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**NASA ASTRONAUTS SUNITA WILLIAMS AND BARRY WILMORE LAND BACK ON
EARTH AFTER AN UNPLANNED 286-DAY MISSION TO THE INTERNATIONAL
SPACE STATION, THAT EVOLVED INTO AN EXTRAORDINARY TEST OF HUMAN
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NASA Astronaut Sunita Williams' space odyssey of an unplanned 286 days in space shows that space travel, even after 25 years of continuous International Space Station (ISS) operation, is still not entirely safe and predictable

(Cover Photo: SpaceX / X)

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The news from Pahalgam has left the entire country stunned. It's heartbreaking beyond words, and like others, we are struggling to process the pain and loss.

Our heart goes out to the families who are grieving today. We fully stand behind the steps our government is taking to ensure those responsible are held accountable.

PAHALGAM INCIDENT HAS TAKEN OUR NATION BY SURPRISE.

Shaking every Indian by heart. While we remain completely speechless for those who lost their loved ones, we very much stand with all the key decisions being taken by Government of India, towards punishing the perpetrators.

All fingers point towards Pakistan and their state sponsored terror groups as the instigators. While the world has come out to condemn the attack and support India, all measures economic, political and military should be exercised to give a long lasting reply so that the terrorists, the terror groups and their supporters do not even dream of such misadventures in the future. We have a thought piece by Air Marshal R.G.K. Kapoor (Retd) on the options available to the Indian government for a hard and calibrated response.

The fact remains that unfortunately, currently India is surrounded by hostile neighbours who continue to take advantage of our policies and largesse. India had launched Operation Brahma, a humanitarian assistance and disaster relief (HADR) mission, to deliver critical supplies, medical teams, and rescue personnel to the regions affected by a massive earthquake in Myanmar. The military transport aircraft deployed by IAF for delivering the aid came under attack with GPS spoofing in Myanmar airspace, thought to be linked to Chinese enabled systems, given Beijing's advanced electronic warfare capabilities and presence in the region. GPS spoofing is increasingly common in conflict zones but these were humanitarian missions for the relief of the local population!! Air Marshal Anil Khosla (Retd) reports on the incidents and how IAF still managed to accomplish the missions.

Our cover story, penned by Ayushee Chaudhary, dives deep into the extraordinary saga of NASA astronauts Sunita Williams and Barry "Butch" Wilmore, whose originally short mission aboard Boeing's Starliner unexpectedly evolved into a 286-day odyssey in orbit. Sunita William, due to her Indian connect, elicited a huge support from Indians, including that from Prime

Minister Narendra Modi for her safe return. This issue examines how this mission became a profound test of human endurance, engineering precision, and the unpredictable realities of commercial spaceflight.

BAOA recently organised its conference that brought together industry experts, policy makers, aviation leaders, and stakeholders to deliberate and chart a strategic roadmap for the sector's future. The conference captured the pulse of India's business aviation sector—highlighting key discussions on policy reform, innovation, and sustainable growth as stakeholders chart a roadmap toward a "Viksit Bharat." The conference got a further boost by the active participation of Naveen Jindal, an Industrialist, Member of Parliament (Lok Sabha) and a huge proponent of Business Aviation in India; and Faiz Ahmed Kidwai, Director General of the DGCA India. Manish Kumar Jha details the proceedings of the Conference in this issue.

Over the last six decades Rolls-Royce has become the world's leading engine supplier in business aviation, powering some of the largest, fastest and longest-range business jets. In an Exclusive and exhaustive interview, Lindsey Stuss Gillen, Vice President, Sales & Marketing – Business Aviation explains on how the company's innovative maintenance programme, CorporateCare® Enhanced, continues to reshape the post-sale support ecosystem for high-performance business aircraft.

*We at SP's reiterate our commitment and our services to our Nation.
Jai Hind!*



JAYANT BARANWAL
PUBLISHER & EDITOR-IN-CHIEF



SUNITA WILLIAMS, STARLINER, AND THE STATE OF HUMAN SPACEFLIGHT

The extended Starliner mission is likely to go down in history for testing technology, teamwork, and tenacity in equal measure

By AYUSHEE CHAUDHARY

PHOTOGRAPH: NASA / KEEGAN BARBER

WHEN NASA ASTRONAUTS SUNITA WILLIAMS AND BARRY “Butch” Wilmore lifted off aboard Boeing’s Starliner spacecraft on June 5, 2024, the mission was planned to be a straightforward 8-day flight—a crucial validation for Boeing’s long-awaited commercial crew capsule. Instead, their planned brief visit extended into a 286-day mission in low Earth orbit, evolving into an extraordinary test not just of engineering, but also of human resilience, adaptability, and the realities of space exploration in the commercial era. What transpired was a reminder that space travel—even after 25 years of continuous International Space Station (ISS) operation and a decade of private sector partnerships—is still not entirely predictable.

THE LONG PATH TO STARLINER’S FLIGHT

The Boeing CST-100 Starliner was developed under NASA’s Commercial Crew Programme to provide the agency with a second US-built option for transporting astronauts to and from the ISS—complementing SpaceX’s Crew Dragon. While the programme promised flexibility and redundancy, Starliner’s route to its first crewed launch was fraught with technical challenges and setbacks.

Its first uncrewed flight in 2019 was marred by software issues that prevented the spacecraft from docking with the ISS. A second, partially successful, uncrewed mission in 2022 improved outcomes but didn’t fully redeem the system. Multiple technical problems—including software bugs, corrosion in valves, and propulsion system issues—troubled the spacecraft’s development.

As launch day neared in 2024, new hurdles emerged. A malfunctioning valve in the Atlas V rocket’s upper stage, paired with a helium leak in Starliner’s own systems, forced delays. In early May 2024, Wilmore even returned to Houston for additional simulator training as engineers worked through the growing list of concerns. After redesigns and scrutiny, the launch finally took place on June 5, 2024, following exhaustive safety reviews.

MAKING HISTORY, THEN FACING HISTORIC UNCERTAINTY

The spacecraft lifted off from Cape Canaveral, carrying veteran astronauts Williams and Wilmore. For Williams—already with 322 days logged in orbit—this mission carried historic weight. She became the first woman to pilot the maiden crewed flight of a new orbital spacecraft. Ahead of the launch, she said, “I feel extremely proud to represent not only NASA and the US but also the many young girls and Indian-Americans who look to the stars and dream.”

After a 26-hour journey, Starliner docked with the ISS on June 6, 2024. The flight, officially known as the Crew Flight Test (CFT), was intended to demonstrate the Starliner’s capabilities and certify it for regular crew transport. Williams and Wilmore were assigned to test life support systems, communication hardware, manual controls, and the spacecraft’s automated docking mechanisms. They were expected to return to Earth just over a week later. However, the technical snags were scripting another tale.

Within days, Starliner exhibited multiple failures: four of its 28 reaction control thrusters malfunctioned, reducing the vehicle’s ability to steer itself in orbit or during reentry. Additionally, engineers identified five helium leaks in its propulsion system—a major safety risk, as leaks could disrupt the spacecraft’s ability to execute emergency aborts or stable flight.

NASA and Boeing opted to postpone the return trip, deciding that sending the astronauts home in a potentially



(TOP) A UNITED LAUNCH ALLIANCE ATLAS V ROCKET WITH BOEING’S STARLINER SPACECRAFT ABOARD; (ABOVE) NASA’S SPACEX CREW-9 MEMBERS POSE TOGETHER FOR A PORTRAIT.

compromised capsule was too dangerous. A decision was made to leave Starliner docked at the ISS indefinitely, and the spacecraft was later returned empty in September 2024.

“We could have come home if we absolutely had to,” Wilmore said in a later briefing. “But it wouldn’t have been pretty. NASA made the right call—safety first, always.”

ABOARD THE ISS

What began as a brief test evolved into an extended stay. Though Williams and Wilmore adapted quickly, transitioning from visitors to active, full-time ISS crew members. “Living in space is never really ‘routine’, but we adjusted our mindset and got to work,” Williams said from orbit. They were integrated into daily ISS operations—conducting scientific experiments, assisting with maintenance, and supporting new arrivals.

One of the experiments they contributed to was the Plant Water Management study, focused on understanding how capillary action can help sustain plant growth in microgravity—vital for future deep-space missions, including Mars. While their extended presence allowed NASA to complete additional research, it also put strain on station resources, as the ISS was not originally provisioned for their prolonged stay.

A DISPLAY OF RESILIENCE

Extended missions in microgravity come with serious health



(TOP) SUPPORT TEAMS WORK AROUND A SPACEX DRAGON SPACECRAFT AFTER IT LANDED WITH NASA ASTRONAUTS; (ABOVE) NASA ASTRONAUT SUNITA WILLIAMS LANDING BACK ON EARTH AFTER SPENDING 286 DAYS IN SPACE.

implications: bone density loss, muscle atrophy, fluid redistribution affecting vision, and increased radiation exposure. Though NASA's daily exercise regimens help mitigate these effects, a 9-month stay pushes human biology to the edge.

After landing back, both astronauts undergo a 45-day rehabilitation programme on Earth, managed by NASA's Astronaut Strength, Conditioning and Rehabilitation (ASCR) team. The programme is split into three phases—starting from basic ambulation and muscle rebuilding, progressing to proprioceptive and cardiovascular conditioning, and eventually to full functional development. Each astronaut's routine is customised based on mission role, test data, and health needs.

THE DELAY AND THE FINAL TOUCHDOWN BACK HOME

Starliner's complications were far from straightforward — and resolving them wasn't either. Engineers at Boeing and NASA spent months running simulations, conducting tests, and verifying fixes for the helium leaks and thruster issues. With astronauts onboard, such troubleshooting couldn't happen in real time. Adding to the delays was the postponement of the Crew-10 mission, originally planned to relieve Williams and Wilmore on the ISS. This further pushed back their return timeline. Ultimately, NASA opted for a practical and safe alternative: bringing the astronauts home aboard SpaceX's Crew Dragon — a vehicle with a solid performance record and

proven safety. "This wasn't about company preference — it was about mission assurance," said former NASA Administrator Bill Nelson. "Our priority is always the safe return of our astronauts."

After an extended wait and intense public interest, Sunita Williams and Butch Wilmore finally returned to Earth on March 18, 2025 aboard SpaceX's Crew Dragon. They splashed down in the Atlantic Ocean aboard the Crew Dragon capsule named *Freedom*, marking the end of their unexpectedly long mission. Freedom departed the ISS carrying not only Williams and Wilmore but also NASA astronaut Nick Hague and Russian cosmonaut Aleksandr Gorbunov.

During her extended mission aboard the ISS, Prime Minister Narendra Modi reached out to Sunita Williams with a heartfelt letter, praising her courage and resilience. He lauded her as a source of inspiration not only for India but for the world, and invited her to visit the country upon her return. After her safe landing, Modi took to social media to welcome her back, writing, "The Earth missed you. Your journey inspires not just a nation, but the entire world." His words reflected the immense pride India takes in Williams, whose roots trace back to Gujarat.

"I caught sight of the Himalayas again from space," Williams said after landing. "Still as awe-inspiring as ever. I can't wait to see them in person again."

LESSONS FROM THE MISSION

Reflecting on their extended stay, both astronauts acknowledged shared accountability for the mission's issues and expressed confidence in Starliner's future. "I'll start by pointing the finger at myself," said Wilmore. "There were questions I could have asked that might have made a difference." He added, "We all own this." Despite the delays, both Wilmore and Williams reiterated their belief in the spacecraft's potential. "We will fix every issue. Starliner will work. We will make it so," Wilmore affirmed.

The Starliner mission brought to light the rigorous demands of commercial crew vehicles — even those built through NASA partnerships. It served as a stark reminder that human spaceflight is fraught with risks, regardless of how routine launches may seem today. Although Starliner's troubles don't mark its demise, they highlight the challenges of simultaneous innovation and cost-efficiency in spaceflight. Crew safety calls for built-in redundancies, extensive testing, and ample time. That SpaceX could step in to bring the astronauts back validated NASA's decision to fund more than one provider. Had Starliner been the sole option, the outcome could have been far more uncertain. As commercial spaceflight grows, and ambitions stretch to the Moon and Mars, the lesson remains clear: space is unforgiving. Automation can fail, and propulsion systems can go awry.

Even astronauts with deep experience like Williams and Wilmore must depend on sound judgment, engineering support, and resilience to make it through. The extended Starliner mission was never meant to become a record-setter, but it may go down in history as one of the most illuminating. It tested technology, teamwork, and tenacity in equal measure. For commercial space to thrive, stories like these are essential—not just to celebrate the wins, but to learn from the trials. And for future missions to the Moon, Mars, and beyond, Sunita Williams and Butch Wilmore's 286-day odyssey will be studied as a benchmark of human endurance and engineering evolution in the age of commercial spaceflight. [SP](#)



PRIME MINISTER NARENDRA MODI CHAIRS A MEETING WITH DEFENCE MINISTER RAJNATH SINGH, NSA AJIT DOVAL, CDS GENERAL ANIL CHAUHAN AND CHIEFS OF ALL THE ARMED FORCES

PAHALGAM ATTACK CALLS FOR HARDENED AND CALIBRATED RESPONSE

India needs to play a long game to punish Pakistan for Pahalgam intransigence

By AIR MARSHAL R.G.K. KAPOOR (RETD)

UNSUSPECTING AND HAPPILY ENJOYING TOURISTS WERE taken by surprise by unrepenting and hardened terrorists on a cool afternoon of April 22, 2025 in Baisaran meadows close to Pahalgam. In ensuing massacre, at least 26 Hindu men were brutally gunned down in front of their wailing families by a group of terrorists. Singling out Hindu men from amongst hundreds present there, lends further dastardliness to this violent act which will go down in Indian history as one of the worst acts of terrorism. The attack timing and location suggest meticulous planning and methodical execution since closest security forces were at least 30 mins away. The connivance and tacit support of Pakistan Army, ISI and local sympathisers was imprinted all over this heinous crime.

