

VAYU

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Aerospace & Defence Review

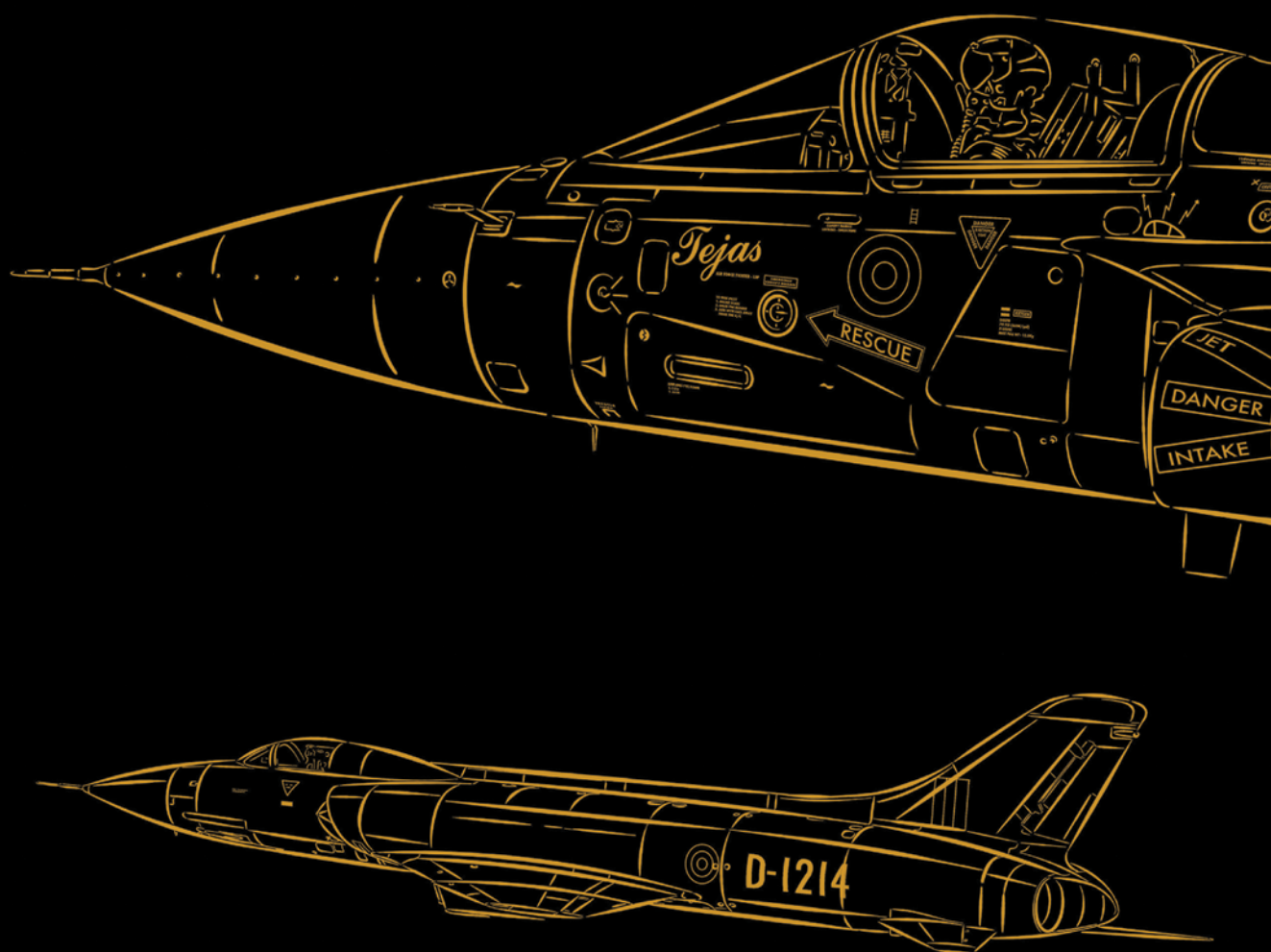


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Suryakiran Aerobatic Team at 30 years
Updates from KSSL/Bharat Forge

Uttam and Virupaaksha radars
Rafale solo display at Nancy AB
Tanks in the age of drones

VAYU

Aerospace & Defence Review



THE GOLDEN ANNIVERSARY ISSUE
50 YEARS: OCT 1974–OCT 2024

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Cover : Photo of a French Rafale Solo Display aircraft by Joris van Boven. Alex van Noye along with Joris van Boven were at Nancy airbase to cover the event and report for us.

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IAF gets FOC for AEW&C 'Netra'

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Suryakiran Aerobatic Team celebrates 30 years

The iconic Indian Air Force formation aerobatic team, the Suryakiran Aerobatic Team, marked its 30th Anniversary at Air Force Station Bidar on 26 May 2026. The occasion "commemorated three decades of inspiring the nation through precision aerobatics and exceptional airmanship".



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Unimech India's next generation precision manufacturing unit

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37 Vector Technics: Powering India's Drone Sovereignty

Every drone mission contains a half-second nobody briefs. The command goes out. The machine has not yet moved. In that gap, copper meets current and magnets meet physics, and everything the engineers promised either holds or it does not.

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The Future of the Tank in the Age of Drones

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On 4 May 2026, the new French Rafale Solo Display (RSD) pilot was officially revealed to the media on Nancy airbase (Base Aérienne 133 Nancy-Ochey "Henry Jeandet") reported by Joris van Boven and Alex van Noye.



94 1962 Ops in Chushul/ 1962 War Series

Jai Samota reports on the Chushul Airstrip which is located between the village and the Gap. Here, An-12 and Packet planes used to land frequently. Chushul Airfield came into being when in August 1951, a Kazakh-Cossack Cavalry Brigade of the National Revolutionary Army of Chiang Kai-shek followed by the PLA sought asylum in India.



Regular features:

Opinion, Viewpoint, Aviation & Defence in India, World Aviation & Defence News, Vayu 25 Years Back, Tale Spin.

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Lt Gen Kamal Davar says....

....What's in a name? Why 'Indo-Pacific' has reverted to US 'Pacific' Command?

A historical question, “What’s in a name?”, embellishes William Shakespeare’s magnum opus *Romeo and Juliet*, and this phrase has been utilised countless times, both seriously and in jest, depending upon the user’s inclination to give it the colour or meaning they warrant. Most people employ this phrase lightly as they feel that, irrespective of the name or title given to an individual or institution, the true worth of an individual or institution lies far beyond its mere name.

Anyway, names do carry ample cultural and symbolic significance, and the above mentioned phrase is followed in Shakespeare’s play by another famous line: “A rose by any other name would smell as sweet.” Extending this expression to the recent geopolitical churn and the catastrophic wars taking place around the world, some changes in military and economic alliances between nations are currently underway. The renaming of the erstwhile US “Indo-Pacific Command” the other day is an example of shifting geopolitical and strategic considerations. The current lack of warmth in India-US relations would perhaps also be a reason for this name change.

The Pentagon has officially announced that the name of the US Indo-Pacific Command (USINDOPACOM) has been restored to its legacy name, the US Pacific Command (USPACOM), which had been changed earlier in 2018 to include the word “Indo” to signify the growing strategic importance of the Indian Ocean and its linkages to the Pacific Ocean and, importantly, India’s emerging geopolitical role. Additionally, the Pentagon has stated that the “reversion honours the command’s deep historical roots, fostering a sense of pride for the oldest and largest unified command”, which was established in 1947.

The question now engaging the minds of many Indian service members and strategic analysts is: What was the reason for this so-called name change? The Americans, not all though, would

naturally ask the Indians: “What’s in a name?” Our reply could be: a lot. Our fading, one sided friendship, engineered by the mercurial US President Donald Trump, may be the reason.

The US has eleven combat commands, which include seven geographic commands. USPACOM was the designation for the oldest and largest geographic unified combatant command. Its operational boundaries extend from the US West Coast to the western border of India. It is manned by over 375,000 personnel from the US armed forces.

Though US officials insist that removing the word “Indo” does not dilute their established operational missions, including their commitment to a free and open Indo-Pacific region, many strategic analysts argue that it unequivocally conveys a strategic message to the global community, especially to India.

It requires no emphasis to state that, since the last couple of years, especially during the Trump administration 2.0, relations between the so called strategic allies, India and the US, have plummeted owing to President Trump’s policies of imposing very high tariffs on India and making the grant of US H-1B visas grossly unaffordable.

As we fathom the reason for this unwarranted change in name, the China factor positively has to be reckoned with. It is a well-known fact worldwide that the military and economic gap between the United States and China is narrowing by the year. The US, for reasons best known to Washington, even under an over-talkative and policy shifting President, appears to be trying to keep China in good humour.

President Trump’s recent visit to China was a diplomatic setback for the US. Even during the US-Israel combined war with Iran, at the Strait of Hormuz water bottleneck, the US targeted no Russian or Chinese cargo carrying ships. On the contrary, three Indian flag bearing commercial

ships were targeted by the US Navy, resulting in the death of three Indian soldiers. Surprisingly, no apology from the US establishment was forthcoming. Unfortunately, the Indian government did not take up this case forcefully with the US government.

Coming back to the Chinese angle in the renaming of the US Indo-Pacific Command, the US, since the early years of this century, has encouraged the formation of the Japan sponsored Quad, comprising India, the US, Japan and Australia, and AUKUS — a trilateral military alliance comprising Australia, the UK and the US — to keep the international waters of the Indian and Pacific Oceans free for maritime traffic, as China is widely viewed as a maritime bully in this region. Though little headway has been made in further energising these alliances, there is merit in forging closer cooperation among the member nations, as China will remain a long-term strategic military and economic threat.

However, it is also a fact that, without the US taking strong enough measures, both these alliances will remain merely talking shops, as China and Pakistan — America’s current favourite — would wish. US officials, however, continue to harp on the post-World War II maritime architecture being carried forward under its original name. Events in the foreseeable future will, however, make the exact reason for this change in nomenclature clear.

Overall, India’s current relations with the United States are on the downside, despite some flattering remarks from President Trump last week at the G7 summit. India will be well advised to pursue its strategic autonomy policy sincerely and adopt a mature, yet self-respecting, approach in its handling of all major powers worldwide. We do need to tell President Donald Trump, after his recent remarks about “helping India if attacked”, that India can very well look after its own interests. 

Lt Gen Kamal Davar led seminar in Kasauli says...Future wars and India's multi-domain preparedness



Venue: The Kasauli Club, Himachal Pradesh. Present on the occasion, apart from the distinguished speakers, were the GOC-in-C Central Command, Gen Sengupta; GOC Uttar Bharat, Gen Mishra; GOC 14 Inf Div Gen Gunjan, and Chairman, Kasauli Club, Brig Sandeep Madan.

On behalf of the Strategic Studies Cell, Lt. General Kamal Davar, said for him as a veteran and an old member of this institution it is an invigorating experience each year to be part of this venture, and since some years, Kasauli too is undisputedly on the security discussions map of India, thanks to 95 Inf Bde. For him personally, he said in his opening remarks, it has been a labour of love.

General Davar noted, that the world, since the last 3 years in particular, namely after the end of the catastrophic COVID pandemic, has been at war with itself, its geopolitics getting fractured by the day; the world today suffers the West Asian War which is now in its 4th month, creating an unprecedented energy crisis globally, bringing the world perhaps on the cusp of another world war.

Ambassador Ajai Bisaria, was our last HC to Pakistan before our diplomatic channels with Pakistan were downgraded in Aug 2019. How in today's global uncertainties what



Lt Gen Kamal Davar (R), welcomes the GOC in C, Central Command, General Sengupta

are India's diplomatic options. How do we manage the emerging challenges as a result of the geopolitical churning taking place. He touched upon the deteriorating relations between our

so-called strategic ally, the US and India and whether we are getting bullied by them, like purchasing oil from Russia or not purchasing from Iran since a couple of years and being persuaded to buy it from Venezuela and their inordinate increases in tariffs. Maintenance of strategic autonomy, much that it is desirable is not simple to achieve. The outcome of the recent not so successful visit of the US President to China and China's long term ambitions for themselves in shaping the world order has also to be factored in by us. How does India build an India Friendly World Order? How are we shaping in restoring harmony and thus prosperity in our immediate neighbourhood especially with three new governments in place, is also of vital concern to us.

Ambassador Bisaria was unambiguous in his overall assessment that the Indian engagement had been more than positive. In this multi polar global new order, there would be hits and misses, and the India's hits have been more than adequate. He did

think India needed a two-track policy with Pakistan, one area where he felt we had missed out, as some dialogue needs to be continuous with them, too. An elaborate presentation that took a global eye view and how India should be prepared to remain nimble, though equally sure footed.

The former Naval Chief, Admiral Sunil Lanba talked on the Efficacy of Maritime Power in Multi Domain Warfare in the Indian context. What is lurking in the depths of the oceans around us, that is, the threats, both military and economic to our dominance in our choppy waters is of vital concern to India's well-being. The blockading of waterways through which pass our absolutely critical energy supplies has been amply highlighted in the ongoing West Asian War; we have to think ahead of similar criticalities emerging and ways to surmount such eventualities.



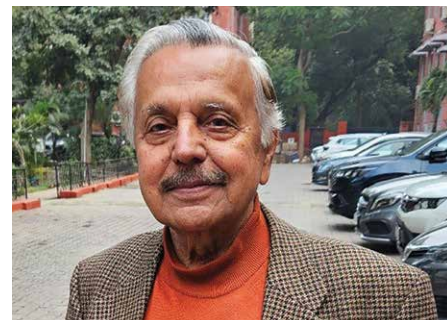
Admiral Lanba touched upon the utility of huge aircraft carriers in today's increasingly threatening non-contact warfare tactics with large stand-off capabilities emerging. Engagement at sea was ongoing and the seas, in many ways, remained critical in more ways that was often realised. For instance, while our three oil refineries were deep on mainland, the crude they refined was offloaded from overseas in Kutch, Gujarat, which remained central to India's defence security. He also pointed out how while Quad may remain in abeyance, the Malabar Exercises were taking place regularly. Separately, Indian Navy regularly conducted exercises, one on one, with Japan and Australian navies. Military preparedness on the seas was already effectively underway.

Lt Gen Pannu shared his thoughts on a subject whose significance is ascending by leaps and bounds by each day – namely – Mosaic Warfare and the role of AI in Multi Domain Operations. AI applications, as you all know is truly sweeping the world in an unprecedented manner; never has anything been so revolutionary in recent times. In the military use of AI, it integrates machines learning algorithms to revolutionise command and control, intelligence gathering, combat operations, and logistics. Militaries are deploying AI to process vast battlefield data in seconds, coordinate autonomous drones and automated threat detection among many other applications. Future war fares, he said, could be conducted with gadgets in your hand, with the least human intervention.

In the aerospace domain, Air Marshal Anil Chopra shared his thoughts on understanding Air and Space Conflicts in the Indian context. The ongoing US and Israel combine's war against Iran has produced many a vital lesson in utilisation of air power including for us. Stealth operations, Electronic Warfare, Drone economics, layered missile defence, directed energy weapons, network centric warfare and strategic autonomy are all vital lessons to be analysed in great detail and adapted in the Indian context.

How relatively cheap but reasonably effective drones are spoiling the Air Force party? Are we spending too much money on acquiring 4.5 gen fighters when the Chinese are going in for gen 6 fighters? He made some excellent pointers. Like, if drones had become the answer, what happened to the thousands that Pakistan had launched upon us? What happened to them? All were effectively neutralised. In another context, given the high costs, was a few squadrons of 4.5 generation more useful than just one or two of 6th generation. He lamented that the 'real' cost spend on military upgrades did not match the requirements for a Viksit Bharat that we all are a part of. Fortunately for us, he said, we have not witnessed only the performance of newer weapons and technologies in

the West Asian War, but from our own experiences from Operation Sindoor.



Lt Gen Kamal Davar

Shaping the military narrative often termed narrative warfare or strategic communication is the deliberate process to influence perceptions, secure domestic support and importantly win global legitimacy. NATO has folded public information and information ops into a single Allied Joint Doctrine 2023. The Chinese are highly adept at Information Warfare. Controlling the story is as vital to victory as controlling the physical battlefield. I think we need far more synergy not only among the three services but also with the civil institutions to sharpen our IW capabilities. The young but eminent editor in chief of News X, Rishabh Gulati shared his views on how to shape the narrative. We in India do get overly impressed with Washington Post, New York Times and the BBC who do churn out wrong news, often motivated, about India.

Overall, the impression was of a huge challenge. One that needed more coming together of the three arms of our Armed Forces, with greater use of high technology and innovation. We need more budgets for this. It was also not about one arm mattering less than the other; all three – land, air and sea – are equally important. Inter disciplinary contests needed to be put aside. As we had entered an era where multi polar engagements was the ongoing new reality, threats could be expected as well from all sides. Security demanded a 24/7 alert, 365 days a year. ➡

This article was posted on June 13, 2026 by CSC Bureau with inputs from Lt Gen. Kamal Davar

Lt Gen Kamal Davar says...

....Quad's future is tied to what the US wants



United States Secretary of State Marco Rubio speaks during the Quad Foreign Ministers' Joint Press statement, at Hyderabad House, in New Delhi on 26 May 2026. External Affairs' Minister S. Jaishankar, Japan's Foreign Minister Toshiimitsu Motegi and Australia's Foreign Minister Penny Wong also present.

Alliances get formed and remain successful only if their strategic constituents and operational drivers remain relevant and mutual trust among the partners prevails despite geopolitical churning. Many alliances, whether defence based or economic in concept, continue to exist in the world with varying degrees of effectiveness—some with credibility while some more or less moribund! At the outset it will be in order to state that in the current geopolitical scenario, unilateralism and bilateralism is gradually giving place to multilateralism with nations, even not so robust standing up to the powerful. Thus, alliances among nations, where equity with others in the alliance is the credo and compatibility in its overall mission and the end objective, will have the chance to succeed.

The Indo-Pacific region encompasses the vast area between

the east of the African continent to the Americas. This region is considered universally as “the global centre of gravity” for trade, economic growth and importantly, even strategic competition. Roughly 60 per cent of the global maritime trade and 40 per cent of global oil shipments pass through the critical choke points in these waters like the Strait of Malacca through which bulk of the global trade flows. This region is home to four large economies of the world, namely, the US, China, Japan and India. By all standards, the Indo-Pacific has shaped into a theatre for great power competition.

Geographically and militarily, India is the “critical anchor” for maintaining an open, international rules based inclusive region free for global economic order. However, China in this entire region desires unequivocally to dominate it economically and militarily and has some territorial or transit over these



OPINION

waters problems with most of the littoral countries.

In this region, China, undisputedly, as the most assertive, expansionist and transactional power desires to annex Taiwan, some islands held by Japan, Philippines besides economically dominating it while ensuring its own supply chains from Europe and the Gulf region remain in order. It thus sees India as a credible competitor in the Indian Ocean. In addition, a rising Japan, which is gradually augmenting its military strength, is also seen by China as a competitor in the Pacific region. Japan too, especially under the leadership of its new Prime Minister Sanae Takaichi, who is considered anti-China, is referred by China as an 'agent provocateur'. She also links the defence of Japan to the defence of Taiwan. In addition, Australia too in the Pacific region, is more than wary of China's maritime ambitions in the region. The tiny island of Taiwan, anyway, is in perpetual threat from mainland China and does not consider itself in agreement with all those nations, including the US, who subscribe to the "One China policy". Overall, thus China is seen by most of the nations in the Indo-Pacific region as the disruptive force.

One of the outcomes of the above prognosis was the formation of the Quadrilateral Security Dialogue in 2004, though ostensibly, it was for primarily Disaster Relief and transportation of "public goods" like vaccines and sharing of technology. Japan's PM Shinzo Abe is considered the "intellectual father" of the Quad. In his speech to the Indian Parliament in 2007, Shinzo Abe emphasised on cooperation among nations embellished by the "confluence of Indian plus Pacific Oceans." Then PM Manmohan Singh joined in 2007 the Quad despite Chinese protests and India also participated along with the US, Japan and Australia in the Malabar naval exercises. However Quad, collapsed in 2008 as PM Kevin Rudd of Australia succumbed to

Chinese pressure as the latter was Canberra's largest trading partner. During the next few years, Quad was relegated to mere dialogue exchanges primarily owing to Chinese pressure.



However, owing to a host of factors, Quad 2.0 got revived in 2017. India's problems with China's kinetic mischief in Eastern Ladakh, militarisation of South China Sea islands by China disrupting to some extent international maritime passage but primarily the US under President Donald Trump, in his first term, laid the foundations of Quad becoming a significant economic force for the Indo-Pacific region. Australia too, under newer political leadership, displayed its keenness to revive Quad. Especially after the Doklam and Galwan incidents in Ladakh in 2020, India too shares the significance of the Quad to counterbalance China's bullying tactics in the Indo-Pacific region.

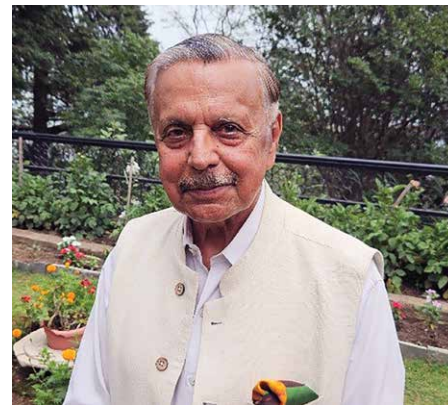
From 2017–2020, the Quad was expanded to the Foreign Ministers' level and from 2021 onwards, it has managed setting up of six working groups like the Quad Maritime Legal Dialogue for a rules based maritime order, Maritime Domain Awareness for delivering real time commercial data and ones for underwater domain awareness, for surveillance and intelligence sharing etc.

After the recently concluded Quad Foreign Ministers Conference in New Delhi on 26 May 2026, it is now looking forward to a summit level meeting of the top leadership in the coming months to further re-energise Quad and make it an instrument for the benefit of its member nations

and other nations using its sea lanes and ensure China's misplaced assertiveness is kept in check.



However, all depends on the US attitude towards China as currently the former is hopelessly embroiled in the Iran dispute and may not have the time and resources to utilise currently for stabilising the choppy waters of the Indo-Pacific. After the recent visit of President Trump to China, reportedly, the US has held in abeyance the 14 billion dollars arms package to Taiwan, most likely on Chinese President Xi's insistence. The Americans trying to improve relations with China will thus dilute Quad's spread and keep it away from any militarisation which its member nations and others too would have been expecting to keep China at bay. Thus, currently the Quad displays as the recent Foreign Ministers Conference exclaimed in its joint statement that it faces "great challenges but unprecedented opportunities." Quad will only succeed if the US wants it to.



The writer, a retired lieutenant-general, was the first head of India's Defence Intelligence Agency, is a long-time Pakistan watcher and has been involved in Track-2 diplomacy.

Photos: MEA/Indian Navy/Twitter

Admiral Arun Prakash says...A wake-up call for India at sea



Ships and tankers in the Strait of Hormuz off the coast of Musandam, Oman, April 18, 2026. Photo: REUTERS.

In a recent telephonic conversation, the US Secretary of State, Marco Rubio, is reported to have conveyed to External Affairs Minister (EAM), S Jaishankar, an admonition that, “All commercial vessels must comply with orders from US forces in the Strait of Hormuz, and that violations of the US blockade will not be tolerated.”

This brusque and peremptory warning follows three successive missile attacks by US Navy (USN) units on neutral merchant ships attempting to transit the Strait of Hormuz. These attacks have claimed the lives of three Indian seafarers and jeopardised many more. Against this backdrop, the EAM's assertion that “such lethal actions against commercial shipping are not justified” fails to convey the full measure of indignation felt across the country.

At present, around 3.23 lakh Indian seafarers are serving in global merchant fleets. It is, therefore, not surprising that all the victims on the first three ships that came under unprovoked attacks by the USN were of Indian nationality. With merchant ship crew lists readily available from multiple sources, the USN almost certainly knew the identities and nationalities of the mariners it recklessly attacked.

Legally, the safety and security of a merchant ship is the responsibility of the “flag state.” In this case, the three vessels were flying “flags of convenience” of tiny island states. The vessel's owners too have a degree of responsibility but, morally, every nation is duty bound to protect its citizens – no matter what the circumstances. Two thousand years ago, a Roman citizen had to merely use the phrase “Civis Romanus sum: I am a Roman citizen”, to ward off attack, arrest or punishment in any part of the Empire. While Indians may not have such lofty claims to imperial privilege, India as an aspiring Vishwaguru, and a rising power does need to stand up for its citizens – even if it means confronting an autocratic and wayward superpower.

Given the international community's passive acceptance of territorial aggression, genocidal warfare, the abduction of Heads of State, and political assassinations undertaken by militaries, one might conclude that historic and customary international laws have been abandoned. Yet, descent into such a Hobbesian–Darwinian world is too grim a reality to accept. Statesmen of vision and courage must act to restore

the rule of international law before it is too late. In this case, the riot act needs to be read to the US from the 1994 ‘San Remo Manual on International Law Applicable to Armed Conflicts at Sea’.

This manual, while not a binding treaty, is recognised as the most authoritative re – statement of customary international humanitarian law (IHL) applicable to naval warfare. Since it codifies existing laws rather than creating new treaty obligations, the manual binds all states – including the US and Iran – to abide by its provisions.

If the UN Convention on Law of the Seas (UNCLOS) governs the sea during peacetime, the San Remo manual governs the sea during wartime/armed conflict. A large number of maritime nations have integrated the manual's stipulations directly into their official naval doctrines, and the current conflict must be judged by these yardsticks.

The manual says that a blockade directed at a belligerent's coast must be formally declared, specifying the exact commencement, duration, location, extent, and a grace period for neutral ships to leave. Crucially, the manual forbids blockades whose, “sole purpose is to starve the civilian population,” and it requires proportionality between military advantage and civilian harm.

Not only do the eight Gulf states rely on the Hormuz corridor for imports and exports, but the current broad blockade imposes disproportionate civilian harm – especially on the less privileged in developing nations who are already suffering from shortages of energy, fertilisers, medical supplies and much more. This deprivation of essential goods is in clear breach of San Remo's humanitarian thresholds.

Neutral merchant shipping is accorded special protection, both under the San Remo manual and established naval rules of engagement. A merchant vessel should attract adverse attention only when it actively takes part in hostilities or clearly acts as an enemy



auxiliary or when it is believed to be carrying contraband.

The sequence of actions is absolutely clear; having conveyed radio warnings to the merchant ship, it must be subjected to 'visit-and-search' by a boarding party, and taken into port if required. A vessel may only be attacked as an exceptional measure if circumstances preclude taking it to port, and only if the safety of the crew is ensured.

Kinetic attacks by the US or Iranian forces on neutral merchant vessels, simply transiting the area, ignoring radio warnings or even switching off their Automatic Identification System (AIS) violate the provisions of the manual. Seafarers, worldwide, sail routinely under flags of convenience or on foreign owned ships, but such a situation does not detract from the rights and obligations of the state whose nationality they profess.

In the current context, while India may have already initiated the routine diplomatic processes, there is enough justification for the MEA to pursue other legal avenues: (a) Diplomatic espousal of individual claims on behalf of affected seafarers and families; (b) Demanding reparation, including restitution,

compensation and guarantees of non-repetition; (c) Seeking a transparent, independent military investigation and accountability for personnel/forces responsible for unlawful strikes.

The San Remo manual makes it clear that blockades of international straits as well as kinetic strikes on neutral merchant ships must face stringent condemnation on legal and humanitarian grounds. A blanket blockade of the Strait of Hormuz violates protections for neutral access while preemptive kinetic attacks on merchant vessels contravene the manual's strict stipulation that 'visit-and-search' must be the first action.

If the US Navy's March 2025 sinking of the Iranian frigate IRIS Dena in neutral waters came as a shock, the reckless attacks on Indian merchant sailors have exposed a profound geopolitical paradox.

As Quad partners, Washington and New Delhi appear locked in a tight embrace —

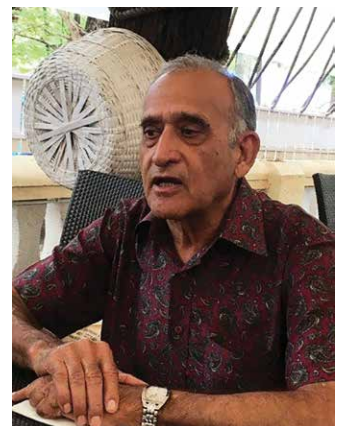
an Indian Navy Commodore heads the USN Combined Task Force 154, and both navies share embedded liaison officers at the headquarters of the United States Naval Forces Central Command (NAVCENT) in Bahrain and at the Information Fusion Centre–Indian Ocean Region in Gurugram. Despite this deep institutional coordination in the Indo-Pacific, Washington has deeply offended India through its disregard for international law on the high seas.

The present contretemps could not have come at a worse moment for Indo-US relations. For the average Indian, long fed a narrative of the country's inexorable rise as an economic powerhouse, a global influencer, and everyone's preferred partner, the strategic landscape of 2026 is beginning to look bleak and bewildering.

This sense of disappointment is acutely aggravated by the unexpected resurgence of neighbouring Islamabad in international relevance. In the Indian psyche, much of the blame for New Delhi's falling stock, whether real or perceived, is attributed to the dismissive attitude adopted by President Donald Trump in his second term.

The meeting between Trump and PM Narendra Modi at the G7 summit in France presents a critical opportunity for the latter to directly convey the nation's deep disappointment with the US' cavalier disregard for Indian sentiments. ➡

In the photos above is Admiral (Retd) Arun Prakash



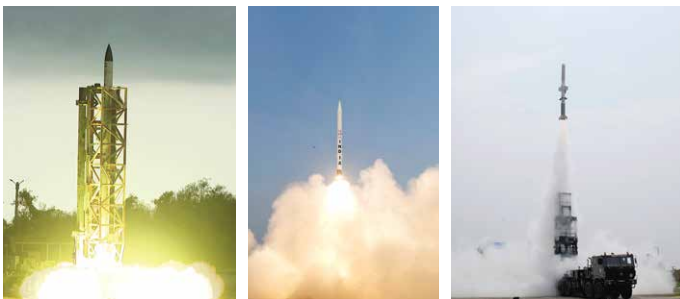
RFP for AMCA issued

India's Defence Ministry issued a Request for Proposal on 27 May 2026 for the indigenous fifth generation Advanced Medium Combat Aircraft (AMCA) project to the three shortlisted bidders, including Larsen and Toubro-Bharat Electronics Limited, Tata Advanced Systems and Bharat Forge-BEML.



DRDO demonstrates next gen defence capabilities

Defence Research and Development Organisation has successfully demonstrated multiple crucial technologies bolstering the nation's defence capabilities against different types of enemy threats. Three consecutive flight tests were conducted on 10 and 11 June 2026 to demonstrate multi-layered defence against long range ballistic missiles and anti-ship capability at medium range. Multi-layered Ballistic Missile Defence (BMD) capability was successfully demonstrated. The interceptors successfully engaged their respective targets. The maiden flight-test of the Naval Anti-Ship Missile-Medium Range (NASM-MR) was also carried out successfully.



Defence production at record Rs 1.78 lakh crore in FY 2025-26

India's annual defence production has surged to an all-time high of Rs 1.78 lakh crore in the Financial Year (FY) 2025-26. The milestone represents a 15.6% growth over the previous fiscal year's output of Rs 1.54 lakh crore and a staggering 110% increase since FY 2020-21 when the figure was Rs 84,643 crore. The indigenous defence production has increased almost four times from Rs 43,746 crore in FY 2013-14.

Defence Public Sector Undertakings and other PSUs accounted for approximately 76% of total production, while the private sector contributed 24%, which is a rise from 22% in FY 2024-25. The share of the private sector is at its

all-time high of around Rs 42,000 crore in FY 2025-26, reflecting its expanding role in the defence ecosystem. The growth in defence production over the years has tremendously contributed in achieving the record defence exports of Rs 38,424 crore in FY 2025-26.

Trial of Advanced Agni with MIRV

India conducted the successful flight trial of an Advanced Agni missile with Multiple Independently Targeted Re-Entry Vehicle (MIRV) system from Dr APJ Abdul Kalam Island, Odisha on 8 May 2026. The missile was flight tested with multiple payloads, targeted to different targets spatially distributed over a large geographical area in the Indian Ocean Region. The telemetry and tracking was carried out by multiple ground and ship based stations. These systems tracked the entire missile trajectory from lift off till the impact of all payloads. Flight data confirmed that all mission objectives were met during the trial.



Successful test of Agni-1

Short Range Ballistic Missile (SRBM) Agni-1 was successfully test launched from the Integrated Test Range at Chandipur, Odisha on 22 May 2026. The launch validated all operational and technical parameters. The test was carried out under the aegis of the Strategic Forces Command.

DRDO and IAF test RudraM-II

Defence Research & Development Organisation and the Indian Air Force conducted flight tests of RudraM-II air-to-surface missile from an airborne platform on 2 June 2026. The tests were conducted under extreme release conditions with critical trajectory establishing the capability of all subsystems. RudraM-II has been indigenously developed by Research Centre Imarat, Hyderabad as the nodal DRDO laboratory in collaboration with other sister labs such as Defence Research and Development Laboratory, High Energy Materials Research Laboratory, Armament Research & Development Establishment and ITR.



DRDO conducts test of LRLACM

Defence Research & Development Organisation conducted a successful test of Long Range Land Attack Cruise Missile (LRLACM) from Dr APJ Abdul Kalam Island off the coast of Odisha on 15 June 2026. All the test objectives were fully met, as per the data captured by various tracking instruments deployed by Integrated Test Range, Chandipur. The LRLACM is an indigenously developed missile with all sub-systems developed by various DRDO laboratories and Indian industry partners. Aeronautical Development Establishment, Bengaluru is the nodal laboratory.



DRDO tests Actively Cooled Full Scale Scramjet Combustor

Defence Research & Development Laboratory (DRDL) of DRDO has achieved a milestone in the development of hypersonic missiles by successfully conducting an

extensive long duration test of its Actively Cooled Full Scale Scramjet Combustor. A run time of over 1,200 seconds was achieved at the state-of-the-art Scramjet Connect Pipe Test (SCPT) Facility in Hyderabad on 9 May 2026, building upon the earlier successful test of over 700 seconds conducted in January this year.



DRDO completes development trials of ULPGM-V3

Defence Research & Development Organisation has successfully completed the final deliverable configuration development trials of Unmanned Aerial Vehicle Launched Precision Guided Missile (ULPGM)-V3 in air-to-ground and air-to-air modes at DRDO test range near Kurnool, Andhra Pradesh. The trials were carried out using an integrated Ground Control System (GCS) to command and control the ULPGM weapon system. DRDO has partnered with two production agencies – Bharat Dynamics Limited, Hyderabad and Adani Defence Systems & Technologies Limited, Hyderabad – for the development and production of the missiles. The system has been integrated on UAVs developed by Newspace Research and Technologies, Bengaluru for current trials.



DAC approves proposals worth Rs 52,000

The Defence Acquisition Council (DAC), under the chairmanship of Raksha Mantri Mr. Rajnath Singh on 3 July 2026, accorded Acceptance of Necessity (AoN) i.e., in-principle administrative approval to various acquisition proposals for the Defence Forces at an estimated cost of about Rs 52,000 crore. For the Indian Army, approval was granted for the procurement of anti-unmanned aerial vehicles (UAV) electronic warfare system 'Akash Tarang', man portable anti-tank guided missile (MPATGM) Systems, medium range surface-to-air missile (MRSAM) weapon system, very short range air defence system (V-SHORADS), active protection system for tanks and jet based kamikaze drone system.

