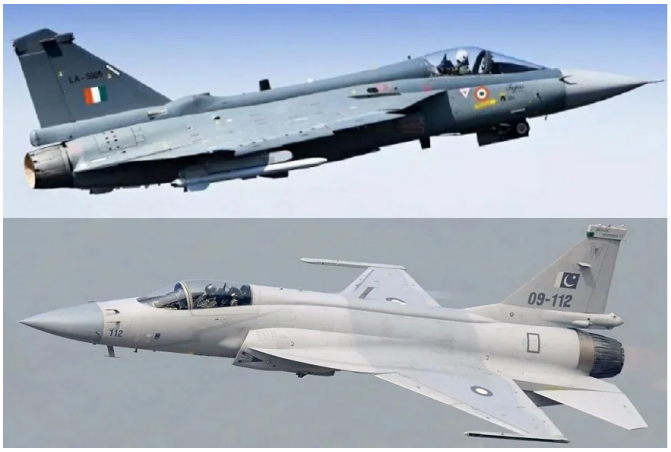
Brazil Evaluates India's Tejas Mk1A against Pakistan's JF-17 Block III for Crucial Contract to Replace Ageing F-5 Jets

Raghav Patel | 14 April 2025

Source: Defence,in | https://defence.in/threads/brazil-evaluates-indias-tejas-mk1a-against-pakistans-jf-17-block-iii-for-crucial-contract-to-replace-ageing-f-5-jets.13714/



The Brazilian Air Force (FAB) is actively assessing potential replacements for its long-serving Northrop F-5FM Tiger II jets, marking a significant step in its ongoing fleet modernization program.

Facing the need to retire these decades-old aircraft, Brazil is considering distinct proposals from India and Pakistan, pitting the Indian-made Tejas Mk1A against the Pakistani-Chinese jointly developed JF-17 Block III.

The FAB's modernisation drive aims to enhance its capabilities to meet contemporary defence and security challenges, particularly across Brazil's vast territory, including the demanding Amazon region.

While the advanced SAAB F-39 Gripen NG now serves as Brazil's primary fighter, the air force requires a more cost-effective, lightweight aircraft to complement the Gripen fleet.

This new aircraft would undertake essential roles such as air policing, ground attack operations, and other secondary combat duties, replacing the capabilities of the outgoing F-5s.

Approximately 40 F-5FM Tiger II jets remain in service but are approaching the end of their operational lifespan and are scheduled for retirement in the coming years.

These third-generation fighters, operational since the 1970s, lack the modern avionics, sensors, and versatility needed for current aerial warfare scenarios. This requirement has drawn international interest, leading to formal offers from both Pakistan and India.

Pakistan formally presented its JF-17 Block III proposal in early April 2025, offering detailed information on the aircraft's capabilities. Developed collaboratively by the Pakistan Aeronautical Complex (PAC) and

China's Chengdu Aircraft Corporation (CAC), the JF-17 has been a key asset for the Pakistan Air Force since 2007.

The latest Block III variant, which became operational in 2024, incorporates significant upgrades, including an Active Electronically Scanned Array (AESA) radar, advanced flight control systems, an Infrared Search and Track (IRST) system, and a Helmet-Mounted Display (HMD).

India has countered with its Tejas Mk1A, a 4.5-generation fighter developed indigenously by Hindustan Aeronautics Limited (HAL). The Tejas is noted for its General Electric F404 engine, which provides a high thrust-to-weight ratio, potentially exceeding that of the JF-17.

It features a maximum speed of Mach 1.8, a combat range cited at 500 km with external fuel tanks, and a weapon payload capacity of 5,300 kg. The extensive use of composite materials in its construction contributes to a lower radar cross-section compared to the JF-17.

The estimated unit cost for the Tejas Mk1A is approximately $37.8 million.

Adding another dimension to the procurement process, the chief of the Brazilian Air Force has reportedly proposed a potential barter arrangement with India. This deal could involve Brazil supplying its Embraer C-390M military transport aircraft to the Indian Air Force in exchange for Tejas Mk1A jets.

While the Tejas Mk1A has faced challenges securing international orders previously, its profile has been boosted by growing confidence within the Indian Air Force (IAF). The IAF has placed substantial orders for 180 Tejas Mk1A aircraft and has integrated the type into operational deployments and international exercises.

The decision facing Brazil involves a complex evaluation of not only the technical performance and cost-effectiveness of the Tejas Mk1A and JF-17 Block III but also considerations related to strategic alignments, potential industrial partnerships, and the viability of the proposed barter deal with India. The outcome will significantly shape the future composition of Brazil's air defence capabilities.

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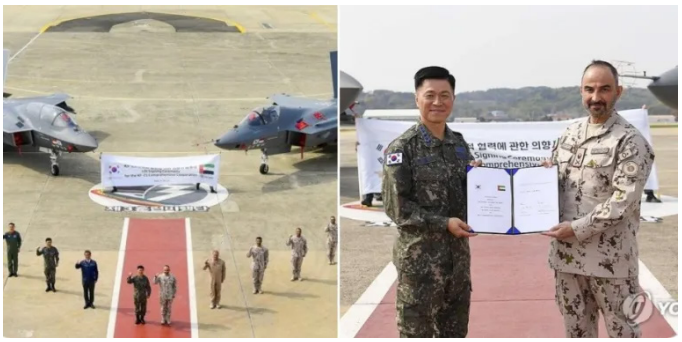
KAAN vs KF-21: UAE Signs LOI With South Korea for KF-21 Boramae Fighters; Comes After Showing "Keen Interest" in Turkish Jets

Sakshi Tiwari | 17 April 2025

Source: Eurasian Times | https://www.eurasiantimes.com/kaan-vs-kf-21-uae-signs-loi-with-s-korea/?amp



Via X

The cash-rich kingdom of the United Arab Emirates (UAE) appears to be interested in the South Korean KF-21 Boramae fighter jets as the two states pursue closer defense ties.

The UAE and South Korean air forces have signed a letter of intent (LoI) for comprehensive cooperation on South Korean fighter jets.

The agreement was signed between the Republic of Korea Air Force (RoKAF) Chief of Staff, Gen. Lee Young-su, and the Commander of the UAE Air Force and Air Defence, Maj. Gen. Rashed Mohammed A. Al Shamsi, during the latter's visit to the Korea Aerospace Industries (KAI), which manufactures the KF-21 fighters and the FA-50 light attack jets.

This preliminary agreement will enable the UAE Air Force to visit South Korean units that will operate the KF-21 fighters and observe air drills involving the aircraft. The agreement did not specify whether the UAE would be interested in purchasing the aircraft from South Korea; however, it is believed that the Letter of Intent (LoI) can pave the way for a future deal.

The UAE first evinced interest in the KF-21 in 2023 as part of its plan to acquire next-generation fighter jets. At the time, reports noted the UAE's Tawazun Economic Council had sent a letter to the South Korean National Security Office asserting Abu Dhabi's direct cooperation in the KF-21 program.

The interest may have deepened after the UAE Air Force Air Defense Commander and KAI President Kang Gu-young met in February at the "IDEX 2025" show in Abu Dhabi, where the KAI chief briefed the UAE air chief on KF-21's current state and its potential for growth through integration with artificial intelligence (AI) pilots in future battlefields.

