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IAF Needs Quantitative and Qualitative Upgradation at a Faster Pace

Group Captain (Dr) Swaim Prakash Singh
Visiting Fellow, CAPS
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The first phase of the largest-ever multilateral air combat exercise, Exercise (Ex) Tarang Shakti, concluded at Air Force Station Sulur on August 14, 2024, showcasing professional acumen, camaraderie and military diplomacy at its best. The high-profile and professionally enriching first phase culminated with a one-of-a-kind flying formation. The formation was flown by the Chiefs of Air Staff of the French, German, Spanish and Indian Air Force (IAF), which is a testament to leading from the front in the best of military traditions. The German and French air force chiefs, Lieutenant General Ingo Gerhartz and General Stephane Mille, flew in the Light Combat Aircraft (LCA) Mk-1 (Tejas). The Spanish and Indian Air Force chiefs, Air General Francisco Braco Carbo and Air Chief Marshal VR Chaudhari flew in the Su-30.

Faith in Self Reliance

Exercise Tarang Shakti also showcased the need for Self-reliance in military aviation, which has been a learning lesson not only from the recent Russia-Ukraine and Israel-Hamas crises but also since World Wars I and II. India, in general, and IAF in particular, has shown immense faith in the versatile indigenous Tejas aircraft. Throughout the missions in the exercise, LCA's serviceability and operational performance have been praiseworthy while executing various missions along with more illustrious, battle-proven and widely flown fighter jets of Air Forces of advanced nations. The favourable and positive comparison has tremendously boosted the morale of the technicians, scientists and the air warriors of the IAF. To the extent that the IAF Chief stated, "LCA being the smallest fighter aircraft in the drills, showed size does not matter. The aircraft proved its capabilities in realistic combat settings as part of both 'blue force' (friendly) and 'red force' (hostile)."[1]

Though LCA Mk I Tejas is the talk of the town, it is worth noting that nearly all Indigenous platforms like Prachand attack helicopter, Netra Airborne Early Warning and Control (AEW&C) and Akash Surface to Air Missiles (SAM) prominently participated throughout the exercise in various missions of Large Force Engagement (LFE). As part of interoperability, MiG-29K fighters of the Indian Navy also joined the first phase, promoting jointness.

The aim of such multi-national exercises is not only to collaborate and corroborate various Tactics, Techniques, Procedures (TTP), and professional skills but also to gauge the potential and efficacy of equipment in furtherance of desired warfare capability. The exposure in this exercise proves that the Tejas is the epitome of Indian success in the self-reliance campaign. It is certain that along with Su30 and Rafale, Tejas will now be used more often in air combat drills both within and outside the country. International Defence Aviation Exposition 2024 – IDAX 2024[2] organised at the airbase showcased the Defence Research Development Organisation's (DRDO) effort to boost the defence industry within the country and with foreign companies.

Challenges in Self-Reliance

While the Chief of Air Staff (CAS) endorsed the capabilities of the LCA Mk-1, he also expressed concern, stating, "If we had adequate numbers of LCA Mk-1As, the aircraft would have taken part in Tarang Shakti."[3] Similar concerns were also flagged by the current Vice Chief of Air Staff (VCAS) recently in a seminar organised by the Centre for Air Power Studies. A question mark hangs over Hindustan Aeronautics Limited's (HAL) ability to meet the delivery timeline of the 83 LCA Mk-1As on order. IAF will have to wait longer for the first aircraft that was supposed to be delivered by the end of February 2024. The deadlines have been revised twice, from February to August and then to November 2024. As has been the experience, it is doubtful it will be delivered even in 2025. This inordinate delay occurred despite the final operational configuration (FOC) version being cleared in 2018. Even the first fleet of 40 Tejas aircraft has not been met to date. The research and production agencies need to realise that the repetitive delay will cost the nation dearly. The sooner we realise this, the better it is. It will be foolhardy to wait for an adverse situation to happen and then speed up the production process. At this slow pace, the IAF will not have the first lot of 83 aircraft by 2029, let alone another 97 aircraft. The delay in the supply of GE-404 engines is making the situation further grim. Four significant issues that always hinder meeting deadlines are the lack of indigenously manufactured high-performance jet engines, slow design and development process, lack of domestic aerospace support ecosystem and stringent certification procedures.

Takeaways

This exercise highlights three major lessons that must be acknowledged within the IAF and the government machinery at the highest level. The media reports and coverage may help showcase the strength of air power yet again. Still, the IAF needs to put forth its requirements more assertively to garner national efforts and ensure it is optimally, qualitatively and quantitatively equipped to safeguard the nation's sovereignty.