The year-on-year growth of tourism in the valley had given way to some sort of complacency. Terrorists attacking tourists in the valley was the last contingency on the minds of local population and security forces. The timing was also carefully chosen by the planners and attackers. Baisaran meadows were not guarded by security forces, they had no road connectivity for rapid police response, the Prime Minister was on a visit to Saudi Arabia and Vice President of USA was in the country. The tourist activity was picking up with upcoming school holidays suggesting return of normalcy in the valley. Lastly, the new State government was working closely with the Central government. On April 19, 2025, Omar Abdullah, the Chief Minister said "I

PHOTOGRAPH: PIB



PRIME MINISTER MODI CHAIRING A MEETING OF THE CCS AFTER THE PAHALGAM TERROR ATTACK

want to convey to the people of J&K that the progress lies in the fact that the J&K government and the Central government work together for the better future of Jammu and Kashmir.” All these developments created unease amongst the perpetrators of terrorism across the border, which reflected in the volatile speech of General Asim Munir, Pakistan Army Chief, few days before the attack.

REACTIONS TO THE ATTACK

The attack drew sharp and immediate response from across the globe. World leaders spoke to Prime Minister Modi and conveyed their support to India. Within the nation, there was palpable anger and anguish. Voices suggesting immediate response and punishment echoed from every corner.

Like, after Uri and Pulwama there is expectation of a kinetic response. In fact Prime Minister Modi, while addressing a rally in Madhubani, Bihar categorically stated that “we will identify, track and punish every terrorist and their backers and we will pursue them to the ends of the earth”. This is the strongest reaction from the Prime Minister after the three major terror attacks of Uri, Pulwama and Pahalgam. It is the clearest expression of the resolve and likely extent of response from India.

Entire world has condemned the abhorrent act in strongest terms. India has received unequivocal support with Director of National Intelligence USA, Tulsi Gabbard assuring India of full support and help in bringing the attackers to justice. This is a noteworthy statement from the US administration. American assistance would be immensely helpful in augmenting Indian intelligence capability in tracking down the terrorists. This would also provide the proof to the world of the complicity of Pakistani establishment, and lend legitimacy to an Indian response.

In the immediate aftermath of killings, President Trump called Prime Minister Modi and said that “the United States

stands with India in its fight against terrorism and offered all possible support.” However, on April 26, 2025, President Trump said “I am very close to India, and I’m very close to Pakistan, and they’ve had that fight for a thousand years in Kashmir. There have been tensions on that border for 1,500 years. It’s been the same, but I am sure they’ll figure it out one way or the other”. This statement can be viewed two ways, firstly, that the USA wants to keep itself out of this situation, secondly, the USA has given free hand to India to do what it deems appropriate. The difference this time is that, except for UN, most nations have not advised restraint or dialogue.

ACTIONS BY INDIA

India responded rapidly to this act of terror. The Prime Minister presided over the meeting of Cabinet Committee on Security after cutting short his visit to Saudi Arabia. Indian government immediately announced numerous measures against Pakistan to convey Indian resolve that business can’t continue as usual till Pakistan unequivocally stops aiding and abetting terrorism. Holding Indus Waters Treaty in abeyance being the most significant step with wide ranging ramifications. Closing Atari-Wagah border and immediate return of Pakistanis visiting India also indicated that it was the entire Pakistani nation that has to bear the consequences of the actions of a rogue army.

All available inputs indicate that, all options are on the table and this time the response will be fiercer. Domestically, the counter terror operations within the valley gained momentum. Local supporters and terrorists are being apprehended and their houses brought down to send a strong signal to others in the valley.

India has suffered innumerable casualties from acts of terror over the last 35 years. The intensity has ebbed and flowed. In recent times, the terrorists have targeted the security forces,

migrant workers and Hindus visiting or working in the valley. Historically, Indian response has been subdued/measured till the surgical strike after Uri attack and air strike after the Pulwama attack.

THE LONG GAME

It is clear that, Indian actions have not been able to deter the Pakistan in sponsoring terrorism. Indian actions have remained tactical, short-term and episodic. These actions have produced spells of temporary peace with sub-terranean unrest and conducive environment for growth of terrorism with little indications on the ground. Now, India needs to change its strategy to achieve a permanent or a long-term solution. While one cannot guarantee zero acts of terror, it must be loud and clear to the perpetrators that the cost of any such intransigence would be punishing. A long-term strategy broken down into specific operational and tactical actions should be developed and implemented. Sustained action on multiple fronts is likely to succeed. India can sustain multitude of actions since it is a much more powerful country.

The long game should comprise of multi-dimensional, multi-domain and multi-lateral actions. Multi-Dimensional moves would encompass diplomatic, economic, military, information warfare and strategic communication measures. While a slew of diplomatic and economic measures have been announced, the government should identify more measures to cut off economic aid to Pakistan by working closely with the nations in the Middle East through Organisation of Islamic Cooperation (OIC) and Gulf Cooperation Council (GCC). Both Saudi Arabia and United Arab Emirates have come to India's support against the Pahalgam attack. Also, the measures could include:

- Declaring Pakistan as state sponsor of terrorism, garner world support to preclude any interference against military or unconventional actions by India, stopping of any military supplies to Pakistan from western nations, identify and stifle Pakistan Army businesses.
- Work closely with Russia, Saudi Arabia and UAE to curb crude oil supplies to Pakistan. Any shortage in supply of oil will pinch Pakistani population.
- Work with USA to apply strict controls on Pakistan in use of military equipment supplied by USA under foreign military assistance scheme including freeze on recent approval of \$397 million for maintaining F-16s, and tightly control their deployment and operations especially, after cessation of US operations in Afghanistan.
- Conduct concentrated information warfare against the Pakistani establishment and ISI.
- All efforts should be made to redesignate Pakistan into FATF grey list, expose corruption in various organs of Pakistani Executive and Military and how common Pakistani is suffering due to the actions of Pakistani military and political leaders.



HOME MINISTER AMIT SHAH MEETING THE FAMILY MEMBERS OF THOSE WHO LOST THEIR LIVES IN THE PAHALGAM TERROR ATTACK

- Effect of diversion of water from Indus, Jhelum and Chenab will further exacerbate the lives of common Pakistani.

Multi-Domain actions would comprise synchronised actions from the Indian military comprising Land, Sea, Air, Cyber and Space domains. Multi-Lateral actions would encompass close coordination with different countries and agencies in an effort to isolate and weaken Pakistan.

Any kinetic action is likely to draw a response from Pakistan military like, the swift retort after the Balakot strike by India in 2019. This could have escalatory effect in view of current state of relations and state of Pakistani Army. Pakistan military has already gone to heightened state of alert including some media inputs of mobilisation in certain areas. Kinetic actions could be planned to ensure escalation control is retained by India in consonance with desired long-term effects. It is important that India hits where it hurts the most, and any retaliation by Pakistan would be met with stronger response. The aim would be to impose prohibitive costs.

Sustained military activity in all three domains by the Army, Navy and Air Force would progressively drain Pakistani military's capacity to retaliate and create opportunities for a decisive kinetic strike. India could capitalise on the wide spread deployment of Pakistani army. One lesson from Ukraine has been extensive use of drones in tactical battle area and its effect on armour, which could be factored in. Judiciously calibrating actions would keep Pakistan guessing of India's real intentions. Any misadventure during this period by Pakistan would allow unfettered response from India. Latest reports indicate upsurge in cross border firing along the LoC, this can be advantageously exploited to degrade Pakistani military capability.

As time passes the intensity of outrage is likely to reduce and the voices exercising restraint would grow. The Pakistani leadership in all domains would have gone underground and the terrorist camps would have been vacated. This would prove

challenging for kinetic action against individuals or terrorist infrastructure, however, there is bound to be target rich environment otherwise.

Pakistan military has continued to build capabilities in all three domains despite its precarious economic situation, thanks to its all-weather friends, China and Turkey and the businesses run by the military. So, if India does go kinetic, which seems probable, then Pakistan is likely to be covertly supported by China and Turkey. There are reports of China moving PL-15 long range AAMs and a C-130 of Turkey landing in Karachi with military supplies (both reports being unconfirmed). These are in addition to the six Turkish C-130 aircraft which landed in Islamabad with military aid as reported in the media on April 28, 2025. Pakistan military operates lot of Chinese equipment and Turkish and Chinese UAVs. Pakistan, this time is not likely to take for granted availability of the F-16s which it copiously used during Operation Swift Retort in response to Balakot strikes by India. PL-15 provides it a long range AAM option from JF-17s and J-10CE obtained from China (About 70 PAF fighter aircraft, JF-17 and J-10CE can carry PL-15 AAMs).

The Pakistan Army presently faces multiple challenges. Its population does not perceive the army as its messiah or savior, there is growing unrest in Baluchistan, Khyber Pakhtunkhwa, Sindh and along Durand line with Afghanistan. There are reports of schism in the highest military leadership, and loss of trust in General Munir. Loss of credibility and deployments across the country in counter terror and counter insurgency operations can be exploited.

BUILD MILITARY CAPABILITY AND CAPACITY

The current situation along borders with China, Pakistan, Bangladesh and Myanmar should be factored in. Hitting terrorist camps which have frugal infrastructure and can be rapidly vacated will not hurt Pakistan, it would be mere signaling of capability. Progressive draining of economic support to terrorist organisations and selective time sensitive targeting of terrorist leadership would create desired effects. The fear that one could be hunted down in his own country is the preferred outcome. This can be done overtly and covertly while ensuring anonymity. India must invest in any capabilities necessary to stealthily neutralise the target in near real time without worrying too much about collateral damage. Pakistan is not like Hamas and hence we must be ready for retaliation in some form.

Along with offensive measures, strong defensive measures are also important. The present counter terrorism grid involves lakhs of uniformed personnel and intelligence agencies. Their coordination and technologies need to be strengthened. Artificial Intelligence could be incorporated in mapping routes, terrorists, their handlers, voice signatures and their likely supporters in local community.

India must build on the support received from local population after this reprehensible incident. A sense of confidence must be quickly reinstated in tourists and there should be a concerted campaign to get them back at the earliest. The administration

should demonstrate its capability in doing so by ensuring visibility and availability of uniformed personnel and closely controlling the tourist movement to places of attraction. The local goodwill earned in recent years must not be allowed to slide.

Recent changes in terrorist activities highlight the innovative approach of surprising the security forces, regularly striking where the security is thin or absent (Pahalgam is an example) and doing the unexpected. India should sustain strong security and counter terrorism posture all along LoC and in the hinterland. There should be no letup in the pressure that is being currently applied. The intelligence needs to be strengthened and higher accountability must be demanded from all concerned.

In the long game, the most important thing is “Never Forget, Never Forget”. It is important that all measures announced so far or those to be announced in future must be monitored at the highest level for implementation and whether desired effects can be quantified. This whole process could take months or years, so the entire plan should be process driven since there is every likelihood that Pakistani military and terrorist groups will lie low for some time, a distraction the nation cannot afford.

Importance of military capability and capacity can never be understated. India has faced such situations on both its borders with alarming regularity. Military capability cannot be built overnight, while diplomacy shapes the environment for favourable status in comity of nations, deterrence is provided by strong military capability. Specific capabilities should be developed or acquired to rapidly respond to such contingencies and sustain trans-border counter terrorist operations. Last one decade has been most successful for India in poverty alleviation, as India transitioned into lower-middle-income category. The defence budget has however, remained stagnant below two per cent

of GDP which adversely affects capability buildup to counter evolving threats.

CONCLUSION

The act of terror unleashed on innocent tourists in Pahalgam deserves strongest retribution. It is clear that India will not sit quiet and the response this time will be bigger and broader. Indian citizens are confident that the response will be multi-dimensional, multi-domain and multi-lateral to achieve visible end state and lasting peace and tranquility in the valley.

This time around, the retribution must not be a one-off event, a definitive change can only be expected if actions by India are sustained and strongly implemented till the accomplishment of desired outcomes. Proactive and not reactive approach is the need of the hour. Indian game plan should be executed as per its own timelines which keeps Pakistan off guard, the plan must inflict unsurmountable pain to its military and methodically dismantle its terror network. The end state would be serious degradation of the deep state in Pakistan leading to loss of sanctuary for terrorist leadership. This end state is possible if India plays the long game. SP

Prime Minister Modi categorically stated that ‘we will identify, track and punish every terrorist and their backers and we will pursue them to the ends of the earth,’ signalling India’s strongest reaction since Uri, Pulwama and now Pahalgam

IAF AIRCRAFT HACKED BUT MISSION ACCOMPLISHED

The GPS spoofing of IAF aircraft during Operation Brahma was a stark reminder of modern aviation’s evolving threats

By AIR MARSHAL ANIL KHOSLA (RETD)

ON MARCH 28, 2025, A DEVASTATING 7.7-MAGNITUDE earthquake struck Myanmar, claiming over 3,649 lives and injuring more than 5,000 people. In response, India launched Operation Brahma, a humanitarian assistance and disaster relief (HADR) mission, to deliver critical supplies, medical teams, and rescue personnel to the affected regions. The IAF deployed six military transport aircraft, including C-130J Super Hercules and C-17 Globemaster, to ferry 625 metric tonnes of aid to cities such as Yangon, Nay Pyi Taw, and Mandalay.