The KAI has been seeking entry into the Middle Eastern export market, where several countries are looking to upgrade their military amid growing security threats from state and non-state actors, albeit without the restrictions that come with purchasing Western equipment.

Speaking of the UAE delegation's visit, KAI president Kang stated, "This visit by the air force provided an opportunity to showcase KAI's advanced aircraft development technology to the UAE and laid the groundwork for expanding defense cooperation in the future." "We will continue to strive for exports to the Middle East and Africa."

The UAE, which primarily operates the

Mirage 2000 and F-16 Fighting Falcon, has been seeking more advanced combat jets since negotiations with the US for F-35 stealth fighters fell apart.

The Emirati kingdom earlier had plans to purchase 50 F-35 Lightning II fighters as part of a package deal that was to include 18 advanced drone systems and other munitions. However, the kingdom chose to abandon the project after talks with US officials hit a stalemate, and the US officials began to drag their feet on the sale.

The US's reluctance to sell the aircraft to the UAE was attributed to the UAE's close ties with China, as well as the US's obligation to ensure that Israel maintains a qualitative military edge in the region.

With talks on the F-35 stalled, the UAE signed a deal with France's Dassault Aviation to purchase 80 Rafale F4 fighters in December 2021—the single largest Rafale order placed by any country in the world. The first of these fighter jets was delivered to the kingdom's air force in January 2025.

Notably, the Letter of Intent (LoI) between the UAE and South Korean Air Forces was signed months after the UAE announced in September 2024 that it did not intend to reopen talks on the potential purchase of F-35 Lightning II fighter jets.

In addition to the South Korean KF-21, the Emirati kingdom has shown interest in another advanced-generation fighter jet: the Turkish KAAN. Thus, it indicates that the kingdom is exploring non-American, 5th-gen aircraft options.

The US has traditionally been the primary arms supplier to the UAE, accounting for 57% of Emirati arms imports between 2019 and 2023. However, the country now appears to be pivoting away from the US, as evidenced by its interest in alternatives to the F-35.

KF-21 Is A South Korean Marvel

The KF-21, an advanced supersonic fighter, is slated to replace the South Korean Air Force's aging F-4 and F-5 jet fleet. The Boramae fighter jet is slated to be the primary aircraft for South Korea's Air Force and is expected to significantly enhance the country's three-axis defense system, which is designed to counter potential threats from North Korea.

Last year, the KF-21 Boramae, which began development nine years ago, reached a significant milestone when a deal was signed between South Korea and KAI to produce 20 units. These fighter jets are slated for initial delivery to the Republic of Korea Air Force (RoKAF) by the end of 2026.

The KAI chief, Kang, has projected the aircraft as a better alternative than European 4.5th-generation fighters.

Kang, a retired Air Force lieutenant who previously flew the F-4 fighter jet, said, "They say the KF-21 is a 4.5-generation fighter, but I think that's an underestimation. Compared to the 4.5-generation French Rafale and the European Eurofighter Typhoon, its performance

is superior. So, I call it a 4.9-generation fighter, which is closer to the 5th generation (a fighter with full stealth capabilities)."

He pointed to the aircraft's radar cross-section (RCS), which places it closer to the fifth-generation fighters. Additionally, it incorporates advanced features, such as the Active Electronically Scanned Array (AESA) radar, commonly referred to as the "eye of a fighter," and various electronic warfare equipment.

However, as previously explained by the EurAsian Times, the KF-21 still does not match the capabilities of the F-35, despite its airframe being considered stealthier than that of fourth-generation fighters. Although it does not currently have internal weapons bays, this could change in future improvements, leading to the reclassification of the aircraft as a fifth-generation fighter.

Many experts view the KF-21 as a potential star in the global export market due to its rapid development and possibly prompt deliveries. This excitement stems from South Korea's successes as a major global arms exporter, particularly multiple significant export contracts for the FA-50 light attack aircraft over the last decade.

Kang states that one of the key advantages of the KF-21 is its cost-effectiveness, being approximately 30-40% less expensive than its competitors.

Efforts are also underway to further reduce the price through enhanced automation processes. The South Korean official also noted that several Middle Eastern nations are showing notable and increasing interest in the FA-50, without naming any country.

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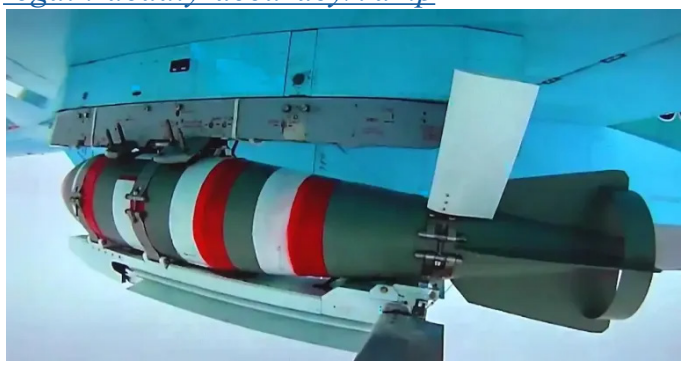
Air Power

Russian Glide Bombs Regain Deadly Accuracy after Navigation Upgrade; Ukraine Braces for Massive Offensive

Vijainder K Thakur | 17 April 2025

Source: Eurasian Times | https://www.eurasiantimes.com/russian-glide-bombs-regain-deadly-accuracy/?amp



A FAB-500 M62 with a UMPK wing kit

At least two videos have gone viral on social media showing Russian UMPK-equipped FAB-500PD bombs striking their targets with deadly precision.

One video shows a salvo of four FAB-500PD bombs hitting an ammunition storage facility in Kherson Oblast. The accuracy of the strike is evident from the secondary explosions that followed the initial impacts. The footage suggests the bombs landed within each other's lethal blast radius, effectively neutralizing the target.

According to the Russian military-linked Fighterbomber Telegram channel, Russia has introduced an upgraded variant of its UMPK glide and navigation kit for unguided bombs.

This version features an improved Kometa satellite navigation (SATNAV) module, addressing vulnerabilities found in the earlier Kometa-M units used in previous UMPK kits.

UMPK Accuracy Degradation

In February, reports from usually reliable sources suggested that Russian forces had lost a significant battlefield advantage—their ability to deliver precision strikes using UMPK-equipped glide bombs.

On February 25, the Fighterbomber Telegram channel noted that Russian frontline bombers continued to deploy UMPK-equipped bombs against Ukrainian targets with the same frequency as before. However, the accuracy of these munitions had noticeably declined due to degradation in the SATNAV guidance, likely caused by intensified Ukrainian jamming efforts.

When Russian forces first fielded UMPK kits in early 2023, the bombs were equipped with jam-resistant Kometa navigation modules. Following their introduction, Russian social media channels—including the official Telegram account of the Russian Ministry of Defence (RuMoD)—regularly posted videos showcasing UMPK-guided bombs striking targets with high precision.

The integration of UMPK kits significantly enhanced the Russian Air Force's ability to conduct precision strikes using legacy unguided bombs, offering a cost-effective method to modernize its aerial strike capabilities.

Initially, Ukrainian forces had no effective

counter to the UMPK-guided bombs. Their glide time was too short for reliable tracking and interception by most air defense (AD) missile systems.