Shiksha to Shakti

It was sixty-one years ago that the Indian Air Force conducted its inaugural multinational air force exercise, Exercise 'Shiksha'. The wargame, which included the USA, UK, and Australian air forces, was developed in response to the 1962 India-China War and reflects a strong commitment to enhancing preparedness for potential future conflicts. In the first fifteen years of its existence in Independent India, the IAF struggled to build up its inventory, tactics, techniques, and procedures, especially in the offensive roles undertaken by the fighter aircraft. Also, the IAF had to address the issues of inadequate radar coverage, poor communications in remote areas, and limited experience in mountain warfare.[4] IAF had to evolve effective Air Defence procedures and capabilities, including an Air Defence ground radar network, control and reporting systems, aircraft on Operations Ready Platform, etc., which later proved to be crucial in subsequent wars.

Nearly six decades later, the IAF has the ability to conduct a strategically significant mega air force exercise, 'Tarang Shakti', involving around 30 countries across the globe. There is a marked difference between 1963 and 2024: while Ex Shiksha (Learning/Education) was focused on learning, educating and evolving, Ex' Tarang Shakti' (Wave-like Strength) aims to practice and showcase strength, reflecting the learning accumulated over these decades. Today, IAF conducts this exercise from a position of strength and confidence as one of the pre-eminent air powers in the region. The armed forces, and the IAF in particular, play a vital and effective role in the geopolitical and geo-economic sphere of influence, aligned with the country's vision of Viksit Bharat@2047. This exercise is an apt example of air power diplomacy through air operations and industry engagements, highlighting the IAF's global influence and strong international ties.

Qualitative Upgradation

Phase I of Ex Tarang Shakti demonstrated quality interceptions, engagements and a variety of air operations required in the contemporary contested and congested battlespace. The participation of advanced fourth-generation aircraft, supported by the latest avionics, and the training of global air warriors reaffirm that one has to be ahead of the latest technology at all times. Only then can one achieve optimum situational awareness

and battlefield transparency, leading to faster and more assured deliverables. Participation of foreign aircraft F-16, F-18, Typhoon, Rafale, etc., along with Indian inventory of aircraft, Surface to Air Guided Weapons (SAGW), Integrated Air Command and Control System (IACCS), etc., improved the combat experience.

At the same time, it serves as a stark reminder that having only a few of the latest top-of-the-line aircraft with better avionics and qualitative output is insufficient in the Indian context, especially in the integrated theatre environment and the vast borders. The entire mission planning and execution is a network-centric process, with IACCS being the lynchpin of the success of quality missions. It is imperative that the IAF's best practices be further strengthened and bolstered with equally capable aircraft, missiles, Intelligence, Surveillance and Reconnaissance (ISR) assets, and network connectivity throughout the battlespace and Tactical Battle Area (TBA). 'The need for advanced technology is not just a necessity but a strategic imperative for the IAF's continued success.'

Since its launch, China's fifth-generation, state-of-the-art stealth aircraft, the J-20, has advanced remarkably, producing about 250 aircraft, of which more than 200 are presently in active service. Production rates have risen from 30 to 100 aircraft annually, and by 2030, the PLAAF may have more than 800 J-20s in its fleet. This would present a serious strategic challenge as it might outnumber the IAF's whole fighter jet fleet.[5]

Conversely, Pakistan has expressed interest in the Chinese Shenyang FC-31 and Turkish KAAN, which are comparable to the US Lockheed F-35. India's security calculations would be further complicated by Pakistan's potential acquisition of either of these stealth fighters, so the IAF would need to respond decisively and swiftly. Given the potential for conflict with both China and Pakistan, India faces a multi-front challenge that calls for it to maintain an extremely competent and adaptable air force that is well-armed to thwart any misadventures by adversaries.

Quantitative Upgradation

Exercise Tarang Shakti demonstrated that today's and tomorrow's warfare cannot be fought with yesterday's equipment. Still, it also reinforced that the quantity of assets, whether in the air or on the ground, is equally essential to orchestrate all kinds of air operations as per your choice of time and place. Over the past decade, the conventional threat emanating from China has garnered more traction than Pakistan. Incidents like Doklam, Galwan, etc., are among the skirmishes that further cement this narrative. However, the traditional rivalry from Pakistan, conventional and otherwise, must not lose sight of military preparedness. The vast, sparsely manned front on both sides of peninsular India, being the most extensive, has added to the difficulty

for the armed forces in monitoring the vast oceans and the highly important Sea Lanes of Communication (SLOCs), especially for the IAF. Therefore, it is imperative that the quantitative upgradation of the IAF is critical and must be met as soon as possible. It is also clear that it cannot be solely met under the *Atmanirbhar Bharat* campaign. India and the IAF, in particular, cannot keep extending the timelines for the prototypes to fructify and further wait for mass production. The IAF needs to firm up the immediate and short-term deadlines of 2027 and 2031 to finally be fully equipped with respectable array of aircraft, radars, enablers, missiles, network-centric systems and space capabilities by its centenary in 2032. The IAF's alignment with the Viksit Bharat@2047 deadline and completing its assets by then may not be on the right track, as there is still a long way to go. Also, the procurement of assets may face multiple hindrances and be marred with internal and external political scenarios, which is difficult to guess at this stage. Therefore, sticking to immediate and short-term deadlines is the need of the hour, and the whole-of- nation/government approach is the only way to meet the ends.

