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FIGHTER AIRCRAFT PRODUCTION IN INDIA: PRIVATISATION IS THE NEED OF HOUR

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In pointed comments regarding the slow delivery of Light Combat Aircraft (LCA)-Mk1A from Hindustan Aeronautics Limited (HAL), Indian Air Force's (IAF) Air Chief Marshal A P Singh expressed anguish during his interaction with HAL Chairman and Managing Director (CMD) Sh D K Sunil during the recently held Aero India show at Bengaluru. He stated that he was just not confident in HAL and expected them to enhance the production of LCA on "mission mode".[1] Such a comment from the IAF Chief was not without any reason as HAL, being the only agency capable of manufacturing aircrafts, has failed to deliver the promised number of LCA to the IAF which is now facing a grave shortage of fighter aircrafts due to the constant depletion of fighter squadrons owing to the phasing out of their life cycle.

Background

In 1983, the government decided to replace the ageing fleet of MiG-21 fighter jets with an indigenously designed and developed new combat platform for the IAF[2]. The Aeronautical Development Agency (ADA) was created as a dedicated entity under the Defence Research and Development Organization (DRDO) to manage the creation of a new combat platform, originally called the LCA and later renamed "Tejas". HAL was assigned the responsibility of manufacturing the LCA Tejas. Since the indigenous "Kaveri Engine" failed to meet the operational criteria for LCA, the GE F404-GE IN20 engine from General Electric Aerospace (GE), United States, was chosen as a suitable replacement engine for powering LCA MK-I and MK-IA. In 2001, Tejas finally made its first flight and entered into service with the IAF in 2015. The first squadron of Tejas became operational in 2016 and the second squadron was formed in May 2020 with the

first four serial production of the final operational clearance (FOC) aircraft. The IAF has currently ordered 123 Tejas aircraft and is planning to acquire an additional 97. The IAF aims to obtain at least 324 aircraft or 18 squadrons of Tejas across all variants, which includes the larger Tejas Mark 2 that is presently in development[3]. However. Despite such large orders by the IAF in the pipeline, HAL, to date, has not even produced 40 aircrafts, which is far below the projected and critically required numbers. Mk1A delivery is affected primarily by a delay in the supply of F404-GE-IN20 engines by GE, which is attributed to a disruption in supply chains by a South Korean firm that is facing financial issues. This firm delivers certain critical components of the engine.

The IAF has currently ordered 123 Tejas aircraft and is planning to acquire an additional 97. The IAF aims to obtain at least 324 aircraft or 18 squadrons of Tejas across all variants. Despite such large orders by the IAF in the pipeline, HAL, to date, has not even produced 40 aircrafts, which is far below the projected and critically required numbers.

Time Criticality of Fighter Aircraft for the IAF

The IAF has repeatedly raised concerns over increasing differential military potential with China, not only in terms of number but also the technology. In anticipation of phasing out of MiG-21s in late 90s and the early decades of the 21st century, the LCA programme was initiated in 1983. To fill the technology gaps and numbers during the years of development of LCA, a limited number of Mirage-2000s and a reasonable number of SU-30s were inducted. During these years, China had enhanced its capabilities very fast. In 2011, while the IAF had not received any LCA for operationalising, China had already developed and flown its first Fifth Generation Aircraft (FGFA) J-20 of Chengdu Aircraft Cooperation.[4] China, since then, has not only increased the number of its aircrafts but has moved rapidly to develop and operationalise J-35 as the second FGFA. Recently, in November 2024, it also demonstrated its capability by flying its first Sixth Generation aircraft at the Zhuhai Air show.[5] In comparison, the IAF has just about two squadrons of LCA, and the number of its fighter squadrons has reduced to an all-time low of about 30 squadrons as against the authorised 42 squadrons. Early efforts to fill the gap with 126 Medium Multirole Combat Aircrafts (MMRCA) aircraft lingered on for almost 15 years since its initiation in 2007 and finally was shelved even with the final selection of Rafale after long drawn trials. Subsequently, between 2020 and 2022, in a Government to Government (G2G) deal between India and France, the IAF received two squadrons of Rafale, with a total of 36 aircrafts[6] that are 4.5 generation, while China already has more than 300 J-20 FGFA and is likely to reach 1000 J-20 by 2030 and 1500 by 2035. The new procurement plan of 114 Multirole Fighter Aircraft (MRFA) of the IAF has

not taken off yet and the indigenous Advanced Medium Combat Aircraft (AMCA) is still at the drawing board stage. To add to the worries of the IAF, it has also learnt that China is already training Pakistani pilots on F-35, and Pakistan has already finalised a deal of the acquisition of 40 F-35s from China. With such capability differeces rising with China, the IAF needs urgent procurements of FGFA aircrafts, the speedy delivery of LCAs from HAL, and the fast track attainment of MRFA to meet the challenges of both technology and number.

