

CHAPTER I: INTRODUCTION

1.1 Introduction

Government of India (GoI) sanctioned (August 1983) design, development and manufacture of Light Combat Aircraft (LCA) over 8 to 10 years from 1983 at an estimated development cost of about ₹560 crore including six flying prototypes. Subsequently after the completion of the feasibility study and project definition, the Cabinet Committee on Political Affairs (CCPA) approved (February 1991) to execute the project in two phases of Full Scale Engineering Development (FSED). The project was assessed¹ to be completed by 2004. The project is still in progress (January 2015).

Delays in execution of LCA project with respect to project definition, deficiencies in planning and financial management were commented upon in Para 50 of Report No. 3 of 1989 of the C&AG of India, Union Government Defence Services (AF&Navy) for the year ended 31 March 1988. Delay in execution of Phase-I of LCA project which included development of Multi Mode Radar, Flight control system, Digital Electronic Engine Control, integration of Kaveri engine on LCA, etc and consequent up-gradation of MiG-Bis aircraft, import of Su-30 MKI aircraft to cover the shortfall in fighter aircraft, were highlighted in Para 28 of the Report No. 8 of 1999 of the C&AG of India, Union Government, Defence Services (Air Force & Navy) for the year ended 31 March 1998.

Ministry of Defence (MoD) in their Action Taken Note (ATN) had stated (July 2004) that regular review meetings of monitoring bodies were conducted and periodical Joint Review of LCA Programme by Scientific Advisor to Raksha Mantri (SA to RM) /Director General-ADA, Chairman HAL & Vice Chief of Air Staff of IAF to accelerate programme implementation had been introduced since 2002. Status of compliance to the ATN is discussed in Chapter II.

¹ As per joint recommendations (March 1990) of Chief of Air Staff and Secretary, Department of Defence R&D for Phased development of LCA.

However, the LCA development has slipped delaying manufacture of LCA at HAL and induction into IAF. Consequently, it has impacted the operational preparedness of IAF. Hence, the present review of the project was taken up to examine the project execution.

1.2 Organisational structure for implementation of LCA

GoI constituted (June 1984) Aeronautical Development Agency² (ADA) as a dedicated institution for the management of LCA project. MoD, besides sanctioning funds for LCA project, is involved in the decision making process through the General Body and Governing Body of ADA. The General Body of ADA presided by Raksha Mantri annually reviews the progress of LCA project, while the Governing Body chaired by the Secretary, Department of Defence R&D manages all affairs and funds of the society. Thus, Ministry had pivotal role to play in overall implementation of the LCA project. Hindustan Aeronautics Limited³ (HAL), a Defence Public Sector Undertaking is the principal contractor for the LCA project.

1.3 Roll out of the LCA project

The FSED Phase-II was taken up in February 2000 even before the closure of Phase-I and the FSED Phase-I was retrospectively closed (July 2005) with effect from 31 March 2004 within the sanctioned cost of ₹2,188 crore by carrying forward the pending activities to FSED Phase-II as discussed in Chapter-II.

It is seen from the minutes of the Empowered Committee meeting (October 2007) that LCA powered by the imported engine would have performance shortfalls towards meeting the ASR and further observed that LCA weight had exceeded the specification by one tonne, and accordingly it was felt that a higher capacity and bigger aero engine was the only possible solution to achieve LCA performance as laid out in the ASR. The Committee, therefore, recommended (October 2007) redesigning of airframe in order to

² A society set up under Societies Registration Act, 1860 under MoD.

³ Engaged in design, development and manufacture, upgrade, repair and overhaul of aircraft, helicopters, aero engines, avionics and navigation system equipment and marine and industrial gas turbine engines for both military and civil applications.

accommodate a larger diameter engine and suggested that LCA Mark-II⁴ with redesigned airframe must be ready by the time existing LCA Mark-I with IOC and FOC configuration would be produced by HAL, with an aim to productionise LCA Mark-II by 2016.

Accordingly, MoD sought (August 2009) sanction from GoI for an additional FSED Phase, termed as FSED Phase III, at a cost of ₹2431.55 crore (FE ₹818.60 crore), with the stated benefits of an aircraft with alternate engine and lower weight having better performance to meet the requirements of IAF.