Statistically analysed, the IAF is currently operating with a significantly lesser number of fighter squadrons than those recommended for a two-front war. It currently has only 30 combat squadrons and barely countable enablers like tankers, AEW&C and orchestrator Airborne Warning and Control System (AWACS). The massive shortfall of nearly 250 fighter aircraft becomes even more concerning when considering China's PLA Air Force (PLAAF), which fields approximately 1,700 combat aircraft, including over 800 fourth- and fifth-generation platforms like the J-20. Meanwhile, with assistance from China, Pakistan has also modernised its fleet to include over 400 combat aircraft, including JF-17s and J-10C fighters. PAF has recently added its ninth aircraft to the AEW&C fleet, which tilts battle transparency in its favour. In contrast, the IAF's depleting strength is aggravated by the impending phase-out of legacy aircraft such as the MiG-21 and Jaguar, which will further reduce its operational squadrons. While the inadequacy of numbers can be overcome by professional acumen, tactics, procedure, etc., the extent to which this would be effective in a war-like scenario is anybody's guess.

The IAF's current combat strength lacks the depth required to counter simultaneous threats on both fronts and in the peninsular India. To bridge this gap, the IAF requires the induction of at least 12-15 additional squadrons which is not possible with the indigenous route alone; thus, government-to-government acquisition is a must by 2031 to ensure a mix of both. HAL is likely to supply not more than 7-8 squadrons of LCA Mk1A and LCA Mk2 by 2031. Beyond these, IAF also needs to have a 5th-gen fighters to counter adversaries, both of whom would have a 5th-gen aircraft fleet by then. Force multipliers like Flight Refuelling Aircraft (FRA), AEW&C, Remotely Piloted Aircraft (RPAs) and orchestrators like AWACS are essential to ensure sustained air operations. Quantitative upgrades supported by strategic acquisitions are vital for the IAF to maintain air

parity, provide effective deterrence, and ensure a credible defence posture against the combined threats posed by China and Pakistan. The need for a credible defence posture cannot be overstated in the face of such formidable adversaries.

Conclusion

The IAF has come a long way, from its first multinational Exercise, Shiksha, in 1963 to Exercise Tarang Shakti in 2024. IAF has successfully demonstrated its operational and combat capabilities to domestic audience, adversaries, and the global community. Conducting such a multinational exercise is also a test bench for the senior military leadership of the three Services to acknowledge the need for quality and quantity in the envisaged integrated environment. It also sends a firm message that Air Power diplomacy is one of the most effective, fastest and far-reaching consequential modes of military diplomacy empowering national objectives. It would not be incorrect to state that '*Quantity alone cannot overcome quality, and effective quality cannot be maintained without adequate quantity.'* Hence, it is a constant reminder for the concerned to review the procurement roadmap of the IAF for the country.

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies [CAPS])

Notes:

[1] Rahul Singh, "LCA proved its mettle in Tarang Shakti drills, says IAF chief", *Hindustan Times*, August 13, 2024, https://www.hindustantimes.com/india-news/lca-proved-its-mettle-in-tarang-shakti-drills-says-iaf-chief-101723547971515.html. Accessed on August 16, 2024.

[2] "Ex Tarang Shakti showcases India's military capabilities and defence ties with participating nations", *All India Radio*, August 13, 2024, https://www.newsonair.gov.in/ex-tarang-shakti-showcases-indias-military-capabilities-and-defence-ties-with-participating-nations/. Accessed on August 16, 2024.

[3] Singh, n.1.

[4] Anchit Gupta and Angad Singh, "Diffidence to Strength: Multinational Air Exercises in Indian skies", #IAFHistory, August 3, 2024, https://iafhistory.in/2024/08/03/diffidence-to-strength-multinational-air-exercises-in-indian-skies/. Accessed on August 16, 2024.

[5] Karan Sharma, "The J-20 Challenge: Can India Bridge the Fighter Jet Gap With China?" *The Diplomat*, June 18, 2024, https://thediplomat.com/2024/06/the-j-20-challenge-can-india-bridge-the-fighter-jet-gap-with-china/. Accessed on August 19, 2024.