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Need for Flight Refueller Aircraft (FRA) and Way Forward

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The Indian Air Force (IAF) being globally the fourth largest Air Force, has evolved into a formidable national security constituent and is equipped with myriad advanced capabilities in terms of tactical defence and strategic deterrence power projection or political signalling besides being a tool of Humanitarian Assistance & Disaster Relief (HADR) globally.

As the IAF continues to augment its operational readiness and extend its strategic depth and tactical reach, the necessity for in-flight refuelling capability becomes progressively vital. The Flight Refueller Aircraft (FRA) plays a crucial role in extending the range, endurance and the operational flexibility of fighter jets like the Su-30 MKI, Mirage-2000, MiG-29, Jaguars and the recently acquired Rafale fighter jet and other new generation aerial platforms.

The IAF is supposed to hold a larger number of FRAs on its inventory while till date it is constrained to manage with a complement of mere six IL-78 class refueller aircrafts. There have been efforts by the IAF in the past two decades or so to fill up the shortfall through global procurement. The first Request for Proposal (RFP) for six Refueller aircrafts was floated under Direct Cost of Acquisition (DCA) mode in 2003, which was withdrawn by MoD for the reason that there was a requirement to float the new RFP based on Total Cost of Acquisition (TCA) model[1].

While the DCA model envisaged the cost of the green (raw) aircraft minus the costs of maintenance and operations, the TCA model comprehensively takes into account also the cost of the green aircraft, cost of the maintenance spares for the prescribed lifetime of the aircraft besides the operating cost in terms of fuel consumption. The RFP based on TCA model was floated by MoD somewhere around 2011 but was withdrawn sometime in 2016 due to some ambiguities in the response of the two bidders, i.e. Joint Stock Company (JSC) RosoboronExport offering IL-78 platform and Airbus offering the Multi Role Tanker Transport (MRTT) A-330 aircraft. However, both the times the process of acquisition failed due to various price related and other issues[2].

India is realising the urgency of meeting the shortfall and therefore, IAF is looking forward to temporarily lease an Airbus MRTT A-330 Refueller aircraft from French Air Force. Alongside, HAL in consultation with Israel Aerospace Industries (IAI) is planning to convert a domestically developed Boeing 737 aircraft equipped with Israeli refuelling kits[3].

Strategic and Tactical Significance of Tanker Transport

The vast geographical expanse of India and its strategic interests beyond its borders necessitate the capability to project air power over long distances. In view of this, FRA enables fighter jets like the Su-30 MKI, Mirage-2000, MiG-29, Jaguars and Rafale to extend their operational reach without the need to land enroute for refuelling[4].

Besides this, the aerial refuelling acts as a force multiplier by virtue of enhancing the endurance and mission capabilities of the combat aircraft, allowing the fighter jets to remain airborne for longer durations providing persistent presence with capability to conduct multiple sorties and tactical inter-theatre diversions without having to return to the base.

The ability to project air power over extended ranges contributes to strategic deterrence by demonstrating the IAF's capability to respond swiftly and effectively to external threats. Aerial power enhances the credibility of India's conventional and strategic deterrent forces, providing the flexibility to swiftly deploy the air assets where and when needed.

The in-flight refuelling also supports India's power projection goals by enabling the IAF while participating in the international exercises, humanitarian missions and sometimes coalition operations, as witnessed while operating in the UN missions away from Indian skies. Needless to say that it enhances India's capability to effectively contribute to regional stability and response to crisis situations, thus reinforcing its role as an effective and responsible global force.

Operational Advantages

As stated above, the AAR capability by virtue of being not only strategic but also a tactical force enhancer, allows the combat aircraft to carry out extended missions without the need for frequent landings to refuel the bird. This increases the aircraft's endurance and operational efficiency, allowing for continuous operations during critical phases of a mission, such as air superiority, reconnaissance, and close air support.

Seen in this view, the FRA provides operational flexibility which is crucial for dynamic battlefield scenarios, where aircraft may need to adjust their mission profiles based on evolving threats and objectives. It allows for rapid redeployments as required to facilitate the sustained air operations in contested environment.

Aerial refuelling also enables fighter jets to take off with full weapon loads and minimal fuel, thereby increasing their payload capacity for air armament and sensors. This is particularly beneficial for strike missions where maximizing the payload and its tactical reach at the target is critical for mission success.

The FRA provides operational independence by reducing reliance on Forward Base Support Units and land-based refuelling infrastructure installed in some of them. This is especially important in scenarios where access to bases may be restricted or if the supporting bases happen to be located amidst contested environment.