Akash Tarang will provide anti-UAV protection to the Army Formations. The MPATGM will enhance the potential of the infantry to counter mechanised threats of the adversary. The MRSAM system provides medium range air defence against a variety of stand-off aerial threats. The V-SHORADS with multi-spectral sensing will enhance counter-measure resilience and effectiveness of the Indian Army. The active protection system will be capable of improving the defence mechanism of tanks and enhance their survivability. The jet based kamikaze drones provide better electronic warfare capability with greater lethality and survivability while also being cost effective.



For the Indian Navy, approval was given for the procurement of Multi Influence Ground Mine (MIGM), Naval Shipborne Unmanned Aerial System (NSUAS) and the setting-up of Land Based Testing Facility (LBTF) for Electric Propulsion System. The MIGM will deny freedom of manoeuvre to the adversary. The NSUAS, equipped with advanced sensors, will enhance situational awareness of the Indian Navy. The LBTF will meet the testing requirements for motors and associated propulsion systems of the Indian naval assets.

For the Indian Air Force, the approval was accorded for the procurement of Fixed Wing Based High Altitude Pseudo Satellite (FW-HAPS) and other proposals. The FW-HAPS will carry out persistent Intelligence, Surveillance and Reconnaissance, telecommunication and remote sensing for the Indian Air Force.

DRDO tests Pinaka long range guided rocket

Defence Research & Development Organisation (DRDO) conducted a successful flight test of the Pinaka Long Range Guided Rocket (LRGR) at the Integrated Test Range

(ITR), Chandipur on 8 July 2026. The rocket was tested for a user defined minimum range of 60 kms. Demonstrating all in-flight manoeuvres as planned, the LRGR impacted on the target with textbook precision exactly following the predicted trajectory. All the deployed range instruments tracked the flight throughout its trajectory. The Pinaka LRGR rocket is designed by Armament Research and Development Establishment in association with High Energy Materials Research Laboratory, with support from Defence Research and Development Laboratory and Research Centre Imarat. The flight trial was coordinated by ITR and Proof & Experimental Establishment. The rocket was launched from the in-service Pinaka launcher "demonstrating its versatility and providing launch capability of Pinaka variants of different ranges from the same launcher".



Garuda Aerospace partners with Micron Instruments for unmanned systems

IPO-bound drone startup Garuda Aerospace signed a Memorandum of Understanding (MoU) with Micron Instruments Pvt Ltd, an Indian manufacturer of precision fuzes, defence ammunition systems and critical military components. The partnership "brings together two advanced manufacturing organisations with complementary expertise to accelerate the development of next generation indigenous defence technologies".

Under the MoU, Garuda Aerospace and Micron Instruments will focus on product distribution, joint technology development and defence focused projects. By integrating Micron Instruments' expertise in custom designed fuzes with Garuda Aerospace's drone technologies, the partnership aims to accelerate the development of next generation indigenous defence solutions, including loitering munitions, payload-enabled UAVs and advanced unmanned systems.



Foundation stone laid AMCA's core integration/FTC and NSMF

Mr. Rajnath Singh and Andhra Pradesh Chief Minister N Chandrababu Naidu laid the foundation stones and presided over the grounded ceremonies for a range of strategic aerospace and defence projects at Puttaparthi in Sri Satya Sai district of Andhra Pradesh on 15 May 2026. The foundation stones were laid for the Core Integration & Flight Testing Centre (FTC) at Puttaparthi to fast track the development of fifth generation Advanced Medium Combat Aircraft (AMCA) and other future indigenous platforms, and the Naval Systems Manufacturing Facility (NSMF) at Sirasapalli village in Anakapalli district to cater to the requirements of advanced underwater weapon and naval combat systems.



'Naval Systems Manufacturing Facility'

The Naval Systems Manufacturing Facility at Sirasapalli village in Anakapalli district will cater to the requirements of advanced underwater weapon and naval combat systems. The Naval Systems Manufacturing Facility, a Rs 480 crore project of Bharat Dynamics Limited (BDL), will focus on autonomous underwater vehicles, underwater counter measure systems, and next generation torpedoes. It will manufacture several critical components and sub-systems that the nation has, until now, been importing from abroad.

AVNL delivers 1000th T-90 (IM)

The 1000th T-90 (IM) tank was delivered on 22 May 2026 by Armoured Vehicles Nigam Limited (AVNL) to the Indian Army, produced at HVF/AVNL, Avadi.



"From licensed production to deep indigenisation of engines and systems, this is Atmanirbhar Bharat in action, strengthening our Armoured Corps and defence ecosystem", stated the company.

Contract for 20 ECGNSS jammers for Indian Navy

Ministry of Defence has signed a contract with Accord Software and Systems Private Limited (ASSPL), Bengaluru for the procurement of 20 Enhanced Capability Global Navigation Satellite System (ECGNSS) jammers for the Indian Navy at a total cost of Rs 449 crore with minimum 75% indigenous content. The contract, under the Buy (Indian-Indigenously Designed, Developed and Manufactured) category, was inked in the presence of Defence Secretary Rajesh Kumar Singh in New Delhi on 10 June 2026.



Contract for 12 sets of 1.25 MW MGTG for IN

The Ministry of Defence has signed a contract with Bharat Forge Limited, Pune for the acquisition of 12 sets of 1.25 MW Marine Gas Turbine Generators (MGTG), with minimum 60% indigenous content, for the Indian Navy at



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a total cost of around Rs 425 crore. The project reinforces the Government's commitment to Aatmanirbhar Bharat and Make-in-India by creating a robust domestic manufacturing ecosystem. It would enhance maritime self-reliance in critical strategic technologies and bolster Indian Navy's operational readiness through indigenous production & end-to-end life-cycle support.

TASL's Airbus C-295 in first flight

The first 'Made in India' Airbus C-295 military transport aircraft from TASL conducted its first test flight from the Final Assembly Line in Vadodara on 10 June 2026 marking a milestone for Indian aviation and defence. This maiden test flight is a crucial step in the aircraft's post production testing process. As the first of 40 aircraft to be built in India, the test flight advances the programme's objective of delivering the first 'Made in India' C-295 aircraft this year to the Indian Air Force.



Honeywell delivers 3 engines for HTT-40

Honeywell has delivered three TPE331-12B engines to Hindustan Aeronautics Limited's HTT-40 basic trainer aircraft for the Indian Air Force. HAL and Honeywell have collaborated for decades on the TPE331 engine family, including Transfer of Technology (ToT) for manufacturing and repair of TPE331-5 engines used on the Do-228 aircraft, and the supply of key components across HAL programmes. Honeywell will supply the first 16 engines for the fleet, after which HAL will begin local engine assembly and expand in-country repair and overhaul capabilities. Over the coming years, more than 80 engines are planned to support the HTT-40 programme.



Big milestone for HAL Koraput

HAL successfully handed over the 1000th Repaired and Overhauled (ROH) AL-31FP engine to the Indian Air Force (IAF) on 23 June 2026. The 1000th ROH engine was formally handed over by S. A. Kothé, Executive Director, HAL Koraput, to Air Vice Marshal B. V. N. Shiva, Indian Air Force. "Despite global geopolitical challenges, HAL Koraput has continuously strengthened its MRO capabilities, scaling its annual overhaul capacity to over 100 AL-31FP engines. AL-31FP powers the IAF's Su-30MKI fighter fleet".



SMPP partners with KNDS

SMPP, one of India's leading defence and aerospace companies, has entered into a teaming agreement with



KNDS, through its subsidiary SMPP Ammunition, to manufacture state-of-the-art loitering munitions (LMs) in India. The partnership aligns with the Government of India's Atmanirbhar Bharat vision by combining technology transfer with indigenous manufacturing. Validated in recent conflicts, these loitering munitions are designed to deliver high accuracy while addressing the critical operational requirements of modern warfare. The agreement was signed on 18 June 2026, at the Eurosatory Exhibition at Paris. These loitering munitions include the Veloce and Rodeur systems along with the ISTAR family of drones.

Rolls-Royce and HAL's joint venture IAMPL

International Aerospace Manufacturing Private Limited (IAMPL), a joint venture between Rolls-Royce and Hindustan Aeronautics Limited (HAL) inaugurated its expanded manufacturing facility in Hosur, Tamil Nadu, strengthening advanced aerospace manufacturing capabilities in India. Spread across 12 acres, the expanded facility will significantly enhance IAMPL's capacity for producing "world-class compressor and turbine components, while also building capabilities for developing complex and rotating parts for future indigenous and global technology programmes".



L to R: Mr Seenivasan Balasubramanian (IAMPL), Mr Sashi Mukundan (Rolls-Royce), Mr Ravi K (HAL), Mr Barenya Senapati (HAL), Mr Sathish S (IAMPL) inaugurating IAMPL's expanded facility in Hosur

GE Aerospace adds 100 crore Pune investment

GE Aerospace announced an investment of INR 100 crore in its Pune manufacturing facility, further strengthening its manufacturing footprint in India and reinforcing its long term commitment to the country. The investment will support new welding technologies, advanced inspection equipment, precision tools, gauges, fixtures and additional infrastructure enhancements designed to increase production capacity, enhance process precision and support the delivery of high quality components for customers worldwide.

This latest investment builds on the INR 410 crore announced over the last two years, bringing GE Aerospace's total investment in the Pune facility to more than INR 510

crore over three years. Previous investments were focused on advancing manufacturing processes, automation and capability enhancements supporting next generation engine components. The latest upgrades will further expand the facility's capabilities and support component production across GE Aerospace's GE90, GENx, GE9X and CFM International's LEAP engine programmes.

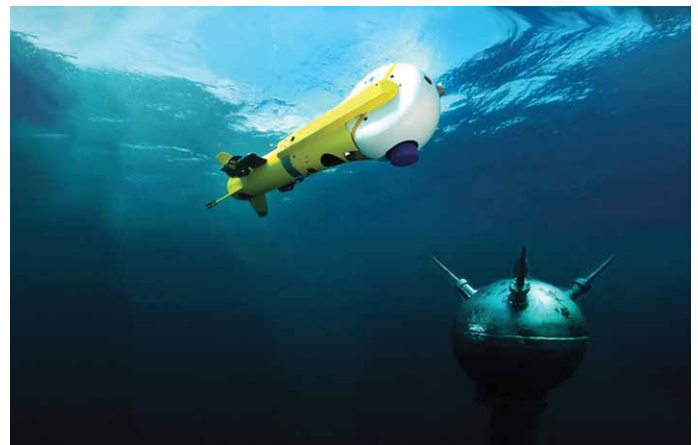
GMR Aero Technic and Boeing for P-8I Phase-56 maintenance

GMR Aero Technic (GAT) has signed an agreement with Boeing Defence India Private Limited (BDIPL) to undertake Phase-56 Heavy Maintenance Checks for the P-8I maritime patrol aircraft fleet. Under the agreement, GMR Aero Technic will perform Phase-56 heavy maintenance checks on Boeing P-8I aircraft at its MRO facility within the GMR Aerospace Park SEZ in Hyderabad. The maintenance will include structural upgrades, comprehensive inspections, painting and system upgrades.



L&T partners Exail for IN's MCM suite

L&T has entered a strategic collaboration with France based Exail to deliver an advanced Unmanned Mine Counter-Measure (MCM) Suite for the Indian Navy's Mine Counter Measure Vessels (MCMVs) programme. L&T and Exail will together provide the Indian Navy with an Unmanned MCM Suite, incorporating autonomous and remotely operated systems designed to detect, classify,



identify and neutralise naval mines in a safe, stand-off manner. L&T, as the prime contractor, will offer the Unmanned MCM Suite to all shipyards participating in Indian Navy's upcoming programme for 12 Mine Counter Measure Vessels. Exail will serve as the technology partner.

Nibe Ltd tests Vayu Astra-1

Nibe Limited has announced the successful no-cost, no-commitment (NCNC) demonstration of its Vayu Astra-1 loitering munition with a strike range of 100 km during trials conducted in Rajasthan and Uttarakhand. According to the company, the anti-personnel variant of the Vayu Astra-1 carried a 10 kg warhead during its first NCNC demonstration at the Pokhran range. Under the Ministry of Defence's procurement process, NCNC trials are conducted without any payment or purchase commitment from the government.



Indian Navy contracts Tonbo Imaging for HPM

Tonbo Imaging has been awarded a contract by the Indian Navy under the ADITI 3.0 innovation framework to integrate and commission a High Power Microwave (HPM) system for naval platforms. High Power Microwave systems represent a strategically significant directed energy capability and are considered a strategic asset owned by only a limited number of countries today. "The Indian Navy's continued investment in this domain reflects a forward looking approach to electromagnetic spectrum dominance and next-generation deterrence".



Apache helicopters follow-on support

The US Department of State has made a determination approving a possible Foreign Military Sale to the Government of India for its purchase of Apache Helicopters follow-on support services and related equipment. The estimated total cost is \$198.2 million. "The Government of

India has requested to buy AH-64E Apache sustainment support services; US Government and contractor engineering, technical and logistics support services; technical data and publications; personnel training and other related elements of logistics and programme support".



Sustainment support for M777A2 ULH

The US Department of State has made a determination approving a possible Foreign Military Sale to the Government of India sustainment support for M777A2 ultra-light howitzers. The estimated total cost is \$230 million. "The Government of India has requested to buy long term sustainment support for M777A2 ultra-light howitzers. The following non-major defence equipment items will be included: ancillary items; spares; repair and return; training; technical assistance; field service representative; depot capability and other related elements of logistics and programme support".



Agnikul Cosmos and ICEYE sign MoU

Agnikul Cosmos, India's private full stack space transportation company, and ICEYE, a leader in sovereign intelligence from space, have signed a Memorandum of Understanding to explore the potential to build, launch and operate Synthetic Aperture Radar (SAR) earth observation systems from India. The partnership aims to explore ICEYE's SAR satellite expertise and its establishment of satellite manufacturing capabilities in India and Agnikul's full stack responsive launch capabilities. For Agnikul, this adds ICEYE to a growing portfolio of international commercial partnerships. For ICEYE, India represents a key Asia-Pacific manufacturing hub opportunity, producing satellites not just for domestic programmes but

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for global markets. ICEYE operates the world's largest SAR satellite constellation, having launched over 70 satellites.

EndureAir in RDI funding for SABAL-200

EndureAir Systems Pvt Ltd, is an IIT Kanpur incubated Uncrewed Aerial System (UAS) design and manufacturing startup from Noida, focused on developing indigenous heavy lift drone systems for defence and civilian applications. They have secured INR 30.01 crore under the Research and Development Initiative (RDI) fund from the Department of Science and Technology, with support from the Technology Development Board. Notably, EndureAir is the first drone company to receive support under the initiative's first cohort. The funding will support the development of its SABAL-200, a 200kg payload class heavy lift VTOL drone platform.



Avantel Limited in contract from ICG for Satcom Products

Avantel Limited, a provider of technology solutions for the defence and communication sectors, has secured a contract from the Indian Coast Guard Headquarters for the supply, installation, commissioning and Annual Comprehensive Maintenance of Satcom Products. The total value of the contract is Rs. 28.20 crore, and the contract is scheduled to be executed by August 2027. Satcom Products play a critical role in enabling secure and reliable communication across maritime defence operations, ensuring uninterrupted connectivity, surveillance coordination, and mission critical communication capabilities in challenging operational environments.

Crown Defence announces strategic expansion

Crown Defence has announced a major strategic expansion designed to transition the group from a maintenance specialist into providing comprehensive shipbuilding and complex system integration. This transition is being spearheaded by its core maritime subsidiaries: Dynatron Services Pvt Ltd (DSPL), dealing in propulsion and precision engineering, and OSK India Pvt. Ltd. (OIPL), the authorised Indian partner for Russia's JSC United Shipbuilding Corporation. Central to this expansion is the group's heightened activity at L&T's Kattupalli Shipyard, where Crown Defence is currently

building hull blocks for major naval projects. At Cochin Shipyard Limited (CSL), the group's expertise "has moved into modular block construction, supporting India's most ambitious indigenous shipbuilding programmes".



RRP Defense in order from BEL for germanium lenses

RRP Defense, a leading Indian OEM specialising in advanced electro-optical systems and thermal imaging technologies, has secured an order worth approximately Rs. 29.8 crore from Bharat Electronics Limited (BEL) for the supply of high precision germanium lenses used in critical infrared and thermal imaging applications. Germanium lenses are among the most critical components in thermal imaging and infrared sensing systems.

Anadrone Systems and Kratos in strategic agreement

Anadrone Systems Limited, an Indian unmanned systems company, and Kratos Defense & Security Solutions of the USA have announced a strategic agreement to jointly pursue opportunities in India's rapidly expanding unmanned and autonomous systems market. The agreement



combines Kratos' expertise in tactical unmanned aerial systems, aerial target platforms and autonomous technologies with Anadrone's established capabilities in indigenous development, manufacturing, integration, operational support and customer engagement within India.

Merlinhawk Composites new facility in Tamil Nadu

Merlinhawk Aerospace Pvt Ltd, in partnership with Italy based Vega Composites, inaugurated its composites manufacturing facility at Shoolagiri in the Tamil Nadu Defence Industrial Corridor. The Shoolagiri facility is designed to manufacture advanced composite aero structures and high performance materials that are critical to next generation aerospace and defence platforms, including aircraft and unmanned systems, radar, electronic warfare structures and high performance defence applications.



Autonomous, edge-native drone swarms unveiled by Tashi Network

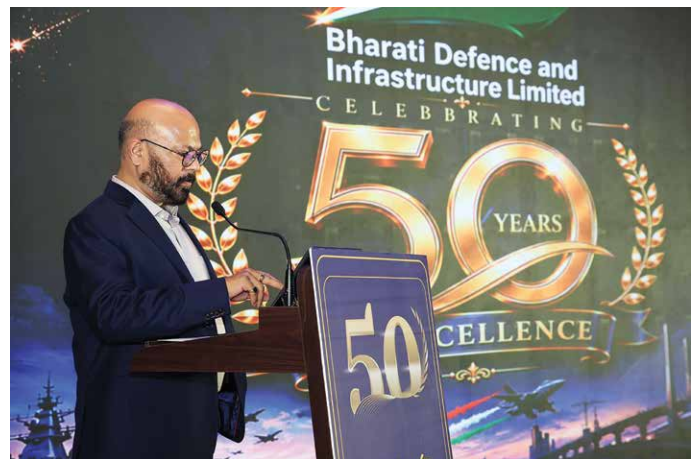
Tashi Network, a company involved in autonomous coordination, and DroneVerse, a major Indian UAV and defence solutions provider, successfully completed a live drone swarm field trial in the Delhi region, demonstrating how a decentralised mesh keeps missions going even when individual drones drop out, batteries run low or links back to base are intermittent.

The joint exercise, amongst the first of its kind in India, reflects this broader shift as armed forces move from one-off drones to coordinated swarms that reconnoitre, strike and re-task autonomously.



Bharati Defence & Infrastructure marks 50 years

Bharati Defence & Infrastructure Limited (BDIL) has marked its 50th anniversary in June 2026 by refocusing its core mission: leveraging five decades of complex systems engineering "to deliver advanced defence technology capabilities for the Indian Armed Forces". BDIL, in collaboration with Exicom Technologies, is developing software defined secure networks and MANET solutions, with platform specific datalinks engineered for Tejas, LCH, C-130 and other critical applications. The Sentinel programme—a semi-autonomous combat modernisation kit for the T-72 Ajeya—represents BDIL's flagship wholly indigenous system, with Phase II extending capabilities to rotary wing platforms, surface vessels and multi-domain operations. BDIL is also developing indigenous loitering munitions and specialised unmanned systems engineered to operational requirements.



Unimech Aerospace in supply agreement with FACC

Unimech Aerospace and Manufacturing Limited has signed a long term supply agreement with FACC Operations GmbH, Austria, one of the world's leading aerospace Tier-1 suppliers and a strategic partner to major global aerospace OEMs. The agreement covers the manufacture and supply of precision engineered aerospace components and flying parts and was awarded to Unimech following a competitive global sourcing process involving international suppliers. As part of the programme onboarding process, Unimech will undergo a qualification and industrialisation phase over the coming quarters, including first article approvals, process validations and production readiness activities before transitioning into serial production.

First batch of NDA women cadets commissioned

The first batch of women cadets trained at the National Defence Academy (NDA) has been commissioned as officers in the defence forces, marking a significant milestone in the evolution of women's participation in military service. The batch of 17 women cadets, who joined the NDA in August

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2022 as part of the 148th Course, successfully completed their rigorous pre-commission training at their respective Service academies.

Spring Term 2026 – Passing Out Parade

A grand Passing Out Parade (POP) was conducted at the Indian Naval Academy (INA), Ezhimala, on 28 May 2026. A total of 311 trainees, including 66 women trainees, passed out with distinction, marking the culmination of their ab initio military training. The passing out cohort included six trainees from three Friendly Foreign Countries – Seychelles, Tanzania and Vietnam – two of whom were women trainees from Seychelles – reflecting the Academy's expanding international footprint.



Passing Out Parade of Batch 01/26 at INS Chilka

INS Chilka witnessed a momentous occasion as 3,011 trainees of Batch 01/26, successfully passed out on 12 June 2026 after completing 16 weeks of rigorous ab-initio naval training. The Passing Out Parade marked their successful transformation from recruits into disciplined, motivated and professionally trained personnel, ready to take on the challenges of naval service. The batch comprised 2,746 Agniveers, including 116 women Agniveers of the Indian Navy and 265 Naviks of the Indian Coast Guard.



Indian Navy commission three naval platforms

In a landmark moment for India's maritime preparedness and indigenous defence capability, Prime Minister Mr. Narendra Modi commissioned three frontline platforms – INS Dunagiri, an advanced stealth frigate; INS Sanshodhak, a survey vessel (large); and INS Agray,

an anti-submarine warfare shallow water craft – into the Indian Navy in Kolkata, West Bengal on 21 June 2026. These platforms will significantly enhance the nation's operational capabilities, maritime security against geopolitical threats and domain awareness.



Steel cutting of 5th FFS for IN

'Steel Cutting' Ceremony of 5th and the last of the five Fleet Support Ships (FSS) was held at Hindustan Shipyard Limited (HSL), Visakhapatnam on 8 May 2026, in the presence of VAdm Sanjay Sadhu, Controller of Warship Production & Acquisition as the Chief Guest. CMD, HSL and other senior officials from Indian Navy and HSL were present for the occasion. The Indian Navy had signed a contract with HSL for acquisition of five Fleet Support Ships (FSS) in August 2023, with delivery commencing mid-2027.



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Commissioning of ICGS Achal at Goa

The Indian Coast Guard, on 9 May 2026, marked a significant capability enhancement with the commissioning of Indian Coast Guard Ship Achal, new generation Adamya class Fast Patrol Vessel series, at Goa Shipyard Limited. The ship is armed with a 30 mm CRN-91 gun and two 12.7 mm stabilised remote controlled guns, supported by advanced target acquisition and fire control systems.



ICGS Akshay commissioned into ICG

Bharatiya Tatrakshak marked another milestone in its force modernisation with the commissioning of ICGS Akshay, a new generation Fast Patrol Vessel (FPV), at Goa Shipyard Limited, Goa, on 27 June 2026. The vessel is equipped to undertake a wide range of Coast Guard operations, including maritime law enforcement, coastal security, search and rescue, marine environmental protection and assistance to mariners in distress.



ICG's ACVs

Girder Laying Ceremony for the 4th, 5th and 6th indigenously built Air Cushion Vehicles (ACV) of Indian Coast Guard was held on 11 May 2026 at Chowgule's Rassaim Yard, Goa, in the presence of Chief Staff Officer (Tech), ICG Regional HQ (West). The contract for six ACVs, signed with MoD on 24 October 2024, marks a major milestone under Aatmanirbhar Bharat. Built with over 50% indigenous content, these state-of-the-art hovercraft will boost maritime security, enhance rapid response and operational agility across India's vast coastline.



ICG inducts indigenous Air Cushion Vehicle

The first of the six indigenous Air Cushion Vehicles (ACVs), being constructed by Chowgule & Company Private Limited for the Indian Coast Guard (ICG), was inducted into service in Goa on 18 June 2026. The hovercraft aims to enhance ICG's operational effectiveness across a broad spectrum of maritime duties and reinforce its ability to respond to emerging challenges.



Launch of NGOPV Sanghmitra

Yard 3039 (Sanghmitra), Next Generation Offshore Patrol Vessel (NGOPV), was launched at GRSE, Kolkata on 20 May 2026. The construction of 11 NGOPVs is being undertaken concurrently at two shipyards (GSL, Goa and GRSE, Kolkata). These indigenously designed and built ships will augment the existing OPVs/NOPVs for multi-domain operations, such as surveillance and defence in area of interest, search and rescue, protection of offshore assets, HADR and anti-piracy missions.



Keel laying ceremony of Yard-16404

The keel laying ceremony of Yard 16404, fourth of 6 Next Generation Offshore Patrol Vessel (OPVs) was held at Mazagon Dock Shipbuilders Ltd (MDL), Mumbai on 25 June 2026. The ceremony was presided over by senior officials from the Indian Coast Guard (ICG) and MDL. The contract for the construction of 6 Next Generation OPVs was concluded on 20 December 2023. The ship will feature modern machinery and other systems.



First Bell 407GX in India for TransBharat Aviation

Bell Textron Inc., a Textron Inc company, has announced the order of the first Bell 407GX helicopter in India to TransBharat Aviation Private Limited, one of India's most established non-scheduled rotary wing operators. Founded in 1990, TransBharat Aviation "has been a trusted Bell customer for decades, operating a fleet that includes the iconic Bell 206B3 and the Bell 407".



APPOINTMENTS

Lieutenant General NS Raja Subramani (Retd) appointed as Chief of Defence Staff

The Government has appointed Lieutenant General NS Raja Subramani (Retd) as the Chief of Defence Staff, who shall also function as the Secretary to Government of India, Department of Military Affairs, with effect from the date of assumption of charge and until further orders. The General Officer is a Graduate of the National Defence Academy and Indian Military Academy. He was commissioned into the 8th Battalion of the Garhwal Rifles on 14 December 1985. He is an alumnus of Joint Services Command Staff College, Bracknell (UK), and National Defence College, New Delhi. He holds a Master of Arts Degree from King's College London and an M Phil in Defence Studies from Madras University.



Vice Admiral Krishna Swaminathan appointed as Chief of the Naval Staff

The Government has appointed Vice Admiral Krishna Swaminathan as the Chief of the Naval Staff. Vice Admiral Krishna Swaminathan assumed charge as the 34th Flag Officer Commanding-in-Chief of the Western Naval Command on 31 July 2025. The Flag Officer was commissioned into the Indian Navy on 1 July 1987 and is a specialist in Communication and Electronic Warfare. He is an alumnus of the National Defence Academy, Khadakvasla; the Joint Services Command and Staff College, Shrivenham, United Kingdom; the College of Naval Warfare, Karanja; and the United States Naval War College, Newport, Rhode Island. On promotion to the rank of Vice Admiral, the Flag Officer was Chief of Staff of the Western Naval Command, Controller of Personnel Services and Chief of Personnel at NHQ. Prior to his current assignment, he served as Vice Chief of the Naval Staff at Naval Headquarters.



APPOINTMENTS

Lt Gen Dhiraj Seth appointed as Chief of the Army Staff

General Dhiraj Seth took over as the 31st Chief of the Army Staff (COAS) from General Upendra Dwivedi who superannuated after more than four decades of distinguished service to the nation on 30 June 2026. Lieutenant General Dhiraj Seth is an alumnus of the National Defence Academy, Khadakwasla, and was commissioned into the Armoured Corps in December 1986. The General Officer has commanded at every level in diverse operational environments. His command assignments include an Armoured Regiment in the Desert Sector, an Armoured Brigade in the Western Theatre and a Counter Insurgency Force in Jammu & Kashmir. As a Lieutenant General, he commanded the Sudarshan Chakra Corps, one of the Indian Army's premier strike formations.



Lt Gen Sandeep Jain is new Vice Chief of the Army Staff

Lt Gen Sandeep Jain assumed the appointment of the Vice Chief of the Army Staff (VCOAS) on 1 July 2026. An alumnus of the National Defence Academy, he was commissioned into the Mahar Regiment in June 1988. Over nearly four decades of distinguished service, he has held a wide range of command and staff appointments across diverse operational environments. On promotion to Lieutenant General, he commanded a Corps in Northern Command. He later served as Chief of Staff at Headquarters Southern Command, where he contributed significantly to capability development, force restructuring and overall operational preparedness. On elevation as Army Commander, he served as General Officer Commanding-in-Chief, Southern Command.



Air Marshal Ashutosh Dixit takes over as VCAS, IAF

Air Marshal Ashutosh Dixit took over as Vice Chief of the Air Staff, Indian Air Force on 1 July 2026. The Air Marshal was commissioned into the fighter stream of IAF on 6 December 1986. He is an alumnus of National Defence Academy, Defence Staff Service College (Bangladesh) and National Defence College with more than 3500 hours of flying. The Air Marshal has an extensive flying experience on various aircraft; to name a few; Mirage 2000, variants of MiG, HPT-32, An-32, Avro, Kiran, Jaguar, Il-78, Hawk and Tejas. He is an Experimental Test Pilot and a Qualified Flying Instructor. During his service career, spanning four decades, he has been actively involved in numerous operations and exercises viz Op-Safed Sagar, Op-Rakshak, Cope-India and Op Sindoor. Prior to assuming charge as the Vice Chief of the Air Staff, the Air Marshal served as Air Officer Commanding in Chief, Central Air Command, and thereafter as the Chief of Integrated Defence Staff to the Chairman, Chiefs of Staff Committee (CISC) at Headquarters Integrated Defence Staff (HQ IDS).



APPOINTMENTS

Vice Admiral Ajay Kochhar assumes charge as VCNS

Vice Admiral Ajay Kochhar assumed charge as the 48th Vice Chief of the Naval Staff (VCNS) on 29 May 2026. On assuming charge, the Flag Officer paid solemn homage to the Bravehearts who made the supreme sacrifice in service of the nation by laying a floral wreath at the National War Memorial, New Delhi. An alumnus of the prestigious National Defence Academy, Pune, Vice Admiral Ajay Kochhar was commissioned into the Indian Navy on 1 July 1988. A specialist in Gunnery and Missile Systems, he has held a wide range of command, operational and staff assignments over his naval career spanning more than 37 years.



Vice Admiral Vineet McCarty assumes charge as C-in-C, A&N Command

Vice Admiral Vineet McCarty assumed charge as the 20th Commander-in-Chief, Andaman & Nicobar Command (ANC) at Sri Vijaya



Puram on 1 June 2026. Commissioned into the Indian Navy on 1 July 1989, the Flag Officer is a specialist in Gunnery and Missiles. An alumnus of the Defence Services Staff College, Wellington, and the National Defence College, New Delhi, he brings over 36 years of distinguished service across operational, staff, training and tri-service domains. Prior to his current appointment, the officer held consecutive tri-service appointments at Headquarters Integrated Defence Staff (HQ IDS) as Deputy Chief of Integrated Defence Staff (Policy, Plans and Force Development) and Deputy Chief of Integrated Defence Staff (Doctrine, Organisation and Training) during 2025–26.

Air Marshal Tarun Chaudhry is new AOC-in-C, CAC, IAF

Air Marshal Tarun Chaudhry assumed the appointment of Air Officer Commanding-in-Chief, Central Air Command on 1 June 2026. He was commissioned into the Fighter stream of the Indian Air Force in December 1989. He is an alumnus of National Defence Academy, Defence Services Staff College, College of Air Warfare and National Defence College. The Air Marshal has spearheaded several transformative projects aimed at capability enhancement and induction of future technologies in the IAF. Prior to taking charge of Central Air Command, the Air Marshal was holding the appointment of Senior Air Staff Officer, HQ Southern Air Command.



Air Marshal PV Shivanand takes over command of SWAC

Air Marshal PV Shivanand AVSM VM, assumed the appointment of Air Officer Commanding-in-Chief, South Western Air Command on 1 July 2026. He was commissioned into the fighter stream of the Indian Air Force in December 1988. He is an alumnus of the National Defence Academy, Tactics and Air Combat Development Establishment and Defence Services Staff College, Wellington. The Air Marshal has a cumulative flying experience of over 2800 hours on MiG-21 and the Il-76 AWACS.



APPOINTMENTS

Air Marshal Jasvir Singh Mann is new AOC-in-C, SAC, IAF

Air Marshal Jasvir Singh Mann assumed command of Southern Air Command as Air Officer Commanding-in-Chief on 1 July 2026. Commissioned in the fighter stream of Indian Air Force on 16 December 1989, the Air officer is a graduate of Defence Services Staff College, Higher Air Command and Post Graduate from the 'Royal College of Defence Studies', London (UK). He is a Pilot Attack Instructor who has over 3000 hours of flying experience on various aircraft like Apache, MiG-21, Jaguar, Mig-29, Su-30 and Rafale.



Lt Gen Rajesh Pushkar takes over Southern Command

Lieutenant General Rajesh Pushkar assumed Command as the General Officer Commanding-in-Chief, Southern Command on 1 July 2026. An alumnus of the National Defence Academy, Lieutenant General Rajesh Pushkar was commissioned into 74 Armoured Regiment in December 1988. The General Officer has had an illustrious and distinguished military career spanning over four decades. During his service, he has held a wide range of command, staff and instructional appointments across diverse geographical and operational environments. Lieutenant General Rajesh Pushkar provided decisive leadership and strategic foresight as General Officer Commanding 2 Corps during Operation Sindoor.



Lt Gen Mohit Malhotra takes over South Western Command

Lieutenant General Mohit Malhotra has assumed the appointment of General Officer Commanding-in-Chief of the South Western Command. Commissioned into the 47 Armoured Regiment in June 1989, the General Officer brings to this appointment over thirty seven years of distinguished service, spanning command, staff and instructional appointments at every significant level. Immediately prior to assuming command, he served as Chief of Staff, Headquarters Eastern Command, where he made substantial contributions to operational preparedness, organisational effectiveness and institutional cohesion.



APPOINTMENTS

Air Marshal Tejinder Singh takes over as CISC

Air Marshal Tejinder Singh took over as the Chief of Integrated Defence Staff to Chairman Chiefs of Staff Committee (CISC) on 1 July 2026. An alumnus of National Defence Academy, Defence Service Staff College and National Defence College, Air Marshal Tejinder Singh was commissioned into the fighter stream of the Indian Air Force on 13 June 1987. He is a Category 'A' Qualified Flying Instructor with over 4,500 hours of flying experience. He has commanded a Fighter Squadron, a radar station, a premier fighter base and was Air Officer Commanding, Jammu & Kashmir. Prior to his present appointment, the Air Marshal was the Air Officer Commanding-in-Chief (AOC-in-C), South Western Air Command.



Vice Admiral Rajesh Dhankhar is new Deputy Chief of Integrated Defence Staff

Vice Admiral Rajesh Dhankhar assumed charge as the Deputy Chief of Integrated Defence Staff (Doctrine, Organisation & Training) on 1 June 2026, after relinquishing the appointment of Director General Project Seabird. He takes over from Vice Admiral Vineet McCarty who is taking over as Commander-in-Chief, Andaman & Nicobar Command.



Tony Walton appointed BAE Systems' MD for India

BAE Systems has announced the appointment of Tony Walton as Managing Director for India, based in New Delhi. "BAE Systems has a proud history and heritage in India, dating back several decades including the Hawk aircraft and the M777 howitzer. We are one of the founding partners of defence manufacturing in India, a commitment we continue with today through the selection of the BVS10 all-terrain vehicle by the Indian Army for manufacture in India in partnership with Larsen Toubro. We work closely with the Indian defence sector cultivating partnerships with more than 80 industrial partners".