Yuriy Ihnat, spokesperson for the Ukrainian Air Force, repeatedly acknowledged the challenges posed by UMPK-guided bombs, emphasizing their disruptive impact on Ukrainian defenses.

The relatively low cost of FAB-series bombs, combined with Russia's vast Soviet-era stockpiles, enabled the deployment of hundreds of UMPK-equipped bombs weekly at the height of their usage, creating a persistent and serious threat to Ukrainian forces and infrastructure.

Electronic Warfare Proves an Effective Counter

Since then, Ukrainian forces have developed portable and mobile electronic warfare (EW) stations capable of degrading the accuracy of the Kometa navigation modules used in UMPK-guided bombs.

These EW systems are reportedly deployed extensively along the line of contact, disrupting satellite-based navigation for various Russian munitions—including UMPK-equipped bombs—thereby diminishing their effectiveness.

On February 26, Forbes reported that Ukrainian forces had acquired the capability to effectively jam Russian glide bombs across the front line, neutralizing one of Russia's key battlefield advantages.

Following the degradation in the accuracy of UMPK bombs, video footage showing the use of UMPK bombs almost disappeared on social media!

This success highlights the dynamic nature of modern warfare, where electronic countermeasures can play a decisive role in undermining the performance of advanced precision-guided weapons.

Russian Forces Seize The Initiative Again

The two viral videos showing accurate strikes with UMPK-equipped FAB-500 bombs are not isolated incidents. According to the Fighterbomber Telegram channel, Russian forces have carried out numerous strikes along the front lines since April 15.

In each reported case, the strikes were described as accurate by Fighterbomber's sources.

Not only has the frequency of strikes increased, but each strike has also become more lethal. Russian forces are now launching salvos of two or four glide bombs per attack.

This tactic enhances effectiveness in two key ways: first, the combined explosive payload delivers greater destructive power; second, the spatial separation of the bombs in flight complicates electronic jamming, making it difficult to disrupt the navigation signals of the entire salvo.

The widespread and sustained use of these upgraded UMPK-guided bombs suggests that

Russia has both a sufficient stockpile and an active production capacity—potentially producing hundreds of units daily—to support continued deployment at scale.

Make Hay While the Sun Shines

Electronic warfare (EW) is a constant cat-and-mouse game. While Russian forces may have gained the upper hand for now, the balance will inevitably shift. Ukrainian forces will need time to analyze and adapt to the upgraded Kometa modules—but history suggests they eventually will.

This marks the second upgrade to the Kometa module since the start of Russia's Special Military Operation (SMO).

According to unconfirmed reports, the upgraded Kometa-M module now features 12 to possibly 16 antenna elements. The addition of multiple antenna arrays enhances the system's ability to spatially distinguish legitimate GNSS (Global Navigation Satellite System) signals from jamming interference, significantly improving resistance to EW.

These additional receivers reportedly allow the module to resist interference "many thousands of times better" than standard GPS-based systems.

This upgrade has created a brief window of opportunity for Russian forces to regain momentum through intensified bombing of Ukrainian storage and staging areas.

The earlier degradation in glide bomb accuracy may have contributed to the stagnation of Russian advances across several fronts since February. As before, the renewed effectiveness of UMPK-equipped bombs could offer Russian forces a chance to alter the battlefield map in their favor.

Conclusion

Several Ukrainian officials, including Volodymyr Zelenskyy, have publicly stated that Russian forces are preparing for a major offensive. These claims are supported by observed military activity, intelligence reports, and independent analyst assessments.

On March 15, Zelenskyy noted that Ukrainian intelligence had detected a buildup of Russian forces, particularly near the Sumy and Kharkiv oblasts.

Further reinforcing this, on April 9, 2025, Ukrainian Commander-in-Chief Oleksandr Syrskyi reported a sharp escalation in Russian military operations. He stated that the rate of Russian assault actions had nearly doubled in just one week across multiple front-line sectors, adding that Russia had "effectively begun an offensive on the Sumy and Kharkiv regions."

If these assessments prove accurate, the renewed precision and lethality of Russian UMPK-equipped glide bombs could play a significant—if not decisive—role in shaping the outcome of the anticipated offensive.

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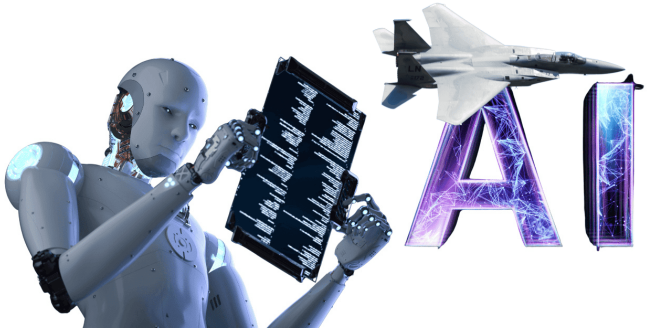
NATO Acquires "NATO MSS", an AI-Enabled Warfighting System that will Boost Its Command & Control Ability

Sumit Ahlawat | 17 April 2025

Source: Eurasian Times | https://www.eurasiantimes.com/nato-acquires-nato-mss-an-ai-enabled-warfighting/?amp



NATO has taken a significant step toward modernizing its military capabilities by acquiring the Maven Smart System NATO (MSS NATO), a new artificial intelligence (AI)-enabled platform developed by Palantir Technologies Inc.

The acquisition, completed within six months of identifying the requirement, reflects NATO's intent to retain its technological edge in a rapidly evolving security environment.

Ludwig Decamps, General Manager of the NATO Communications and Information Agency (NCIA), said the system marks a strategic shift in how NATO prepares its forces to respond to emerging threats.

"NCIA is pleased to team up with Supreme Headquarters Allied Powers Europe (SHAPE) and Palantir to deliver MSS NATO to the Warfighter, providing customized state-of-the-art AI capabilities to the Alliance, and empowering our forces with the tools required on the modern battlefield to operate effectively and decisively," Decamps said.

Developed through close coordination between NCIA, SHAPE, and Palantir, the MSS NATO platform delivers a next-generation digital infrastructure tailored for modern military operations.

As an integrated command-and-control system, it uses machine learning models and data analytics to support intelligence fusion, enhance situational awareness, improve operational planning, and accelerate decision-making.

What the System Does

MSS NATO is designed to strengthen NATO's command and control functions by helping military leaders make quicker, better-informed decisions. It collects and processes data from multiple sources to offer real-time insights and predictive assessments, improving battlefield awareness, targeting, and coordination.

At its core, the system integrates structured and unstructured data from both classified and open sources. Its data analysis tools generate actionable intelligence to support decision-making. This enables commanders to make timely and strategic decisions based on a comprehensive view of the operational environment.

The MSS platform builds on the U.S. military's XMSS system, which has become a standard tool for planners across the Joint

Staff, theater commands, and the Pentagon's Chief Digital and Artificial Intelligence Office (CDAO). In 2024, the CDAO awarded contracts worth over US$500 million to expand the system's use across the Department of Defense, from hundreds of users to thousands.

Originally created in 2021 as a follow-up to the Maven program—an object-recognition system developed to scan hours of surveillance video for identifying potential targets—MSS draws from a wide range of data inputs. It organizes this information into a single, searchable platform that supports everything from logistics and supply status to targeting data and social media monitoring.