Government of India, accordingly, sanctioned (November 2009) FSED Phase-III at a cost of ₹2431.55 crore (FE ₹818.60 crore) for design and development of two prototypes of LCA Mk-II with an imported alternate engine⁵ with a delivery schedule of 31 December 2018. Thus, LCA development can be termed as completed only when the LCA Mk-II is developed (December 2018) under FSED Phase-III, productionised and inducted into IAF squadrons thereafter, as LCA Mk-II is expected to meet the ASR.

Development of LCA Mk-II under Phase-III is also simultaneously in progress (January 2015) along with FSED Phase II and an expenditure of ₹804.15 crore had been incurred (January 2015).

1.4 Expenditure on LCA programme

A total amount of ₹10397.11 crore (FE ₹3800.01 crore) was sanctioned for the three FSED phases of LCA programme, against which, ADA had incurred (October 2014) a cumulative expenditure of ₹8294.39 crore (FE ₹2768.18 crore) as detailed in the **Annexure-I**. This sanction and expenditure are exclusive of cost of Kaveri engine (₹2,839 crore) and Electronic Warfare Suite (EWS) (Mayavi) (₹154.74 crore) developed for LCA as development of Engine and EWS were sanctioned (1989, 2005) as separate projects by DRDO. These two cases are discussed in Chapter II and III.

⁴ LCA Mark I and Mark II distinguished only in October 2007, as the aircraft planned with improved aero engine was designated as LCA Mark II, and the present version as LCA Mark-I.

⁵ GE-F414-INS6.

1.5 Audit objectives

The execution of the LCA programme was examined to assess the extent of

- i. Achievement of Air Staff Requirement (ASR) and Weaponisation of LCA;
- ii. Indigenous capability developed through LCA programme;
- iii. Development and manufacturing of LCA (AF) including setting up of manufacturing facilities at HAL;
- iv. The preparedness of IAF to induct LCA into Service and consequent operational impact.

1.6 Sources of Audit Criteria

The sources of Audit Criteria were:

- The Air Staff Requirement of 1985;
- Ministry of Defence's (MoD) sanction letters and approvals of Cabinet Committee on Security (CCS) including papers leading thereto;
- Procedure for Design, Development and Production of Military Aircraft and Airborne Stores (DDPMAS) – 2002;
- Minutes of meetings of General body, Governing Body of ADA, Empowered Committee, Programme Management Team of IAF, HAL Board of Directors etc.;
- Memorandums of Understanding, Consultancy contracts, supply orders entered into by ADA and HAL and MoD contracts with HAL for supply of LCA;
- Papers relating to the Work services and IAF preparedness for induction into IAF and operation of LCA;
- LCA trial reports, reports of various committees and certifying agencies;

1.7 Scope and methodology of Audit

The Performance Audit (PA) covers the progress made in execution of LCA programme since the last Review i.e. Para 28 of the Report No. 8 of 1999 of the C&AG of India, Union Government, Defence Services (Air Force & Navy) for the year ended 31 March 1998. The records of ADA, Air HQ, HAL and DRDO Headquarters and its laboratories⁶ affiliated to design and development of LCA were seen for conducting the review. As MoD had requested (October 2013) to take up the audit after completion of Initial Operation Clearance of LCA, an Entry Conference for the performance Audit could be held on 24 March 2014 at DRDO Bhavan, New Delhi. The field audit was conducted during the period from April 2014 to mid October 2014. Preliminary Audit observations and questionnaires were issued to ADA, Air HQ, DRDO and HAL for eliciting their replies and obtaining requisite information, evidences and clarifications, wherever required. A draft PA report was issued (December 2014) to the Ministry of Defence, for which reply is awaited. MoD was requested (December 2014) for an Exit Conference which is still (March 2015) to be held.

1.8 Acknowledgement

We acknowledge the support extended by MoD, Air HQ, ADA, DRDO & its laboratories and HAL in the furnishing of documents, information, and replies to the audit queries raised during the course of the PA.

⁶ Defence Avionics & Research Establishment (DARE), Bangalore, Aeronautical Development Establishment (ADE), Bangalore and Centre for Air Borne Systems (CABS), Bangalore.