THE INCIDENT

The first reported incident of GPS spoofing occurred on March 29, when a C-130J aircraft, carrying 15 tonnes of relief material from Hindon Airbase to Yangon, experienced navigation anomalies in Myanmar’s airspace. Subsequent flights reported similar issues, with sources indicating that most of the six aircraft involved in the operation encountered GPS spoofing on multiple sorties. After the initial incident, IAF pilots were briefed to anticipate such challenges, enabling them to prepare for and mitigate the risks on subsequent flights.

The IAF later clarified that a Notice to Airmen (NOTAM) issued by Mandalay International Airport highlighted the possibility of degraded GPS availability. The NOTAM warned of potential navigation issues in Myanmar’s airspace, and IAF crews were trained to operate under such conditions. Despite the disruptions, all missions were completed successfully, with no reported accidents or deviations from the planned routes. This underscores the professionalism and preparedness of the IAF pilots, providing reassurance about their capabilities in challenging situations.

GPS SPOOFING

GPS spoofing is a form of electronic warfare where false signals are broadcast to deceive a receiver, causing it to calculate an incorrect position. Unlike GPS jamming, which blocks signals entirely, spoofing manipulates data to mislead

navigation systems, potentially directing an aircraft off course. The technique exploits the weak signal strength of GPS satellites, which can be overpowered by stronger, fraudulent signals generated from ground-based or airborne platforms. GPS spoofing is increasingly common in conflict zones, where state and non-state actors deploy electronic warfare to disrupt adversaries.

Modern military aircraft, however, are equipped with additional navigation systems, such as INS, which uses gyroscopes and accelerometers to track position independently of external signals. The IAF’s prompt switch to INS ensured safe navigation, but the incident highlighted the vulnerability of GPS-dependent systems in contested environments.

MOST OF THE IAF AIRCRAFT INVOLVED IN OPERATION BRAHMA ENCOUNTERED GPS SPOOFING ON MULTIPLE SORTIES

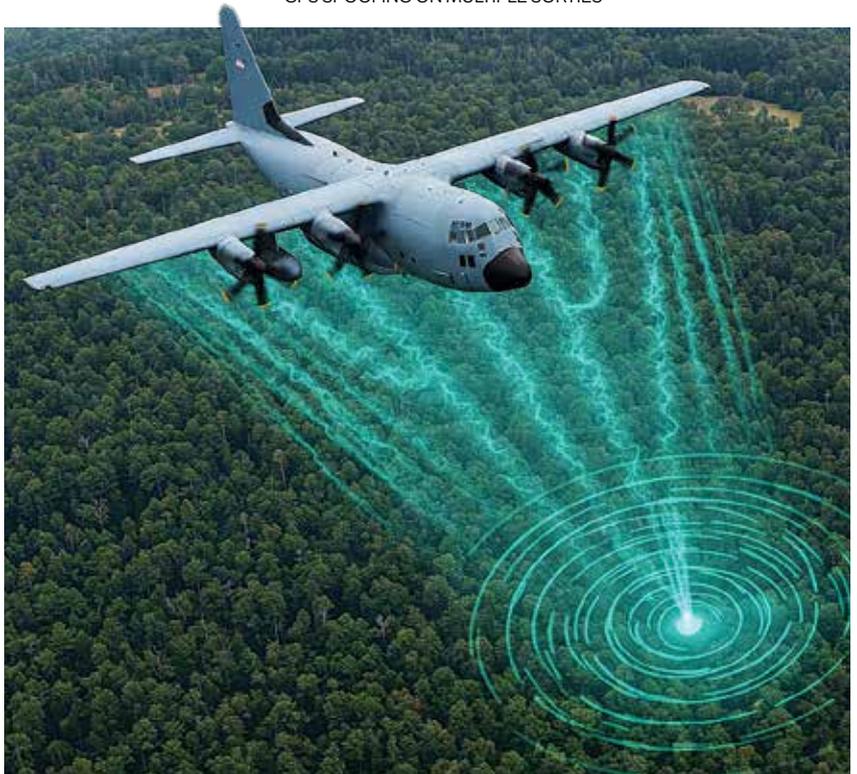


ILLUSTRATION: ROHIT GOEL

ATTRIBUTABILITY

Myanmar’s complex political landscape provides critical context for the incident. Since the military coup in 2021, the country has been embroiled in civil conflict, with the junta facing resistance from ethnic insurgent groups and pro-democracy forces. The region is also a geopolitical flashpoint, with major powers like China, India, and the United States vying for influence. China, in particular, has made significant strategic inroads in Myanmar, including infrastructure and military cooperation investments.

Some reports speculated that the spoofing may have been linked to Chinese-enabled systems, given Beijing’s advanced electronic warfare capabilities and presence in the region. The proximity of the interference to the Coco Islands, where China is suspected of developing surveillance and electronic warfare facilities, fueled these suspicions. However, attributing responsibility is difficult due to a lack of definitive evidence.

Other potential actors include non-state militant groups or regional adversaries seeking to cause disruption as a geopolitical signal. Myanmar’s airspace, described as a conflict zone, is particularly susceptible to such interference, with GPS spoofing reported as a common tactic in similar environments globally. Investigating spoofing in foreign airspace is nearly impossible due to limited access and jurisdictional constraints. Myanmar’s junta’s lack of transparency, restricted internet access, and communication controls further complicate any efforts to investigate the incident.

IAF RESPONSE AND MITIGATION

The IAF’s response to the GPS spoofing incidents was swift and effective. The pilots’ training in handling navigation anomalies allowed them to transition seamlessly to INS, ensuring the safe completion of all missions. The preemptive NOTAM from Mandalay International Airport also played a crucial role, enabling crews to anticipate and prepare for degraded GPS availability. This response highlights the IAF’s operational resilience in such challenges.

On April 14, the IAF clarified that its crews were well-equipped to operate in environments with compromised GPS signals. The statement avoided directly referencing spoofing, focusing instead on the successful execution of Operation Brahma and the robustness of IAF protocols. This measured response likely aimed to avoid escalating tensions in an already volatile region while highlighting India’s operational resilience.

The incident has sparked discussions within India’s defence establishment about enhancing countermeasures and navigation redundancies. Recommendations include installing real-time interference detection systems, conducting regular audits of navigation vulnerabilities, and advocating for international standards to counter GPS spoofing. The urgent need for global cooperation against electronic warfare is also underscored.

BROADER GLOBAL IMPLICATIONS

The Myanmar incident is part of a global surge in GPS interference, with similar cases reported near the India-Pakistan border, the Middle East, and Eastern Europe. Spoofing has affected civilian and military aircraft globally, with notable cases like the

2024 Azerbaijan Airlines crash linked to GPS disruption and widespread interference in the Baltic and Black Sea regions.

For military operations, GPS spoofing poses risks beyond navigation errors, including compromised mission security and potential airspace violations. The Myanmar incident underscores the need for robust countermeasures, such as encrypted navigation systems and alternative positioning technologies like Galileo or India’s NavIC. This highlights the importance of preparedness in electronic warfare and the need for robust countermeasures.

Civilian aviation also faces growing risks, as commercial aircraft rely heavily on GPS for navigation, raising concerns about passenger safety. To enhance resilience, the aviation industry is exploring solutions like multi-constellation receivers, which integrate signals from multiple satellite systems, and ground-based navigation aids.

Geopolitically, the incident highlights the challenges of operating in contested regions. It underscores the need for diplomatic efforts to establish international norms against electronic warfare, though enforcement remains difficult in conflict zones.

LESSONS LEARNED AND MITIGATION MEASURES

The Myanmar GPS spoofing incident offers several lessons for India and the global aviation community. First, it emphasises the importance of pilot training and redundant navigation systems, which proved critical in averting disaster. Second, it highlights the need for real-time intelligence sharing among allies to map and counter interference trends. Groups like OPSGROUP, which tracks aviation risks, could play a pivotal role in this effort.

Technologically, the incident underscores the urgency of developing spoofing-resistant navigation systems. Advances in quantum positioning, which relies on atomic clocks, and machine learning-based anomaly detection could reduce dependence on vulnerable GPS signals. India’s investment in NavIC, a

regional navigation system, offers a potential alternative, though its coverage remains limited compared to GPS.

There is also a case for a global ban on GPS spoofing, similar to existing prohibitions on laser attacks against aircraft. While such measures face resistance from states with advanced electronic warfare programs, they could set a precedent for protecting peaceful humanitarian missions. Regional cooperation, particularly within ASEAN, could also address the region’s airspace vulnerabilities, though political instability poses challenges.

CONCLUSION

The GPS spoofing of IAF aircraft during Operation Brahma was a stark reminder of modern aviation’s evolving threats. While the IAF’s preparedness ensured the mission’s success, the incident exposed the fragility of GPS-dependent systems in conflict zones. As electronic warfare becomes more sophisticated, nations must invest in resilient technologies, robust training, and international collaboration to safeguard military and civilian operations. The incident reinforces India’s role as a responsible power capable of overcoming adversity to deliver aid. Still, it also signals the need for vigilance in an increasingly contested digital landscape. SP

Despite speculation that the spoofing may have been linked to Chinese-enabled systems, IAF managed to complete all missions and needs to remain prepared for such threats in the future

EXCLUSIVE

LINDSEY STUSS GILLEN,
VICE PRESIDENT, SALES &
MARKETING – BUSINESS AVIATION,
ROLLS-ROYCE



PHOTOGRAPHS: ROLLS-ROYCE BUSINESS AVIATION

A 'PEARL' IN BUSINESS AVIATION

“Safety and quality always have been our utmost priorities. Over time we have positioned ourselves as the leading brand in the attractive large cabin market, along with leading products and technology capability,” says **Lindsey Stuss Gillen, Vice President, Sales & Marketing – Business Aviation, Rolls-Royce** in an interview with **Jayant Baranwal, Editor-in-Chief, SP’s Aviation**

Jayant Baranwal (Baranwal): Please can you take us through your journey of six decades of your association with the Business Aviation industry?

Lindsey Stuss Gillen (Gillen): From the beginning in 1958, which was marked by the first flight of the Dart-powered Gulfstream I, through to the imminent entry into service of the Pearl-powered Gulfstream G800, Rolls-Royce has followed a pioneering approach to offer its customers extraordinary engine technology and services.

Over the last six decades Rolls-Royce has become the world’s leading engine supplier in business aviation, powering some of the largest, fastest and longest-range business jets available. Today more than 4,000 of these aircraft are in service worldwide, helping companies to improve business efficiency, productivity and enabling economic growth. They offer the flexibility and connectivity required in a globalized world, fly heads of states around the globe, support humanitarian efforts or connect families by making the world a smaller place.

Baranwal: How many business jets have been powered by your engines, till now?

Gillen: Over 4,000 Rolls-Royce powered aircraft are in-service and flying worldwide today, offering the perfect combination of speed, range, size, efficiency and reliability.

Baranwal: Rolls-Royce is synonymous with the Quality. What all it takes to remain consistent with such line of expectation in today’s cost-competitive world?

Gillen: Safety and quality always have been our utmost priorities. Over time we have positioned ourselves as the leading brand in the attractive large cabin market, along with leading products and technology capability.

However, Rolls-Royce continues to create a high performing, competitive, resilient and growing business and we are on track to deliver returns above the industry average in a resilient and growing market. To achieve this, we are also further reducing unit cost.

Baranwal: What kind of efforts go into the R&D in order to remain current and absolutely relevant with the continuous evolving Business Jets industry?

Gillen: Our continued and sustainable investment in R&D is a key focus to stay competitive and keep our market-leading position. One example for this strategy is our Pearl engine family.

PROFILE: LINDSEY STUSS GILLEN

LINDSEY JOINED ROLLS-ROYCE in 2012 and is currently the Vice President, of Sales & Marketing – Business Aviation. In her role she is responsible for leading the global Sales & Marketing Team and driving growth of their aftermarket maintenance programme, CorporateCare® Enhanced.

Throughout Lindsey’s tenure at Rolls-Royce she has served in a variety of roles within Sales and Finance. Having started as a finance intern, she has held finance positions across many different sectors including Group, Defense, and Civil Aerospace. In 2018, Lindsey joined the Business Aviation team as the Sales Director supporting CorporateCare® customers in Central US. In this role she was a key player in negotiating contracts with large US fleet operators and launching new service offerings including CorporateCare® Enhanced and CorporateCare Flex.

Lindsey holds a Bachelor’s degree in accounting from Saint Mary’s College in Notre Dame, Indiana and has her MBA from Indiana Wesleyan University. She currently resides in Indianapolis, Indiana. 

The Pearl family of engines combines innovative technologies derived from Rolls-Royce’s Advance2 technology demonstrator programs with proven features from the Rolls-Royce BR700. Its pioneering technology, combined with outstanding performance, is supporting our customers Bombardier, Dassault and Gulfstream in reaching new standards in the ultra-long-range corporate jet market.

Baranwal: How many engine families do you offer to the industry? And what are the fundamental differences between each of them?

Gillen: If we are talking about the OEM business Rolls-Royce currently builds new engines from its BR700 and Pearl engine family. Due to the generational change, we are seeing further growing production numbers of the latter, while BR700 deliveries will decline over time.

If we are talking about business aviation services, we are supporting mainly four engine families – AE 3007, TAY, BR700 and the Pearl family. Each of these engines support a different

airframe to support our business aviation customer's needs. The AE3007 engines power the Citation X/X+ as well as the Embraer Legacy 600 & 650 aircraft, the TAY611-8 & 8C aircraft power the Gulfstream GIV, GIV-SP & G450 aircraft, the BR710 engines power the Bombardier Global Express, Global XRS, Global 5000 & 6000 aircraft as well as the Gulfstream GV & G550 platforms, the BR725 engines power the Gulfstream G650/G650ER aircraft and our latest Pearl engines power the Bombardier Global 5500 & 6500 aircraft with the Pearl 15, the Pearl 10X will power the Dassault Falcon 10X once it enters into service and the Pearl 700 powers the Gulfstream G700 and its sister model G800. The difference between them is thrust, efficiency and performance.