This eliminates the need for officers to manually cross-check multiple databases that may be incompatible or siloed, a process that previously took hours or even days. Instead, the MSS platform centralizes relevant information and streamlines access, allowing faster coordination and execution.

Recent updates to the system added capabilities such as advanced natural language processing and the option to integrate tools developed by third-party vendors. MSS is built with an open-architecture approach, which allows users to tailor the interface and add analytical functions without altering the base data. This ensures that all users work with a consistent set of information while adapting the tools to their specific operational needs.

By maintaining a shared foundation of verified data and offering flexibility on top, MSS enables multiple users across various units or commands to collaborate without relying on a rigid centralized system. NATO officials said this flexibility was a key reason for the platform's rapid adoption within six months of the formal requirement being raised.

Competing Military AI Capabilities

NATO's acquisition of MSS NATO comes amid concerns that the alliance is falling behind in integrating advanced technologies into its military planning and execution. China has been working on AI-driven operations under its concept of "intelligentized warfare," which focuses on combining machine learning, autonomous systems, and integrated data processing to speed up battlefield decision-making.

China has conducted simulated war games where AI-assisted commanders reportedly outperformed human-led teams.

The People's Liberation Army (PLA) has invested in autonomous systems, real-time surveillance integration, and electronic warfare incorporating cognitive technologies. These efforts are intended to shorten response times and gain an advantage in fast-changing combat situations.

Russia, too, has continued developing AI-enabled systems despite economic sanctions and ongoing military operations. Russian forces are reportedly working to embed AI in kamikaze drones, such as the Iranian-designed Geran-2, enabling semi-autonomous targeting capabilities.

In addition, Russia is investing in electronic warfare systems aimed at disrupting satellite communications, GPS navigation, and networked systems—areas on which U.S. and NATO militaries remain heavily dependent. Incorporating AI into these electronic warfare tools may enhance their effectiveness by allowing them to respond faster to adversary communications or disrupt coordination more efficiently.

Reliance On The Private Sector

The MSS NATO platform reflects a wider trend of growing reliance on private companies to develop warfighting systems.

Palantir's growing role in defense contracts is part of a broader shift. In the U.S., firms like Anduril Industries, Shield AI, and Raytheon Technologies are building systems that combine autonomous operations with AI decision support.

In China, companies such as Hikvision and Huawei have reportedly developed surveillance systems with military applications. In Israel, companies like Elbit Systems and Rafael Advanced Defense Systems are producing AI-powered drones and precision targeting technologies.

Unlike traditional defense equipment procurement through state-funded research organizations, AI systems built by private firms often remain proprietary.

Their internal workings, especially the algorithms, may not be transparent or subject to public oversight.

This can limit governments' ability to adapt or audit the systems independently. In the case of NATO's MSS platform, the alliance is procuring a tool developed by a private firm, which retains control over key software components that may also be used in other commercial or defense contracts.

This arrangement raises concerns about long-term dependency. Unlike conventional military equipment such as tanks or aircraft, AI platforms are not easily reverse-engineered or modified without sustained vendor support. For European NATO members that lack domestic AI development capabilities, this may pose risks to strategic autonomy in the long run.

NATO's core strength remains its ability to coordinate complex operations among member states. While the MSS NATO platform enhances this coordination by improving information flow and decision-making, it does not significantly alter NATO's overall military structure or capabilities.

For the alliance to undergo a fundamental transformation, it would need to integrate AI technologies more deeply into autonomous weapons systems, undersea platforms, cyber defense networks, and frontline tactical operations. Until then, MSS NATO represents an important but incremental upgrade.

As military strategies shift toward data-centric operations, the key advantage will not lie in who possesses the most firepower but in who can interpret battlefield information the

fastest and act accordingly. NATO has now entered that arena—but it is still catching up.

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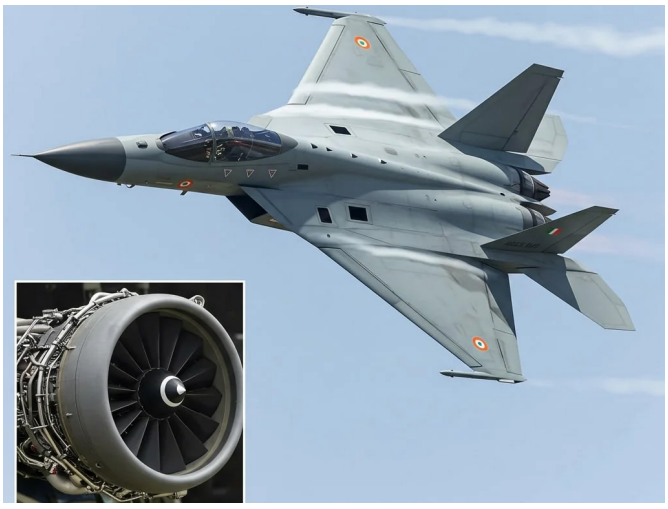
Rolls-Royce Proposes Entirely New 110kN Engine Tailored for India's AMCA with Full IPR, Distinct from its Own 6th-Gen GCAP

Jaydeep Gupta| 17 April 2025

Source: Defence.in | https://defence.in/threads/rolls-royce-proposes-entirely-new-110kn-engine-tailored-for-indias-amca-with-full-ipr-distinct-from-its-own-6th-gen-gcap.13746/



In a significant development for India's military aviation future, aerospace giant Rolls-Royce has confirmed its offer to co-develop a new jet engine for the nation's upcoming Advanced Medium Combat Aircraft (AMCA).

Company officials stated that the proposed 110 kilonewton (kN) thrust engine would be a completely original design, specifically created for India's requirements and separate from the engine Rolls-Royce is developing for its own contributions to sixth-generation fighter programs like the Global Combat Air Programme (GCAP).

Crucially, Rolls-Royce emphasised that India would retain full Intellectual Property Rights (IPR) for this bespoke engine. While some advanced technologies might be shared, the fundamental design and thrust capacity will differ considerably from Rolls-Royce's other next-generation projects.

The AMCA represents India's ambitious step into the 5.5-generation stealth fighter category, spearheaded by the DRDO and the ADA. This advanced aircraft requires a sophisticated propulsion system capable of sustained supersonic flight without afterburners (supercruise), features optimized for stealth, and superior agility.

Rolls-Royce's proposal for a 110kN engine directly addresses these needs. By offering an engine designed "from scratch," rather than adapting an existing model, the company aims to provide a powerplant perfectly matched to the AMCA's specific operational and strategic profile. Mastering jet engine technology is seen as a critical step for any nation aspiring to advanced aerospace capabilities.

Officials highlighted that the engine's power specifications - 110kN of "wet" thrust (with afterburner) and potential for growth to 120-130kN are distinct from the engine being developed for the GCAP initiative involving the UK, Italy, and Japan.

GCAP sixth-generation engine is expected

to feature adaptive cycle technology, allowing variable performance for different flight stages, and cater to future needs like powering energy-intensive systems. In contrast, the engine proposed for India's AMCA focuses on delivering a robust balance of power, dependability, and adaptability suitable for a 5.5-generation fighter, while supporting India's long-term technological goals in aerospace.

