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- The 1971 Bangladesh Liberation War
Heli-Borne Assault on Sylhet
Bhupinder S. Nijjar
- Indian Defence Budget 2021-2022—What is Enough?
Anil Chopra
- Arguing for a Norms-Based Framework for
Nuclear Responsibilities
Tanvi Kulkarni
- India and Its Role in the Indo-Pacific
Theatre: Partnerships and Prospects
Manan Dwivedi and Manisha Sarade
- China in Maldives: Implications for India
Shantannu Roy-Chaudhury
- China's "Marching West" Strategy: Creating a
Eurasian Great Power
Joshy M. Paul
- India-Sri Lanka Relations: Evaluating the
Impact of Global Politics
Sushmita Bharti
- China's Environmental Security
Ishka Yadav
- From Astrakhan to Vladivostok: Growing Relevance of
Subregional Cooperation between India and Russia
Chandra Rekha

Book Reviews

BOOK REVIEWS

Radiance in Indian Skies: The Tejas Saga
Author: Air Marshal P Rajkumar, Sh BR Srikanth
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DALJIT SINGH

Recent approval by Cabinet Committee of Security (CCS) of procurement of 73 LCA Mk1A fighter aircraft and 10 LCA Mk1 trainer aircraft has generated much enthusiasm and inquisitiveness amongst the public on the LCA Project. While the public is proud of the indigenous production of the modern Light Combat Aircraft, it is keen to know more about how India achieved the capability to manufacture the fourth-generation fighter, whether there was support required from foreign agencies, how much the indigenous content is and the differences in its various standard versions.

To address this need for information, there has been a timely release of *Radiance in Indian Skies—The Tejas Saga* published by DRDO.

Air Marshal **Daljit Singh** (Retd.) is a former Air Officer Commanding in Chief of South Western Air Command.

The book chronicles the LCA journey from conceptualisation to induction of the fighter in the operational squadron. It was officially released by the honourable Defence Minister in February 2021, during the Aero India Show 2021. The book is authored by Air Marshal Philip Rajkumar (Retd.), who set up the National Flight Test Centre (NFTC) and headed it for seven years. Later he headed the Aeronautical Development Agency (ADA) for two years. The first flight of the LCA was undertaken under his stewardship when he took the responsibility and gave it the final go-ahead. He is undoubtedly the most appropriate person to author this book. Mr. B. R. Srikanth, his co-author, has written on aerospace technologies and has monitored this Project for a long time.

The book opens with a write-up of impressions on the Project by various leading personalities who envisioned the project and provided the unstoppable momentum, to ensure continued progress despite occasional issues of funding and stoppage of foreign consultancy. The Book chronologically records the journey from the genesis of the Project to the induction of the LCA in the first operational squadron. There are twenty-six chapters, starting from the genesis, leading to setting up of establishments to manage all aspects of the project, the key technology developments involved, testing and validation, foreign consultation, and funding. The chapters on indigenous development of Fly-by-Wire (FBW) and LCA Navy development provide an account of the technical complexities involved and provide a gripping account of how the combined team surmounted all odds to produce the LCA. The team meticulously adopted the approach of taking small careful steps at a time, ensure safety and reliability, while developing the modern fighter from 'scratch'. In fact, all chapters—especially "Preparation of First Flight", "Air to Air Refuelling" and "Integration of External Stores and Weapons" take the reader along the scenarios, with a gush of excitement and climax. The chapter on "Preparation towards Participation of Tejas in International Air Shows" truly highlights the dedication of the combined team of engineers and display pilots which demonstrated the reliability and performance of the LCA to experts and experienced spectators. Some technical terms like FBW and Control Laws have been well explained for common readers to assimilate.

The authors have truly accomplished the aim of recording the appreciation of all those who were involved in the project. The book is based on the interviews with major players and reports of various trials conducted, which would otherwise not be accessible to the readers. Therefore, the book is quite rich in technical details which, at times, are beyond the comprehension and requirement of an ordinary reader (LEVCON, pages 140-145). Chapter 21 on "Formation of First Tejas Squadron" covers more of the induction ceremony and performance of Tejas during "Exercise Gaganshakti" which indirectly reflects on the aircraft's performance. However, readers looking for a timeframe for the fighter's induction, tarmac maintenance, turnaround efficiency and parts interchangeability would find this information lacking in this abridged chapter. Service security requirements prevented the authors from accessing this information. An important chapter (Chapter 23) on the lessons learnt during the LCA Project is considered invaluable for similar ongoing and future projects. Today technology has advanced so rapidly that it is no more operational requirements leading technology but the technological advances in computation, networking, sensors, and propulsion systems which are driving changes in operational concepts. Another important aspect which stands out is the requirement to review the design from "Technology Demonstrator" stage to the "Series Production" stage, to ensure improvement in operational maintenance, ease of aircraft turnaround, and operational loading of weapons. The issue of parallel preparation of Documentation of Flight Manuals, Maintenance Manuals and Servicing schedules has been well highlighted and should also be a learning lesson for future projects. At present there is emphasis on 'self-reliance', while there are still gaps to be filled in technology and quality. The book clearly brings out a good approach to consultation and cooperation with the more advanced and experienced foreign manufacturers to bridge collaborators to bridge the technological gap and produce operationally capable product indigenously, and on time. Another important lesson that emerges is that the armour of 'self-protection suite' is essential and inescapable for any modern fighter that will be operational for many decades.

This suite can best be embedded and integrated during project definition and developmental stages. Add-on at a later stage would always be a challenge.

The book is an excellent reference work for aviation enthusiasts, a motivator for young scientists, and informative reading for academicians, as it is based on restricted Project Reports and exclusive interviews. The book dispels any doubts on the capability and dedication of the Indian experts and makes the reader truly proud of the dedicated LCA team, who carved their own untrodden path to reach the destination. The book has a high quality of printing with a well designed hard cover and it would be an excellent attractive document for reading and reference.