IAF gets FOC for AEW&C 'Netra'



On 25 June 2026, Defence Research & Development Organisation achieved a significant milestone with the handing over of the Final Operational Clearance (FOC) certificate of the Indigenous 'Netra' Airborne Early Warning and Control (AEW&C) system to the Indian Air Force (IAF). The system has been indigenously developed through close collaboration among the IAF, DRDO and associated industries to significantly enhance airborne surveillance, situational awareness and battle management capability. It represents a landmark achievement in India's journey towards self-reliance in advanced aerospace and defence technologies. The Initial Operational Clearance (IOC) was given in 2017.

The ceremony was presided over by the Deputy Chief of the Air Staff Air Marshal Awadhesh Kumar Bharti in Bengaluru, Karnataka. Former Chief of the Air Staff Air Chief Marshal RKS Bhadauria (Retd), former DRDO Chairman Dr S Christopher, serving and retired senior officers of IAF, Outstanding Scientist & Director Centre for Air Borne System (CABS) Smt P Santhya, Outstanding Scientist and Chief Executive (Airworthiness) Mr. APVS Prasad, Scientist 'G' and Head NETRA FOC Mr. AS Kumaran, other senior officials of DRDO and industry partners attended the event.

In his address, the Deputy Chief of the Air Staff appreciated the FOC of indigenous Netra AEW&C. He spoke about the

operational utilisation and reliability of the system during Operation Sindoor and Balakot strikes. He reiterated the importance of indigenous technologies which offer the services the flexibility to adapt the system to the evolving war scenario by undertaking modifications. He lauded the synergy among DRDO, IAF and the industry which has defined the success of the programme.

Distinguished Scientist and Director General of Aeronautics Cluster of DRDO Dr K Rajalakshmi Menon narrated the successful journey of Netra. She brought out the challenges faced and the decisions taken that enabled to achieve the programme objectives and deliver the





operationally capable system to IAF. She emphasised the importance of system engineering and how it helped in the planning and execution of flight tests.

Distinguished Scientist and Director General of Electronics Cluster of DRDO Dr BK Das stated that the synergy among the stakeholders had been the cornerstone of success of this programme. He termed Netra AEW&C as a defining testimony to self-reliance and attaining 'Viksit Bharat'.

As part of the event, special appreciation and felicitations were extended to organisations and units that played a pivotal role in the successful realisation and operationalisation of the Netra AEW&C system. The contributions of all stakeholders were acknowledged as instrumental in transforming the system from concept to operational reality.

The successful induction of the Netra AEW&C system into operational service reflects DRDO's commitment to indigenisation, innovation, and capability enhancement of the Defence Services. The programme stands as a shining example of synergy between operational users, scientific agencies, and defence production establishments.

Commending DRDO, IAF and the industry, Raksha Mantri Mr. Rajnath Singh has stated that the achievement of FOC marked not only a technological milestone, but also a strategic advancement in strengthening India's airborne surveillance and command and control capabilities. Defence Secretary and Secretary, Department of Defence R&D and Chairman DRDO Mr. Rajesh Kumar Singh congratulated DG (Aero) and Team AEW&C for achieving the milestone. 🇮🇳

Suryakiran Aerobatic Team celebrates 30 years



The iconic Indian Air Force formation aerobatic team, the Suryakiran Aerobatic Team, marked its 30th Anniversary at Air Force Station Bidar on 26 May 2026. The occasion commemorated three decades of inspiring the nation through precision aerobatics and exceptional airmanship.

The celebrations were graced by the Chief of the Air Staff, Air Chief Marshal AP Singh, and Air Officer Commanding-in-Chief, Training Command, Air Marshal S Shrinivas. In a special highlight of the event, CAS and AOC-in-C flew with the team during the commemorative aerial display.

A poignant “Hollow Diamond” formation was flown in remembrance of the brave team members the Suryakiran Aerobatic Team lost during its illustrious journey. The tribute reflected the deep camaraderie, courage and enduring spirit that define the team. Popularly known as the “Ambassadors of the Indian Air Force”, the nine aircraft formation aerobatic team has inspired millions through professional flying in close formation encompassing thrilling manoeuvres at low levels.

The team, “Suryakiran” – meaning “Rays of the Sun” – was formed on 27 May 1996 at Air Force Station Bidar, initially flying the Kiran Mk.II aircraft. In September 1996,



the team made its public debut with a spectacular display at Coimbatore, marking the beginning of an inspiring journey in precision aerobatics. Over the past three decades, Suryakiran has conducted more than 800 breathtaking air displays, captivating audiences across India and abroad, including in China, Sri Lanka, Myanmar, Thailand, Singapore and the United Arab Emirates. Continuing its legacy of innovation and excellence, SKAT has operated the iconic Red and White Hawk Mk.132 aircraft since 2015 in its signature nine aircraft formation. ➡

Text: IAF

Photos: Vayu and IAF

Updates from KSSL/Bharat Forge

KSSL and Paramount unveil Simha 4x4

Kalyani Strategic Systems Limited (KSSL), the wholly owned defence subsidiary of Bharat Forge Limited, and Paramount, has unveiled Simha 4x4, a next generation Light Armoured Multi-Purpose Vehicle, at Eurosatory 2026. Developed to address the rapidly evolving mobility, protection and mission requirements of armed forces in India, Africa, South Asia and other global markets, the Simha 4x4, is an ab initio design – that “delivers a uniquely capable multi-purpose platform”. Combining power, agility and protection, the Simha 4x4 is best suited for a mix of urban warfare and on and off-road reconnaissance. “Building on proven aggregates, its modular architecture allows easy upgrades, customisations and modifications enabling users to streamline and optimise their supply and MRO lines”.



Mr. Rajnath Singh (Raksha Mantri) and N. Chandrababu Naidu (CM, Andhra Pradesh) view defence systems with Mr. Baba Kalyani (CMD, Bharat Forge).



Bharat Forge MoU for marine gas turbine facility

Bharat Forge Limited has signed an MoU with the Government of Andhra Pradesh to establish India's first private sector Marine Gas Turbine Repair, Overhaul and Indigenous Development facility at Visakhapatnam. The proposed facility, to be developed through Bharat Forge's Aerospace division within the Andhra Pradesh Defence Manufacturing Corridor, will strengthen India's indigenous naval propulsion ecosystem and support the country's long term defence self-reliance objectives. The project will include advanced repair and overhaul capabilities, indigenous marine gas turbine development infrastructure and a full spectrum testing ecosystem, while also generating approximately 750 direct and indirect employment opportunities.

Kalyani/Agneyastra Energetics facility in AP

Agneyastra Energetics Limited, a wholly owned subsidiary of Kalyani Strategic Systems Limited (KSSL) announced the groundbreaking of its strategic defence manufacturing facility near Madakasira in Sri Sathya Sai District, Andhra Pradesh. Spread across more than 1,000 acres, the integrated campus will be developed with a planned investment of Rs. 1,500 crore over the next 2-4 years. Designed with “advanced manufacturing technologies, high safety testing infrastructure, and specialised logistics capabilities, the facility will significantly enhance India's indigenous capabilities in advanced energetics and ammunition systems critical to modern defence and aerospace applications”.



KSSL unveils the MArG Series of 155mm 4×4 mounted artillery guns

Kalyani Strategic Systems Limited (KSSL) introduced its line of Mounted Artillery Guns, the MArG series, on the opening day of Eurosatory 2026. Truck mounted and built for manoeuvre, the MArG series delivers a mobile, rapidly deployable and cost-optimised firepower solution for modern land forces. The MArG series is a comprehensive family of 4×4 mounted 155mm artillery systems, engineered to give armed forces a single, common platform across three calibre configurations: MArG 39 (39 calibre), MArG 45 (45 calibre) and MArG 52 (52 calibre).



Embraer names Bharat Forge as new supplier

Embraer and Bharat Forge Limited announced the signing of a contract for the supply of forged raw materials. This agreement represents Embraer's first forged raw material supply contract with an Indian supplier and marks an important milestone in strengthening the partnership between the two companies. The agreement supports Embraer's global supply chain with high quality forged products and reinforces the company's strategy



of expanding and diversifying its supplier base, while fostering industrial capabilities in key growth markets.

KSSL and AM General sign strategic partnership

Kalyani Strategic Systems Limited (KSSL) has signed a strategic partnership with AM General, a leading military vehicle mobile defence capabilities provider at Eurosatory defense exposition. This strategic partnership between AM General and KSSL addresses the requirement of modern armies of the world in an evolving combat scenario equipping them with compact, robust, light weight, ruggedised, mobile, all weather, all terrain Next-Gen Mounted Artillery gun platforms, with a distinct competitive edge. There are numerous opportunities globally, and the partnership is intended to support broader allied distribution, positioning the platform as a scalable, exportable artillery solution for partner nations seeking modern, mobile and survivable 155mm fires capability.

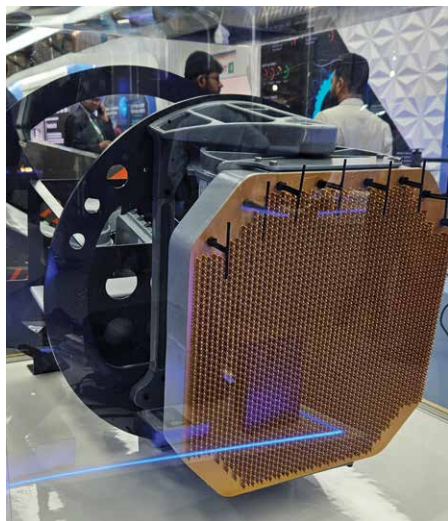
KSSL and NAMMO in LoI

At Eurosatory 2026, Kalyani Strategic Systems Limited hosted a NAMMO delegation led by Karl Edström. Aligned with the Nordic Security of Supply mandate and the EU Re-Arm initiative, Bharat Forge Kilsta AB signed a Letter of Intent (LoI) document with NAMMO Sweden AB towards supply of large calibre sub-systems. Leveraging its rich automotive and industrial legacy, Bharat Forge Kilsta AB, a wholly owned subsidiary of Bharat Forge Ltd, offers its "fullest commitment to expand manufacturing capabilities and add production capacities to contribute to the strategic objectives of Sweden and the greater Nordic region and Europe".



Gems from LRDE: Uttam and Virupaaksha radars

Uttam (meaning excellent) is a solid-state Gallium Arsenide (GaAs) based Active Electronically Scanned Array AESA radar under development by the Electronics and Radar Development Establishment (LRDE), a laboratory of the Indian Defence Research and Development Organisation (DRDO). Hindustan Aeronautics Limited (HAL) is the lead integrator and Bharat Electronics is the major supplier of subsystems. As per Project director D. Seshagiri of the Electronics and Radar Development Establishment, Uttam AESA radar is 95% indigenous, with only one imported subsystem. The building block is GaAs Monolithic Microwave Integrated Circuit (MMIC) using lithographic-type processes to produce microwave circuits on chips at very high levels of integration. The X-band Transmit/Receive module, in addition to a radiating element, contains additional MMIC integrated into a substrate with a few discrete components and cooling provisions in compact space. It is an LPI (Low Probability of Intercept) liquid cooled AESA radar featuring quad-band modules that can be stacked to form a larger unit.



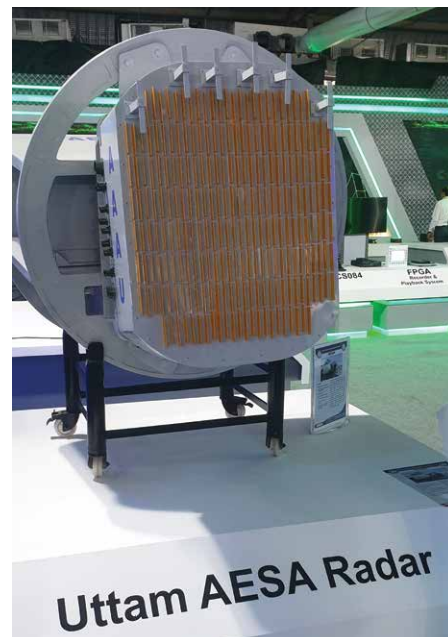
Virupaaksha AESA radar

The Uttam Mk-1 has a total of 912 TRMs. Unofficial sources confirm radar's range against tactical-size targets at roughly 100 miles and greater electronic surveillance range. The radar is capable of tracking 50 targets with 4 in priority. Uttam AESA radar has a total of 18 modes in Air-to-Air (including Track While Scan and High-resolution raid assessment), Air-to-Ground (including High resolution imaging and tracking in

Synthetic Aperture Radar/SAR Mode, Doppler Beam Sharpening and Ground Moving Target Indicator on SAR) and air-to-sea roles. The radar will inherently be capable of interleaving air-to-air, air-to-ground and terrain following modes, at ultra long ranges and at a suitable frequency to provide simultaneous assessment in every mode, no doubt a highly desirable attribute of the "strike packages" in terms of situational awareness. The fully functional active electronically scanned array (AESA) radar prototype was unveiled at Aero India 2019; the prototype was mounted inside the glass nose of a HAL Tejas prototype. During Aero India 2021, there was a licensing agreement for technology transfer from DRDO to Hindustan Aeronautics Limited for manufacturing and integration of the Uttam in the Mk 1A variant of the HAL Tejas. The technology transfer to HAL was finished by DRDO in July 2023, and the radar was approved for export as well. In April 2025, Centre for Military Airworthiness and Certification (CEMILAC) informed HAL and DRDO internally that the Uttam radar had finished four stages of flight testing. Furthermore, the radar hardware has passed qualification tests in accordance with the specifications of the Tejas Mk 1A.

Virupaaksha (a form of Lord Shiva) radar is an advanced version of the Uttam Mk 2 radar. The radar under development will replace the current N011M Bars radar being used onboard the Sukhoi Su-30MKI after the Super Sukhoi upgrade programme. Virupaaksha weighs half as much as the N011M Bars. Virupaaksha utilises Gallium Nitride (GaN) technology with improved radar operational characteristics than Gallium Arsenide (GaAs) used by earlier variants. GaN provides better power output, enhanced thermal efficiency, wider bandwidth of operation, and a longer lifespan compared to earlier variants. The radar incorporates the quad transmit-receive modules (T/R modules) similar to Uttam but has a more densely packed configuration and has around 2400 modules based on GaN based planks. The plank configuration eases maintenance operations. Reportedly, the radar succeeded to track 64 to 100 aerial targets simultaneously during trials and offers at least 1.7 times increased head-on search range over

the 140 km range N011M Bars radar. It features advanced electronic counter-countermeasures (ECCM).



Uttam AESA radar

The Virupaaksha radar operates in the S-band frequency range, and can detect and track a wide range of targets like aircraft, helicopters, drones, and even ballistic missiles. It has a head-on search range of over 400 km as per another report, though the value is officially classified. In air-to-air attack mode, Virupaaksha can maneuver, control, and direct six missiles simultaneously towards the target. Virupaaksha features a combination of mechanical and electronic steering, also present on Captor-E of the Eurofighter Typhoon, allowing a higher angle of view. According to IAF Chief Air Chief Marshal AP Singh, over 200 of Sukhoi Su-30MKIs shall be upgraded to the Super Sukhoi standard with the Virupaaksha radar.

As evident, Uttam and Virupaaksha AESA radars are projected to empower significant increase in the Indian Air Force fighters air-to-air target detection and tracking range and provide higher resolution Synthetic Aperture Radar (SAR) air-to-ground mapping at longer ranges while itself remaining largely immune to Electronic Counter Measures (ECM) interferences and interception. LRDE has started producing formidable airborne radars of pristine technology.

Article by Sayan Majumdar

Unimech and the rise of India's next generation precision manufacturing capability



Aero tooling facility

India's manufacturing ambitions are increasingly moving beyond scale. The next phase of growth will depend on the country's ability to deliver high precision engineering for industries where quality, certification and reliability matter as much as cost. As aerospace, defence and semiconductor supply chains diversify globally, manufacturers capable of meeting stringent technical standards are becoming strategic partners rather than simple vendors.

Unimech Aerospace and Manufacturing Ltd reflects this transition.

Founded in Bengaluru in 2016 by Anil Kumar Puttan, Mani Puthan, Preetham Shimoga, Rajanikanth Balaraman and Ramakrishna Kamohhala, the company was built with a clear objective: to create a globally competitive precision engineering platform serving some of the world's most demanding industries.

That vision mirrors the changing needs of global OEMs. Today, aerospace and defence companies increasingly seek suppliers that can deliver integrated manufacturing capabilities, from precision machining and fabrication to assembly, testing and specialised processes. Success in these sectors depends not only on manufacturing excellence but also on qualification, process discipline and long term execution.

Unimech has steadily built capabilities across complex tooling, precision components, electro-mechanical assemblies and engineered sub-systems for aerospace, defence, energy and semiconductor customers. More importantly, it operates in industries where supplier approvals often take years of audits, validation and performance testing. Once qualified, these relationships typically become long term partnerships, creating significant competitive advantages and high switching costs.

The strength of this model was evident in FY26. Despite global tariff related disruptions and temporary



Assembly



From left – Unimech Co-Founders – Rajanikanth Balaraman, Mani Puthan, Preetham Shimoga, Ramakrishna Kamajhala and Anil Kumar Puttan

customer order deferrals, the company finished the year with an order book of approximately Rs. 314 crore as of May 2026, more than three times the previous year's level. It also completed over 200 first article qualifications, many of which are expected to transition into production programmes, while continuing to expand manufacturing capacity.

A particularly encouraging indicator was the strong recovery in the fourth quarter. Improved customer deliveries, higher production throughput and operating leverage supported a sharp improvement in both revenue and profitability. The company also secured new orders in the nuclear energy segment, reinforcing the growing diversification of its business.

This sprint has become one of Unimech's defining strengths. While aerospace remains a core market, its growing presence in semiconductors, energy and nuclear applications allows it to leverage the same precision engineering capabilities across multiple high-value industries, reducing dependence on any single market cycle.

Alongside organic growth, the company is also strengthening its global manufacturing footprint. Its 51% Unimech led joint venture with the Yusuf Bin Ahmed



Shop floor

Kanoo Group in Saudi Arabia provides access to one of the world's fastest growing industrial markets while supporting the Kingdom's localisation agenda. Initially focused on manufacturing and re-manufacturing high precision drilling and production components for the oil and gas sector, the venture also establishes a platform for expanding Unimech's precision engineering capabilities across other industrial sectors in the region.

Its acquisition of Hobel Bellows follows a similar strategic approach. By adding expertise in metallic bellows, flexible tubing assemblies, metalforming and high precision welded systems, the acquisition broadens Unimech's technology portfolio while creating opportunities for cross selling, capability integration and deeper engagement with global OEMs. It also strengthens the company's presence in high value engineering applications, including emerging opportunities in India's nuclear sector.

Supporting these initiatives is the company's Free Trade Warehousing Zone (FTWZ), the first such facility of its kind in Bengaluru, which is expected to improve export logistics, inventory management and supply chain responsiveness for global customers.

The significance of companies such as Unimech extends beyond individual business performance. India's ambitions in aerospace manufacturing, defence indigenisation, advanced energy systems and semiconductor fabrication depend on the development of a domestic ecosystem capable of consistently delivering products that meet global precision and quality standards.

The broader ecosystem is already showing signs of growing maturity. A recent example is Unimech's associate company Dheya Engineering Technologies, developer of advanced 20 kg and 50 kg payload micro gas turbines, which was recognised among India's Top 100 Deep-Tech Startups and selected to represent the country at the Bharat Innovates'26 showcase in Nice, France, from 14–16 June 2026. Such recognition reflects the increasing ability of Indian companies to combine advanced engineering with globally competitive manufacturing.

As global industries seek resilient, trusted and technologically capable supply chain partners, India's competitive advantage will increasingly rest on engineering capability rather than labour cost alone. Companies such as Unimech demonstrate how Indian manufacturers are evolving from component suppliers into integrated engineering partners. In doing so, they are helping shape the next chapter of India's manufacturing story, one defined by precision, technology, global integration and sustained capability building. ➡

Interview with Yashas Jaiveer, Managing Director, Hical Technologies



VAYU: *What are Hical Technologies' core capabilities, and what makes it different in aerospace and defence manufacturing?*

A: Hical has over four decades of manufacturing experience and nearly 20 years of exports in aerospace and defence. Our core strength is electromechanical manufacturing across both build-to-print and build-to-spec programmes. What matters in this sector is consistency, and that comes from strong process discipline, traceability and quality at every stage. This requires sustained investments into quality system, workforce training, R&D and engineering capabilities to ensure reliability and long term relationships with global customers.

VAYU: *What is Hical's long term vision for growth in the global aerospace and defence space?*

A: Hical's long term focus is to grow its aerospace and defence business by deepening its electromechanical, technological and manufacturing capabilities. To this end, the company is expanding its talent base, increasing R&D spend and scaling up manufacturing and design capacity in line with market demand. It is also pursuing acquisition opportunities over the medium term.

VAYU: *India's defence headlines are dominated by fighters, submarines and missiles but every one of those rests on a deep tier of high reliability electromechanical and magnetics suppliers that rarely gets discussed. Where does India's indigenous capability in this layer actually stand today, and which critical gaps still force import dependence?*

A: There is a genuinely growing base of aerospace qualified manufacturers in India like the companies that have held AS9100 certification, survived OEM qualification cycles and sustained multi-decade export relationships. That represents real and hard won capability. The gaps that remain are less about manufacturing intent and more about depth. Design led electromechanical capability where an Indian supplier can contribute to specification and engineering, not just produce to a drawing is still concentrated in a relatively small number of organisations. Most of the supply base operates in build-to-print mode, which limits how far up the value chain India can genuinely move. The other constraint is qualification time. Global OEM qualification cycles are long and resource intensive, and many capable Indian manufacturers have not yet accumulated the programme history that makes a prime comfortable placing safety critical electromechanical work with them.



VAYU: *In airborne and defence applications a single electromechanical failure can ground a platform or compromise a mission. Beyond certifications, what does building a genuine zero defect manufacturing culture demand on the shop floor and how is Hical embedding that into qualification for Indian and global programmes?*

A: Certifications like AS9100 and NADCAP are necessary but they describe systems, not outcomes. What actually drives zero defect performance is whether the people

doing the work understand the consequence of what they are producing. At Hical, operators are trained to know the specific safety critical application of the part in their hands. That connection changes how seriously individuals approach their tasks. We run structured cross functional mechanisms to surface issues early rather than catch them at final inspection. Every operator works through a training passport system no one is deployed on a task without the relevant certification. Safety critical components are handled only by the most experienced personnel. The company averages around 32 hours of training per employee annually. Sustained discipline across all of this, over years and across multiple programmes simultaneously, is what produces consistent zero defect outcomes.



VAYU: *'Make in India' is usually framed around domestic demand, but the larger prize may be Indian suppliers earning qualified positions on global OEM supply chains. What does it actually take for an Indian electromechanical manufacturer to get there, and where does HiCal sit in that shift?*

A: Earning a qualified position on a global OEM supply chain is a six month to one year process under reasonable conditions and longer for complex or new platform programmes. It involves multiple audits, capacity assessments, line validations and sustained demonstration of zero defect delivery before any volume commitment is made. OEMs invest their own engineering resources in qualifying suppliers, which makes them inherently

conservative. Hical has navigated this across Boeing, Dassault, Honeywell, Collins Aerospace and others not once but repeatedly, across programmes spanning decades. The move toward build-to-spec capability is the next important step. When a supplier contributes to engineering rather than simply executing a drawing, the relationship becomes structurally different harder to displace and more central to the programme. That is where Indian electromechanical manufacturers need to position themselves.

VAYU: *Hical took part in the India-Germany Defence Industry Roundtable in Munich this year. What is driving the appetite for India-Germany collaboration specifically at the components and systems level, and what did those conversations reveal about how Indian suppliers are now viewed by European primes?*



A: The Munich roundtable was held during Raksha Mantri Rajnath Singh's official visit to Germany, focused on co-development, co-production and stronger industrial collaboration between the two countries. What stood out at the components and systems level is that the conversation with European primes has changed in character. The question is no longer whether Indian suppliers are capable. It is how to integrate qualified Indian manufacturers into programme supply chains for next generation platforms. Indian manufacturers with verifiable long term track records of quality and delivery are being viewed as credible supply chain partners, not just cost alternatives. That shift reflects both India's growing export experience and the broader strategic intent to move the relationship beyond transactional procurement toward genuine co-development. ➡

Vector Technics: Powering India's Drone Sovereignty from the Ground Up



Every drone mission contains a half-second nobody briefs. The command goes out. The machine has not yet moved. In that gap, copper meets current and magnets meet physics, and everything the engineers promised either holds or it does not. The unmanned systems industry builds for everything around that half-second—the airframe, the payload, the sensors, the autonomy stack that attracts the funding and the headlines. Vector Technics builds for the half-second itself: the motors, controllers and power electronics that turn an instruction into motion. It does not make the platforms you see at defence exhibitions. It makes what moves them. And as drones cross the line from experiment to operational infrastructure, the question of who controls that movement has quietly become one of the most consequential questions in Indian defence policy.

Until recently, India did not have a good answer.

The dependency nobody wanted to name

For a decade the global drone industry grew fast on a foundation more fragile than it admitted. Platforms



got smarter, autonomy improved, sensors multiplied but the propulsion underneath came overwhelmingly from one geography: China. By industry estimates, Indian drone manufacturers sourced roughly four-fifths of their propulsion components from Chinese origin supply. For a logistics start-up that is a cost and continuity risk. For a defence programme it is a sovereignty problem. The government's IDDM (Indigenously Designed, Developed and Manufactured) procurement requirements forced the confrontation the industry had been deferring: you cannot field a sovereign unmanned capability on propulsion someone else designs, builds and can switch off. That created an urgent gap. Vector Technics had been building toward exactly this problem since 2018.

It began with a teardown

The company did not start with a market. It started with a refusal to accept propulsion components whose inner workings were undocumented, and to treat the physical layer of an autonomous system as a commodity while the systems themselves were being trusted with critical work.

In 2018, Prudhvi Raj Pakalapati and Karna Mahendra Raj founded the company as Trishula. Prudhvi Raj Pakalapati as CEO, Mahendra Raj as CTO driving the technical architecture. They began in a small 400 sq ft office in Hyderabad, taking apart imported brushless DC motors. Not to copy them, but to interrogate them: to find where reliability eroded under heat, under load, under time, and to map the gap between what a datasheet promised and what a motor actually delivered when real conditions arrived.

There was no ecosystem to lean on. No domestic vendors working to aerospace tolerances. Coils were wound by hand. Parts were machined on improvised setups. Prototypes failed constantly and the failures were the point. Each

one added to an internal map of how propulsion actually behaves when the cost of failure is real.

What kept the discipline honest was live programme work for India's defence establishment. While developing their own motors, the founding engineers also worked on the brake parachute actuator, the ULPGM launcher,



and the antenna positioning system for Tapas-BH-201, the DRDO Medium Altitude Long Endurance UAV better known as Rustom-2. Cutting your teeth on systems where failure carries operational consequence leaves a mark on an engineering culture that no later success erases.

From workshop to national asset

In 2022, Trishula became Vector Technics. Not a rebrand, a statement that the ambition was always motion as a domain, not drones as a category. The shift from survival to scale came in 2025, when Zen Technologies, the listed defence company known for its counter-UAS and simulation systems, took a strategic stake. The value was structural more than financial: programme level visibility inside the Indian defence ecosystem, credibility with procurement offices, and the manufacturing discipline to grow without diluting the standards that had defined the company.

A 26,000 square foot integrated propulsion facility came online at Shamshabad. Under one roof: CNC machining, automated coil winding, powder coating, heat treatment, surface-mount electronics assembly, dynamic balancing, firmware development and full propulsion testing. The team grew past 130 specialists across mechanical, aerospace, electrical, electronics, materials and firmware disciplines, more than 40 of them in R&D. Annual capacity reached 50,000 propulsion units. The catalogue passed 30 SKUs and keeps growing.

Today Vector Technics serves more than 300 clients across over ten countries, India's leading drone makers and international integrators in surveillance, mapping, agriculture, logistics and defence.

What they build, and why it is one system

The product philosophy rests on a single insight the component industry mostly ignores: a motor, a controller, and a propeller are not three products. They are one system. Design them separately and integrate later, and you accept a performance compromise at every interface. Design them together and you control the outcome.

The brushless DC range spans four series, each tuned to a class of platform. The SL (Super Light) series, open-frame designs for surveillance, mapping and tactical FPV, where weight and efficiency govern. The PRO series, a closed, thermally resilient architecture tested to MIL-STD-810G for temperature and vibration, spanning light cargo to heavy lift. The FW series for long range fixed wing UAVs, loitering munitions and VTOL transition vehicles. A dedicated VTOL series completes the range for hybrid platforms.

The manufacturing depth is what separates this from assembly. Stators are built from 0.2 mm cold rolled non-grain oriented electrical steel, stacked and heat-bonded, epoxy-coated, wound with oxygen-free copper. Rotors and hubs are machined from aerospace-grade aluminium and low-carbon steel. Raw materials are sourced from non-Chinese origins, a decision that is at once strategic and technical, securing both supply and batch-to-batch material consistency.

Electronic speed controllers are designed and built in-house on trusted silicon, with all firmware written domestically. This is not a footnote. As programme managers increasingly demand full auditability of the software governing critical systems, an ESC whose firmware is verifiable and whose silicon origin is known is a categorically different proposition from a black box import. Current production covers 40A and 60A controllers across 6S-12S, with more in development.

The propellers are carbon fibre reinforced polymer, 30% carbon fibre, 70% Nylon-6, with wingtip geometry tuned for the operating conditions of industrial and defence UAVs. The power electronics line adds the PowerCore distribution system for hexacopters, with onboard current sensing and voltage regulation, and the Voltrox DC-DC converters that feed clean power to LiDAR, cameras and flight controllers.

Quality as an engineering discipline

Every motor leaving the floor is tested for insulation resistance, phase resistance, inductance, Kv constant via back-EMF profiling and dynamic rotor balance, accepted against engineering reference data, not generalised pass/fail bands. Propulsion performance is validated on three NABL accredited thrust benches measuring thrust, efficiency, voltage behaviour, current draw and RPM for every motor and propeller pairing. Electrical validation adds waveform analysis, phase symmetry checks and inductance matching. The result is a process where tolerance and consistency are measured outcomes, not aspirations. More than a thousand motor variants have been developed and refined across the company's life, each one sharpening the understanding of how controlled materials, geometry and winding parameters translate into predictable field performance.

After sale support follows the same logic. The company keeps engineering access open through a system's operational life and formally captures field feedback to drive design changes. In mission critical systems, that continuity is not a differentiator. It is an obligation.

Why the timing is not an accident

Vector Technics is arriving as the question in procurement offices from New Delhi to Washington to Canberra shifts. It is no longer only does the drone work. It is: who designed the propulsion, who wrote the firmware, where the magnets came from, and whether the full stack can be audited and trusted under operational conditions.

Western markets often have the R&D but lack the manufacturing agility and cost structure to deliver at fleet scale. The cheaper alternatives carry a trust deficit no price can close. India sits in a rare middle position, deep engineering talent, fast maturing industrial base, and trusted partner standing with the democratic world that opens genuine deep tier integration at the component level.

In propulsion, Vector Technics is built to be the primary beneficiary of that position. Design ownership, manufacturing depth, domestic firmware, non-Chinese sourcing and verifiable quality together make it one of

very few companies anywhere that can offer what the most demanding programmes are starting to require: a clean chain propulsion solution trusted from first principles to field.

What comes next

The roadmap follows the same rule that has governed every decision since 2018, go where the problem is hardest and the alternatives fewest.

In propulsion, development is underway on two stroke internal combustion engines for long endurance UAVs, in two and four cylinder configurations, addressing the endurance ceiling of electric propulsion in a domain where few Indian firms operate and global supply is limited and strategically sensitive.

In robotics, the company is building actuator systems for collaborative robots, humanoids and quadrupeds. The physics of precise, high reliability motion control, seven years of it, mastered in the UAV context, transfers directly. As humanoid and quadruped platforms move from demonstration to deployment, demand for actuators built to aerospace standards will rise sharply.

"The question that defines this industry isn't who delivers fastest," the founders put it. "It's who can be trusted when conditions drift and assumptions break. We built for that question."

It is the easiest story in Indian drones to miss from the outside. Vector Technics does not build the most visible platforms or raise the largest rounds. It spent seven years solving the layer everyone else assumed was already solved, the physical foundation under every autonomous mission, surveillance run and defence sortie.

As unmanned systems become infrastructure rather than experiment, tolerance for failure in that layer approaches zero. A breakdown there stops being a technical inconvenience and becomes a strategic event. When that standard turns universal, and it is turning faster than most procurement timelines assume, very few companies will genuinely meet it.

Vector Technics intends to be one of them. 

By The Vayu Editorial Team



SMPP delivers 106 Agniveg drones to Indian Army



SMPP has successfully completed the delivery of 100 Jet Based Peacekeeper (Agniveg) Operational Drones and 6 Training Drones to the Indian Army, marking a significant milestone in India's unmanned warfare capabilities and reinforcing the nation's commitment to self-reliance in critical defence technologies.

The delivery follows successful user trials in which the Peacekeeper (Agniveg) demonstrated a Circular Error Probable (CEP) of less than five metres showcasing an operational range of about 180 kilometres, while operating in a heavily jammed and spoofed environment. The performance highlights the system's precision, reliability and ability to operate in contested battlefield conditions.

SMPP's Peacekeeper (Agniveg) is a turbojet powered kamikaze drone system designed to engage high value targets deep inside enemy territory. Combining long range reach, precision strike capability and the ability to strike at extremely high speeds, the system provides the Indian Army with a flexible and cost effective option for prosecuting time sensitive targets while reducing risk to personnel.

The induction of the Peacekeeper (Agniveg) comes at a time when modern warfare is increasingly being shaped by precision guided unmanned systems capable of delivering significant battlefield effects at a fraction of the cost of conventional strike platforms. The system bridges the capability gap between conventional artillery and long range missile systems, providing commanders with a new layer of precision strike capability.

Speaking on the completion of deliveries, Mr. Ashish Kansal, CEO & Director, SMPP stated, "The successful completion of Peacekeeper (Agniveg) deliveries to the Indian Army in a short time frame of 6 months is a significant milestone for SMPP and for India's indigenous defence manufacturing ecosystem. Modern warfare is increasingly defined by precision, autonomy and affordability, and systems such as Peacekeeper (Agniveg)

are becoming critical force multipliers on the battlefield. As SMPP expands its capabilities across protection systems, precision strike technologies and ammunition, we remain committed to delivering indigenous solutions that enhance the operational effectiveness of the Armed Forces and strengthen India's defence and self-reliance."

With an operational range of 180 kilometres and speeds of up to 450 kmph, the Peacekeeper (Agniveg) is capable of conducting autonomous precision strike missions against critical military infrastructure, logistics hubs, command centres, radar installations and other strategic targets. Designed to operate in contested electromagnetic environments, the system can continue mission execution despite hostile electronic warfare measures, including jamming and spoofing attempts.

The Peacekeeper (Agniveg) programme reflects SMPP's ongoing evolution into a diversified defence technology company. Building on its leadership in ballistic protection systems, the company is expanding its presence across precision strike capabilities, drone and counter-drone systems, large and medium calibre ammunition and next generation battlefield technologies, supporting India's vision of creating a resilient and self-reliant defence manufacturing ecosystem. Having successfully completed deliveries under the current order, SMPP has also offered an enhanced variant of the Peacekeeper (Agniveg) with extended operational range for future consideration.

"SMPP is a leading Indian defence technology and manufacturing company focused on advanced protection solutions and next generation battlefield systems for the Armed Forces. With capabilities spanning ballistic protection, defence materials, precision strike systems, drone and counter drone systems, large and medium calibre ammunition and emerging defence technologies, SMPP is committed to strengthening India's defence preparedness through innovation, indigenous development and world class manufacturing", stated the company. 