Barawal: What are some special factors of the Pearl Engines Family?

Gillen: The Pearl engine family brings together innovative technologies derived from the Rolls-Royce Advance2 technology demonstrator programs with proven features from the Rolls-Royce BR700, today's leading engine family in business aviation. Our latest engine, the Pearl 700, combines the most efficient engine core available across the business aviation sector with a brand-new low-pressure system, resulting in an 8% increase in take-off thrust at 18,250lb compared to the BR725 engine. The engine offers a leading thrust-to-weight ratio and 5% higher efficiency, while maintaining its class-leading low noise and emissions performance. All this while propelling customers nearly as fast as the speed of sound.

Key technologies of the new Pearl engine family include a highly-efficient blisked fan, a high pressure compressor with a market-leading pressure ratio of 24:1 and six blisked stages, an ultra-low emissions combustor with 3D-printed combustor tiles, a two-stage shroud-less high pressure turbine and an enhanced four-stage low pressure turbine, that is one of the most efficient and compact in the industry.

The Pearl engine family is part of the Rolls-Royce IntelligentEngine vision of a future where product and service become indistinguishable thanks to advancements in digital capability. As well as a new-generation Engine Health Monitoring Unit (EVHMU) that introduces advanced vibration detection, the family benefits from the incorporation of advanced remote engine diagnostics. It is also enabled for bi-directional communications, allowing for easy remote reconfiguration of engine-monitoring features from the ground. Cloud-based analytics, smart algorithms and Artificial Intelligence continue to play an increasing role in delivering exceptional levels of availability and greater peace of mind for our customers.



THE PEARL ENGINE FAMILY BRINGS TOGETHER INNOVATIVE TECHNOLOGIES AND IS PART OF THE ROLLS-ROYCE INTELLIGENTENGINE VISION OF A FUTURE

Barawal: Can you give us some details on CorporateCare Enhanced? What all benefits do you offer to your customers around the globe ensuring timely solutions?

Gillen: CorporateCare Enhanced is a comprehensive cost per engine flight hour maintenance program designed to cover Rolls-Royce powered Business Aviation aircraft. Launched in 2019, CorporateCare Enhanced is the most-comprehensive coverage, giving customers the ultimate peace of mind. The program covers corrosion, erosion, labor, troubleshooting, mobile repair and more for all engine programmes and on the BR700 & Pearl family engines it now even includes full coverage of the powerplant including the nacelle components like the cowl doors and thrust reversers for parts and labor including corrosion. The unique coverage under CorporateCare Enhanced goes further and is recognized in the industry with over 1,500 aircraft on the program.

Not only is the programme covering for associated maintenance events, but it is also providing aircraft availability for our customers. We have a dedicated support network under CorporateCare Enhanced to support our 3,000+ customers should an event arise. We have the biggest and most powerful service network in the world which includes 85+ Authorized Service Centers, 10 CorporateCare parts stores, 250 lease engine and nacelle assets, about 80 On-Wing Service Technicians, a dedicated 24/7 Operational Service Desk and customer support located across the globe to support our customers wherever and whenever they fly.

“Over 4,000 Rolls-Royce powered aircraft are in-service and flying worldwide today, offering the perfect combination of speed, range, size, efficiency and reliability”



THROUGH DIGITAL AND AI, ROLLS-ROYCE AIMS TO ACCELERATE DECISION MAKING, STREAMLINE OPERATIONS AND ENHANCE PRODUCT PERFORMANCE

Baranwal: Business Aviation industry is abuzz about the Sustainability goals. What is the roadmap Rolls-Royce is pursuing on this front? Can you kindly elaborate SAFinity programme a little for us?

Gillen: Rolls-Royce is committed to reaching net zero by 2050 within our own operations and supporting the achievement of net zero within the Business Aviation industry.

This will be realized via the strategic pillars below:

- Continue to improve the gas turbine (eg Pearl family)
- Collaborate on drop-in SAFs (100% SAF compatibility)
- Develop radical alternatives such as hydrogen and electrification (Pearl 15 tests on hydrogen; more electric engines)

In 2023 Rolls-Royce completed a series of tests with 100% Sustainable Aviation Fuel (SAF), that demonstrated once again that all Rolls-Royce in-production Trent and business aviation engines are compatible with 100% SAF, laying the groundwork for moving this type of fuel towards certification. The testing has involved a variety of ground and flight tests to replicate in-service conditions, with one of the highlights being the first 100% SAF business aviation flight on the BR725-powered Gulfstream G650. All tests confirmed the use of 100% SAF does not affect engine performance. Net CO2 lifecycle emissions of unblended SAFs are up to 80% lower than conventional fuel.

Rolls-Royce is also carrying out a research project that aims to study hydrogen as an aviation fuel and the

“Rolls-Royce is a true pioneer in of Business Aviation, working to create the most innovative and technologically advanced products in the market. Our Pearl engines are the exact definition of leading the way for another generation.”

required combustion engine technology. This includes a comprehensive series of rig and engine tests to prove the fuel can safely and efficiently deliver power for small-mid size aircraft. The next stage of testing – a gaseous hydrogen ground test on a full Pearl engine – is planned to be conducted this year.

Baranwal: What kind of role do you foresee out of Artificial Intelligence (AI)? Or if you can please elaborate a little in case it is already contributing?

Gillen: Rolls-Royce is undergoing a bold transformation to become a high-performing, competitive, resilient, and growing business. Digital and AI are at the heart of this transformation, accelerating engineering innovation, driving operational excellence and unlocking new levels of value. Whilst we’re already seeing clear benefits—whether in engine design, operations, or customer solutions—there’s still much more to unlock.

HOW DIGITAL & AI ARE CREATING IMPACT

• **Faster, More Efficient Design:**

Model based systems engineering and AI-driven automation is already accelerating engine design, reducing manual work and driving faster time to market. Data-driven engineering enhances performance while delivering efficiencies.

- **Smarter, More Agile Manufacturing:** Signature Analyzer – an AI-powered inspection of cooling holes in our turbine blades - has boosted machine utilization by 30%, reduced scrap, and unlocked £24 million in efficiency gains.

Digitally connected machines allow us to optimize scheduling and inventory management; helping us avoid unnecessary capital investment in machinery.

Digital inventory management and predictive analytics are optimizing production, reducing downtime, and increasing precision.

• **Revolutionising Operations & Maintenance:**

AI-driven Engine Health Monitoring tracks thousands of engine parameters in real time, reducing unplanned downtime and improving fleet performance. Predictive maintenance and real-time data insights enhance reliability, minimize shop visits, and optimize service for customers.

- **Empowering Our People:** We are investing to transform our working environment with the right digital tools to augment – not replace – employee expertise. Through digital and AI we will accelerate decision making, streamline operations and enhance product performance.

Baranwal: The 3D Printing, an additive manufacturing process, has been very much talked about subject of-lately. a. Should we presume this is contributing effectively for the Engines powering Business Jets?

Gillen: The combustor of our Pearl 10X business jet engine features cooling holes that can, remarkably, turn back on themselves in a loop and then fan out onto their combustor tiles. Why is this important? Because performing that loop means the cooling air picks up the heat from the tiles in the most effective way and the fan-shaped hole exit generate a uniform protective film of air on the hot combustor tile surface. And ALM allows those holes to be created where they couldn't be done before. The outcome? More efficient combustor cooling, a reduction in turbine "hot spots" and lower emissions.

We were driven to bring ALM to the combustor because we knew there was a great environmental benefit – created by being able to run the combustor hotter and use less cooling air on components in the process. Combustion is the first hot section of the engine where we can take advantage of ALM to do that.

And we knew that could be achieved through ALM because it allows us to create ever more complex cooling holes and do them in ways that would be impossible through traditional machining. This has always been the engineering allure of 3-D printing – to create complex structures relatively simply and without waste.

In some cases, we've been able to create holes that actually double back on themselves and then split up into a fan shape as they exit onto the tile. The reason? The double back actually slows the air down – and that allows the air to actually "pick up" more heat from the tile. And the fan shape allows that air, which is still cooler than the gas path of course, to form a more even barrier. We pay no penalty for creating holes, it's just melting less material, and we can put them where we want to.

Baranwal: As one of the most important Business Aviation OEMs in the world, how would you define the various factors reiterating the importance of Business Aviation?

Gillen: The general aviation industry is a significant economic contributor to the global economy, as seen in reports published by GAMA, EBAA and others. Today, more than 4,000 Rolls-Royce powered business aircraft are in service worldwide, helping companies to improve business efficiency, productivity



(TOP & ABOVE) ROLLS-ROYCE HAS THE BIGGEST AND MOST POWERFUL SERVICE NETWORK IN THE WORLD INCLUDING ON-WING SERVICE TECHNICIANS

and enabling economic growth. They offer flexibility and connectivity, flying heads of states around the globe, supporting humanitarian efforts and connecting families by making the world a smaller place. Our engines enable airframers to offer the perfect combination of speed, range, size, efficiency and reliability.

Rolls-Royce is a true pioneer in of Business Aviation, working to create the most innovative and technologically advanced products in the market. Our Pearl engines are the exact definition of leading the way for another generation. We support our customers with our leading engine maintenance programme, CorporateCare Enhanced, which provides a piece of mind and saves our customers their most valuable asset – time. That's why we strive to provide the best product, service and availability network to support our customers should an incident arise whenever or wherever they are in the world. **SP**

“CorporateCare Enhanced is the most-comprehensive coverage, giving customers the ultimate peace of mind”



ROLLS-ROYCE PEARL 700 ENGINE
MOUNTED ON THE LATEST
GULFSTREAM G800

POWERING THE FUTURE OF BUSINESS JETS

A sneak peek into the top engine manufacturers for business jets, defined by their performance, range, and operational efficiency

By SP'S SPECIAL CORRESPONDENT

IN THE WORLD OF BUSINESS AVIATION, PERFORMANCE, efficiency, and reliability are paramount. Whether for corporate executives, government officials, or high-net-worth individuals, business jets must deliver seamless, long-range travel with minimal downtime. At the heart of these sophisticated aircraft lies one of their most critical components—the engines. Business jet engines are designed to provide optimal thrust while ensuring fuel efficiency, reduced emissions, and quieter operations. Over the decades, leading aerospace manufacturers have pushed the boundaries of propulsion technology, integrating advancements in aerodynamics, materials, and digi-

tal controls to enhance performance and sustainability. The business aviation comprises top-tier engine manufacturers that design and produce high-performance, fuel-efficient, and reliable jet engines. This article lists some of the top engine manufacturers that power the world's most prestigious business jets, detailing their technological innovations, flagship engines, and the aircraft they support.

CFM INTERNATIONAL

A 50/50 joint venture between GE Aerospace (USA) and Safran Aircraft Engines (France), CFM has a legacy of delivering

PHOTOGRAPH: GULFSTREAM

innovative, fuel-efficient, and reliable propulsion solutions. While primarily known for powering commercial airliners, CFM has also made a significant impact in the business aviation sector, particularly with its LEAP-series engines. CFM International continues to push the boundaries of business aviation with its high-performance, fuel-efficient turbofan engines. By powering large-cabin VIP aircraft, CFM plays a crucial role in providing ultra-long-range, luxury travel solutions for elite customers worldwide. Its ongoing commitment to innovation and sustainability ensures it remains a leader in the business aviation sector for years to come.

Technological Excellence

CFM International is at the forefront of next-generation propulsion technology. Its key innovations include:

- **LEAP (Leading Edge Aviation Propulsion) Technology:** Offers 15 per cent better fuel efficiency and lower emissions than previous-generation engines.
- **3D Woven Composite Fan Blades & Fan Case:** Reduces weight while increasing durability and efficiency.
- **Ceramic Matrix Composites (CMCs):** Improves thermal efficiency and engine lifespan.
- **SAF & Hydrogen Readiness:** Supports alternative fuel compatibility to drive sustainable aviation initiatives.

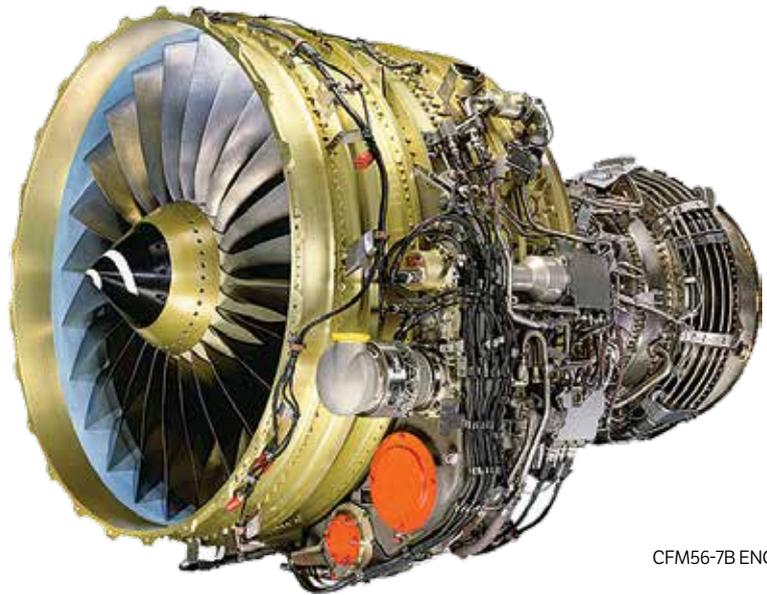
Business Jet Engines & Applications

CFM International’s engines, particularly the LEAP-1A and LEAP-1B, have been adopted in large-cabin, ultra-long-range business jets and VIP-configured airliners.