A major highlight of the Rolls-Royce offer is the promise of complete IPR transfer to India. This assurance means India would fully own the engine's design blueprints, manufacturing techniques, and the rights to undertake future modifications and upgrades independently. This aligns strongly with India's 'Atmanirbhar Bharat' initiative, aiming to reduce dependency on foreign defence technology.

Unlike previous collaborations where intellectual property often remained with the overseas partner, this proposed arrangement would empower India's Gas Turbine Research Establishment (GTRE) and local industries to control, enhance, or potentially export the engine technology without external permissions.

This ownership promise reportedly includes sharing not just the manufacturing methods ("know-how") but also the underlying engineering principles ("know-why"). Equipping Indian engineers with this deeper understanding is vital for fostering genuine indigenous innovation.

Such comprehensive technology transfer could significantly boost India's aerospace sector, potentially benefiting other indigenous projects like the Tejas Mk2 fighter, the planned Twin Engine Deck-Based Fighter (TEDBF) for aircraft carriers, and perhaps even a future Indian sixth-generation aircraft program.

While stressing the unique nature of the proposed AMCA engine, Rolls-Royce indicated that select cutting-edge technologies being researched for sixth-generation platforms could be incorporated.

This might involve advanced heat-resistant materials, enhanced fuel efficiency measures, or specialized nozzle designs to minimize heat signatures, thereby improving stealth and overall performance.

However, these would be specific features adapted for the AMCA, not the full, complex architecture of a sixth-generation adaptive cycle engine. An official clearly stated, "Technically and in thrust parameters, they are totally different beasts."

The proposed engine is expected to generate around 75kN of "dry" thrust (without afterburner), enabling the crucial supercruise capability expected of modern fighters. A modular construction, potentially drawing from Rolls-Royce's advanced research, could also simplify maintenance and future upgrades, helping keep the AMCA fleet effective over its decades-long service life.

This contrasts with true sixth-generation engines, which are anticipated to exceed 130kN thrust and incorporate variable cycle technology to manage a wider range of

operational demands, including support for unmanned companion aircraft and advanced weapon systems.

Rolls-Royce's proposal enters a competitive field, with France's Safran and America's General Electric (GE) also vying to partner with India for the AMCA engine.

Safran is offering an engine derived from its Rafale fighter's M88 engine family with full technology transfer, while GE has proposed an enhanced version of its widely used F414 engine.

Rolls-Royce seeks to distinguish its bid by offering a purpose-built design combined with complete intellectual property ownership, appealing directly to India's strategic objectives of technological independence and flexibility.

The AMCA project aims for a first flight around 2029-2030, with squadron service planned by 2035. Initial prototypes and the first production batch (Mk1) are slated to fly using imported GE F414 engines (rated at 98kN).

The more powerful, co-developed 110kN engine is intended for the subsequent AMCA Mk2 variant. This progression aligns with DRDO Chairman Dr. Samir V. Kamat's stated goal of developing a propulsion system that can serve the AMCA effectively and potentially evolve to power future Indian fighter aircraft, ensuring India is not reliant on foreign suppliers for critical defence technologies in the long run.

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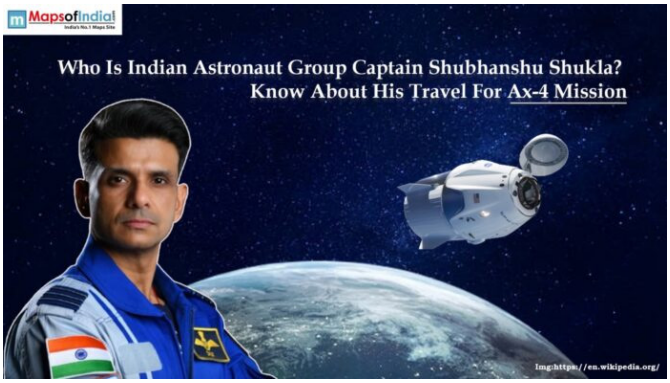
Space

Who is Indian Astronaut Group Captain Shubhanshu Shukla? Know about his Travel for Ax-4 Mission

Aditya Shekhawat | 15 April 2025

Source: MAPS of India | https://www.mapsofindia.com/my-india/science/who-is-indian-astronaut-group-captain-shubhanshu-shukla-know-about-his-travel-for-ax-4-mission?utm_source=chatgpt.com



India is about to reach another milestone in its space journey. An officer of the Indian Air Force (IAF), Group Captain Shubhanshu Shukla, will fly to space and become the first astronaut in humanity after four decades. As part of Axiom Space's Ax-4 mission, he is the first Indian to have flown to the ISS, but what may go down in history is how his mission was achieved with the collaboration between India's space agencies and those of global partners.

India has its own indigenous human spaceflight program called Gaganyaan, and this international mission will serve as a precursor and invaluable training opportunity. Shukla's mission is part of the Ax-4 mission,

a private spaceflight effort between Axiom Space, NASA, and SpaceX. It will give him a chance to experience spaceflight operations, microgravity research, and international cooperation aboard the orbiting lab.

Who is Group Captain Shubhanshu Shukla?

Group Captain Shubhanshu Shukla is an accomplished test flight veteran and pilot of the Indian Air Force who has been chosen by ISRO and Indian defence authorities to represent India in future human spaceflight missions. Having trained long and hard both at the Institute of Aerospace Medicine (IAM) and abroad, Shukla represents the physical endurance and mental discipline essential to modern astronauts, as well as their technical prowess.

He is one of the few selected out of hundreds of applicants for the Indian Human Spaceflight Program (HSP) under the overall objectives of Gaganyaan. The Ax-4 mission, and his own effort in particular, will not only be a personal milestone but also a signal of the readiness of Indian astronauts to take their place among the elite ranks of spacefarers worldwide.

Ax-4 Mission Overview

The Axiom Space Mission 4 (Ax-4) is a private mission to the International Space Station, a collection of commercial flights led by Axiom Space. NASA expects to launch Ax-4 in late 2025 or early 2026 using a SpaceX Crew Dragon spacecraft launched from NASA's Kennedy Space Centre in Florida.

Unlike the longer-running national missions led by NASA, Roscosmos, or ESA, however, the Ax-series missions are intended to provide seats to commercial astronauts, researchers, astronauts of emerging spacefaring nations, and organisations wanting the strategic or scientific benefits of a presence in space.

Including Group Captain Shukla in the Ax-4 mission highlights the growing Indian trust in public-private international space missions. It will be the first time an Indian astronaut has gone to space since Rakesh Sharma's historic 1984 mission aboard a Soviet Soyuz spacecraft.

The Strategic Imperative for India

Bridging the Gap Since 1984

Until then, Rakesh Sharma, who flew aboard Soyuz T-11 in 1984 for ISRO and the Soviet space agency, remained India's only astronaut. Although this mission achieved the ancient and national goal, it did not initiate an Indian human spaceflight programme.

Now, Shukla's imminent spaceflight will bring India's subcontinent back to manned spaceflight and set it back on a new definition of the cutting edge. Unlike Sharma's, Shukla's participation in the Ax-4 mission is structurally unrelated to ceremonialism and is strategically important in terms of technical preparedness for the future of Indian space exploration.

Precursor to Gaganyaan

India's first crewed space mission, Gaganyaan, is being developed by ISRO and is set to launch in the coming years. Shukla's

real-time experience aboard the ISS will be indispensable, considering that he is among the first astronauts on the final shortlist for Gaganyaan.