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Existing Aircraft Production in India

India's multi-decade fighter aircraft manufacturing journey started in the years following independence. From the early reliance on imports to the shift towards licensed production and indigenous development, this journey's timeline is dotted with significant turning points.[7] India began producing jet aircrafts when HAL assembled the “Vampire” and manufactured the “Hawker Hunter” using a license from the United Kingdom followed by the "Folland Gnat". During the 1970s, India started to explore the development of domestic fighter aircrafts while still engaging in licensed production. The HF-24 Marut was India's first jet fighter developed in-house. Despite its limited operational success because of underpowered engines, it represented a significant achievement in India's aerospace advancement.[8] Subsequently, HAL manufactured over 600 MiG-21 aircrafts under a license agreement with Russia with a present capacity of SU-30 MK I as well. During the 1980s to the 1990s, HAL also commenced the maintenance of Jaguars and Mirage-2000s. During the same period, the indigenous LCA programme was launched. However, due to multiple factors, the LCA production by HAL has been far below the expected delivery, and has led to an unacceptable depletion of fighter squadron strength in the IAF due to the phasing out of MiG 21 squadrons without any replacement by LCA. The ambitious programme of AMCA as an indigenous FGFA is also still at the drawing board stage. Ongoing project delays, dependence on foreign engines, and essential technologies with deficiencies in research and development capabilities have obstructed the progress of indigenous projects like LCA and AMCA. HAL has failed to ramp up its production of LCA and meet the minimum requirement for aircrafts to be supplied to the IAF.

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Private Sector Aircraft Industry in the World

The USA, with three major industries— Lockheed Martin, Northrop Grumman and GE Aerospace— is the leading country amongst private manufacturers of aircrafts. These companies commenced their journey during the Second World War, and today are the leading aircraft manufacturers in the USA with many nations across the globe as their customers. A large number of fighter fleets of the United States Air Force and the US Marines are from Lockheed Martin as well as from GE Aerospace. Similarly, Dassault Aviation is a leading fighter manufacturer in France with its state-of-the-art Mirage series and Rafale aircrafts. BAE Systems and Rolls Royce are private aircraft manufacturers in the UK. Till recently, in India, HAL was the only aircraft manufacturing entity that is primarily a public sector unit (PSU) of the Government of India. However, last year, with the induction of the C-295 aircraft, the Tata Advanced System Ltd (TASL) entered a collaboration to manufacture and assemble the C-295 for the IAF. Private aircraft manufacturing industries of the USA, France and the UK have not only supplied state-of-the-art aircrafts and systems to their own country, but also have boosted their economy by earning huge revenue by way of the sale of these aircrafts to other nations. In contrast, India is still struggling with the inefficiencies of HAL in producing the required number of fighter aircrafts for the IAF as well as the development of new technology. DRDO, another PSU, is also unable to make reasonable progress in the AMCA programme. Such delays and inefficiencies of PSUs have led to the widening of capability differentials with our adversaries, which need to be addressed expeditiously.

Way Forward for the Indian Fighter Aircraft Industry

The IAF presently faces multiple challenges that include primarily a fast-depleting number of fighter squadrons at one end with an extremely slow production rate of the indigenous LCA Tejas to fill the gap. In addition, the major worry for the IAF is the fast rising war waging capability differential with our main adversary China that has successfully produced two FGFA aircrafts J-20 and J-35 along with the demonstration of the sixth generation aircraft J-36 while the Indian aircraft industry is still struggling with its indigenous FGFA AMCA. While facing all these challenges, the IAF also faces another setback to its efforts towards enhancing capability through a major procurement proposal of 114 MRFA, which has been stuck in bureaucratic tangles for many years. The IAF urgently needs to not only ramp up the production of LCA by HAL, but also to quickly induct the available

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FGFA through G2G deals and fast track the induction of suitable MRFA as short listed by the IAF, while focusing on indigenous FGFA AMCA. Since the Air Force relies heavily on technology, it takes time to transform technology into capabilities. It is necessary to invest in cutting-edge technologies and consider their potential applications in combat in order to stay ahead of the curve.

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In order to resolve all the above challenges simultaneously, it is obvious that neither HAL nor DRDO or any other PSU alone will be able to meet the time-critical targets with the present capability and capacity. Since the rising capability differential with China has to be reduced at the earliest, all agencies, including the government and PSUs, have to work in "mission mode" to ramp up LCA production while exploring options in private sector participation to augment the aircraft production efforts. The success story of the US, France, and the UK's private aerospace industry could be a leading example to follow that would boost fighter production in India and encourage research and development by young technical talent in India to enhance indigenous development.

The Indian government, as an immediate solution, must give the highest priority to procuring a certain minimum number of FGFA available on offer either from the USA or Russia through the G2G route, along with the fast-track finalisation of MRFA procurement. Simultaneously. As an impetus to "Atmanirbharta", the government must encourage private industries to set up the aircraft manufacturing industry by working together with multinational aerospace companies to ensure knowledge transfer and obtain access to cutting-edge research. By pursuing cooperative development initiatives with international defence manufacturers and guaranteeing fair technology and intellectual property exchange, we can increase international collaborations and technological alliances. The government also needs to focus on improving governance and policy frameworks, simplify bureaucratic processes to expedite the defence project approval process, guarantee shorter project timeframes and quicker approvals, and modify offset policies to maximise foreign enterprises' industrial participation and technology transfer. At the initial stage, the government must provide diplomatic and financial support to private manufacturers to promote Indian fighter aircraft production in India and set up an aerospace ecosystem of research and development and self-reliance.

As a long-term plan, the government should advocate for the establishment of

technical institutions that focus on specialised programs in aerospace engineering and design. It is essential to create dedicated training centres aimed at enhancing skills in aircraft manufacturing. Additionally, providing competitive incentives and research opportunities is crucial to mitigate the risk of brain drain to other nations. It is expected that with immediate and long-term action, the IAF would not only have the requisite number of fighter squadrons but also be able to bridge the technology gap with the adversary China. Concerted and focused efforts by all the government agencies, supported by the private industry, would ensure that IAF retains its edge and is able to execute its task of defending the skies of India in all eventualities.

Notes:

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[8] Ibid.

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