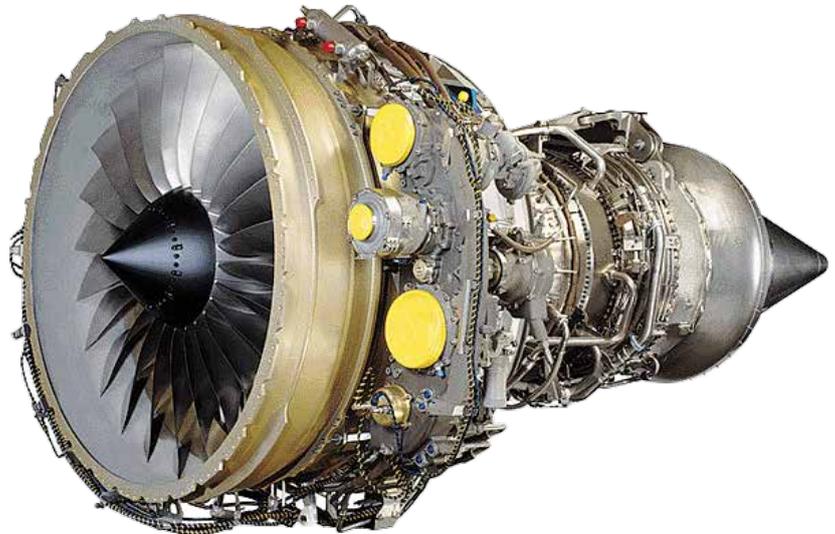
- **LEAP-1A**
 - Selected to power Airbus ACJ320neo (Airbus Corporate Jet), offering high efficiency for long-range executive transport.
- **LEAP-1B**
 - Exclusively used in the Boeing Business Jet (BBJ) MAX family, providing unmatched range, fuel savings, and operational cost benefits.
- **CFM56 Series (Previous Generation, Still in Use)**
 - Powers legacy Boeing Business Jets (BBJ1, BBJ2, BBJ3), known for reliability and long-range capability.

GE AEROSPACE

GE Aerospace, a division of General Electric, is one of the world’s foremost aircraft engine manufacturers, renowned for its cutting-edge propulsion technologies. With a strong legacy in aviation, GE Aerospace designs and produces high-performance jet engines for commercial, military, and business aviation. The company is committed to innovation, fuel efficiency, and sustainability, making it a key player in the ultra-long-range and large-cabin business jet segment. GE Aerospace remains a leading force in business aviation, ensuring high performance and reliability for elite customers worldwide.



CFM56-7B ENGINE



GE'S CF34-10E ENGINE

Technological Excellence

GE Aerospace integrates state-of-the-art technologies to enhance fuel efficiency, performance, and environmental sustainability in its business jet engines. Key innovations include:

- **Blisk (Bladed Disk) Technology:** Reduces engine weight and improves durability.
- **Ceramic Matrix Composites (CMCs):** Enhances thermal efficiency, allowing engines to operate at higher temperatures with reduced fuel consumption.
- **Additive Manufacturing (3D Printing):** Streamlines production while optimising engine performance.
- **SAF Compatibility:** Supports global sustainability initiatives and reduced carbon emissions.

Business Jet Engines & Applications

GE Aerospace has a strong presence in the business aviation

PHOTOGRAPHS: CFM, GE AVIATION SERVICE SOLUTIONS



HONEYWELL
TFE731 SERIES



P&W PUREPOWER
PW800

market, particularly with its Passport and CF34 engine families, which power some of the most advanced business jets.

- Passport Engine (Ultra-Long-Range Business Jets)
 - Powers the Bombardier Global 7500, delivering industry-leading efficiency and range.
 - Features a blisk fan design and high-bypass ratio, reducing noise and fuel burn.
- CF34 Series (Super-Mid to Large Business Jets)
 - **CF34-3B:** Used on the Bombardier Challenger 650, offering robust reliability.
 - **CF34-10E:** Previously adapted for some business jet conversions and regional jet applications.

HONEYWELL AEROSPACE

Honeywell Aerospace is a globally recognised leader in aviation technology, specialising in aircraft engines, avionics, and auxiliary power units (APUs). As a division of Honeywell

International, the company has a strong reputation for delivering high-performance, fuel-efficient, and reliable propulsion systems. Honeywell’s business jet engines are widely used in light, midsize, and large-cabin jets, making it a trusted choice for manufacturers and operators worldwide. Honeywell Aerospace continues to be a top-tier business jet engine manufacturer, offering advanced propulsion solutions that enhance performance, fuel efficiency, and reliability. With a strong presence in the midsize and super-midsize jet market, Honeywell remains a preferred choice for business jet operators seeking cutting-edge technology and operational excellence.

Technological Excellence

Honeywell Aerospace’s key innovations include:

- **Advanced Fuel Efficiency Designs:** Reduces fuel consumption and operating costs.
- **Full Authority Digital Engine Control (FADEC):** optimises engine performance and reliability.
- **3D Printing & Advanced Materials:** Reduces weight and enhances durability.
- **SAF Compatibility:** Supports environmental sustainability efforts.

Business Jet Engines & Applications

Honeywell’s HTF7000 series and TFE731 series engines power a wide range of business jets, providing superior performance and operational efficiency.

- HTF7000 Series (Midsize to Super-Midsize Jets)
 - **HTF7250G:** Powers the Gulfstream G280, delivering exceptional range and fuel efficiency.
 - **HTF7500E:** Used in the Embraer Praetor 600, providing high thrust and low noise emissions.
 - **HTF7350:** Selected for the Cessna Citation Longitude, ensuring reliability and smooth operations.
- TFE731 Series (Light to Midsize Jets)
 - **TFE731-5BR:** Powers the Dassault Falcon 900LX, offering strong performance and efficiency.
 - **TFE731-50R-1B:** Used in the Dassault Falcon 50EX, known for its reliability and low maintenance.
 - **TFE731-40AR:** Installed in the Learjet 70/75, enhancing speed and fuel efficiency.

PRATT & WHITNEY

Pratt & Whitney, an RTX business, is an aerospace engine manufacturer known for its cutting-edge propulsion systems. With over 95 years of engineering excellence, the company has established itself as a dominant player in commercial, military, and business aviation. Pratt & Whitney’s dedication to innovation, fuel efficiency, and environmental sustainability makes its engines a preferred choice among leading business jet manufacturers and operators worldwide. Pratt & Whitney remains a cornerstone of business aviation, providing state-of-the-art propulsion solutions that prioritise efficiency, reliability, and

PHOTOGRAPHS: HONEYWELL, PRATT & WHITNEY

sustainability. With a strong presence in the light, midsize, and ultra-long-range jet segments, the company continues to redefine the standards of performance and innovation in business jet travel.

Technological Excellence

Pratt & Whitney incorporates state-of-the-art technologies into its business jet engines to enhance performance, reliability, and sustainability. Key technological advancements include:

- **Geared Turbofan (GTF) Technology:** Improves fuel efficiency and reduces noise and emissions.
- **Full Authority Digital Engine Control (FADEC):** Enhances precision, efficiency, and ease of operation.
- **Advanced Materials:** Incorporates ceramic matrix composites (CMCs) and additive manufacturing to optimise weight and durability.
- **SAF Readiness:** Ensures compatibility with SAF, supporting global sustainability initiatives.

Business Jet Engines & Applications

Pratt & Whitney powers a wide range of business jets, from light jets to ultra-long-range aircraft. Its PW300 and PW800 engine families are among the most trusted in the industry.

- **PW300 Series (Mid-Size to Super-Mid Jets)**
 - **PW306D1:** Powers the Cessna Citation Latitude for superior efficiency.
 - **PW307D:** Used in the Dassault Falcon 8X, offering enhanced range and performance.
 - **PW308C:** Provides propulsion for the Gulfstream G200 and Dassault Falcon 2000LXS/S.
- **PW500 Series (Light & Midsize Jets)**
 - **PW535E1:** Powers the Embraer Phenom 300E, a best-selling light business jet.
 - **PW545C:** Installed in the Cessna Citation XLS+, ensuring optimal climb rates and fuel efficiency.
- **PW800 Series (Ultra-Long-Range & Large Cabin Jets)**
 - **PW815GA:** Exclusively designed for the Gulfstream G600, offering unmatched power and reliability.
 - **PW812D:** Selected for the Dassault Falcon 6X, delivering superior performance and reduced emissions.

ROLLS-ROYCE

Rolls-Royce is a global leader in power and propulsion systems.

With a legacy spanning over a century, the British engineering giant has established itself as a premier manufacturer of aircraft engines for commercial, military, and business aviation. The company’s commitment to innovation, sustainability, and reliability has made it a preferred choice among business jet manufacturers and operators worldwide.

Rolls-Royce remains a dominant force in business aviation, continually advancing its propulsion systems to meet the evolving needs of the market. With an emphasis on performance, reliability, and sustainability, the company

Rolls-Royce remains a dominant force in business aviation, continually advancing its propulsion systems to meet the evolving needs of the market

continues to shape the future of business jet travel, making it the engine manufacturer of choice for high-performance, long-range executive aircraft.

Technological Excellence

Some of the key technological advancements of Rolls-Royce include:

- **Advanced Fan and Core Technology:** Reduces fuel consumption and emissions while improving thrust-to-weight ratio.
- **Blisk (Bladed Disk) Compressor Design:** Enhances engine durability and reduces maintenance requirements.
- **Intelligent Engine Monitoring:**

Uses real-time data analytics for predictive maintenance, optimising operational efficiency.

- **Sustainable Aviation Fuel (SAF) Compatibility:** Supports net-zero carbon goals by enabling the use of alternative fuels.

Business Jet Engines & Applications

Rolls-Royce’s engine portfolio for business aviation caters to a wide range of jets, from super-midsize to ultra-long-range aircraft.

- **BR700 Series**
 - **BR710:** Powers the Bombardier Global 5000/6000 and Gulfstream G500 and G550.
 - **BR725:** Exclusively designed for the Gulfstream G650/G650ER, offering superior efficiency and range.
- **Pearl Series (Latest Generation Engines)**
 - **Pearl 15:** Developed for the Bombardier Global 5500 and 6500, providing improved fuel efficiency and thrust.
 - **Pearl 700:** Brand new engine, designed for Gulfstream’s G700 and G800 aircraft
 - **Pearl 10X:** The newest addition, designed for the Dassault Falcon 10X, featuring enhanced aerodynamics and digital engine control.
- **Tay Series**
 - Used on older Gulfstream models such as the Gulfstream G350 and G450, known for its proven reliability.

CONCLUSION

The business aviation sector relies on a select group of industry leaders to develop high-performance, fuel-efficient, and reliable jet engines. Companies such as Rolls-Royce, Pratt & Whitney, GE Aerospace, Honeywell Aerospace, CFM International, and Safran have established themselves as pioneers, driving innovation through cutting-edge propulsion systems.

Their engines power a diverse range of business jets, from ultra-long-range aircraft capable of intercontinental travel to super-midsize jets optimised for corporate mobility. As sustainability and fuel efficiency become increasingly important, these manufacturers continue to invest in new technologies, including hybrid-electric propulsion, SAF compatibility, and advanced aerodynamics. With business aviation poised for further growth, the evolution of engine technology will remain a key factor in shaping the future of private and corporate air travel. SP

GE Aerospace remains a leader in business aircraft engines, ensuring high performance and reliability for elite customers worldwide



WHY THE SMARTEST BUYERS CHOOSE PRE-OWNED AIRCRAFT

By **GARETT JERDE**,
CEO AND FOUNDER OF JETHQ

IN PRIVATE AVIATION, NOTHING COMPARES TO HAVING THE right aircraft, ready when and where you need it. While new jets often steal the spotlight with their latest features, for savvy investors, the true advantage lies in securing the right aircraft, the needed performance, with critical timing. That's why many of today's most discerning ultra-high-net-worth and corporate buyers choose pre-owned aircraft, often proving to be a sound investment.

With decades of experience and aircraft acquisitions completed across six continents, JetHQ is quickly becoming a recognised authority in global aircraft sales. Our clients don't just rely on us to find an aircraft; they trust us to find the right aircraft, anywhere in the world. Here's why the pre-owned market remains one of the smartest moves you can make.

GLOBAL VALUE, REALISED

New aircraft can depreciate in value by up to 20 per cent of their value in the first year, and as much as 40 per cent within five years, regardless of brand or model. By contrast, a pre-owned jet that has been expertly maintained often comes fully equipped with premium upgrades and program coverage, offering meaningful cost savings with no compromise in capability or prestige.

In rapidly growing aviation markets like India, where over 80 per cent of fixed-wing aircraft imports are pre-owned, buyers are proving that value, not novelty, drives intelligent decision-making.

FASTER TIME TO OPERATION

The wait time for new aircraft deliveries can stretch into years. But in business aviation, time is money. Pre-owned aircraft, especially those sourced through JetHQ's global network, can be acquired and delivered in weeks, not years.

From first inquiry to final delivery, we manage every stage of the transaction: sourcing, inspections, legal contracting, and international logistics. With offices and partners across key global hubs, we ensure a smooth, expedited process wherever your aircraft is located.

VERIFIED PEDIGREE AND PROVEN PERFORMANCE

Every aircraft has a history, and we believe that history should work in your favor. Our acquisition team performs in-depth technical and operational due diligence, ensuring you have complete transparency into the aircraft's condition, programme coverage (such as RRCC or ESP Gold), and service records. We know this is an investment and it should perform like one.

TURNKEY LUXURY OR TAILORED UPGRADES

While buying new gives you a blank canvas, many pre-owned jets already feature modern interiors and updated avionics. And if upgrades are desired, our network of world-class MRO and

design partners ensures efficient, cost-effective enhancements, often at a fraction of what factory options might cost.