He will learn about launch protocols, in-orbit operations, space research, zero-gravity adaptation, and emergency procedures, all of which are important for the upcoming Indigenous mission.

India's Human Spaceflight Potential- A Global Validation

Shukla's selection for Ax-4 will be seen in the context of increasing acknowledgment of India's human spaceflight capabilities and the country's space diplomacy. His presence on a global platform like the ISS adds to national pride. It sends a powerful signal that India is ready to play an important role in space exploration and international cooperation.

Axiom Space and the Commercialisation of Spaceflight

Founded by former NASA executives, Texas-based Axiom Space aims to commercialise human spaceflight and create the world's first commercial space station. The Ax-series missions are designed to help train astronauts, conduct research and build international partnerships in space.

Axiom has flown three missions to the ISS with NASA's support and partnership with SpaceX. These missions have included astronauts from Spain, Turkey, Saudi Arabia, reflecting an emerging trend of international cooperation through commercial vehicles.

Training and Preparation of Shukla

Group Captain Shubhanshu Shukla is already an experienced astronaut in India and Russia. He formed part of a four-member IAF team that had undergone training at the Gagarin Cosmonaut Training Centre, Star City, Russia, under the Indo-Russian collaboration for the Gaganyaan programme.

The training included:

- Survival (arctic, desert, sea) training in extreme environments
- Flight simulation
- Weightlessness adaptation in parabolic arcs
- Physiology of humans in microgravity conditions
- Orbital manoeuvre and docking training
- Familiarity with space systems (particularly with ISS and Soyuz modules)

Leading up to the Ax-4 mission, he'll receive additional training at NASA facilities and Axiom Space's astronaut training centre in Houston, including:

- SpaceX Crew Dragon familiarisation
- ISS systems training
- Coordination between a multi-national crew
- Emergency drills
- Science experiment protocols

Such extensive exposure means that Shukla

is not merely a passenger but a participant in space research and operations.

India's Expanding Role in Global Space Missions

India's involvement in missions such as Ax-4 is part of a greater strategy involving integration into the world's space economy. ISRO's growing cooperation with NASA, ESA, and Roscosmos, as well as with private players such as SpaceX and Axiom, provides significant opportunities for research, innovation, and exploration.

India is already a rising provider of low-cost satellite launches, and with Gaganyaan on the way, human spaceflight is the next logical step. Such missions will also help India fill gaps in technical capability and showcase a commitment to the peaceful and cooperative use of outer space.

Key Takeaways and Advantages of Technology

Although the Ax-4 mission is not Indian-led, the Indian space program can gain a lot from It.

These include:

Microgravity Research in the Real World

Shukla is slated to perform a series of tests on the ISS for Indian scientific establishments and startups. Such data can be employed for biomedical, material science, and pharmaceutical research in the motherland (back home).

Technology Validation

Learnings gained will also go a long way in perfecting similar systems being built for Gaganyaan, which include life-support systems, monitoring of crew members, and space-to-ground communication.

Mission Planning and Operations

This also offers Indian mission planners a crucial comparative basis for their endeavours in launch sequencing, docking operations, and return procedures and for their operational risk.

Engaging with STEM and Inspiring the Public

Similar to how Rakesh Sharma generated enthusiasm in the 80s, Shukla's mission is expected to inspire a new generation of students, researchers, and space enthusiasts across India.

Conclusion

Soon, Group Captain Shubhanshu Shukla will take flight to the International Space Station (ISS) with the next crewed mission, Ax-4, a groundbreaking milestone for Indian space flight. More than four decades after Rakesh Sharma's landmark voyage, India is preparing to launch another of its own into space to become a self-sufficient, international space power.

Now, India's journey into the heavens

enters a bold new chapter, and Group Captain Shubhanshu Shukla is prepared to write it among the stars.

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Port to Deep Space: China's 'Hopeless' Satellites Create First Earth-Moon Nav-Com Network

Ling Xin | 18 April 2025

Source: SCMP | https://www.scmp.com/news/china/science/article/3307038/port-deep-space-chinas-hopeless-satellites-create-first-earth-moon-nav-com-network?module=top_story&pgtype=homepage

A Long March 2C rocket lifted off with satellites DRO-A and DRO-B from Xichang Satellite Centre in March last year but they failed to reach a planned orbit on their way to the moon Photo: Xinhua

The world's first satellite constellation in Earth-moon space is up and running, after a team of young Chinese engineers recovered two of the spacecraft that had been stranded in the wrong orbit for months following a launch mishap last year.

The constellation of three satellites operating in "cislunar" space forms a highly efficient communication and navigation network stretching from low Earth orbit to distant retrograde orbit (DRO), a region 310,000km to 450,000km (192,600-280,000 miles) from Earth, according to state broadcaster CCTV.

That area is often seen as a potential staging point for missions to the moon, Mars and beyond.

Among the mission's technical firsts was a record-setting 1.17 million km space-to-space communication link between satellites, showing that a network could stay connected reliably across the vast distance between Earth and the moon, CCTV said on Tuesday.

"For the first time, we've showed that satellites can track each other instead of relying on ground stations," said Wang Wenbin, a researcher at the Centre for Space Applications Engineering and Technology under the Chinese Academy of Sciences (CAS), the lead institute on the project.

Using just three hours of data exchanged between the spacecraft, Wang and his colleagues achieved the same level of orbit precision that would normally take more than two days of monitoring from ground stations, offering a much faster and autonomous way to manage spacecraft far from home.

"This opens up a new technical path for future exploration of the Earth-moon system – and even deeper into space," he told CCTV.

The first of the three satellites, DRO-L, was

successfully placed into a polar orbit about 500km above Earth in February last year. A month later, DRO-A and DRO-B lifted off together. However, the mission suffered a major setback when the rocket's upper stage failed to deliver them to their intended trajectory.

Around two hours after launch, a curve on the mission control screen – tracking the satellite's distance from Earth, which was expected to climb steadily to 292,000km – began to fluctuate wildly, rising and falling like a roller coaster around 150,000km, according to a China Youth Daily report.

The two spacecraft, with a combined mass of 581kg (1,280lbs), were stranded in what the team called a "hopeless orbit". Worse, they were tumbling uncontrollably at a dangerously high speed.

"It was flipping more than once every 1.8 seconds," Bai Tao, a researcher at the CAS Innovation Academy for Microsatellites in Shanghai, told the newspaper. "The centrifugal force could have easily torn the solar panels apart like sheets of paper."

That night marked the start of a 120-day rescue operation led by teams from multiple CAS institutes and Chinese aerospace control centres. Most of the engineers involved were in their 20s or early 30s.

Among them were Chen Zhichao and Liu Jiawei, who issued the first emergency commands, buying precious time for the recovery effort. Researcher Wang Yueyang helped verify gyro data, which was critical to stabilising the spinning spacecraft.

The tumbling was halted in the early hours of the next morning. Despite damage, both satellites' solar panels remained functional. Zhang Hao, a researcher with the CAS Space Applications Centre, called it a turning point. "We knew we had a shot," he said.

The team quickly devised a new flight plan, using low-energy transfer techniques to bring the satellites to the moon. Rather than burning large amounts of fuel for a direct insertion into DRO, they carried out carefully timed manoeuvres over the next months to gradually lift the satellites into their target orbit.