ARI Simulations

Building high-fidelity maritime training ecosystems



Bridge Operations Simulator

In an increasingly complex maritime security and commercial environment, simulation driven training has become indispensable. ARI Simulations, a New Delhi based company, has positioned itself as a key player in this domain, delivering advanced simulation and virtual reality training systems across marine, offshore and defence sectors. With a global footprint and decades of experience, the company is among the few original equipment manufacturers (OEMs) worldwide capable of developing high fidelity maritime simulators, while also being the only Indian firm currently offering indigenous naval simulation solutions.

Vayu Aerospace and Defence Review had the opportunity to visit ARI Simulations' facility in Okhla, New Delhi, where a range of its simulation systems are maintained for demonstration and testing. The facility showcases

simulators replicating key shipboard environments, including the bridge and engine room, offering a realistic representation of onboard operations. In addition to large vessel simulations, ARI also features a tow tug simulator, a critical asset used to train personnel in the precise manoeuvring required for safe docking of heavy ships. Notably, several of these systems are integrated with virtual reality headsets, enabling a more immersive training experience for both trainees and instructors.



Founded in the year 1998 by Capt. S.S.S. Rewari, ARI Simulations has evolved into a global provider of sophisticated training systems, with over 1,000 simulation solutions delivered worldwide across industries and served an array of clients. Its offerings extend beyond marine applications into offshore, oil and gas, construction and defence sectors, reflecting a broad technological base and deep domain expertise.

At the core of ARI's portfolio lies a comprehensive range of marine simulators covering navigation, engine room operations, cargo handling and communication systems. These solutions are designed to replicate real world shipboard environments with high fidelity, enabling training across operational, tactical and emergency scenarios.

The company offers both Full Mission Simulators (FMS) and modular, scalable systems ranging from desktop-based trainers to large scale immersive installations with 360 degree visual environments. These systems operate standalone or as part of integrated simulation complexes, allowing multiple teams to train simultaneously in coordinated scenarios, an essential requirement for modern maritime operations.

Advanced naval and operational training

ARI's naval simulation capabilities stand out for their depth and realism.

The systems incorporate fully functional equipment, control interfaces and mission specific configurations that closely replicate onboard naval platforms. These simulators are powered by in-house developed software that enables dynamic scenario generation, including mission rehearsal, operational training and crisis response simulations.

Beyond basic training, ARI integrates structured

learning modules such as tutorials and performance assessment tools. This allows institutions to not only train personnel but also evaluate competency and readiness within the same simulation environment, effectively creating a closed-loop training ecosystem.



Customisation as a core strength

Customisation is central to ARI's approach. The company develops simulator environments tailored to specific client requirements, often recreating exact replicas of ships, ports and operational theatres using client provided data.

This includes detailed modelling of ports and harbour layouts, coastal terrain and skylines, vessel specific equipment and systems as well as mission specific operational conditions. The result is a training environment that is not just realistic, but contextually accurate, something that holds significant value in both commercial navigation and naval operations.

Engineering realism through technology

ARI's simulators are built on robust



Combat Information Centre (CIC) Simulator

physics based mathematical models combined with real time visualisation technologies. This ensures that vessel behaviour, environmental conditions and system responses closely mimic real-world dynamics.

The company's solutions meet international regulatory standards, including IMO (STCW 2010) requirements, and are certified to high classification levels such as DNV Class A for marine and offshore simulators, reinforcing their operational credibility.

ARI's simulation platforms are also used for feasibility studies, port planning, vessel design validation and mission rehearsal. This enables stakeholders to test and refine operations in a virtual environment before real-world execution, reducing both risk and cost.

Strategic acquisition and future outlook

In March 2025, ARI Simulations was acquired by Zen Technologies, marking a significant development in India's defence training ecosystem. The acquisition is expected to enhance synergies between simulation technologies and defence training systems, particularly in areas such as integrated mission training and next generation warfare preparedness. The company is also actively working in integrating simulations of various weapon systems that will aid the training for combat scenarios, expanding its portfolio beyond navigation simulation services. This move will position ARI more strongly within a larger defence technology framework.



The Action Speed Tactical Trainer (ASTT)



The Submarine Operations Navigation Simulator

In discussion with Commodore Brinder Singh Ahluwalia (Retd), CTO, ARI Simulation, he underscored that simulation systems now formed a "critical backbone" of training worldwide, noting that across both civilian and military domains, organisations relied on simulators to deliver training that is not only effective but also cost efficient and scalable.

Conclusion

As maritime operations become more technologically advanced and operationally demanding, the importance of high fidelity simulation will continue to grow. ARI Simulations, through its combination of indigenous capability, customisation, and technological depth, is not only addressing current training needs but also shaping the future of maritime preparedness. In a sector dominated by a handful of global players, ARI's rise as a credible OEM from India reflects a broader shift: one where advanced simulation technologies are increasingly being developed and exported from within the country. ➡



The Fast Attack Craft (FAC) Simulator

IOS Sagar at Yangon, Myanmar

The Indian Ocean Ship (IOS) Sagar, INS Sunayna, entered Yangon Harbour on 4 May 2026 as part of India's ongoing maritime engagement in the region. The visit coincided with the visit of Adm Dinesh K Tripathi, Chief of the Naval Staff (CNS), highlighting the focus on strengthening bilateral maritime engagement between India and Myanmar.



INS Sagardhwani at Cam Ranh, Vietnam

INS Sagardhwani, an oceanographic research vessel, arrived at Cam Ranh, Vietnam on 5 May 2026, marking a significant step in India's scientific cooperation with Vietnam. On arrival, the ship was warmly received by Senior Colonel Tran Van Cuong, Deputy Head of Khanh Hoa Military Command, along with representatives from the Vietnam People's Navy and the Coast Guard. The



ship conducted scientific interactions with the Institute of Oceanography, Nha Trang, promoting collaboration in marine science and oceanography.

INS Sudarshini at Mindelo, Cape Verde

The Indian Navy's sail training ship, INS Sudarshini, successfully concluded an engaging port call at Mindelo, Cape Verde on 8 May 2026, as part of her ongoing expedition Lokayan 26. The four day stopover featured a range of professional interactions, cultural exchange and social engagements, further deepening maritime ties between the two nations.



IOS Sagar at Chattogram, Bangladesh

Indian Navy's INS Sunayna, deployed under the Indian Ocean Ship (IOS) SAGAR initiative, departed Chattogram, Bangladesh, on 10 May 2026 after a successful port call marked by professional engagements, maritime cooperation and cultural exchanges with the Bangladesh Navy (BN). The departure was marked by a ceremonial send-off by the Bangladesh Navy.



IOS Sagar at Colombo

The Indian Ocean Ship (IOS) Sagar, crewed by personnel from 16 Friendly Foreign Countries (FFC), arrived at Colombo Harbour on 15 May 2026, as part of its ongoing operational deployment in the Indian Ocean Region. The

ship's entry into Sri Lankan waters underscored the strong maritime partnership and interoperability between the Indian Navy and the Sri Lanka Navy (SLN). On arrival, IOS Sagar was escorted into harbour by a Sri Lanka Navy ship.



INS Sagardhwani at Port Klang, Malaysia

The Indian Navy's oceanographic research vessel, INS Sagardhwani, arrived at Port Klang, Malaysia, on 13 May 2026 as part of her South East Asia deployment. On arrival, the ship was warmly welcomed by personnel of the Royal Malaysian Navy. During the two day visit, personnel from the Indian Navy and Royal Malaysian Navy participated in a range of collaborative engagements, including professional interactions, training exchanges, cross-deck visits and Subject Matter Expert Exchanges (SMEE).



Exercise Pragati 2026 at Umroi, Meghalaya

Multilateral military exercise Pragati 2026 commenced



on 20 May 2026 at Umroi Military Station, Meghalaya, with the participation from 12 friendly nations, namely Bhutan, Cambodia, Indonesia, Laos, Malaysia, Maldives, Myanmar, Nepal, Philippines, Seychelles, Sri Lanka and Vietnam.

INS Sudarshini at Antigua

Indian Navy's Sail Training Ship (STS) INS Sudarshini arrived at Antigua on 27 May 2026 after successfully completing a historic trans-Atlantic passage as part of the ongoing Lokayan 26 expedition. The ship was received by Mr Vijay Tewani, the Honorary Consul General of India to Antigua and Barbuda, and Brig Telbert Benjamin, Chief of Defence Staff of Antigua and Barbuda Defence Force (ABDF).



INS Tarkash at Port Victoria, Seychelles

Indian Naval Ship Tarkash, stealth frigate of the Indian Navy, arrived at Port Victoria, Seychelles on 12 June 2026 during her ongoing operational deployment to the South West Indian Ocean Region. The ship escorted Seychelles Coast Guard ship PS Zoroaster from India to Seychelles, on completion of refit at GRSE, Kolkata, reflecting a lasting maritime partnership across construction and sustainment.



INS Sharda at Colombo, Sri Lanka

INS Sharda departed Colombo, Sri Lanka on 13 June 2026 after a successful port call that further strengthened maritime cooperation and friendship between India and Sri Lanka. The visit featured a series of professional, training and sporting engagements with the Sri Lankan Navy.



Multilateral military Exercise Khaan Quest

The Indian Army contingent participated in the multilateral joint military Exercise Khaan Quest. The Exercise was conducted from 20 June to 3 July 2026 at Five Hills Training Area, Ulaanbaatar, Mongolia. The previous edition of the exercise was conducted from 14-28 June



2025 at Mongolia. The Indian Army contingent comprising 40 personnel was represented by troops from a Battalion of the Jat Regiment along with personnel from other Arms and Services.

INS Tarkash at Port Louis, Mauritius

Indian Naval Ship Tarkash arrived at Port Louis, Mauritius, on 20 June 2026 during her ongoing operational deployment to the South West Indian Ocean Region. During the port call, Captain Rohit Mishra, Commanding Officer of the ship, called on senior Government and Mauritius Coast Guard functionaries. A series of professional training capsules for personnel of the Mauritius National Coast Guard, focusing on harbour and sea watchkeeping, firefighting, damage control, and other aspects of maritime safety and seamanship, were conducted.



INS Udaygiri and Kavaratti at Ho Chi Minh City, Vietnam

INS Udaygiri, a stealth frigate, and INS Kavaratti, an anti-submarine warfare corvette, both indigenously designed and constructed warships of the Indian Navy, arrived at Nha Rong Port, Ho Chi Minh City, Vietnam, on 22 June 2026 during their operational deployment to the South East Asia region. During the port call, the Indian Navy and the Vietnam People's Navy undertook a series of professional interactions, cross-deck exchanges, sporting fixtures and community outreach activities. ➡



The Future of the Tank in the Age of Drones



The debate has intensified: Drones are reshaping the battlefield, traditional systems appear vulnerable and the role of the main battle tank is increasingly being called into question. In European countries, especially, the Leopard 2 is at the centre of this discussion. However, the conclusion that “tanks are obsolete” falls short. The reality is more complex: Modern battlefields are evolving into highly networked, sensor driven environments where visibility, reaction speed and information superiority are crucial. The central question is not whether tanks like the Leopard have a future, but rather: How must it evolve to survive in an ever-changing environment?



In the first year and a half of the Russian invasion alone, Ukraine has lost at least 930 main battle tanks. These heavy losses are putting immense pressure on armored platforms like the Leopard to adapt. The widespread use of drones has fundamentally changed the transparency and dynamics of the battlefield. Movements are detected nearly in real time, targets are identified more quickly, and they are effectively engaged. Affordable and scalable systems are constantly creating new and serious threats, because even the best armour has vulnerabilities.

The increased use of sensors within the vehicle – such as optical systems, infrared sensors, or radar – supports the crew in their mission but at the same time makes a tank easier to detect, thereby further increasing its vulnerability, for example by surprise attacks from the air or from long range. Especially in the “hybrid death zone” – particularly dangerous frontline sectors or strategic zones where modern, often automated weapon systems are combined with asymmetric tactics – the risk to conventional tank systems is enormous, as evidenced by the numerous destroyed vehicles in eastern Ukraine.

Perhaps the greatest challenge is the loss of relative invisibility. What used to be offset by terrain, camouflage or movement is now increasingly negated by enemy sensors and networked systems. This gives rise to several

specific challenges: the urgent need to detect threats such as drones, as well as guided missiles and covert reconnaissance, much earlier; drastically shorter reaction times, which force decisions to be made under intense time pressure; the growing complexity of the battlefield, which can lead to cognitive overload among the crew.

At the same time, dependence on individual subsystems, to which traditional platforms are particularly vulnerable, is increasing. If, for example, the driver's or gunner's sighting system fails, this can immediately impair the effectiveness of the entire system. A risk that is virtually intolerable in a highly dynamic combat situation.

Despite these challenges, the role of the main battle tank remains clearly defined. Platforms such as the Leopard 2 or the Puma continue to be an effective means of achieving protected mobility, firepower and control of the terrain.

Drones can conduct reconnaissance, delay the enemy, and carry out targeted strikes. However, they cannot hold ground. This is precisely where the tank's enduring strength lies. Its role, however, is shifting: away from that of an individual combat vehicle toward becoming an integral part of a networked system comprising manned and unmanned components. Tanks have never operated entirely on their own, but always in coordination with other units and platforms. The modern Leopard and its future variants take this networking and interaction with their own drones, sensor platforms, and digital command structures to a new level.

Its effectiveness stems increasingly from this networked architecture.

In order to network a tank's various systems, they must be brought into the digital age. HENSOLDT, a supplier to the Leopard programme, has, for example, converted its traditional vision systems for armoured vehicles into digital versions. In line with its vision of Software-Defined Defence, the German defence contractor had already unveiled three new optronic systems for the Leopard 2A8 main battle tank and the PUMA infantry fighting vehicle by the end of 2024. These new digital image processing systems offer greater precision and thus improved sensor performance compared to current analog optics. state-of-the-art, AI-supported video processing and scanning technology significantly enhance reconnaissance capabilities and reduce decision-making time.

In particular, the new digital ATTICA LWIR (long-wave infrared) and MWIR (mid-wave infrared) thermal imaging devices offer improved reconnaissance capabilities even under the most challenging weather and visibility conditions. This significantly enhances the protection of combat vehicles against attacks and the ability to engage enemy units.

The PERI RTWL Digital is a stabilised, high precision observation and target acquisition system developed specifically for the Leopard 2A8, PUMA and Boxer RCT30 tanks. It provides the commander with enhanced sensor performance in the mid and longwave infrared

spectrum and enables precise target acquisition under all visibility conditions. The proven glass optical channels are supplemented by Full HD daytime cameras, which significantly enhance the system's performance. At the same time, the system features advanced video processing capabilities and provides a panoramic view with a stabilised field of view suitable for both close range and long range observation.

WAO Digital is a stabilised, long range electro-optical target acquisition system. Thanks to the high performance of its sensors and the resulting precision, it ensures the combat readiness of platforms even under adverse conditions. WAO Digital features high resolution infrared and daylight sensors that can zoom continuously and are fully stabilised. Here, too, compliance with NATO standards ensures the highest level of operational readiness.

On the modern battlefield, self-protection is no longer solely a matter of armour. What matters most is the ability to detect threats early and actively counter them. HENSOLDT, supplying to the Leopard programme for many years, is addressing these challenges through several approaches.

The SETAS (See Through Armour System) all around vision system is a high performance day and night observation system for all types of armoured vehicles. The high resolution electro-optical vision system, consisting of high resolution colour daylight cameras and uncooled thermal imaging cameras, enables every crew member to obtain a complete 360-degree visual situational awareness of the vehicle's surroundings from inside the vehicle.

Threats within the vehicle's operational radius can thus be detected and classified early and reliably. When using a helmet mounted display as an HMI, a crew member inside the vehicle can effectively see through the armour, achieving the same level of situational awareness as if observing "from above." Intelligent software algorithms automatically alert the crew when a potential threat is detected near the vehicle.

The MUSS multifunctional self-protection system was developed primarily to counter threats from ATGMs and laser guided munitions. With 350 first generation systems installed on the PUMA infantry fighting vehicle, it is currently the only active soft kill protection system for ground vehicles in serial production and operational use worldwide. HENSOLDT has further developed the capabilities of MUSS to detect and counter both existing and emerging threats, such as those posed by UAVs.

With MUSS 2.0, the German defence company offers a NextGen Active Protection System (APS), i.e., a next generation active protection system, featuring a layered protection solution for medium weight armoured vehicles, self-propelled artillery systems, infantry fighting vehicles and even Main Battle Tanks (MBTs) such as the Leopard.

In addition, the brand-new ODAEON enables the early detection of optical threats, such as those posed by enemy targeting systems or laser reconnaissance. To



also contribute to this by providing the crew with enhanced reconnaissance far beyond the direct line of sight.

With regard to armament, larger calibers are under consideration to remain effective against increasingly sophisticated armour. At the same time, increasing the caliber could eventually

this end, HENSOLDT has received a contract from the Federal Office for Equipment, Information Technology, and Utilisation of the German Armed Forces (BAAINBw) to develop a capability demonstrator.

Following successful customer acceptance (Concept Review) in December 2024, a demonstrator is currently being prepared at Technology Readiness Level six (TRL6), which is scheduled to be tested by the BAAINBw starting this year. In a further step, a merger of the ODAEON and MUSS technologies is also planned to ensure a comprehensive protection strategy.

Other technologies used to protect modern tanks include “jamming” and “dazzling.” “Jamming” disrupts electro-optical systems using targeted interference signals, while “dazzling” overwhelms optical systems such as cameras and target acquisition devices with intense flashes of light. Both methods enhance vehicle protection by effectively impairing the enemy’s reconnaissance and target acquisition capabilities. The growing importance of software also contributes to the protection of armoured platforms:

For example, optronic systems, in conjunction with smart software algorithms, open up new possibilities for the automated detection of mines or ground anomalies, which further enhances mobility and safety.

This prevents situations such as the one that recently occurred in Ukraine, where entire tank units were brought to a standstill by undetected minefields.

In addition to protection, the focus is also on enhancing effectiveness, ensuring the Leopard’s continued relevance in the future. This begins with the ability to fully monitor the battlefield. Systems such as SETAS not only protect the vehicle but also contribute to improved combat operations by providing a 360° situational awareness picture. The integration of the vehicle’s own drones can

extend the range of the Leopard and similar systems by several kilometers. While this is not relevant for all armed forces, in regions with the appropriate geography, it would increase the demands on target acquisition and fire control systems. Demands that, however, would also be elevated to a new level through digitalisation.

Both protection systems and advancements in combat effectiveness can only realise their full potential if the individual technologies are deployed in an integrated and coordinated manner. There is no shortage of sensors on today’s digital battlefield. However, when used in isolation, the incoming sensor data quickly leads to cognitive overload among soldiers. In the future, therefore, the ability to fuse data across individual systems and platforms in a way that yields decision making and operational superiority will be crucial.

With Ceretron, HENSOLDT is demonstrating an innovative way to manage the enormous volumes of data from various sensor systems in land vehicles and to facilitate decision making. The software suite links and fuses data streams and evaluates them within seconds to provide the crew with an AI supported situational picture. This enables decisions to be made more quickly and with greater confidence.

The pressure on the main battle tank is real, but it does not spell its end. Rather, it marks the beginning of a new phase of development. The Leopard 2 will remain a central element of modern armed forces if it adapts to changing conditions: through networking, sensor technology and intelligent protection mechanisms. For HENSOLDT, the key lies in this transformation. Technologies for reconnaissance, networking and self-defence ensure that the Leopard is not a relic of past battlefields, but rather a next-generation system. ➡

Article courtesy: HENSOLDT

2nd MBDA MICA NG firing

The second development firing of an MBDA MICA NG air-to-air missile (New Generation Missile for Interception, Combat and Self-Defence) has successfully been made from a Rafale. Conducted for the first time in supersonic flight configuration, this firing took place at the DGA Missile Testing Centre's Mediterranean site. It is a major step towards the missile's qualification and integration with the Rafale since the first development shot from a Rafale which took place in June 2025.



MBDA and Ukrainian Armour announce strategic partnership

MBDA and the Ukrainian defence company Ukrainian Armour signed a Memorandum of Understanding (MoU), launching a strategic partnership discussion aimed at developing advanced defence capabilities in the fields of Deep Strike and Counter-Unmanned Aerial Systems (C-UAS).



Terma and MBDA join forces

The agreement, signed at Eurosatory by Terma CEO Henriette Hallberg Thygesen and MBDA CEO Eric Béranger in the presence of Denmark's Minister for Business and Competitiveness, Martin Lidegaard and French Minister Delegate for Industry Sébastien Martin builds on a longstanding partnership between the two companies. The "cooperation goes beyond traditional industrial participation and includes joint development activities in the naval domain".



Hanwha to supply Chunmoo launchers to Estonia

Hanwha Aerospace announced that it will supply three additional Chunmoo multiple rocket launcher systems to the Estonian Defence Forces. The supply follows a government-to-government (G2G) contract signed between the Korea Trade Investment Promotion Agency (KOTRA) and the Estonian Centre for Defence Investments (ECDI).



Raytheon selected to provide SeaRAM

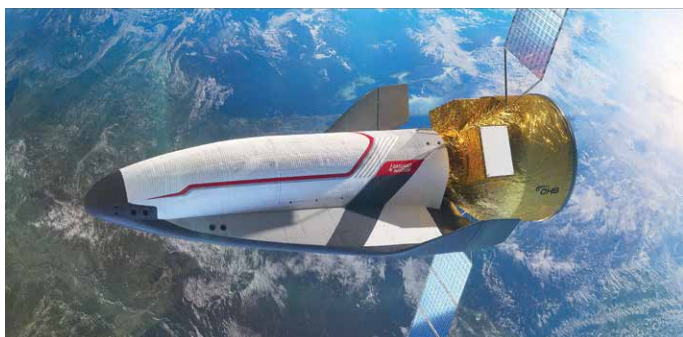
Raytheon has been awarded a contract by Mitsubishi Heavy Industries (MHI) to provide SeaRAM ship self-defence systems in support of Australia's Sea3000 General



Purpose Frigate programme. The Sea3000 programme is set to replace the decommissioning Anzac class frigates with 11 upgraded Mogami class frigates.

Dassault Aviation and OHB team up

Dassault Aviation and OHB announced that they are teaming up to propose to the European Space Agency (ESA) a multipurpose spaceplane VORTEX-S, capable of round transport to space stations and of autonomous orbital free flyer missions, together with a number of other European partners. Together, Dassault Aviation, as the VORTEX-S prime architect and global integrator of the spaceplane, and OHB, as the architect and integrator of the service module, will form the core team of the proposed ESA project.



Patria signs MoU with Czech enterprises

Patria has signed Memoranda of Understanding (MoUs) on future cooperation with key state enterprises under the Ministry of Defence – Vojenský technický ústav, VOP CZ and Vojenský výzkumný ústav. The MoUs mark an important step towards involving the Czech defence industry in the project to re-equip the Czech Armed Forces with a new 8x8 wheeled armoured vehicle platform.



Raytheon order for SharpSight radars



Raytheon has been awarded a contract from Blue Raven to produce 120 SharpSight radars, marking the largest single order to date for the new system and a key step in expanding its availability to customers worldwide. SharpSight is a platform agnostic, multi-domain surveillance radar designed for both manned and unmanned platforms, enabling critical missions such as anti-surface warfare, border protection, coastal monitoring, search and rescue, and long range surveillance.

GA-ASI 1st flight of MQ-9B with AEW pods

General Atomics flew its MQ-9B Remotely Piloted Aircraft for the first time with Airborne Early Warning (AEW) pods. The much anticipated AEW capability is being provided through a partnership with Saab. Once the AEW sensor, named LoyalEye, is made available to MQ-9B operators and new customers, it will deliver “persistent and cost-effective air surveillance capabilities in regions where it is currently unavailable”.



P&W and NGAP engine

Pratt & Whitney has completed a fully digital technical assessment of its XA103 engine for the US Air Force's Next Generation Adaptive Propulsion (NGAP) programme. The assembly readiness review marks Pratt & Whitney's progress in transitioning from designing in a digital environment to procuring and producing physical hardware.



NASA's X-59 flight tests pick up speed

As flight operations for NASA's quiet supersonic X-59 aircraft accelerate, its team has picked up their

testing tempo, completing two test flights in a single day for the first time. The first dual flight day was on 30 April at NASA's Armstrong Flight Research Centre in Edwards, California. Making its 11th and 12th flights, the X-59 completed multiple test objectives at altitudes ranging from 12,000 to 43,000 feet and speeds from 528 to 627 mph (Mach 0.8 to Mach 0.95).



Flight test of APKWS using MQ-9A

General Atomics Aeronautical Systems, Inc. (GA-ASI), in collaboration with the US Air Force, has conducted flight tests of an Advanced Precision Kill Weapon System (APKWS) using a USAF MQ-9A Reaper Remotely Piloted Aircraft.



Philippines for Bell 505 Jet Ranger X's

Philippines has requested to buy Bell 505 Jet Ranger X Helicopters; spare parts including main rotor blades; tail rotor blades; full length trainer shoes; pilot training for twenty-two (22) pilots including ground and flight training, left seat orientation, and Instrument Meteorological Conditions and Helicopter Upset Recovery, etc.



Ukraine for 1200 JDAM-ER's

Ukraine has requested to buy one thousand two hundred (1,200) KMU-572 joint direct attack munition (JDAM) tail kits; and three hundred thirty-two (332) KMU-556 JDAM tail kits. The following non-MDE items will also be included: FMU-139 fuze systems; JDAM support equipment; spare and repair parts, consumables and accessories, and repair and return support, etc.



AirAsia order for 150 A220s

Malaysia's AirAsia has placed an order for 150 A220-300 aircraft. The purchase agreement is the largest single firm order placed for the A220 and propels the programme beyond the 1,000 firm order milestone.



QinetiQ to test new remote-controlled artillery systems

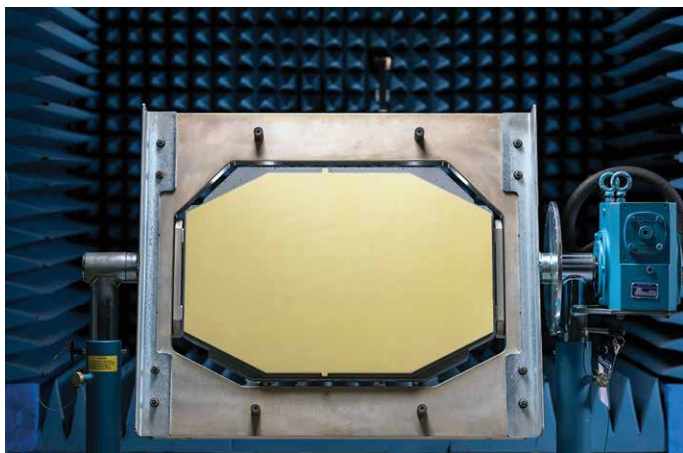
QinetiQ has been awarded a contract from the National Armaments Director Group to put the British Army's newly contracted Remote Controlled Howitzer 155 (RCH155) next generation artillery system through rigorous tests to ensure the equipment is safe to use

on the battlefields of the future. This contract follows announcement of the signing of a production contract for 72 RCH155 that will be the British Army's long term 155mm Close Support Artillery solution.



Northrop Grumman's 1,000th SABR AESA

Northrop Grumman has delivered its 1,000th APG-83 Scalable Agile Beam Radar (SABR) system. SABR is a radar that upgrades existing operational aircraft like the F-16 with advanced sensing technology from newer fighters like the F-22 and F-35.



Germany orders more JSM from Kongsberg

Kongsberg Gruppen ASA has signed a contract worth about NOK 3.5 billion for the delivery of Joint Strike



Missiles to Germany. In June 2025, Germany became the fifth country to select the JSM for its F-35 fighter jets. Now the German federation has signed a contract for further deliveries of the missiles.

Belgium for AGM-184's

Belgium has requested to buy AGM-184 Joint Strike Missiles; spare parts, consumables and accessories, repair and return support; training aids, devices, and spare parts; testing and multi-purpose missile equipment; classified and unclassified software delivery and support; classified and unclassified publications and technical documentation; transportation support, etc.



Stratolaunch conducts hypersonic test flight with MDA

On 6 March 2026, Stratolaunch successfully executed OMDA's Flight Test Experiment Other-04 (FEX)-04 flight test mission from Mojave Air and Space Port supporting ongoing hypersonic flight testing. Stratolaunch used the Spirit of Mojave aircraft to transport the Talon-A3 vehicle to the planned release conditions, which enabled the aircraft to begin its flight profile at higher altitudes.



GE Aerospace T700 support for UK AH-64E's

GE Aerospace has been awarded a three year contract from Boeing Defence UK Ltd to extend support for the T700-GE-T701D engines powering the British Army's Apache AH-64E fleet. Under the Performance Based Logistics (PBL) agreement, GE Aerospace will provide an on-site Field Service Representative (FSR) at Wattisham Flying Station in Suffolk, UK, and deliver logistics



management, technical support, and material, as well as repair and maintenance of engines and line replaceable units (LRUs) through StandardAero in Gosport, UK.

Czech Mol signs for 11 Airbus H145

The Czech Ministry of Interior and Airbus Helicopters have signed a contract for 11 five bladed H145 helicopters, marking a significant milestone in the modernisation of the Czech Republic's public safety infrastructure. These aircraft will be operated by the Czech Police Aviation Service, serving as the backbone of its fleet for law enforcement, search and rescue, and emergency medical missions.



Royal Thai Navy orders two C295s

The Royal Thai Navy has acquired two Airbus C295 in an enhanced transport configuration that will enable surveillance and Search and Rescue missions, on top of the logistic operations for Thailand. The two C295s for the Thai Navy, which will be operated from the U-Tapao air base in Sattahip, will be able to detect, classify, and



identify targets at sea or on land, operating effectively in both day and night conditions as they will be equipped with an Electro-Optical/Infra-Red (EO/IR) sensor suite.

Royal Thai Air Force orders two C295s

The Royal Thai Air Force has acquired two Airbus C295 in tactical transport configuration, which will enhance Thailand's defence capabilities. The two C295s will be operated by the 46th Wing Division of the Royal Thai Air Force from the Phitsanulok air base. Thailand already has three C295s operated by the Royal Thai Army, performing cargo and troop transport missions since 2016.



Air China Cargo A350F order

Air China Cargo has signed a purchase agreement with Airbus for four additional A350F freighters, taking its total order for the type to 10 aircraft. Air China Cargo previously ordered six A350F freighters in November 2025.



NGG's Jackal completes key flight test

Northrop Grumman has completed a key flight test for Jackal, its next generation precision strike missile, demonstrating the capability's flight system readiness. During the test, Jackal demonstrated rapid

response through its automated turbojet engine start, precise autopilot-controlled flight and flexible high speed maneuvering. These tests confirm the technical readiness of Jackal's airframe, propulsion, navigation and autopilot systems.



Raytheon contract for SPY-6 family of radars

Raytheon has been awarded a \$515 million contract from the US Navy for the SPY-6 family of radars. The contract is a follow-on to the Integration and Production Support contract, which was awarded in June 2025, and includes upgrading Flight IIA destroyers with the SPY-6(V)4 variant.



ICEYE leads a new era of sovereign intelligence



ICEYE has raised EUR 450 million (USD 520 million) in a primary Series F funding round led by General Atlantic, at a valuation of over EUR 10 billion (USD 12 billion). Additional investors include Solidium, Tesi, Varma, Ilmarinen, Lifeline Ventures, as well as Nokia, from Finland, Qatar Investment Authority (QIA) and TCV. Together with a secondary placement, the total Series F funding round exceeds EUR 1 billion. The breadth of the investor group signals recognition that sovereign and commercial access to space-based intelligence is essential to national security and resilience worldwide. Seven governments to date across Europe have procured sovereign satellite systems from ICEYE, making it the leading provider of space based intelligence.

BAE contract for Paladin SPH

BAE Systems received a contract award valued at \$535 million to produce additional M109A7 Paladin self propelled howitzers and M992A3 ammunition carriers for the US Army. As a key capability in the Army's Armoured Brigade Combat Team formation, the M109A7 Paladin provides advanced firepower and maneuverability, enabling artillery units to rapidly deploy and engage targets with precision.



Hanwha Aerospace signs teaming agreement

Hanwha Aerospace has signed a teaming agreement with Generation 5 Holding, a leading defence and technology company, to collaborate on the manufacture and sale of the K9 155mm self propelled howitzer for the Middle East market.



Sweden selects Skorpion

Dynamit Nobel Defence “welcomes the conclusion of a framework agreement with the Swedish Defence Materiel Administration for the delivery of the vehicle mounted mine laying system Skorpion”. The agreement runs through 2033 and has a total value of approximately SEK 4 billion (Eur 360 million). Skorpion has been designed for integration on a variety of vehicle platforms and enables the rapid deployment of anti-tank mines in accordance with operational requirements.



FORM IV

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Vikramjit S. Chopra

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Signature of Publisher

Air bp marks 100 years of aviation refuelling



In June 2026, Air bp celebrated 100 years serving the global aviation industry. Since its creation in 1926, when aircraft were still made of wood and canvas, Air bp has remained central to the industry's most important milestones. The scale of change is significant – from 2,582 gallons supplied in its second year of operations to the approximately 6.6 billion gallons used annually today. Air bp is now present at 600 airports across 40 countries.

From pioneering mobile refuelling units to the first commercial test flight using Sustainable Aviation Fuel (SAF) transatlantic commercial flight, Air bp's history tracks the remarkable trajectory of flight. Today, as aviation faces new challenges, Air bp is using its technical expertise and leveraging its global network to support the shift to a lower-carbon future.

Federica Berra, CEO of Air bp: "Air bp has helped shape the way the world flies, from pioneering into-plane fuelling in 1926, to supporting the aviation industry through every major transformation since."

Air bp has contributed to the evolution of refueling practices through a series of technical and operational advancements, including early mobile refueling services and support for notable long distance flights in the 1930s. Air bp also helped develop industry wide safety standards that continue to support safe and reliable operations today.

More recently, Air bp supplied fuel for the first 100% SAF transatlantic commercial flight.

Berra added: "As we enter our second century, our focus remains the same: delivering the reliability, safety and lower carbon solutions our customers and the industry needs for its next chapter."

As the aviation division of bp, Air bp is one of the world's leading suppliers of aviation fuel products and services. It has been investing in the aviation industry for almost 100 years to keep people flying safely around the world. Air bp serves over 600 locations across 40 countries and fuels over 6,800 flights per day – that's more than one flight every 15 seconds. Air bp's customers include commercial airlines, the military, business and private aircraft owners, airports and airfield operators. Aviation experts support bp's purpose to deliver energy for today and tomorrow. Air bp has a wide range of services to support its fuel offer including the design, build and operation of fueling facilities, technical consultancy and training, solutions to potentially help customers with direct and indirect carbon emissions savings, the Sterling card for efficient general aviation refueling and innovative digital platforms to increase efficiency and reduce risk. ➡

Courtesy Air bp
Photos: Air bp/Wikipedia



Two seat prototype of Su-57 in maiden flight



for organising and managing combat operations of a joint group of manned and unmanned aircraft, creating a unified information and control space,” Rostec stated.

“We continue to work on improving and expanding the functionality of our most advanced fifth generation aviation system. I am confident that the two seat version of the aircraft will significantly contribute to its success in international markets,” stated Vadim Badekha, CEO of UAC.

The Su-57 multirole frontline aviation system is designed to perform a wide range of combat missions. It is capable of engaging air, ground and sea targets. The aircraft can be used around the clock, including in adverse weather conditions and challenging jamming

United Aircraft Corporation (part of the Rostec State Corporation) has begun flight tests of the Su-57D, a two seat multirole fifth generation fighter. The aircraft was flown by Sergei Bogdan, Sukhoi Design Bureau Chief Pilot and Hero of Russia. The flight was successful and went in accordance with the flight mission requirements.