ACCESS TO GLOBAL INVENTORY AND OFF-MARKET OPPORTUNITIES

JetHQ operates on a truly global scale. We have access to hundreds of aircraft at any given time, many of which are exclusive and never reach public listings. Whether you're looking for a specific range, configuration, or budget window, our international team connects you with exclusive inventory across North America, Europe, the Middle East, Asia, and Africa.

When matching demand and supply, timing and relationships matter. We have built relationships in key markets and continue to grow our reach.

TAX AND DEPRECIATION BENEFITS IN STRATEGIC MARKETS

In India, the tax environment is particularly favorable for aviation investors. Aircraft benefit from 40 per cent annual depreciation under the Written Down Value (WDV) method, reducing taxable income and improving return on investment from year one. Combined with the lower capital outlay of a pre-owned aircraft, these incentives make private aviation more financially strategic than ever.

TOP AIRCRAFT IN DEMAND: INDIA AND BEYOND

India's pre-owned aircraft market is maturing rapidly. Buyers are informed, pragmatic, and increasingly focused on value, support, and long-term ownership economics. Our clients in India prefer models that deliver performance, regional flexibility, and serviceability:

- **King Air 200 series:** Ideal for regional missions and secondary airports
- **Cessna Citation CJ2+:** Efficient, capable light jet with low operating costs
- **Cessna Citation XLS+:** Versatile midsize option with broad appeal
- **Embraer Legacy 600/650:** Long-range capability with generous cabin space

A STRATEGIC INVESTMENT WITH GLOBAL SUPPORT

Pre-owned aircraft are not compromises; they're calculated investments. With JetHQ, your acquisition is powered by global expertise, real-time market data, and unmatched transactional support.

With the right advisory team, buying pre-owned means lower upfront investment, faster deployment, proven operational reliability, and tailored luxury, all backed by rigorous market intelligence and transactional expertise. Whether upgrading, building a fleet, or entering private aviation for the first time, our team will guide you locally and globally every step of the way. 



(ABOVE AND RIGHT) DASSAULT 6X IS A GAME-CHANGER IN THE BUSINESS JET MARKET, OFFERING UNPRECEDENTED LEVELS OF COMFORT, RANGE, TECHNOLOGY, AND EFFICIENCY

FALCON 6X: THE NEW STANDARD IN WIDEBODY BUSINESS AIRCRAFT

The Falcon 6X is among Dassault Aviation's latest flagship business jets, combining unmatched cabin comfort, advanced flight technology, and the flexibility to access challenging airfields worldwide

By SP'S SPECIAL CORRESPONDENT

PHOTOGRAPHS: DASSAULT AVIATION



IN THE ELITE WORLD OF BUSINESS AVIATION, WHERE SPEED, range, and luxury intertwine, Dassault Aviation has once again raised the bar with the Falcon 6X — the first true extra-wide body business jet. Combining French elegance with cutting-edge aerospace engineering, the 6X delivers a travel experience designed to satisfy the most discerning global traveler.

Passenger- and pilot-centric, the Falcon 6X reflects the next step in Dassault’s legendary aircraft heritage. The Falcon 6X integrates the best features from Dassault Aviation’s world-leading business aircraft expertise to create the longest-range jet in its class with unparalleled passenger comfort, maximum mission flexibility, and the most advanced cockpit technologies available. The Falcon 6X is the most spacious, advanced, and versatile twinjet in the long-range business jet segment.

Dassault Aviation’s Falcon 6X entered service on November 30, 2023. Type certification was granted prior to that by both EASA (European Union Aviation Safety Agency) and the FAA (Federal Aviation Administration). In May 2024, the Falcon 6X made its EBACE debut after entering service in November, showcasing its next-gen digital flight control system for ultra-precise handling and advanced turbulence damping. Despite its class-leading, wider, and taller cabin, the 6X can operate from

short, challenging runways like the 3,400-foot strip at Saanen-Gstaad, Switzerland.

A CLASS OF ITS OWN

Introduced as a new benchmark for business jets, the Falcon 6X features the tallest and widest cabin in business aviation today. With a range of 5,500 nautical miles (10,186 km) and a maximum operating speed of Mach 0.90, it effortlessly connects major business hubs such as London to Hong Kong, New York to Moscow, or Paris to Los Angeles.

Built for versatility, the 6X can accommodate between 12 to 16 passengers, depending on configuration. It boasts a maximum certified altitude of 51,000 ft and an impressive short-field capability, with a takeoff distance of just 5,115 ft (1,560 m), making it ideal for accessing airports closer to city centers and remote destinations alike.

The Falcon 6X represents a new chapter in business aviation — one where space, technology, and health-conscious design coalesce to redefine long-range travel. For executives, entrepreneurs, and government officials seeking a flexible, connected, and supremely comfortable aircraft, the 6X makes a compelling case.

As the business jet market evolves to prioritise not just range and speed but also wellness, sustainability, and digital integration, Dassault’s Falcon 6X stands tall — and wide — as a class apart.

AERONAUTICAL PROWESS MEETS LUXURY

At 78 inches (1.98 m) in height and 102 inches (2.58 m) in width, the cabin space feels more like a high-end lounge than a business jet interior. With a cabin length of 40.3 ft (12.30 m) and a total volume of 1,843 cubic feet (52.20 m³), it offers an unprecedented sense of space.

Thirty extra-large windows and a unique skylight flood the cabin with natural light, offering panoramic views from cruising altitude and contributing to passenger well-being. Customisable mood lighting helps travelers manage their circadian rhythm and ease the effects of time zone transitions. Dassault also introduced an optional Privacy Suite, a versatile space that doubles as a private meeting area by day and a restful sleeping zone by night. Coupled with berthable seats and an adjustable divider, it ensures privacy and comfort at 51,000 feet.

CABIN SPACE & AMENITIES

More room to work or relax. Pure comfort for passengers.

The largest cabin – 6 feet 6 inches of headroom and 8 feet 6 inches wide.

- **Cabin height:** 6 feet 6 inches (1.98 meters)
- **Max width:** 8 feet 6 inches (2.58 meters)
- **Cabin length:** 40 feet 4 inches (12.30 meters)

All that space translates to room for more personal productivity: for collaborating, for working and for sleeping on long flights.

The Falcon 6X provides the largest cabin space in the 5,000 nm range and boasts the tallest and widest cross-section of any dedicated business jet. Utilising this generous space and incorporating valuable feedback from customers, Dassault Aviation’s in-house Design Studio reimagined and redesigned the cabin interior. The result is a layout defined by smooth, continuous lines that amplify the sense of openness and comfort onboard.

A defining feature of the 6X is its advanced cabin air management system. Air inside is refreshed up to 10 times faster than in modern office buildings. Its hospital-grade HEPA/ULPA filtration system captures 99.97 per cent of airborne particles,



WITH A MAXIMUM RANGE OF 5,500 NAUTICAL MILES (10,186 KILOMETERS), THE 6X CAN FLY NONSTOP BETWEEN A WIDE RANGE OF CITY PAIRS, MAKING IT IDEAL FOR LONG-DISTANCE TRAVEL AND GLOBAL BUSINESS OPERATIONS

including viruses as small as 0.06 microns, ensuring superior in-flight air quality.

Acoustically, the cabin continues Dassault’s legacy for silence, offering one of the quietest environments in business aviation. Combined with smooth pressurisation and ergonomic seating, passengers arrive at their destination rested and refreshed.

The Falcon 6X cabin is equipped with Dassault’s advanced cabin management system, allowing passengers to control lighting, entertainment, and climate through their personal devices. Its seamless, high-speed broadband solution — FalconConnect — ensures uninterrupted connectivity for work and leisure throughout the journey.

Technologically, the jet features Dassault’s pioneering Digital Flight Control System (DFCS). The DFCS governs all flight control surfaces for optimised performance, flight envelope protection, and enhanced safety margins. It also harmonises control responses across all three axes, mitigating turbulence effects and simplifying pilot workload for a smoother passenger experience.

The aircraft’s large, powerful rudder and integrated nosewheel steering further improve responsiveness during ground operations and in challenging takeoff and landing conditions.

GREATER ACCESS, UNMATCHED FLEXIBILITY

The Falcon 6X redefines operational versatility by offering more airport options closer to passengers’ ultimate destinations. It delivers exceptional mission flexibility, pairing the longest range in its category — up to 5,500 nautical miles — with the short-field performance synonymous with the Falcon family.

This capability allows the Falcon 6X to link an impressive variety of city pairs worldwide, including routes typically out of reach for larger business jets. Thanks to its advanced aerodynamics and field performance, it can access airports with shorter runways and difficult approaches that would otherwise be inaccessible.

LONG-RANGE & EXCEPTIONAL SHORT-FIELD CAPABILITY

Capable of flying up to 5,500 nautical miles (10,186 km) at Mach 0.80, or 5,100 nautical miles (9,445 km) at Mach 0.85, the 6X opens up nonstop routes across continents and oceans — connecting major business hubs and remote destinations alike.

Engineered for demanding missions, the Falcon 6X is equipped with advanced wing designs featuring extendable leading-edge slats and trailing-edge flaps. These enable approach speeds as low as 110 knots indicated airspeed (KIAS) — even with eight passengers, three crew members, and standard NBAA IFR reserves. The jet handles steep, non-standard approaches up to six degrees, making it ideal for operations into challenging airfields like London City, Lugano, Saint-Tropez, and Aspen, where other long-range jets might hesitate.

The Falcon 6X represents a new chapter in business aviation — one where space, technology, and health-conscious design coalesce to redefine long-range travel

KEY HIGHLIGHTS OF THE FALCON 6X

- **Sustainability & Innovation Hand in Hand:** Dassault positions the Falcon 6X as a future-forward aircraft, fully compatible with Sustainable Aviation Fuel (SAF) — a step toward reducing aviation’s carbon footprint. Its aerodynamic efficiency and smart systems also contribute to lower emissions and operational costs.
- **Spacious Cabin Capacity:** Accommodates up to 16 passengers

in three distinct lounge zones. A 5-inch wider aisle than earlier Falcons ensures easier cabin movement and added comfort.

- **Flexible Interior Configurations:** Options include an extended entryway and galley, crew rest area, spacious rear stateroom for privacy on long flights, and an innovative Falcon Privacy Suite with an electrically controlled lie-flat seat.
- **Natural Light Advantage:** Features 30 large windows offering nearly 5,000 square inches of natural light — the highest in its class. Also includes an industry-first skylight above the galley for added brightness.
- **Exceptional Cabin Comfort:** Quietest cabin in its segment with sound levels below 50 dB-SIL. Continuously refreshed air via hospital-grade HEPA filters, maintaining a low cabin altitude of 3,950 ft while cruising at 41,000 ft for passenger wellness.
- **Seamless Connectivity and Entertainment:** Equipped with high-speed in-flight connectivity, including Ka-band service options. Advanced entertainment system streams HD audio and video, with Dassault’s Ambiance system enabling fingertip control of lighting, temperature, and media via touch panels or personal devices.
- **Short-Hop and Long-Haul Versatility:** Can land with more fuel than competitors, enabling short hops before embarking on long-haul trips without refueling — flying up to 50 per cent farther after a stopover than rival aircraft.
- **Aerodynamically Advanced Wing:** The new-generation wing design with a curved trailing edge enhances lift-to-drag ratio, improves turbulence response, and supports both steep, short-field approaches and high-speed cruise up to Mach 0.90.
- **Proven, Efficient Power Plant:** Powered by the 13,500 lb-thrust Pratt & Whitney PW812D engine, derived from the PurePower® geared turbofan family. Certified in December 2021 after over 4,900 test hours, the engine offers double-digit fuel efficiency gains, reduced emissions, low noise, and 40 per cent less scheduled maintenance. SAF-compatible up to 50 per cent.
- **Integrated Powerplant Solution by RTX Corporation:** Includes inlet, fan cowls, thrust reverser, and engine build-up (EBU) system using lightweight composites to reduce fuel burn and cabin noise.
- **Next-Generation Cockpit Design:** The most spacious cockpit in its class with 30 per cent more window area. Reclining pilot seats, improved storage, and easy movement enhance crew comfort. Integrated FalconSphere iPads and added headroom for optimised ergonomics.
- **Fuel-Saving Route Planning:** First aircraft to feature FalconWays — Dassault’s intelligent flight planning app, enabling up to 7 per cent savings in fuel and emissions.
- **Advanced Digital Flight Control System (DFCS):** Commands all control surfaces, integrating slats, flaps, and nose-wheel steering. Multifunctional surfaces and superior envelope protection simplify pilot workload and improve safety — building on Dassault’s 15+ years of business aviation digital flight control innovation.
- **Streamlined Start-Up Operations:** Highly automated aircraft start-up procedure reduces pilot workload, with systems activating in sequence requiring minimal pilot intervention.
- **Unmatched Situational Awareness:** The FalconEye Combined Vision System (CVS), standard on the 6X, merges synthetic terrain imaging with thermal and low-light visuals



FALCON 6X IS A FUTURE-FORWARD AIRCRAFT, FULLY COMPATIBLE WITH SUSTAINABLE AVIATION FUEL (SAF)

PERFORMANCE

Maximum number of passengers	12-16
Range (8 pax, NBAA IFR Reserves)	5,500 nm
Maximum Operating Mach Number (MMO)	.90
Maximum Certified Altitude	51,000 ft
Takeoff Distance (Sea Level, ISA, Max Takeoff Weight)	5,115 ft
Landing Distance (Unfactored, Sea Level, ISA, Typical Landing Weight)	2,440 ft
Approach Speed, Vref (Typical Landing Weight)	110 kias

Source: www.dassaultfalcon.com

on a single wide-field HUD. Enhanced Flight Vision System (EFVS) capabilities support operations in poor visibility with 100 ft minimums, with future zero/zero landing approvals.