"It felt like playing a high-stakes game of space billiards," said CAS researcher Mao Xinyuan. "We had to calculate each manoeuvre precisely – like hitting the cue ball at just the right spot – so that the moon's gravity could sling the satellites in the correct direction."

By July 15, both satellites had safely reached their intended orbit after travelling some 8.5 million km. They separated on August 28 and established mutual communication with DRO-L two days later.

The pair also took pictures of each other. The solar panels of the DRO-A satellite were bent nearly 90 degrees, while DRO-B's arrays resembled "broken wings".

In addition to long-distance, space-to-space communication, the satellites also supported scientific experiments, such as the detection of gamma-ray bursts – brief but powerful cosmic

explosions – and the operation of atomic clocks in the Earth-moon environment.

"We used to talk about reaching for the stars," Wang said. "Now we're actually building a port to deep space. This three-satellite network acts like a 'lighthouse' in cislunar space – one that could guide future lunar bases and even serve as a data highway for Mars missions."

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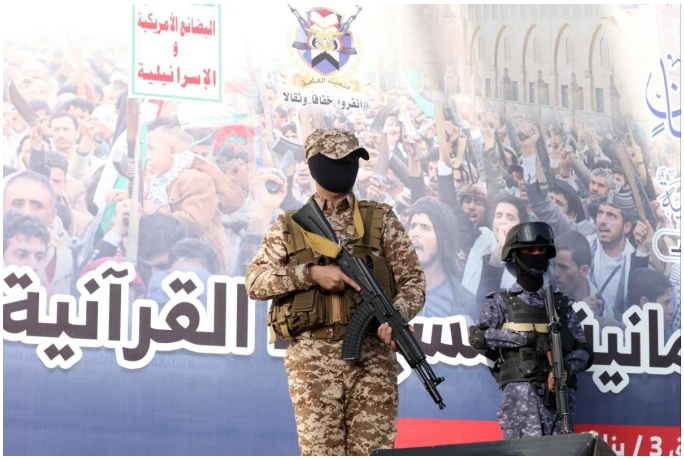
US Says Chinese satellite Firm is Supporting Houthi Attacks on US Interests

18 April 2025

Source: SCMP | https://www.scmp.com/news/world/middle-east/article/3306997/us-says-chinese-satellite-firm-supporting-houthi-attacks-us-interests



Houthi soldiers stand guard in Sanaa, Yemen. On Thursday, the US accused Chinese firm Chang Guang Satellite Technology of directly supporting attacks on US interests by Houthi fighters. Photo: EPA-EFE

The US State Department on Thursday accused a Chinese firm, Chang Guang Satellite Technology, of directly supporting attacks on US interests by Iran-backed Houthi fighters and called this "unacceptable".

Earlier, The Financial Times cited US officials as saying that the satellite company, linked to China's military, was supplying Houthi rebels with imagery to target US warships and international vessels in the Red Sea.

"We can confirm the reporting that Chang Guang Satellite Technology Company Limited is directly supporting Iran-backed Houthi terrorist attacks on US interests," State Department spokeswoman Tammy Bruce told a regular news briefing.

"China consistently attempts … to frame itself as a global peacemaker … however, it is clear that Beijing and China-based companies provide key economic and technical support to regimes like Russia, North Korea and Iran and its proxies," she said.

Bruce said the help by the firm to the Houthis had continued even though the United States had engaged with Beijing on the issue.

"The fact that they continue to do this is unacceptable," she said.

The spokesman for China's Washington embassy, Liu Pengyu, said he was not familiar with the situation, so had no comment. The firm did not immediately respond to a request for comment.

China is Washington's main strategic rival and the latest charge comes as the two economic

and military superpowers are in a major stand-off over trade in which US President Donald Trump has dramatically ramped up tariffs on Chinese goods.

The US military, meanwhile, struck the western Yemeni fuel port of Ras Isa on Thursday, the US Central Command said in a post on social media, citing the "destruction" of the port.

"Today, US forces took action to eliminate this source of fuel for the Iran-backed Houthi terrorists," it said in the post, adding that the aim was to hit the Houthis economically and not harm the people of Yemen.

Also on Thursday, the US unveiled sanctions on a Yemen bank, including its senior leaders, citing its support for Houthis in that country.

The designation of the International Bank of Yemen (IBY) complements a government effort "to stop Iran-backed Houthi attacks against commercial shipping in the Red Sea", the US Treasury Department said.

Houthi rebel forces launched an armed rebellion in 2014 after years of protesting against discrimination and marginalisation, seizing control of the capital Sanaa and several other provinces.

Since November 2023, Houthi forces have targeted shipping lanes using missiles and drones in what they said is solidarity with Palestinians in Gaza, where a brutal war has raged since October that year.

"Financial institutions like IBY are critical to the Houthis' efforts to access the international financial system and threaten both the region and international commerce," Deputy Treasury Secretary Michael Faulkender said in a statement.

The official said the US government was "committed to working with the internationally recognised government of Yemen".

Thursday's action follows a designation in January of the Yemen Kuwait Bank for Trade and Investment.

In a separate statement, the US State Department added that Washington was "committed to disrupting Houthi financial networks and banking access".

Besides the IBY, senior leaders targeted in Thursday's actions are Kamal Hussain Al Jebry, Ahmed Thabit Noman Al-Absi and Abdulkader Ali Bazara, the Treasury Department said.

As a result of sanctions, property and interests in property of designated individuals in the US are blocked and must be reported.

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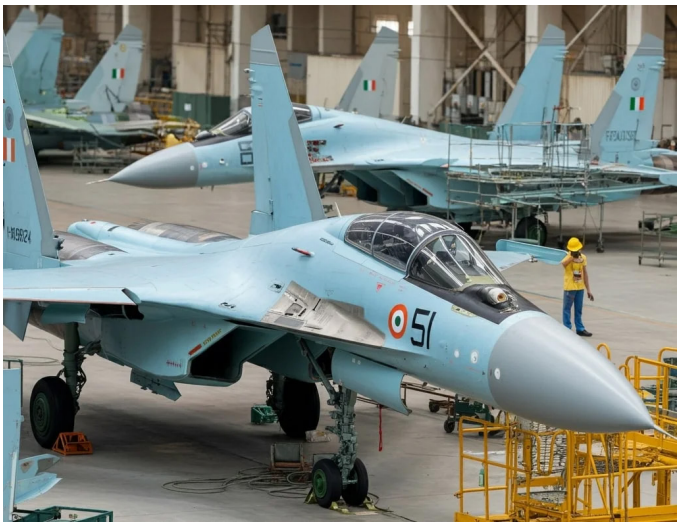
Aerospace Industry

Despite Production Prowess, how India's Su-30MKI Export Ambitions are Grounded by Restrictive Russian IPR Clauses

Raghav Patel | 17 April 2025

Source: Defence.in | https://defence.in/threads/despite-production-prowess-how-indias-su-30mki-export-ambitions-are-grounded-by-restrictive-russian-ipr-clauses.13740/



The Sukhoi Su-30 family, a powerful twin-engine fighter jet developed in Russia, serves numerous air forces globally. Russia has successfully exported versions like the Su-30SM to several nations. However, India, despite manufacturing an advanced variant known as the Su-30MKI under license, has been unable to sell this aircraft to other countries.