“Flight tests of the Su-57 fifth-generation two seat fighter prototype have begun. This aircraft, developed proactively by our aircraft manufacturers, will not only boast unique combat capabilities but also the capabilities of a combat trainer and combat control aircraft,” noted First Deputy Prime Minister of Russia Denis Manturov.

“Today, our aircraft manufacturers are producing unprecedented volumes of aircraft in demand by the military and are continuously working on the development of modern aviation systems. The two seat version of the Su-57, developed by specialists at the Sukhoi Design Bureau, can be used not only for pilot training but also

environments. Its low observability allows it to destroy targets even against modern air defence systems. ➡

Text and images: UAC



News from Poland's WB Group

Contracts for Gladius, Flyeye and Warmate



In the presence of government representatives, Poland's Armament Agency signed contracts with WB Group for the delivery of new reconnaissance strike unmanned systems. These agreements represent the largest procurement of such capabilities not only in the history of the Polish Armed Forces, but also in Europe. The contracts will be financed through the European Union's SAFE instrument.

On 28 May 2026 in Ożarów Mazowiecki, Piotr Wojciechowski, President of WB Group, and Major General Artur Kuptel, Head of the Armament Agency of the Ministry of National Defence, acting on behalf of the State Treasury, signed three contracts for the delivery of unmanned systems. These are the largest contracts for comprehensive reconnaissance-strike solutions ever concluded in Poland and across Europe.

"The SAFE mechanism is based on joint procurement. In May, the phase of individual contracts – under which a single Member State, such as Poland, could purchase specific products – will come to an end. After that, we will

enter a new chapter of international contracts. We have just returned from Canada, where the Canadian side declared its intention to procure drones from WB. Today, further declarations were made by additional partners from the European Union," stated Magdalena Sobkowiak-Czarnecka.

The signing ceremony was attended by Deputy Prime Minister and Minister of National Defence Władysław Kosiniak-Kamysz, Secretary of State at the Ministry of National Defence Paweł Bejda, Government Plenipotentiary for the Security Enhancement Instrument Magdalena Sobkowiak-Czarnecka, representatives of the Armament Agency, and employees of WB Group.



"I am proud to be here, in a company that has become a flagship of the Polish economy, as we see every time we go abroad. We hear it every day from Polish soldiers. There is no better recommendation than that of a Polish soldier. If they speak highly of your equipment, the entire world will speak highly of it – and indeed, it already does," stated

Deputy Prime Minister Wladyslaw Kosiniak-Kamysz following the signing. Under the SAFE-funded contracts with the Armament Agency, WB Group will deliver its flagship products: hundreds of Warmate loitering munition systems, nearly 200 Flyeye unmanned reconnaissance systems, and twelve battery level fire units of the Gladius reconnaissance strike unmanned system.

“This event is of special significance to us. It is a great recognition of the work of our engineers, specialists and all our employees. The Polish Armed Forces have decided to procure modern equipment that has been combat proven and highly valued by its users. Moreover, we are committed to its further development to make it even more advanced and effective,” stated Piotr Wojciechowski, President of WB Group, after the ceremony.



The signed contracts will provide a major impetus for further growth, expansion of production capacities, and further development of the expertise of the teams that have been designing and developing unmanned systems in Poland for years. Contracts of this scale offer greater predictability for research and development investments and enable broader cooperation with domestic partners forming the supply chain for advanced defence technologies.

“The security aspect is particularly important. By strengthening the nation’s defence capabilities, we enhance the security of all of us – our families, local communities and the country as a whole. Contracts related to Gladius, Flyeye and Warmate mean jobs for our colleagues in Skarzynsko-Kamienna, Czechowice-Dziedzice, Gliwice and Gdynia. They also create opportunities for smaller locations such as Lipka Krajenska. These funds will not remain solely within our company – they will flow into local economies, creating jobs, supporting local suppliers and entrepreneurs and driving economic growth,” added the President of WB Group. The foundation of WB Group’s success lies in its proprietary technologies, engineering expertise and scalable manufacturing capabilities. Combined with the newly signed contracts, these strengths will enable the company to execute further programmes for the Polish Armed Forces and expand cooperation with international partners, supporting the development of defence capabilities across NATO and strengthening the Alliance’s eastern flank.

Gladius – A unique European reconnaissance strike system

The first contract signed in Ozarów Mazowiecki covers the delivery of 12 battery level fire units of the Gladius reconnaissance strike unmanned system, which will be

delivered to the Polish Armed Forces by 2030. Gladius is a highly advanced unmanned system unique in Europe, developed in part based on lessons learned from the war in Ukraine. It integrates reconnaissance, command, and precision strike capabilities within a single network centric architecture. The system’s advantage does not stem from individual unmanned platforms alone, but from the full integration of sensors, effectors and command-and-control systems. This integration enables the creation of a modern find-identify-strike chain fully aligned with NATO and EU standards. Gladius battery modules are designed for precision engagement of targets and airborne intelligence, surveillance and reconnaissance (ISR). Imaging, radar and electronic reconnaissance missions will be conducted using, among other platforms, FT-5 reconnaissance unmanned aerial vehicles. WB Group will supply not only systems already known to the Polish Armed Forces, but also new effectors, including those developed under the Gladius 2 programme, capable of engaging selected high value targets at distances of several hundred kilometres from the launch point. All unmanned platforms within the Gladius system will be integrated with the Topaz battlefield management system already in service with the Polish Armed Forces. Each battery module will include launchers, command vehicles, ammunition vehicles, technical support vehicles and a stock of strike UAVs.

Flyeye – Expanding tactical reconnaissance capabilities

The second contract covers the delivery of 190 Flyeye unmanned aerial systems. Most of the systems will be delivered to the operational forces and the Territorial Defence Forces. For the first time, however, the Flyeye system developed in Gliwice will also be fielded by reconnaissance platoons of tank battalions. Flyeye systems are designed for airborne ISR missions using electro-optical payloads capable of day-and-night observation and image recording. The system has been extensively tested by the Polish Armed Forces and has been used in combat conditions for more than a decade, including in Afghanistan and Ukraine.

Warmate – Hundreds of loitering munition systems

The third contract signed on 28 May concerns the delivery of more than 400 Warmate loitering munition systems. Warmate is designed to identify and engage targets, including lightly armoured vehicles and enemy infantry, depending on the warhead configuration selected for the mission. Within the Polish Armed Forces, Warmate is used both as a man portable system and as a vehicle integrated solution.

The system features advanced control modules that automate most phases of flight and support the operator during target engagement. Operation is conducted in real time using a live video feed. The operator retains full control over the system and can switch between a reusable reconnaissance mode and a one-way combat mode depending on mission requirements. ➡

News from Thales

Thales and ArianeGroup in successful firing

Thales and ArianeGroup have reached a major milestone with the successful launch of the FLP-t 150 ballistic munition. As part of this industrial partnership, Thales is responsible for the overall system – including the ground launcher, fire control and launch system – while ArianeGroup develops the propulsion and guidance systems for the munition. The FLP-t 150 ballistic munition represents the upper echelon of artillery systems. Its technologies – propulsion, guidance and control – are derived from ballistic missile systems. The guided rocket can reach ranges beyond 150 km, delivering the precision and robustness required even in GNSS-jammed environments. The versatile, interoperable X-Fire launcher will conduct its first demonstration firings later in 2026.



Thales and UKs Apache Wingman drone

Thales will be working alongside its partner, Schiebel, following their successful down selection for participation in the Land Autonomous Collaborative Platform (ACP) framework. Further to the February 2026 announcement of making it to the top seven, Thales and Schiebel will be competing as part of the final four contenders for Project NYX, offering Schiebel's Camcopter S-301 as a next generation rotary wing Uncrewed Air System (UAS) for the programme. With a strong focus on the growing



importance of sovereign autonomy and crewed/uncrewed teaming in modern defence operations, and integrating advanced autonomous technologies, Thales and Schiebel aim to enhance effectiveness, adaptability and mission success. They remain committed to delivering innovative solutions and look forward to the next phase.

Thales completes first firings with X-Fire launcher

Thales successfully conducted live firings from the X-Fire launcher, confirming the maturity of this land based long range strike system. Developed in partnership with Soframe, X-Fire features a versatile architecture enabling it to engage deep strike targets (150 km and beyond), using a wide range of munitions, whether sovereign or allied. This flexibility complements the solution offered by Thales and its partners to the French forces, in the context of the replacement of the LRU (Unitary Rocket Launcher) system.



Thales and Hellenic Navy Hydra's

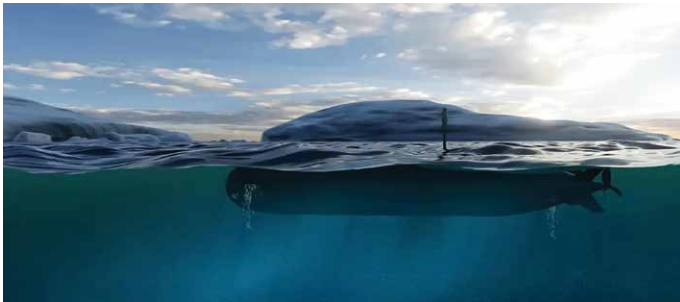
The four MEKO 200 design ships, built in Germany and Greece with Thales systems onboard, have been operational since the late 1990s. Thales will perform the Mid Life Upgrade and the following support and services locally, as localisation has always been a key driver within this programme. Once the upgrade is completed, the local Thales service hub will continue working with local



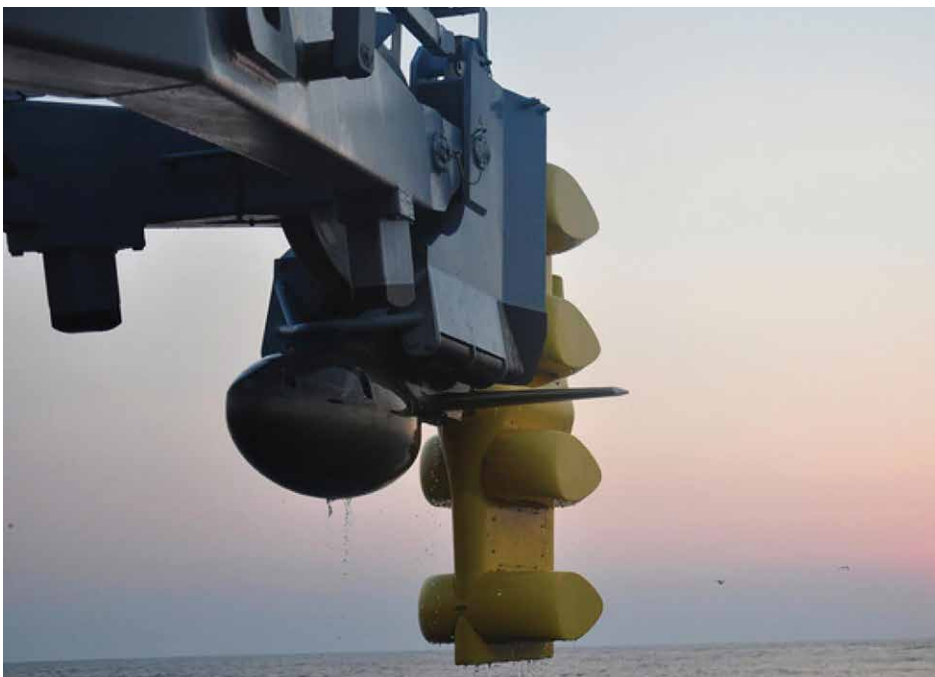
industry for the Hellenic Navy to maintain operational readiness.

Thales and BAE collaborate

Thales and BAE Systems are working together to address that challenge, collaborating on the integration of their advanced sensor system, with the intent to demonstrate it on the Heron XLAUV platform in 2027. At the heart of this collaboration is a new intelligence surveillance and reconnaissance (ISR) mast system from Thales.



Thales and LM Canada contract



Thales Canada has been awarded a contract by Lockheed Martin Canada to supply its Sonar 2087 towed array sonar systems for the Royal Canadian Navy's (RCN) future River Class destroyers. The S2087 is a towed array sonar designed to detect and track quiet submarines over long ranges in complex littoral and open ocean environments. Its integration into the River Class destroyers supports the goal of achieving 75% fleet serviceability by contributing to high operational maturity and long term supportability.

Lightweight Multirole Missiles for UK MoD



The UK Ministry of Defence and Thales have signed a £36 million contract to supply hundreds more Lightweight Multirole Missiles (LMM) to the British Armed Forces. This builds on contracts already in place with Thales to enhance the UK's stockpile of missile systems. Thales has quadrupled its production capability for missiles at its facilities in Northern Ireland since 2022. Deliveries of the newly agreed systems will begin over the next few months. LMM is laser guided to ensure precision against a range of threats and is particularly effective as a counter-crewed aerial system (C-UAS) capability.

Thales and Dutch MoD in partnership

Thales and the Netherlands MoD have announced a new strategic collaboration to expand the production, development and test capacity for advanced radar systems in Hengelo. This partnership includes the development of a state-of-the-art near field test site with an anechoic chamber, the availability of training facilities, the expansion of the production of complex printed circuit boards and the construction of a new test tower. With this agreement, the Netherlands secures the availability of world class radar systems for its national, international and G2G customers.

Thales strengthens Royal Netherlands Army readiness

Thales will expedite the delivery of a fleet of Bushmaster Protected Mobility Vehicles to the Netherlands, strengthening the ability of Dutch forces to operate in the contemporary threat environment. Bushmaster vehicles will be supplied in the latest configuration with enhanced systems and features to meet the needs of the Royal Netherlands Army. They are recognised for protecting soldiers in high risk environments.



Thales energy weapon neutralises 80 drones

“Thales in the UK are pleased to announce further successful trials of RapidDestroyer – a radio frequency directed energy weapon (RFDEW) designed to counter drone swarms”. The trials took place in April 2026 at Pershore, Gloucestershire, in partnership with Teledyne



E2V and marks another milestone in advancing RFDEW technologies. Building on previous successes, RapidDestroyer neutralised 80 drones in individual scenarios. Thales and E2V demonstrated the upgraded 4 panel effector which enhances the focus of the effectors power, increasing the energy on the target and allowing for additional range of engagement to be achieved. This extensive testing enabled a forensic analysis of each engagement, demonstrating consistent, near immediate defeat of each drone, removing the chance that the drones could re-engage.

Order for 60 G012 for Germany

As a tactical infantry radar, the G012 is specifically designed for highly mobile forces. With a sensor volume of only 28 litres, it can be carried in a backpack by two soldiers, in addition to 15–20 kilograms of personal equipment. This radar operates in all weather conditions, notably rain, snow, and fog, if optical sensors such as camera drones can no longer provide usable results. To meet the demand of the armed forces, Thales is strengthening its production

capacity, including expanding the plant in Ditzingen (near Stuttgart) and increasing its workforce. In 2026, Thales plans to hire 300 new employees in Germany to support this growth.



Thales and Mesko sign MoU

This industrial cooperation will include the implementation of a major transfer of high value added activities to Poland, including the assembly of rocket engines and the production of critical components by PGZ subsidiaries. This collaborative effort will ensure European resilience in the manufacture of 70 mm ammunition for various platforms and consolidate Thales in Belgium’s leading position in the European market of 70 mm rocket systems.

Saab News

Saab presents 1st Gripen F

On 2 June 2026, Saab rolled out of the first Gripen F fighter to the Brazilian Air Force during a ceremony held at Saab's facilities in Linköping, Sweden. Gripen F is the two seat variant of the Gripen E series and has been developed to meet the training and operational requirements of modern air forces by combining conversion training and combat capability on the same platform.

As the launch customer, Brazil played an active role in the co-development of the two seat variant, enabling direct industrial participation and long term cooperation. Through an extensive transfer of technology programme, Brazil has trained hundreds of engineers and technicians while strengthening the advanced design and development expertise within its national industrial base.

"The rollout of Gripen F represents a shared achievement between Saab, Brazilian industry and the Brazilian Air Force, reflecting the deep trust we have built together over many years. Developing this aircraft together demonstrates the maturity of this collaboration. It represents not only a highly capable fighter for the Brazilian Air Force, but also the tangible outcome of sustained joint development and shared ambition," stated Lars Tossman, head of Saab's business area Aeronautics.

Designed for an era of rapid transformation, Gripen F delivers world-class performance, sensors and revolutionary architecture, mirroring Gripen E. The addition of a fully independent second cockpit enables instructor guided missions in a fully operational fighter, giving trainee pilots realistic live mission conditions. Consequently, pilot conversion and preparatory training can be dramatically accelerated compared to conventional time,

while enhancing operational effectiveness in high-threat environments through shared workload and improved mission command.

Before final delivery to the Brazilian Air Force the aircraft will be transferred to Saab's Flight Test Centre in Sweden, where it will start a dedicated flight test campaign.

The 2014 contract with the Brazilian government covers the development and production of 36 fighter aircraft: 28 Gripen E and eight Gripen F. Deliveries began in 2020 and to date 11 aircraft have been handed over. Saab has also received Gripen F orders from Thailand and Colombia.

Saab reveals Barracuda poncho



Saab has introduced its latest iteration of camouflage solutions, a poncho to protect individual soldiers from being detected by sensors operated by opposing forces across a variety of environments. Barracuda Poncho is Saab's latest addition to complement its existing Barracuda range of advanced camouflage solutions. The purpose of



Barracuda Poncho is to hide the user from thermal and, in the arctic version, UV sensors while providing the freedom of movement to act swiftly and quietly. Its light weight of just above 1 kg makes Barracuda Poncho easy to deploy, wear and adjust. Barracuda Poncho provides visual and thermal protection across varied environments, including woodland, stony desert, and arctic conditions. Its reversible design enables a night and day configuration on each side, with enhanced thermal protection for night.

Saab strengthens RBS 70 NG with new Bolide 2



Saab has launched the new Bolide 2 missile for the RBS 70 short range air defence missile system. Bolide 2 brings a larger warhead and better terminal flight performance for superior capability, and an improved modular design to allow for future updates. Bolide 2 retains the unjammable guidance method used by RBS 70 with its previous missile generations. Deliveries are starting in 2027 and this new missile will become the standard ammunition for RBS 70 NG.

New Carl-Gustaf anti-tank round launched



Saab has launched its new anti-tank ammunition round for the Carl-Gustaf weapon during a live firing customer demonstration in May at Karlskoga, Sweden. The new round, designated HEAT 758, has been designed to defeat heavy armoured vehicles equipped with Explosive Reactive Armour (ERA). Vehicles protected by ERA are increasingly more common on the battlefield. HEAT 758 features a tandem warhead; the initial charge neutralises the ERA installed on the outside of the armoured vehicle, allowing the main charge to then successfully penetrate the main armour. The main charge can defeat up to 700mm of armour, enough to defeat the heaviest armoured vehicles.

An undisclosed Carl-Gustaf customer has ordered HEAT 758 and production is underway. HEAT 758 uses Saab's Firebolt technology, meaning it can communicate with the Carl-Gustaf M4 weapon in which it is loaded and with the Fire Control Device 558 used to aim the M4, thereby simplifying the workload on the gunner while increasing first-round hit probability.

Carl-Gustaf order from Lithuania

Saab has received an order from Lithuania for the Carl-Gustaf M4 weapon and training equipment. The order value is SEK 460 million with deliveries planned



2026–2029. The order is part of a newly signed contract between Saab and Lithuania, which allows for potential options collectively valued up to a total of SEK 640 million. The agreement is valid for ten years and includes Carl-Gustaf M4 weapons, sub-calibre adapters for the

use of training ammunition and Carl–Gustaf Outdoor Trainers. The agreement also includes cooperation with the Lithuanian defence industry in accordance with Lithuanian regulations.

The Carl–Gustaf recoilless rifle is a man portable, multi–role weapon system that allows dismounted soldiers to safely and effectively deal with multiple challenges on the modern battlefield. Adaptable and flexible, the system is constantly evolving to meet user and market needs. The Carl–Gustaf training systems enable advanced and collective skills training, allowing forces to prepare for a wide range of scenarios.

Hungary receives 2 new Saab Gripens

The Hungarian Defence Forces celebrated the reception of two new Gripen C fighters, to be operated by the 101st Aviation Wing, based at Kecskemét Air Base, Hungary. This follows the contract signed between the Hungarian Ministry of Defence and FMV (the Swedish Defence Materiel Administration) in February 2024. The delivery of two new aircraft, the first two out of four, confirms Saab's commitment to timely delivery to its customers. Hungary has operated Gripen fighters since 2006. With the contract signed in February 2024, Hungary will operate 18 Gripen C/D with the latest upgrades.



Saab in order for C–UAS from Sweden

Saab has received an order from the Swedish Defence Materiel Administration (FMV) for a mobile and modular



counter–unmanned aerial system (C–UAS). The system is designed to protect the Swedish Armed Forces as well as civil infrastructure from threats posed by drones. The order value is approximately SEK 2.6 billion and deliveries will take place in 2027–2028. Saab's C–UAS is a modular, mobile platform designed to detect and neutralise low flying small to medium sized drones. It integrates field proven Saab sensors and effectors, as well as selected third party technologies, into a single interoperable solution that seamlessly connects with existing defence assets. Built on established components, the system is fully operational and ready for deployment.

Giraffe 1X for France



Saab and Scania France have jointly signed a contract with direction générale de l'Armement (Directorate General of Armaments) for supply of Giraffe 1X radars and development of a solution with Scania tactical vehicles for the French Armed Forces. The contract consists of 17 Giraffe 1X radars for the French Armed Forces. One Giraffe 1X radar will be used for test and evaluation purposes and 16 Giraffe 1X radars will be installed on the Scania V3P chassis, a tactical vehicle developed by Scania France and its SPAD (Scania Public and Defense) division in Angers, France. The contract also includes spare parts, training and support. Saab and Scania France have combined their resources and created a joint consortium for the duration of the contract. Deliveries of the radars will take place between 2026 and 2027.

The Giraffe 1X is a compact, high performing 3D radar that is already contracted and in service with a number of customers. The radar system can be used for air defence, counter unmanned aerial systems (C–UAS), protection of buildings and sites, and has marine applications for most types of vessels. Giraffe 1X is software based and can be continuously upgraded to meet new types of threats.

New Sirius Compact R–ESM

Saab has unveiled Sirius Compact L24R, the latest member of its Sirius Compact R ESM sensor family, at the AOC EW Europe symposium in Helsinki. Designed for fixed installation on masts or existing infrastructure, Sirius Compact L24R detects, tracks, classifies and localises radar emissions from threats such as fighter aircraft, surveillance radars and surface vessels. Sirius Compact



L24R supports both fixed and mobile deployments. Its small, modular design enables rapid installation and seamless integration into networked environments. Operating autonomously, it continuously processes intelligence data without storing sensitive information on the sensor. The Sirius Compact family consists of modular, lightweight and passive Electronic Warfare (EW) sensors designed for silent detection, classification and tracking of radar (R-ESM) and communication (C-ESM) signals.

Canada engages Saab as preferred supplier of future AEW&C capability



Canada has announced that they will enter into detailed discussions and formal negotiations with Saab as the preferred supplier of Canada’s future AEW&C, enabled by Saab’s GlobalEye. At this point, Saab has not signed a contract nor received an order. Saab has offered to build, maintain and upgrade the Canadian GlobalEyes with a team of Canadian partners. The goal is to transfer knowledge and technology to Canada that will grow the domestic defence industry. Saab also plans to invest in research and development work in Canada, as part of the future programme.

Order for GBAD solution from Sweden



Saab has received an order from the Swedish Defence Materiel Administration (FMV) for sensors and command and control systems for a ground-based air defence system (GBAD) solution for the Swedish Army brigades. The order value is approximately SEK 1.2 billion. Deliveries will take place between 2029 and 2030. The command and control and sensor systems continue to build on previous deliveries to FMV, strengthening Sweden’s ground based air defence capability. This contract will provide the end user with an improved ability to detect and counter advanced aerial threats.

Order from the US Army

US Army has awarded Saab a \$22.4 million order within a firm fixed price contract under the Bridge to Evolution Synthetic Training Environment Tactical Engagement Simulation Systems Multiple-Award Contract (BEST MAC). The total potential contract value is \$60.8 million over 60 months. Under Lot 2 of the BEST MAC contract, Saab will support the US Army’s Tactical Engagement Simulation Systems (TESS) programme through the delivery of Vehicle Tactical Engagement Simulation System (VTESS) Base Kits.



Saab in order for NLAW from France

Saab and the French General Directorate of Armaments, Direction générale de l'Armement, have signed a contract regarding Saab's NLAW (Next Generation Light Anti-tank Weapon). Deliveries are scheduled 2026–2030. The order includes NLAW weapons as well as indoor and outdoor trainers. The contract also includes options for France to order additional NLAW weapons.



Saab announces new Giraffe AMB D radar

Saab launched Giraffe AMB D at Eurosatory 2026 in Paris; the latest evolution of its Giraffe AMB radar family. Giraffe AMB D combines a new radar array design with

a modern software architecture to deliver enhanced performance and greater operational flexibility. Designed



to counter a wide range of threats, the system provides superior situational awareness through extended detection capability and advanced target tracking. Its software defined architecture enables continuous upgrades, ensuring the radar can evolve to meet future operational requirements.

Order for Giraffe 1X from Denmark

Ahead of the EU leaders' security summits in Copenhagen in October 2025, the Danish Armed Forces engaged Saab to deploy several Giraffe 1X systems for surveying both civil and military infrastructure. Saab responded promptly, and after successfully operating the systems for over six months, the Danish Ministry of Defence Acquisition and Logistics Organisation (DALO) has now placed a permanent order for the systems.



Saab invests in Comand AI

Saab has announced a strategic investment of 11.1 MEUR for a 10% equity stake in Paris-based battlefield AI company, Comand AI. The investment brings Comand AI's AI-native planning solutions and technical expertise into Saab's research and development ecosystem, supporting the continued evolution of Saab's command and control (C2) and C5ISR capabilities, including systems such as GlobalEye and ongoing initiatives for multi-domain C2. The initiative also strengthens Saab's co-operation with French industry, promoting a deeper integration within the French innovative technology sector. This move aligns with a broader commitment to enhancing European sovereignty, contributing to a more resilient and adaptable European defence industry capable of developing high-performance capabilities.

Final deliveries of Hungarian Gripens

Two new Gripen C fighters landed end June 2026 at Kecskemét Air Base, marking the completion of the deliveries under the contract amendment signed between the Swedish Defence Materiel Administration (FMV) and the Hungarian Ministry of Defence in January 2024. With these deliveries, Hungary will operate a total of 18 Gripen C/D (16 Gripen C and 2 Gripen D) aircraft to protect and defend Hungarian and NATO airspace. The delivery of two additional aircraft will further strengthen the capabilities of the Air Force. ➡



Lockheed Martin news

LM proves seeker capabilities



The Lockheed Martin QuadStar missile recently successfully completed the Next-Generation Short Range Interceptor (NGSRI) Seeker Characterisation Flight Test (SCFT), a critical risk reduction milestone for the programme. The test paves the way for continued testing as the US Army moves into the next phase of the future replacement for the legacy Stinger missile.

Korea for 24 MH-60R's



Korea has requested to buy twenty four (24) MH-60R Multi-Mission Helicopters; fifty two (52) Embedded Global

Positioning System/Precise Positioning Service/Inertial Navigation Systems with Selective Availability/Anti-Spoofing Module (48 installed, 4 spares); twenty four (24) Airborne Low Frequency Sonars; and eight (8) M240D 7.62mm machine guns. The following non-major defence equipment items will also be included: T700-GE-401D engines; AN/AVS-9 Night Vision Devices (NVDs); M514 impulse cartridge/cartridge actuated devices; MJ20 cartridge actuated thruster/cartridge actuated devices; WB53 fire extinguisher cartridge/cartridge actuated devices;

CCU-136A/A impulse cartridges; AN/AAR-47 missile warning systems; AN/APX-123 Identification Friend or Foe transponders; AN/ALE-47 dispenser, electronic countermeasures; AN/AAS-44C(V) multi-spectral targeting systems; IFF Mode 4/5 cryptographic applique, KIV-78; Joint Mission Planning Systems; Training Simulators/Operational Machine Interface Assistant, Avionics Training System; Training Simulators/

Operational Machine Interface Assistants; Aviation Maintenance Weapons Loading Trainer; Tactical Operational Flight Trainer; AN/ALQ-210 Electronic Support Measures systems, etc.

LM delivers ICS to the US Navy

Lockheed Martin has delivered the first Integrated Combat System (ICS) enabled baseline to the US Navy. ICS enabled baselines combine heritage combat system capability with modern infrastructure,



driving rapid proliferation of capability through a singular development effort at scale. Working with the Navy and industry partners, this marks the start of a six month operating cadence for updates and certifications that will be fielded across the fleet, a significant step toward the Navy's vision of fleetwide commonality.

LM demos C-UAS launch



Lockheed Martin successfully intercepted a Group 3 one way attack test drone using a Joint-Air-to-Ground

Missile (JAGM) launched from a Grizzly containerised launcher for the first time. Sanctum Counter-Unmanned Aerial System (C-UAS) battle manager and Fortem R-40 Radars were used for the successful detection, tracking and engagement of the drone target. Sanctum's sensors detected and tracked a hostile Unmanned Aerial Vehicle (UAV), the Sanctum mission management software processed the engagement, and the Grizzly launcher fired a JAGM missile neutralising the target.

LM advances PrSM Inc-4

Lockheed Martin, L3Harris and the US Army successfully completed a pivotal advanced propulsion milestone for Lockheed Martin's offering for Precision Strike Missile (PrSM) Increment 4. During a recent Direct Connect Transition Test, the development missile demonstrated a flawless booster-to-ramjet handoff inside L3Harris' high speed air-breathing propulsion facility, validating the propulsion transition event.

S-92 centre of excellence opens in Brazil

Heli-One, a global leader in helicopter Maintenance, Repair and Overhaul ('MRO'), opened the first S-92 helicopter Customer Support Center in Brazil to provide scheduled and unscheduled maintenance on any S-92 aircraft in the region. Authorized by Sikorsky, a Lockheed Martin company, the support centre is a foundational pillar for a comprehensive S-92 Centre of Excellence, which will offer a broad range of sustainment services for the platform, including parts provisioning and an overhaul and repair capability. The launch of the Brazil Customer Support Centre reflects Heli-One's broader strategy to expand its global support network and bring advanced MRO and embedded maintenance capabilities closer to operators in critical markets worldwide. ➡



Belgian AF Days at Florennes



Every two years the Belgian Air Force takes the opportunity to present its aircraft and crews to the general public during the so called Belgian Air Force Days. This year was no exception and in the weekend of 27–28 June 2026, the doors were opened at Florennes air base in the south of the country. That this base was selected for the 2026 edition of the Air Force Days, which was also the mark stone of the 80 years air force anniversary, was no surprise as you can find here the unit that is the 1st user of the F-35A in the Belgian AF. Next to that, the base is also host of the new Belgian MQ-9B “SkyGuardians”, a remotely piloted aircraft system (RPAS).

F-35A Lightning II

In 2024, the Belgian air force received its first F-35's which were based at Luke air force Base, USA, for pilot training. In October 2025, the first 4 Belgian F-35's touched down at Florennes, after their delivery flight from the US with a stopover at the Azores. The 2nd Wing was honoured to become the first unit to be equipped with the F-35 while their F-16's are taken out of service or handed over to other Belgian units still flying the Fighting Falcon. In the preparational process for the transition to the F-35,



Florennes had meanwhile also received several flight sims. To give the audience at the open house a good view at the new aircraft, a wide flight display was given with 2 F-35's and included flybys with F-16's, a formation flight with an Airbus A-330 MRTT tanker aircraft from the Multinational MRTT Unit (MMU) and a close formation heritage flight together with a Spitfire.

By 2027 the deliveries of new F-35's will also start at the other Belgian fighter base, namely 10th Wing at Kleine



Brogel where now large preparational construction works are ongoing.

SkyGuardian

On 18 August 2025, the first of 4 ordered MQ-9B SkyGuardians was delivered to the Belgian Air Force at Florennes air base. About a month later, the MQ-9 made its maiden flight from Florennes in presence of the Belgian Minister of Defence and the Defence Staff, marking a new era. During the open house a SkyGuardian could be seen from nearby in one of the base hangars. The RPAS involved, the “MS-03” was also applied with a comet badge at its vertical lower fin, symbol of No 2 squadron which is the operational RPAS unit. The squadron, with a rich history flying the F-84F Thunderstreak, the Mirage V and finally the F-16 was disbanded back in 2001 and reactivated in 2023 as a preparation for its new MQ-9 tasks.

H-145

Although not based at Florennes, the audience could also see the recently delivered Airbus H-145M helicopter.





This sample belongs to an order of 15, of which the final delivery is foreseen by the end of 2027. The H-145's are part of the Belgian Light Utility Helicopter (LUH) programme, which overtakes tasks of the NH-90 TTH and A-109 helicopters, and are based at Beauvechain air base.

The future missions of the Belgian H-145's include Medical Evacuation (MedEvac), tactical air transport, observation and reconnaissance, support of Special Forces (SF) and rescue operations. The helicopter can also be equipped with a bambi bucket underneath, for forest fire fighting duties.

International

Other highlights at the Belgian AF Days at Florennes air base, included a brand-new trio of A-29N "Super Tucano's" of the Portuguese Air Force. Next to all the other modern and new aircraft, the audience could also see "ancient" but still operational Turkish and Greek F-4E Phantoms at the static display. Turkey was furthermore represented by the "Turkish Stars" in the air show. The red and white coloured demo team, which flies the NF-5A/B Freedom Fighters, gave a long and thrilling aerial show to the enthusiast public. ➡

Article and photos: Peter ten Berg



Weapon Instructor Course 2026

Introducing Danish F-35s



Late April 2026, a new Weapon Instructor Course (WIC) started at Leeuwarden Air Base, The Netherlands. 25 participants from Belgium, Denmark, Norway and The Netherlands will follow the 6 month during course towards October for final certification. The course is not limited to pilots only, but includes also officers and non-commissioned officers out of other operational units. These include intelligence officers, air battle managers and surface-based air defence (eg, Patriot) operators.

The WIC evolved out of the Fighter Weapon Instructor Training (FWIT) which was installed from 1975, out of a cooperation between Portugal, Belgium, Denmark, Norway and the Netherlands. These countries all operated the F-16 and were looking for synergy and shared initiatives like on training. Several years ago there was a need for change as countries started transition from F-16 to F-35 operations and the FWIT name changed accordingly into the Weapon Instructor Course (WIC) and was opened as well for other expert functions, besides the pilots. The WIC is hosted by the Royal Dutch Air Force Weapons School of the 323rd Air Combat Development Centre at Leeuwarden Air Base,





which is also the European knowledge centre for tactical operations. For F-35 operations the WIC now concentrates on Denmark, Norway and the Netherlands, while Belgium and Finland still support with F-16 and F/A-18 activities before they will also switch towards F-35.

The 6 months course has an overall academic approach and includes several flying periods, where lessons learned are put in practice. WIC 2026 had its first flying phase during May and June, where initially Dutch F-35's worked together with their Danish colleagues for 2 weeks, to be followed for another 2 weeks with Norwegian F-35's and some Alpha Jets and A-4 Skyhawks from contractor "Top Aces" for "red air" activities.



The Danish Air Force participated for the first time with their new F-35's in the WIC and their visit to Leeuwarden was also a first timer. Five F-35A aircraft from Eskadrille (squadron) 727, based at Skrydstrup AB, Denmark, were for 2 weeks active, during the 2 WIC missions a day.