- **Next-Generation Avionics:** The advanced EASy IV cockpit, powered by Honeywell Primus Epic, offers sharper displays, RNP approaches, moving airport maps, SiriusXM weather, ROAAS, upgraded CPDLC, and predictive 3D weather radar for enhanced flight safety and operational ease.
- **Enhanced Safety by Design:** The 6X introduces flaperons — control surfaces doubling as flaps and ailerons — improving control in steep approaches. A nitrogen-generating system pressurises fuel tanks for ignition protection, complemented by continuous aircraft health monitoring.
- **Smart Maintenance & Cost Efficiency:** The FalconScan diagnostic system monitors over 1,00,000 parameters for real-time system health and trend analysis. With no life-limited primary structures and extended 800-hour/12-month maintenance intervals, the FalconCare programme ensures predictable operating costs and maximum aircraft availability. **SP**

NAVEEN JINDAL, MEMBER OF PARLIAMENT AND THE CHIEF GUEST BEING WELCOMED BY HARSH VARDHAN SHARMA, PRESIDENT OF THE BUSINESS AIRCRAFT OPERATORS ASSOCIATION (BAOA)

SHAPING THE FUTURE OF BUSINESS AVIATION IN INDIA

The conference united industry experts, policymakers, aviation leaders, and stakeholders to deliberate and chart a strategic roadmap for the sector's future

By **MANISH KUMAR JHA**



THE BIZAVINDIA CONFERENCE TOOK PLACE ON MARCH 24, 2025, at the India International Centre (IIC) in New Delhi, was a landmark event for India's rapidly evolving business aviation sector. With the theme "Transforming Business Aviation for Viksit Bharat – Policy Reforms, Sustainable Growth, and Innovations," this conference aimed to address the sector's future trajectory, explore policy reforms, and advocate for sustainable practices while examining the innovative technologies that are driving change.

The Indian business aviation sector is poised for significant growth, buoyed by a rapidly expanding economy, a burgeoning affluent middle class, and increasing demand for private air travel. However, it faces its share of challenges, particularly in terms of policy reforms, environmental sustainability, and evolving business models. This conference brought together industry experts, policymakers, aviation leaders, and stakeholders to discuss and strategise the way forward for the sector.



X Naveen Jindal
@MPNaveenJindal

"Let's work towards a more connected and developed India!"

THE GROWTH STORY OF BUSINESS AVIATION IN INDIA

The Indian business aviation industry has witnessed steady growth in recent years, with more corporations, high-net-worth individuals (HNWI), and government entities utilising private aircraft for convenience, flexibility, and time savings. However, the sector continues to face several bottlenecks, particularly in terms of outdated policies, regulatory hurdles, and infrastructure gaps.

One of the key areas of focus at the BizAvIndia Conference was the pressing need for policy reforms. India's aviation policy is often criticized for being restrictive, with high taxes, complicated approval processes, and a lack of infrastructure in tier-2 and tier-3 cities. For the sector to thrive, there is a need for more streamlined procedures, tax incentives, and the creation of a more favourable business environment.

Naveen Jindal, Member of Parliament and the Chief Guest, laid out his perspectives on the immense scope and opportunities in business aviation

PHOTOGRAPHS: BAOA

in India, said, “Business aviation is an intriguing sector. It’s fascinating to see how in countries like the US and in Europe, smaller aircraft vastly outnumber larger planes. In India, however, we have an inverted pyramid, with more large aircraft than small ones. There’s hope for India to grow its fleet of smaller aircraft, which will not only meet business needs but also inspire a new generation of pilots and aviation enthusiasts.”

He added, “In the US, one can drive directly to the aircraft, board, and fly internationally. In India, even for a domestic flight, passengers must undergo multiple security checks when transferring between flights, which wastes valuable time.”

“Streamlining ramp-to-ramp transfers would significantly enhance efficiency,” he opined.

Government initiatives such as the “Regional Connectivity Scheme” (UDAN) have laid the groundwork for expanding air travel to underserved regions, but business aviation requires a more nuanced approach that takes into account the specific needs of corporate jet users and operators. The conference will discuss how policies can be reimagined to foster greater industry growth, particularly as India moves closer to its vision of a “Viksit Bharat” (Developed India) by 2047.

The representative of one of the key players in the global aviation sector, Airbus, which has a substantial presence in India, also threw light on the opportunities for growth in the Helicopter sector.

Sunny Guglani, Head of Airbus Helicopters in India, focused on the initiatives under the ‘Make in India’. “We are in the process of setting up a final assembly line for our single engine helicopter in the country with Tata. This is the first example of a helicopter introduced in the private sector in India. We are very proud that Airbus is taking this leap. And for you to know, this factory is not only for India. It will also export to other regional countries. So, when it comes to ‘Make in India’, even on the civil side, we believe that we have to put these capabilities,” he said.

“Indian operators still rely on overseas funding for aviation needs. Why should that be the case when India has such a dynamic aviation market and a robust financial system? That’s why Airbus has partnered with SIDBI and other banks to create financing solutions tailored for helicopter operators in India.”

Sustainability will also take centre stage. The aviation industry is under increasing pressure to reduce its carbon footprint, and



“Once the right regulatory environment is in place, the market will naturally drive the sector forward, and that’s when we will see the true transformation”
— Faiz Ahmed Kidwai, Director General of the DGCA India



“While fractional ownership exists in other countries, we are working to tailor a system that works for India’s unique market and regulatory environment”
— Asangba Chuba Ao, Joint Secretary, Ministry of Civil Aviation

business aviation is no exception. The rise of sustainable aviation fuel (SAF), carbon offset programmes, and innovations in electric aircraft are part of the conversation. As the world grapples with climate change, business aviation will need to adopt green technologies and practices to ensure its long-term sustainability.

IS FRACTIONAL OWNERSHIP A FAILING MODEL?

A hot topic that sparked debate at the BizAvIndia Conference is the future of fractional ownership in India’s business aviation sector. Fractional ownership—where multiple owners share the use and cost of a single aircraft—has been a popular model for private aviation in many parts of the world. However, India has faced challenges that have led some to question its viability.

In theory, fractional ownership should provide a cost-effective entry point for businesses and individuals who want to enjoy the benefits of private air travel without the full financial burden of sole ownership. However, several factors have hindered the widespread adoption of fractional ownership in India. The lack of adequate regulatory frameworks, the absence of clear tax policies, and the complexity involved in structuring fractional deals have all contributed to its slow uptake. Additionally, high operating costs and the limited availability of suitable aircraft have made it challenging for companies to make the model economically viable.

Asangba Chuba Ao, Joint Secretary, Ministry of Civil Aviation (MoCA) highlighted the issue and said, “The Ministry is actively working on improving the fractional ownership model, particularly in addressing challenges within the current tax regime. While fractional ownership exists in other countries, we are working to tailor a system that works for India’s unique market and regulatory environment.”

At the same time, fractional ownership does have potential, especially for companies with fluctuating or seasonal needs for private air travel. The model could offer cost-effective solutions for businesses looking to expand their operations or improve the mobility of their executives, especially if it is paired with more flexible policies and a more favourable market environment.

As Group Captain Rajesh K. Bali, Managing Director BAOA, also emphasised that fractional ownership models need more flexibility and simplification to reach a broader customer base. “Despite the challenges, business aviation remains indispensable.

With the right policies, industry collaboration, and technological advancements, we can create a more efficient, sustainable, and accessible aviation sector that will remain relevant for decades to come.”

While fractional ownership may not be the dominant model in India today, there is still room for innovation in this area. The panellists at the BizAvIndia Conference agreed that fractional ownership needs reform and restructuring to better align with the current economic and regulatory environment.

A SECTOR POISED FOR GROWTH DESPITE CHALLENGES

Despite the challenges, the Indian business aviation sector is poised for significant growth. As the country’s economy continues to expand, the demand for private air travel is set to increase, driven by the growing number of affluent individuals, multinational corporations, and government officials who see the value in efficiency and convenience. Moreover, as India’s domestic and international markets continue to integrate, business aviation will be key to meeting the connectivity demands of a rapidly changing economy.

Advancements in aircraft technology, such as the development of smaller, more fuel-efficient aircraft and the rise of electric aviation, will also play a pivotal role in the growth of the sector. With greater accessibility to regional airports and improved aviation infrastructure, the expansion of business aviation is likely to extend beyond the major metropolitan hubs like Delhi, Mumbai, and Bengaluru, opening up new opportunities for regional business travel.

BUSINESS AVIATION: A VITAL PLAYER IN GLOBAL CONNECTIVITY

On this Faiz Ahmed Kidwai, Director General of the DGCA India, said, “India’s aviation potential is at least two to three times its current capacity, especially in the fields of fixed-wing aircraft and helicopters. The question remains: Why haven’t we realised this potential yet? What barriers are we facing? We have the right people in place, and now is the time to set ambitious goals to grow this sector—not just for business owners but for all Indians who stand to benefit.”

Aviation is about connectivity and safety, DGCA is taking a comprehensive review of its regulatory frameworks. “Once the right regulatory environment is in place, the market will naturally drive the sector forward, and that’s when we will see the true transformation,” he said.

Asangba Chuba Ao also addressed the sector’s growth potential, “We are actively working to align India’s aviation sector with natural growth patterns. To achieve this, we need a significant increase in aircraft numbers. India is already the third-largest domestic aviation market, but we want to see the General and Business Aviation (GABA) sector grow both in size and quality.”

He also pointed out the introduction of the Cape Town Convention Bill in the Rajya Sabha. The introduction of the Bharatiya Viman Adhiniyam 2024, will further boost the growth of the sector.

Leasing and financing are critical for expanding India’s business aviation fleet. High capital costs for aircraft acquisition make leasing a valuable option, allowing companies to access private jets without the financial strain of ownership. Financing mechanisms, such as leaseback agreements and structured loans, offer flexibility to businesses seeking to scale their aviation needs while preserving liquidity.

BUSINESS AVIATION IN INDIA: PROGRESS AND POTENTIAL

K. Narayana Rao, Director at DIAL, spoke about the dramatic growth in business aviation since 2006. “When we began in 2006, there were fewer than 100 business aircraft in India. Today, that number has surpassed 300. We’ve also seen a surge in general aviation movements at Delhi Airport, growing from 6-9 daily flights to over 30-40. This sector will continue to grow, potentially reaching nearly 1,000 aircraft in the next 25 years,” he said.

THE PATH FORWARD: POLICY REFORMS AND INNOVATION

So, what is the way forward to achieve the potential growth opportunity? Group Captain R.K. Bali (Retd) concluded with, “Business aviation must evolve to meet the demands of a changing market, a shifting regulatory environment, and the growing need for sustainability. Advances in electric and hybrid aircraft, better air traffic management, and digital technologies will shape the future of the industry.”

The BizAvIndia Conference 2025 was held at a crucial moment for India’s business aviation industry. It offers a unique platform for industry leaders, policymakers, and aviation stakeholders to come together, share insights, and chart a roadmap for the sector’s future. The theme of transforming business aviation for a “Viksit Bharat” encapsulates the collective vision of a more sustainable, innovative, and policy-driven aviation sector that can meet the demands of a rapidly developing economy.

As we look to the future, the conference highlights the opportunities for a sector that, while still facing challenges, is undeniably on the cusp of significant growth and transformation. Whether fractional ownership becomes a dominant model or evolves into a new framework altogether, the business aviation industry in India is set to soar to new heights in the years ahead. SP

Manish Kumar Jha is a Consulting & Contributing Editor for SP’s Aviation, SP’s Land Forces and SP’s Naval Forces and a security expert. He writes on national security, military technology, strategic affairs & policies.



(TOP) FAIZ AHMED KIDWAI, DIRECTOR GENERAL OF THE DGCA, SPEAKING TO THE AUDIENCE;
(ABOVE) ASANGBA CHUBA AO, JOINT SECRETARY, MINISTRY OF CIVIL AVIATION (MOCA) ADDRESSING THE GATHERING



GALINA BROK-BELTSOVA (1925 - 2024)

By 1943, so many Soviet pilots were being killed, that a few women began to be trained on the Petlyakov Pe-2 twin-engine dive bomber, the pride of the Soviet Air Force. Galina was one of just nine women selected.

GALINA BROK-BELTSOVA WAS A SOVIET BOMBER NAVIGATOR.

She was one of more than 8,00,000 women who served in the Red Army, of whom around 1,000 were aviators. Three women's air regiments had been authorised by Joseph Stalin in 1941 at the urging of the record-breaking, long-distance aviator Marina Raskova – the Soviet answer to America's Amelia Earhart. Raskova told Stalin that women could fight as well as men. Whether or not Stalin was convinced, he had no choice but to agree, because the Soviet Union was fast running out of young men who could fight. The three women's regiments that Marina Raskova founded were the 586th Fighter Regiment, the 587th Bomber Regiment and, most famously, the 588th Night Bomber Regiment, nicknamed "the Night Witches". Galina belonged to the 587th Bomber Regiment.

Galina Pavlovna Brok-Beltsova was born in Moscow on February 12, 1925. As a child she actively participated in athletics, volleyball, swimming, skating and skiing. She had planned to go to university but her plans were dashed by the Nazi invasion of the Soviet Union in June 1941. It so happened that Galina and some of her girlfriends were emerging from a cinema when an air raid siren went off. The people on the streets were rushed into an underground station. But the girls, unfazed by the air raid, went to a nearby office to sign up for military service. Galina who was just 16 years old at the time, later said, "We were athletic and strong and very brave. We were maybe too brave – showing off."