This situation arises from a combination of contractual limitations tied to intellectual property, technological dependencies, national strategic focus, and the realities of the international arms market.

The Su-30MKI ("Modernized Commercial India"), first introduced to the Indian Air Force (IAF) in 2002, is a highly customized aircraft developed by Russia's Sukhoi Design Bureau specifically for India and built locally by Hindustan Aeronautics Limited (HAL).

It incorporates sophisticated features such as thrust-vectoring controls and a mix of advanced electronics from Russia, Israel, France, and India, making it a cornerstone of India's air combat capability.

In contrast, Russia later developed the Su-30SM primarily for its own military and for direct export, featuring different upgrades tailored to its production and sales strategy.

A fundamental obstacle preventing India from exporting the Su-30MKI lies within the original licensing agreement signed with Russia in 1996 and subsequent deals covering the production of 272 jets.

While these agreements permitted HAL to manufacture the aircraft for the IAF, they explicitly reserved the export rights for Russia, the owner of the Su-30 platform's intellectual property.

According to insights shared by former officials involved in the program, the terms strictly limited production for domestic use only. This contractual arrangement allows Russia to market its own Su-30 variants globally without involving India in the sales process.

Furthermore, the complex international supply chain for the Su-30MKI presents

another significant challenge for potential exports. The aircraft integrates components from multiple countries, including France and Israel, alongside Russian and Indian systems. Selling the aircraft externally would necessitate securing permissions from each of these international suppliers, who operate under their own distinct export control regulations.

For example, components with U.S. origins, potentially sourced through partners like Israel, are subject to America's International Traffic in Arms Regulations (ITAR), which could prohibit sales to certain nations without explicit U.S. approval. Russia's Su-30SM largely avoids these multi-national dependencies by relying mainly on Russian or allied nation components, simplifying its export procedures.

India's defence production capacity, particularly at HAL, has primarily concentrated on fulfilling the substantial domestic requirements of the IAF. The air force continues its efforts to build up squadron strength towards its sanctioned goal, keeping the Su-30MKI production lines focused inward.

Delays in other indigenous programmes have also meant that resources remain committed to meeting existing obligations, leaving limited capacity to pursue complex international sales campaigns for the MKI.

Conversely, Russia possesses a well-established defence export infrastructure and sufficient industrial capacity to produce aircraft like the Su-30SM for both its own forces and international clients simultaneously.

The global market for fighter jets is highly competitive. Russia promotes its Su-30SM as a cost-effective ($50-60 million estimated unit price) and battle-tested option, often offering flexible payment plans and comprehensive support packages attractive to nations with budget constraints. This strategy has secured sales in countries like Algeria and Kazakhstan.

India's Su-30MKI, with its specialized and diverse systems, carries a higher estimated price tag (around $70-80 million per unit) and faces stiff competition from lower-cost aircraft, including China's JF-17 or even Russia's own export models.

Additionally, potential buyers often prefer to negotiate directly with the original equipment manufacturer, Russia, to streamline procurement and ensure long-term access to spare parts and support, bypassing India's less established defence export framework.

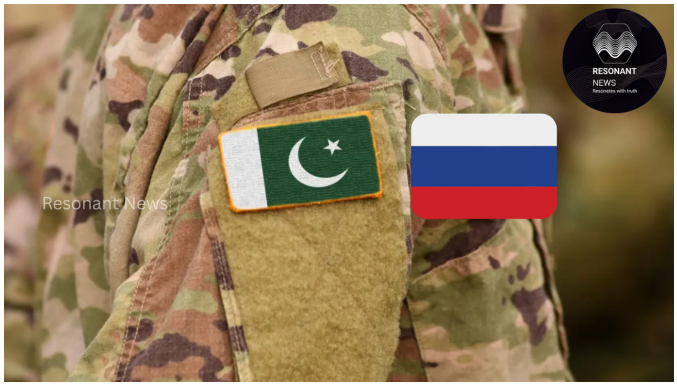
In conclusion, while Hindustan Aeronautics Limited has demonstrated considerable capability in manufacturing the sophisticated Su-30MKI, achieving significant levels of indigenisation, India remains unable to offer the aircraft for export. The foundational intellectual property rights retained by Russia under the licensing agreements act as the primary barrier, effectively grounding India's export ambitions for this specific platform.

This situation highlights a major limitation for India's defence export goals, even as the country finds more success in marketing other indigenous systems like the Tejas light combat aircraft.

Pakistan Air Force Seeks Assistance from Russian Entity for Spyware Development

Andrew Jones | 18 February 2025

Source: Resonamt News | https://resonantnews.com/2025/03/28/pakistan-air-force-seeks-assistance-from-russian-entity-for-spyware-development/



Recent reports have surfaced indicating that the Pakistan Air Force had sought technical assistance from Operation Zero, a Russian government-backed company specializing in zero-day vulnerabilities, to develop an in-house spyware. This alleged collaboration was reportedly facilitated through a local businessman in the Middle East.

According to reports, representatives of the Pakistan Air Force met with a Russian hacker associated with Operation Zero in the Middle East in 2024. The purpose of this meeting was to obtain expertise for creating a sophisticated spyware tailored to the Air Force's operational needs.

Operation Zero is a prominent player in the cybersecurity world, known for acquiring and selling zero-day vulnerabilities—security flaws in software that are unknown to the vendor and can be exploited for purposes like espionage or cyberattacks. The company's website specifies that its clients are limited to the Russian government and private companies based in Russia, underscoring its ties to state interests.

Around the time of this reported engagement, Operation Zero, headed by Sergey Zelenyuk, made headlines by announcing a search for exploits in the Telegram messaging app, offering up to $4 million for successful submissions. The company had also previously advertised substantial rewards for vulnerabilities in iOS and Android systems, with prizes ranging from $200,000 to $20 million. These efforts highlight the active and lucrative nature of the Russian vulnerability market, particularly amid Moscow's ongoing conflict with Ukraine.

The deal between the Pakistan Air Force and Operation Zero was allegedly brokered by a local businessman in the Middle East, who served as an intermediary to connect the two parties. While the exact details of the arrangement remain unclear, the involvement of Operation Zero—a company closely aligned with Russian governmental interests—adds a layer of intrigue to the reported collaboration.

This move could signal a significant step in the Pakistan Air Force's cyber capabilities, raising broader considerations about military use of spyware and international cybersecurity dynamics. Further developments may shed light on the nature of this alleged cooperation between the Pakistan Air Force and Operation Zero.

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Further Reading

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3. R&D Spends by India Inc Lag Global Competitors Despite Improvement - https://www.business-standard.com/companies/start-ups/datanomics-top-indian-companies-continue-to-skimp-on-r-d-spending-125041100820_1.html

"The term 'Aerospace' was introduced in 1958 by the USAF Chief of Staff, General Thomas D White, as a new construct that depicted air and space as a seamless continuum stretching from the Earth's surface to infinity."

The Centre for Air Power Studies (CAPS) is an independent, non-profit think tank that undertakes and promotes policy-related research, study and discussion on defence and military issues, trends and developments in air power and space for civil and military purposes, as also related issues of national security. The Centre is headed by Air Vice Marshal Anil Golani (Retd).

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