During July another flying phase will be executed with aircraft from Norway, Denmark, Finland and The Netherlands. Around October a final flying phase is conducted which is decisive for participants graduating to Weapon Instructor. This final phase will be executed in Norway. ➡

Article and photos: Peter ten Berg



Patrouille Suisse



The Patrouille Suisse is an aerobatic team of the Swiss Air Force. The team flies six Northrop F-5E Tiger II fighter jets. It was founded on 22 August 1964 with four Hawker Hunters. Two displays were also flown in 1968 with the Dassault Mirage III under the name “Patrouille de Suisse Mirage”. Other than those shows the Patrouille Suisse retained the Hunter. In 1970, a fifth aircraft was added to the team, followed by the sixth shortly thereafter. In 1977 a smoke system was introduced. The Patrouille Suisse flew its Hawker Hunters for the last time in 1994 and transitioned to the faster and more maneuverable Northrop F-5E Tiger II adding smoke systems in 1996. In April the following year, a Pilatus PC-6 Porter single engine turboprop light aircraft was assigned as a support aircraft, painted in the team’s colour scheme.

In February 2013, the Swiss Minister of Defence, Ueli Maurer, stated that the Patrouille Suisse would be disbanded by early 2016 due to the withdrawal of the F-5 from service. The Swiss parliament decided not to purchase 22 Gripen E replacement aircraft. In summer of 2014, the Swiss Air Force released plans to move from six F-5Es to four F/A-18Cs by the end of 2016. To facilitate these reduced operations, fewer air displays would be flown and, as a result, the aircraft were unlikely to receive special paint. The Swiss Air Force and the Swiss parliament planned to extend the service of eighteen F-5E and four F-5F until 2018. This would also include the continued operation of the Patrouille Suisse flying the F-5E until 2018. A unique Flight Demonstration was performed by the Patrouille Suisse on 7 September 2014 at the Air Show at Payerne Air Base as they flew a 15-plane display with the PC-7 Team.

The Patrouille Suisse normally operates six Northrop F-5E Tiger II aircraft out of a total of twelve F-5Es that are maintained in team colours. Since 1996 ten aircraft



are able to accept one of the eight smoke generators that were made by RUAG. When fitted with a smoke generator, including the two 40 litres (8.8 imp gal; 11 US gal) bottles of diesel, the right gun of the F-5E is disabled. The teams F-5Es are also used for other purposes such as training and as target tugs flown by Target Squadron 12, facilitated by their high visibility colouring. A Pilatus PC-6 V-622 “Felix”, painted in Patrouille Suisse colours, transports the commander, announcer and the team ground crew.

About 60th Anniversary Patrouille Suisse

The Swiss Aviation Force, celebrated its 60th anniversary on 22 August 2024. Established in 1964,

the team has been captivating audiences both domestically and internationally with their precision flying and dynamic displays. To commemorate this milestone, IWC Schaffhausen released a special edition Pilot's Watch Mark XX Patrouille Suisse. This limited edition timepiece features a titanium case, a grey dial, and is powered by the IWC-manufactured 32111 calibre automatic movement, offering a 120 hour power reserve. The case back is adorned with a special engraving honouring the Patrouille Suisse.

The Patrouille Suisse continues to serve as ambassadors of Switzerland and the Swiss Air Force, showcasing the capabilities, precision and readiness of the Swiss Army through their performances. Antigua & Barbuda issued a sheet of four stamps \$6.00 x 4 on August 22, 2024 to mark the occasion along with an eighteen value sheet \$1.60 each depicting posters and postal labels showcasing Swissair's growth in the last 100 years.

For decades, the Patrouille Suisse has stood for precision, team spirit and aeronautical excellence. It is a symbol of the Swiss Air Force and an ambassador for Switzerland at home and abroad. In 2026, it will continue to inspire the public and showcase the capabilities of our Air Force. At the same time, this year is already marked by farewells. With the definitive decommissioning of the F-5 Tiger in 2027, the era of the Patrouille Suisse will come to an end. The F-5 and the Patrouille Suisse have left their mark on generations and strengthened the bond between the Armed Forces and the public. But saying goodbye doesn't mean forgetting. The achievements of Patrouille Suisse shall remain part of history. At the same time, with respect for what has been achieved and with responsibility in 2026, the Patrouille Suisse will continue to show what it stands for: precision, trust and passion.



The last performance of Bigfoot

A Glimpse into a Day in the Life of the Patrouille Suisse. The day begins early and quietly for all Patrouille Suisse pilots. At home, before traffic builds and the airbase awakens, the morning belongs to routine: rising, strong coffee, a quick glance at the morning news. Then comes the first ritual of a demonstration day: white socks. The awareness that this will be Bigfoot's final performance is present, yet it does not dominate the moment. The focus is on the task ahead. The drive to Emmen is calm. For years, the Swiss Air Force base has been the starting point for Patrouille Suisse training and performances. For fans, Emmen holds a special meaning; for the pilots, it is a second home – at least during the season.

Upon arrival, there is a focused yet joyful atmosphere. The entire Patrouille Suisse team prepares for the day: ground crew, speakers, the commander, and the pilots. Every process intertwines, every member knows their role. The day starts with a small pre-briefing. Bigfoot and Salim, the two soloists, go over the performance, focusing on the precise execution of solo maneuvers. At the centre of attention is the topography of St. Moritz, today's demonstration site. The Engadin demands careful planning: terrain, altitude, reference points, obstacles and available airspace are meticulously studied. Weather developments and lighting conditions are also considered. The goal is to execute the display safely, precisely and adapted to the local environment.

Next comes the main briefing, where all six pilots gather. Figures, timing and transitions are discussed and mentally rehearsed. Questions are answered,





contingencies reviewed. It is a structured exchange, repeated before every performance – professionalism built on routine, clear processes and mutual trust. Suiting up brings movement into the day: anti-G trousers, helmets, protective vests. Every step follows a strict order. Checklists set the rhythm, ensuring nothing is left to chance. On the way to the aircraft, concentration – and tension – rises. The F-5 Tigers are ready, thoroughly checked, with ground crews performing precise tasks. After donning parachutes and performing the traditional ‘tap test’, the pilots approach their jets. With the help of the ground crew, pilots strap in, engines start, and systems are checked. On the taxi to the holding point, enthusiastic fans wave from behind the fence. The two three-ship formations unite after takeoff. The flight to the Engadin is in formation – six aircraft moving as one. Under the wings, the landscape gradually becomes



alpine. Radio calls remain brief and precise; the focus is on position, spacing, and timing – the fundamentals for the upcoming display.

Entering the demonstration box over St. Moritz, the show begins. For the audience, it is an impressive spectacle; for the pilots, the realisation of a carefully planned programme. Maneuvers flow seamlessly, transitions are clear. White smoke enhances visibility and provides orientation, while the speakers guide the audience’s eyes, highlighting formation changes and providing context. Bigfoot executes his solo role with focus and poise – integrated into the team, supported by established routines and mutual trust.





matter the occasion. Accuracy and perfection are forged not in the air, but in careful review – even after an emotional final performance. With the close of the day, Bigfoot's career in the Patrouille Suisse ends – but his bond with the team remains forever.

Expertise on the ground

Accuracy and precision not only characterise the Patrouille Suisse pilots' flying ability, these values are also lived behind the scenes. Without the ground crew's meticulous yet rapid work, the Patrouille Suisse could not take to the air. The aircraft, machine and weapons mechanics, the repair team's avionics specialists, the flight operations plane captains, and the logisticians who are responsible for all transport and vehicle matters make an important contribution to maintaining operational readiness. With their wide ranging expertise,

they guarantee that the aircraft are handed over to the pilots in perfect condition and on time. ➡

By Vijay Seth
Aerospace Heritage Trust

The fact that this is his final performance does not affect the flight; in the air, only the shared mission matters. Safety, precision and teamwork remain paramount. The display box is used fully, formations remain stable, and the programme unfolds as planned. After the grand finale, the six 'Bambini' leave the Engadin as a unit, heading back to Emmen. The return flight is calm; tension eases, but attention remains sharp. The final flypast over Emmen and the landing proceed flawlessly. Jets taxi back into their boxes, engines shut down – for Bigfoot, for the last time.

A special moment follows. After shutting down the aircraft, the team gathers at Bigfoot's jet. The last flight concludes together. Hugs, emotions and memories of years shared fill the moment. Routine resumes afterward, but meeting waiting fans brings emotions to the surface once more. Conversations spark, autographs are given, memories captured. For the fans too, it is a special moment. The day ends with the debriefing. Maneuvers and crossings are analysed; lessons are noted. This step is essential after every display, no



The sharp claw of the Turkish Air Force: Eagle Squadron



The 161. “Kartal/Eagle” Filo, established on in 1952. The 161st Squadron was introduced to jet aircraft in 1952. Initially receiving F-84G aircraft, the Squadron replaced them on 25 December 1965, with the first batch of 21 F-5 Freedom Fighter aircraft acquired from the United States.

On 26 November 1966, six of the other aircraft in a batch acquired to establish a second F-5 squadron were assigned to the 161st Squadron Command. These aircraft were flown from the USA by six pilots serving in the squadron. Covering a distance of 15,348 kilometres in 21 hours, the pilots became the first Turkish pilots to fly across the Atlantic Ocean.

The Squadron was modernised in 1983 with F-104G “Starfighters”. On 19 June 1992, the 161 Filo was modernised with F-16 Fighting Falcon aircraft.

The eagle becomes a bat to rule the night

The establishment of the LANTIRN system, which will provide the Air Force with night operation capability, was first started in the 161st Squadron in 1993. On 1 July 1994, LANTIRN training was completed, and the 161st Squadron became the first LANTIRN capable Turkish Squadron. TURAF is the first user of the LANTIRN system outside the United States.

With the LANTIRN modernisation, the 161st Squadron, whose call sign was Kartal (Eagle), also adopted the call sign Yarasa (Bat). Thus, they began flying as Eagle during the day and Bat at night. They became the only squadron in the Turkish Air Force to have two names.

The Turkish Air Force acquired the LANTIRN (Low Altitude Navigation Targeting Infrared System for Night) system through the FMS channel under the Peace Moon programme. Within the framework of the US \$183 million Peace Moon contract, 40 navigation pods and 20 targeting pods would be delivered along with the necessary technical and tactical training, logistic support and maintenance/repair capabilities.

The LANTIRN pods and support equipment arrived in Turkey in June 1993. six pilots selected by the Turkish Air Force completed their respective combat readiness training in the USA. The “Yarasa (Bat)” LANTIRN Squadron was



established with 2 US instructor pilots and six additional pilot trainees and was activated on 6 January 1994. During this period, all pilots received training, especially in AGM-65G and GBU-10/B firing tactics and techniques. In 1997, 20 more targeting pods were ordered.

LANTIRN is a system consisting of AN/AAQ-13 Navigation and AN/AAQ-14 Targeting pods externally mounted on the F-16 aircraft. The use of these two pods in conjunction with the aircraft's INS and radar systems enables navigation at very low altitudes both day and night, and allows for highly precise attacks on desired targets. The LANTIRN system effectively transforms night conditions



into daytime conditions, allowing the pilot to penetrate and destroy the target from low altitude. This system identifies and visualises the target from a distance, allowing for precise approach and attack capabilities both day and night. With this system, the pilot gains the ability to use all the weapons they use during the day in the same way at night. Thanks to the navigation pod, automatic or manual navigation can be performed between 100 and 1000 feet altitudes, adapting to terrain irregularities.

Depending on the terrain, the pilot can select altitudes of 100, 200, 300, 500 and 1000 feet via the MFD. Thanks to the FLIR in the navigation pod, a thermal image is displayed on the Head-up Display (HUD) during night flight. Within the scope of the needs determined by the Turkish Air Force Command under Project Onyx IV, 30 AN/AAQ-33 Sniper Targeting Pods and 30 Enhanced LANTIRN-ER Navigation Pods have been added, increasing LANTIRN capabilities.

Today, AN/AAQ-14 pods are being replaced by AN/AAQ-33 Sniper and Aselpod.

Aselpod is equipped with a domestically designed thermal camera with a 64x512 pixel resolution Focal Plane Array (FPA) detector operating in the 3-5 micron mid-wave (MWIR) band (LANTIRN uses an 180 pixel



scanning detector, while Sniper XR uses a 64x512 pixel resolution Focal Plane Staring Array detector) and a 768x576 pixel black and white day vision camera (CCD-TV, stated to have two viewing angles (wide and narrow) and higher resolution than the day vision camera in SNIPER ATP). Aselpod also features a four axis gimbal. The Aselpod, whose primary function is as a targeting pod, can also be used during nighttime navigation thanks to the 28x21 degree field of view provided by the thermal camera in Super Wide View (SFoV) mode (same as the AN/AAQ-13 LANTIRN Navigation Pod, but not present in the Sniper XR). The thermal camera image obtained with

Super Wide View can be displayed on the aircraft's HUD. The thermal camera also has two additional viewing angles: Wide and Narrow.

On 27 September 1994, for the first time in a Turkish Air Force exercise, 161st Squadron's F-16s aircraft dropped six Mk-82 general purpose bombs on unlit targets at night, achieving direct hits. In 2000, the LANTIRN Combat Readiness Training for pilots of the 181st Squadron Command was provided by the 161st Squadron Command.





On 8 June 2004, the first Night Vision Goggles (NGP) flight with an F-16 aircraft in the Turkish Air Force was carried out by the 161st Squadron. From 2005 onwards, NGP Combat Readiness Training has been provided in groups by the 161st Squadron to all F-16 and F-4/2020 Squadrons.

Operations and exercises in which the squadron participated

Between 1994 and 1999, at different times, it participated in the NATO Operation Deny Flight/Decisive Endeavour, conducted against Bosnia–Herzegovina, by being deployed to Ghedi Airfield (ITALY), and became the squadron with the most flight hours in the Turkish Air Force with 4600 operational flight hours during the operation. Within the scope of Operation Deny Flight, in March 1994, the 161st Squadron carried out the first ever night time in-flight refuelling in the history of the Turkish Air Force. The Turkish Air Force, which joined the multinational force in the “Denial of Flight Operation” phase with 18x F-16s on 19 April 1993, participated in the Bosnia–Herzegovina and Kosovo Air Operations from the Ghedi Italy Air Base with

different F-16 Squadrons until the last flight of the 182 Filo on August 7, 2001. During this 8 year mission period, TURAF completed approximately 34,000 flight hours.

Between 1993 and 1996, they participated in activities against the separatist terrorist organisation PKK. For this purpose, Squadron was transferred to the 8th Main Jet Base in Diyarbakır, and this base was used as a temporary base for domestic and international operations.





Between 1993 and 1999, at different times, it was deployed to Incirlik Air Base and participated in Operation “Northern Watch/Provide Comfort” conducted against Northern Iraq.

One of the 161st Squadron’s key missions is TASMO (Tactical Air Support for Maritime Operations). In the first training exercise within this scope, Sea Wolf 2001, the squadron attacked a designated target ship, and thanks to the modern ammunition used, the target ship sank in a very short time. Currently, AGM–65G, SOM and SLAM–ER ammunition are used for this mission.

Four F–16 aircraft from the 161st Squadron, deployed to Malbork Air Base in Poland as part of the NATO Enhanced Air Policing mission, began their duties on 6 July 2021, and returned to Türkiye on 15 September 2021.

With its capabilities, the 161st Squadron continues to successfully carry out every mission assigned to it, both domestically and internationally, as the most important fighter–bomber squadron of the Turkish Air Force. ➡

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Rafale solo display



On 4 May 2026, the new French Rafale Solo Display (RSD) pilot was officially revealed to the media on Nancy airbase (Base Aérienne 133 Nancy–Ochey “Henry Jeandet”, ICAO:LFSO). Due to runway maintenance at the nearby Rafale airbase St-Dizier (ICAO:LFSI), the Escadron de Transformation Rafale 3/4 “Aquitaine” was temporarily deployed to BA Nancy. During the RDS presentation at Nancy airbase, the new 2026 paint scheme of the Rafale was presented as well.

The operational continuity of the Rafale Solo Display (RSD) is ensured through a personnel transition within the French Air Force (L’Armée de l’Air et de l’Espace, AAE). For the 2026–2027 cycle, the responsibility of primary Rafale Solo Display pilot (RSD) is taken over by Captain (Capitaine) Alexandre “Rocky” Roeckel, he is the 9th

RSD pilot. This tenure follows an extensive career path that commenced in 2008 with entry into the French Air Force through the Elève Officier Personnel Navigant (EOPN) programme; the EOPN path is designed for Officers Under Contract. It focuses heavily on immediate operational training for those who want to fly as quickly as possible.

Having achieved fighter pilot certification in 2011, initial instructional duties were performed at the Ecole de Pilotage de l'Armée de l'Air (EPAA) at Cognac airbase (ICAO: LFBG). Experience was further consolidated at Saint-Dizier airbase (ICAO: LFSI) within the Escadron de Chasse (EC) 01.004 "Gascogne," followed by a specialised role at the Rafale Transition Squadron (ETR) 03.004 "Aquitaine." With 3200 flying hours and sixty-one war missions completed, the required tactical proficiency for the demonstration role is very well achieved by Captain Rocky.

The coaching and tactical oversight for this period are provided by Captain Jean-Brice "Mimouss" Millet. Following the completion of approximately 200 technical demonstrations as the primary RSD pilot during the 2024–2025 seasons, a transition to the role of Technical



Display Coach was undertaken. The professional background of CNE Millet includes service at Istres air base (ICAO: LFMI) and French Strategic Air Command (Commandement des Forces Aériennes Stratégiques, COFAS) at Taverny airbase (ICAO: LFPJ). A tandem partnership is maintained between the pilot and the coach, wherein the display sequence is developed from a blank sheet.





The mission parameters of the RSD extend beyond technical flight; the team is utilised as a strategic “Ambassadeur” for French military and industrial excellence. Representation of the AAE and the French aeronautical industry is prioritised to strengthen the Lien Armée–Nation. Furthermore, these public engagements are leveraged to inspire interest among the civilian population and facilitate recruitment efforts. The aircraft utilised for these tasks, the Dassault Rafale, is operated within rigorous technical boundaries. A maximum take-off weight of 24 metric tons is supported by two M88 engines providing a combined thrust of fifteen metric tons. During the high-performance maneuvers required for display, the airframe is subjected to G-loads ranging from -3.2 G to $+11\text{ G}$.

Standardisation of the display is achieved through three specific profiles adapted to environmental conditions. A “High Show” is executed

when the cloud ceiling is at least 1,067 meters, while a “Low Show” is conducted at a minimum of 457 meters. Should conditions deteriorate further, a “Spare Show” is performed at a threshold of 244 meters. As the Rafale demo is designed and performed by the current Rafale pilot, the coach can not take over the demo in case the current pilot is not available, even if the coach was the official demo pilot 2 years before; the coach can only take over the Spare Show when needed.

Operational readiness is maintained through a comprehensive training regimen that includes centrifuge sessions for high-G tolerance, advanced aerobatics (Voltage), and maritime survival training at Solenzara airbase (ICAO: LFKS). This preparation is finalised during the winter season through more than 30 training flights, where flight altitudes are progressively reduced from 1,524 meters down to 152 meters above ground level, ensuring that the highest standards of safety and precision are upheld for the upcoming display seasons.

The preparation of a Rafale technical demonstration is an exhaustive process that transforms an operational fighter pilot into a specialised display aviator. This progression is defined by the creation of the “Ruban” (the Ribbon) and the physical conditioning required to execute it. The Ribbon refers to the continuous sequence of maneuvers performed during the 10-minute flight display. Unlike a standard operational mission, the Ribbon is designed to showcase the aircraft’s flight envelope, agility and power in a compressed space.

Each new pilot, including CNE Alexandre “Rocky” Roeckel, begins their tenure by designing the Ribbon from a “blank sheet.” While they may draw inspiration from predecessors, the sequence is strictly personal. The pilot selects the maneuvers, such as high-alpha passes, square loops, and 360-degree rolls, and determines their order based on energy management and visual impact. Before



each take-off, the RDS pilot can be seen walking on the ground, while moving with his hands, mimicking the whole demo flight. Although the pilot creates the sequence, it is refined in close collaboration with the Technical Display Coach, CNE Jean-Brice “Mimouss” Millet. The coach provides critical technical advice on safety margins and visual symmetry from the ground.

The operational effectiveness of the Rafale Solo Display (RSD) is maintained by a rigorous selection process within L'Armée de l'Air et de l'Espace (AAE). Recruitment is initiated through a comprehensive survey distributed to all Rafale pilots, ensuring that the role is filled exclusively by volunteers. Initial screening is conducted by the AAE human resources department, focusing on specific career milestones. Candidates are required to hold “Chef de Patrouille” (Flight Lead) status and must have logged a minimum of five hundred flight hours on the Rafale. Furthermore, an aptitude for public relations and communication is considered essential, as the personnel must commit to a four-year service term, comprising two years as the primary demonstrator followed by two years as the technical coach for the new demopilot.

Final selection is determined through a multi-stage interview process involving the current coach, the active demonstrator pilot, and the commander of the Escadron de Transformation Rafale 3/4 “Aquitaine”. Crucially, the final decision-making authority rests with the current demonstrator. This is necessitated by the intensive nature of the pilot-coach partnership; during the demonstration



season, these individuals interact more frequently than with their respective spouses. The physiological and psychological demands of the role are extreme, often described as a peak physical challenge. It is noted that:

“Performing a 10-minute demonstration in the air is the equivalent of doing a marathon while sprinting.” To withstand the repeated exposure to high G-forces, which range from -3.2 G to $+11\text{ G}$, the body must be meticulously prepared. A dedicated sports coach oversees physical strength training during the autumn and winter months. This preparation ensures the pilot can manage the thrust of the two M88 engines, which provide a total of fifteen metric tons of power.





The new livery for the 2026–2027 seasons, flown by captain Alexandre “Rocky” Roeckel, was designed by Régis “Rage” Rocca. Rocca is a prominent “Painter of the Air and Space” (Peintre de l’Air et de l’Espace) who has been responsible for the visual identity of the Rafale Solo Display (RSD) since 2009. The 2026 Scheme features a blue–white–red tricolor theme, described as a revisit of the team’s visual signature. It was officially unveiled on April 28, 2026, during the Flight Safety Committee meeting. His signature is on the left side of the Rafale tail. Rocca’s approach for 2026 was to preserve the “DNA” of the RSD while providing a “new breath” for the debut of the new pilot. The physical painting of the aircraft is often a collaborative effort; past projects have involved specialist painters such as Sébastien “Harry” Bault and support from the mechanics at Saint–Dizier airbase (LFSI).

The signature “À Root et Lolo” is a dedication to two people who were deeply connected to the French Air Force and the Rafale community, but who have passed away:

“Root”: Refers to Jean–Claude “Root” Veroot, a highly respected figure in the French Air Force community. He was a long time member of the “Ambassadeurs de l’Armée de l’Air et de l’Espace” (Ambassadors of the Air and Space Force) and was known for his work in communication and support for the display teams. “Lolo”: Refers to Laurent “Lolo” Arvieu, a technician/mechanic who was a beloved member of the Rafale Solo Display family and the wider French military aviation circle.

For the 2026 season, since the theme is “Unicity” (Unity), this list of names is more prominent than in some



previous years. It symbolises that the “pixelated” tricolor isn’t just a pattern—it’s a mosaic made up of all these individual people.

This list represents the technicians, mechanics, and support staff of the ETR 3/4 “Aquitaine” who actually maintain the aircraft and brought this specific 2026 livery to life. In the French Air Force, it is a point of pride that the “Ambassadors” (the display teams) are not just about the pilot; they are a collective. Régis Rocca includes these names to ensure that every mechanic who turned a wrench or spray painted a pixel is recognised. The crew names are on the right side of the Rafale tail. ➡

Report by: Joris van Boven and Alex van Noye

Photos by: Joris van Boven and Armee de l’Air (blue sky photos by Pascal Bock and Nicolas Travaux)

The airspace dilemma and civil–military synergy



The European airspace dilemma

European airspace is a spider web of increasingly growing air traffic that cannot be expanded, yet the demands placed upon it are reaching a critical breaking point. Commercial air traffic is projected to rise significantly as global travel continues its post-pandemic recovery, while the geopolitical climate in Europe simultaneously requires a much higher tempo of military exercises to ensure credible deterrence and collective defence. The result is a “Zero-Sum Game” played at 30,000 feet, where every cubic mile of sky dedicated to a military mission is a mile taken from the most direct and fuel efficient route of a commercial airliner. This friction is most intense over the Benelux and Germany, which serve as the primary junction for the continent’s busiest hubs, including London, Schiphol, Frankfurt and Brussels. For the military, the challenge is not just transit because important operations, particularly Air-to-Air Refueling (AAR), require massive boxes of reserved airspace. A tanker mission involving an Airbus A330 MRTT

and a formation of German Tornados or Eurofighters cannot be squeezed into a standard civilian airway. These missions require large, protected blocks of air to ensure safety and operational effectiveness. As commercial flows grow and military readiness becomes non-negotiable, the



traditional method of simply segregating the sky is no longer sustainable, and the industry is facing a logistical stalemate. Solving this requires a complete overhaul of how we view the sky, moving away from rigid borders and toward a dynamic, shared environment where rapid military mobility and civil efficiency can coexist.

Civil–military synergy at EUROCONTROL

At the heart of the logistical puzzle governing the European skies is EUROCONTROL, the European civil–military organisation tasked with supporting the continent’s aviation network across 42 Member States. Leading the efforts in civil–military cooperation in the organisation is Major General Karsten Stoye, Head of the Civil–Military Cooperation (CMC) Division and Military Advisor to the Director General, who possesses over 3,000 flying hours primarily on the Tornado. The strategic philosophy at EUROCONTROL has shifted significantly under the current geopolitical climate, moving away from simply finding an empty corner of the sky toward advocating for a “Dual–Use” infrastructure. This vision assumes that the European Air Traffic Management (ATM) network must be inherently flexible to serve the economic interests of commercial carriers while simultaneously fulfilling the security mandates of national air forces. Major General Stoye explains that they are bringing civilian aviation and military aviation together under the principle of Flexible Use of Airspace (FUA). Under FUA, airspace is seen as a continuum that is allocated based on real time requirements, meaning that when a tanker track like LENA is not being used by the Multinational MRTT Unit (MMU), that box is immediately returned to



the civilian controllers at Maastricht UAC to let airliners fly more direct, fuel–efficient routes. This collaborative decision–making process is the only way to prevent total gridlock in the Benelux and German sectors, where traffic density is among the highest in the world.

The “Dual–Use” concept extends beyond sharing blocks of air to the very technology that keeps aircraft separated and safe, meaning future Communication, Navigation, and Surveillance (CNS) installations must be robust enough for military encryption and anti–jamming requirements while remaining accessible for civilian safety. A critical focus for EUROCONTROL today is “Rapid Air Mobility” because the military cannot wait for standard 72–hour civilian flight–planning windows during a crisis. Stoye’s division supports experts across its Member States to ensure that the military backbone of Europe can move assets across borders at a moment’s notice by linking the EATC’s mission planning systems directly with EUROCONTROL’s network manager to predict where



friction will occur hours before a tanker ever leaves the tarmac. Furthermore, because each nation maintains its own sovereign rights over its airspace, the CMC division works to create standardised and harmonised procedures for Air-to-Air Refueling (AAR) and large scale formations, ensuring that a Dutch tanker can refuel a German fighter over Belgian airspace with the same level of safety and efficiency as a domestic mission. Looking toward the future through the lens of the Single European Sky (SES), Stoye's team is actively involved in ensuring that the next generation of combat aircraft and Unmanned Aerial Systems (UAS) are interoperable by design so they can communicate with civilian air traffic control systems from day one.

mobility hubs in the world. The genius of the EATC lies in its pooling and sharing concept, where member nations do not give up ownership of their aircraft but instead transfer authority over these assets to the EATC for operational employment. General Mollard explains that they are essentially a service provider for their member nations across three primary pillars comprising strategic and tactical transport, aeromedical evacuation, and air-to-air refueling (AAR). By centralising the planning and execution of these missions, the EATC eliminates redundancy. One of the most innovative aspects of this command is the use of the ATARES (Air Transport, Air-to-Air Refueling System) and other Exchange of Services, which is a non-monetary accounting system that allows



EATC's Multinational Authority

While EUROCONTROL keeps the overview on air traffic, the European Air Transport Command (EATC) provides the planning of flights. Headquartered at Eindhoven Air Base, the EATC represents a unique model of European military integration, functioning as a coalition of the willing established in 2010 by four founding nations including the Netherlands, Belgium, France and Germany, and later expanded to include Luxembourg, Spain and Italy. At the helm of this command is Major General Franck Mollard, who assumed leadership in September 2023 and oversees a structure that manages over 180 aircraft, making the EATC one of the largest air

member nations to exchange services, such as trading one flying hour on an A330 MRTT for a specific amount of cargo space on a C-130 Hercules or an A400M, building deep trust without the need for complex financial transactions.

Sovereignty remains a cornerstone of the EATC as member nations retain the right to invoke a “red card” at any time if a mission conflicts with national policy or specific legal constraints, though this safeguard is rarely used due to the high degree of alignment among the seven members. The role of the EATC has become even more vital with the arrival of the Multinational MRTT Unit (MMU) because the EATC is responsible for the operational planning of its missions, identifying the refueling requirements

across member nations and seamlessly tasking an MMU aircraft to fulfill that need across borders. Managing such a diverse fleet of roughly 20 different aircraft types requires immense technical expertise, and the EATC harmonises flight safety standards and maintenance procedures across the member nations to ensure a multinational force can operate together smoothly.

Moving from JOJO to the LENA Track

For years, the JOJO track in the Hannover Upper Information Region (UIR) served as the primary operational hub for Air-to-Air Refueling (AAR) in Western German airspace close to the Dutch border, supporting tactical wings like the Tornados and Eurofighters from Nörvenich and Büchel alongside USAFE assets stationed at Spangdahlem. However, as commercial aviation underwent a period of rapid expansion, the JOJO track became a significant logistical bottleneck because its geographic footprint directly influenced the most critical civilian arrival and departure corridors in Europe, creating severe interference with aircraft departing from Frankfurt via the OBOKA waypoint and those arriving at Schiphol via the NAPRO arrival route. An AAR mission requires a protected block of airspace typically 10 to 20 nautical miles wide and approximately 50 nautical miles long, which becomes a no-go zone for civilian controllers when active. This forced commercial airliners to level off at lower altitudes or take lengthy vectors to circumnavigate the track during civilian peak hours, resulting in increased fuel consumption and a zero-sum situation where military training came at the direct expense of civilian efficiency.

To resolve this breaking point, EUROCONTROL and the military commands engineered the establishment of the LENA AAR track within the Amsterdam Flight Information Region (FIR), marking a fundamental redesign of how military boxes interact with the busiest commercial flight paths in Europe. To manage the complex flow of traffic around the active LENA track, Maastricht Upper Area Control (UAC) implemented a sophisticated set of Flow Management Zones known as FBZs, designated as EHTRA12Z1 and EHTRA12Z2, which act as dynamic tools to maintain a protective buffer around the refueling mission while providing predictable constraints for commercial operators. One of the most significant technical advantages of the LENA track is the vertical separation it affords because commercial traffic is generally able to clear the primary AAR protection area (EHTRA12Z1) by planning to fly at Flight Level (FL) 340 or higher, allowing



high-altitude commercial overflights to maintain their most efficient cruise levels and direct routings while a complex military mission is underway several thousand feet below. For aircraft operating at lower altitudes between FL245 and FL335, the LENA track introduces strict but predictable planning requirements where southbound traffic is rerouted via specific anchor points such as GISEB or LARAS, and eastbound flights are channeled through waypoints like TUSUK or BADGO, eliminating tactical uncertainty for airline operations centers. The impact on departures from major airports is where the LENA track truly shines because flights departing Frankfurt via the OBOKA waypoint are shifted to the Z29 TORNU route during LENA activations, ensuring that departing aircraft cross the TORNU waypoint above FL285 to place them safely above the lower levels of the refueling area while maintaining high departure frequencies.

MMU and the Executing Tanker Fleet

The physical manifestation of this complex airspace management effort is the Multinational Multi-Role Tanker Transport Fleet (MMF), a programme providing a sovereign, shared capability that is owned by NATO and managed by the NATO Support and Procurement Agency (NSPA), while being registered in the Netherlands and operated by the Multinational MRTT Unit (MMU). The MMF programme is the result of a partnership between eight European nations including the Netherlands, Germany, Belgium, Luxembourg, Norway, Czech Republic, Denmark and Sweden, who have pooled their resources to build a fleet currently expanding toward its target of ten aircraft, with an eleventh already on order. The distribution of flight hours within the unit is managed proportionally to each nation's investment, with Germany leading the group at 5,500 flight hours, followed by the Netherlands with 2,000 hours, Luxembourg with 1,200



hours, Belgium with 1,000 hours, and both Norway and the Czech Republic utilizing 100 hours each to gain vital strategic reach for their air forces.

Technically, the Airbus A330 MRTT is a highly sophisticated three-in-one platform capable of Air-to-Air Refueling (AAR), strategic passenger and cargo transport, and aeromedical evacuation (MedEvac). In its tanker configuration, the aircraft utilises a dual delivery system equipped with a high-speed Aerial Refueling Boom System (ARBS) for boom-only receivers like the F-16 or F-35, as well as under-wing Cobham 905E hose-and-drogue pods for aircraft like the Eurofighter and Tornado. Beyond its role as a flying gas station, the A330 MRTT provides a massive strategic lift capability by carrying up to 267 passengers in a standard layout or transporting up to 45 tons of equipment on its lower deck for cargo roles. The MedEvac capability is the most specialised aspect of the fleet, allowing the aircraft to be rapidly reconfigured into a state-of-the-art flying hospital that includes up to six intensive care units (ICUs) and 16 stretchers for the transport of wounded personnel, with one aircraft always kept in a dedicated medical configuration or available for immediate conversion. To manage this fleet effectively, the MMU utilises a split-basing strategy where five aircraft are permanently stationed at Eindhoven Air Base in the Netherlands as the unit's headquarters, and the remaining four aircraft operate out of a Forward Operating Base (FOB) at Cologne-Bonn in Germany to minimise transit time to refueling sectors like the LENA track.

Strategic bottlenecks at IT and diplomacy

Even with a state-of-the-art fleet and a unified multinational command, the path to seamless air mobility is often blocked by terrestrial constraints. Major General Franck Mollard identifies diplomatic clearances as a primary bottleneck that still hampers military agility in Europe because each nation maintains its own sovereign approval process that requires significant lead times,

acting as a friction point during a crisis when Rapid Air Mobility is the priority. To address these hurdles, EATC and EUROCONTROL are working on formalising their partnership through a new Letter of Intent to establish dedicated sub-working groups tasked with updating and standardising the essential documentation for Air-to-Air Refueling (AAR) patterns and trail formation procedures at a European level, ensuring a mission can transition

through multiple national airspaces without a breakdown in communication or safety.

Technological interconnectivity is the second major hurdle because military mission planners and civilian air traffic controllers must share the same data to manage the invisible grid in real time. This is where systems like LARA (Local and Sub-regional Airspace Management Support System) and CIMA CT (Civil-Military Aviation Coordination Tool) become indispensable IT platforms, allowing Maastricht UAC to see military requirements as they develop so controllers can plan for AAR mission hours before takeoff. General Stoye emphasises that Dual-Use must apply to infrastructure, meaning the next generation of communication and surveillance systems must be interconnected by design so that data from military sensors can feed into the civilian network to provide a complete picture of the sky. By solving these diplomatic and IT friction points, Europe can transform its airspace from a patchwork of national sectors into a unified operational environment where the military can move with the speed of relevance while the civilian economy flows without interruption.