Galina was accepted into the all-female 122nd Composite Air Group, along with hundreds of other women. She immediately had her head shaved. She was given men's military boots and a man's jacket several sizes too large for her. The women were transported east to Samara, on the banks of the Volga, where they lived in primitive conditions, at temperatures of minus 30 degrees. Galina's billet was a stable full of frozen horse manure. Undeterred, she found shovels and crowbars and organised a work party to get rid of the filth and make their surroundings liveable. By 1943, so many Soviet pilots were being killed, that a few women began to be trained on the Petlyakov Pe-2 twin-engine dive bomber, the pride of the Soviet Air Force. Galina was one of just nine women selected. The Pe-2 was designed for a crew of three, but severe shortages of trained personnel meant that two crewmembers was the norm. Although Galina was

trained as a navigator, she had to multitask as the radio operator as well as the bombardier, which could prove dangerous whilst attacking enemy forces. An added problem was that their aviation maps were practically useless since the invading Nazis had razed villages and forests across the captured territories.

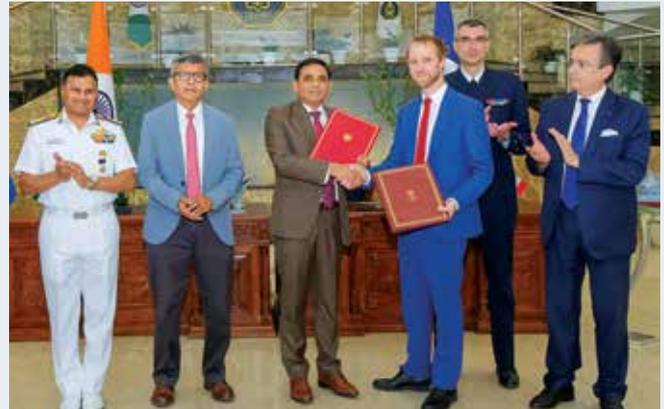
On June 23, 1944, Galina Brok-Beltsova flew her first combat mission as navigator in the Belarusian campaign. The pilot was Antonia Bondareva-Spitsina. By then, the 587th Bomber Regiment had been renamed the 125th Guards Bomber Aviation Regiment. In all the pair flew 36 combat missions starting with Operation Bagration. On one occasion the two women smelled petrol in the cockpit. Just as Antonia bent down to examine a hole in a fuel tank, a German shell shot through the plane, right where her head had been. The shell barely missed Galina too. Another time, their engine cut out. A couple of German fighters harried them aggressively, "With terrible smiles on their faces." However, the German pilots were gallant enough to let them get away safely. Galina's final mission was the bombing of Konisberg (present-day Kalingrad), which the Germans surrendered on April 9, 1945, with the city in ruins.

Galina was demobilised from the Soviet Air Force, when she was just twenty. She had been awarded six state honours and 18 medals. In a later interview she said, "I was young. We were sent to the military, and we went to funeral after funeral. We were jumping from our planes." She added, "We were burning. Women died." She married Georgy Belsov, a fellow air force officer, who had been courting her for years. She was able to go to university as she had intended. She eventually fulfilled her dream by acquiring a PhD in History in 1960, and taught at several universities thereafter.

Galina Brok-Beltsova died on August 15, 2024, aged 99. Her death marked the end of an era, because she was the last member of Marina Raskova's force to pass away. Indeed these three all-female air regiments were decades ahead of their time, considering that the US Air Force only allowed women to fly in combat missions in 1993, and the Royal Air Force in 1994. The Indian Air Force began inducting women into combat roles in 2015, and made the system permanent in 2022. SP

— JOSEPH NORONHA

INTER-GOVERNMENTAL AGREEMENT INKED WITH FRANCE FOR 26 RAFALE-MARINE AIRCRAFT FOR INDIAN NAVY



THE GOVERNMENTS OF INDIA AND FRANCE HAVE SIGNED AN INTER-GOVERNMENTAL AGREEMENT (IGA) FOR THE PROCUREMENT OF 26 RAFALE AIRCRAFT (22 SINGLE-SEATER AND FOUR TWIN-SEATER) FOR THE INDIAN NAVY. THE SIGNED COPIES OF THE AGREEMENT WERE EXCHANGED BY INDIAN AND FRENCH OFFICIALS IN THE PRESENCE OF THE DEFENCE SECRETARY RAJESH KUMAR SINGH AT NAUSENA BHAWAN, IN NEW DELHI ON APRIL 28, 2025.



THE GOVERNMENTS OF INDIA AND FRANCE HAVE SIGNED an Inter-Governmental Agreement (IGA) for the procurement of 26 Rafale Aircraft (22 Single-Seater and four Twin-Seater) for the Indian Navy. It includes Training, Simulator, Associated Equipment, Weapons and Performance-Based Logistics. It also includes additional equipment for the existing Rafale fleet of the Indian Air Force (IAF).

The IGA has been signed by Defence Minister Rajnath Singh and Minister of Armed Forces of France Sebastien Lecornu. The signed copies of the agreement, aircraft package supply protocol and weapons package supply protocol were exchanged by Indian and French officials in the presence of Defence Secretary Rajesh

Kumar Singh at Nausena Bhawan, New Delhi on April 28, 2025.

In line with the Government's thrust on Atmanirbhar Bharat, the agreement includes Transfer of Technology for integration of indigenous weapons in India. It also includes setting up of production facility for Rafale Fuselage as well as Maintenance, Repair and Overhaul facilities for aircraft engine, sensors and weapons in India. The deal is expected to generate thousands of jobs and revenue for a large number of MSMEs in setting up, production and running of these facilities. The delivery of these aircraft would be completed by 2030, with the crew undergoing training in France and India. [SP](#)

— PIB

MILITARY

SWEDEN CONFIRMS ACQUISITION OF FOUR C-390 MILLENNIUM



Sweden officially committed to acquiring from Embraer a global leader in the aerospace industry, four C-390 Millennium multi-mission aircraft, securing the necessary production slots. This announcement follows the recent official signing of an agreement that stipulates that Sweden joins the Netherlands and Austria in the C-390 programme.

The aircraft has been acquired by eight countries: Brazil, Portugal, Hungary, South Korea, the Netherlands, Austria, the Czech Republic, and an undisclosed customer. It has also been officially selected by Sweden and Slovakia to modernise their air forces. The C-390 represents the next generation of military airlift with multi-mission capability and interoperability built by design.

FRENCH AIR FORCE BUYS 22 PC-7 MKX



The French Procurement Agency, Direction Générale de l'Armement (DGA), has selected the PC-7 MKX as the new training system for the French Air and Space Force. The fleet of 22 PC-7 MKXs will be used to provide basic training for military pilots – deliveries are scheduled for 2027. Besides the 22 aircraft, the package will also include ground-based training tools to be provided partly in collaboration with French industry. Pilatus will supply simulators, computer-based training and mission planning and debriefing system equipment.

APPOINTMENTS



BOEING APPOINTS DON RUHMANN

Boeing announced Don Ruhmann as the company's new Chief Aerospace Safety Officer, effective immediately. In this role, Ruhmann will be responsible for strengthening Boeing's safety culture and safety practices, furthering efforts to accelerate and mature the Safety Management System (SMS) across the company and continuing work with the industry to bolster the aviation safety ecosystem.



EMBRAER APPOINTS PATRICK PENG

Embraer has appointed Patrick Peng to the position of Managing Director and Senior Vice President Sales & Marketing, Commercial Aviation, Embraer China, effective March 31, 2025. Peng will lead Embraer's activities in China and report to Martyn Holmes, Chief Commercial Officer (CCO) of Embraer Commercial Aviation.



GULFSTREAM APPOINTS BRIAN BURROWS

Gulfstream Aerospace announced the appointment of Brian Burrows as Vice President of Service Centre Operations, effective immediately. In his new role, Burrows is responsible for ensuring customers and operators continue to experience consistent service excellence across the extensive Gulfstream Customer Support service centre network.



STAR AIR APPOINTS SHILPA BHATIA

Star Air announced the appointment of aviation veteran Shilpa Bhatia as the Chief Commercial & Marketing Officer (CCMO), effective March 1, 2025. Her appointment marks a significant step for Star Air as the airline continues to expand its footprint and enhance its commercial operations.

CONTRACT INKED WITH BEL FOR MI-17 V5 HELICOPTERS

Ministry of Defence has signed a contract with Bharat Electronics Limited, Bengaluru for the acquisition of Electronic Warfare (EW) Suites and aircraft modification kits as well as their installation on Mi-17 V5 helicopters, along with associated equipment, for the Indian Air Force at an overall cost of ₹2,385.36 crore. The contract, under Buy (Indian-Indigenously Designed Developed and Manufactured) category, was inked in the presence of Defence Secretary Rajesh Kumar Singh in New Delhi on April 7, 2025.

This state-of-the-art EW Suite will considerably enhance operational survivability of the helicopters in hostile environment. Majority of sub-assemblies and parts will be sourced from indigenous manufactures. The project will boost and encourage active participation of Indian electronics and associated industries, including MSMEs.

FIRST REAR FUSELAGE FOR LCA MK1A HANDED OVER TO HAL

The first rear fuselage for Light Combat Aircraft Mk1A, produced by Indian Private Industry, Alpha Tocol Engineering Services Private Ltd, was handed over to Hindustan Aeronautics Limited (HAL) in the presence of Defence Minister Rajnath Singh. In his address, Defence Minister termed the handing over as a milestone in the historic journey of India's defence manufacturing. The ceremony is a testimony to India's progress towards Atmanirbharta in defence and the Government's commitment towards enhanced public-private partnership, he said.

Defence Minister described HAL as the fuselage of the country's defence and aerospace sector, with private companies such as L&T, Alpha Tocol, Tata Advanced Systems and VEM Technologies playing the role of rear fuselage, supporting HAL. "Together with these Indian components, the

aircraft which is being manufactured in our defence and aerospace sector will reach greater heights in the times to come," he said.

CIVIL

COLLINS AEROSPACE UNVEILS NEW ENGINEERING DEVELOPMENT AND TEST CENTER



Collins Aerospace, an RTX business, today opened its new Engineering Development and Test Center (EDTC) at the company's North Gate campus in Bengaluru, India. The new facility streamlines product development, testing, and certification of components locally, bringing aerospace technologies to market faster.

The state-of-the-art facility includes comprehensive testing equipment to ensure the aerospace systems meet the highest global safety and performance standards. These tests simulate harsh aircraft operating conditions and address potential issues including extreme temperatures, high altitudes, vibration, and electromagnetic interference. By conducting these tests locally, Collins can more quickly identify adjustments earlier in the development process, improving product design while reducing both time and cost.

GE AEROSPACE PARTNERING WITH THE SOCIETY OF WOMEN ENGINEERS IN INDIA



GE Aerospace partnered with Society of Women Engineers (SWE) in India for the WE Local conference held in Bengaluru from April 10-11 as a part of their focus on empowering women in STEM and developing engineering talent in India. The two-day event brought

FALCON 10X DEVELOPMENT ON COURSE



MANUFACTURING, DEVELOPMENT AND assembly continue apace for the Falcon 10X, the largest, fastest Falcon yet. Engineers are working with its mechanical testbed to stress test the airframe's load and

fatigue limits, which will help validate its actual lifespan. Rolls-Royce completed a successful test campaign of the Pearl 10X engine on its testbed aircraft. First deliveries are scheduled for the end of 2027. **SP**

together over 1,000 early to mid-career women engineers, serving as a dynamic platform for networking, knowledge sharing, and career growth. GE Aerospace hosted two exclusive panel discussions—"Towards More Sustainable Aviation: The Road to RISE" and 'AI in Aerospace: Shaping the Future of Flight'. They also engaged with career fair attendees at its booth on day 2, re-affirming their commitment to innovation, engineering excellence, and advancing the future of flight.

V2500® ENGINES SURPASS 300 MILLION FLIGHT HOURS OF SERVICE

IAE International Aero Engines AG (IAE) announced that the V2500® engine has surpassed 300 million engine flight hours of operational experience. IAE is a multinational consortium comprised of Pratt & Whitney, Japanese Aero Engines Corporation and MTU Aero Engines AG.

Powering approximately 2,800 aircraft and serving more than 150 operators, the V2500 engine operates passenger, cargo, and military missions around the world. The engine currently powers the Airbus A320ceo family, including A321F passenger-to-cargo conversions, as well as the Embraer C-390 Millennium multi-mission military transport aircraft.

ATR ANNOUNCES NEW ORDER OF ATR 72-600F

ATR announced a major contract with FedEx for the acquisition of 10 ATR 72-600F. This order adds to a previous

commitment of 30 aircraft, and deliveries are scheduled between 2027 and 2029. The only in-production regional freighter on the market, the ATR 72-600F incorporates the latest technology featured in the ATR –600 series while being specifically designed for cargo operations. A bulk configuration helps in optimising the available volume – up to 75 m³ – thanks to the nine vertical nets, attachment points on the floor and lateral tracks. In addition, with a large cargo door, cargo loading system and wide cross section, the ATR 72-600F can accommodate industry-standard Unit Load Devices (ULDs) and interline with larger freighters.

EMBRAER TO OFFER HIGH SPEED WIFI SYSTEM

Embraer has finalized an agreement with Intelsat to install its high-speed in-flight connectivity system on E-Jet E2s during aircraft production. The system, with transmission speeds up to 275Mbps, gives passengers in the sky a similar streaming and surfing experience to their home networks. The Intelsat product is the first multi-orbit satellite system to incorporate an Electronically Steered Array (ESA) antenna, which for passengers means wider coverage, faster transmission, and greater reliability. The Intelsat ESA, which is offered as an option, will be available for line-fit by the end of this year. Intelsat's LEO network has low latency (the delay between sending and receiving data) and covers the entire Earth, including the polar regions. The GEO network is ideal for more densely populated areas, like big cities. ●

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