Current Fleet Limitations and Future Requirements

As of 2024, the IAF operates a limited number, six to be precise, of aerial refueller aircraft i.e. the Ilyushin Il-78MKI. These aircraft have provided valuable in-flight support for various operations and exercises but they do have limitations in terms of numbers, operational availability and serviceability constraints. The Il-78MKI is known to maintain just satisfactory serviceability due to older technology and therefore restricts the IAF's ability to support multiple operations simultaneously[5].

To meet the growing operational demands, the IAF is exploring the acquisition of modern aerial refueller aircraft. Potential options include platforms like the Airbus A330 MRTT and Boeing KC-46 Pegasus[6]. These aircraft offer advanced capabilities, increased fuel capacity and interoperability with various aircraft, making them suitable for the IAF’s diverse operational requirements.

It is also relevant to mention here that, the present day FRAs available worldwide enable efficient and precise compatibility with different types of aircraft. Additionally, modern tanker aircrafts score an additional point by virtue of incorporating advanced avionics, advanced communication systems and self-protection suit, that enhance their operational capabilities and survivability.

Advanced aerial tankers equipped with secure communication links and data sharing capabilities would provide real-time information to enhance mission coordination and situational awareness. These aircrafts would support IAF's broader goals of achieving seamless connectivity and interoperability in today’s theaterised battle environment.

It would also be prudent to feature the requirement of specialized training for FRA aircrew and support personnel. Developing robust training programs by the OEM and revised operational doctrines by IAF are crucial for maximizing the benefits of AAR. The training curriculum may include

training on refuelling techniques, mission planning and coordination with various aircraft platforms operated by IAF.

Significantly enough, active collaborations with friendly air forces that possess AAR capabilities can provide valuable insights into FRA operations through joint exercises. Participation in international exercises and ongoing strategic partnerships with advanced countries like the United States, France and Australia would enhance the IAF's proficiency in aerial refuelling operations and foster interoperability with allied forces.

Need for Modernization and Way Forward for Acquisition of FRA

To address the present capacity constraints and functional limitations, there is a pressing need to modernize the IAF's AAR capability. It may be considered strategically desirable to enhance the operational effectiveness by acquiring the advanced FRAs providing improved range and faster fuel off take capability. India needs to go in for acquisition of new generation aerial tankers equipped with state-of-the-art systems and sensors to enhance the IAF's operational efficiency and mission effectiveness.

Sometimes it has been found difficult to finalise the contracting action by MoD for acquisition of FRA in the past mainly due to the OEM not responding or not cooperating with MoD. The failure to ink the acquisition contract for FRA by MoD has led to not only prolonged non availability of the reliable FRA and shortages against the requirement, but also cost escalations with every postponement of the acquisition action. It would be worthwhile to address the issue of inadequate response by the OEMs through Government to Government (G-to-G) route, as done in case of acquisition of Rafale fighter jet fighters in 2014-15.

Summing Up

The need for FRA in the IAF is driven by the strategic imperative to extend operational reach, enhance mission endurance and support the strategic need for power projection. Aerial refuelling acts as a force multiplier, enabling sustained air operations, rapid response to threats and enhanced operational flexibility. While the existing fleet of aerial refueller aircraft provides inadequate AAR capability, there is a pressing need to modernize and expand this capability to meet evolving operational requirements.

Acquiring modern flight refueller aircraft, integrating them into network-centric operations and developing robust training and doctrine are essential steps for enhancing the IAF's aerial refuelling

capabilities. Collaboration with friendly Air Forces and participation in international exercises will further enhance proficiency and interoperability.

The strategic and operational benefits of aerial refuelling extend beyond immediate mission requirements, contributing to India's broader defense, deterrence and strategic power projection goals. A robust aerial refuelling capability will strengthen the IAF's operational readiness, support expeditionary operations, and enhance India's role as a responsible global actor in maintaining regional and international security.

It would therefore be worthwhile to expedite the process of acquisition of the FRA circumventing the bureaucratic red tape and undertaking the complete exercise in the mission mode through G-to-G route.

Notes:

[1] Rajat Pandit, "India eyes direct purchase of six refuelling aircraft", The Times of India, July 31, 2016, https://timesofindia.indiatimes.com/india/india-eyes-direct-purchase-of-six-refuelling-aircraft/articleshow/53471222.cms. Accessed on July 01, 2024.

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[3] Raunak Kunde, "Aerial Refuelling Frenzy: US and Europe vie for India's Tanker Deal", Indian Defence Review Wing (IDRW), https://idrw.org/aerial-refueling-frenzy-us-and-europe-vie-for-indias-tanker-deal/. Accessed on July 15, 2024.

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[5] AK Sachdev, "IAF Quest for Flight Refueller", SP's Aviation, 6/2018, https://www.sps-aviation.com/story/?id=2230&h=IAFs-Quest-for-Flight-Refueller. Accessed on July 01, 2024.

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