The evolution of European airspace management from the restrictive JOJO era to the dynamic LENA framework demonstrates that civil efficiency and military readiness are two sides of the same coin, each requiring the other to ensure a stable and prosperous continent. The success of the Multinational MRTT Unit proves that pooling resources is the only viable path forward for European defense, but these high-end assets are only as effective as the airspace they occupy. The ongoing work to dissolve diplomatic bottlenecks and integrate IT systems like LARA and CIMA CT is essential to ensuring that this fleet can be deployed at the speed of relevance, bridging the gap between the cockpit and the controller's console to ensure Europe's skies remain both a thriving economic artery and a shielded sanctuary for collective defence. ➡

Text and Photos: Joris van Boven and Alex van Noije

We Stared In The Eyes of Death

1962 Ops in Chushul/1962 War Series



*“We carved not a line, and we raised not a stone, But we left him alone in his glory”
~ Charles Wolfe*

After the eight day battle, which concluded on 27 October, there was a bizarre silence in Ladakh until the early hours of 18 November. Suddenly, an artillery shell landed and broke the silence, ushering in some of the most famous battles in military history.

Chushul Sector, which is located south of the Chang-Chenmo Valley and has Pangong Tso as its main attraction. The village of Chushul is located to the west of the vast Spanggur Gap, which is located on the west side of Spanggur Lake and has a mountain slope on its south bank. The Chushul Airstrip, which was strategically significant, is located between the village and the Gap. Here, An-12 and Packet planes used to land frequently. Chushul Airfield came into being when in August 1951, a Kazakh-Cossack Cavalry Brigade of the National

Revolutionary Army of Chiang Kai-shek followed by the PLA sought asylum in India. There was no military deployment in Eastern Ladakh and troops had to be brought from Kargil garrison. The Kazakhs were given asylum and one infantry company of Sikh Regiment was deployed at Chushul. This encounter led to the construction of the Chushul ALG under Brigadier K. Bagh Singh, which was inaugurated on 29 August 1952, in the first landing at Chushul, PM Pandit Nehru himself landed at Chushul with his daughter and other dignitaries.

Chushul Airfield was not much used after that. The 1959 Kongka La clashes with the Chinese led to the deployment of the Army and thus Chushul Airfield was revived by a recce cum construction party under Lt MM Kumar of Madras Sappers. After this revival Chushul

Airfield was regularly used for transportation of troops and logistics.

In 1961, 1/8 Gorkha Rifles was deployed in Eastern Ladakh under the command of Lt Col PW Pathak. The battalion established its HQs in Chushul and took operational responsibility for the Chushul and Chang Chenmo sectors. Along with the Gorkhas were posted the sappers of 372 Field Company under Major SR Rao, were tasked to construct the mud brick shelters for troops. The 9 Field Company under Major SR Bagga was tasked to extend and maintain the airfield and make new tracks. Leh also had 212 EME Workshop under Major LM De Roassario with an Advance Workshop Dett in Chushul under Lt SS Rana.

In 1961, Chushul was held by two companies of the 1/8 Gorkha Rifles. Gorkhas had posts at Spanggur, ITB Hill, Tokung, Yu La, Phobrang, Tharsang La and Hot Springs. The battalion was thinly stretched. But in December came the orders from Delhi to establish a forward post at Rezang La. Rezang La is a massive feature, approximately 5,180 metres high.

The Commanding Officer of the unit Lt Col PW Pathak refused to establish a post because his unit was already too stretched. The orders came again, this time Lt Col Pathak had to follow those, he decided to establish a section post. He gathered men from different posts to send them to Rezang La. Captain PL Kher was sent to reconnoitre the position and the weather was harsh and terrain was difficult. He reached there with his party and could see a hut like structure opposite Rezang La, which they initially thought was a Chinese post but it later became clear when they went a little near and found it was a hut like-boulder. In January 1962, a post was established at Rezang La base and gradually they prepared to make a post at Rezang La. Major VP Bhasin, Lt Gustad Kotwal along with Jem Min Bahadur and a section were sent to Rezang La top to establish a post. The trek was tiring and difficult, every breath took effort. They established the post and the section stayed there. Winters were harsh in Chushul.

In the early summers of 1962, 5 JAT was moved from Uri to be deployed in Eastern Ladakh. Alpha Company under Major SS Hasabnis moved by road and reached Leh



by 21 April. The company stayed in Leh for a month for acclimatisation. MMG detts of 1 Mahar started to arrive in Chushul by mid-May. Now Chushul garrison was going through some changes. Veteran and gallantry award winner of 1947–48 war Lt Col Hari Chand, MVC took over the command of 1/8 Gorkha Rifles from Lt Col PW Pathak on 18 May. 10 days later Alpha Company of 5 JAT reached Chushul after a rigorous marching from Leh. They had come to relieve the Gorkhas from some posts and the Jats took over ITB Hill and simultaneously a platoon of 7 J&K Militia relieved the Gorkha section at Rezang La in the month of June.

In June of 1962, orders came to establish a post on the north bank of the lake. In order to clearly demonstrate our presence, Brigade Commander Brigadier Rawind Singh Grewal, MC, was willing to establish a post at Sirijap. One main problem with the task at hand was how to cross the lake. In order to resolve this, the Brigadier managed to get storm boats and allocated them to the Gorkhas and operated by Sappers of 36 Field Company.

Commanding Officer 1/8 Gorkha Rifles, Lt Col Hari Chand, MVC assigned this task of establishment of the post to Major PP Singh who was the Delta Company Commander. On 26 June, Major PP Singh along with Captain PL Kher who was the Adjutant and 1 NCO and 10 OR boarded boats to cross the lake and establish a section sized post at Sirijap. Soon after establishment, the enemy on 4 July surrounded it. Soon the message for help arrived and the 2-IC Major DS Rawat and Quartermaster Captain Issac David Joseph left by boats with 1 JCO and 12 OR to reinforce the post at Sirijap. Later on 21 July, Captain Ved Parkash Bhasin was sent to establish a new post Sirijap-II. Now the posts in Sirijap complex were reinforced and Captain Bhasin was in command. On 11 August, Captain Dhan Singh Thapa arrived in Chushul and in a few days he was promoted to the rank of Major and was sent to Sirijap as OC Delta Company. As time was passing by, the Chinese were strengthening their posts and causing psychological pressure on our troops by broadcasting propaganda messages.

Now, Delta Company, less a platoon, was stationed at the Sirijap complex, which was maintained by Assault Boats and had no land connection to the Chushul Garrison. The Yula Complex, located on the south bank of Pangong, was manned by another Company of 1/8 Gorkha Rifles.



In July, the Gorkhas established the Galwan Post, later Captain Bhasin was made the OC Galwan Post. After spending a month and a half in Chushul, Alpha company of 5 Jat was ordered by CO Lt Col Bakhtawar Singh to move to Hot Springs after handing over ITB Hill back to Gorkhas. The company marched along the banks of the Pangong Tso to Phobrang before continuing on to the Hot Springs. Alpha arrived at the Hot springs. At Hot Springs, Alpha company was to replace Charlie Company of 1/8 Gorkha Rifles led by Major Prabhakar Narayan Modak. Alpha Company took control of the Hot Springs Company's defence during the following few days. The Gorkha company now started to withdraw in small detachments to Chushul where they took defences in Spanggur. The company positions were positioned on the north and south shoulders of Spanggur Gap named as Gurung Hill and Magar Hill, respectively, with a post in the Spanggur gap as well. The post Gurung Hill and Magar Hill were named after the main sub-castes of the unit's troops.

On 1 September 1962, Brig Tapishwer Narain Raina took over the command of the Brigade from the well experienced Brigadier Rawind Singh Grewal, MC, who played an essential role in establishing the forward posts in Ladakh.

In September, the Chinese started surrounding our posts, the Sirjap complex, which included the company positions Sirjap I and II was also surrounded. The enemy was well prepared since it had direct road linkages to Sirjap with Khurnak fort, making it simpler for them to transport reinforcements, supplies and heavy weaponry, but Indian forces only had personal weapons and LMGs, with the lake serving as the only supply line.

In between all the happenings, on 14 September, 13 Kumaon, which arrived at Baramulla in June under the command of Lt Col Hari Singh Dhingra under the 19 Infantry Division for its field tenure, was given orders on the final day of September to move to Leh by road. The plan was such that 13 Kumaon would stay in Leh till March 1963 and train themselves for high altitude and later relieve the Gorkhas who would complete their two years tenure in Chushul. The battalion advance and

main arrived in Leh on 2 October and were instructed to acclimatise while the battalion rear, led by Quartermaster Major Shaitan Singh, remained in Baramulla to transfer over duties.

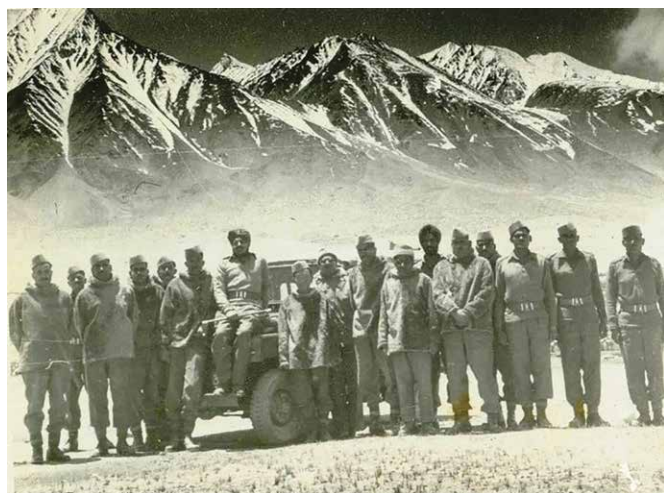
Things were getting tense day by day, the enemy strength was increasing in front of our posts. 13 Kumaon which was supposed to move to Chushul in March was given orders on October 17th to move immediately to Chushul to relieve the pressure on Gorkhas.

The Battle of Sirijap

The Chinese People's Liberation Army had started the War on 20 October and the next morning they used artillery and mortars to attack the Indian Army position at Sirijap-I. As a consequence, the Gorkha troops were severely injured. At this juncture, Chinese troops began to progressively approach the Indian stronghold. Major Thapa's isolated company was assaulted in huge numbers by Chinese forces. The Chinese soon came up with light tanks against which Indian troops had no weaponry, but Major Thapa's Gorkha men responded and repulsed three enemy attacks.

Unfortunately, Thapa's company suffered greatly during this conflict, and just seven of his 28 troops survived. Once a while had passed and the Indian soldiers' ammunition had run out, the Gorkhas yelled Jai Maa Kali Aayo Gorkhali and attacked the Chinese with their Khukris. Sirijap-I, however, fell to the enemy due to a bigger number of enemy forces. After overpowering the Indian forces with their vast numbers, the Chinese captured Major Dhan Singh as a prisoner of war.

Our observation post at Tokung could see smoke clouds over the Sirijap area and informed the HQs. Since there was no connection with the post, the Battalion HQs dispatched one patrol led by Naik Rabi Lal Thapa. The boat got as near as 1000 yards to the position before being fired upon by the enemy boats, so it turned around and reported that the entire post had collapsed, assuming Major Thapa and his men had been killed. After a fierce battle, the Chinese also attacked Sirijap-II, the enemy came from Sirijap-I and our boys fought till the last bullet. All were





killed except Rifleman Tulsiram Thapa but unfortunately he was captured by the enemy. Only 7 men from Sirijap OP managed to survive. In the dark of the night they were rescued by boats. These men informed that all the severely wounded personnel who couldn't walk were lined up and shot by the enemy on 21 October. Rifleman Tulsiram Thapa while marching as a POW sneaked out in the darkness and managed to reach Yula Complex. HQs decided to evacuate the posts in the Pangong area, Naik Rabi Lal Thapa volunteered to evacuate the casualties and men even after knowing that the Chinese would attack our boats. He successfully evacuated the casualties and Men from Yula-III. Lance Naik Raghavan of Madras Sappers left with two boats to bring back the personnel.

Amidst enemy fire, he took the boats to the post. When returning, due to heavy enemy fire one of the boats sank, Lance Naik Raghavan was in the other boat 100 yards ahead. Despite continuous enemy fire and the darkness, he turned around in the rough waters and picked up three survivors. Again, when seven men of our post were seen on the far bank, he took a boat and rescued them. The Chinese surrounded Yula-I at the Yula Complex, shelling it heavily and surrounding the post from three sides, obstructing all escape routes. Our troops returned fire until their ammo ran out. Since no communication could be made, all 19 ORs and 1 JCO were deemed killed in action. Gorkhas lost thirty three men at the Battles of Sirijap and Yula. Three individuals received awards: Rifleman Tulsiram Thapa received the Vir Chakra, Mahavir Chakra went to Naik

Rabi Lal Thapa, and Major Dhan Singh Thapa received the Paramvir Chakra (initially posthumously). All the men including Major Dhan Singh Thapa, who were taken as POWs were repatriated in May 1963.

After a fierce battle, the Chinese also took over Sirijap-II, and by 22 October, all forward posts in Chushul Sector had been either withdrawn or overwhelmed by the enemy.

The Indus Valley

The Indus Valley is located south of Chushul in the southern sector. It was an important location since it had a route that connected Chushul to Dungti and then south to Demchok. Lt Col RM Banon, Commanding Officer of the 7 J&K Militia, was in charge of the sub-sector's defence. The unit had its headquarters in Koyul, with a company and a company strength stationed in Dungti. The rest of the battalion was dispersed in small posts along the passes. On 27 October, the Chinese began attacking posts in the southern sector, following identical attack tactics which they used in northern and the middle sector.

Chang La

Chinese forces assaulted Chang La post on 27 October. Our men, numbering just 17, held the post against the mighty enemy and prevented the post from being captured. But, with ammunition running low and Chinese strength building. Since it was becoming harder and harder to uphold the post, the post commander, a JCO, ordered his troops to withdraw while he kept providing cover fire with his LMG. The escaping troops made it to Fukche, and the post commander who assisted his comrades in escaping made the ultimate sacrifice.

Jara La

The Chinese, together with Chang La, encircled the post Jara La. There were also 17 men under the command of an NCO. Over 300 Chinese marched up to the position and surrounded it in the morning. The Chinese encircled the post all day, but our troops managed to escape during the night, although one soldier was killed and seven were taken prisoner.





Other positions in the region were similarly besieged and overwhelmed by the Chinese. Sepoy Sonam Rabgais was on one of these posts when it was brutally bombarded and assaulted by the Chinese. He fought valiantly and remained in his trench until he was killed. He was later awarded the Vir Chakra.

A dett of 372 Field Company under Lt JS Sidhu at Demchok was ambushed by the Chinese but they successfully fought their way out. Most of the Indian troops in the sector were asked to withdraw the withdrawal commenced on the night of 27–28 October and troops successfully managed to reach Koyul.

The Lull

There was no fighting in the Chushul Sector after the forward posts fell. The Chinese also proposed negotiations with the Indian government. At this time, the Indian Army strengthened its foothold in the Ladakh Theatre. At this time, the 114 Brigade, which was based in Leh, was moved to Chushul and became responsible for the Lukung–Phobrang–Chushul region.

Major General Budh Singh, MC raised the 3 Himalayan Division on October 26th, with 70 Infantry Brigade and 163 Infantry Brigade under its command. The sector also

received one Field Artillery Regiment, two tank troops, one heavy mortar battery and field engineers.

Now the 14 J&K Militia which was formerly under 114 Brigade and was responsible for the Northern Sector or Saser La–Shyok–Thoise directly came under command of 3 Division.

During the lull, geography of the deployments changed a lot.

The Central or Middle sector was held by the 114 Brigade, which was in responsibility of the Lukung–Chushul–TsakaLa stretch. With four regular infantry battalions, 1/8 GR, 5 Jat, 13 Kumaon, and 1 Jat LI, two tank troops of 20 Lancers, the 38th field battery of 13 Field Regiment, one troop of 32 Heavy Mortar, one company of field engineers and one company of 1 Mahar (MMG), the Brigade was now in a strong position.

The Southern Sector, which included Demchok–Dungti, was now under the command of Brigadier Rawind Singh Grewal, MC, led 70 Infantry Brigade with three infantry battalions and 7 J&K Militia battalion, as well as one battery of Field Regiment, one Heavy Mortar troop, one company of engineers and one company of MMGs.

Leh Sector, which had previously been the headquarters of

114 Brigade, was now under the command of 163 Infantry Brigade, which had one Field Battery with Regiment Headquarters, one troop of heavy mortars, and one engineer company. Except 114 Brigade no other formation in Ladakh had tank troops.

New deployment of the 114 Brigade in Chushul

Initially based in Leh, the Brigade was responsible for a vast frontage stretching from Daulat Beg Oldie to Demchok with just two regular infantry battalions and two J&K Militia battalions, with no artillery or armoured support. Nevertheless, with the formation of the 3 Himalayan Division, the Brigade's area of responsibility reduced. Its operational area was now around 80 kilometres long, stretching from Lukung to TsakaLa.

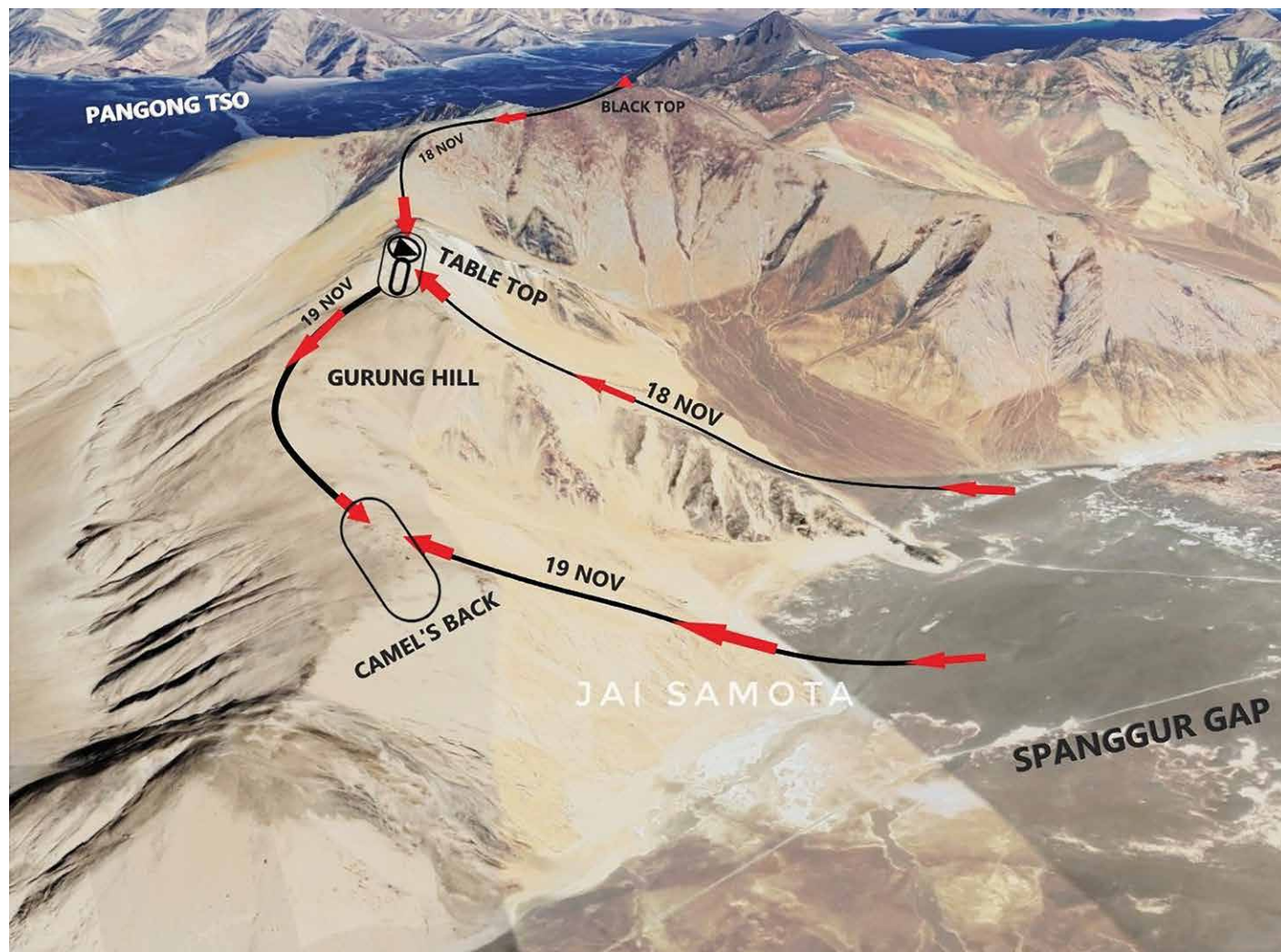
5 Jat under Lt Col Bakhtawar Singh had been hard struck and sustained casualties in the DBO and Galwan sectors, was now regrouped and strengthened by troops from the Jat Regimental Center and other sister battalions. The Battalion was now based in Lukung–Phobrang, and its Alpha Company, with lesser troops, was sent to Tsaka La under the command of Lieutenant Prem Singh. The

battalion was also supported by a troop of 32 Heavy Mortar Battery.

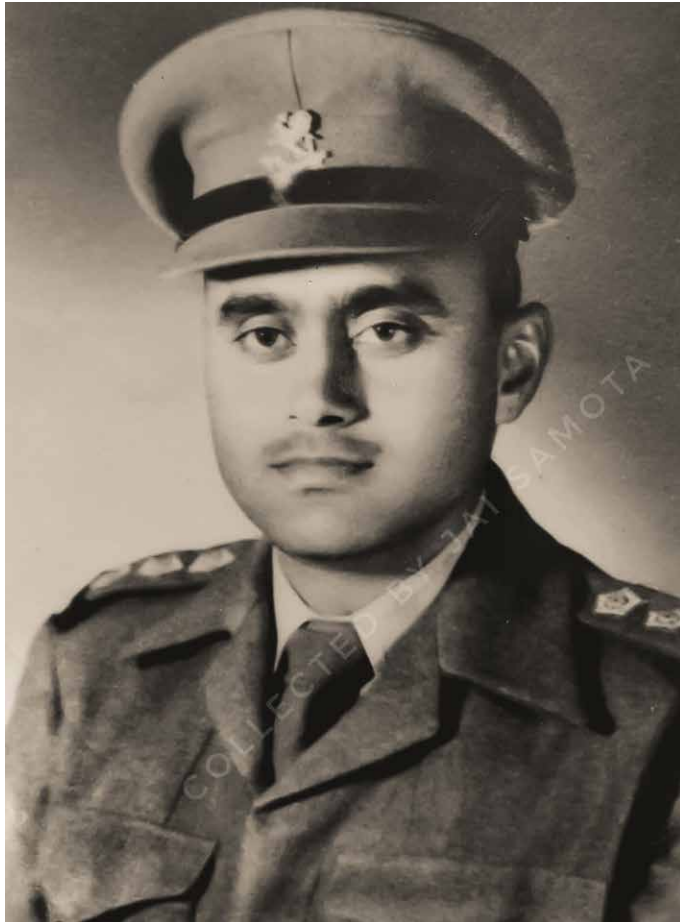
1/8 Gorkha Rifles under Lt Col Hari Chand, VrC the first battalion to move to Ladakh in 1961 was now without its Delta Company which they lost in the Battle of Sirjap were given the responsibility with one company each at Gurung Hill, Table Top–Camel's Back and Spanggur Gap.

Y Company 1 Mahar (MMG), under Major TR Reddy, was part of the Brigade for a long time; it had participated in the first phase in DBO now it moved to Chushul and was located at important positions and was now joined by X Company under Captain VC Joshi.

On 17 October, shortly after acclimatisation, 13 Kumaon received orders to move to Chushul. The advance party, led by Lieutenant Prem Kumar, arrived at Chushul on the 24th and by 26th whole 13 Kumaon was inducted into the Brigade. 13 Kumaon Headquartered near the airfield. Lieutenant Prem Kumar was given orders to deploy Charlie Company to Rezang La and establish company positions. While Bravo Company, led by Captain HS Chauhan, and Delta Company, led by Captain RV Jatar, were sent to Magar Hill, the south shoulder of the Spanggur Gap. Captain Jatar was promoted to the rank



of Major and assigned charge of the post commander Magar Hill. Major Girish Narayan Sinha, the unit's 2-IC, was also in command of Alpha Company which served as Brigade reserve. Soon on 27 October, Major Shaitan Singh arrived at Chushul and he was ordered to hand over responsibilities of QM to Captain Gurdeep Singh and move to Rezang La as Charlie Company Commander. Lt Prem Kumar who was commanding the company at Rezang La was sent to Magar Hill.



20 Lancers

Following the spread of word of the Chinese operating tanks in the region, the Indian Army began to induct tanks to confront the Chinese threat. Lt Col Gurbachan Singh 'Butch' commanded 20 Lancers based in Ferozepur was chosen for the assignment, and two tank troops with Squadron HQs were transported to Chandigarh Air Base from whence the tanks were to be flown in recently inducted An-12 aircraft of the Indian Air Force's 44 Squadron. The trial to load tanks into aircraft began, however due to the weight and structure of the tanks, the first trial failed, damaging the aircraft. With the assistance of local carpenters, a suitable ramp, adequate floor, and tail support for aircrafts were quickly constructed, with sandbags acting as shock absorbers. Squadron Leader Chandan Singh, an accomplished aviator, was responsible for landing the tanks at Chushul Airbase.

With the additional load from the tanks in mind, he

took the risk and cut the aircraft fuel to half to finish the Chandigarh–Chushul–Chandigarh flight. He successfully landed the tanks at Chushul without any damage to aircraft. The Squadron Commander and two other officers were evacuated shortly after landing at Chushul owing to high altitude sickness, but Lt Avinash Chand, a tank commander, refused to be evacuated. Captain Ashwani Kumar Dewan was now in command of both the troops and the squadron headquarters. The tanks were now positioned near the foot of Gurung Hill, at a position where the enemy couldn't see them. That was the first time Indian tanks had been transported to such altitudes. It was extremely difficult to operate tanks due to the weather and a lack of oxygen.

13 Field Regiment, Lt Col Shri Dhar Man Singh led Artillery Regiment, which was stationed somewhere in the Kashmir Valley was asked to move quickly by road from Srinagar to Leh. The Regiment was headquartered in Leh, and its two batteries were transported to Chushul and Dungti under the 114 Brigade and 70 Brigade, respectively. Major SP Joshi led the 38th Field Battery was moved to Chushul. The battery had two troops, each one with four 25-pounder guns. All of the guns were positioned at the base of Gurung Hill and Magar Hill to support both the hill features and the Spanggur Gap. Rezang La was left isolated since the gun behind Magar Hill was unable to support it owing to crest clearance issues. The Battery had two observation posts, one at Gurung Hill and the other at Magar Hill with Captain AD Singh and Captain Sharma being OP Officers.

1 Jat LI

The Battalion was in the same formation as 13 Kumaon in Uri Sector, but the latter was transferred first in October and the Jats were given the order to move in November. In just a few days, the entire battalion assembled at Srinagar Air Base, from whence they were flown and transported to Chushul under the command of Lt Col Jaspal Singh. After being inducted into the sector without acclimatisation, troops began to experience difficulties; shortly, a JCO died of altitude sickness, and the CO had to be evacuated due to pulmonary edema. Lt Col Balbir Singh was appointed to command the unit. Alpha Company was led by Captain



KS Kang, who was also serving as the unit's Adjutant and Charlie Company, commanded by Major RS Mavi, were deployed at Brigade Depth near the Battalion HQs at Chushul. Bravo Company, commanded by Lieutenant SS Kaler, was deployed at Thankung and Yula, while D Company, commanded by Major SS Malik, was stationed at Lukung on the shores of Pangong Tso.

With its two battalions, which incurred serious casualties in the initial phase of the war, and 14 J&K Militia, which had been placed directly under the command of 3 Div and 7 J&K Militia, which had been transferred under the command of 70 Infantry Brigade. The 114 Brigade was short on manpower. With the addition of support components and two additional Infantry Battalions, the Brigade quickly gained strength, and the Commander began reconnaissance and siting operations. With frequent reconnaissance, good tactical positions for tanks, artillery and infantry were identified, troops were sent to their assigned areas, and digging for trenches and weapon pits began. During the first week of November, all battalions and units had been deployed and were combat ready. The Brigade Commander visited posts at Rezang La, Magar Hill, and Gurung Hill on a regular basis to acquire firsthand information of the enemy's development and movement.

No aggressive activity from the enemy side was recorded in November, however they had a buildup at Spanggur Lake, which was connected by road from Rudok and Khurnak Fort, making it simpler for them to transfer weapons and supplies. Charlie Company at Rezang La had no artillery support, but was aided by Battalion weapon 3" Mortars. Major Shaitan Singh led the company and was in contact with the Battalion headquarters. In the evening of 17 November, Adjutant 13 Kumaon Captain DD Saklani contacted Major Shaitan Singh; the situation was OK at the time, then later that night, about 2200 hours, he called again, and the radio operator answered about the situation which was normal. It was Captain Saklan's last call to Charlie Company after the communication lines were cut.

On the 18 November, early in the morning. The Chinese artillery began bombarding Indian positions such as Rezang La, Magar Hill, Gurung Hill, and the Battalions HQs of 13 Kumaon. The Battle of Chushul had begun with the bombardment.

The Battle of Chushul consists of The Battle of Rezang La and The Battle of Gurung Hill with actions of artillery and armoured troops.

The Battle of Rezang La

Rezang La is a massive feature, approximately 5,180 metres high. It was defended by the Charlie Company of 13 Kumaon. Deployed over a stretch of about 2 kms, it had a strength of 127 all ranks. The Company consisted of No. 7, 8 and 9 platoons. The ground required to be covered at Rezang La was much larger than what could be covered by the troops available.

The company administrative base, with its cook house, reserve rations and clothing was located at the Nallah below. The company position had been prepared well within the time limits and resources available.

On the night 17–18 November around 2200 hrs, a heavy snowstorm lashed the battle zone for nearly two hours. After the storm, visibility improved to 600 meters. At 0200 hrs, LP ahead of 8 Platoon observed a large body of Chinese soldiers swarming through the gullies at about 700–800 meters moving from the pass. Lance Naik Brij Lal the LP commander ran back to Platoon Headquarters to inform this unusual development. He, with his Section Commander Hukam Chand and one LMG were rushed as reinforcement to the post. By then the Chinese had advanced within firing range of small arms from the post. The LP fired a predetermined red very light signal along with long bursts of LMG fire, warning the C Company to 'stand to' in their dug-out positions.

Similarly, 7 Platoon's LP on the forward slopes also saw Chinese forming up and the entire C Company was alerted. Major Shaitan Singh immediately contacted his sub-unit commanders on the radio communication who confirmed that all ranks were ready in their battle positions. Since the paucity of troops had caused wide gaps in 7 and 9 Platoon localities, he also ordered 9 Platoon to send a patrol to ascertain the situation. The patrol confirmed massive Chinese build up had taken place through the gullies.

All ranks of the Charlie Company with their fingers on triggers, waited patiently for the impending major frontal attack on their positions around first light with improving visibility. Around 0500 hrs, the first wave of the Chinese were spotted through their personal weapon sights by every Ahir manning the defences and hail of LMGs, MMGs and mortars fire greeted the enemy. Scores of the enemy died, many were wounded but rest duly reinforced continued to advance. Soon all the gullies leading to Rezang La were full of Chinese corpses. Wave after wave of the Chinese launched four more attacks that were beaten back that dwindled defender's strength and ammunition as many Ahirs fell fighting. As the fifth attack was launched, Naik Singh Ram, a wrestler of repute led his comrades with bayonet charge killing 6–7 Chinese single handedly till he fell to martyrdom. By about 0545 hrs, the Chinese frontal attack was beaten back and failed.

By now, the Chinese realised Rezang La was not a cake walk and changed their plan. Rezang La resorted to heavy artillery shelling and to destroy field fortifications they used concentrated fire of 75 mm recoilless (RCL) guns brought on wheelbarrows from the flanks and 132 mm rockets. The Chinese shelling was a spectacular display of firepower against defenders who had no artillery support and no bunker on the Rezang La feature. In between Major Shaitan Singh was hit by enemy bullets in his arm but without caring of his own safety he continued to fight.

The Chinese started regrouping for a rear attack on 7 Platoon positions that had no survivors. A little distance away Naik Sahi Ram, the only survivor detached from his



platoon, waited for the enemy to assemble and let them have it with accurate LMG fire. The Chinese dispersed and Sahi Ram waited for the next wave that came with RCL guns and blasted his lone firing position. Major Shaitan Singh regrouped his dwindling assets to charge the advancing Chinese. Since all the platoon positions had been overrun with no survivors, the enemy was re-grouping to assault the C Company Headquarters from the rear after heavy pounding. While moving from one-gun position to another, motivating his men, a burst of fire also hit Maj Shaitan in the abdomen. The remaining two men Jai Narain & Phool Singh picked him up and continued to rush downhill towards the company base, now and then taking cover behind boulders, to escape the Chinese fire. Major Shaitan Singh had become unconscious with the loss of blood. Life was fast ebbing out of him. For a moment he regained consciousness. Turning to the loyal jawans who were risking their lives in trying to carry him, he said that they should leave him alone and save their lives. Reluctantly the men obeyed. 'Tell the CO and the battalion, how well the company fought were the last words heard from this brave soldier. With this he breathed his last. The snowy pinnacles of Rezang La had stood helplessly by watching this unequal match of 'so few against so many'. It was all over by about 9 a.m.

Harphool Singh led 3 survivors to fight and stop the enemy's onslaught till martyred. Ram Kumar's 3 inch Mortar Section having coughed up all its ammunition was ordered to be disabled and fire plans and maps destroyed lest they fell in the Chinese hands. As Ram Kumar was disabling his mortars, he was hit by rifle fire from the Chinese 20 yards away. Though wounded, he took position in his command post and as the Chinese peeped in, he pumped bullets with his bolt action .303 rifle and killed many of them. The remaining Chinese hurled hand grenades to silence him and left. After many hours profusely bleeding, he regained consciousness and painfully trekked back to Battalion Headquarters to narrate the chilling, gallant untold story of the Rezang La Battle for the posterity. Silence of war engulfed Rezang La as the last round had been fired and the last soldier bled to martyrdom. Neither any help or reinforcements were asked for nor could any be provided to C Company.

Charlie Company's soldiers kept their promise of fighting till the last bullet and last breath. Out of a total of 127 all ranks, one officer, 2 JCOs and 105 other ranks laid down their lives. One JCO and 4 ORs were taken prisoner. Of the five prisoners, one later succumbed to his wounds. Only four managed to return alive from the ghastly hell at Rezang La, on 18 November. It is said that the battle had 17 survivors.

The Battle of Gurung Hill

Gurung Hill was also a significant feature. It measured 3000 metres in length and 2000 metres in breadth. It is 5030 metres high. This feature was strategically important since it overlooked both the airstrip and the Spanggur Gap. On its northern flank is Black Top, which was occupied by the Chinese and had infantry on its reverse slope; they also had an artillery observation position on Black Top from which they could readily monitor Indian activity at Gurung Hill. The Hill is divided into two sections, one of which resembles a camel's back so it was called Camel's Back and the other a flat top known as a table top. 1/8 Gorkha Rifles deployed its Bravo company less a platoon at the Table Top and a platoon at Camel's Back. 2/Lt SD Goswami and his three soldiers manned the Indian artillery observation position on the Hill. The fact that Gurung Hill was adequately backed by artillery as well as tanks, which were primarily inducted to confront enemy tanks at Spanggur Gap, was a benefit.

On 18 November, Chinese heavy artillery and mortar fire pounded Gurung Hill, as well as all other features. In Gurung Hill, the enemy bombardment was less successful than at Rezang La.

Attack on Table Top

The Chinese infantry troops, numbering in the hundreds, began to advance from Black Top towards the table top. The Gorkhas were waiting for the enemy to get within their firing range when Artillery OP 2/Lt SD Goswami, who had been sent to relieve Captain AD Singh for only a day or two, got involved in the battle and was given a high level of responsibility. He kept bringing accurate fire to the Chinese. This effectively prevented the Chinese from advancing because artillery fire succeeded in killing a big number of their troops. Instantly the Gorkhas began shooting at the enemy with their single shot weapons, thwarting two enemy attacks from the Black Top, but the platoon's front section was quickly overrun and Captain PL Kher, the post commander, kept moving from post to post in the face of enemy shelling until he was severely wounded.

As Captain PL Kher became a casualty Jemadar Tej Bahadur Gurung took over the leadership and continued battling and repelling the enemy, and when the enemy struck in waves, he moved from post to post repelling each enemy onslaught. The fierce battle raged on for several hours, with the enemy suffering severe fatalities. Jemadar Tej Bahadur was wounded in the chest by a burst of fire while moving from one position to another, but he



refused to be evacuated and fell down fighting. Captain PL Kher, the company commander, ordered the Gorkhas to withdraw since they were outnumbered. Captain Kher requested artillery support on his own position to cover the retreat. To cover the withdrawal, the tanks also provided direct fire. The Gorkhas fought valiantly at Table Top, but it was overwhelmed by 1000 hours.

Shyamal was severely wounded while bringing artillery fire on the enemy; his face was half blown off, and his Technical Assistant Gurdeep, who took charge when the officer was wounded, was shot and died on the spot with both signallers Pritam Singh and Sarwan Singh.

Despite his injuries and heavy bleeding, Shyamal grabbed his radio and screamed “Fire Till Eternity” to his battery of guns. He collapsed shortly after issuing this instruction. Afterwards, the Chinese arrived at his post to look for survivors in the area where he was laying in excruciating pain. Fortunately for him, they assumed he was dead and abandoned the post.

Shyamal regained consciousness a day later and crawled and limped towards the base when two Gorkha Army spotted him and carried him to Medical Assistance. He was declared dead, but there was a movement in his body, and Shyamal was quickly evacuated and sent to the Military Hospital in Delhi. Later he was sent to Germany for rehabilitation after amputation.

With the fall of Rezang La, there was a threat of an attack on the Chushul–Dungti track. The CO 13 Kumaon discussed the threat of an attack during the night with the Brigade Commander, and the Commander decided to send one tank troop at last light, which will return to its hiding position by first light. Lt Avinash Chand arrived at 13 Kumaon’s HQs just before dusk with one troop less a tank; he left the troop there and returned to repair the stalled tank. He returned to the reentrant and reported that there had been no Chinese activity in the region all throughout the night.

Attack on Camel’s Back

Because of precise artillery barrage, the Chinese sustained high fatalities at Table Top. They did not attack until the afternoon of 19 November, but they kept firing artillery, to which our tanks and guns responded fiercely, but due to the absence of the OP party, the fire wasn’t precise. Around 2030 hours, the Camel’s Back was attacked from two prongs, one from the Table Top, a former Gorkha position, and the other from the Spanggur Gap. The Chinese intensified their two pronged onslaught on our platoon position, making it impossible for our troops to resist against them; the enemy overran our position at the Camel’s Back in less than an hour. The enemy suffered huge casualties, but the Gorkhas also suffered 26 casualties and several wounded out of 102 all ranks. The

battle of Gurung Hill was over. After the fall of Gurung Hill to the enemy, the Indian Air Force's aircraft could no longer land on the airfield for risk of being severely damaged by the Chinese.

Magar Hill

The post and the Battalion headquarters had lost touch with Rezag La, so Major Jatar sent a four man patrol led by an NCO to investigate what had occurred there. Nonetheless, the Chinese surrounded the patrol and killed two men before they reached Rezag La; the remaining two men, however, managed to escape and reach their company position.

During the Battle of Gurung Hill, the artillery fired constantly, but the enemy soldiers did not approach the Magar Hill stronghold. Despite the fact that the enemy mercilessly bombarded the post. The Magar Hill also possessed Artillery OP, but no OP officer was present during the battle day, thus the post commander, Major Jatar who could see enemy APCs coming through the Spangur Gap directed Artillery fire on the enemy in the immediate vicinity and the Spangur Gap.

During the whole battle, Artillery fired more than 2700 rounds.

Aftermath

Meanwhile, an hour or so after the enemy had commenced bombarding the Chushul sector on 18th, 9 Field Company deployed in infantry role to defend the approach from Gurung Hill and Spangur gap was tasked to prepare engineer plant and machinery at Chushul airfield for reserve demolition, a task that had been earlier avoided. 2/Lt NM Malhotra began his task when the enemy started pounding Chushul airfield, focusing especially on the supply dump which was close to the engineer plant and machinery. A shell burst near him, its splinters striking his helmet. Nevertheless, he continued with his task and finished it in less than the two hours that had been allotted to him.

On the evening of 19 November, troops from the 114 Brigade began to retreat from their positions, and by first light, all units had established depth positions in allotted locations. TsakaLa Company retreated to Dungti to join the 70 Infantry Brigade. Except for two RCL guns and two tanks that were damaged during the bombardment, all equipment was shifted. 9 Field Company had taken up a defensive position on a ridge south of the Gyantse lines. 2/Lt Malhotra slipped into the airfield area at night and carried out demolitions of stores, equipment and building materials.

On 21 November, the Chinese announced a ceasefire. Afterwards, the whole Brigade withdrew, and a vehicle convoy with supplies and weaponry was dispatched to Leh. The Brigade suffered 140 fatalities of all ranks in the Battle of Chushul, compared to 1000+ casualties at the Chinese end.

A native Ladakhi shepherd wandered across the Rezag La feature in February 1963. He was astounded

by the incredible battle spectacle of warriors frozen to death but still clutching their wrecked weapons. Their firearms were mostly empty, with bulging barrels from repeated shooting. A week later, in February 1963, the first Indian party of the International Red Cross and Indian Army reached Rezag La and discovered 97 corpses in the shattered trenches with various splinters and bullet wounds. Dharampal Dhaiya, a nursing assistant, was holding a morphine syringe and a bandage. Major Shaitan Singh's body was discovered near where he was last seen by the two jawans. 96 corpses were discovered which were cremated at the Chushul High Ground where the Battalion HQs used to be. Major Shaitan Singh's mortal remains were sent to Jodhpur.

26 bodies of soldiers were found from the Gurung Hill area. Major Dhan Singh Thapa and other POWs were repatriated to India in May 1963. Until now, the battalions had relocated to new positions around Durbuk and Tangste.

Major DS Thapa and Major Shaitan Singh were both awarded the Paramvir Chakra for their exceptional valour and commitment to service.

Brigadier TN Raina, 2/Lt Shyamal Dev Goswami, who lost both his legs to frostbite, and Naik Rabi Lal Thapa received the Mahavir Chakra.

Lt Col HS Dhingra received the AVSM for his commitment to duty throughout the conflict.

Squadron Leader Chandan Singh of IAF, Captain Ashwani Kumar Dewan of 20 Lancers Captain PL Kher and Subedar Amar Bahadur Gurung of 1/8 GR, Naik Raghavan of 36 Field Company, TA Gurdip Singh of 38 Fd Bty along with Naik Gulab Singh, L/Nk Singh Ram, Jemadar Surja Ram, Naik Hukam Chand, NA Dharampal Dahiya, Jemadar Hariram Yadav and Jemadar Ram Chander, Hav Ram Kumar of 13 Kumaon were awarded Vir Chakra.

Two memorials were erected, one at the cremation place of 13 Kumaon to memorialise the courageous souls of Rezag La, and the other near the Chushul Village to honour the valiant Gorkhas and Gunners. ➡

*To every man upon this earth
death cometh soon or late.
And how can man die better
than facing fearful odds,
for the ashes of his
fathers
and the temples of his
Gods?"*

This one's for the Braves who stared in the eyes of Death and laid down their lives defending Ladakh in the 1962 War.

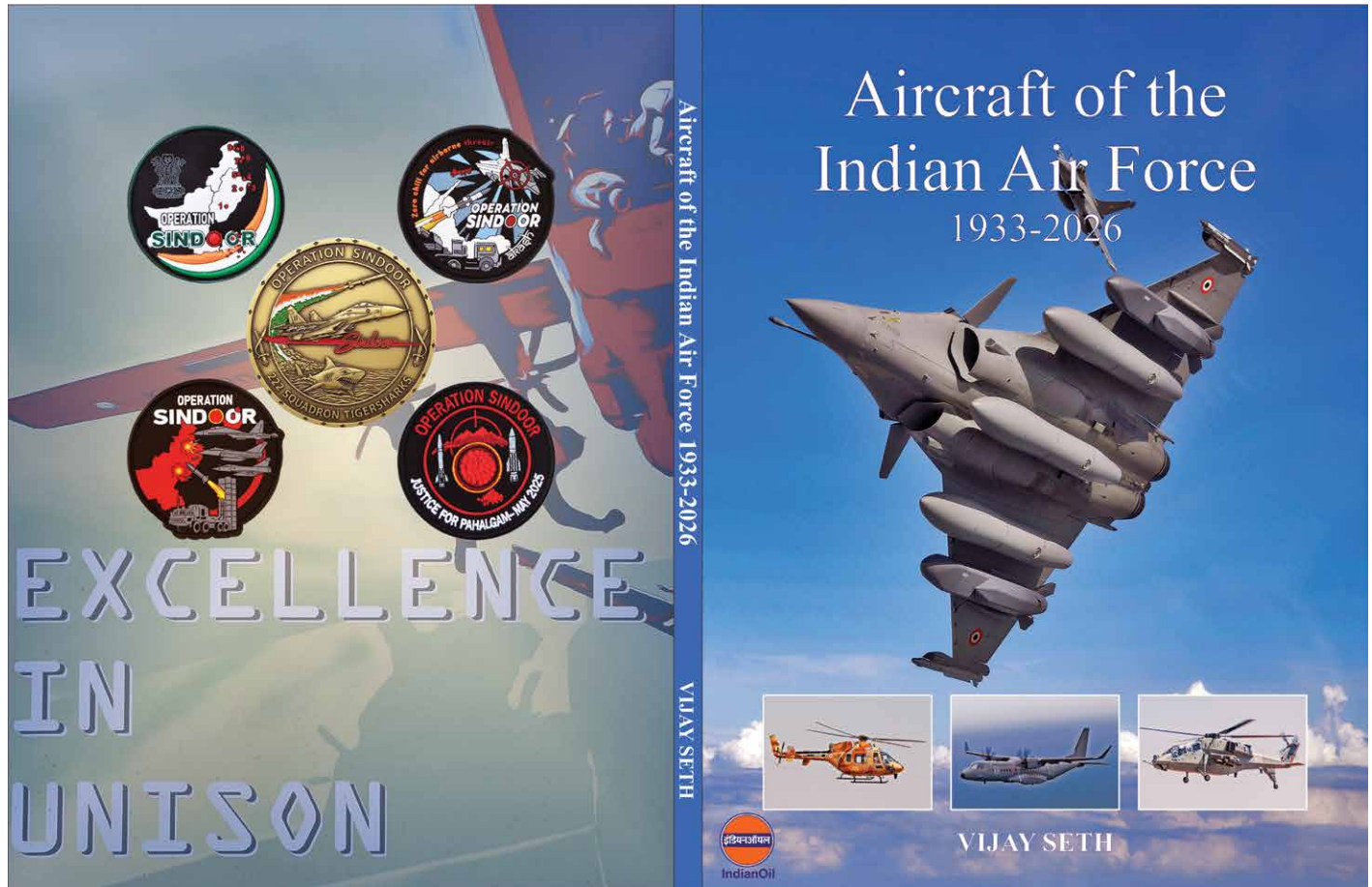
**Article by
Jai Samota**



Book review

Beyond the Horizon: A Visual History of India's Air Dominance

Reviewed by Chaitali Bag, Executive Editor, I A & D



Vijay Seth's 'Aircraft of the Indian Air Force 1933–2026' is far more than a catalogue of machines; it is a sweeping historical narrative that mirrors the rise of India's air power from its tentative colonial beginnings to its emergence as a technologically sophisticated and globally engaged force. Published at a time when Indian

military aviation approaches its centenary, the book feels both timely and deeply reflective.

The work begins by tracing the origins of aviation in India to the post–World War I era, when RAF aircraft began operating in the North–West Frontier Province. Indians initially entered the system as officers and hawai sepoys, with sharply defined roles: officers trained to fly, and sepoys to maintain the machines. From these modest beginnings, Seth charts the consolidation of air power during World War II, when Indian personnel distinguished themselves under British command, earning 22 Distinguished Flying Crosses.

The transition to independence brings a shift in tone and purpose. The Royal Indian Air Force, soon to become the modern Indian Air Force, proved its mettle during the 1947 conflict in Kashmir, defending a nascent nation under immense strain. Seth presents these early decades not just as military history but as a story of resilience, sacrifice and institutional identity.



One of the book's greatest strengths is its ability to balance technical detail with human narrative. The evolution of aircraft from the Westland Wapiti to the modern Airbus C-295 is meticulously documented yet never feels dry. Instead, each aircraft becomes a marker of technological progress and strategic necessity. Seth skillfully walks the reader through transitions: from wood and fabric airframes to piston engines, to jets and ultimately to supersonic and network centric warfare platforms.

The author's personal recollections add a unique layer of intimacy. His childhood memory of seeing the diminutive Folland Gnat after the 1971 war, contrasted with today's imposing Sukhoi Su-30MKI, encapsulates the dramatic growth of Indian air capability. His long career documenting the Air Force, influenced by his father's role during the historic events of 1971, lends authenticity and emotional depth to the narrative.

Equally compelling is the book's coverage of contemporary developments. Seth highlights the induction of advanced platforms such as AWACS, air-to-air refuellers, and indigenous systems like the HAL Tejas and HAL Prachand. These additions symbolise India's push toward self-reliance and modern warfare readiness.

A standout feature of this edition is its inclusion of recent strategic developments such as Exercise Tarang Shakti. Seth presents this multinational exercise as a landmark moment, showcasing India's growing defence diplomacy and operational interoperability. With participation from numerous global air forces and the deployment of aircraft such as the Rafale, F-16 and Eurofighter Typhoon, the exercise reflects India's rising stature on the world stage.





The emphasis on indigenous systems during the exercise also reinforces the nation's commitment to Atmanirbharta in defence.

The chapter on 'Milestones of the Indian Air Force' is one of the most compelling sections of the book, presenting a sweeping chronicle of the Indian Air Force's evolution from its earliest aviation experiments in pre-Independence India to its emergence as one of the world's most capable air arms. Rich in detail and meticulously researched, the chapter captures defining moments such as the establishment of the first military flying school at Sitapur in 1913, the formation of No. 1 Squadron in 1933,



the heroic contributions of Indian pilots during World War II, and the transformation of the Royal Indian Air Force into the modern Indian Air Force after independence. The narrative vividly highlights landmark achievements, including the induction of India's first jet fighters, pioneering high altitude operations in Ladakh and Siachen, decisive air campaigns during the 1965, 1971 and Kargil conflicts, humanitarian and peacekeeping missions abroad and the induction of cutting edge platforms such as the Mirage 2000, Su-30MKI, Rafale and Tejas. What makes the chapter especially engaging is its ability to combine operational history with stories of courage, innovation





and national pride, making it not merely a timeline of aircraft and events, but a tribute to the men and women who shaped Indian military aviation across more than a century.

The bibliography section of 'Aircraft of the Indian Air Force' is far more than a routine listing of references; it stands as a valuable archival guide to the vast literature on Indian military aviation. Carefully curated and remarkably extensive, it brings together squadron histories, biographies of legendary air warriors, operational studies of major wars, technical works on aircraft, and commemorative publications spanning decades of Indian Air Force history. The inclusion of seminal works such as *The Eagle Strikes*, *History of the Indian Air Force*, *Saber Slayers*, *Unknown and Unsung*, and *Guardians of Indian Skies* reflects the author's deep engagement with both scholarly research and service history. Particularly impressive is the balance between official Air Force publications, rare squadron chronicles and personal narratives, which collectively provide readers and researchers with pathways for deeper exploration into the evolution of Indian air power. This exhaustive bibliography enhances the credibility of the book and underscores its importance not only as an illustrated aircraft compendium, but also as a serious reference work for aviation historians, defence enthusiasts and students of military history.

The book's illustrated format greatly enhances its appeal. Rich imagery, supported by contributions from aviation experts and senior officers, transforms it into both a visual archive and a scholarly reference. Each page serves as a snapshot of a moment in time, and together they narrate the story of an institution that has become a cornerstone of India's security framework.

Ultimately, 'Aircraft of the Indian Air Force 1933–2026' succeeds as both a document and a tribute. It celebrates not only the machines that dominate the skies, but also the engineers, pilots and visionaries who brought them to life. Seth reminds us that every aircraft represents a leap of imagination and determination.



For aviation enthusiasts, historians, and general readers alike, this book offers a compelling journey, one that captures the spirit of a force committed to its enduring motto: "Touch the Sky with Glory."



Vijay Seth, Founder and Managing Trustee (Aerospace Heritage Trust) and Author & Publisher of Aircraft of the Indian Air Force 1933–2026, can be contacted at: aerospaceheritagetrust@gmail.com

25 Years Back

From Vayu Aerospace Review Issue IV/2001

India and Russia sign major defence co-operation protocol

At Moscow on 6 June 2001 Indian Defence and Foreign Minister Jaswant Singh and Russian Deputy Prime Minister Ilya Klebanov, also responsible for defence industries and arms exports, signed a military protocol following conclusion of the first meeting of the Indo-Russian Inter-Governmental Commission.

An Indo-Russian 5th generation fighter?

As part of the protocol signed at Moscow on 6 June 2001 was the agreement to jointly develop a "fifth generation fighter". Inclusion of this subject in the various matters expected to be finalised took most defence observers and analysts by some surprise and, according to Moscow based sources, the initiative came from the Indian side.

LCA first phase flight testing completed

The Aeronautical Development Agency (ADA) have announced a major milestone achieved for India's Light Combat Aircraft (LCA), "the world's smallest light weight supersonic fighter", which completed its first block of flights ahead of schedule on 2 June 2001.

Fighters for carrier

Even though the Russians have assumed that the Indian Navy has little choice as to the selection of an aircraft for the Admiral Gorshkov (but to go in for the navalised MiG-29), it is learnt that evaluation is contemplated on other potential carrier borne fighters, including the Su-33, the Rafale M and "navalised" Gripens and Typhoons.

Russian officials smarting over naval criticism

According to media reports from Moscow, repeated in New Delhi, Russian officials are said to have taken strong exception to statements made by senior Indian naval officers regarding the purchase of defence equipment and spares from Russia. Select briefings were held for the Indian media after the Tehelka expose, and organised by the Information Consultant to the Defence Ministry, Mr. BG Verghese.

Agni II IRBM into series production

An official announcement was made on 31 May confirming series production of the Agni-II intermediate range ballistic missile (IRBM) at the state owned Bharat Dynamics Limited facility at Hyderabad. Defence Minister Jaswant Singh told the Parliamentary Consultative Committee on Defence that the 2,500 km range missile would be inducted into the Armed Forces during 2001-02.

Indian CAS visits China

Air Chief Marshal Anil Tipnis, CAS of the IAF, accompanied by senior officers from the Service, officially visited China during the last week of May. He was given comprehensive briefings by the PLA Air Force Commander General Liu Shun Yao on the PLAAF's mission, organisation and focus.

Strong Chinese reaction to MoD report

Just after the Indian and Chinese Air Chiefs had expressed bonhomie, Beijing reacted sharply to New Delhi's charge of a Chinese military build-up and termed as "irresponsible" India's objection to the "normal" military cooperation between China and Pakistan.

Indo-Russian supersonic cruise missile "BrahMos"

As reported subsequently from Moscow, referring to the successful flight testing of the "PJ-10" supersonic cruise missile, the Indian Ministry of Defence at New Delhi have officially acknowledged that on 12 June 2001, at 1015 hrs, such a missile known as the "BrahMos" was, launched at the interim test range at Chandipur.

India-Israel defence co-operation discussions

Within six weeks of the agreement signed between India and Russia on various defence and aerospace programmes, comes an agreement between Israel and India, signed at Tel Aviv on 16 July 2001, under which the state owned Israel Aircraft Industries (IAI) will transfer technology know how for co-production of various systems by state owned HAL.

Indian AWACS: Israel's Phalcon, Russia's A.50Eh1

The long desired Indian requirement for an airborne warning and control system, is likely to be met by a joint programme with HAL also involved in the industrial programme where three Israel Aircraft Industries (IAI) Phalcon systems will be integrated with the Beriev A.50 (modified Ilyushin Il-76 transport).

Israel and the Lakshya

Even as India and Israel are discussing various air, land and sea based weapon systems, the Israeli armed forces have evinced much interest in the ADE developed, HAL manufactured Lakshya pilotless target aircraft (PTA). ➡

Much ado about nothing?

On 2 June 2026, at their Graduation Ceremony, an Army pilot proposed to his girlfriend in front of a helicopter post the graduation; this romantic surprise created waves on social media as well as mainstream media (mostly positive but enough negative ones too). Dressed in his ceremonial military uniform, the newly commissioned pilot Indian Army Aviation Captain Bharat Bhardwaj walked onto the tarmac, knelt before Arushi and proposed with an engagement ring.

As Ritu Singh from NDTV reported: A heartwarming proposal at an Indian Army Aviation graduation ceremony has captured the internet's attention, with videos of the moment spreading widely across social media. Indian Army Aviation Captain Bharat Bhardwaj, after completing his flight training at the Combat Army Aviation Training School (CAATS) in Nashik, Maharashtra, proposed to his girlfriend, Arushi, surprising her. The memorable moment took place on 2 June 2026, shortly after the passing out parade and aviation display marking the completion of the training programme. Having achieved a major professional milestone, Captain Bhardwaj chose the occasion to celebrate a personal one as well. Dressed in his ceremonial military uniform, the newly commissioned pilot walked onto the tarmac, knelt before Arushi and proposed with an engagement ring. An Army helicopter parked nearby provided a dramatic backdrop to the occasion. Caught completely by surprise, Arushi accepted the proposal as family members, fellow officers, instructors and guests erupted in applause and cheers.

Videos of the proposal quickly gained traction online, with many viewers praising the unique combination of military achievement and romance. The footage showed the emotional exchange unfolding amid the celebrations following the graduation ceremony. Social media users described the proposal as something out of a film, with many saying the timing made the moment even more special. Others applauded the young officer for marking one of the biggest achievements of his career by sharing it with the person he loves, and congratulated the couple.

Some were not impressed and criticised the event. One person said it was a highly disciplined institute with a passing out parade and officers in uniform, and then going down on one knee for a proposal felt inappropriate. Another person said that Army Aviation School has great value, ethics, and history, and felt this should have happened outside the premises.

Lieutenant General Kanwal Jeet Singh Dhillon, a retired General Officer of the Indian Army had a few words to say on X/Twitter @TinyDhillon, "You want the young officer to sacrifice his life for the love of the Nation, but you don't want him to express his love for his fiancée. In the Army we say 'Youngster nahi karega, toh kaun karega'. If you cannot find a fault in his professional capabilities, don't



(Video grabs from ANI)

do this nuktachini for such a pure gesture of love and belonging. Military equipment has been on display during many 'Know your Army' exhibitions around the country. The students and non-military personnel have clicked pics with it showing pride and love for the Army. So, please don't bring in the national security angle into this. Let the young soldier do his national duty with pride and honour. Jai Hind".

Shiv Aroor @ShivAroor on X said: Only thing offensive about this photo is the Cheetah copter. Uncles/incels/wannabes should be furious over how the Army has failed to replace Cheetahs for 20 years! Last month, a Maj Gen had a narrow escape in a crash. But no, they'll fulminate over young love in a new world.

@kaeshour on X said, "An Indian lady in love with an officer in the Indian army, who being a gentleman asked her hand in marriage after the passing out parade, and this whole episode somehow riled up some babus and busybody uncles".

@dmuthuk on X said: This photo would attract more talent to our army than all campaigns. I believe no action should be taken against the officer. Infact this is the kind of thing we should officially do to attract current generation into defence.

@TheRealDharm on X said: Two major milestones in one day Captain Bharat Bhardwaj graduated from the Combat Army Aviation Training School in Nashik and immediately went down on one knee to propose to his girlfriend, Arushi. Congratulations to the lovely couple as they begin their journey together.

@TheGrayOperator on X said: Uniform is not a celebrity costume. This debate is being framed wrongly. A young officer's personal happiness is not the issue. Everyone respects that. The issue is whether a public act in uniform, amplified by media, fits the discipline and restrictions of military service. The Army itself has always said soldiers are not civilians. They live under different rules, different conduct standards and different limitations. Gen Bipin Rawat also reminded the country that the uniform comes

with restrictions. So we cannot say “Army is different” when seeking respect, protocol and special treatment, and then say “why not like celebrities” when discipline is questioned. A soldier in uniform cannot become a media moment without clearance. If rules were broken, action should follow. Justifying it today may create a precedent tomorrow. Love is personal. Uniform discipline is institutional. The two should not be confused.

@shreyadhoundial on X said: The officer should have respected decorum, as it was his passing out parade and

he was in uniform. This was not the appropriate time for all the drama; he could have done it quietly.

@Gen_RajShukla on X said: The Army is about grand ethos and free thinking, not petty rules. Let’s not make this beautiful video a big issue.

Comment from the Vayu Aerospace Review Editor: While we do not want to get into this debate any more, all we can say is that for every 10 positive reviews we have seen on this episode, there has been 1 negative one. Are the authorities going to take note of the public support or...?

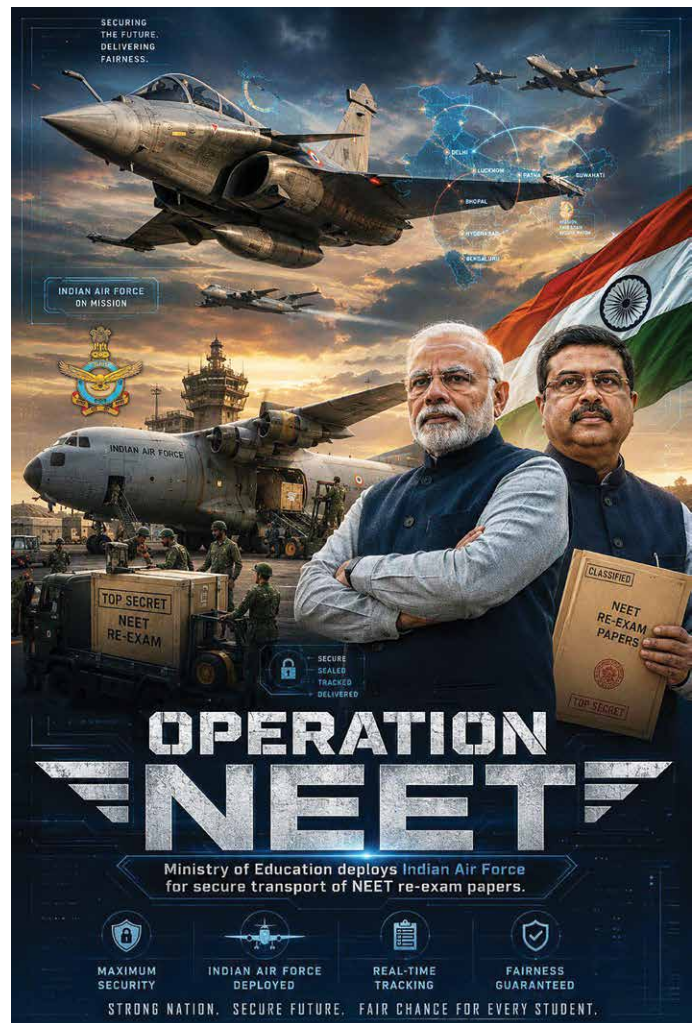
Selfie of the year?

On 20 May 2026, an Indian Army Cheetah helicopter crashed in the Tangste region in Ladakh. The helicopter was carrying three Army officers, including Major General Sachin Mehta, General Officer Commanding of the 3rd Infantry Division. All three survived with minor injuries. Quoting The Eurasia Times, “They walked away from the wreckage in high spirits, as seen in the selfie. The crash drew attention to the Indian Army’s aging fleet of around 350 Cheetah and Chetak helicopters. For over 20 + years, the Indian Army has been seeking replacement of the 1960s vintage helicopters manufactured in India by HAL”.



Fiasco in the making?

On 29 May 2026, the government announced the involvement of the defence forces to manage logistics and transportation for the NEET-UG 2026 re-test. This measure followed the cancellation of the original examination after an alleged question paper leak. A high level meeting was held at the residence of Defence Minister Rajnath Singh and attended by Education Minister Dharmendra Pradhan and officers from the Indian Air



Force (IAF). According to officials, a proposal had been prepared to deploy the IAF to provide transportation and logistics support to securely move question papers from printing presses to examination centres across the country. The internet, social media and mainstream media exploded with incredulity and memes.

The backlash was inevitable. While officials view this as an ultimate fail-safe, the proposal has faced strong criticism. Veterans and critics argue that utilising military resources for civilian examination duties misuses defence personnel, distracts from the IAF’s core duties and fails to address the root issue of internal NTA corruption.

Tale Spin



AVM Manmohan Bahadur (retd) in a piece written for The Print said: The primary task of the Indian Armed Forces is to guard the nation's sovereignty. While this is a given, there is another duty they perform — 'aid to civil power', when asked to do so. India's citizens have seen the forces accomplish these duties with aplomb. But, there are very many requests that come their way that defy logic and common sense — and sometimes makes one wonder whether the missions and roles of the Armed Forces are understood correctly.

A brilliant take was from AeroKnottyUncle @iflytb20 who said: Maybe they can bring back the Gnat and call it the Gneet!

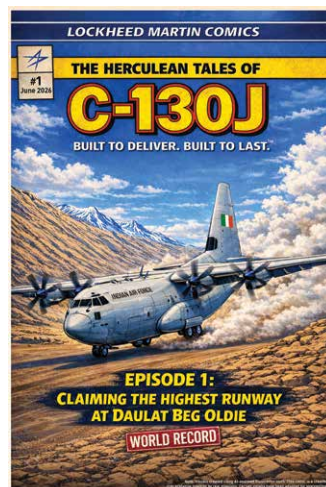
@shiv_cybersurg said: The upgraded Su-30 could have fired paper bundles straight into the exam hall.

Vivek @Mallufideintent said: Mitron, what do you call the Air Force pilot who will transport examination papers? Test Pilot!

Other NEET jokes: The Army guy said—I will have it on the rocks, Navy guy—with water only, IAF guy—Give me NEET!!! That's how they got NEET.

Happiness!

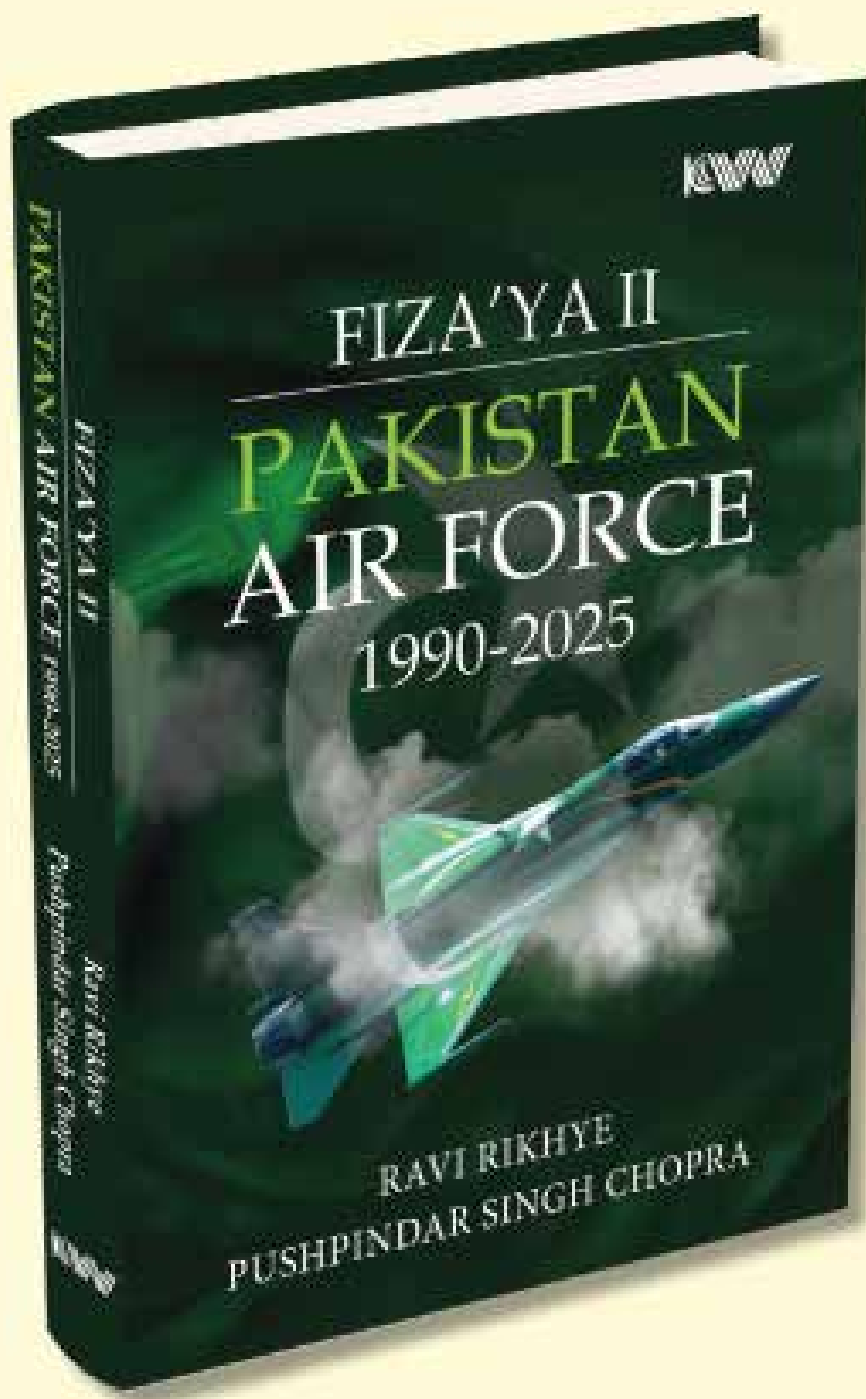
A cute cartoon from Lockheed Martin India (X @LMIndiaNews) was doing the rounds and we loved it! The tweet said, "Impossible is where the C-130J story begins. Presenting the first edition where the IAF and C-130J set a world record by landing at the highest runway in the world at Daulat Beg Oldie. We are bringing you tales of the mighty C130J, flying



where others don't, won't & can't". We want more comic strips please!



Afterburner



This is a long-delayed follow-up to *Fiza'ya: The Pakistan Air Force 1947-1990*, by Pushpinder Singh Chopra and Ravi Rikhye. The delay was occasioned by Ravi's departure in 1989 for home in the US, and then the unfortunate and much-too-early death of Pushpinder Singh.

The book covers the PAF 1990-2025; its successes and failures; and particularly its orders of battle during this period. It covers PAF operations, modernisation, and the growth of Pakistan Air Force co-operations with a variety of allies and like-minded nations. The book particularly emphasises the growth of Pakistan-China air nexus.

Though direct comparison with the Indian Air Force is avoided, it becomes clear meanwhile India has failed in its air modernisation to the point it is barely superior to the PAF as opposed to the former's historic 3-1 superiority. Factor in the rise of China as a co-belligerent against India, and the salient point of this book is India is totally outclassed in the air.

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